Study on voluntary arrangements for collaborative working in the field of construction services

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Final Report

Part 3: Country Reports

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Introductory note

The seven Country Reports are presented essentially as they were prepared by members of the Study Team in 2008. Some have been slightly re-structured in order to achieve greater commonality of approach, and some headings have been changed in order to provide reference points for topics which occur in each report. The differences in treatment in the reports reflect underlying differences in the experience of the seven Member States and the Study Team have not sought to harmonise the presentations.

The Synthesis and Assessment Report (Chapter 5 of the Main Report) provides a summary and analysis of the reports.

COUNTRY REPORT

BELGIUM

CONTENTS

1 BACKGROUND INFORMATION ON THE CONSTRUCTION SECTOR

1.1 GENERAL STATISTICS (POPULATION, GDP, CLIMATE, GEOGRAPHY)

1.1.1 General statistics

	2007(1)
Population (x1,000)	10,544
Households (x1,000)	4,457
Developed land	19.5%
Population density (per km²)	346.7
Average temperature (/24h)	11.5° C
Days of precipitation per year	204
GDP (Bln €)	341.0
Economic growth	2.7%
Gross Fixed Capital Formation (Bln €)	72.2
Total employment (x1,000)	4,303
Unemployment rate	7.0%
(1) Estimates	

Source: INS, ICN

1.1.2 Construction industry figures, characteristics and business climate

Number of enterprises and workers by occupational status

	2006
Enterprises	71,482
- without employees	*25,515*
- with employees	*45,968*
Employees	200,386
- manual workers	*169,683*
- white-collar workers	*30,704*
Self-employed	52,217
Total of workers	252,603

Source: ONSS, INASTI, INS and own calculations

Breakdown of construction enterprises by size class (number of employees)

Size class	Number of enterprises	% of total	% of employers
0	45,968	64,30%	
x<5	16,985	23,80%	72,1%
4<x<10	4,415	6,20%	18,7%
9<x<20	2,17	3,00%	0,9%
19<x<50	1,408	2,00%	6,0%
49<x<100	346	0,50%	1,5%
99<x<200	121	0,20%	0,5%
199<x<500	56	0,10%	0,2%
499<x	14	0,00%	0,1%
Total	71,482		

Source: ONSS, INS and own calculations

Turnover by market segment (estimates for 2007)

Market segment	Turnover (Bn €)	% of total
Residential construction		
New	6.6	21.8%
Repair and maintenance*	7.1	23.3%
Non-residential building		
New	7.3	24.2%
Repair and maintenance*	4.1	13.5%
Civil engineering		
	5.2	17.2%
Total	*30.3*	*100.0%*

Source: Euroconstruct
(*) includes renovation works

1.1.3 Distinctive characteristics of the Belgian construction industry

The construction industry weights for approximately 5% in the Belgian GDP, which is less than the EU27 average (6.2%). After having outperformed over the last few years, the construction industry has re-aligned with the overall Belgian economic growth. The recent outstanding levels of activity have had a positive influence on employment, even if construction companies experience increasing difficulties to find skilled workers.

The overwhelming majority of Belgian construction enterprises are SMEs and even counting out one-man businesses, 98% of construction employers occupy less than 50 workers. Most larger companies are part of international groups.

High labour costs but also (and probably consequently) high productivity are distinctive features of the Belgian construction industry, as highlighted in the study *Benchmarking of use of Construction (Costs) Resources in the Member States* (Bernard Williams Associates , 2006), commissioned by the European Commission's Enterprise and Industry Directorate-General.

Belgian construction firms are mainly focused on their national market but progressively expand their activities abroad for work carried out both from Belgian premises and from foreign subsidiaries. The work carried out from Belgian premises is generally limited to the neighbouring countries but some firms operate all over the world (dredging companies, in particular).

The Belgian construction market has always been quite open, as the rest of the Belgian economy, as demonstrated by the presence of numerous subsidiaries of European groups. Direct tendering by contractors established in other member states (beyond mere transborder activities), in particular subcontractors from Central and Eastern Europe, is a more recent and consequential phenomenon.

1.1.4 Distinctive characteristics of the Belgian construction market

The Belgian construction market is a mature one and mostly made up of small to medium scale projects.

Since 2004 the number of authorised new dwellings has seen a sharp increase. The demand for new dwellings has almost reached the levels before the crisis in the eighties when more

public dwellings were built than today. This is unprecedented in the last 25 years, but has already begun to decline in 2006-2007.

The non-residential construction sector is still recovering from the collapse observed in 2002-2003. Overall, non-residential activities are moving in a positive direction, with a few shifts among the different types of buildings.

The repair and maintenance segments accounts for a high proportion (ca 37%, compared to an EU average of 23%) of the Belgian construction activity. This is particularly true in the housing sector where renovation accounts for more than the half of the output. This part of the market is less influenced by the short-term economic situation and follows a structural process of expansion supported, among other factors, by the rise of comfort and environmental standards.

The share of renovation demand tends to increase since the eighties in the housing market, and the nineties in the non-residential market. This is significant as regards collaborative arrangements insofar as renovation works are regarded by contractors as more difficult to coordinate and giving rise to more collaboration issues with architects1.

The weight of civil engineering activities is by contrast lower than usual in Europe. Belgium, as many other EU-15 member states, has experienced a general downward trend of its public investments as related to GDP during the past 30 years. If not unusual, the decline has been one of the biggest, from 4.7% in 1980 to 1.7% nowadays, compared an EU average of 2.7%. The Stability and Growth Pact discipline makes radical changes to this situation unlikely. PPPs seem to many the only way forward. The public demand for construction works lay primarily in the hands of local authorities (48%), then in those of regional administrations (43%).

[1] Mona Grinwis Plaat Stultjens, Bruno Heyndels, et Ellen Mombers, “Interaction entre les marchés de la construction neuve et de la rénovation: aspects structurels et conjoncturels” (presented at the XXVIIth Congress of the FEGC, Bruxelles, 2002), p. 24-25.

2 ORGANISATION AND MANAGEMENT OF THE CONSTRUCTION PROCESS IN BELGIUM

2.1 PRIVATE PROJECTS

The classical construction process in Belgium starts with the appointment by the client (future owner or developer) of an architect who establishes the drawings and specifications and is assisted by an engineer with regards to the structural design, and controls the subsequent execution of the works. Architects are remunerated for their design through a fee based on the cost of the works and receive a separate fee for their supervision tasks. The contractor(s) is or are separately appointed by competitive tender on the basis of the detailed design. The works can alternatively be awarded to a general contractor (who generally carries out carcass works himself, often carpentry and joinery works as well, and sub-contracts the rest) or through direct trade contracting of the different trades. In this case, the coordination tasks fall on the architect, an appointed project manager or the client himself. Both contracting models coexist without clear overall predominance of either one of them.

Larger projects may involve a technical control office in charge the approval of the design and the technical supervision of the works, allowing for the granting of an "all risk" insurance of the construction phase followed by a ten year cover against major defects. This control/insurance scheme is reputed for encouraging more co-operative working amongst the parties as detailed further on.

Developers and real estate managers hold obviously an important place on the construction market. Medium and large contractors often play the role of developer, directly or through a specialised subsidiary.

Despite of the architect's independency principle demanded by the law, some forms of "Design- and build" exist in Belgium (for industrial buildings, where designs can be more standardised, as an example). The legal provisions and the case law leave some ground partnerships involving architects. In particular, a regular collaboration between an architect and a developer building for his own account, or acting only as coordinator has been considered as legit. The lawfulness of the situation where a developer-contractor deals directly with an architect but without the latter being contractually involved with the client is more marred by uncertainty but is seen in practice and seems to hold up[2].

2.2 PUBLIC PROCUREMENT

Public procurement must of course abide by the rules set at European level. Belgium's implementation of the directives does not feature much idiosyncrasy in this regards. In opposition to other member states, the same provisions generally apply for contracts above and below the European thresholds.

Under normal procedures, design and execution phases are strictly separated and someone having taken part to the design phase is prohibited to participate to the call for tender relative to the execution phase, according to rule of equal treatment of tenderers. In those circumstances, collaborative working arrangements between architects, engineers, and contractors can of course not take place. In fact, such arrangements may only occur in the case of complex projects where design and building are tendered in a whole (as classic contract or PPP) and for which consortia are usually formed.

[2] Flamme M.-A., Flamme P., Delveaux A., Pottier F., "Le contrat d'entreprise: Chronique de jurisprudence 1990-2000", Bruxelles, Larcier, 2001, pp. 35-38.

Public-private partnerships have been employed in some infrastructure works and in social housing [see case study]. There is increasing interest in the concept, particularly by municipalities and in the health sector and it is being promoted in order to overcome resource constraints.

Moreover, there is a long-standing 'experimental' programme in the social housing sector which has encompassed aspects of public-private partnership and design-build. The programme is the subject of a case study (see below). The form of procurement was chosen by the Flemish Ministry of Public Works in order to promote high quality and innovation in construction, against a background of concerns about the quality of design and construction in social housing.

2.3 LEGAL FRAMEWORK

2.3.1 The Breyne Act (9 July 1971)

The law governing residential construction, the so-called "Breyne Act" (named after the minister who filed it) was amended in 1993. The Breyne Act governs the construction of residential buildings and the sale of houses that have yet to be built or are in the process of being built. Here, we will focus on the key points and most confusing aspects.

Law of 3 May 1993, so-called "Breyne Act", amending the law of 9 July 1971 governing residential construction and the sale of housing that has yet to be built or is in the process of being built (Official Gazette 19.VI.1993). This law applies to any agreement relating to the transfer of ownership of a house or apartment that has yet to be built or is in the process of being built, as well as any agreement establishing an undertaking to build, have built or obtain such real estate, when the house or apartment is intended for residential use or mixed professional and residential use, in accordance with which the purchaser or client must effect one or more payments prior to completion of the construction.

In order for the Breyne Act to be applicable, 3 conditions must be met:

- The building must be for residential use (a shop or even a second home does not fulfil this requirement).

- The contractor or property developer must build the property or arrange for the property to be built, or obtain the property on your behalf. This may appear self-evident, but this is a very important clause. Reading between the lines, what this section is saying is that a single contractor (real estate developer) must be responsible for everything. If you use a number of different contractors and therefore there are various contracts, the law is not applicable! Not even if you conclude a contract with a single contractor for all structural work.. If you do not yet have a plot on which to build, the Breyne Act applies to the combined sale of a plot of land and the future construction of a dwelling. If, on the other hand, you already have a plot on which to build, the Breyne Act applies to both an individual works contract (with your architect and a general contractor) and a turnkey contract (based on the plans of the developer).

- You must make one or more payments before the dwelling is completed. (Only some building firms anticipate this point by only requesting full payment upon completion of the work). If the building has yet to be built or is in the process of being build, you are protected if you are required to pay for your home before it has been completed.

2.3.2 Liabilities

2.3.2.1 Design stage

The architect is normally responsible for the design. However the contractor can not be held liable for hidden flaws in the design of a building project, he can't behave as a servile executor of what is dictated by the plans and the specifications. On the basis of his duty to inform and notify, the contractor must always inform the building owner on possible deficiencies in the design or bad choice of materials. Every contractor/building professional isn't expected to detect every design mistake. The bigger the grade of specialization, the heavier the duty of information.

If the contractor has neglected his tasks to inform, he risks to be held responsible for possible design mistakes or bad choice of materials.

2.3.2.2 Execution stage

The contractor is responsible for the non-performance of works stipulated in the contract (i.e. breach of contractual arrangements) and for the execution flaws. He is normally also responsible for the flaws regarding the materials he uses except if he can proof his invincible ignorance. This means he has to proof he was totally unable to foresee or avoid this flaw. The contract can also render the contractor liable for abnormal troubles with the neighbours (article 544 CC).

2.3.2.3 Acceptance

Once the works are finished, the parties proceed to t heir acceptance. The acceptance is the act by which the client, possibly assisted by his architect, takes delivery of the works and accepts them. This implies that he agrees that the works have been executed according to the contract and the generally accepted construction practices.

When only one acceptance is foreseen, the acceptance is considered as a final acceptance that covers the visible flaws and that starts the decennial liability.

When a double acceptance is foreseen and the provisional acceptance is accompanied by an acceptance report, it is generally considered as covering the visible flaws. The provisional acceptance results in the transfer of risks (risk of loss by fortuitous event or force majeure) to the building owner. The final acceptance marks the start of the decennial liability. It's authorized to foresee in the contract that the decennial liability can begin at the provisional acceptance.

2.3.2.4 The liability after commissioning

After the commissioning of the works, only two kinds of liability can occur. These two kinds of liabilities suppose the proof of a fault on the part of the contractor.

**** the decennial liability (articles 1792 et 2270 CC)***

The decennial liability supposes a flaw putting in danger the solidity of the building or a big part of it without the flaw being hidden necessarily at delivery.

It's a public policy responsibility. This means it's impossible to limit this liability by a contract provision, neither as regards the delay nor the flaws it applies to.

**** the liability for venial hidden flaws***

This liability may be invoked for a flaw that couldn't be discovered at the commissioning and that's not as serious as flaws covered by the decennial liability. The flaw must be important enough so that it wouldn't have been accepted by the client, had it been visible.

Given the kind of liability, the possible judicial proceedings have to be initiated within a reasonable time after the flaw has been discovered. The reasonable time is assessed by the judge in function of the delay from which, in the absence of reaction from the building owner to the manifestation of the flaw, the flaw has to be considered as "accepted".

The time within which this responsibility may be invoked is also 10 years but can be contractually reduced. Afterwards the building contractor takes the risk of possible appearance of latent venial defects under his responsibility. It deals most of the time with the delay between the provisional acceptance and the final acceptance when it was agreed that the commissioning implies the acceptance of the works.

2.3.3 Role of the architect

2.3.3.1 The education curriculum

The standard architect's education curriculum takes 5 years. Only holders of a degree in architecture, architectural and civil engineers or construction civil engineers can exercise this function. A traineeship of 24 months is obligatory. The certificate is personal and can't be given to a moral person.

2.3.3.2 The profession

The Belgium architect disposes of a monopoly for all construction works that need a building permit. For these works, the client (private or public) needs to have an architect for the design of the plans and the control of the execution of the works (article 4 of the law of 20 February 1939).

Article 4 of the law of 20 February 1939 that gives a monopoly to the architects has to be combined with the law of 26th June 1963 that established "l'Ordre des architectes".
The law applies to all architects of our country (federal level). On the other hand, the urban prescriptions as well as the norms that relate to the attribution of the urban permit, belong to the responsibility of the Regions.

2.3.3.3 The organisation of the profession

The architect has to be registered in the "Tableau de l'Ordre" or on the list of trainees (inscription on provincial level). Only a physical person can be registered on the "Tableau de l'Ordre" or on the list of trainees. The title and function of an architect are protected. The title and monopoly is only awarded to physical persons. Since 2006, it is possible to exercise the profession of architect in the context of a legal person.

2.3.4 Insurances

There is no existing system regarding building insurances. Only the architects have an insurance obligation (cover of contractual responsibility including the decennial liability and extra contractual liability).

The consulting engineers are normally insured for their contractual liability including the decennial liability and the extra contractual liability. Most building companies only cover their civil exploitation liability. The insurance market offers 2 kinds of specific insurances namely the All Risk Construction Site insurance and the decennial insurance that is submitted to a technical control.

The subscription to such an insurance is without obligations and is done at the initiative of the company or the client.

2.3.4.1 All Risk Construction Site insurance

The All Risk Construction Site insurance offers a very complete cover in favor of all participants at a building project (client, promoter, architect, design office, building contractor, subcontractor,…).
The All Risk Construction Site insurance is in the first place a property insurance: the insurance covers in general the material damages for the insured construction site. The cover can be extended in an optional way to liability insurance towards third parties (art. 1382 – 1386 CC) as well as towards abnormal troubles with neighbours (art. 544 CC).
The insurance is valid for the period mentioned in the policy. The cover can be extended in an optional way to the “maintenance period” that comes after the provisional delivery and lasts for about 1 or 2 years after reception

2.3.4.2 Insurance civil Construction liability

This insurance covers the professional civil liability of the building contractors for all risks linked to the execution of their insured professional activity. The insurance covers the loss of income due to the obligation to pay indemnities under the contractual (partly) and extra contractual liability and can be imputed to the insured due to a mistake done when executing his professional activity.
Contrary to the All Risk Construction Site insurance policy, the professional liability covers the insured building contractor’s liability towards third parties and not the works he has executed.

2.3.4.3 The control insurance

This policy covers the decennial liability for designers and works foremen. The insurance can only be concluded when the insured persons commit themselves to submit the plans and works to a technical control. The technical control concerns the stability, the good performance of the buildings and civil constructions and this relates to new construction, transformation and renovation.
This technical control includes carrier elements, finishings and technical installations. During the technical control, particularly the quality of materials and construction elements used as well as the conformity of the works with the plans and the technical specifications are supervised.

2.3.4.4 Decennial liability insurance F-10

For construction works that are less important like medium-sized houses, offices and apartments (till 743.680 euros for carcassing and associated works), the “Assurances

Fédérales" have developed a specific policy for the decennial responsibility. This policy insurance, named F-10, doesn't need control of an external office.

2.3.5 Technical regulations

In Belgium we have some technical regulations in environmental matters especially for energy and fire. Most of the technical matters are covered by European and national standardization.

We distinguish 3 levels of competence to establish the regulation concerning fire security:

- The federal authority is authorized to formulate the basic norms that stipulate the minimal conditions to which all categories of buildings independent of their destination, need to answer. The federal authority has also formulated the regulations concerning the workplace, the hospitals, the electrical installations and new buildings in general.
- The Regions and Communities are competent for the regulation of particular security cases by adding or adapting the federal law without reducing the requirements at security level. Thus special regulations have been formulated for rest homes and hotels.

- The municipalities have to publish the police regulations (fire prevention). The bench of mayor and aldermen can add conditions to the building or environmental permit. The mayor has to control the existing regulation (between the basic norms).

These regulations (basic norms,…) have a binding character (Belgium law)

There also exist Belgium norms published by NBN (bureau voor Normalisatie - Bureau de Normalisation). Normally these norms don't have a binding character. Nevertheless, the Belgium homologated and registered norms are juridical considerated as rules of good use.
The regulation of the energy performance is such an example.

2.3.5.1 European guideline (EPBD: Energy Performance of Buildings Directive)

The publication of the European Guideline on January 4th 2003 (Guideline 2002/91/EG from the Parliament and European Council of December 12th 2002 on the energy performance of buildings) obliges all European state members to implement a regulation on energy performance. In Belgium this responsibility belongs to the regions.

2.3.5.2 Flanders

On May 7th 2004, the decree on energy performance was ratified and published. This decree stipulates the basis to execute the European guideline in the Flemish region and foresees a framework for adapted control for execution. The text was published in the "Moniteur Belge" on July 30th 2004.

Decree on the energy performance (pdf 94 kB)

The decree of the Flemish Government concerning the requirements for energy performance and internal climate of buildings has been approved on March 11th 2005 (M.B. June 17th 2005). The new requirements will be applied for all constructions where the building permit is applied for after January 1st 2006.

Requirements PE – Decree (pdf 7.7 MB)

More information on the situation in the Flemish Region is available on this page : (Vlaamse overheid): http://www.energiesparen.be/energieprestatie/.

2.3.5.3 Brussels and Walloonia

Brussels-Capital region

Ordinance of 7 June 2007

The Brussels-Capital region adopted in June 2007 an ordinance in order to promote energy efficiency of buildings. This Framework decree transposes the European Directive 2002/91/EC on the energy performance of buildings.

Ordinance of 7 June 2007

Walloon region

Decree of 19 April 2007

The Walloon Region of Belgium implemented the EPBD on 19th April 2007. The Walloon Region has for many years a Thermal regulation for new and existing dwellings, schools and offices. For existing buildings, there are requirements for the building envelope (U values) and ventilation. For new buildings, there are requirements for the building envelope (U values, global insulation level) and ventilation.

Decree of 19 April 2007

More information on energie.wallonie.be.

3 APPLICATION OF COLLABORATIVE ARRANGEMENTS

3.1 THE BELGIAN APPROACH TOWARDS COLLABORATIVE ARRANGEMENTS

In Belgium no public actions exists in favor of voluntary arrangements for collaborative working but these arrangements are not forbidden by the law (“bouwteams”, design and build).
The law of 1939 and the law on public markets are not in favor of voluntary arrangements.

In the public markets we notice an increase of markets favoring the collaboration between the public client and the different partners of the private sector.

- PPP’s
- public development contract

Although there is no legal framework, different kinds of collaboration exist. The process is carrier of voluntary arrangements on cultural level (cultural heritage).
Concerning public procurement we still work with tenders but we can distinguish a tendency towards “bouwteams”.

3.2 PROJECT PARTNERING

3.2.1 Joint ventures

It is a common practice for contractors to join forces in order to bid for a contract requiring larger/different capacities than their own separate ones. The Belgian legislation provide for a specific legal form of joint venture called "temporary partnership" or "temporary company" (société momentanée in French, tijdelijke handelsvennootschap in Dutch) that clearly demands trust and collaborative attitude from participating contractors.

The temporary company is defined by the law as a company without legal personality nor distinguished name, that aims at one or more trading. The temporary company has by definition a temporary character. This does not mean that it has necessarily to exist for a certain time but that it is committed to one or more trade actions and will be dissolved after completion of those. A temporary company can be founded for the execution of a project that can last (dozen of) years, as long as the assignment is described and limited.

Due to the lack of legal personality, there are no specific requirements for the constitution, which results from the simple consensus ad idem between the parties.

As for any trading company, all partners of the temporary company have to make a contribution of capital or a contribution in kind. Because the temporary company has no legal personality, the contribution is done without creating a new registered capital. Every partner remains normally the owner of his own.

A temporary company bids by itself but the tender has to be signed by all partners. When a contract is awarded to a temporary company, every participating company stays responsible towards the client. This means that if one of the participating companies cannot fulfil his obligations, the client can ask every participating company to take over the full assignment.

3.2.2 Public-private partnerships

PPPs were considered at first as convenient alternate financing schemes. But the viewpoint has evolved and overall, PPP or mere design and build contracting stimulate cooperation between designers and construction companies. In certain domains, PPPs can be viewed in Belgium as genuine partnerships, possibly involving the client common undertaking set up to carry out the project.

Consortia are commonly created in order to compete for PPP contracts (as it is the case for the latest major projects such as the *Diabolo* project near Brussels' airport or the "*Oosterweel verbinding"* in Antwerp). The peculiar views of Belgian public authorities regarding PPPs often limit the consortia to design + build + maintain (possibly), leaving out the funding subject to a separate contract. The Belgian PPP market features examples of institutionalized PPP, gathering private and public partners in order to achieve local projects (urban renewal, social housing, tramways).

3.2.3 Alliance

The alliance is up till know not known in Belgium.

3.2.4 Construction consortia

Collaborative arrangements are frequently made by contractors, possibly involving other construction professionals (architects, engineering companies, developers, equipment providers, etc.) as well, in order to setup comprehensive and competitive bids for large private and public projects. As regards public projects, this is typically the case for PPPs but also for traditional public contracts such as, for instance, wastewater treatment plants which require the know-how of both civil engineering and hydro-mechanical equipment specialists. Consortia may last for more than one project when market conditions are favorable (repeatable design, series of similar procurement procedures, etc.).

3.3 INFORMAL COLLABORATIVE ARRANGEMENTS

3.3.1 Clusters

Informal collaborative processes are quite common in Belgium. An obvious example is the well known practice of recurrent collaborations between the general contractor and a set of specialized sub-contractors (a couple for each trade), tending towards a functioning in cluster[3] (every member having however advantage not to rely too much on a single and exclusive partnership). These relationships understandably lead to collaborative behaviors and offer the advantages of easier coordination, mutual trust (in terms of quality, payment delays) and rapidity of response, as a trade off for possible better profit margins through pure market transactions or other forms of contracting. Such "relational contracting" can only thrive when and in market segments where the price competition is not too fierce and the demand driven by other criteria than price. Subcontracting is a well and long-established practice in the construction sector, for reasons inhering in the very nature of the business. It has nevertheless

[3] Robert G. Eccles, "The quasifirm in the construction industry," Journal of Economic Behavior & Organization 2, no. 4 (Décembre 1981): 335-357.
.

undergone fundamental changes under the combined effects of market's volatility (leading to more "capacity subcontracting"), project managers entering onto scene (whose logic is financial rather than technical), and last but not least the internationalization of the supply, putting further pressure on prices[4].

3.3.2 Variants

A second example is the common practice for contractors, expected and sometimes demanded by designers, to offer alternative technical solutions meeting the requirements whilst providing cost or time savings, or even performance improvements. This supposes a pre-contractual study by the contractors with the collaboration of potential sub-contractors and providers, as well as some early dialog between client, designers and contractors.

The architect and the engineer are still responsible for approving any variation proposed by the contractor. This distinctive approach of the contractor's role is made possible by the fact that the few number of technical regulations, although counterbalanced by the obligation to act according to the generally accepted construction practices and a widespread recourse to standards leaves the choice open between several solutions including innovative ones. This can also be seen as some continuation to the obligation of contractors in Belgium to inform their clients of errors or shortcomings in the plans and specifications.

3.3.3 Projects covered by a project insurance

In the view of SECO and of independent observers, this system encourages innovation since there is independent appraisal of proposals (including those originating from the contractor with the aim of simplifying construction) with the client protected from risk by the insurance system which, if failures do occur, will rectify them without the need to prove liability by any party. It also encourages more co-operative working amongst the parties to the contract.

A distinctive role is played in projects each year by the combination of project insurance and SECO, which is a “Bureau de Contrôle”. SECO is appointed by the client to provide technical supervision of the works and is then responsible for approving the original design and any changes, and for supervision of the works. Provided it has approved the design, the works are covered by ‘project insurance’ in addition to the professional indemnity insurance carried by the designers and contractors involved.

The insurance is ‘all risks’ during the construction phase (potentially extendable for a further two years) followed by 10 year cover against major defects. The system forms the main element of technical control in Belgium, since there are few mandatory standards for construction and no system of public inspection of works

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[4] Virginie Xhauflair, Dimitri Deflandre, et Jan De Schamphelaire, “Le secteur de la construction vu par les entrepreneurs,” Courrier hebdomadaire du CRISP, no. 1917 (2006), pp. 26-30.

3.3.4 "Bouwteam"

The following quotations sum up the Bouwteam concept

> *"**Bouwteam"** means the team of all parties (client, designer, executing parties, prospective advisors) that have been appointed from the beginning of the project by the client and that work under his direction .Moreover there is a strict division between the design and execution responsibility: the general contractor works as advisor in the preparing phase." (L. Moons, KVIV, 1998)*
>
> *"Apart from the client; those parties are also involved:*
>
> *a. the designer(s) ;*
> *b. the executing parties : 1 general contractor or more specialised general contractors ;*
> *c. prospective advisors, like for example the quantity surveyor, the control organism,.. ;*
>
> *The beginning of the project means the start of the design phase, the phase after the project definition.*
>
> *In spite of the collaboration of the general contractor during the design phase, there is a strict division between the design and execution responsibility: the general contractor works as an advisor in the preparing phase." (Gabriël De Keyser, KVIV, 1998)*
>
> *Every member of a "bouwteam" has a contract with the client but the members don't have any liability towards each other. We have to evolve towards a formula where the whole "bouwteam" is liable towards the client (R. Lenaers, BBRI, 2008)*

In a bouwteam it's important to have the right attitude towards profit, competition and quality.

- all partners have to cope with possible profits of the general contractor
- a transparent open accounting
- adjustment of profit sharing with regard to guarantees for quality and added value.

Before starting the bouwteam, time needs to be invested in:

- defining the goals, criteria, work methods (choice of partners,…), requirements client
- Coaching partners with regard to the mission of the bouwteam/concept

Confidence is also a key factor in a bouwteam. Confidence can be reached by:

- setting up a system of evaluation and audits with regard to possible lapses (method, partners,…)
- by adding an ethical charter to the contract

The budget within a bouwteam is only determined when the bouwteam has been composed. It needs to be in accordance with the market. A maximum budget needs to be fixed. If the maximum budget is not reached there will be profit sharing.

> *"We have to make the project the centre of attention of all members of the bouwteam" (R. Lenaers, Confederatie Bouw, 2008)*

3.3.4.1 *International references and models concerning the "Bouwteam" (Partnering)*

"The term partnering is used to describe the largely symbiotic collaboration of the parties involved in the project to achieve the targeted performance goals by defining contractually agreed incentive systems. This partnership should encompass all phases of the project, where possible.
Whilst the partnership between developer and service provider is particularly important, the relationship between the service provider and his cooperation partners must, equally, be taken into consideration (Bennett and Jayes 1998)." (G. Girmscheid, CIB, Toronto, 2004)

"There is now a large body of literature on partnering (see, for example, Bennett and Jayes, 1995;Godfrey, 1996; Barlow et al., 1997). According to Ang and Ofori (2001), Partnering is based on the principles of trust, mutual respect and cooperation towards the achievement of a common goal. Often, the term 'partnering' is used to capture a spirit of cooperation that may occur on any type of project - collaborative or otherwise (Barlow and Cohen, 1996). 'Partnering' is a structured sequence of processes initiated at the beginning of a project that is based on mutual objectives and uses specific project management tools and techniques (Bayramoglu, 2000). Although, viewed in this sense, partnering can help to resolve the problems of Singapore's construction industry, its usage is relatively low (Ang and Ofori, 2001).

Partnering is the revolutionary tool for the construction industry. It offers a new paradigm for the building owner and other participants in the construction industry (Bresnen and Marshall, 2000a).

The concept basically emphasizes an attitude transformation such that the parties involved look beyond the strict provisions in the contract to formulate collaborative and cooperative actions to achieve the common objectives of the parties.
Most importantly, partnering requires all the parties to agree in a formal structure to build good and healthy working relationships based on mutual trust, commitment, respect and open communication (Bresnen and Marshall, 2000). It seeks to achieve a "win-win" situation for all the parties. Partnering is not a quick fix for project-related problems. However, it can provide a framework for reducing the problem of construction materials waste generation relating to the traditional method of subcontracting." (George Ofori, CIB, Toronto, 2004)

3.3.4.2 Obstacles for the conventional models of project delivery that influence the "Bouwteam" model

- *The building process thematic: this means that the building project is most of the time a prototype.*
- *The execution takes place in open air and is thus exposed to variable climate conditions.*
- *It is to a greater extent labor-intensive. We deal with people who have their own skills (qualified and experienced less or more) and weaknesses, who can get ill, who can make human mistakes,…*
- *The building process has been deprived of new Technologies in the field of executing Technologies as well as in the field of information technologies.*
- *The building process is also enclosed in a series of laws and regulations regarding environmental planning, environment, security, quality ...*
- *The black and grey work grow abundantly in our sector" (R. Lenaers, KVIV, 1998)*

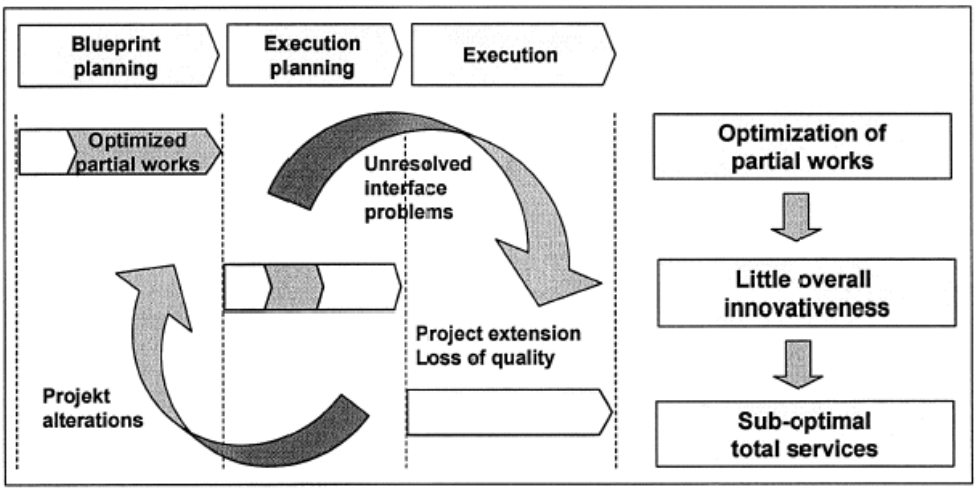


FIGURE 1.
Traditional construction processes and their sub-optimal impact

"The fragmented composition of construction processes no longer meets the requirements of today's socio-economic conditions. The processes, which are still less than optimal, are, in part, based on the conventional methods of completing projects, which comprise fragmented phases and the subdivision of works, and on the increased outsourcing to subcontractors with project control lacking any direct system leadership.

This leads to unresolved interface problems, and to only parts of the project being optimized, instead of the overall project completion (Figure 1). Moreover, generally speaking, very few innovations are implemented that encompass the entire project and generate customer benefits across all works and phases; this is because of the fragmented interests of the various individuals involved in the project.
The resulting product is frequently less than optimal for the customer in terms of return (maintenance, rentability), value conservation, etc. during the operation phase." (G. Girmscheid, CIB, Toronto, 2004)

3.3.4..3 "Life cycle" approach

"Our economic environment is undergoing dramatically dynamic changes. Market characteristics and corporate strategies are becoming ever shorter-lived. Invested capital has to produce a quick return.This situation is also placing new demands on the realization of construction projects.Developers focusing on the return and long-term conservation of the value of their facilities have realized that the conventional approach to tackling projects often does not produce the desired results. The orientation towards return and value conservation can only be achieved using a lifecycle approach (Girmscheid 2000)." (G. Girmscheid, CIB, Toronto, 2004)

These evolutions offer the opportunity to companies to develop new markets (**"lifecycle-oriented products"**)

"New approaches to cooperation in the construction industry are needed to ensure that a construction's optimization and innovative potential, which is inherent in the overall system, is exploited across the entire spectrum of value creation phases. This includes both horizontal and vertical forms of cooperation with providers of complementary products and services on the one hand, and new approaches to partnering between developers and the providers of products and services in the construction industry on the other hand." (G. Girmscheid, CIB, Toronto, 2004)

"The key to rapidly executing a project lies in the hands of the property owner. It is his responsibility to ensure that a target-oriented, trouble-free (as far as possible) and efficient execution of the project is possible. To achieve this aim, he must have clarified the following questions (Brandenberger and Ruosch 1996).

4. SUCCESS FACTORS IN COLLABOARATION

4. 1 Initial stages

Objective and decision

- clear preliminary clarification of requirements and general conditions
- clear objectives and decisions regarding functionality, quality, costs and the time frame
- clear targets
- efficient decision-making structure

Permission and financing

- permissibility or even permission must be clarified
- the permit procedure and time frames must be defined
- the conditions for a permit must have been complied with
- the financing must be in place

Project structure

- clarification of the types of project execution, tender and contract award needed to ensure the rapid realization of the project
- suitable project management structures

"It is crucial that the property owner realizes the contribution that he must make to guarantee the rapid and, where possible, trouble-free completion of a project. As such he should already have developed clear and understandable ideas during the pre-project phase with the help of a consultant or professional project manager. Furthermore, all hurdles that lie on the way to the permits being awarded for the project must have been overcome. Shortening the permit award and decision- making processes is a crucial objective. The financing of the project must be based on a reliable estimation of the costs with appropriate leeway guaranteed." (G. Girmscheid, CIB, Toronto, 2004)

4.2 The client is the essential player

1. The client is the person who determinates and pays the project: he defines his objectives, indicates the other parties, determines the contract strategy,…. This gives him the right to lead the project as well as to lead the project team.

2. If the client doesn't dispose of the time/knowledge/structure to take the lead, he needs to appoint a **clients representative** who will take over the role.

   In the text below we mean by the client, the client himself or his representative. "The term 'project manager' as used here is a generic term for the individual who represents the owner and is responsible for the overall coordination and management of the project activities.

   The project manager may be selected from the owners, designer's or contractors staff, or may be an independent person employed by the owner, such as a professional construction manager" (ref. 10.a.l) ;

3. This leadership has to be exercised with respect to the interest of all concerned parties: a win-win situation is necessary for a successful project.

4. The client must be aware of some disadvantages when accepting to short building times:

    a. Insufficient time to check/work out the security plan, subvention arrangements, alternative financing, expansion possibilities later on, influence of maintenance and exploitation costs,..
    b. The small possibility to make up delays and to repair mistakes ;
    c. The increased danger of conflicts;

4.3 Execution and design

4.3.1 Execution

In the execution phase there are means to shorten the building process, like:

(a) The work preparation:

The execution time can be drastically reduced with a decent work preparation. The necessary time has to be taken.

The pressure of the building contractor is most of the time so high that the general contractors are willing to accept the works immediately after the command (sometimes immediately after the basic. General contractors should not submit under this pressure also because of economical reasons.

(b) Execution methods:

If the general contractor gets enough preparation time to fine tune the execution methods, this will allow him to shorten the execution time and to work in a more economical way. The execution methods can be optimalized maximally in a partnering situation.
Prefabrication also belongs to the execution methods. “In the classical procedure the design didn’t foresee this, in the execution phase it’s almost impossible to prefabricate optimally.” (R. Lenaers, KVIV, 1998)

4.3.2 Design

Short building times implicate in practice, not always, a shorter design period.

In order to optimalise and to control the execution period regarding the time aspect, a well thought-out design is a valuable instrument. This contradiction at first sight can be removed in different ways. An organization model adapted to the project plays an important role.

The design as regards content needs to be tuned to the criterion “short building time”, independent of the chosen project organisation. Choice of materials, structure concept, way of execution, integration of structures, integration of structure-technical equipment and flexibility are some of the key concepts. Also repetition, simplicity and standardization play an important role in the execution.

The design is in two ways deciding for the whole building time because of the own passage time (directly) and because of the influence of the design on the execution time. In a first part, some considerations regarding the **design process** are given while in the second part the **design** is discussed.

It's important to mention that, although we speak a lot of the time aspect, this is not the only criterion.

Building time is one of the several criteria (comfort, value of perception, costs, flexibility...). The expression 'Time is money' is also applicable for the building process. Time can be expressed in money so "building time and building costs" are reduced to the same denominator.

For some projects this can be budgeted in a very unambiguous way (early rental revenues or production), for other projects it's more difficult to estimate. To put time into money, this is always done in a penalty clause." (M Dewanckele, KVIV, 1998)

Apart from the design and execution phase, it's also important to have a good (working) environment. A good environment leads for example to a better public image of the company and brings in money indirectly.

5 CASE STUDIES

Case 1: Renovation of an existing office building of 8.000m² in Brussels

Client: Crown Building Company

Project manager: Probam NV

Architect: Jaspers

Cost price renovation: 7.5 million euro

Project description

Major renovation of an existing office building with a surface of 8.000m² and accompanying commercial spaces. Demolition till naked construction, adding all technical installations (cool – ceilings, new elevators, etc.).

Starting points: maximal flexibility, rentable to the European Commission (bleu book), high quality finishing.

Project approach

Probam was asked to make a budget for the due-diligence. In this stage, the CBC wants to have quasi certainty about the cost price.

For all technical installations, the following approach was used: in design and build, all general contractors were chosen in CONFIDENCE and the installations were elaborated in team together with SECO and Probam.

Besides, all prices for all the other works that had to be executed were asked for in advance. This way a very realistic budget was already made a long time in advance. This was all done in the design phase without the specifications.

In the execution phase, a few general contractors had been invited for the renovation works and on the basis of "fee for pilotage" (because some general contractors were already contracted in the design phase), building price, sense of creativity, timing and quality, the general contractor was chosen.

The upper limit of the total building amount was determined during joint talks with the general contractor. For the savings the general contractor got 2/3 and the client got 1/3.

Reasons for this approach:

For the client it was very important to know the contract (is not the same as the cost price or budget).
The short execution time imposed that the execution plans of the techniques had to be known already by the start of the works.

Execution time

Start works: 15/08/2004
End of works: 31/05/2005

Measures that promote the good understanding

Open communication channels
Stimulate the involvement within the project
Encourage partnership

Results

Win-win situations created
Budget and timing respected
Degree of quality achieved
Flexibility in financial talks

Difficulties

Realisation of openness towards communication

End conclusion

To start on time at the design phase, to put together a balanced budget is very important, to give the lead to an **independent** project manager.

Case 2: Drug Safety Evaluation Center Beerse - Janssen Pharmaceutica

Client: Johnson and Johnson (Jansen Pharmaceutica)

Project manager: J&J WWERE Europe

Architect:

Cost price renovation: 45.444 million euro

Project description

- Toxicology/Pathology Operations Group
- Gross surface: 12.200 m²
  - -Vivarium : 5.700 m²
  - - Labo's: 2.950 m²
  - - office: 1.650 m²
  - - others: 1.900 m²
- Capacity : 145 researchers
- Start design : June 2001
- In use : December 2004

Project management:	J&J WWERE Europe
International design offices:	Kling Lindquist
Local design office:	Grontmij Bouw
Dry excavation:	THV Vanhout –Smet
Structural works:	Cordeel

Project budget

Budget composition:

- E3819 DSEC building (total cost)	40.010
- preparatory works	4.711
- design project definition	0.723
Total	45.444 MMEURO

Timing Budget approvals

- CAR phase I August 2001
- CAR phase II August 2002
- Project partnering order June 2003

Project timing

- Project definition up to and including the design
- Project definition (BOD A-B) Jun 2001 Dec 2001
- Preliminary design (BOD C) Jan 2002 May 2002
- Design Jun2002Feb2003
- Project partnering building program March 2003 June 2003

- execution
- excavation Aug2002 Dec2002
- structural works Jan 2003 March 2004
- project partnering multidisciplinary Aug2003 Dec2004

Project quality

- Modern en high technological building equipment:
- HVAC with warmth recuperation system
- Super isolated glazing (low-E)
- Intelligent home automation system for lighting and heating
- Modern security system
- Top quality in design and construction:
- 100 % respect of all internal company norms
- GLP critical systems 100 % qualified

Risk management :
• Quality of execution: integrated & multidisciplinary
• Packet of requirements: extremely customer-oriented and flexible
• Costs: market value with transparent cost structure
• Timing: integrated total planning

When : The conditions…

• only if there is a sufficient strong preliminary design
• only with business critical time lines
• only with well-founded risk-analysis:
• for quicker budget verification / validation for multidisciplinary construction packets

• strength/weaknesses analysis of building programs and project organisation

When: the moment …

• faster introduction for active participation to the final design and construction documents of multidisciplinary construction packets

BOUWTEAM (partnering) : Who ?
Executing “bouwteam” partner “UGBN”

• some preferred suppliers :• via “in-house” contractor management process
• based on proven track record & evaluation scores, supervising and designing “bouwteam” partner “OTBG”
• only preferred suppliers: idem “UGBN”
• Main design office: multidisciplinary • security coordinator
• Technical consultants commissioning “bouwteam” partner “OGBN”
• appointment “UGBN”/“OTBG” via intern decision committee

Project partnering : How ?

-Via the formal project partnering agreement:
  • object and size of the assignment
  • division of tasks and limits of contracting
  • practical modalities and cooperation

- detailed coordination task, cost compensation:
  - final price offer per partner
  - a fix coordination compensation
- detailed cost structure: “open book” approach planning:
  - fixed and approved total planning

Project partnering: DSEC RESULTS

Security:

217.125 performed man-hours.
A frequency degree Fig. of 4.6. This is an excellent result.

Quality:

100 % respect for all company norms without critical construction deficiencies.
On top of that, all GLP critical systems have been intensively tested via qualification resulting in stable and robust building systems.

Timing:

The original “fast track” construction time BT of 64 calendar weeks was only exceeded by 2 weeks (3%).

Budget:

The project program was fully realised within the budget.
Growth percentage, increased packet of requirements included, amounts to + 4 %

Teamwork:

The DSEC project had to absorb different internal “tunings”. The study partners as well as the construction partners have picked up this multidisciplinary approach with minimal deviations in execution. Hence the perfect control of the costs and a seamless transfer to exploitation.

COUNTRY REPORT

DENMARK

CONTENTS

1 INTRODUCTION

1.1 BACKGROUND DATA

The population of Denmark amounts to 5.4 million people and grows by 0.2 per cent annually mainly due to immigration. The economy is highly open, with Danish exports and imports accounting for 54% and 53% of GDP respectively. The three most important foreign trade partners have traditionally been Germany, Sweden and the UK. Trade with other countries, such as the US, has increased, and China is becoming a more important source of imports. However, an expanded EU remains the most important trading zone, accounting for 70% of exports and 73% of imports in 2006.

GDP in 2007 was DKK 1,696 billion equivalent to € 227 billion[5]. Total employment is around 2.8 million, the largest ever.

Annual data	**2007**	**Historical averages, per cent**	**2003-07**
Population (m)	5.4	Population growth	0.2
GDP (DKK bn)	1,696	Real GDP growth	2.1
GDP per head (DKK)	308,782	Real domestic demand growth	3.4
		Inflation rate	1.3

Source: Economist Intelligence Unit, Country Briefings, Denmark, 8 Apr 2008

Construction's share of GDP was 10-11 per cent in the 1970s and 1980s but has since 1990 been around seven per cent, a bit lower 1990-2004 and slightly higher in the very latest years. Constructions share of employment was similarly just under 10 per cent 20-30 years ago and presently amounts to just over six per cent. As in the other Nordic countries, climate and physical geography influence building tradition and choice of building materials. Concrete and bricks in house building are however much more commonly used in Denmark compared to the other Nordic countries where wooden construction are more frequent. Nevertheless, due to competitive prices of wooden houses, a strong trend from end 1990s is import of wooden detached family houses and terraced housing from the other Nordic and Baltic countries. Recently global warming has influenced the construction market as the importance of lower energy consumption and precautions against flooding is increasingly taken into consideration in new projects.

1.2 CONSTRUCTION SECTOR TURNOVER, STRUCTURE AND EMPLOYMENT

Compared to EU27 the Danish construction industry has grown quicker in recent years. The table shows that this was particularly the case in 2006 and parts of 2007. From 2007 growth in Danish construction has slowed down.

Construction production, index 2000=100												
	2005				2006				2007			
	q1	q2	q3	q4	q1	q2	q3	q4	q1	q2	q3	q4
EU	101.6	103.5	103.7	103.9	103.3	107.2	108.4	111.5	112.1	110.8	111.3	112.1
DK	97.7	100.9	101.0	103.0	105.5	104.5	113.9	125.4	109.7	114.4	115.1	111.6
Source Eurostat, Industry, commerce and services, Construction production												

Nevertheless the importance of the Danish construction sector relative to other economic sectors has been declining since the 1980s. Before then, when Danish politics and economy was characterised by rapid welfare state growth, high unemployment, and large state budget

[5] € 100 ~ DKK 746 and GBP 100 ~ DKK 925, April 2008

deficit and trade balance deficit the construction sector was used in politics to regulate the economy. Growth in publicly financed house building and infrastructure activities offered the possibility of a growing domestic demand for labour and inputs of building materials without causing major growth in imports.

Construction's share of total turnover, million DKK								
Mn. DKK	1970	1980	1990	2000	2004	2005	2006	2007
Total output all sectors	210192	671196	1386927	2169795	2456477	2630208	2820498	2949835
4500 Construction	23252	53943	101298	153175	159532	160124	167130	173429
Construction share	11.1%	8.0%	7.3%	7.1%	6.5%	6.1%	5.9%	5.9%
Source: National Accounts NAT07, Statistikbanken ® Statistics Denmark								

In a long time perspective the importance of construction has diminished from nine per cent of overall turnover to around five percent with a moderately growing, but probably temporary, trend since the turn of the Century.

Construction turnover distributed on subsectors, per cent					
	1970	1980	1990	2000	2004
Construction of new buildings	61,2%	42,8%	31,6%	29,0%	31,9%
Repair and maintenance of buildings	14,2%	23,0%	27,1%	34,7%	31,4%
Infrastructure, etc	21,2%	26,5%	34,3%	24,2%	24,8%
Building materials for repair of buildings	3,4%	7,6%	7,0%	12,1%	12,0%
Source: National Accounts NAT07, Statistikbanken ® Statistics Denmark Note: Data for 2005 to be published by Statistics Denmark summer 2008					

In the most recent years the Danish housing market and property markets in general have witnessed extraordinary strong growth. This has been expressed in growth in property prices up to 25 per cent on an annual basis in 2005 and 2006. The phenomenon has been particularly profound in and around the big cities and conurbations but has gradually spread to larger areas and more peripheral regions. This obviously has had impact on activity in the construction industry resulting in the highest volume of new house building, biggest turnover in several years, a general shortage of labour, and import of labour and construction services from Poland, Lithuania and Germany. From 2007, however, property prices in central regions have stalled or decreased while prices continued to grow, although at a slower pace, in peripheral regions. In for example Copenhagen property prices dropped 19 per cent since they peaked by end of 2006 which brings prices back to the level of mid-2005. Prospects for 2008 and further therefore seems to be less promising for the property and construction industries.

1.2.1 Number and size of firms and employment

Number of firms in the sector has been growing in the most recent years. This represents a reverse of a long term development in previous decades where number of firms slowly but steadily has decreased with around 1 per cent annually. From 2003 to 2004 number of firms grew by 3.5 per cent and in the following two years by eight per cent and totalled 31,600 in 2006 against 26,110 in 2003, an increase of more than 20 per cent. Of these two thirds had less than five employees, more than one fourth less than 20 employees and only 6.5 per cent 20 or more employees. Only 0.4 per cent of firms in construction equivalent to just over 100 companies had more than 100 employees. There is only a handful very big contractor firms with more than 2-3,000 employees in Denmark, for example NCC with 3,300 employees in Denmark out of a total of 21,000.

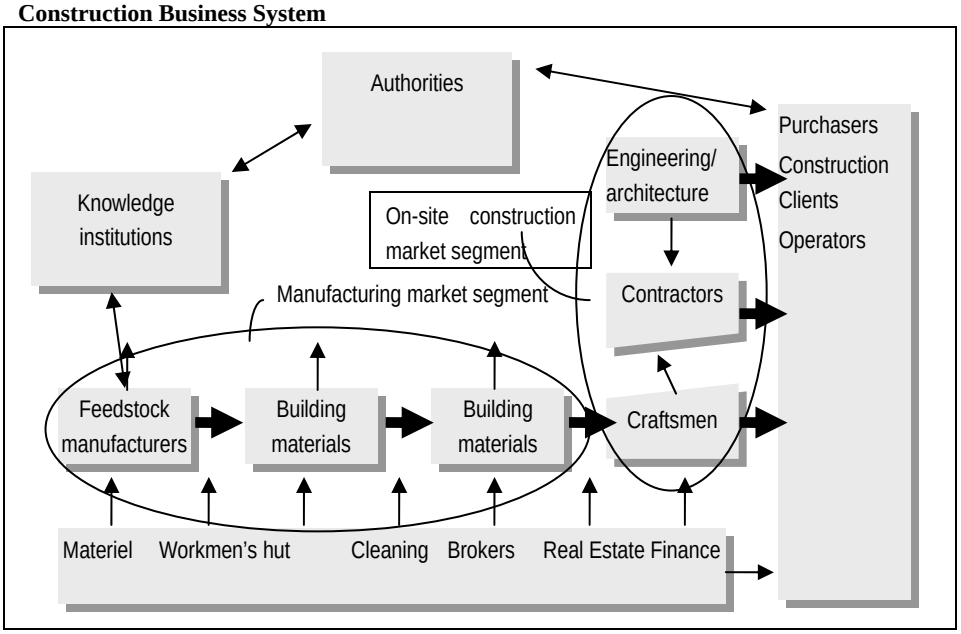
Employment in construction 1997-2006									
1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
156197	160513	165206	167396	174092	173179	167934	166669	169418	179391
Source: Labour market statistics RASA, Statistikbanken ® Statistics Denmark									

The rapid economic growth in 2004-2006 resulted in a mushrooming of new firms and therefore average firm size dropped to 5.7 employees in 2006 against 6.4 employees in 2003. The overall employment development in construction is shown in the table. Clearly the 2005-2006 change in total employment is unusually big.

Completed building (in square metres) by ownership type and year of completion					
	2002	**2003**	**2004**	**2005**	**per cent**
Private clients (housing)	4255537	4746804	5662993	4995187	57
Social housing organizations	320734	398050	398025	223040	4
Companies	2194069	2059552	2458187	2017268	25
Associations and institutions	205726	214594	279634	262172	2
Private co-ownership housing societies	155486	214927	283467	305567	3
Municipalities	516060	466986	524229	462120	5
Governmental	156744	63420	81659	118663	1
Owner-occupied flats	159951	123108	125365	181574	1
Source: Construction and housing BYGB3, Statistikbanken ® Statistics Denmark. Here quoted from Gottlieb (2008a).					

Since the mid-1990s the Ministry of Enterprise and construction has attempted to introduce a view of construction in Denmark as an integrated business system as illustrated in the figure below. This is, however not the traditional view of the industry and thus for example national (and European) statistics are still organised along traditional lines where construction is separated from manufacturers of building materials, consulting engineers, design consultants etc. Whereas there may have been specific interests in highlighting the integration of activities across traditional sector divides it is nevertheless a fact that the industrial structure has been and still is very fragmented, particularly as regards the gap between relative few big companies and very many small firms. The division of labour is highly specialised expressed in number of industrial subsectors as well as size distribution of firms. While concentration index shows no indication of exceptionally high concentration rates in for example the contractor industry (Lotz 2005) there has for some years nevertheless been political focus on lack of competition in several construction and building material industries. In recent years some illegal cartels have been uncovered and taken to court by government anti-trust authorities.

Construction Business System



Translated after: Erhvervsfremmestyrelsen (1993) Bygge/bolig. En erhvervsøkonomisk analyse

1.2.3 Client-supplier relationships and supply side coordination

Generally the supply side of Danish construction markets is split between vertically separated segments. Thus architectural design, technical design (consulting engineering), contractors and specialist contractors each belong to distinctly separated industries and in relation to any given construction project they have separate, specific responsibilities. Specialist contractors and subcontractors again comprise several specialised disciplines each of them organized with its own professional association, public regulation etc. Both coordination across trades and firms and inter-organizational communication and collaboration might generally be impeded by the traditional separation of trades and the big share of very small, small and medium sized enterprises.

Traditionally coordination has in principle been left to the construction client but as many client organization lack capabilities to do so project management expertise has often been acquired from consulting engineering companies. A number of small consultancies or individuals operating on a freelance basis offer project management services to clients. Contractors have traditionally been selected through a competitive tendering process following a detailed design prepared by architect and with specialist input from a consulting engineer. Earlier the lowest price tender has usually been selected but lately so-called economically best value has become more widely used. Most optimal price basically means that price as selection criteria has to be seen in relation to a range of other ex ante specified technical or process criteria. Private sector clients are not subject to public procurement regulation and are consequently free to abstain from competitive tendering. Traditional organization of construction projects places a big responsibility on clients, of which many have very limited technical and organizational skills and resources to take complete responsibility for larger projects. By letting principal main contractors form consortia and thereby co-ordinate a number of specialist subcontractors clients have managed to reduce complexity and transfer responsibility to other actors.

Design build

Whereas Public-Private-Partnerships are still quite rare, although occasionally much spoken of and in fact promoted politically since late 1980s, design-build has for the past decades been a commonly used procurement model in Denmark. Design-build represented an integration of hitherto separately procured parts of the construction process and, not least, a more clear governance structure allocating main responsibility to one contractor who co-ordinates all other contractors, subcontractors, designers, suppliers, etc. Since 1993 design-

build contracts follow 'AB 92 - General Conditions for provision og works and supplies within building and engineering'. In Denmark design-build exists side by side with the other less centralised contractual forms. The growth of partnering should probably be seen as yet another consequence of the construction clients' permanent wish for substitution of fragmentation and uncertainty with more predictability in procurement. Voluntary arrangements for collaborative working may be seen as a consequence of the inadequacy or insufficiency of design-build and other traditional methods to meet the requirements of construction clients for better co-ordination, reduced uncertainty, fewer delays, defects and budget overruns. It is important to note though that partnering and other forms of voluntary collaborative arrangements should be seen as supplements to the usual contractual forms rather than as an alternative.

There may also be supply-side factors driving design-build as mode of operation as both upstream vertical integration of architectural design and technical design and downstream integration of marketing and sales may have positive impact for contractor firms in terms of economies of scale and scope etc. This is also reflected in contractors' forward integration of the developer role particular as regards large scale housing projects. Controlling sales enables the contractor to perform long term planning which again increases economies of both scale and scope. Reduction of market uncertainty facilities more industrialised production, economically favourable procurement of building materials and stimulates positive learning curves in the organization.

Nevertheless integration at larger scale has mainly taken place in both consulting engineering and contractor industries in the form of horizontal mergers and acquisitions rather than vertical integration thus enabling the biggest companies to operate in an increasingly internationalised competition both in domestic markets and abroad.

2. BACKGROUND TO THE APPLICATION OF VOLUNTARY COLLABORATIVE ARRANGEMENTS, AND MEANS OF PROMOTING THEM

In Denmark the most commonly used term for voluntary arrangements for collaborative working in the construction sector is ‘partnering’. Initially, in mid-end 1990s, a frequently used term was 'new arrangements for collaborative working' but since then partnering has become the predominant way of describing a variety of organizational initiatives aimed at overcoming mistrust and adversarial practices in construction and advance trust and productive collaboration. As such partnering is the outcome so far of many years of research, experimental building projects and policy analysis in the construction industry and business policy system. Project partnering has become by far the most frequently occurring form of collaborative arrangements and partnering has become a widely accepted term associated with mostly positive connotations. Since 2003 it has been mandatory for government construction clients to use key performance indicators and consider the application of voluntary collaborative arrangements including PPPs and partnering when planning construction projects. By government construction clients is meant clients whose projects are covered by The Government Construction Act together with construction project for clients receiving more than 50 per cent funding of current expenses. Moreover, it is well-known that many other construction clients, including municipal and other public sector clients together with many construction industry firms, apply the partnering guidelines of the Danish Enterprise and Construction Agency. Therefore the published official partnering guidelines do not only address state bodies but is principally an attempt to introduce new practices among all actors within the construction industry (Erhvervs- og Boligstyrelsen 2004).

The official definition of partnering, published by the Danish Enterprise and Construction Agency, is that is

> "a voluntary collaborative arrangement in a construction project characterised by dialogue, trust, openness, and early inclusion of all relevant partners to the construction project. Moreover the project is carried out within a mutually agreed objective and based upon shared financial interests" (authors translation) (Erhvervs- og Boligstyrelsen 2004).

The general background to the publication in 2003 of the Construction Policy Action Plan as well as the Guidelines for Partnering Projects was many years of political debates, working commissions, experimental building projects, empirical analysis and evaluation, etc. all focussing on the lagging relative productivity development of the construction industry, high levels of defects, time and budget overruns and ensuing litigation.

In both 1990 and again in 1993 analyses of the construction sector highlighted the lagging productivity of the Danish construction sector – it was evidenced empirically that the use of resources in the construction of a housing project had almost doubled from 1969 to 1986. While the complexity of the construction process had grown the way in which construction was organised appeared to be unchanged. On-site production at the construction-market was characterised by fragmentation, discontinuity, and changing collaborative constellations in new locations each time a new project was initiated. Moreover, the industry was characterised by an orientation towards domestic markets, protection from competition, and dependency on the public sector as a purchaser and as regulatory authority. In short the construction sector was confronted with a series of issues related to lack of competitiveness, lack of competencies and capital, lack of production methods to operate within more than one market segment, lack of a collaborative tradition, and lack of innovation (Erhvervsfremmestyrelsen 1993).

Public procurement policy and partnering
Whereas the industry's own contribution mainly was to participate in the political debates and in working committees the strategy agreed upon comprised a range of public policy instruments to be employed in the years to come. These included utilisation of

i) the public sector as purchaser;

ii) regulation/deregulation of the area;
iii) research, development and technological service;
iv) education and training;
v) supplementary infrastructure, including information infrastructure.

While the success within the last four areas has been fairly limited the first policy area, the public sector as purchaser, has proven quite influential. The policy instruments here included publicly supported special development programme for renovation of buildings and experimental demonstration projects as to new types of collaborative arrangements. The explicit assumption underlying all initiatives was that they would contribute to promote productivity development within the industry. Policy programmes were launched in 1994-1998 and in the report from 1998 the term partnering was mentioned for the first time in a public policy report. The next programme ran 1998-2001 and focussed even more explicitly on developing collaborative arrangements in construction by means of experimental projects and otherwise, for example implementation of lean in construction projects. Upon termination of the programme it was stated that projects of the 'New Forms of Collaboration' programme had resulted in

(1) economic savings of 5–20 per cent in both design and construction coupled with the prospect of increased profit margins for the companies,
(2) increased product quality due to closer and more trustful collaboration,
(3) Fewer resources tied in disputes and no settlements in arbitration
(4) Better working climate throughout the entire construction process (Gottlieb 2008b).

The experimental projects were continuously evaluated, debated and reported in a network of interested public construction clients and other stakeholders and these reports later formed the backbone of the first version of the official partnering guideline. The new policy initiatives on public construction procurement policy and partnering were decided and then published in 2003. Generally, the policy seems to have been successful as it has been accepted not only in government construction clients' practices but also by other public sector clients, in municipalities and even among major contractor companies using partnering actively in their construction practice, management, training and marketing in major markets. Other forms of voluntary collaborative arrangements have had less influence in the market.

Framework agreements and consortia
Nevertheless there is among policy makers and even some researchers a firm belief that the establishment of (more) framework agreements, construction consortia or alliances would benefit the achievement of overall goals as to productivity development in construction in general. Moreover it is considered a matter of government policy to stimulate and encourage private companies' establishment of such collaborative arrangements, perhaps further fuelled by the relative success of the project partnering initiatives. Framework agreements were invited tendered for in 2005 in relation to construction of social housing by the Ministry of Welfare: The Ministry expected substantial interest from the industry but only one consortium tendered for it and moreover it later pulled out. Whereas the Ministry in the proposed framework agreement opened for the construction of a quite big volume of central government supported housing projects within a four-year period, it basically left it to the discretion of the country's 98 municipalities whether any of these projects would actually be realised. This taken together with other uncertainties, not least that prices generally should be reduced by 10 per cent and that the price of a housing unit should be uniform no matter its geographical location, all in all resulted in so unfavourable conditions that no consortia except one even considered bidding. It naturally contributed to the unattractiveness of the framework agreement that the construction and housing markets were booming at the time. As regards construction consortia and alliances more formalised (and publicly known) inter-firm relations are few. The boom in the Danish housing market 2003-2006 made some contractors enter into arrangements with design companies about housing construction to meet a strong demand and rapidly growing market prices. One of the more specialized market niches that these consortia wanted to address was affordable housing. It was given a prominent place in the present Copenhagen Mayor's municipal election campaign in 2005 but has not succeeded to bring about more than 12 apartments until now. The consortia as well as developers and other actors in the housing market have since 2006 witnessed drop in house prices in the

region of 15-30 per cent and consequently there is now a surplus in the supply of residential housing of historical dimensions. In 2008 even the demand for business and office space has been diminishing and prospects for construction markets are generally uncertain.

Keeping in mind that PPPs, construction consortia and alliances, to our knowledge, largely do not occur in a Danish context or still are in their infancy, the Danish experiences with voluntary arrangements for collaborative working in the construction industry appear to be developed on the background of substantial inspiration from the UK. Thus the political initiatives leading to the application of project partnering partly replicated the sequence of policy initiatives applied in the UK:

- Analysis and think tanks with participation of a range of professional and construction market organizations
- One or more series of demonstration projects including evaluations and recommendations
- Use of public procurement as policy tool
- supplemented by The Benchmark Centre for the Danish Construction Sector providing hard evidence of the benefits from partnering etc.

From the experience of other Nordic countries it is known that there has been a similar strong influence from the example of the UK (Larsen 2008). There is further information as to the origin of partnering and other forms of voluntary collaborative arrangements in the annex.

3. EXTENT OF APPLICATION OF VOLUNTARY COLLABORATIVE ARRANGEMENTS AND EXPERIENCE OF THEIR USE

Whereas the first introduction in a Danish context of the concept partnering took place early in the late 1990s it was not until around 2004-5 that partnering had become rather stabilised and institutionalised – both in political terms and as a specific project-based practice.

With the help of an expert panel the Benchmark Centre for the Danish Construction Sector, BEC (Byggeriets Evalueringscenter 2005b) identified 122 projects implemented in partnering in the preceding years. Data were collected in 101 of these cases as to a number of variables such as organization, activities, incentives etc. The study confirms that partnering largely did not occur in Danish construction before 2000. Of the evaluated projects two third were new building projects while around one third were renovation projects and less than five per cent were either infrastructure or facilities management projects.

The 'official' Danish definition describes partnering as a voluntary collaborative arrangement in a construction project characterised by dialogue, trust, openness, and early inclusion of all relevant partners to the construction project. According to the Enterprise and Construction Authority partnering guidelines (Erhvervs- og Boligstyrelsen 2004) dialogue is a key quality of partnering projects. It is best stimulated and facilitated in a construction project if all major partners are involved at an early stage and come to know each other through mutual activities of which the first typically is a so-called 'kick-off-workshop'. 76 per cent of the projects examined in the BEC 2005b examination opened the project with a kick-off workshop. Contractors participated in all kick-off workshops, the client in 95 per cent of them, the consulting engineer in 91 per cent and architectural design consultant in 89 per cent of these workshops. Other partners such as subcontractors, foremen, representatives of local authorities only participated in less than 15 per cent of the workshops. Professional workshop facilitators were used in almost two thirds of the workshops. There was a distinct difference between small and big projects. In big projects kick-off workshops were used in nine of ten cases whereas this was only the case in two thirds of projects smaller than DKK 50 million (Euro 7 million) (Byggeriets Evalueringscenter 2005b).

In addition to the initial workshop some projects had other joint activities. Celebration of the completion of specific steps in the building process is traditionally taking place in most projects. Other examples of joint activities were workshops in the course of the project in every third case and evaluation workshops also in one third of the cases.

Example: Öresundbron – The Öresund fixed link between Malmö (Sweden) and Copenhagen (Denmark) combines rail and road and consists of both a tunnel a bridge. It was constructed 1994–2000 and thus followed a few years after the construction of the Great Belt bridges 1988–1998. The Great Belt project was characterised by many serious accidents and death of seven employees. Not only was this tragic in itself but it also gave very poor publicity to the project. Therefore the planning of the Öresund-project right form the beginning integrated means to develop better management methods in order both to prevent accidents as much as possible and to create a better image of the project in the public. This was primarily done by means of a very early involvement of all partners and stakeholders in the project in order to make everybody pay special attention to safety, environmental hazard and work environment. The aim was to create new standards for work environment and safety. In addition to the parties actively involved in the project also relevant associations, trade unions and other parties were involved. This contributed to stimulate a broader accept among all parties in the construction industry of the necessity and desirability of developing new forms of management and collaboration in order to avert or reduce hazard, damages and accidents (Dyreborg 2006). New procedures, managerial routines and collaborative arrangements were supplemented by financial incentives. Furthermore the contract included arrangements and incentives to keep the project on budget and time resulting in the project being finished a year ahead of the time schedule. The experiences of the Öresund project were core in inspiring the introduction of voluntary collaborative arrangements in the following years. It further added to

the process that the project manager from the Öresund-project a few years later was co-founder of the construction clients' association and its chair for the first nine years.

Example: *Enghaven housing project; strategic partnering* – Whereas partnering has become a quite common way of organizing collaborative arrangements in construction projects during the first seven years of the Century there is still scope for experimentation with further development of the partnering model. One way this experimentation has taken is in demonstration projects to try including more elements into the partnering model. In the Enghaven-example this included a strategic partnering perspective and early inclusion of more partners at an early stage. While it is common in partnering arrangements that the main parties to the construction project – client, contractor, architectural and technical designer – are involved in a collaborative effort from an early phase it is new to try enrolling subcontractors especially at an early/earlier phase. The Enghaven-project is the first in a series of projects, hence the label "strategic". The overall economic framework (the price) was settled at an early stage and flexibility, productivity gains and economic incentives in general therefore was to be realized by means of economies of scale due to the strategic multi-project approach.

Generally the Enghaven-project, the first of a series, displayed no visible economic savings or time savings. Moreover the fixed price resulted in that most project partners experienced the project as very similar to a traditional design-.build project. Despite these shortcomings there is a positive feeling among project participants due to the development of a long-term project organization in which many resources were spent knowledge and information exchange, prevention of conflicts and very positive team building in general. All in all the positive evaluation concerns soft factors while progress as regards the hard factors appears to be more uncertain.

Example: Road Management and maintenance – From 2003 the Road Directorate entered a number of partnering agreements in relation to contracts on road management and maintenance. The Road Directorate contracted with three large contractors six contracts amounting to in total Euro 20 million each year. The Road Directorate wanted to supplement traditional contracts with partnering agreements mainly for three reasons:

i) improvement of dialogue and reduction of conflicts with contractors,
ii) optimization of products and processes and development of new methods
iii) improved quality control and cost management.

The measures specifically taken to promote collaborative working included among others:
- specification of shared goals and transformation of these into operational indicators,
- incentives to further product and process optimizations including sharing of financial savings between contractor and the Road Directorate,
- the promotion of team spirit and collaborative working by the use of team building activities such as seminars, workshops, etc.

The partnering agreements were evaluated after three years. The evaluation clearly showed general cost savings in the three first years of 3, 6 and 4.5 per cent respectively. In selected single contracts savings amounted to up to 10-25 per cent (plantation management), Calculation of savings is extensive and detailed and includes the value of for example savings related to fewer delays for road users due to better planning of maintenance works, lower safety risk for maintenance workers, reduced consumption of contractor man-hours, and reduced need of investments because of better quality maintenance works. More generally the benefits of the applied collaborative measures provide opportunities for the Road Directorate to include the effect of process optimizations in future invitations to tender and consequently achieve generally lower costs. From the contractor's view benefits are mainly a generally improved competitiveness due to better work process planning, more efficient administrative processes and moreover a direct remuneration of good performance in terms of payout of a tangible share of savings.

Example: New Headquarters to the Danish Confederation of Trade Unions – When the Danish Confederation of Trade Unions in 2000 planned its new headquarters it was the

intention to implement the construction project as a partnering project with extensive collaboration between the project partners including designers and specialist contractors in addition to client and main contractor. The partnering agreement comprised formulations of shared goals as to project implementation as well as agreement regarding incentives (sharing of savings/deficit respectively).

In general the involved parties evaluated the building as a environmentally friendly work of high architectural and functional value. However, the positive results were achieved at the cost of significant time and budget overruns. As the partnering agreement included a formula for the sharing of deficits all involved parties had to shoulder their part of the extra costs.

Although there were improvements during the course of the project, project partners were generally dissatisfied with the way collaboration developed throughout the project. Dissatisfaction specifically related to the will and ability of other partners to keep budget and time schedule and collaboration in general as it was evaluated poorer than in traditional projects. Afterwards it was concluded that two factors had been particularly important: 1) that the collaborative aim of the partnering agreement was interpreted very differently of the different partners and 2) too many individual team members had been replaced during the project causing lack of social bonds and common understanding of the goals and intentions of the partnering agreements this again resulting in many conflicts throughout. The project was evaluated by the National Agency for Enterprise and Construction and many of the experiences of this project later served as inputs to the process of preparing the national partnering guidelines

4. EVIDENCE OF PERFORMANCE IMPROVEMENT

In an evaluation of the benefits of using voluntary collaborative arrangements both the views of the different suppliers and the customers are relevant. Although evidence in terms of quantitative indicators is still relatively scarce, a number of studies point to the fact that partnering is a beneficial practice. A major Nordic contractor informs that conflicts in construction projects have been almost eliminated, project planning is much improved and earnings have gone up. Moreover contractors refer to customer satisfaction when explaining the many benefits of partnering (NCC 2008). Clients stress that partnering

- facilitates better use of knowledge in the project across boundaries between firms, more commitment or loyalty to the project and therefore a better project in the end,
- enables more openness between the parties to the construction project. Because this openness regards competencies as well as economic interests a consequence is that many misunderstandings are prevented and continuous adjustments enabled,
- leads to more satisfactory economic results because it, as part of the process, is agreed that economic savings as well as budget overruns will be shared between the partners.

Clients also stress though, that the avoidance of conflicts is much easier achieved when financial accounts show surplus whereas when the balance is in red there it still seems to be tempting to choose conflict as a means to try ensure better earnings. The Benchmark Centre for the Danish Construction Sector, BEC (Byggeriets Evalueringscenter 2005a) surveyed the experiences of 18 public, 7 semi-public and 10 private construction clients with project partnering compared to traditional projects, see table. These 35 construction clients have experiences from a very large number of construction projects. Generally there is little doubt that construction clients prefer a partnering organization for a traditionally organized construction project. They particularly stress 1) fulfilment of client requirements within the economic framework 2) inclusion of the client in planning of the project, 3) absence of budget overruns and 4) value for money i.e. high quality relative to the price paid.

Comparison of partnering projects and traditional project

From your experience with both partnering and traditional projects how are the following goals met?	with partneirng			with traditional organization			
	much better	better	not differnt	better	much better	total	
	%	%	%	%	%	N	%
All involved parties achieve economically satisfying result	9	69	20	3	0	35	100
Good work environment and safety at site	14	31	54	0	0	35	100
User involvement	23	54	23	0	0	35	100
Involvement of client in planning	23	51	23	3	0	35	100
Client needs are met within the agreed framework	17	60	20	3	0	35	100
High quality relative to price	17	51	29	0	3	35	100
Time schedule is kept	14	31	49	6	0	35	100
Agreed price is kept	15	44	29	12	0	34	100
Good collaborative atmosphere in between key actors	37	60	3	0	0	35	100
All necessary information is provided	6	15	79	0	0	34	100
Possible to make adjustment according to client's wishes	34	37	29	0	0	35	100
Good handling of conflicts	20	80	0	0	0	35	100
Absence of defects at final delivery	9	40	51	0	0	35	100
Respectful attitude towards local context	9	20	69	3	0	35	100
Relevant competences involved i planning phase	9	51	34	6	0	35	100
No problems after project delivery	6	44	50	0	0	34	100

Source: Byggeriets Evalueringscenter (2005a) Bygherrers tilfredshed med partnering. p 15, (authors translation)

Other important factors as seen from the client's perspective are inclusion of the best professional expertise in the planning phase and good collaboration and a friendly atmosphere among key persons in the project and at the site. In some fields partnering

organization seems to have less or insignificant effect, particularly as regards information exchange and the way the construction project affects the surrounding local environment.

5. RELATIONSHIP TO EUROPEAN AND OTHER POLICIES

5.1 VOLUNTARY COLLABORATIVE ARRANGEMENTS AND SMALL AND MEDIUM SIZED FIRMS

A recent Danish study suggests that it is a rule rather than an exception that small and medium sized construction companies collaborate voluntarily with other SMEs to avoid shortage of construction services or labour. The major part of these relations is with known partners and thus collaboration, although almost always informal, has a certain permanent character of 'strategic partnering' or informal alliance. Firms estimated that 80 per cent of turnover was traded in relations with firms with whom relations could be characterised as close. Collaboration with such closely related business partners had decisive influence on flexibility, efficiency and profitability of the interviewed firms (Steenstrup 2008)

While behaviour and performance of construction SMEs may be characterised informal collaborative arrangements it is generally the impression though that partnering in the 'official' version to a certain degree excludes SMEs because partnering contributes to raise entry costs. A study of partnering practices in Nordic construction suggests that small and medium sized firms may be disfavoured by developments towards more collaborative inter-firm approaches such as partnering (Larsen 2008). The major drive towards partnering and other voluntary arrangements for collaborative working comes from big contractor companies and public sector clients with big projects. It could be anticipated though that as the news about the good experiences of partnering gradually become known among more construction clients also and more an more firms become experienced in the implementation of partnering the initial costs related to commencing a partnering project (workshops, knowledge and information exchange, establishment of collaborative procedures, etc.) could be lowered. This will gradually enable also small and medium-sized firms to engage in partnering projects.

5.2 PUBLIC PROCUREMENT

Generally, public procurement must conform to EU competition regulation and specifically the *Directive of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts*. It has been observed that this may cause difficulties as regards voluntary arrangements for collaborative working in the construction sector. If it is mandatory for public construction clients to choose the bid with the lowest price it will more often than not be detrimental to endeavours to further more collaborative relations and practices. If a proposed project can be chosen on the basis of most optimal price rather than lowest price also other considerations than financial ones are allowed to influence decision of public sector construction clients. Practical experience shows that it indeed is possible to invite bids without going against EU regulations. A very recent example is a project in a major 1960s social housing estate in Copenhagen which is going to be the biggest renovations scheme in Denmark ever. Only 25 per cent of the criteria concerns price whereas 50 per cent relates to organization, process and collaboration and the remaining 25 per cent other non-economic criteria. Similar experience exists in other Danish projects as well as for example Norwegian projects. This also stresses that price is only one parameter and not necessarily the most important one from the point of view of the public construction client. The move away from selection based primarily on price is nevertheless still a quite recent development as two thirds of the 101 partnering projects in the BEC analysis were based on price as main criteria (Byggeriets Evalueringscenter 2005).

6. CONCLUSIONS

In Denmark partnering, being the most common form of voluntary collaborative inter-firm arrangements in construction, has been sturdily promoted by public authorities, especially the Danish Enterprise and Construction Authority. Thus, since 2004 it is mandatory for public construction clients to consider partnering as a method of procurement. It has no doubt been instrumental that the Danish Association of Construction Clients actively supported government policy in this field and continuously strives to train, educate and qualify its member firms in order to enable them to apply partnering in construction projects with ever better results. The Chair of the Association has personal experience with partnering from the management of two major public construction projects since the mid-1990s. The public policy makers' pushing the ideas of partnering has evidently inspired not only construction clients but also the major contractor companies to introduce partnering principles in construction project management. Public promotion of collaborative working in construction is, however, not the only way to foster new forms of organising inter-firm relations in project organizations and project management. In for example Sweden the major contractors have been the main drivers of partnering arrangements whereas in Finland and Norway it seems that one or few major construction clients holds a core role as "change agents".

While voluntary collaborative arrangements have entered construction markets in the other Nordic countries in other ways than in Denmark, it is obvious that the Danish example has been inspirational for the initiatives in the other countries. Then again the development in both Denmark and the other Nordic countries has been much influenced by ideas and experiences from the UK. It seems that an important source of inspiration and transfer of knowledge is contacts between policy makers of different nationalities in combination with more scattered contributions from interactions in the research community, between professional associations etc. Moreover mergers and acquisitions throughout the previous decades have resulted in the establishment of big international contractor and consulting engineering corporations in the Nordic and this has generally provided more resources for in-house innovation and product development in most of these. An important outcome of this is the development and evaluation of concepts and models for voluntary collaborative arrangements.

Whereas it is not really considered a serious criticism of voluntary collaborative arrangements it seems that there is some agreement that they do not necessarily result in lower price. This is, however, not considered a major problem as price *per se* was not the main reason for introducing voluntary collaborative arrangements in the first place. For the Construction Clients' Association for example, economically best value was always more important than lowest price. The important positive effects include for example a better collaborative process between client and contractor as well as between contractor and sub-contractors and, as a result of this, a more committed project team with fewer conflicts are valued so positively that price is not really an issue, unless of course in extreme cases of major budget overruns in large-scale projects such as the national broadcasting company's new headquarters.

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ANNEX

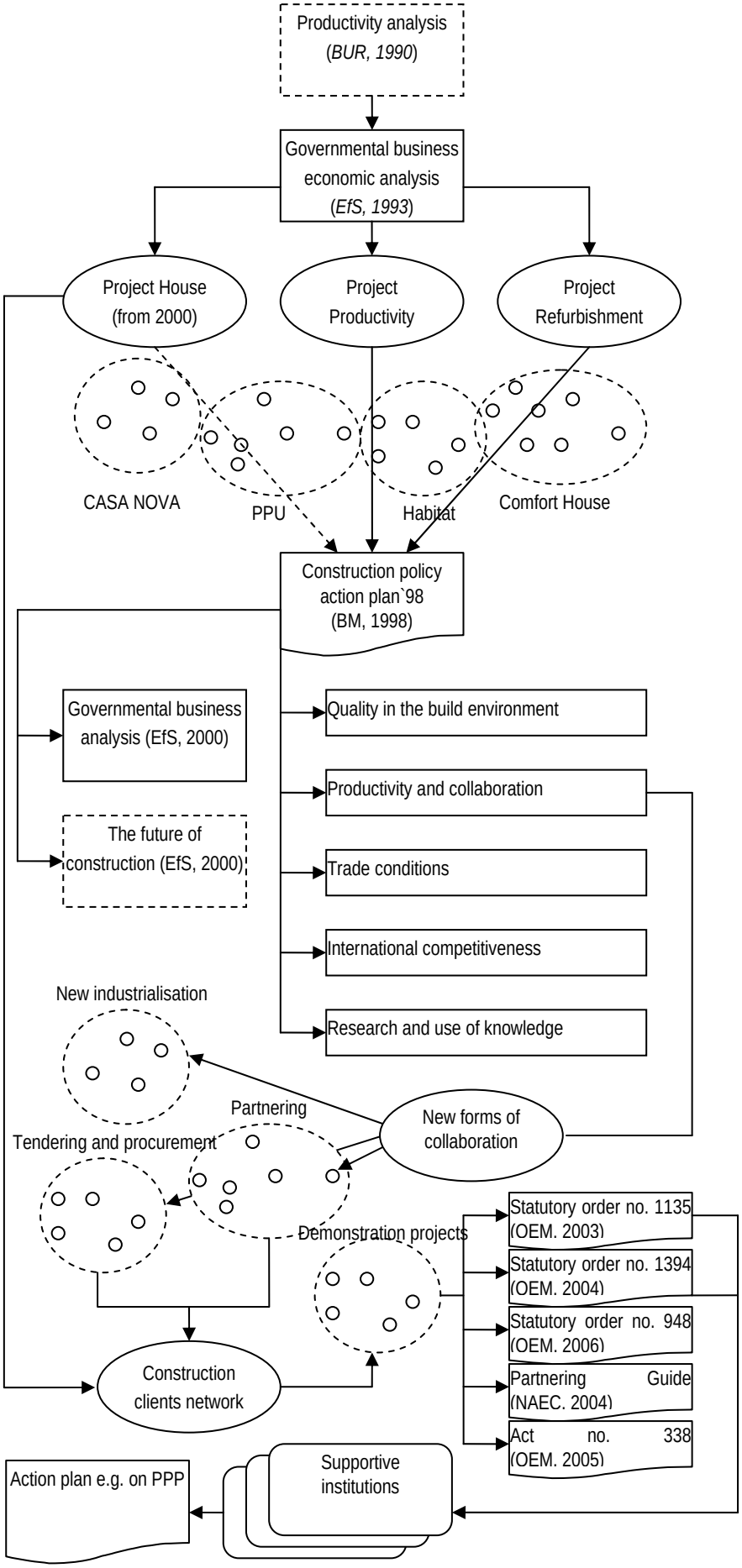
The following figure "A brief archaeological overview of the development of partnering and partnerships in the Danish construction sector" is quoted from Gottlieb (2008b). It illustrates the development and sequence of construction policy initiatives sonce the mid-1990s. The following legends are used:

Symbol	Explanation
	Policy reports and analyses
	Debate papers
	Development programmes
	Institutions/organisations
	Policy agendas, orders, statutes, acts and laws
	Collection of projects
	Demonstration projects

The latest political reform programme regarding the construction sector was published in 2007 following a couple of years' work in the Construction Policy Task Force and was entitled along the same lines as most previous construction industry policy documents: "Better and cheaper construction" (my translation). It contains 24 proposals for needed reform initiatives within six main fields (Økonomi og erhvervsministeriet 2007):

1. Better value for money in public construction projects
2. Increased competition
3. Increased quality and protection of consumer rights
4. Administrative reform
5. Research and innovation
6. Manpower and competencies

Examples of specific reform initiatives include:
- strategic partnering
- improved regulation of public-private partnerships
- key performance indicators
- stimulation of all-season construction activity
- increased international collaboration in construction research


Productivity analysis
(BUR, 1990)
Governmental business economic analysis
(EfS, 1993)
Project House
(from 2000)
Project Productivity
Project Refurbishment
CASA NOVA
PPU
Habitat
Comfort House
Construction policy action plan`98
(BM, 1998)
Governmental business analysis (EfS, 2000)
The future of construction (EfS, 2000)
Quality in the build environment
Productivity and collaboration
Trade conditions
International competitiveness
Research and use of knowledge
New industrialisation
Partnering
Tendering and procurement
New forms of collaboration
Demonstration projects
Statutory order no. 1135 (OEM. 2003)
Statutory order no. 1394 (OEM. 2004)
Statutory order no. 948 (OEM. 2006)
Partnering Guide (NAEC. 2004)
Act no. 338 (OEM. 2005)
Construction clients network
Supportive institutions
Action plan e.g. on PPP

COUNTRY REPORT

FINLAND

CONTENTS

1. Introduction to the country and its construction sector

1.1 Brief overview of country and the construction volume

- Finland is a sparsely inhabited northern country with a population of 5.3 million and a land area of 338 000 square kilometers. The GDP is currently 179 milliard euros.[6] The total value of the Finnish national wealth tends to be increased close to 0.6 billion euros; of that three fourth is tied to buildings, transport facilities and networks.[7]

- Based on the Euroconstruct outlook[8] Finnish economic development has remained robust until recently when clearer indications of a weakening economy have appeared and GDP forecasts have been revised down. The 2007 GDP forecast is 4.4 percent. The country's economic growth is expected to slow down clearly from the rate of the last few years but yet remain above the average for the Western nations. GDP growth of 2.5 percent is forecast for 2008.

- The Euroconstruct outlook reveals also, that the total construction volume increased at a brisk 7 percent rate in 2007 totalling in 27.4 billion euros (see Figure 1). In early 2008 the outlook for construction as a whole remains favourable. The total construction volume will diminish around five percent in 2009. A turn is expected around the middle of 2009, in 2010 the annual volume is expected to reach the 2009 level. It is also important to note that there is a significant seasonal fluctuation in construction activities due to the climate. Winter is not the time for excavations and the contractor aims to schedule the infill works to take place during this (usually) cold and snowy period.

[6] Statistics Finland (2008); i.e. the official statistics of Finland offers also information on the construction sector.
[7] Introduction to the construction sector in Finland is given in VTT (2003).KTI (2006) takes another perspective.
[8] Pajakkala and Lehtinen (2008); The Euroconstruct Conference is hold and material updated twice a year.

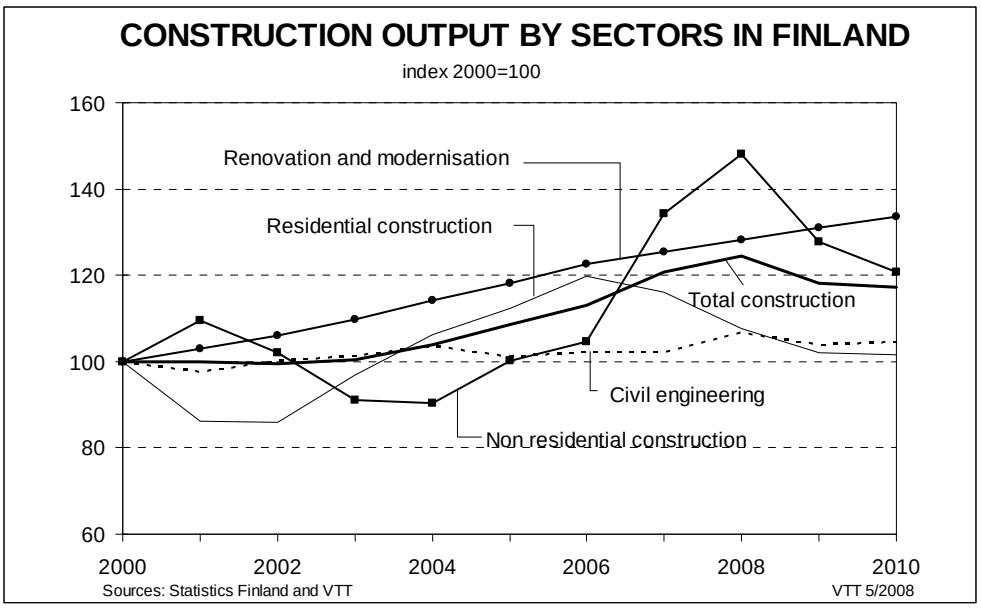


Figure 1. Construction output by sectors in Finland.

1.2 Construction Business System

- It may not be appropriate to try to describe the construction business system in its entirety (except what can be found from the above mentioned sources), but to describe only such issues that have sometimes been recognized as possible differences between the Finnish system and systems of some other countries. The comments presented here are as up to date as possible and are gathered in a systematic manner to facilitate a best as possible comparison between other countries covered by the study group. The possible differences are:
    - The profession of quantity surveying does not exist in Finland. Corresponding activities are made by the stuff having an engineering background (“site engineer”, “customer service engineer”, etc. are typical positions).
    - Major part of new housing construction is based on speculative development by construction contractors since there are few developers in Finland. In such a case, the constructor starts a housing (or real estate) corporation whose name he operates and signs a contract. The future tenants buy sets of shares from the contractor which each give a right to possess a certain dwelling. In addition to housing, the system has been used for other types of production to some degree – nowadays the practice has been replaced (in the case of these “other types”) by the involvement of real estate investors to whose ownership the building is to be made for.
    - In Finland each contractor prepares his own bill of quantities as a basis for his tender price quotation. The bill of quantities is not, however, made part of the contract.
    - The general contract conditions are adopted probably without exceptions. They are not made part of the contract; a mere reference to them suffices. Besides, there are plenty of model documents for different situations/relations.
    - Especially one-time builders and large projects often hire independent consultant to act as a process coordinator to carry out the competition/selection of major parties and to ensure the desired end result. Thus, in Finland, the client may take much wider responsibility

than in many other countries where many of his tasks are taken care of by the architect or the contractor. (Due to the increasing multiformity of project delivery systems and service models this may not be as meaningful as it used to be earlier.)

- The shares of different forms of procurement in new building are shown in Figure 2.[9]
- Building renovation is towards design-bid-build (comprehensive and divided) more than new construction while, especially, the share of the in-house system[10] is lower (this concerns all building types, but is especially significant in housing where the big share of the in-house system in new construction exists because of the speculative development by construction companies).
- In main roads the share of design-build has been increasing and also larger than that of design-bid-build in terms of monetary values while the opposite is true based on number of projects.[11] (The rest of the infra sector owners rely mainly on the use of design-bid-build.) It may be reasonable to mention that the Finnish Road Administration has probably the most advanced and progressive procurement strategy[12] among the public owners. They direct to: larger and more comprehensive procurements, longer contract periods, more leeway given to service providers, involvement of environmental issues into the contractor selection, etc. More collaborative approach is the aim, in general, although no actual procedures are focussed on.
- Share of subcontracting in building construction has been increasing slowly and the boundary value of 50% was exceeded in 1992 or so[13] – the current figure is considered to be significantly higher since almost all the work is subcontracted.
- Relevant issues can probably be found also from a report[14] that compares the competitiveness of selected countries (Finland, Sweden and the UK). The report expresses also general information asked for above.

[9] Background information to these more recent figures and to source of data, etc. is given by Lahdenperä (2001).

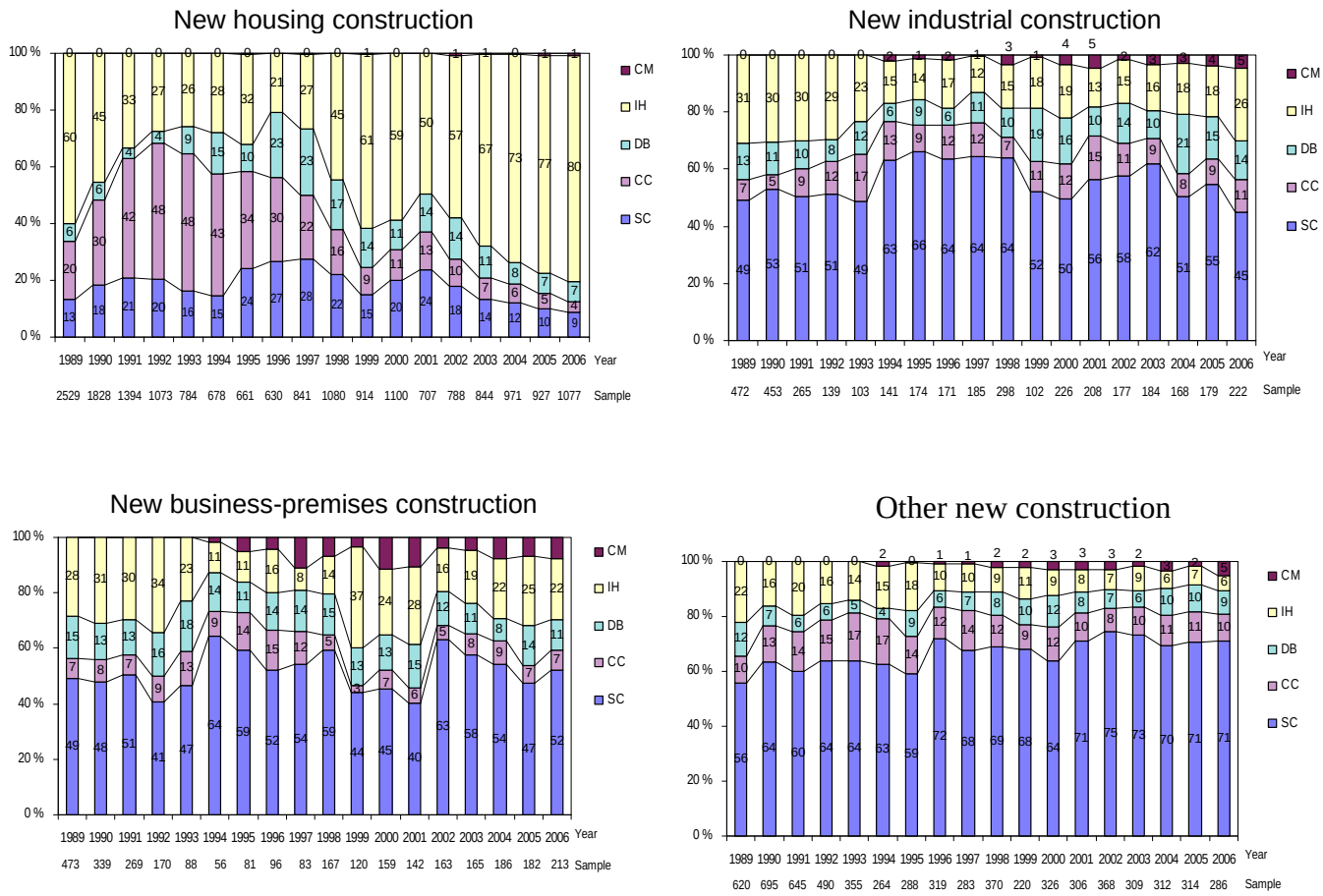
[10] In-house construction is an artificial study concept that refers to practice, where the "self-acting" owner designs or commissions the design, supervises site works and possibly performs part of the technical construction work. In other words, the owner takes care of activities that are usually commissioned to other professional parties. Speculative construction by contractors is also considered "in-house" since there is not separate owner. (In the history municipalities and bigger industrial enterprises had also their own construction organizations.)

[11] Finnra (2003)

[12] Finnra (2006); an updated version, which does dot include the shares of different procurement systems any more

[13] Särkilahti (1996)

[14] Flanagan et al (2006a; 2006b)



Construction management (CM), where a separate project management organization supervises the project and implementation is realized through numerous partial contracts (construction management with a fee or at risk, etc.)

In-house construction (IH), where the owner designs or commissions the design, supervises site works and possibly performs part of the technical construction work (e.g. municipalities, speculative building by contractors).

Design-build (DB), where a contractor under contract to the client is responsible for the project's design and construction as an entity (e.g. turnkey with the contractors lot, competitive DB based on client's design criteria).

Comprehensive contract (CC), where client assumes responsibility for design and the project is implemented on the basis of a single contract (i.e. traditional design-bid-build method); no subsidiary contracts are used.

Separate-contracts (SC), where the client assumes responsibility for design, and construction divides between a minimum of two, but generally more parallel contracts (i.e. design-bid-build with subsidiary contracts).

Figure 2, The statistics on project procurement methods in Finland 1989 – 2006.

1.3. Recent developments as to more integrated project delivery systems

- PPP/DBFO has been used also in Finland but in a few projects only.
    - As regards to road construction, Helsinki–Lahti Motorway was constructed (by using the shadow toll system) in late '90s and E18 Lohja-Muurla is currently under construction and will go into operation by the end of November 2008.[15]These are the only DBFO road projects implemented in Finland so far.
    - The Finnish Road Administration has renewed its procurement strategy in 2006: the major renewal is that they will also focus on the development and application of DBM in the near future (while DBFO is not excluded, however).
    - According to the strategy (including the previous version from 2003), the trend is towards more integrated project delivery systems (a change from traditional to design-build has largely happened as to major projects already).
    - Municipalities are more traditional as is the Finnish Rail Administration (RHK). RHK is, however, basically hankering after DB(F)O, CM, etc.
    - In building construction DBFO/PPP has been used in (a) few projects as well.[16]
    - Organizational structure may be different from what have been used in the UK, for instance. The building/real estate is not owned by the project company (SPV) but a separate body financing the service (although the client makes an agreement only with the SPV). Therefore, it is the investor who enters into a design-build agreement, etc (the design-builder is a shareholder of the SPV). This model has been used in practice and has been met in other proposals also (for a project that never realised).
    - The Confederation of Construction Industries carried out a major project to develop DB[F]O practices and guidelines in 2003-2006.
    - For municipalities DBFO is not equal opportunity in practice, since there are some tax consequences (e.g. the possible timing of depreciation by the project company) which make it less advantageous compared to the alternative project delivery systems. (Another reason to the disuse is the fact that the government's financial support is tied to the property ownership and therefore the support is not available for DBFO projects.)
    - The Government has made a decision not to combine construction and finance into the same contract/procurement (or more precisely: the construction and finance have to be submitted for competition separately).[17] Reasons are probably multifaceted – one reason is related to the residual value: it is too costly risk for private sector enterprises to carry in the case of special properties (which are the properties the government tends to own[18] while normal business premises may be hired from the market).
- Design-Build has been a kind of hot topic also.

[15] www.ykkostie.net/?id=26; www.tiehallinto.fi/e18/
[16] Majamaa et al. (2008) gives an introduction to a few projects likely including all major projects of that kind.
[17] Ministry of Finance (2005)
[18] Senate properties is a government owned enterprise responsible for managing the Finnish state's property assets.

- All the ‘90s was a decade for an active development of design-build by researchers, but this activity may not have industry wide influence in the practice as can be concluded based on the attachments on the shares of different procurement systems.
- Design-build is also an old form of project delivery and was actively developed and used in ‘70s already. The then selection method focussing strongly on price did not, however, always produce the best possible solution.

2. Application of voluntary collaborative arrangements

2.1 Different types of voluntary arrangements

A. Project partnering (for a single project).

- Partnering is a word that is occasionally used to emphasise the spirit of the work, but formal systems or practices that differ significantly from the usual ones have not been met. Even, for instance, a partnering charter is not known to have been used. And despite the term used, openness may not always be reality in practice.
- Such partnering arrangements known and used in some other countries (including early involvement, quality/reference-oriented selection, etc.) are hardly used in Finland. Selection of a contractor based on "the economically most advantageous" criterion usually means that the price for the entire project is focuses on also although it can be either set by the owner or given by the contractor (fixed or target price).

B. Strategic partnering (over a number of projects)

- Continuous cooperation is usual among the private sectors actors. In practice, however, it means buying services repeatedly from a company which has been proven to work satisfactorily in previous projects. Usually there is no contractual arrangement over a number of projects and thus, it is questionable whether there exist a type of financial rewarding and openness that were set as criteria for partnering by the study.
- Another type of strategic partnering is based on joint development. Motivation is offered by the possibility to increase the firm's competitive position. Thus, the reward comes from the market and is seldom based on a mutual agreement (excluding IPR and joint companies, if any) – if they do, they can not be reported in public.

C. Framework agreements (covering a period of time)

- Framework agreements are usual. As to small assignments, a major part of designers' work with municipalities and other public bodies is based on framework agreements so that they avoid arranging a competition for every small commission. Contractors also have such agreements but they tend to be with building owners for repair work.
- In a usual case, a municipality, for instance, has a few parallel framework agreements for design which offers them a kind of thumbscrew: agreements are based on price-per-hour tables and do not offer means to focus on the overall cost/efficiency.
- Contractors have framework agreements also with material and component suppliers. This is very common, naturally. Such an agreement defines the intended amount to be purchased during the period, and by guaranteeing a large amount, the agreed unit price is supposed to be more advantageous to the contractor. It also ensures the availability of resources especially during the booming market. The final price maybe adjusted based on actualised purchasing volume afterwards.

D. Construction consortia (to bid collectively for contracts)

- PFI/DBFO projects are sparse and kind of piloting projects. Contractual models have (said to have) been based on those brought from the UK – and a mass of lawyers have followed. Now the prevailing mindset is to apply something which is not as laborious in terms of contractual arrangements. The usual contractual practice in Finland is likely based on more straightforward practice (than in some other countries) and DBFO is not considered worth being an exception.

- Therefore, other types of or case-by-case arrangements are more relevant here. A consortia may be necessary to cover the know-how (and related cost information) required for a bid. As to partnering concept, it may not be perfectly valid in these cases, since it is mostly question about (the design proposal and) a fixed price and it is not known if there are any actual agreements on exceptional responsibilities and rewards.
- The partners usually represent different roles, but sometimes joint ventures by construction companies, for instance, are in use. They have been said to be sparser than earlier, since the biggest contractors are bigger than they used to be in history. On the other hand, it has also been said, that since the infra construction is booming currently, none of the design offices would have adequacy resources to design a major project just alone.
- It is likely a usual practice that the compensation to the designer (by the contractor) in the proposal phase of a design-build competition is relatively low compared to actual commissions. This naturally requires that the parties have a mutual agreement that they will continue as co-produces of the facility in the case the consortia wins the competition.

E. Alliances (the client also takes an equity stake)

- Alliance-type projects are hardly implemented in Finland. There is, however, a development effort going on in order to develop the practice. First applications will be roads. In this case we most likely speak about an arrangement which, in terms of the study, was defined as 'virtual' alliance (i.e. without creating the legal entity).
- The alliance practice is still under development. Finnish Road Administration (Finnra) and Finnish Rail Administration are the two owners involved. In addition to them four contractors (plus the corresponding federation) and three design offices are involved in the development project. It has to be noted also, that the role of the industrial members is really meaningful in this case: in the project there are three working groups plus a steering group and ab. 30 persons involved in the development (as commentators).[19] The result should be rather similar to the one used in Australia[20] although the selection of partners will differ due to the national and EU procurement legislations.
- The practice is likely to be based on a kind of tri-party agreement between the owner, the designer and the constructor. These issues will be considered, however, in the future when other rules of the game have been solved. An alternative is offered by the use old standard forms of contracts (a set of two-party agreements open to all participants). Finnra is planning to implement a few pilot projects in the near future.

2.2 Scale of application of voluntary arrangements

- Rakennuslehti, which is the leading weekly construction magazine in Finland, reported (in its May 10, 2007 issue) about a survey it has made. 60 construction company, design office and material industry representatives established the interviewees/sample. Statement presented on partnering[21] were that:

[19] Alliance_brochure_10 12 2007.pdf
[20] Project Alliancing.pdf
[21] The article in Finnish focuses on "kumppanuus" which translates as "partnering" although it seems to refer to a long term relationship or a kind of close relationship which does not necessarily involve similar features and procedures that partnering is supposed to involve in most countries where it is regocnosed as a systematic project procedure.

    - the representatives were in agreement that the industry should increase the use of partnering (without defining what they mean by that).
    - two thirds of construction companies reported that they have experiences on partnering; in many cases partnering is seemed to be based on long-term co-operation rather than the partnering agreement.
    - most partnering arrangements construction companies have are with material/component suppliers and design offices (which implicitly mean – although not written in the text – that the relationship with subcontractor are not based on partnering; some other comments from other sources support the conclusion).
    - contractors are active in developing partnering agreements in order to ensure the availability of material and components in the booming market, but suppliers are still afraid that a possible slow down would lead back to price competition.
    - almost three fourth of design offices have had a kind of partnering relationship with the client and, for instance, construction companies have become their valued clients. Partnering with public clients may, instead, be a solution to pave the way in relation to the requirements of the Public Procurement Directive (and corresponding act) – this obviously refers to framework agreements.
- Another article in Rakennuslehti (May 1, 2007; web) focuses on the activities of design offices by stating that:
    - Senate Properties is one of the building owners who have made partnering or annual agreements with design offices; also some contractors have ensured the design resources they need by the means of cooperative agreements.
    - "Earlier it was customary to disparage construction companies, but today they are ambitious and more interesting partners than public sector bodies" (said by a CEO of a major design office).
    - Statistics from SKOL tells that 27% of the billing of design offices is based on annual agreements and 32% on negotiated contracts; only 22% comes from bid works. (SKOL refers to The Finnish Association of Consulting Firms.[22])
    - (It has to be noted, however, that at the time of these surveys and interviews the construction was booming quite nicely and there was a lack of designers; it can not be anticipated how the situation might change…)

2.3. Prominent examples of the use of voluntary arrangements (some to be reported as case studies)

- General message from the practice was that whatever has been tried in terms of new types of cooperative working procedures, it usually does dot remain in force for long. The upkeep of a system requires extra effort and when there is no continuous flow of similar projects, personnel is changing, etc. it is difficult to avoid the return to the old mainstream practices.
- In publicity, the most famous partnering arrangement was probably the one established by Nokia in late '90s. It selected a few partners for the production of new facilities when the organisation was growing fast. Selected partners had to, however, compete for new projects while there were now fewer competitors and the hit rate was probably rather good. The arrangement obviously lost its meaning relatively soon when the spurt was over and they started to intensify the use of space.

[22] http://www.skolry.fi/in_english

- Another example is offered by a joint development effort by design offices from different fields of expertise. They were developing a kind on one-stop shopping model in order to sell comprehensive design services which none of them could have been able to carry out just alone. The effort ended even before any success: two offices were bought by others and one participating office was bough by another office involved in the arrangement.
- Kind of case studies are reported in the **ANNEX**.
- It is reasonable to suppose that no significant public studies have been made on the functioning of any cooperative arrangement (as understood in the study).

3. Experience in use: criticisms and problem areas

- Cooperation is probably worth doing in vertical chain, but sometimes it is done between companies with similar role, i.e. between design offices, for instance. A reason may be, for instance, the increasing size of projects and contractual entities in order to make the supply of projects more efficient. Experiences have not always been positive, since the arrangement offers a possibility for studying the other company and its personnel – this has led to company acquisitions and recruiting from the competitor/partner.
- As demonstrated by the developed one-stop shopping model above, companies may not be willing to build on strategic partnering, since it requires extra effort, but includes a big risk since they can not control what happens as to the partner company.
- Construction is based on competed projects, and if the future flow of projects are not known (considering the relatively high economic fluctuation in construction especially), you may not be able to make binding agreements that erodes the motivation that, again, makes parties to return to old practices.
- Partnering as a word ("kumppanuus") is actively used, but in most cases it tends to describe the intentions more than the actual practice. It may also be that the expression is used to improve the reputation and boost business.
- Although there are kind of partnering practices (strategic and framework agreements), they tend to be local or somehow limited. In construction, the business unit and projects/sites are relatively independent and decisions are made under a time pressure. It is hard to extend the partnering practice to cover larger parts of the company activities, especially since the operations of the partnering companies may cover different geographical areas.

4. Factors relevant to successful application

4.1 Legal frameworks

- Whether reasonable or not, the public procurement act is generally considered a hindrance to partnering – at least in trivial discussion. This is, however, an important point since the public sector is the commissioner of a major part of all construction activity.
- The procurement act makes the public owner to weight the price component more than the quality component in the selection in order to avoid the procurement process to be open to interpretations and legal actions. Neither is the owner willing to accept alternative proposals improving the quality set in the call-for-proposal documents. This constraints innovation, co-operation and development in general.[23]
- Finns seem to think that the statement of "economically the most advantageous" requires that final price is known relatively trustworthy in practice at the time of contractor selection.[24] According to anecdotal information this is not a fear only but court decisions support this interpretation. This may not be the interpretation in all other countries.
- The control of free competition is another issue accidentally mentioned as a hindrance when horizontal development efforts are tried to be established. This, again, is only an anecdote and has not been studied properly in this connection.

4.2 Financial incentives

- An effort to develop inventive basis of payment was carried out some years ago: an international survey preceded the actual system development work[25] – which resulted in numerous indicative measurement systems instead of finalized contract conditions, etc.
- In June 2007, three years after the completion of the work (and the launching of the results in a small seminar with ab. 15 participants) a survey was directed to the participant of the seminar. According to the results it seems likely that:
    - no incentives based on qualitative issues are used in practice (but there may be few exceptions among Construction Management-at-fee projects).
    - target price practice is in use in some projects (mostly CM) so that the cost under-run and/or overrun is divided between the contracting parties.
    - facility management agreements may be more active application area for financial incentives than construction contracts.[26]
    - in conclusion, the use of financial incentives are limited to very few contracts considering the total volume of construction.
- Although CM has been used by certain bodies, a model documents for CM-at-fee and CM-at-risk (or CM and MC) that got an industry wide recognition were publish in 2006/2007. This may slightly support increasing use of target price contracts and CM in general.
- The idea about the target price contracts has been included in model agreements in 1970s already, but there is no information available on the use of this pricing system.

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[23] Anon. (2007)

[24] The above mentioned development of the alliancing practice is also stuck on this challenge since there the services providers are supposed to be selected before there are possibilities to compile accurate enough cost estimates.

[25] Lahdenperä & Koppinen (2004)

[26] The facility management activity is also said to be based on partnering more than the construction (although it is out of the scope of this study). See, e.g. Lehtonen (2006), Salonen (2006)

5. National promotional initiatives

- In Finland, there are no promotional bodies for the promotion of partnering/partnership/cooperation or any other mode of operandi (e.g. certain procurement system). Industrial organisations consist of federations and association [e.g. The Confederation of the Construction Industries (RT)[27], The Finnish Association of Building Owners and Construction Clients (Rakli)[28]) that, in the first place, focus on the supervision of the interests of their members. They also have development activities which might accidentally focus on the development of cooperative practices in construction, but such wide-ranging actives are not known to have taken place recently.
- Besides, there is, however, one organisation which has a role that is different from that of the other associations. Construction Quality Association (RALA)[29] aims to promote prerequisites of construction quality and prevent / suppress the black market. It is a joint effort by the industry which takes care of the bureaucracy needed to ensure that companies have been careful to manage the legal obligations. Besides, the association's new feedback system aims to support parties to the construction process in the improvement of cooperation.[30] The system involves 15 different questionnaires for different relations (between different roles.) It is also aimed to be used continuously during the project, not only after completion like the earlier version of the feedback system.
- The Finnish Real Estate and Construction Cluster's Vision 2010[31] can probably be considered a kind of promotional initiative for advanced and cooperative construction practices. In practice, the joint effort was more or less to collect ideas, share values and, thereafter, follow the development. In other words, no other industry-wide activities are known to have been done.
- As to cooperative arrangements, the government's comments are sparse. Ministry of the Environment controls construction but its activities hardly reach issues that would be especially important here. The National Audit Office has not been found to have produced material that would be critical in this context where the scope is narrowly defined as voluntary cooperation.
- Some years ago, the Finnish Government passed a resolution on a national construction policy programme[32] on the basis of a working group report[33]. The programme establishes guidelines for the state, municipalities, industry, commerce and other key actors that allow improving, for instance, the quality of the built environment and productivity of the sector as well as expand life-cycle and environmental know-how. More effective competition and efficient and comprehensive co-operation are also among its key goals. It is really question about general guidelines – it comes closest to the theme by stating that (although the original discussion is naturally much more extensive):
    - "economically most advantageous" criteria should be used increasingly over the price (only) criteria
    - larger procurement entities should be applied without, however, eliminating the SMEs' possibilities, etc.
    - the public sector should out-sources increasingly more instead of carrying out construction related activities in-house.

[27] http://www.rakennusteollisuus.fi/
[28] http://www.rakli.fi/english/
[29] http://www.rala.fi/
[30] Some idea about the system is available from a (partially dated) conference paper by Lahdenperä & Soini (2002) which does not, however, describe all features included in the new practice.
[31] The Finnish Real Estate and Construction Cluster (2002)
[32] Ministry of the Environment (2003)
[33] Anon. (2002)

- Although not an authority, the Finnish Funding Agency for Technology and Innovation (Tekes)[34] has an important role in leading the way in the R&D. Since late '80s when so called Rata 2000[35] project was implemented, Tekes has supported the use of more integrated project delivery systems based on performance based thinking. (This has been on the general level only and it has not meant of not financing other types of development either.)
- Tekes is a government organisation sponsoring development. They are continuously running so-called Technology Programs, for instance. An example of the programs implemented recently is offered by the Progressive building process *ProBuild* technology programme, 1997–2001.[36] This programme is obviously the one closest to the theme of construction practice. Other examples are *Sara*[37] and *Vera*[38] – the latter focussed on ICT in construction which is also considered as a means to improve collaborative approach in construction. In general, voluntary arrangements were not a big issue in any of those programs but they provided supporting technology for more integrated project teams and more collaborative types of relationship.

[34] http://www.tekes.fi/eng/
[35] Summary in English offered by Hirvensalo (1992)
[36] Nykänen & Salmi (2003)
[37] Anon. (2008)
[38] Information Networking in the construction process, 1997 – 2002; http://cic.vtt.fi/vera/

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ANNEX

Mini-Case 1: Synchronizing urban and building design

The partnering effort is based on the view that the planning process of new areal real estate development projects can be developed in cooperation between society and developers and their designers. While the traditional practice is based on sequential local detailed planning and building design, the municipality now selects the partner consortia prior to completion of the plan. The selection is made through a competition in order to find the most potential actors and the best ideas for implementation that produce an urban structure of high quality and are incorporated into the local detailed plan. Candidates will be attracted by offering them the right to implement a quarter as a developer. This is a system for developers (contractors) to purchase land at reasonable price which is always in short supply, but is true in this case since it is question about a type of fixed price competition and the municipalities are stuck to relatively low land prices.

The several blocks involved in an areal development project, and the laboriousness of producing competitive solutions, require a well planned selection process. So-called multi-target competition processes were developed and applied in the implementation of actual greenfield housing developments in Vuores neighbourhood, in Tampere[39,40] — both consisting of five adjoining quarters. The first competition was hold in 2005 and since then some other municipalities had applied similar system, but in most other cases only one partner consortium has been selected for a smaller area. The fourth competition is now going on in Tampere.

It was reported that the end result of the process was a diverse local plan of high quality which could not have been achieved without the competitive cooperation procedure. The procedure based on design competition has proved superior in developing innovative solutions compared to engaging a single actor as designer straight away. And this is the benefit for the municipality. The model makes use of private expertise while enabling more economic implementation combined with effective societal control. The developers know what kind of housing or business premises are called for in the market. Unless there are objections to the plan, the system also allows the consortia to progress to the implementation rapidly. These are the benefit for implementers.

Comments:

- In the described case there was objection to the plan (which is rather usual unfortunately) and the construction is not in progress. It takes time before the court makes its decision.
- It is more or less usual to use competition for the disposal of land after the plan has been completed. The novelty value is related to the involvement of implementers in the local detail planning phase.
- As to partnering in study terms, the described procedure does not involve any financial incentives, etc. but involves only cooperation in the planning and building design.

Mini-Case 2: Strategic partnering in precast concrete construction

Three companies — a design office, a contractor and a precast component manufacturer — implemented a joint study to renew the prefabricated framework construction so as to improve

[39] Nykänen, V., Huovila, P., Lahdenperä, P., Lahti, P., Riihimäki, M. and Karlund, J. (2007) Collaborative urban planning. Case Beyond Vuores. VTT Research Notes 2393, Technical Research Centre of Finland (VTT), Espoo. (in Finnish) http://www.vtt.fi/inf/pdf/tiedotteet/2007/T2393.pdf

[40] Lahdenperä, P. (2008) Syncronizing urban and building design: experiences from reneved development practice (a conference paper to be available soon)

quality, efficiency and safety significantly.[41] The study examined both business processes and production process. At the beginning of the study the construction project preparation process and site planning and control processes were modelled and views on development need were collected.

After a considerable joint effort (including an implemented construction project and its monitoring), a new common process model for inter-company activity was generated. The key changes were: (1) The process involving invitation to tender-tendering-bargaining-order was replaced by negotiations over delivery content; (2) The early stages of design will be influenced by tripartite cooperation and decision-making will be expedited; (3) Preconditions for design, production and safe construction will be secured by tripartite reviews; (4) Errors will be used systematically to as a source of learning and good, universal solutions will be developed together; (5) Information management and co-operation will be improved by mutually agreed procedures; (6) The procedures of safety management will be integrated into production planning.

According to the participant (as written in the study report), the study has improved cooperation between companies, clarified the significance of project stages to the parties and deepened understanding about the interdependencies and effects of activities. The effort leaded to a tri-party partnering agreement between the joint developers. The idea was to follow the developed practice in the coming projects since the constructor had a significant area to construct as a housing developer.

By means of the new practice the construction company had a reasonable fixed price relatively early in the process, since the expertise of the precast concrete manufacturer was available throughout the process: in the early design to search for an economically efficient solution as well as later in the process when cost increase due to design modifications is typical. Therefore the major benefit to the constructor was measured in terms of costs. The manufacturer, again, was benefiting in a different way. The continuous flow of work is, of course, important while the continuous discussion with the constructors and the early involvement in the project give it better possibilities to anticipate and organise its internal production planning. The seasonal fluctuation especially is a challenge to manufacturers in Finland. The cooperative practice has resulted in structural innovations also.

Comments:

- The constructor and the manufacturer continue to have a kind of partnering relationship while they admit that they are not able to hold on the renewed process.
- The design office involved does not consider the arrangement as a partnering relationship in a similar fashion; they, however, do cooperate with the parties through continuous flow of work.
- Whilst open discussion, etc. financial bonuses and shared savings are not (likely) involved but the benefits to the partners come from other issues.

3.4 MINI-CASE 3: PROCUREMENT CLINIC FOR MAJOR PROJECTS

The Finnish Association of Building Owners and Construction Clients (Rakli) launched a function (on project basis) called “procurement clinic”. It is a platform to develop procurement practices by means of an increased emphasis given on practical procurement situations. A construction owner who has a demanding and exceptional project which, however, is of a general interest, may suggest the project to be dealt with by the clinical approach. If accepted, 10–15 experts from service suppliers’ and consultants’ organisations are invited to focus on the challenges of the project. The topic will be under examination in a series of workshops. The aim is to find improved solutions for application and to recognize all relevant factors in prior to launching the actual procurement process.

[41] Teriö, O., Koski, H., Rantanen, E. & Ruuhilehto, K. (2003) Process re-engineering in precast construction. VTT Research Notes 2222, Technical Research Centre of Finland (VTT), Espoo. (in Finnish) http://www.vtt.fi/inf/pdf/tiedotteet/2003/T2222.pdf

The first and only case studied so far was the Ring Rail Line – the new connection to Vantaa and to the Helsinki-Vantaa Airport.[42] It is a demanding 18 kilometres long rail of which more than eight kilometres will be in tunnel. The entity involves numerous stations, road rearrangements, etc.[43]

Through the procurement clinic the owner had a dialogue concerning the implementation with the actors in the industry. The objective was to make know-how available for the project and to come up with a procurement solution that would ensure the pursued end result within an appropriate cost. Division of the project into subprojects, syncronization of its phases, interaction and dependencies between the project parts and phases, and appropriate risk transfer were all important issues in the discussion. The owner benefited from the expert views and opinions.

The service suppliers, again, got advanced information on the forthcoming project while they also influenced on its procurement model so that it would be reasonable for them to compete for the project parts. Some companies may participate in order to be informed about the forthcoming project and to learn the approaches suggested by others, etc. Yet, a more important incentive for firms to participate is the possibility to influence on the procurement arrangements. In the traditional approach there is much confusion since the parties try to find more appropriate rules of the game while the process is going on and those rules and solutions have already been fixed in the project documents.

Key issues are the sharing of risks and the earning logic. The owner may not understand the contractor's business logic and the risks related to the implementation (and the related impact on price). Therefore the companies consider it important to message these issues to the client: which one of the parties is able to influence on the realisation of those risks and is, thus, also the most appropriate risk carrier. Another issue that may influence in the background is that the industry is changing towards more integrated project delivery systems (DB, etc.) and there is no extensive experience on the appropriate risk-sharing in these cases in general, i.e. comprehensive established practice. (And now we speak about major infrastructure projects.) Reference to earning logic refers to the aim to develop and agree on incentive basis of payment. Also contractors know that it is no-one's benefit to work separately and disagree on the changes, etc. thereafter.

All the information created during a clinic is open to all possible candidates in later proposal phase (without any compensation) and this is known by the participants entering to the workshops also. There exist no functioning rules for the compensation. Naturally, the owner would be willing to utilize all ideas given by participating contractors, but they form the means of competition to the contractors and are not available to the discussion. The treatment of ideas is that general that it can progress without revealing the ideas itself. All possible ideas expressed can be used by anyone.

Comments:

- As to term of the study, any financial matters and contractual obligations were not yet topical in the case which was only open discussion around a project to be launched later on.
- The project currently under examination in the clinic is an areal development in a former harbour area which involves also areas that are to be captured from the sea.

[42] Vaara, P. (2007) Procurement clinic for the Ring Rail Line, Final report. Rakli, Helsinki. (in Finnish) http://www.rakli.fi/kehitysjaprojektit/projektit/hankintaklinikka/
[43] http://www.keharata.net/english/

COUNTRY REPORT

NETHERLANDS

CONTENTS

1 INTRODUCTION TO THE NETHERLANDS AND ITS CONSTRUCTION SECTOR

1.1 OVERVIEW OF COUNTRY

The NL can be characterised as a very densely populated country with a society that is based on consensus. The population is about 16 million. It has the highest average population density in the OECD: 420 inhabitants per square kilometre. This is four times the European average. Even higher densities, i.e. between 600 – 1200 inhabitants per square kilometre, are achieved in the so-called 'Randstad', the belt of cities like Amsterdam, Haarlem, The Hague, Delft, Rotterdam, and Utrecht.

The NL has a relatively large amount of industry and intensive farming. In addition, an important part of the European Transport network is to be found in the NL. As a consequence, there is a considerable degree of environmental pollution in the NL. This was one reason why in 1989 the National Environmental Policy Plan was unveiled in order to make these problems manageable[44].

Geographical and geological conditions, inhabitants
In order to understand the Dutch national building and construction sector, historical, geographical and climate conditions, as well as demographics must be taken into consideration:

- High population density and relatively high environmental taxes have benefited developments in sectors of the construction industry that deal with waste and water treatment.
- Environmental management has succeeded in the NL because both business and government benefit from it. The special effect of NL environmental policy is the degree of self-responsibility/accountability that it confers to the companies.
- The weather is wet and windy, stimulating technologies for solid and windproof construction (in particular residential housing)
- The soil is often unstable with highly fluctuating water levels, in particular in the metropolitan west of the country, stimulating specific foundation technologies (traditionally straw and wooden piles. More recently most often concrete piles)
- Sand, gravel, and river clay are traditionally cheap and abundant in the NL, wood and natural stone are relatively scarce and expensive. This held back skeleton-based construction.
- Dutch natural gas is cheap for local use, presenting additional advantages for the production of brick, roof tiling and cement.
- The sea and rivers have been a central driver to the Dutch economic development. Trade and transhipment have promoted key technologies in logistics, dredging and other similar areas.
- Large waterworks have been an important part of Dutch construction (in particular between 1953 – 1993), stimulating the related core technologies.
- High population density combined with very active Dutch policies to limit the space destined for residential-, office-, and industrial buildings has stimulated technologies to build 'compactly', and to effectively maintain and renovate existing buildings.
- Environmental management has succeeded in the NL because both business and government benefit from it. The special effect of NL environmental policy is the degree of self-responsibility/accountability that it confers to the companies.

Moving population
Until about 1960, most population growth took place in the large cities, but afterwards people started moving away towards surrounding smaller towns where there was more green space. This sub-urbanising trend (although it appears to have been halted in recent years) generated and continues to generate a vast amount of traffic, and this has a detrimental effect on the countryside.

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44 *Main Source: PSIB/PP1; Context of the Dutch Construction Industry; Drivers behind revaluing construction;* Ang G., Geraedts R.P., 2004.

1.2 OVERVIEW OF DUTCH CONSTRUCTION SECTOR

Turnover, employment, distribution
As in all countries, the building and construction sector is a very significant component of the Dutch economy. With an annual turnover of approximately € 60 billion, the sector represents 7% of GNP. It is comprised of 85000 firms and has around 526000 employees in the total supply chain. Some Dutch construction firms, notably those concerned with dredging and civil works, are world leaders.
Here below a few representative data are shown about the data of the total gross floor area built.

Gross area built in NL		
Public	- Education	24.452.000 m2
	- Health Service	22.520.000 m2
	- Offices	14.424.000 m2
	- Ware houses and storage	5.663.000 m2
	- Cultural buildings (like museums etc.)	363.000 m2
	- Other	11.572.000 m2
	Subtotal public sector	*78.795.000 m2*
Private	- Agricultural real estate	193.641.000 m2
	- Industry	146.148.000 m2
	- Offices	25.787.000 m2
	- Stores, shops and malls	25.958.000 m2
	- Transport real estate facilities	17.058.000 m2
	- Garages etc.	6.394.000 m2
	- Catering industry	5.091.000 m2
	- Other	7.312.000 m2
	Subtotal private sector	*427.387.000 m2*
Total	Public and private	506.182.000 m2
This equal a total stock value of 450 a 500 billion Euro.		

Date of reference 2004; source: Soeter, et al., Delft University of Technology, Department of Real Estate & Housing

Predictions for 2002-2011[45]
Every year the Ministry of Housing has a 'prediction-research' carried out by the TNO (National Research Institute) in order to inform the Upper and Lower House of Parliament about the consequences of Governmental Policy for the labour employment and outlet of building and construction.
The production in the construction industry increased in 2005 with 2.6% compared with the 0.3% in 2004. The recovery is due completely to the housing sector. The employment in the civil works sector decreased with 0.8%. The expectation is that that the production in the construction sector in 2006 increases with 5.5% and in 2007 with 4.2%. Civil works sector is reacting to an improved tendency of the market. The employment increased in 2006 and 2007 with 3 to 4%.

Residential Housing
Over all figures in the end of 2007 point out a structural expansion in production volume since 2002, mainly caused by the housing sector. The total amount concerning in this sector in 2007 is 20.030 million euro. In 2004 this sector had a production expansion of 8.7%, in 2005 an expansion of 7% and also in 2006 a strong expansion is expected which can not be hold in 2007 with 2.2%, although it is remaining positive. The prediction for the period 2008 - 2011 is a downsizing of the production with -1.3%.

Civil Works
Over all figures in the end of 2007 point out a structural expansion in production volume since 2002 (-5.6%), with -1,3% in 2005, 8.9% in 2006 and 4.9% in 2007. The total amount concerning in this sector in 2007 is 6.680 million euro. The prediction for the period 2008 - 2011 is a downsizing of the production with 0.4% towards 6.706 million in 2011.

[45] VROM Bouwprognoses 2006-2011, TNO, 2007

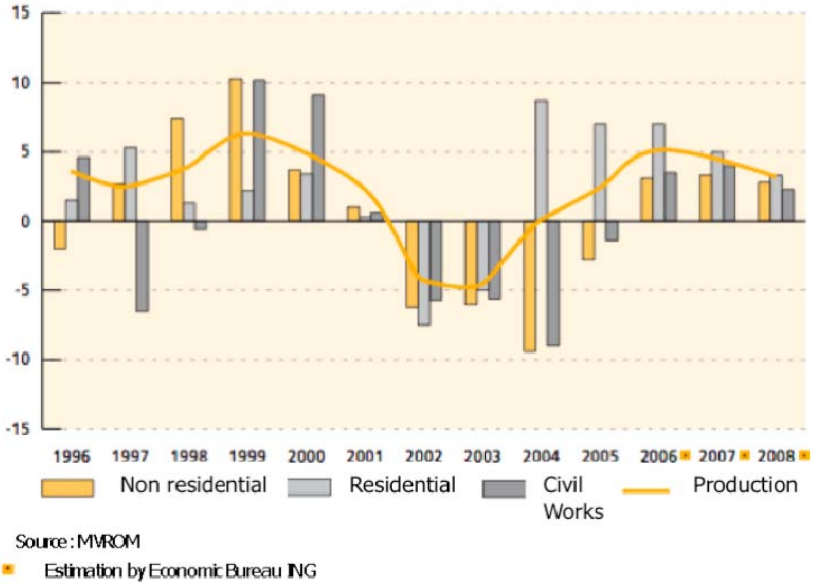
Public and other utility facilities

These are facilities for agriculture, industry, catering industry, transport and communication, business services, health, educational, and other services. Over all figures in the end of 2007 point out a structural expansion in production volume since 2002 (-6.4%), with -2.8% in 2005, 6.3% in 2006 and 8.3% in 2007. The total amount concerning in this sector in 2007 is 11.600 million euro. The prediction for the period 2008 - 2011 is a small growth of the production with 4.1% towards 12.075 million euro in 2011. Investments in Civil Works are done by both public bodies (23% in 2007) and private parties (77% in 2007). The decentralised governmental entities benefit for more than 90% of these investments. Dominant are the positions of road (44%) and railway (40%) facilities in these investments (84% of the total investment). Air traffic facilities (4%) and water care and control facilities(12%) benefit from the rest.

	2007	2002	2003	2004	2005	2006	2007	**08-11**
					%			
Residential	**20030**	-7,4	-5,0	8,7	7,0	6,3	2,2	-1,3
New construction	**13680**	-7,3	-5,6	10,6	7,7	8,5	2,5	-2,6
Major repair & maintenance	**6350**	-7,7	-4,0	5,3	5,7	2,0	1,4	1,5
Non-residential	**11600**	-6,4	-6,0	-9,4	-2,8	6,3	8,3	4,1
New construction	**7690**	-9,0	-8,4	-11,2	-3,6	7,3	11,4	2,9
Major repairs	**3910**	-0,5	-1,0	-6,1	-1,4	4,4	2,6	6,4
Central government	**2720**	12,3	5,1	-19,2	3,4	7,1	5,8	3,8
Private sector	**8890**	-10,4	-9,2	-6,2	-4,6	5,9	9,3	4,2
Infrastructure	**6680**	-5,6	-5,7	-8,9	-1,3	8,9	4,9	0,4
Capital formation in built environment	**38810**	-6,8	-5,8	-0,6	2,4	6,8	4,5	0,8
Minor repair & maintenance	**13790**	2,6	0,8	0,7	0,2	4,0	3,8	3,4
Total construction industry (net)	**52980**	-4,5	-4,1	-0,3	1,8	6,0	4,3	1,5
Labour and prices								
Employment	**435**	-1,2	-3,8	-4,6	-0,9	3,9	3,4	0,5
Employees	**348**	-1,7	-4,7	-6,5	-3,6	-	-	-
Self-employed	**87**	1,4	1,4	5,4	11,5	-	-	-
Vacancies	**9,7**	11,9	6,4	6,7	9,7	-	-	-
Unemployment	**9,1**	7,4	10,2	10,9	9,1	-	-	-
Labour productivity	**56,2**	0,8	0,5	4,1	1,8	1,4	1,4	1,3
Construction price index								
Gross Domestic Product	**1,5**	0,1	0,3	2,0	1,5	3,1	3,0	-
Gross Private Capital Formation	**3,1**	-7,2	-1,8	-2,2	3,1	5,69	4,64	-
Interest on bonds	**3,4**	4,9	4,1	4,1	3,4	3 3/4	4 1/4	-

Table 1.1 Key data for construction, 2002 - 2011 (prices 2005); Source: TNO, based on CBS/CPB, 2007

Fig. 3.1 Development production in the construction industry, 1996 – 2008 (%)



Source of fig. 3.1[46].

1.3 DISTINCTIVE CHARACTERISTICS OF SECTOR

Structure of the building industry

The Building and Construction sector is an important sector for the NL economy, accounting for 7% of the GNP and 9% of the total labour employment. The Governmental entities account for a substantial amount in investing in this sector through procurement of facilities and civil works, and are a key-player in the functioning of the sector.

Three types of branches can be distinguished:

- Demand side: The professional or incidental principal, who is often advised in procurement or tendering issues by consultants, architects, or engineers.
- Supply side: Contractors, project developers, architects, engineers, and consultants.
- Regulatory side: Inspectors, Assessors etc.

There are approximately 85.000 corporations active in the total building and construction supply chain[47]:

- Approx. 75% are building and construction firms and corporations.
- Approx. 25% are architects, engineers, consultants, suppliers of parts, components, subcontractors etc.
- In these corporations and firms approximately 526.000 people are employed.
- 75% of these people work in building and construction corporations and firms.
- The building and construction sector accounts for approx. 7% of the GNP, and more than 9% of the NL national labour employment.
- Total turn-over of the building and construction sector as a whole is approximately € 60 billion (€ 35-40 billion in building and construction production)

Data for building and construction sector in 2002, related to NL economy as a whole[48]:

- Labour employment (number of workplaces): 438.000 / 7.524.000 = 5,8 %
- Production (million €) = 49.170 / 444.033 (GNP) = 11,1 %
- Investments in (million €) = 53.324 / 93.201 = 57,2 %
- Number of corporations/firms: 69.440 / 689.625 = 10,7 %

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46 Van Sante M., Leeflang N., ING, HIBIN, NVTB, *Toeleveranciers bouw; de juiste ketenstrategie*, [Suppliers to the construction industry; the right chain strategy] 2007, ING Economic Bureau

47 Ministry of Economic Affairs, Nov 2003 *Toekomstperspectieven voor de Bouw*, The Hague

48 AVBB (2003) *De bouw in cijfers 1998-2002.* AVBB, Gouda

Extent of horizontal and/or vertical organisation
All parties in the Dutch sector are strongly 'horizontally organised', in associations for contractors, architects, engineers, consultants, etc, which is strong from the point of defending their own professional interests, but at the same time it is weak from the point of delivering integral quality in total building performance.

1.4 CONSTRUCTION BUSINESS SYSTEM

Traditional construction business system
Carrying out the construction in combinations, consortia (very large projects), and subcontracting was very significant for the traditional Dutch construction business system until 2003. Co-operation in terms of subcontracting or combinations with other corporations is necessary to a certain extent because single corporations do not have enough capacity to carry out a construction job. This phenomenon determines the way the competition takes place. Specific characteristics of the Dutch construction business system that differ from other industries were[49]:

- Co-operation per project based on contracts between parties. Co-operation based on consensus is not possible due to distrust.
- Disintegration between design and construction. The process is merely design-led; architects are selected by quality criteria, while the contractors are selected by the criterion of the lowest price.
- The strategy is focused on selling capacity rather than on selling the built object as an integral product. Due to the risks of this strategy no long term investments are considered in specializing, and innovation is kept very limited.
- Principals are not able to conduct the parties involved in a building and construction project in such a way that a common responsibility is recognised in terms of the projects' total quality, price, and time schedule.

This situation can be characterised as a 'prisoners dilemma' [50]. All parties in a building and construction process only care for their own interests, and therefore they often select sub-optimal solutions (for the sector as a whole, but in the long run also for themselves).
Criticisms of this traditional Dutch construction business system are described in par. 2.1 (Stimuli to introduce new forms of procurement), par. 2.2 (Pressures) and par. 2.3 (History of reform initiatives), lead from 2003 to reform initiatives and new ways of collaboration and arrangements.

1.5 RECENT DEVELOPMENTS IN CLIENT - SUPPLIER RELATIONSHIPS

Lifespan costs and quality more important deciding factors
In weighing up the construction costs, a large majority of the big clients are led by the lifespan costs of a project. The importance of quality has increased particularly among the big public clients: from 45 percent in 2006 to 63 percent in 2007[51].
Price is still more important to clients than innovation per se. However, the majority of the big clients are open to innovations and in just over half of the cases they take the initiative towards this. The most important reasons cited for applying innovations are a higher quality and lower lifespan costs. When the measurement of 2007 is compared with that of 2006, the percentage of clients citing a higher utility value as a reason for implementing innovations has significantly declined. For the commissioning companies, future costs of operations have become less important, and for the big corporations accommodating the needs of the end user has lost in importance.

One in six construction projects based on an integrated contract
Now, in respect of big clients, one in six construction projects involves a modern construction organisational form with an integrated contract[52]. Project developers prefer to work in a construction

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[49] Van den Beuken 2003, and Doree, 2001
[50] Hasselhof, 1988, 23
[51] Clients have their say; 2007 Indicators (Regieraad Bouw 2008) [Dutch Council of Reform in Building and Construction]
[52] Identical

team; almost a quarter of the big public clients prefer to work with design & construct contracts. This preference will increase further in future.
As in 2005 and 2006, clients show a preference for the traditional project organisational form. Most developers prefer to work in a construction team (*bouwteam – project partnering*). Almost quarters of the public clients prefer working in the near future on a design & construct basis. There is now little preference shown for public-private cooperation. Clients are showing a clearly growing preference for design & construct and construction team forms for the future, and less for traditional organisational forms.

Clients still closely involved in the construction process
Clients are still emphatically putting their stamp on the construction process and are not showing any increased willingness to leave things to the contractors[53]. Project developers are an exception to this. It also appears that most clients still favour the traditional organisational form, and the lowest price remains the most important criterion.

Suppliers in the chain
Through chain optimisation, processes between the various links in the value chain are improved, so that the result is optimised for the entire chain and for each partner within it[54]. In the construction chain, suppliers can cooperate, for example, with contractors, and internal business processes can be coordinated. Failure costs and coordination problems can thus be restricted. In construction, two types of chain are significant: the cost chain, mainly aimed at keeping costs as low as possible, and the added value chain, which is mainly aimed at innovation, renewal and cooperation with a limited number of partners. With present procurement practices in the construction industry, construction companies mainly have to compete on price. This forces construction companies to be very price-conscious in their purchasing of materials. On every project, a contractor is buying in from another (the cheapest) ancillary supplier. This leads to short-term contact between ancillary supplier and contractor, with long-term relationships being precluded because price is found to be more important than aspects such as reliability and quality.

From transaction-orientation to integrated wholesale
A wholesaler can restrict himself to the bringing together of supply and demand, but can also offer all kinds of additional services. A categorisation recently introduced by ING is based on value-adding activity, in order to differentiate the types of wholesalers. It is not important here whether the value-adding activities are carried out under independent management or are outsourced. It is important, however, that the wholesaler can be approached concerning the performance delivered. This situation refers amongst others to the described case Esprithuis (par. 3.2 and appendix 2). At the moment however the role of suppliers in the supply chain in the Dutch construction industry is still very traditional and positive developments as described in the Esprithuis case are still very rare.

[53] Clients have their say; 2007 Indicators (Regieraad Bouw 2008) [Dutch Council of Reform in Building and Construction]
[54] Van Sante M., Leeflang N., ING, HIBIN, NVTB, *Toeleveranciers bouw; de juiste ketenstrategie*, (Suppliers to the construction industry; the right chain strategy) 2007, ING Economic Bureau

2 BACKGROUND OF VOLUNTARY COLLABORATIVE ARRANGEMENTS

2.1 STIMULI TO INTRODUCTION OF DIFFERENT FORMS OF PROCUREMENT

Problem statements, drivers for change
Investigations into the building and construction sector, including a National Parliamentary Enquiry in 2002-2003, have revealed a number of systemic problems. These have included irregular pricing practices, artificial constraints on markets, and even a degree of fraud following the introduction of new European regulatory arrangements in 1992. In addition, the industry has been criticised for not showing the level of improvement in performance and productivity shown by other industrial sectors. As a consequence, the Dutch construction sector has been the subject of negative comment in the media and Parliament, and generally has a poor image.

- These investigations have identified shortcomings in the industry which contribute to its relatively poor performance. Traditional market structures, with their emphasis on short-term relationships, provide little opportunity for the optimisation of the price-quality ratio or for continuous learning by both clients and the supply side.
- Secondly, there is inadequate understanding of clients' real requirements and how these are matched to the needs of society. These are met through the whole life cycle of the project, but the traditional construction process is focused on the internal optimisation of sub-projects which relate to design, construction, operation etc.
- Thirdly, the industry is highly fragmented, with many parties involved in the different phases of a construction project and consequent potential for conflicting objectives and poor communications. Finally, its research base and the bodies that advise on future opportunities and trends are not well linked to industry practitioners

Major driving forces for the reform initiatives
The poor image of the sector, the hampering competition, the inefficiencies in production and marketing mechanisms, causing a low-profit business profile were the major driving forces for change, acknowledged by stakeholders in both government and sector, considering that this is the most important sector in terms of contribution to the GNP and labour employment.

2.2 POLITICAL, SOCIAL AND ECONOMIC PRESSURES

Joint future perspective note
The recommendations of the Parliamentary Enquiry Commission have led to a response from the Government, who presented a joint future vision on the building and construction sector by the Ministers of Economical Affairs, Civil Works, and Housing. On 25th November 2003 these three Ministries have submitted a joint future perspective note[55] on the sector for the next years, aiming at:

- Complete and unhampered competition within the building & construction sector
- Normalising the relations, both between the government and the sector, as well as among the parties within the sector itself.
- Repair of trust among the stakeholders within both demand and supply sides
- Improving the quality and the price/quality ratio.

Objectives and targets Dutch Government
This represents the vision of the National Dutch Government over the next four years. It primarily affects the establishment of:

1. A sound market and a sound building and construction sector; characterised by openness, transparency, and mutual trust based on an attitude of integrity among stakeholders on both demand and supply side.
2. Professional procurement; starting with a sound procurement policy, clarity of the principals position in the process of building and construction, properly analysing, clarifying and allocating

[55] Note on future perspective construction industry; Min. VROM, EZ, V&W, 2003

risks. The government principal shall explicitly be held accountable for procuring best value for taxpayer's money, and for acting within the regulations set out by law.
3. Professionalism in fulfilling assignments and supply; including integrity among all parties within the supply chain, a client orientated entrepreneurship, ensuring and guaranteeing building quality, appropriate risk sharing and increasing efficiency by better matching design, construction, and maintenance in projects.
4. Less and more effective regulations; referring to the role of regulations in creating guarantees for a sound competition and transparency within the market. Such a role will provide a maximum of synergy in procurement processes.

2.3 HISTORY OF REFORM INITIATIVES AND ASSOCIATED ACTIONS

After the recommendations of the Parliamentary Enquiry Commission and the response from the Government, as described in the former paragraphs, by 2003, a consensus had developed across key stakeholders in the industry that there was a need for radical change. Both the government – representing very important demand interests – and the private sector supply side, shared this view. These Government commitments, and the issues that have led up to them, provide the background to the PSIB research programme, which aims to enhance the economic and social performance of the building and construction sector.

PSIB - Process and System Innovation in Building and Construction
Since 2004 PSIB (in Dutch: *Proces- en Systeeminnovatie in de bouw*) is acting as a national programme for construction change, analogous to 'Rethinking Construction' in the UK and similar programmes in other countries. It brings together the major stakeholders in the Dutch construction industry: clients, contractors, suppliers, consultants, research institutes and universities, with the aim of securing a change in industry performance through process and system innovation. The Dutch government has already committed €15 million to the programme over the first four years since 2004, and this has be matched by industry contributions. PSIBouw acts as a network that is formed by companies, government and other organisations and universities.

Par. 4.3 (management approaches) the most important outcome in terms of publications, research reports, congresses, regional steering boards are described. Par. 7.3 describes the effectiveness of Regieraad, the Steering Council. The PSIB has five objectives:
1. Improvement of social-economic benefits from construction
2. Increase of added value to the client and other stakeholders
3. Increase of profitability of the construction industry
4. Creation of a competitive environment that stimulates innovation, thus enhancing the image and reliability of the industry
5. Accumulation and rapid utilisation of knowledge.

On 6th February 2004 the Dutch Central Government appointed a Steering Council for the Construction Industry (*Regieraad Bouw*) to start and lead the intended process of change within the building and construction sector, supported by the national PSIB research programme. PSIBouw derives from the demand for regeneration in the Dutch construction sector. This includes process and system innovations. Examples include innovations in tendering, awarding contracts and cooperation, new ways to organise the construction process, new applications of ICT, a new way of involving users in the processes, and changes in the culture.

Competing paradigms
A clear and well-founded vision (see par. 2.2 Political, social and economic drivers) has formed the basis of reforms in the Netherlands. The process of creating this vision and the subsequent commitment is a contribution to restoring trust. Codes of Practice and Codes of Ethics appear to be valuable tools for the restoration of trust and the establishment of proper relationships between clients and supply side interests. These tools should also be adopted within the supply side in order to provide a framework for commercial relationships down the supply chain. Acceptance of such codes by supply interests signifies a commitment to working to high principles, with integrity in all transactions and respect for staff, clients and partners in the supply chain.

Competing paradigms like commercial pressures from competition versus trust may also be (re) viewed from another scope. The Dutch advisory board on Science and Technology[56] on the relationships between regulation, competition, and innovation point out that technology and competition policies must be in balance, but that it is difficult to indicate what type of rules are required.

Two logics collide: On the one hand, competition and commercial pressures are seen as the key to innovation; on the other, collaboration and trust are seen as essential for innovation and technological breakthroughs (joint efforts, clusters, supply chain integration).

Promotion
The promotion of the collaborative culture in the Netherlands is been carried out on different levels. On the highest level the *Regieraad Bouw* and PSIB are playing a prominent role. Since their start in February 2004 a lot of research projects have been completed about the various themes mentioned (par.2.3). Most of the research results have been translated into clear conclusions and recommendations to be designated for stimulating the Dutch construction industry. Examples are '*Opdrachtgevers aan het woord*' (Clients speaking), '*Anders Denken Anders Doen*' (Different Thinking Different Acting), '*Bouwen is Teamwork*' (Building is Teamwork), '*Bouwen is vooruitzien*' (Building is looking into the future), '*Beter aanbesteden in de bouw*' (Better procurement in construction) and '*Vernieuwingsoffencief Bouw*' (Renewal offensive in construction). Besides publishing several public reports on a yearly basis the *Regieraad Bouw* organizes once or twice per year national congresses to inform the Dutch construction industry about the developments in renewing the sector. The free publications of the *Regieraad* can be downloaded from the website.

Regional Steering Boards
From 2006 five regional steering boards (*Regieraden*) are active in promoting a new collaborative culture in the Netherlands. These regional boards are initiated by VNO-NCW (representative body for the Dutch trade and industry) and *Bouwend Nederland* (representative body for the Dutch contractors and SME), supported by the national *Regieraad*. These boards in the regions North, East Netherlands, West Netherlands (*Randstad*), Brabant-Zeeland and Limburg are composed of representatives of local governments and construction industry parties. Their ambition is to realize a change in culture and mentality, to promote professionalism for clients and bidders, to develop and stimulate new forms of collaboration and to show best practices. They organise conferences and several specific workshops for regional companies that want to learn from renewal experiences from others.

Construction Window Display
The Construction Window Display (*BouwEtalage*) is a website that started in 2005 to shine upon best practices of innovative construction projects. These best practices serve as inspiration for clients and bidders who want to establish renewals in their own projects. The Traverse foundation, the *Regieraad* Bouw and PSIBouw gathered their strengths to accomplish this project. In 2006 these combined forces started to transform the *BouwEtalage* to an internet Starting page for renewal in construction. In consequence the information offered by the internet about renewal of the Dutch construction industry is easily to find and very accessible. The website offers a platform for the knowledge transfer between professionals in the sector.

Better Building
Better Building (BouwBeter) is a network of progressive construction professionals who are keen to lead the field with practical ideas for better, more efficient and especially more marketable development and construction. The Better Building initiative is been coordinated by the Foundation for Construction research (Stichting Bouwresearch - SBR). It is a meeting point for building practitioners wanting to test their knowledge and opinions on an equal footing against those of fellow managers from across the entire construction chain. Several times a year Better building organises national and regional conference and workshops on common or specific renewal themes.

[56] AWT report; Advisory Board on Science and Technology; Bouwen op kennis; The Hague 2002

3 EXTENT OF APPLICATION OF VOLUNTARY COLLABORATIVE ARRANGEMENTS, AND EXPERIENCE OF USE

3.1 SCALE OF APPLICATION OF VOLUNTARY ARRANGEMENTS

More construction projects based on an integrated contract
In 2007, in respect of big clients, 1 in 6 construction projects in the Netherlands involves a modern construction organisational form with an integrated contract[57]. Project developers prefer to work in a construction team; almost a quarter of the big public clients prefer to work with design & construct contracts. This preference will increase further in future.

	Organisational Form					
Preference	Traditional	Construction Team	Design & Construct	PPP	Different	Total
2007	57	21	15	2	5	100
Future	36	28	23	4	9	100

Table 3: Percentage preference for organisational forms of big clients in 2007 and near future (source EIB)

As in 2005 and 2006, clients show a preference for the traditional project organisational form. Most developers prefer to work in a construction team (*bouwteam – project partnering, between several design & construct parties in an early development phase, usually the design phase of a project)*. Almost a quarter of the public clients prefer working in the near future on a design & construct basis. There is now little preference shown for public-private cooperation. Clients are showing a clearly growing preference for design & construct and construction team forms for the future, and less for traditional organisational forms (see table 3).

Scale of application
The three RGD cases described in paragraph 3.3 (Prominent examples: cases RGD) belong to the 2% category PPP in 2007 of table 3 above. For all the other experiments or cases mentioned in this report concerning voluntary collaboration, like the Esprithuis method (see paragraph 3.2) and paragraph 3.4 for other example cases like *Topbouw*, *Bouwbeter*, *Slimbouwen, Panningen* - also Appendix 6.1, the Inno Concept Building - Appendix 6.2, and the experiment in Panningen - Appendix 6.4), the scale of these kinds of collaborations in The Netherlands seems to be still very experimental and not widely spread.

3.2 PROMINENT EXAMPLE: CASE ESPRITHUIS

In Appendix 2 a prominent case of voluntary collaboration called the Esprithuis is described in detail. In this paragraph the most important drivers for the successful voluntary collaboration, the main obstacles and the recommendations derived from this case are outlined. The Esprithuis Association[58] is a platform for actors (ca 30 at this moment) in the Dutch housing sector: suppliers, project developers, installer contractors, designers, contractors, housing associations, manufacturers and distributors of components. Their aim is to apply principles of industrial product development to arrive at construction practice, which more closely addresses consumer requirements, with 'massed customisation' inspired by the industrial methods applied in the car industry[59]. This aim called for better and voluntary collaboration throughout the chain of project developer, architect, contractor and component manufacturer. Following a demonstration project in 1991, the first full-scale residential developments to incorporate with the EspritHuis Mass Customisation method began in 2007. The very first is in Boekelo, near Enschede, and

[57] Clients have their say; 2007 Indicators (Regieraad Bouw 2008) [Dutch Council of Reform in Building and Construction]
[58] www.esprithuis.nl (April 2008)
[59] van den Thillart, *Mass Customization*, Phd theses, 2002, TU Delft

is to be realised by Tersteege Bouwbedrijf in association with VBI, Lafarge, Geberit, Bruynzeel Keukens and Van Dam Installatiebedrijf. This development of forty units will be built entirely in accordance with the EspritHuis philosophy.

Important drivers

The most important drivers for the parties involved in Esprithuis to collaborate on a voluntary basis are:
1. Industrialisation - Plug & Play
2. Increase in influence on the market and/or market turnover
3. Savings on labour costs and the number of employees

The rising and individual customers need to connect and disconnect building and system components swiftly and flexibly, varying from electrical systems and central heating systems up to and including even complete bathrooms and inner walls, asks fittings and components based on a plug & play principle. On the one hand, this would better meet the consumer's individual requirements and, above all, his requirement to make changes to his dwelling without difficulty. On the other hand, a more industrial approach to manufacturing building components and shifting a segment of the work from the construction site to the factory, would significantly improve the controllable quality of the components, reduce the number of construction defects and result in cost savings during construction.

In their wish to use more industrially manufactured components in construction, manufacturers developed a strong need to get more grip on the customer's or client's demand specifications. Obtaining more of a grip on clients' demand implies a forward integration in the chain and a direct approach to consumers. This is the only way to gain more influence on the market and, hence, to secure or increase one's own market turnover. See here the basis of the voluntary collaboration of the suppliers in the Esprithuis project.

Shifting a large part of the construction volume to factories compared to actually assembling on the construction site not only makes construction less vulnerable with regard to the quality to be realised, but also generates savings on labour costs compared to a traditional construction.

Main obstacles

The main obstacles for the Esprithuis member to extend their collaboration on a wider scale are:
1. Initially the market demand exceeded the market supply
2. Seemingly higher costs
3. Traditional sellers in the market
4. Obstructing approval procedures
5. No financial incentives
6. Collaboration and ICT

The fact that since the first pilot project in 1990 a second pilot project was not launched until 2007 predominantly relates to the overheated housing market in the Netherlands. The demand for dwellings was still many times higher than the market supply. The consequence in this context was that traditional market players are hardly forced to take account of consumers' specific requirements. And therefore no new forms of collaboration were adopted.

Using industrially manufactured and high-quality construction components and products initially resulted in an increase of direct costs. This is one of the reasons why traditional sellers usually adopt a wait-and-see attitude with respect to early collaboration with suppliers and manufacturers.However, actual costs with regard to pilot projects have shown that the higher product costs are entirely compensated by savings in labour costs during construction.

In connection with the market situation in the Netherlands (the demand still exceeds the supply), traditional sellers (developers, contractors and subcontractors) in the market are hardly forced to take into account the consumers' specific requirements. Sellers of innovative industrially manufactured construction components who are traditionally at the bottom of the chain are largely dependent on the willingness of these traditional sellers to deploy them (usually in a late stage of the procedure).

By leaving the definitive choices for fittings and finishing in consultation with collaborating suppliers to the buyers of dwellings until at a late stage, problems may occur with various municipal approval authorities at the start of the development process, because at the time of the planning application or the approval by the buildings aesthetics committee, the definitive choices for the dwellings have not yet been made.

So far, there are no financial incentive programmes or financial incentive means, both on a national level and on an international level, so as to provide the necessary injections in the construction sector within the framework of these forms of (voluntary) collaboration, manufacturers' forward integration into the chain, and more customer-oriented construction.

Due to the new form of early collaboration in the construction chain, the possibility for various collaborating suppliers to enter into direct consultation with future (potential) clients, who can subsequently make their own choices, and the fact that they together are to ensure efficient mutual coordination of their products in the ultimate overall result, the problems with mutual coordination of their various ICT systems are becoming very manifest.

Recommendations
Based on the experience to this day the Eprithuis members gave some recommendations to extend the scale of this kind of voluntary collaborations.
1. Pilot projects
2. Information to consumers and sellers
3. Innovation subsidy for the construction sector
4. Coordinating various ICT systems
5. Government interference
6. Decision-makers in the operational phase

Part of the resistance of traditional sellers can be removed by showing in practice what the possibilities and advantages are of using industrially manufactured construction components, for example, in the form of well monitored, documented and evaluated pilot projects.
In addition to informing traditional and conservative sellers on the positive influence of a shift in the chain by early collaboration with manufacturers, it is also required to explain to consumers what the qualitative and financial advantages are of the forward integration of construction component manufacturers.

In addition to the existing and useful incentives in the development of national and European research programmes for the construction sector, for example, by *Regieraad Bouw* and the *PSIB* research programme in the Netherlands, it is important to make available more means to test the above developments in the new collaboration between parties in the construction chain in practice.
The problems relating to communication and coordination in an early collaboration between the various parties envolved in the chain due to individual uses of various ICT systems have to be solved.

It is of the utmost importance for the parties in the Netherlands supporting the above new forms of collaboration that the government gives its positive opinion in this context. This would automatically create a much larger support in the Dutch construction sector.

Flexible, demountable and industrial construction and, consequently, the above new forms of collaboration and early integration into the construction chain of manufacturers and suppliers, is enhanced to a high degree if the major initiating and commissioning parties at the start of the process are the same parties who bear responsibility for the operational phase of the project.

3.3 PROMINENT EXAMPLES: CASES RGD

In three prominent DBFMO cases in the Netherlands, the RGD is involved as a client. In appendix 4 they are described in detail. In this paragraph the most important aspects of collaboration, drivers, obstacles derived from this case are outlined. The following cases are concerned:
1. New office building for the Dutch Tax and Customs administration in Doetinchem.
2. New building for the Rotterdam Airport detention centre.
3. New office building for the Tax authorities and the Information Management Group in Groningen

In all three cases the Strukton Company is the main contractor i.e. supplier for building and services, together collaborating with several other companies per case. In the first interviews with RGD there was no information available of encouraging or rewarding collaborative behaviour. At this moment the impression exists that they don't actively do.

Integral solutions
About Design, Construction and Management the Strukton Company writes[60]: Integral solutions are commercially most successful. Customers are increasingly demanding an integral approach to infrastructure and accommodation challenges. In order to arrive at integral solutions with a high service level, contractors must sharpen their focus on identifying what the customer really wants. A sustainable tailor-made solution calls for a lifecycle approach that brings together design, realisation and operation. With the objective of achieving an optimal result in terms of quality, costs and yield. Such a solution contributes to the success of the customer and thus also to the success of Strukton.

Collaboration
About Cooperation Strukton explains: collaboration provides a fertile breeding ground for renewal and creativity. Parties that bundle their strengths as good partners or co-makers can effectively capitalise on the available knowledge and expertise. For example, to stimulate integral thinking, find innovative solutions, convert tailor-made applications into creative concepts with an added value in terms of marketability or synergy. Strukton draws on that strength in both internal and external alliances. Not only in cooperating with knowledge institutes and universities, but especially in working together with customers.

In all three cases Strukton looked for and found different partners for design, construction, services and maintenance and finance. The way these combinations come into existence (birth) is merely due to the fact that the different partners have been working together before on other projects. They know each other rather well, especially the way they work and the quality they deliver. From that knowledge, combined with the trust these external partners can handle very well the complexity of the new project and therefore excluding possible risks, new collaborations are being developed for these projects. Another important trend is being observed: after one or two good experiences of working together on a project bound basis, different companies try to extend that experience into a more permanent or strategic way of working together. After all, the knowledge of each other' qualities excludes a lot of possible risks during the development and construction phase of a new project, supports the cost quality ration of the product and reduces possible delays. In that sense it is very imaginable that these forms of collaboration in the future can lead to a more strategic way of collaboration, not project bound (strategic alliance is one of the possibilities).

Drivers
The advantages or most important drivers for the Dutch government or the Dutch Government Buildings Agency (RGD) as a client of PPS - DBFMO collaboration are described in Appendix 4. Summarizing they see the following advantages.

The Netherlands government is aiming at optimal quality for governmental housing. This means that market parties can become involved in renovation and new-build projects, but also in maintenance, facility services, operation and financing. Public-private partnerships are expected to help control the cost of construction projects and provide opportunities for innovation.

The DBFMO contract covers the entire process, from the production of a design to a fully operational building with all the associated services. An integrated approach is the keyword here. The idea behind this approach is that better and most likely cheaper accommodation can be developed when the consequences of a particular design are thoroughly examined in the early stages of the development process. Lifecycle costs can be reduced when investment and exploitation costs are brought in line with one another.

The user of the building wants to avoid disappointments, such as an unforeseen cost increase as a result of price-fixing by construction companies. Some users want to retain an overview of the amounts spent on climate control installations, maintenance – in short: the entire 'management package'. Others want to outsource the management of the building and require reliable quality.

One of the decisive arguments causing the government to opt for the PPP model is the opportunity to implement innovative solutions. This is the main motivation of the Government Buildings Agency (RGD) for working together with a consortium (consisting of different market parties) that contributes its specific knowledge and expertise as a contractor. This approach works best if it is not specified beforehand *how* the products and services will be delivered, as this leaves too little room for variation. Instead, it is specified *which* products and services are to be delivered. A performance standard is then derived from this information and used to assess the performance of the other party.

[60] www.strukton.com (April 2008)

Promotion
To promote these kinds of developments in common, the Dutch government changed the national regulations system for construction. Principles of performance-based building (PBB) are present in legislation, regulations, policy debate, research, education and, since 1992, more and more even in government procurement. The 2003 version of the Building Decree is to a large extent performance based.

Standardizing briefing documents
Another way to promote these developments is based on the fact that the RGD as a client is standardizing the briefing phase and briefing documents at a performance based level. Examples can be found in the development of new prisons. By standardizing the client creates possibilities for several and more market parties to respond with an offer to these standardized demands. A remark here can be made about the fact that a major part of the governmental building stock consist of old and often monumental buildings. The adaptation or renewal of these buildings does not go along with standardization of the demand in briefing documents. A lot of project specific information and knowledge has to be added in these kind of projects.

Obstacles
Along with other parties in the Dutch construction sector public clients believe that in a system where the government or client not only describes the demand of a building and the according services in terms of performances, one particular problem can arise concerning the parties involved.
In the case a specific client is not satisfied with the performance specification of the demanded project by itself, but he has specific and strong ideas about the quality of the architecture along with the architect who could do the job for him, two possible options are open. The first option is that this specific architect can play a role within the bigger special consortium that is being erected for the DBFMO-project. This occurred in one of the three RGD cases without any problem. The second option - when a client wants a strong decisive position in the quality op product and process, and therefore wants to deal with a specific architect or other important party, it is advised not to use the DBFMO model but a more traditional one. This is in fact the reason that the Strukton company, after considering a tender for a DBFMO project, firstly looks for a well qualified architect who is able to fulfil the specific wishes of the client, before extending the collaboration with other possible companies.

3.4 OTHER EXAMPLES

Next to the already in this report described example cases, some other stimulating initiatives for chain optimisation and voluntary collaboration also can be mentioned here.

Topbouw
Topbouw [construction sector partnership between suppliers and the construction industry] is an initiative of suppliers to the construction industry that see opportunities for improving the entire construction chain. The biggest benefit in this is expected to come from vertical cooperation within the chain. Topbouw was set up in April 2005 as a defence against the failure costs in construction. Within the Topbouw foundation, the following organisations collaborate: CRH Bouwmaterialenhandel, ENCI, Isobouw, Isover, Knauf, Raab Karcher, Rockwool, Ubbink, VBI, Wavin, Wienerberger and Xella. Currently, there are 5 projects underway. One of these is 'the ideal construction process' in which the builder's supplier develops new product concepts with which to improve the role of construction supplier. This involves a construction process given industrial form. The application of prefabricated elements is significant in this, and the building site is evolving into an assembly site.

BouwBeter
BouwBeter (better building) consists of twenty companies from throughout the construction chain and was founded at the end of 1999 as an initiative of the ministry of Economic Affairs, Bouwend Nederland and the Construction Research Rotterdam Foundation (SBR). In 2003, the organisation of BouwBeter was transformed into a cooperation of innovating companies. The aim of BouwBeter is to ensure that the requirements of the end user are actually met. In particular, it is a practical project within which working groups deliver concrete and usable results. This includes, for example, advice on reducing failure costs and helping companies to be proactive in their search for solutions that meet the customer's requirements. See also Appendix 6 (Collaboration) for more detailed information.

Slimbouwen

Slimbouwen (clever building) is a foundation that bundles the forces of innovative suppliers, designers, builders, advisers and clients in order to build in ways that differ from the traditional ones. At Slimbouwen, all the partners in construction provide a cohesive solution in order to arrive at necessary innovations. The *Rode Haan* [red rooster] in Delft is the latest Slimbouwen building to have been delivered. In a workshop of two days, all the main points of this project were mapped out. A team was created in which the development of new ideas and open communication was possible. The building was realised to plan and failure costs were more or less avoided.

Panningen
In 2007, the publication *'Anders organiseren'* (Organising Differently) was issued, aimed at the installation or services industry[61]. Various cases in the project 'Organising differently in the installation and plant installation industries' offer pointers for dealing with issues such as optimisation of performance and reduction of workload. A clear cause of problems of companies in the installation and insulation sectors is often the poor collaboration with other parties in the construction process chain. Historically, a collaboration often comes about based on the lowest price on offer, with the subcontracting installation or insulation company being paid by the metre, or for the work that he performs. The pilot construction project in Panningen, in which all the parties involved collaborated from a very early stage at a voluntary base, delivered six concrete improvements: smarter and more efficient logistics, more efficient deployment of personnel, lower costs and higher profit, greater influence on blueprints, reduced conflict and dispute, reduced road transport.

3.5 EVIDENCE OF PERFORMANCE IMPROVEMENT

Real evidence of performance improvement based on financial economic research in the comparison between traditional collaboration situations and new innovative ways of (voluntary) collaboration, is not available yet in The Netherlands. Neither is known what the consequences are of these collaborations in terms of enlargement of the market turnover of the different parties involved. On the other hand looking into several recent publications of the Dutch *Regieraad* and listening to a lot of statements of individual parties (case studies), one could establish that there is a increasing majority of people (and companies) who strongly believe that these new forms of collaboration will lead to performance improvement in the construction sector (see for more details also paragraph 3.5).

3.6 EVIDENCE AND VIEWS ON DEVELOPMENT COLLABORATIVE CULTURES

Although there is no hard evidence of financial or economic improvements of companies involved with new forms of collaboration, many recent publications of public clients, representative bodies and other and statements of major stakeholders give the impression that it is just a matter of time before the mainstream of Dutch companies in the construction sector will adopt this new collaboration culture.

'The Dutch Government Buildings Agency (RGD) is aiming at optimal quality for governmental housing. This means that market parties can become involved in renovation and new-build projects, but also in maintenance, facility services, operation and financing. Public-private partnerships are expected to help control the cost of construction projects and provide opportunities for innovation'[62].

'The main motivation of the Government Buildings Agency is working together with a consortium (consisting of different market parties) that contributes its specific knowledge and expertise as a contractor. This approach works best if it is not specified beforehand *how* the products and services will be delivered, as this leaves too little room for variation. Instead, it is specified *which* products and services are to be delivered. A performance standard is then derived from this information and used to assess the performance of the other party'[63].

The *Regieraad bouw* (Dutch Council of Reform in Building and Construction) promotes necessary changes in the construction industry (see also par. 2.3). It is an industry-wide approach, focusing on all

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61 VIB, De Unie, Uneto-VNI, NVKL, CNV, FNV, *Anders organiseren*, June 2007 [Organising Differently]

62 See par. 3.3.2

63 See par. 3.3.2

the parties involved in the construction chain. The three core themes are transparency, innovation and quality/price. The principal task of *Regieraad* II will be to go from the abstract to the reality of clients and companies. There is a big role here for the 5 regional *Regieraden* (regional councils) which were set up in recent years on the initiative of VNO-NCW (Confederation of Netherlands Industry and Employers) and *Bouwend Nederland* (sector organisation for construction companies).

'Constructing is something you do together[64]. The chain players also have a lot to gain by working together better. Their common interest is a satisfied commissioning party. Therefore, the challenge is to realise the highest possible quality at a competing price. For this purpose, designers, constructors and suppliers are to operate as a team, to bundle their know-how and experience and have an open mind to one another's creativity. When that happens, problems are not shifted, but solved together. This creates a more efficient construction process, in which problems with regard to coordination hardly ever occur anymore and costs of failure are drastically reduced. Commissioning parties can enhance this concept, which is referred to as chain integration, by choosing for integral design and construction in their construction projects'.

'Collaboration between the various parties is therefore a prerequisite to arrive at a successful construction process[65]. Due to several recent developments, parties are to collaborate in ways other than in their traditional role'.

The Esprithuis companies clarify (see also par. 3.2 prominent case) amongst others:
'It's our wish to deliver more industrially manufactured components in construction. But merely developing innovative products is insufficient. The products will also have to be used somehow. Until that moment, we as manufacturers found ourselves in a dependent position at the bottom of the construction chain; a dependency on contractors and subcontractors with a usually traditional and non-innovative way of thinking. Obtaining more of a grip on clients' demand implies a forward integration in the chain and a direct approach to consumers. This is the only way for us to gain more influence on the market and, hence, to secure or increase one's own market turnover'.

The Strukton Company clarifies in par. 3.3 (three prominent cases):
'Integral solutions are commercially most successful. Customers are increasingly demanding an integral approach to infrastructure and accommodation challenges. Cooperation provides a fertile breeding ground for renewal and creativity. Parties that bundle their strengths as good partners or co-makers can effectively capitalise on the available knowledge and expertise'. This is in fact the basis thought of this company behind the way voluntary arrangements were born in the described RGD cases (par. 3.3.1).

The representative bodies of the Dutch installation and services sector clarify (appendix 6.4):
'The pilot construction project in Panningen, in which all the parties involved collaborated from an early stage, delivered six concrete improvements: smarter and more efficient logistics, more efficient deployment of personnel, lower costs, higher profit, greater influence on blueprints, reduced conflicts and dispute and reduced road transport'.

3.6 CRITICISMS AND PROBLEM AREAS

Quotes from practice
A first and provisional reaction of a large contractor[66] to our research question was as follows:
'The implementation in the Netherlands of innovative and collaborative relationships is not voluntary at all. They are the consequence of political choices made by the Government or the public clients.
At this moment exist a lot of differences between the large contractors on the one hand and the smaller SMEs on the other hand. One can observe that for instance in subjects as clustering or making combinations of SMEs, selection criteria are important; those differences show clearly. Large contractors would like to distinguish there companies from each other and specially from SMEs as well, based on having more experience with large scale and complex projects, better equipped for time, quality, cost and risk management". Therefore we would not like to support actions that will reinforce our competitors (talking about knowledge transfer or SMEs)'.

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[64] Bouwen is Teamwork – Regieraad Bouw, Practical guide for successfully working together in the construction industry, April 2007
[65] Bouwen is Teamwork – Regieraad Bouw, Practical guide for successfully working together in the construction industry, April 2007
[66] Jan Rottier, Heijmans (31-1-2008)

On the other hand the same large contractor declared:
'But of course I am a speaker in favour when we are talking about an early collaboration in the development process. The more time you are with a client, the more value you can add for him. The more his appreciation for you will be or should be. This added value can include the take-over of risks, of for instance to minimize or reduce the possible risks. The added value increases (and together with that the distinction between the different contractors) when the contractor is able to transfer or transform into the interests and main issues of the client".

Concerning problem areas the Esprithuis companies clarify (see also par. 3.2 prominent case) amongst others:
'The demand for dwellings is still many times higher than the market supply. The consequence in this context is that traditional market players are hardly forced to take account of consumers' specific requirements. New dwellings that will be completed are already sold on paper before the start of construction. Using industrially manufactured and high-quality construction components and construction products initially results in an increase in direct costs. This is one of the reasons why traditional sellers usually adopt a wait-and-see attitude with respect to early collaboration with suppliers and manufacturers'.

'In connection with the market situation in the Netherlands (the demand exceeds the supply), traditional sellers (developers, contractors and subcontractors) in the market are hardly forced to take into account the consumers' specific requirements. Sellers of innovative industrially manufactured construction components who are traditionally at the bottom of the chain are largely dependent on the willingness of these traditional sellers to deploy them (usually in a late stage of the procedure)'.
'Due to the new form of early collaboration in the construction chain, the possibility for various collaborating suppliers to enter into direct consultation with future (potential) clients, who can subsequently make their own choices, and the fact that they together are to ensure efficient mutual coordination of their products in the ultimate overall result, the problems with mutual coordination of their various ICT systems are becoming very manifest'.

About problem areas the RGD stated in par. 3.3 (prominent cases):
'Along with other parties in the Dutch construction sector we as a public client believe that in a system where the government or client not only describes the demand of a building and the according services in terms of performances, one particular problem can arise concerning the parties involved. Especially in the case a specific client is not satisfied with the performance specification of the demanded project by itself, and he has specific and strong ideas about the quality of the architecture along with the architect who could do the job for him. In this case it is advised not to use the DBFMO model but a more traditional one'.

The Dutch construction sector is rather occupied with the role of the SME. An example is the new legislation about procurement. In subjects as the possibility of forming several combinations and selection criteria for new projects the differences between the large construction companies and the SMEs come out clearly. The Dutch Institute for Building Law declares in par. 4.5 (Legal Frameworks):
'Part of the problems surrounding procurement law would be solved if employers were to conduct themselves more professionally, on the one hand, and if the SME were to consider tendering as an opportunity, on the other. In other words, tendering law is neutral by nature, something which tendering policy is not always. For example, not observing the principle of proportionality, which constitutes the basis of tendering law, makes that tendering policy sometimes has negative results for the SME. If tendering services acted more in line with this principle, less steering would be required towards any specific economical group'.

4 FACTORS RELEVANT TO SUCCESSFUL APPLICATION

4.1 CLIENTS ATTITUDES AND ROLES

The report ' Clients have their say'[67] contains the results of a study among clients of construction companies. The study was commissioned by the *Regieraad Bouw* [Dutch Council of Reform in Building and Construction] to examine the extent to which innovation occurs in the client's role in the construction process, given the objectives and initiatives of the *Regieraad* in this area. In order to bring changes to light, the study is being carried out over a continuous period of four years. The first measurement took place in 2005. This report shows the results of the third measurement over 2007. Major parts of this publication are used in this paragraph

More trust and more transparency in planning and progress of operations
Clients' trust in construction companies increased again in 2007 and is at a high level. For example, 90 percent of private clients trust construction companies when it comes to fulfilling agreements. Among other clients, too, these percentages are quite high; for example, among large housing corporations it is 78 percent (was 53 percent in 2005). Almost all the big public clients (93 percent) trust construction companies as regards competence. More clients are finding construction companies to be transparent in providing insight into the planning and progress of operations. Around 90 percent of the big public clients are of this opinion. The provision of insight into mistakes in specifications and pricing, as far as transparency is concerned, remains problematic, according to some clients (e.g. large housing corporations). The majority of clients believe that construction companies take a more positive approach in the solving of problems. These figures confirm the positive development in construction since 2004 (start Regieraad, PSIB). A (positive) relation with stimulating voluntary agreements has not been a topic of research yet in the Netherlands.

Big clients	Developers		Government		Housing Associations		Companies	
working with	2006	2007	2006	2007	2006	2007	2006	2007
contractors								
that support	75	83	49	79	57	86	92	88
integrity code								

Table 1: percentage big clients collaborating with contractors that use the integrity code in 2006 and 2007 (source EIB)

Appreciation of innovative solutions
Clients appreciate innovative solutions from construction companies and find that they are taking much more initiative in this than previously. This is a significant departure from the previous measurements, when clients were less positive in their opinion. Construction companies with whom clients work regularly are distinguished by innovation orientation and in supplying quality. One in three big clients explicitly requests innovation and finds this more important than price. Innovation orientation, quality and willingness to cooperate on the part of construction companies are becoming increasingly important commissioning criteria, according to many clients.

Big Clients				
Assessment innovations of contractors by the clients	Developers	Companies	Government	Housing Associations
Are valued	100	88	80	100
Are asked explicitly	56	44	23	22

Table 2: Percentage of big clients to value innovations of contractors (source EIB)

[67] Clients have their say; 2007 Indicators (Regieraad Bouw 2008) [Dutch Council of Reform in Building and Construction]

Innovative procurement
In their procurement policy, big public clients and corporations are not alone in focusing on lifespan costs, but they focus more than the other big clients on the (lowest) construction costs. The big commissioning companies, for example, do not focus primarily on this. A large majority of them see lifespan costs as an issue for which they make allowance. In their procurement process, just over half of the clients assess construction companies on quality rather than on price. Businesses in particular are very quality-conscious. As regards public clients, quality has increased considerably in importance compared with the previous measurement. Durability and performance specifications are relatively less important in the procurement of operations. Smaller clients (small municipalities in particular) pay the most attention to the lowest construction costs and the least to lifespan costs. Lifespan costs play a big part with corporations. Compared with 2006, however, the differences are small. An exception to this is the commissioning businesses, which are paying more attention now to lifespan costs and durability.

4.2 MANAGEMENT APPROACHES

Based on practical experiences and several workshops the *Regieraad* published in 2007 the combined suggestions for improving (voluntary) collaboration[68].

Working together has to be organised
The first rule for efficiently working together is that working together does not happen automatically; you have to organise it. Just as a project plan has to be drawn up at the start of a project, including a planning, division of tasks, diagrams with regard to information requirements, machinery of internal consultation etc., a plan for efficiently working together has to be drawn up, as well. This means specifically that at the start of a project as well as at the start of every new phase a *kick-off meeting* has to be organised, in which the collaboration has to be explicitly entered on the agenda. These meetings are to be attended by all people playing a major part in the project or collaboration effort. The commissioning party is one of these people. The objective of this meeting is to get better acquainted with one another, making the group into a team and keeping it that way, and together giving shape to the collaboration for this specific project.

Points of interest
The four major items on the agenda with regard to these meetings are team analysis, teambuilding, listing interests and agreements on working together.

People who know and understand one another are more prone to find one another and work together better. In addition, it is important to gain an understanding of the characters or types of people in the team. Many tools are available in this context. These methods enable listing the team's qualities and pitfalls. The *Regieraad* publication explains these tools in detail. In order to make a team from a group of individuals, it is advisable to do teambuilding in one way or another. To keep feeding the team spirit, it is useful to organise several types of activity not only at the start of the collaboration, but also during the collaboration. Practice has shown that this creates a shared history. In addition to the shared project interest, everyone has one's own interests. These may be corporate interests but also personal interests. Interests play an essential part in working together, since interests to a large extent determine people's conduct. It is important to exchange expectations and to determine what standards and values are shared as a team for smoothly working together. It can be advised to jointly compose a top 5 of agreements on working together to which each team member can commit. Finally do not forget to deal with the question: how to deal with one another if team members fail to keep to the agreements made on working together?

4.3 LEGAL FRAMEWORKS

At the end of 2007, the Ministry of Economic Affairs presented a proposal for laying out the details of the new Procurement Act[69]. This consultation document comprises the policy proposals of the Minister of Economic Affairs for the governmental decrees. The policy proposals were drawn up after extensive

[68] Bouwen is Teamwork – Regieraad Bouw, Practical guide for successfully working together in the construction industry, April 2007

[69] Consultation Document: Proposal for contents of details of legislation in connection with the legislative proposal for the Procurement Act, Ministry of Economic Affairs, 15 November 2007

negotiations with representatives of other ministries, governmental bodies, and companies occupying a special place in the sector and umbrella organisations from the business community. The new policy aims to remove several bottlenecks occurring in the tendering implementation practice and to increase the accessibility of the legislation. In addition, the expenses for the business sector and the implementation expenses for employers will be reduced to the extent possible.

Bottlenecks for businesses
The fact that entrepreneurs always have to take account of different rules creates additional expenses. For this reason, it would be good to bring these rules in line with one another. Due to the lack of consistency, entrepreneurs are not always certain which rules apply. This creates legal uncertainty. A certain level of competition is required to ensure that assignments are granted in an honest and transparent way and that a tendering service receives the best price/quality ratio. Therefore, a consistent framework should be created for putting out to tender assignments under the threshold sums in such a way that a sufficient level of competition is created. In this context, expenses for the business community and for tendering services should be kept in mind. A reduction in expenses would allow small and medium-sized enterprises (SMEs) to have better access to the market of government assignments, for high expenses may constitute an obstacle for entrepreneurs to participate in tendering procedures. Another advantage of streamlining and simplifying the implementation of tendering procedures is that it would facilitate fully electronic tendering.

Combating unnecessary clustering
The plan is to include a clause to combat unnecessary clustering. Tendering government bodies and companies in special sectors sometimes cluster several assignments into one assignment to obtain economies of scale. However, clustering sometimes appears without there being clear economies of scale. Clustering results in larger assignments and consequently has a detrimental effect on small enterprises (SME) having access to the market of government assignments. Unnecessary clustering wrongly eliminates a segment of the market: the smaller enterprises. It also restricts competition, as a result of which employers may no longer obtain the best price/quality ratio from the market.

Forming combinations
The plan is to prescribe that combinations may not be subjected to higher suitability requirements than a single tenderer. Sometimes, combinations are subjected to higher suitability requirements than a single tenderer. This is discriminatory and in violation with the purport of Directive 2004/18/EC. In addition, establishing higher requirements for combinations constitutes a barrier to entry for SMEs in submitting a tender for government assignments.

Comments on the new procurement act
It is evident that the governmental decree to implement the imminent Dutch Procurement Act[70] is legislation that will be of great influence in the building practice. In the autumn of 2007, a large number of building lawyers tackled[71] the suggestions made in the Consultation Document[72].
When drawing up legislation on tendering, the objective of the tendering legislation is to be kept in mind. The objective of tendering legislation is to offer a procedural framework for the pre-contractual situation in which a tendering service and tenderers find themselves together. In this context, the legislator is to be aware not to favour one of the parties involved by too stringently prescribing certain conduct. One of the objectives of the new policy is to clarify legislation.

4.5 FINANCIAL INCENTIVES

When SME suppliers want to enter new ways of collaboration, especially to gain new markets by transferring their influence in the chain from the end to the beginning of the development process, these incentives could give a hand, especially focussed on collaboration.

Financial compensation arrangements

The Dutch Ministry of Economic Affairs has created a wide range of financial compensation arrangements to be designated for the SME. The most important focus areas are:

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70 Dutch Lower House 30 501.

71 Organised and written by M. Chao-Duivis, IBR (Institute for Building Law, The Hague)

72 Consultation Document about the consequences of the new procurement act, offered to the Dutch Lower House on 29 November 2007.

- Technology, innovation & development
- Environment & energy
- Workers & education
- Investments
- Export
- (International) collaboration & knowledge transfer

Within the focus area Technology, Innovation & Development, related to voluntary collaboration, financial compensation arrangements can be provided for technological collaboration with other companies (national or international) and innovative collaboration projects.

The act Financial Compensation Arrangements on Innovation has the objective to improve the national and international technological collaboration. Arrangements are focused on collaboration between companies and on collaboration between companies and public research institutes. With the aid of innovation vouchers SMEs are able to collect knowledge on the one hand and ask specific questions to knowledge providers on the other hand.

5 NATIONAL 'APPROACHES' TO PROMOTING APPLICATION

5.1 EFFECTIVENESS OF NATIONAL PROMOTIONAL INITIATIVES

In 2004 the Dutch Central Government appointed a Steering Council for the Construction Industry (*Regieraad Bouw*) to start and lead the intended process of change within the building and construction sector, supported by the national PSIB research programme. The PSIB programme was structured in clusters of themes representing the issues for change, each led by an experienced industry practitioner, assisted by a scientific manager, in order to guarantee an effective co-ordination when putting research into practice.

The PSIB (Process and System Innovation in Construction) is a national programme for construction change, analogue to 'Rethinking Construction' in the UK and similar programmes in other countries. It brings together the major stakeholders in the Dutch construction industry: clients, contractors, suppliers, consultants, research institutes and universities, with the aim of securing a step change in industry performance through process and system innovation. See for more detailed information about the *Regieraad* and PSIB par. 2.3 (History of reform initiatives).

Effectiveness
After four years of intense activities in which the *Regieraad* has been working to convince and to mobilize the construction industry of the necessity for renewal and to really model a new culture in this sector, there are some remarkable results to observe. Although there is less scientific evidence based on research on the scale of redevelopment in the Dutch construction industry, several signs point out the growth of awareness in The Netherlands of the necessity of renewal in the construction industry. They will be presented in the following paragraphs.

Steering Council II - Regieraad Bouw II
There is clearly some talk about a growing and common ambition and decisiveness to transform the construction industry to an innovative, transparent sector that can compete based on quality. In January 2007 the Dutch Central Government appointed a follow-up Steering Council for the Construction Industry (*Regieraad Bouw* II). The new *Regieraad* is focussing mainly on the practice of renewal at clients, companies and projects. There is a close relationship with the five regional councils and the collaboration with the PSIBouw is an important condition for success.

Endorsement
In 2005 the *Regieraad* launched the Construction Renewal Offensive; a vision combined with a multiannual programme with special aims and priorities. With crucial themes as transparency, innovation and quality-costs ratio. Through Renewal Agreements 14 branch and representative bodies have endorsed the vision and ideas of the *Regieraad* and have taken their own responsibility in the renewal offensive. It concerns *Bouwend Nederland* (contractors and SME in construction), ONRI (advisors, engineers), UNETO-VNI (installations, facilities), NVTB (suppliers), VNG (public municipalities), het *Bouwcollege* (health care institutions), BNA (architects), UvW (water authorities), IPO (Dutch provinces), NEPROM (project developers), NVB (construction entrepreneurs), HIBIN (construction materials trade), Conga (constructors federation) en Aedes (housing associations). By the search for collaboration with these 14 representative bodies a solid basis is created to spread the message of the *Regieraad*. Clients, project developers, contractors, installers and suppliers are actually involved now with the renewal offensive.

Syntens (SME) and PIANOo (public clients) are directly connected to the renewal offensive. On an international level there is been taken care to built relations and to learn from experiences abroad. DelthaNeth (European Construction Technology - ECTP) keeps The Netherlands connected to renewal activities in the European context.

Construction Education
In December 2006 the *Regieraad Bouw* published the key publication for construction education 'Construction the metier'. This publication outlines a perspective on construction in the future and the role of education and training. Bottlenecks and problems in construction education have been inventoried and analysed.

5.2 ROLE OF FISCAL OR FINANCIAL MEASURES

The measures described in this paragraph are not especially focussed on collaborative agreements. On the other hand new developments in that direction could use part of these common measures. As already mentioned in par. 4.5 (Financial incentives), the Dutch Ministry of Economic Affairs (*Ministerie van Economische Zaken*) has created a range of financial compensation arrangements to be designated for the SME. An important focus area is 'Technology, innovation & development'. In this programme financial compensation arrangements can be provided for collaboration with other companies (national or international) and innovative collaboration projects.

SenterNovem
SenterNovem is an agency of the Dutch Ministry of Economic Affairs[73]. They promote sustainable development and innovation, both within the Netherlands and abroad. The core competence is converting government policy into reality. On behalf of the Dutch government *SenterNovem* implements policy regarding: Innovation, Energy and Climate Change, Environment and Spatial Planning. *SenterNovem* also works on behalf of international organisations such as the European Union, the International Energy Agency (IEA) and foreign governments.

SenterNovem facilitates public-private collaborations through working agreements, drawing up plans and by making sure everyone keeps to their end of the deal. They promote collaboration in order to unlock knowledge and bring those who possess knowledge and those who require it together.

Innovation Performance Contracts (IPC)
Innovation Performance Contracts (IPC) is a new policy instrument designed to stimulate innovation in small and medium-sized enterprises (SMEs). It aims at facilitating collaboration and the transfer of knowledge within a group of SMEs.

EG-Liaison
EG Liaison is set up to encourage and support Dutch researchers and companies to participate in European research funding programmes, especially the European Commission's Framework Programme for Technological research and Development and the Competitiveness and Innovation Programme.
The EG Liaison staff provides information, including free and independent advice on project ideas and proposals, to potential participants in the Netherlands and abroad. They also offer training in writing proposals, understanding legal and financial aspects of EU funding programmes and project management.

Innovation Subsidy for Collaborative Projects
Setting up international collaboration projects is an excellent way to share research & development costs and provide both partners access to each other's information, networks and markets. *SenterNovem* therefore initiates 'match making trips' to foreign countries, hoping to spark collaborations between Dutch companies and counterpart's abroad. Through a subsidy scheme called 'Innovation Subsidy for Collaborative Projects', the Dutch Ministry of Economic Affairs further supports such collaborations.

5.3 INFLUENCE OF PUBLIC CLIENTS

Introduction
This paragraph is based on best practices in setting output specifications for Dutch government PPP-projects and will describe performance-based briefing with special focus on client and end-user involvement[74]. This paragraph specifically deals with performance based briefing and related subjects in PPP-projects and not with other important aspects of PPP-projects such as contract, finance etc. For the RGD, acting as the national corporate real estate agency, the client is generally also the end-user. The term 'client' in this paragraph therefore covers both the construction client and the end-user. The RGD believes that PPP-projects will improve the price-quality ratio: cost efficiency versus the quality of the

[73] http://www.senternovem.nl (april 2008)
[74] Zeegers A., Ang G., Client involvement in performance based briefing in PPP; Dutch best practice, CIB 2007

end result. Integration of design and exploitation stimulates innovation and added value for the client. Therefore, all projects of more then 25 million euro (investment-, interior- and user costs), requires a comparative study whether PPP will be given surplus value, prior to project initiation.

Performance based briefing
Describing performance requirements (output specifications) for projects has become an important impulse for the RGD to develop an approach, which will increase the user satisfaction and faith in the end result. Especially for PPP-projects, with a long contract period, it is important that the client will recognize his input and has faith in the outcome and its flexibility over time. If the client is suspicious and/or dissatisfied, it is very hard to create a real partnership during the rest op the contract.
In order to ensure a proper process where risks are allocated with the right party, risk management may be organised according to best competence of demand and supply parties.

In general the client competences are apparent in the domain of demand and the domain of use, while the competences of the supply chain players is manifest in the domain of production. In traditional contracts all supply parties are contracted separately, and the contract partners are individually responsible for their input in the domain of production. In an integrated Design Build (eventually extended with finance-maintenance-operation) contract a consortium covers a single point responsibility within this domain of competence.

Points of attention
In PPP-projects the output specification is a very important contract-document. It is de basis of the whole project and requires major attention. Different parties are involved in making a brief and lots of documents are produced to describe what kind of building the client/end-user wants. This makes it a complex matter and experiences learn that lots of things can go wrong as a result of language problems between several parties, the number of documents and the tuning of the different documents and the verification between demand and supply.

6 RELATIONSHIP TO EUROPEAN AND OTHER POLICIES

6.1 PROCUREMENT

In this paragraph suffices a summary of the consultation document about the new procurement act of the Ministry of Economic Affairs:

- Unnecessarily high costs because of inefficient procedures and because clients use different procedures for assignments that are below the EU procurement thresholds.
- Legal uncertainty because of unclear legislation.
- Employers do not fully abide by the rules because they are insufficiently aware of regulations and because regulations are insufficiently accessible.
- Assignments are granted to contractors of insufficient integrity because their integrity is insufficiently assessed.
- Contractors are faced with unreasonably high suitability requirements because clients have an insufficient level of professionalism.
- Procurement guidelines do not apply to assignments with a value that is below the European threshold sums, but the essential principles of the EC Treaty do apply. There is a lack of clarity as to the way in which these principles are to be deployed with regard to this type of assignment.
- The fact that entrepreneurs always have to take account of different rules creates additional expenses. For this reason, it would be good to bring these rules in line with one another. Due to the lack of consistency, entrepreneurs are not always certain which rules apply. This creates legal uncertainty.
- Tendering government bodies and companies in special sectors sometimes cluster several assignments into one assignment to obtain economies of scale. Clustering results in larger assignments and consequently has a detrimental effect on small enterprises (SME) having access to the market of government assignments. Unnecessary clustering wrongly eliminates a segment of the market: the smaller enterprises. It also restricts competition, as a result of which clients may no longer obtain the best price/quality ratio from the market.
- Entrepreneurs are regularly confronted with unnecessary suitability requirements or suitability requirements that are too high. This problem is caused by the fact that some tendering services have an insufficient level of professionalism.

4.1 6.2 SMES

In the comments on the Consultation Document[75] the IBR[76] wrote amongst others:

The impression is that many of the proposals have been inspired by the political need to meet the requirements of small and medium-sized businesses (SME). It is not considered undesirable that a distinction is made between SME objectives and sector objectives and that this distinction is taken account of (for example, as done in the document with regard to technical and professional skills). Examples of legislation that may have been inspired by such political motives include the proposal relating to unnecessarily clustering assignments. Part of the problems surrounding tendering law would be solved if clients were to conduct themselves more professionally, on the one hand, and if the SME were to consider tendering as an opportunity, on the other. In other words, tendering law is neutral by nature, something which tendering policy is not always. For example, not observing the principle of proportionality, which constitutes the basis of tendering law, makes that tendering policy sometimes has negative results for the SME. If tendering services acted more in line with this principle, less steering would be required towards any specific economical group.

Tendering law is neutral by nature, something which tendering policy is not always. For example, not observing the principle of proportionality, which constitutes the basis of

[75] Consultation Document about the consequences of the new procurement act, offered to the Dutch Lower House on 29 November 2007.
[76] M. Chao-Duivis, IBR (Institute for Building Law, The Hague)

tendering law, makes that tendering policy sometimes has negative results for the SME. If tendering services acted more in line with this principle, less steering would be required towards any specific economical group.

In the near future three major trends will dominate the European housing market: market saturation, energy transition and internationalization. Market saturation is observed on both the Dutch and European market with its decreasing population, ageing housing stock and declining production of new buildings. The market change from supply to demand brings the customer in the driving seat. The second trend concerns the European energy policy of energy saving and stimulation of alternative energy sources (independency EU). The third trend concerns the fulfilment of the European internal market. Not only products but also services can be offered and delivered increasingly without barriers to trade across Europe. As regards the second trend of energy transition, the Dutch building regulations have stringent energy safety requirements for buildings. Moreover, there is an encouraging policy of sustainable building. Concerning the third trend of internationalisation, the harmonisation of building regulations made it possible for the housing sector to market housing concepts across Europe via the so called European Technical Approval. Appropriate answers to the above mentioned trends will improve both the competitiveness of the Dutch housing sector and create added value for the end user i.e. the customer[77].

6.3 EMPLOYMENT

Like other industries, the construction industry will be confronted with shortages on the labour market. The building materials industry can respond to this by supplying prefabricated components. These render the manufacturing and construction processes less labour-intensive and can make up for the shortage of manpower in the construction industry. Another advantage of prefab components is reduced delays in the building process, since factory production is possible without being subject to the influence of weather conditions, allowing a more efficient deployment of personnel by implication[78]. Shifting a large part of the construction volume to factories compared to actually assembling on the construction site (see par. 3.2 case Esprithuis) not only makes construction less vulnerable with regard to the quality to be realised, but also generates savings on labour costs compared to a traditional construction. As the availability of labour force for the local construction market becomes an increasing problem for the traditional construction market, this new form of collaboration will be much less vulnerable in this context.

More joy in working and less stress. This may be the most important advantage of voluntary agreements and collaboration. In the construction industry, people often work under enormous stress. Working together better will result in more joy in working and research has shown that satisfied employees perform better[79].

There are very good reasons for collaborating with other parties. Oft-cited strategic reasons are the restricted failure costs, timesaving and quality improvement. Collaboration also provides the participants with an interesting work environment[80].

6.4 ENVIRONMENTAL ISSUES

High population density and relatively high environmental taxes have benefited developments in sectors of the Dutch building and construction industry that deal with waste and water treatment. Environmental management has succeeded in the NL because both business and government benefit

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[77] Thillart C. van de, Esprithuis European Hybrid Open Housing Concept, mei 2007

[78] Van Sante M., Leeflang N., ING, HIBIN, NVTB, *Toeleveranciers bouw; de juiste ketenstrategie*, (Suppliers to the construction industry; the right chain strategy) 2007, ING Economic Bureau

[79] Construction is Teamwork (*Bouwen is Teamwork* – Regieraad Bouw), Practical guide for successfully working together in the construction industry, April 2007

[80] Kaats E., *Organiseren tussen organisaties*, Twijnstra Gudde, 2007 (Organising between organisations)

from it. The special effect of NL environmental policy is the degree of self-responsibility/accountability that it confers to the companies[81].

The efforts of PSIBouw should lead to a fundamental and irreversible regeneration movement in which all the links in the construction chain and the interests of users and environment are involved[82].
As of 2010 the Dutch Government will by all products and services only based on environmental principles. This can vary from office supplies to complete buildings. At this moment the Ministry of VROM is formulating environmental criteria for 80 different product groups[83].

[81] *PSIB/PP1; Context of the Dutch Construction Industry; Drivers behind revaluing construction;* Ang G., Geraedts R.P., 2004.
[82] From the programme of PSIBouw, 2004
[83] Podium 07, *Bouwend Nederland*, April 2008.

7 CONCLUSIONS

7.1 OVERALL BENEFITS

Important drivers
Although not proven by scientific research there is a common sense in the Netherland about the fact that new forms of (voluntary) collaboration could improve the poor image of the sector, the hampering competition, the inefficiencies in production and marketing mechanisms, causing a low-profit business profile were the major driving forces for change, acknowledged by stakeholders in both government and sector, considering that this is the most important sector in terms of contribution to the GNP and labour employment[84],[85].

The important drivers for the PSIB are: improvement of social-economic benefits from construction, increase of added value to the client and other stakeholders, increase of profitability of the construction industry, creation of a competitive environment that stimulates innovation, thus enhancing the image and reliability of the industry, accumulation and rapid utilisation of knowledge.

For suppliers: added value in the chain
Voluntary collaboration can contribute to added value in the chain. Through chain optimisation, processes between the various links in the value chain are improved, so that the result is optimised for the entire chain and for each partner within it. In the construction chain, suppliers can cooperate, for example, with contractors, and internal business processes can be coordinated. Failure costs and coordination problems can thus be restricted. In the added value chain, the various links in the chain work less on an ad hoc basis and collaborate much more intensively; information is exchanged and internal business processes are coordinated[86].

For suppliers: increasing influence on market and turnover
Manufacturers develop a strong need to get more grip on the employer's or client's demand specifications. Merely developing innovative products is insufficient. The products will also have to be used somehow. Until that moment, manufacturers found themselves in a dependent position at the bottom of the construction chain: a dependency on contractors and subcontractors with a usually traditional and non-innovative way of thinking. Obtaining more of a grip on clients' demand implies a forward integration in the chain and a direct approach to consumers. This is the only way to gain more influence on the market and, hence, to secure or increase one's own market turnover[87]. Voluntary collaboration can contribute to that.

For developers: innovative solutions
Integral solutions are commercially most successful. Voluntary collaboration in an early development phase can contribute to that. Customers are increasingly demanding an integral approach to infrastructure and accommodation challenges. A sustainable tailor-made solution calls for a lifecycle approach that brings together design, realisation and operation. With the objective of achieving an optimal result in terms of quality, costs and yield. Such a solution contributes to the success of the customer and thus also to the success of the developer[88].

Collaboration provides a fertile breeding ground for renewal and creativity. Parties that bundle their strengths as good partners or co-makers can effectively capitalise on the available knowledge and expertise. A developer draws on that strength in both internal and external alliances.

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84 Note on future perspective construction industry; Min. VROM, EZ, V&W, 2003

85 Regieraad Bouw (Dutch Council of Reform in Building and Construction), Bouwen is Teamwork - Construction is Teamwork; Practical guide for successfully working together in the construction industry, April 2007.

86 Van Sante M., Leeflang N., ING, HIBIN, NVTB, *Toeleveranciers bouw; de juiste ketenstrategie*, (Suppliers to the construction industry; the right chain strategy) 2007, ING Economic Bureau

87 Esprithuis, April 2008

88 Strukton, April 2008

For public clients: stimulate innovative solutions
One of the decisive arguments causing the government to opt for the PPP model is the opportunity to implement innovative solutions. This is the main motivation of the Government Buildings Agency for collaborating with a consortium (consisting of different market parties) that contributes its specific knowledge and expertise as a contractor[89]. Voluntary collaboration in an early development phase can contribute to that.

Main obstacles
Market demand exceeds supply
One of the case studies indicated that the birth of voluntary agreements have been complicated by a number of causes. For instance in the housing sector the demand for dwellings is still higher than the market supply. The consequence in this context is that traditional market players are hardly forced to take account of consumers' specific requirements and willing to start new forms of collaboration[90], and that traditional sellers usually adopt a wait-and-see attitude with respect to early collaboration with suppliers and manufacturers[91]. At this very moment the same situation can be noticed in other sectors of the construction industry.

No financial incentives
In contradiction to the financial compensation arrangements by the Ministry of Economic Affairs described in par. 4.5 and par. 5.2 (SenterNovem), suppliers think there are no sufficient financial incentive programmes or means, both on a national level and on an international level, to provide the necessary injections in the construction sector within the framework of new forms of (voluntary) collaboration, manufacturers' forward integration into the chain, and more customer-oriented construction.

ICT and collaboration
Due to the new form of early (voluntary) collaboration in the construction chain, the possibility for various collaborating suppliers to enter into direct consultation with future (potential) clients, the problems with mutual coordination of their various ICT systems are becoming very manifest[92].

Recommendations
Initiating and documenting of pilot projects
Part of the resistance of traditional clients and sellers can be removed by showing in practice what the possibilities and advantages are of voluntary collaborations, for example, in the form of well-monitored, documented and evaluated pilot projects. It is important to show what advantages the various parties involved may have by an early collaboration with one another in this new way and by involving manufacturers in the development even at an early planning stage[93]. In addition to this, it is important to make available more means to test the mentioned developments in the new collaboration between parties in the construction chain in practice by means of conducting several pilot projects, documenting and assessing them, and subsequently comprehensively reporting on them to the various target groups[94].

Coordinating various ICT systems
The problems relating to communication and coordination in an early (voluntary) collaboration between the various parties in the chain due to individual uses of various ICT systems have to be solved. The various systems will have to be better aligned to one another. Suppliers can, for example, be a part of a construction team, in which various parties start at an early stage on the design and preparation of the construction project. ICT can deliver solutions for exchanging the right information as early as possible in the construction process and for informing all the interested parties immediately of any changes[95].

Governmental support
It is of the utmost importance for the parties in the Netherlands supporting the described new forms of collaboration that the government gives its positive opinion in this context. This would automatically

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89 RGD, April 2008
90 Esprithuis, April 2008
91 Esprithuis, April 2008
92 Esprithuis, April 2008
93 Esprithuis, April 2008
94 Esprithuis, April 2008
95 Van Sante M., Leeflang N., ING, HIBIN, NVTB, *Toeleveranciers bouw; de juiste ketenstrategie*, (Suppliers to the construction industry; the right chain strategy), ING Economic Bureau, 2007

create a much larger support in the Dutch construction sector. Particularly the traditional and conservative parties would be much more inclined to think and act along in the new forms of collaboration[96].

7.2 PERMANENT CHANGE IN CONSTRUCTION RELATIONSHIPS

Birth and development of collaboration forms
The Strukton Company is involved with all the three cases described in par.3.3 and Appendix 4. In all the three cases Strukton looked for and found different partners for design, construction, services and j

7.3 EFFECTIVENESS OF PROMOTIONAL APPROACHES

After three years of intense activities in which the *Regieraad* has been working to convince and to mobilize the construction industry in the Netherlands of the necessity for renewal and to really model a new culture in this sector, there are some remarkable results to observe. The awareness in The Netherlands of the necessity of renewal in the construction industry has been grown on a large scale. Although real evidence of performance improvement based on financial economic research in the comparison between traditional collaboration situations and new innovative ways of (voluntary) collaboration, is not available yet in The Netherland. Neither is known what the consequences are of these collaborations in terms of enlargement of the market turnover of the different parties involved. On the other hand looking into several recent publications and congresses of the Dutch *Regieraad* and looking into a lot of statements of individual parties (case studies), one could establish that there is an increasing majority of people (and companies) who strongly believe that these new forms of collaboration will lead to performance improvement in the construction sector.

[96] Esprithuis, April 2008

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COUNTRY REPORT

NORWAY

CONTENTS

1. Introduction

1.1 The Norwegian construction industry

Norway is a kingdom with (only) 4.6 mill inhabitants, situated at the Scandinavian Peninsula (together with Sweden). The national policy has been to "keep the countryside populated". With thousands of islands and fjords, mountain barriers, harsh climate and villages and cities spread over the approximately 2000 km long country, the construction industry has met many and different challenges over the years, especially on the field of production and maintenance of infrastructure (harbors, roads, railways, bridges, tunnels, airport, hydro power plants).

There is still a national ambition to have a spread pattern for living and working. Even so, the last decades have been characterizes by the allocation of people in the regional "capitals". Oslo, the national capital has been the strongest "magnet" for such concentration of people and working places. Approximately 1.5 million inhabitants are living in Oslo region today. Concentration brings new challenges to the construction industry, with respect to infrastructure (civil engineering), as well as public and private construction of residential and non-residential buildings.

The production of the construction industry of Norway is today (2007) approximately 30 billion €. As details for 2007 still is lacking, we show distribution into the main categories of construction work for the year 2006, based on information from Euroconstruct, see table 1.

Table 1
Norwegian construction industry (2006)

	2006 Volume bill euro (€)
Building (total)	**23 106 (79 %)**
NEW	13 036 (56 %)
Renovation	10 070 (44 %)
Civil engineering (total)	**6 208 (21 %)**
NEW	4 112 (66 %)
Renovation	2 096 (34 %)
TOTAL	***29 315***
Total NEW	*17 148 (59 %)*
Total renovation	*12 166 (41 %)*

Break down of the Building production figures in table 1 is as shown in table 2:

Table 2
Production of buildings in Norway (2006)

	2006 Volume bill euro (€)
Residential construction (total)	**11 121**
NEW	5 018 (45 %)
Renovation	5 303 (55 %)
Non-residential construction (total)	**11 984**
NEW	7 218 (60 %)
Renovation	4 767 (40 %)

The figure for renovation in residential construction (5 303 mill €) includes the households' own work on new dwellings. Consequently the aggregated renovation figure in table 1 (Building, renovation; 10 070 mill €) also includes this type of production.

The development and maintenance of the offshore oil and gas installations is not included in the figures above (but the land based construction activities are).

Figure 1 shows the development in total production in construction sector during the last 12 years.

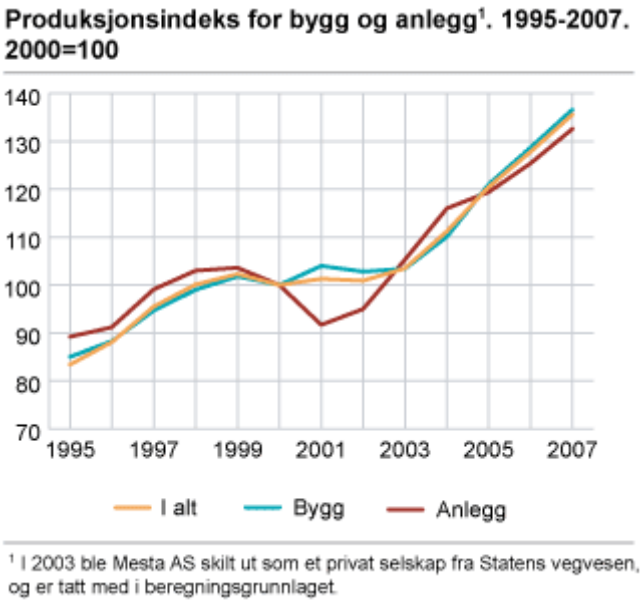

Figure 1
Production index for construction work (civil engineering and building) in Norway 1995 – 2007. Source: Statistic Norway

With an exception for civil engineering 1998 – 2001, there has been a strong growth in the production, i.e. in the clients' demand (need) for the service of the construction industry (the contractors). For most types of contracting work there has been "an inverse competition", i.e. a competition among clients to have the contractors' to participate in tendering. Parallel to this, the constant competition among the contractors in the market, even so boosting, has lead to the search of new ways into construction contracts, i.e. without the unimaginative competition on prices only – with rather low probability to gain the contract.

On this rather simplified, but still representative background, different types of voluntary arrangement have been developed both from the clients and from the general contractors – and even other parties in the industry. It started among the contractors and the inspiration seems to arrive through international operating contractor(s) that had establish different kinds of collaborative models in other countries (f. ex. Denmark) – based on impulses from the development in UK at the early '90s. On the other hand voluntary arrangements in construction are not new in Norway. There are lots of examples of successful voluntary arrangements in construction in old (the 1950s) and resent (the '70s) history. On bright example is the

very first building of the University of Tromsø, which in 1967 was ordered by the Government from one "pre qualified" contractor by the statement "This is the site. Let us have as many square meters as possible for 50 mills NOK ready for use by September next year!" (Roughly quoted).

The new thing is, however, that the concept (idea) has been developed into industrial models, especially by the companies constituting the frontier group. This group seems to consist of the major general contracting companies. However, this picture may be modified if we had made closer observation into the many small communities (that still exist) in the country. In such places, where "everybody knows everybody" and there are few of each kind of professionals, voluntary arrangement in construction has often been the ruling way of having solved a task, even when public projects were on the agenda. This "just do it approach" has changed gradually, basically as a consequence of the development in general ("regionalization", see above) and later through the new threshold named Law of public procurement (the Norwegian application to the EU Directive of public procurement).

1.2 Summary of the construction business system

The tables above (chapter 1) tells following about the Norwegian construction industry

1) Aprx. 40 % of the total construction turnover is maintenance activities. This is a type of work that normally is purchased through tendering models or as frame contracts for a period of time (one year or more). All these types of work/contracts might have elements of voluntary, pre-contractual arrangements with a "win-win" thinking as goal. Though, it is not possible to describe these numerous approaches into one, or a few, generic models for voluntary arrangements in construction.
2) Aprx. 20 % of the total construction turnover is civil engineering work. This is mainly work purchased by central, regional (county) or local (municipality) authorities. Roads, railways, harbors, airports, hydro power dams and plants, etc. are as a rule purchased through price tendering on specified deliverances. But the circumstances, i.e. the long lasting expanding market for construction services (see above) has encouraged the public clients to try new ways into construction contracts. Some "signal projects" (pilots) are worked out. All of them are on the concept of Build-Finance-Operate-Transfer (PPP/BOT), with the financial aspect as the most addressed, and consequently not within the EU Commission/MSG definition of voluntary arrangements.
3) Aprx. 80 % of the total construction production concern buildings (new and renovation). Construction of new buildings constitute 56 % (13 036 mill €) of the total production in the building segment, of which again 40 % are residential buildings and 60 % are non-residential buildings.
    a) The residential buildings group comprises single family houses, row houses etc. – and blocks of flats. The latter is the fastest growing type, but still is the production of single/few family house dominant (2007: Aprx. 60/40). Almost all residential housing is produced for private clients, mainly for sale to individual owners of house or apartment. The operators in this segment of the industry are mainly professional developers, who are creative and flexible concerning economical risk in a project. Different voluntary arrangements are one established way in this respect. – There is a "grey zone" between residential and non-

residential housing where public clients are visible. This is buildings for student homes, nursing homes, military barracks etc. In addition to the private project, these kinds of projects seem to be suitable for adoption of collaborative models in construction, see case 2 below.

b) The non-residential buildings group is diversified (buildings for education, health care, industry, agriculture – office and commercial buildings etc.). This kind of building projects is both public and private ones. The ratio is not evident, but we estimate it to be 30/70, i.e. most often private projects but a considerable part with a central, regional or local authority as client. – What about voluntary arrangements? In the private segment of the market voluntary arrangements is an established way of acting, though still as an alternative to the "classical" ways into contracts. Even the public clients participate in such collaborative models, but seemingly more reluctant. See discussion below.

2. Stimuli for the promotion of voluntary collaborative arrangements

In some countries, f. ex. Denmark, voluntary arrangements in construction has been stimulated by regulatory means. This is not the case Norway. One might say that the situation is rather contrary. Even if the law on public procurement (Law 1999-07 – 16-69), which is the Norwegian application to the European Parliament and Council Directive 97/52/EC, don't strictly forbid alternatives to procurement based on "lowest price", it seems that the regulatory initiative has underpinned this long established alternative among procurement regarding construction projects.

There have, however, been some minor stimuli, through the way individual authorities (regional and local) have acted, based on a less firm interpretation of the regulation. To be more specific, where general contractors have been invited to participate in competitions where not only price is the issue, but also collaborative capacity, financing and management of the building (PPP/BOT) is part of the competitive basis.

In resent time, after a period with seemingly less initiatives of this type, there is increased attention to the model and now also at the central authority level. Different aspects of voluntary arrangements as basis for construction contracts are about to be discussed both at the field of civil engineering (Directorate of Roads and Railways) and non-residential buildings (The Directorate of Public Construction and Property). Such initiatives among those (and other) influential public clients should be understood as a kind of stimuli to the contractors, even if the collaborative models not will be the ruling way of purchasing in the short run.

The private sector of the construction market doesn't have any significant stimuli either. But the clients' interest for this type of arrangement is indisputably encouraging the contractors (and their allied) to develop their competence to meet that kind of challenges.

The most actual argument for search of new models for contractual co-operation, for all parties in the construction sector, is however the escalating prices/costs. The two figures below should clearly indicate the need for price/cost reducing initiatives of all kinds and at all levels.

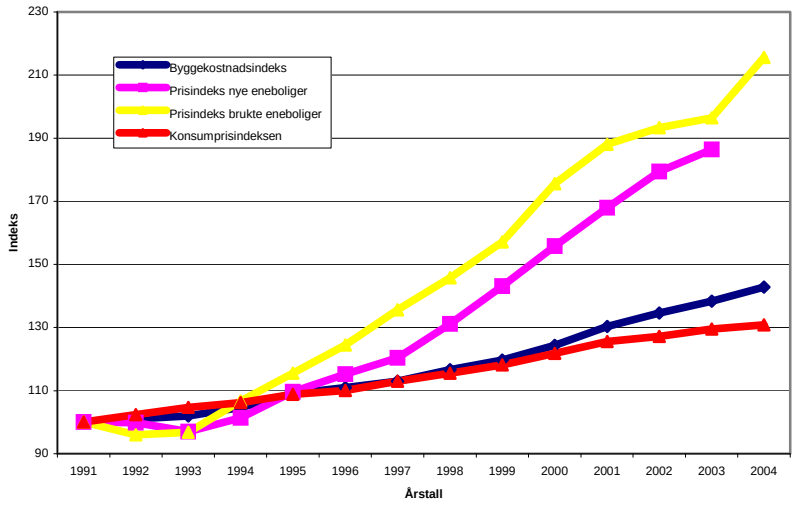

Figure 2
Example of the development of *price* (yellow graph and pink shows one family houses, existing, respectively new ones) and *cost indicators* (red graph and black graph shows consume price index, respectively building cost index) – in the period 1991 – 2004 (Statistic Norway)

Figure 2 shows that the market prices for one family houses, both used and new ones, have grown much stronger than the general costs in the same period. This is (more or less) a picture of the construction market in general. Compared to the cost index graphs, the gap seems to tell that the *market pull* opens for high profit for the last link in the value adding chain (the developers). It might be so, but the developers, a group that include many the general contractors, claims that their profits not are *that* big, i.e. that the building cost index (BCI) makes a rather poor reflection of the real construction market situation.

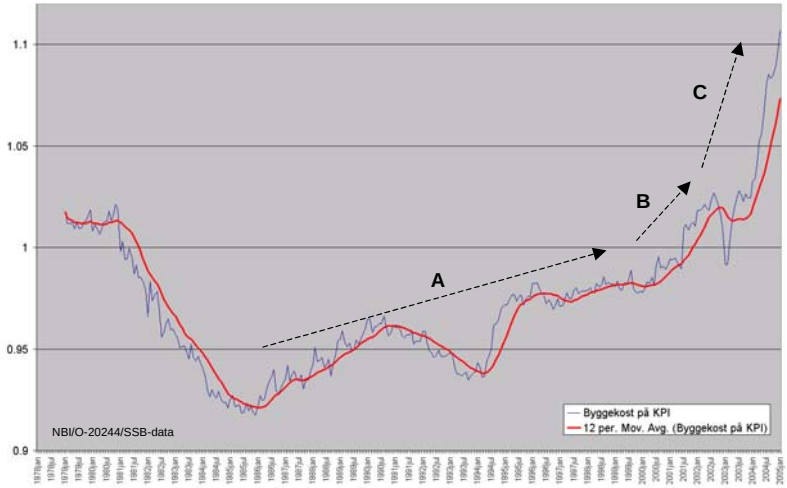

Figure 3
Development of the ratio BCI/CPI (Building cost index on Consume price index) during the period 1978 – 2005. Source: Statistic Norway/SINTEF Byggforsk

See figure 3. The ratio BCI/CPI (Building cost index on Consume price index) will in a balanced market fluctuate around 1.0 – depending on the business cycles in general and the construction market in special. The graph shows the development of this ratio for the period 1978 – 2005. The ratio seems to react rather instant on changes in environmental conditions (frame conditions), and tends to find the balance level again, i.e. close to 1, as soon as the frame conditions are adjusted. From approximately year 2000, however, it seems that the construction sector has started "a life of its own" where each link (supplier) in the value chain is subjected to escalating prices from its preceding link, i.e. its suppliers of materials, components, semi-products and services. – The situation calls for creativity. Different concepts for voluntary arrangement in construction projects are apparently one of those.

3 Forms of collaboration

As sketched in chapter 3, the means of promoting voluntary arrangement ahead of a contract for construction projects are few, all and company individual and often also designed out of the current market situation. There seems to be three basic types

1) (Project partnering or Construction consortia). The owner/client invites teams to apply for pre qualification, or directly to participation in a competition on conceptual solution and operational frame conditions, after which one of the teams are invited to proceed together with the client in collaborative development of the project. A crucial part of the models is the Target price (budget price), which should be established early in the project phase (on pre project basis). This forms the mutual steering point, which the project team collaborate to meet through shared responsibility, openness and profit share as means and incentive. The models normally rest on a design - build type of contract between the client and the team. Such models can be seen both in public projects and in private ones. The extreme variant of this model is the one that is completely without competition, i.e. the owner invites a given general contractor, or a set of special contractors, to sit in during the design phase, to participate in the budget work, and later accomplish the work with a "roof price" as steering guide. This model is only known from private sector – and seems to have long lasting, tacit business relations as basis, see earlier notions about small communities etc.
2) (Project partnering). The contractor takes the initiative and succeeds in convincing the client that his model collaboration, more or less similar to the principles that are sketched above, should be preferred. The model can be defined as a prolongation of earlier time's ('70s –'80s) acquisition of Design - Build project accomplishment, though with higher degree of insight/openness for the client in the contractor's project account, real collaboration for search of optimal solutions, and well established systems for profit share with respect to the cost savings. Due to the Law of public purchasing (EU directive of public purchasing), these models are solely seen in the private sector.
3) (Project partnering, strategic partnering or framework agreements). A Norwegian construction project is most often organized with an independant management function that assists the client and act on his behalf towards (the designers and) the contractor(s). A number of companies with Project management/Construction management as business idea have emerged. Among those there are some that have developed their own collaborative model. Their risk taking is less than that of the client and the contractor(s). On the other hand, they have competence and systems needed for establishing a project budget (Target price) or "Roof price" - and are also qualified for taking the role as an active facilitator of the collaborative processes in the project. It seems that this position and approach has been successful for the actual companies. Their "in-between" position seems to make those kinds of companies more flexible towards the purchasing regulation for public clients. Consequently this kind off arrangements made the first wave of (more or less) voluntary arrangement projects in resent time.

A certain version of collaboration, which may include elements of voluntary arrangement but not always, are the contract based on the fact that a contractor possesses a site and invites a client to form an association (single purpose

company) for the development and accomplishment of a construction project. This happens rather often within field of housing. Even if there are real elements of collaboration, this seems often be limited to the relation between the developer and the general contractor, whereas the consultants and sub-contractors often are purchased based on price tendering. (Strategic partnering)

Examples of project outcomes
We will present two case examples. Both of them concerns public clients and their way of perform voluntary arrangements for accomplishment of building projects. The cases shows how a public client at national level (1), and another at local/municipal (2) level, operate when they administer their versions of voluntary collaboration in construction.

We have chosen public clients because their situation is more demanding with reference to the procurement restrictions. For the clients (companies and individuals) in the private sector there are no legal hindrances of similar kind. However, the major private clients (companies at the stock exchange lists, etc.) do often act similar to the public clients. See annex 1 and 2.

4 Views on the impact of voluntary arrangements on competition and markets in the country

We don't know exactly the volume of voluntary arrangements in Norway, not the present volume nor the volume f. example during the last ten years. As suggested in the introduction we do believe that the scattered settlement and close connections between people in small communities made such arrangements suitable and frequent in earlier days – even often without written contracts. This is not longer the case. In modern Norway voluntary arrangements in construction started with non-competition based design - build contract between clients and one selected general contractors of good repute (there are some!) Even public clients found this type of arrangements suitable under certain circumstances. However, this kind of collaborative projects has been few compared to the total production, roughly a few percent of the turnover. Gradually – during the '80s – Design- Bid - Build projects, with participation of more than one contractor, and often many, came into the market as an often preferred model, presumable to the sacrifice of the real voluntary arrangements. On the other hand there has been a development where many general contractors have taken the owner/developer position, too. This type of strategic Design-Build projects has been accountable and probably growing in volume.

With increased in-house design management competence (and to some extent also design competence) some of the general contractors were ready to act as soon as they observed the growth of collaborative models in the Danish construction market. We anticipate that the volume of different voluntary arrangement in the Norwegian construction market during the last 10 – 15 years has exceeded the level of the '70s. Even so, it still is a modest part of the construction production per year, estimated to 2 - 3 %.

However, we believe the impact to be stronger than this tiny share of the total production due to the fact that there are an increasing number of contractors that offer collaborative models which seem to be evaluated as beneficial by an increasing number of private clients. In addition, and this is probably even more important, some of the leading public clients are about to take into use models which are in harmony with the Law on public procurement (i.e. the EU Directive of public procurement).

Reported results from completed projects according to such arrangements are positive, as one of the cases below will show. The crucial issue in this approach is an initial competition among a few (3 -4) pre-qualified teams on a conceptual basis, i.e. not on the project price. One may argue that this is not a real voluntary arrangement. The opposite view is that the voluntary aspect is fully taken care of after the initial, conceptual competition, see more below (8 Views on consistency with EU-policies).

Even if there is a certain number of contracts based on voluntary arrangements, and this number most certainly will increase, it will constitute but a minor part of the of the total construction output. Still it must be regarded as important, due to the fact that the model has demonstrated that there is an alternative way of collaboration to the classical approach with smaller, and even severe, conflicts as close follower.

It seems obvious that some of the experience form "the first wave" (early '90s) is that voluntary arrangements in construction are not suitable in all situations. - When should this approach be used and when use others? This must be defined by the involved parties themselves, especially the clients. Even if there still is limited experience, it seems that the future market will comprise more voluntary arrangement based contracts and more "classical" design – build, price tendering contracts – at the sacrifice of the pure tendering based, general contracts. General business cycles and the specific situation in the different sub markets (housing, public investments of construction sector, act.); will define the speed and intensity of the development. We anticipate that a slightly less pulling market than what we have experienced for the last 10-15 years will be the ideal situation for growth of the number of collaborative models.

- Will voluntary arrangements have any significant impact on competition and markets in Norway? We believe the answer is yes. First of all these types of projects will be a visible part of the market. They will allow engaged operators in the market to "act in accordance with own ideals". As leading, public clients, and leading developers/contractors both promote this kind of arrangements, the consequence most certainly will be an increasing attention on the subject. The (more or less) voluntary involvement of sub contractors – in a well organized manner – will also add attention and interest. The client initiated part of this type of project will undoubtedly involve their representatives in a more active and committing way, and reinforce his competence as key person in the project team. The general contractor initiated parts of this type of projects will likewise lift the project development competence and managerial skill among the companies that give priority to this way of collaboration, and by this set a standard for the industry as a whole.
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The voluntary arrangement approach is in the short run only relevant for the production of new buildings. This part, 13 036 bill € (2006), i.e. 44 % of the total production in 2006 (29 315 bill €), represents the real potential of voluntary arrangement projects. Not all types of new building projects will benefit on this concept. Simple, straight forward types of project (easy to specify) will probably still be set out based on an ordinary price competition, eventually as turn key projects.

The market of new civil engineering projects, where the public clients are the dominant ones, is on 4 112 bill € (2006), making 14 % of the total production in 2006; will not join the field of voluntary arrangements during the first years. Today some few build-operate-transfer projects (road segments) have been carried out successfully (when it comes to the planning, design and production – the operation phase is just in the very early stage). The public client companies (mainly the Directorate of Roads and Railways) are discussing models closer to real voluntary arrangements, i.e. contracts without the financial or the operating aspect as crucial part. In other words, the nearest future may deliver a pilot project based on a collaborative model in civil engineering.

The building renovation market, making an amount of 10 070 bill € (34 % of total production, 2006) is diversified and not easy to break down. Much of this kind of work is complex operations. Some part is rather big projects, too. This segment will,

as soon as the participants learn to collaborate efficiently, qualify as projects for collaborative accomplishment too.

Some conflicts of interest have been sensed. There are for example general contractors that prefer not to give high priority to the collaborative models, due to the fact that the profit potential is limited in this kind of contracts. One can not neglect this - and similar - arguments, even if this is stated in a period with high activity in the Norwegian construction market. Voluntary arrangements are, not to forget, an initiative that derange the since long established distribution of tasks and responsibility in the industry, and may in this perspective be regarded as a threat to some interests.

In 2006 the Norwegian research project "Productivity in construction" was completed. The goal, to develop a model for statistical benchmarking of project efficiency, was achieved. The tool was applied on a set of data from 122 blocks of flats projects. The benchmarking ranked the 122 projects from the reference project (E-score = 100 %) to lowest total factor efficiency score (cost efficiency score), which was approximately 50 % (!) Based on this, ca. 400 explanatory variables were tested. Despite the scarce amount of data for this part of the analysis, and the fact that the analysis is a pilot (that should be repeated before the results are too much spoken about), we allow ourselves to present some findings that are relevant in the context of collaborative performance in construction. Out of 61 findings after the initial, partial regression, we found that 61 had empirical relevance to efficiency. Among the variables that were found to correlate with the efficiency score in partial regression are the following:

- the projects where one ore more of the members in the general contractor's management team had collaborated in earlier completed projects with the clients representative(s), were often the projects with highest cost efficiency score
- same finding as above with respect to member(s) in the design team
- same finding as above with respect to the crucial sub contractors
- the projects where the score of conflict level between the general contractor's management team and the representatives of other participants in the project team were low, were often the projects with highest cost efficiency score

We emphasize the uncertainty of the analysis (pilot, few entities, partial regression, etc.), but are still regarding the findings interesting with respect to the discussion of the ideal performance concept in construction. The four findings from the efficiency analysis might be interpreted as a statistical argument to the benefit of collaboration and to the disadvantage of "lowest bid and firm fighting".[97]

Another interesting finding is the result from a research work conducted at the Chalmers University, Sweden (Josephson, P. E. and Hammarlund,Y., 1989), see figure 4.

[97] The research project is reported in Norwegian (Ingvaldsen and Edvardsen, 2007). An article for a scientific journal is about to be completed.

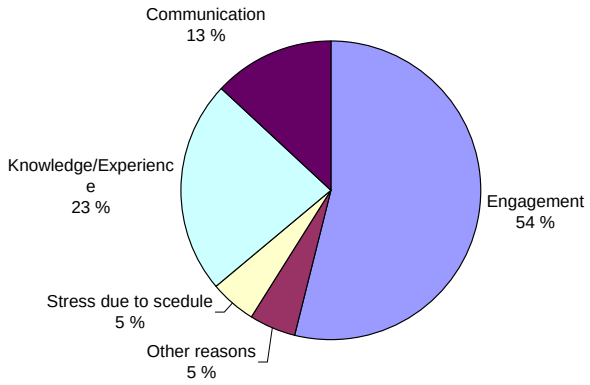

Figure 4
Internal quality faults and root causes (Chalmars, Sweden, 1989).

The conclusion after the analysis of the registration of building faults during the construction process (on the site), lasting for two years, is that the main reason for failures is *lack of engagement*. 54 % of the identified faults are explained by lack of engagement. This is not only lack of engagement by the worker at the site, the site management or the sub-contractors representatives, but also by the consultants, the architect and the client.

The research works show the potential of alternative way of performance in construction. Different voluntary assignments for construction works seems to contain the ability to bring an extra amount of engagement into the project teams, with more satisfied clients/owners as final result.

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5 Views on the factors that have contributed to the success or otherwise ……

In general, the success of collaborative arrangements as alternative to traditional construction project performing models is the fact that this seems to stimulate the professional (and the client and user) to take ownership to all relevant challenges and problems. The team members, designers, "doers" and owner, seem to generate real engagement for "their" projects and to strive for the goal achievements.

In private sector is this approach mostly of the kind "contractor offers client an open book contract with target price and profit share". It seems that this works well, i.e. that the clients that go into such cooperative contracts are satisfied with the results. The explanation to this may be that the contractors are trustworthy, i.e. that the client's can measure the positive effects with respect to cost, time and quality.

Private clients (real estate companies etc.) seem still to be reluctant, and claim to the old models. This may be explained by the way they are organized, normally with small staffs and low capacity on construction/technical issues.

Public clients, however, have found this approach interesting. The explanations of this are probably more than one. At the national level, the client organizations (Statsbygg etc.) possess resources of most all kinds. Most of the organizations has been construction clients for decades and have employees that feel confident in their capacity as client representatives. They are equals to the designers and contractors and can administer the construction contracts and the connected processes. Voluntary arrangements open for a situation where the clients can bring more of their own resources into a project, and where the client's best interest can be taken care of more directly by the presence of his representative(s) in the project teams.

At local level, most public clients don't have many employees. However, they are skilled clients, trained in handling all kinds of construction procurements and to collaborate with most all types of construction professionals. The history (see above), their local knowledge and connections, are presumably some elements that foster ideas of voluntary arrangements. Another aspect is the escalations of prices in construction (figure 2 and 3), which often become emphasized in tendering competitions, which brings frustration to the client's representative. Such circumstances are possible part of the picture, too.

Finally, the project management companies, who are drilled to administer the construction project on behalves of an owner, private or public, have obviously seen the potential in the voluntary approach. In fact, some of the first collaborative projects in resent time have been developed by this kind of professionals in collaboration with engaged public client professionals.

The old partnering model did not bring forward the expected results, mainly due to the fact that it was new and none experience was gained at the moment. Much of the old roles were allowed to remain. The new model expects a mind set of collaboration and interest beyond own company from all team members. The effect is motivation to the job and attention to the achievements that goes beyond own, specific professional and business interest.

Openness in all respect is mandatory. This goes for the costs at all levels and aspects. Without this confidence in the team, the success might be lost. All representatives in the team should be equipped with all necessary authority from their companies. Otherwise the processes in the team, especially during the design phase, should be without necessary power and drive.

One must anticipate problems to rise. The rule is that problems shall be taken care of and solved where they first come into being. The team members must therefore have committed themselves to a "Procedure for solving internal problems".

The economy is as important in partnering projects as in all other types. The cost follow up towards the detailed goal prices by all involved, is vital, including studies of cost security/risk and possible actions.

Today the municipality of Bærum administers three projects after this model. They are not completed and consequently the conclusive experience will remain until the end of 2008. The representative of the client claims that the process until today has been "a journey of joy", though challenging in many ways, and express the belief of having found the collaborative model that can fit most normal size clients, public and private, and most small and medium size construction companies and their network of professionals.

6 Views on consistency with EU-policies

It is said that Norway respond more respectfully to the different EU directives than most of the EU member states do. As stated above, the Norwegian government has passed a law based on the EU Directive of public procurement. The law has narrowed the long lasting elbowroom also public clients have had concerning ways of accomplishment of construction projects. A public client can not invite one certain – often local and well qualified - operator to take care of a certain construction project or job, even he regards this to be in the best interest of the municipality or county under the circumstances. Time, a need/whish of a certain site owned bye a general contractor/developer, available capacity in a booming market, or relevant competence for the actual project/job, etc. may be reasons for non-competing procurement of construction work before the Law of public procurement has set a new standard. The law has closed the door for such flexibility, even when a very small piece of construction work is the subject. During the first years after the regulation much energy has been spent on establishing detail regulation on how to live up to this standard. Gradually the attention moved from a word-to-word interpretation towards how to follow the main idea of the law and still do what in an overall perspective is the most suitable approach. It has not been performed a coordinated study on this application to the law, but some of the public construction authorities at different level, with belief in the value of having alternatives to the ruling procurement regulation (the “competition on price only” model) have worked along different paths and developed models that seems to be in consistence with the law. The case examples will go further into this

7. Final conclusion

The number of voluntary arrangements for assignments construction projects in Norway are significant, though not occurring in a large scale. They offer an alternative to the traditional way of performing in the construction industry that challenge the old pattern and open for the professionals of the industry to develop themselves through new environmental settings.

The Law of public procurement (EU Directive on public procurement) must be taken into account when this kind of collaboration is planned, but doesn't seem to be an absolute hindrance to gain the crude of such performance in construction. On the contrary, it seems that these models, after a early wave of testing and failing, have been an approach that in different ways help public client organizations and representatives, and user the organizations, to involve themselves more actively in the development of the buildings they operate and use in the future, and even with a more transparent construction process with less undesirable risk on all parties than in alternative approaches.

The collaborative model is still a building matter, but the interest for clients in civil engineering (roads, etc) sector is significant (It have been carried out some BOT contracts for road projects, and this may lead to more "pure" voluntary arrangement in the coming years).

In the private sector is this concept mainly offered as an alternative, collaborative performance of design-build contracts by a limited number of general contractors ("Partnering", "open book" etc.). Also this part of the alternative approach to construction performance seems to be regarded beneficial to the parties involved ("win-win").

One threshold to this approach is the rather high costs for the participants in the early phase. F. ex. is it not normal that the client will pay the real cost of the teams' participation in the initial competition of conceptual grip. Therefore the voluntary arrangements can be an arena for the big construction companies with lots of resources – or the minor ones with good, business networks.

Despite all the positive experience in resent time, we presume the voluntary arrangement approach to remain an alternative to the traditional ways of working out construction projects. This view is partly based on the fact that the collaborative model is challenging to the participants, especially in the early phase of the project (resources, qualification and ability to work with commitment in a team), partly on the fact that there are legal aspects that can keep clients from choosing such way of operating (fear of being "trapped"), and partly the fact that collaborative models in construction are suited for the complex projects, whereas the simpler projects can benefit on the "sharp" price tendering models, as well.

In average, the voluntary arrangement contracts may take care of 5 - 10 % of the annual, future production, though with a severe higher percentage in the most dedicated and trained environments of the sector. The rather low part must not be read as low importance. Voluntary arrangements are offering the progressive, idealistic and knowledge seeking organizations and individuals in the construction sector an arena

for improvement. The approach seems to reveal methods for efficient problem solving and a standard for good professional behavior. This is the real, and common, benefit of the voluntary approach in construction.

COUNTRY REPORT

SWEDEN

CONTENTS

PART 1 : CONSTRUCTION INDUSTRY IN SWEDEN - SUMMARY

CONSTRUCTION INDUSTRY IN SWEDEN – AN INTRODUCTION

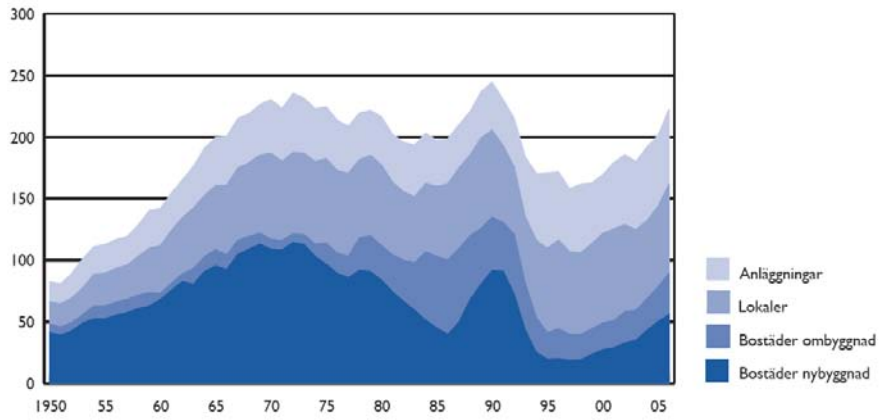
The construction sector, with 450,000 employees, accounts for 11 per cent of Sweden's total working population. The sector includes enterprises concerned with management, project development, architecture, technical consulting, construction, installation and materials production.

Sweden's construction investments in 2006 totalled MSEK 220,000, which was 8 per cent of GDP. The construction industry that year had 270,000 employees.

1.1 Construction investments

FIG 1 TOTAL CONSTRUCTION INVESTMENTS

MSEK 1,000/ 2006 prices



Anläggningar = Infrastructure
Lokaler = Non-housing construction
Bostäder ombyggnad = Housing, alteration
Bostäder nybyggnad = Housing, new production

Source: SCB, BI

Total construction investments, i.e. investments in new production and in alterations to existing properties as well as infrastructure investments, amounted to some MSEK 223,000 in 2006. The term "properties" includes everything from multi- and single-family housing to industrial facilities, offices and public premises. Construction investments climbed steeply during the 50s and 60s. During the 1970s and well into the 80s the Swedish economy had considerable growth problems and the construction market stagnated. The second half of the 80s brought a resurgence of building activity, followed in the 1990s by a dramatic downturn. Construction investments fell by 35 per cent between 1990 and 1997. Building production has recovered since then and in 2006 the volume of investments in absolute figures could bear comparison with those recorded for the first half of the 1970s, though at that time the population was smaller and the economy – in terms of annual GDP – a good deal smaller.

Housing construction and alterations remained the overwhelmingly dominant sub-market until the beginning of the 1990s, accounting for 57 per cent of total construction investments in 1991 and 1992, but falling to a mere 22 per cent in 1995. By 2006, however, the figure had risen to 40 per cent, which is on a par for the sector's average share between 1950 and 1990.

Non-housing mainly comprises office and retail facilities together with public premise, e.g. schools and hospitals. Factories are also included. This sub-market gradually increased its share of total construction investments, from barely 20 per cent in 1950 to more than 40 per cent in 2000. The figure has declined since then and in 2006 stood at 32 per cent.

Infrastructure comprises streets and roads, postal and telecommunication facilities, transport, water and sewerage and power and heat production plants. This sub-market accounted for 26 of total construction investments in the 1950s. A decline then followed, bottoming out at 12 per cent in the 1990s. Between 1994 and 2006 the figure fluctuated between 27 and 35 per cent.

Construction investments in relation to GDP

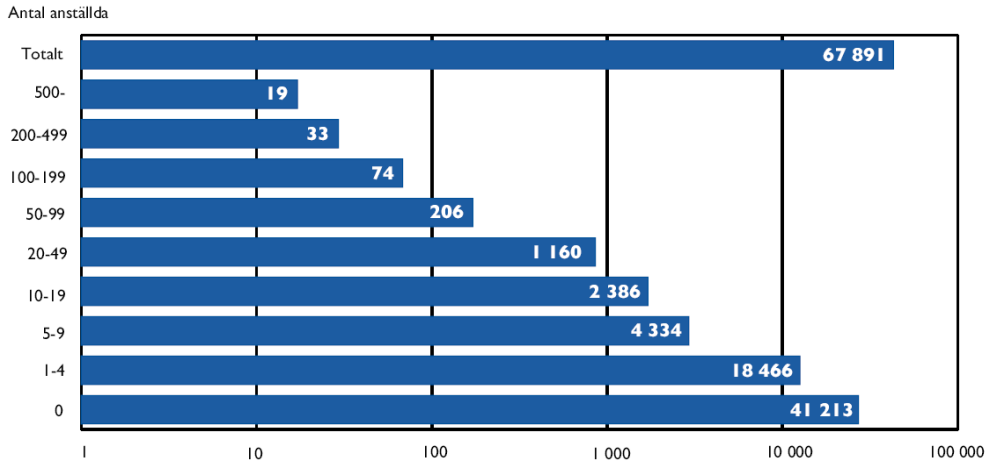
Construction makes a vital contribution towards national economic development. Investments in buildings and infrastructure generate demand for goods and services in many other parts of the national economy over a long period. In particular, efficient transport and viable housing markets are necessary preconditions of a workable, expanding economy.

During the mid-1960s construction investments were about 16 per cent of GDP. A declining trend then followed, down to just under 6 per cent at the end of the 1990s. The opening years of the 21st century have brought a certain recovery, and by 2006 construction investments had risen to nearly 8 per cent of GDP.

Underlying the period of percentage investment decline was, among other things, the generally poor development of Sweden's economy, the brunt of which was borne by the construction industry. Another important reason was the heavily increased taxation of building and housing as part of the tax reform at the beginning of the 1990s. This, coupled with overheating of the property market in the second half of the 1980s, led to a collapse of housing production, and during the first half of the 1990s building investments plummeted. The upturn in recent years has been mainly due to a growth of new housing investment.

1.2 STRUCTURE OF THE INDUSTRY

Fig 2 Number of firms in the construction industry 2006



Antal anställda = No. employees
Totalt = Grand total

Source: SCB

Swedish enterprise in 2006 numbered about 920,000 undertakings, 68,000 or 7 per cent of which were active in the construction industry. 88 per cent of the construction firms had at most 4 employees, and these firms accounted for 16 per cent of the construction industry's total personnel strength. During the past five-year period, the number of construction firms rose by 12,700, including 11,500 with not more than 4 employees.

A breakdown of construction companies by sphere of activity comes out as follows: 8,700 site improvement and foundation contractors, 23,800 building and civil engineering contactors, 16,000 installation firms (plumbing etc.), 17,300 firms for finishing operations (joinery, flooring, painting, glazing etc.) and 1,600 rental firms providing construction/contracting plant and drivers.

The construction industry being characterised by a large number of small businesses, a considerable proportion of its workers are self-employed. In 2006 this applied to some 20 per cent. Salaried staff made up no more than about 20 per cent, while manual workers comprised about 60 per cent. The large proportion of manual workers is unsurprising, construction being very much of a "hands-on" industry.

The construction industry remains very much a local and national concern, despite a distinct growth of international competition in recent years. This applies to the whole sequence of building operations from property ownership and consulting services to the building materials industry and building contractors. The proportion of foreign firms among BI members, however, remains little more than 1 per cent (40 out of 2,800).

Most of the foreign companies are from Germany and Poland.

Fig 3: Building and civil engineering contractors - Size breakdown in 2006

Size of undertaking (av. no. employees)	Firms	N %	%*	Employees	N %	Change since 2001 Firms	N %	Employees	N %
0	13 946	59				3 000	27		
1- 4	6 668	28	68	12 656	13	1 230	23	2 056	19
5-19	2 533	11	26	22 429	22	366	17	2 745	14
20-49	463	2	5	13 520	13	79	21	2 632	24
0-49	*23 610*	*99*	*98*	*48 605*	*48*	*4 675*	*25*	*7 433*	*18*
50- 99	92	<1	<1	6173	6	9	11	445	8
100-199	41	<1	<1	5 608	6	23	128	3 239	137
200-499	12	<1	<1	3 681	4	4	50	1 347	58
500-999	9	<1	<1	36 188	36	-2	-18	-6 733	-16
50-	*154*	*1*	*2*	*51 650*	*52*	*34*	*28*	*-1 702*	*-3*
Summa	**23 764**	**100**	**100**	**100 255**	**100**	**4 709**	**25**	**5 731**	**6**

* Percentage of firms with employees

Source: SCB

This table only includes firms classed as building and civil engineering contractors in the Swedish Industrial Classification, class SNI 45.2. There were about 23,800 such firms in 2006, but nearly 14,000 of them had no employees.

Only 2 per cent of firms with employees had a personnel strength of 50 or over, but these firms accounted for more than half (52%) the total personnel strength.

The net increase in the number of firms between 2001 and 2006 was upwards of 4,700, most of them (64%) firms with no employees. Relatively speaking, though, it was firms with between 100 and 199 employees that grew most. The number of such firms rose from 18 to 41 (128%) and the number of employees from about 2,400 to 5,600 (137%). The number of firms with at least 500 employees declined from 11 to 9 and the aggregate personnel strength of this group fell by 16 per cent, from 42,900 to 36,200.

Fig 4: The 10 biggest construction firms 2005

Company	Contracting turnover in Sweden, MSEK	No. employees in Sweden
Skanska Sverige	24 535	10 706
NCC	19 354	8 042
Peab	18 920	8 350
JM	7 818	1 977
Vägverket Produktion	6 380	2 480
Banverket Produktion	2 736	2 890
Veidekke Sverige	1 315	601
Midroc Construction[1)]	1 045	431
Svenska Entreprenad i Mälardalen	768	276
Oden Anläggningsentreprenad	760	302

1) Acquired by Peab, January 2006

Source: MM Partner

Skanska, NCC and Peab were the three biggest construction companies in 2005, grossing more than MSEK 18,000 each. Another three companies had turnovers in excess of MSEK 2,500.

The above table is based on annual reports for 2005. Consolidated figures are given for parent companies of groups. Where relevant, business departmental data have been used with a view to focusing exclusively on contracting operations in the Swedish market.

Turnover refers to contracting income plus sideline earnings, e.g. from property management. "Employees" refers to average personnel strength in Sweden for the financial year.

1.3 CONSTRUCTION BUSINESS SYSTEM

At present, the great majority of contracts in Sweden are based either on "Allmänna bestämmelser för byggnads-, anläggnings- och installationsentreprenader (AB 04)" of 2004 (General Conditions of Contract for Building, Civil Engineering and Installation Work) or "Allmänna bestämmelser för totalentreprenader, avsedda för byggnads-, anläggnings- och installationsarbeten (ABT 06)" of 2006 (General Conditions of Contractor for Building, Civil Engineering and Installation Work performed on a package deal basis). Supporting these two documents are commentaries and forms of agreement which have been worked out by parties. The building Contracts Committee has had a decisive influence on the production of all these documents.

The documents deals with

1) extent of work	4) times	7) inspection
2) execution	5) liability	8) termination
3) organization	6) costs and payment	9) disputes

In the case of agreements between client and consultant "Allmänna bestämmelser för konsultuppdrag inom arkitekt- och ingenjörsversamhet (ABK 96)"of 1996 (General Rules for Consulting Works in Architectural and Engineering Activities) is usually applied with appurtenant commentaries and forms of agreement. At the production of these documents the member organizations of the Building Contracts Committee have represented the clients.

1.4 THE SWEDISH AMA SYSTEM FOR TECHNICAL AND ADMINISTRATIVE SPECIFICATIONS

The figure below aims at giving an overview of how the different AMA publications are used and how they relate to the project documents, administrative instructions, technical specifications and bills of quantities.

AMA constitutes a reference document. By referring to codes and headings in this in the administrative instructions or technical specifications, the text in the reference document under given and superior codes and headings are applicable as the instructions for the current project.

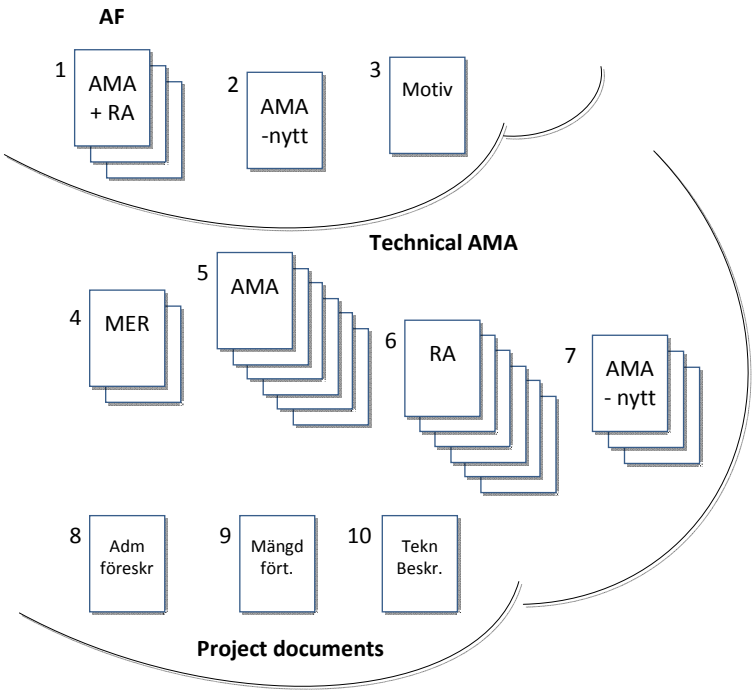
RA and AMA-nytt are used by the project architects and engineers to supplement the instructions in the project documents with their own texts and where necessary change the text referred to in AMA.

Technical AMA covers the group civil engineers works, buildings and building services which are separate from one another but which can be used together in a technical specification.

Provisions regarding measurements and payment (MER), are applicable in their entirety according to the relevant regulations for application for the contract to which they refer. The diagram gives examples of how items can be specified in the bill of quantities.

Translation of words and abbreviations in the figure below:

AF *Adminstrative instructions*
1 *AMA + RA – General material and workmanship specifications + Advice and instructions*
3 *Motiv - Explanations*
Tekniska AMA – Technical AMA
4 *MER – Provisions regarding measurement and payment*
5 *AMA – General material and workmanship specifications*
6 *RA – Advice and instructions*
2, 7 *AMA-nytt – AMA news*
8 *Adm föreskrifter – Administrative instructions*
9 *Mängdfört – Bill of quantities (B of Q)*
10 *Tekn beskrivn – Technical specifications*
Projektdokument – Project documents



PART 2 CONSPECTUS OF PARTNERING IN SWEDEN'S CONSTRUCTION AND CIVIL ENGINEERING INDUSTRY

2. INTRODUCTION TO PARTNERING

2.1 PREFACE

Much interest has come to focus in the past few years on new forms of co-operation in the construction industry, basically because our customers are experiencing flaws in the quality provided, escalating costs and delays. The industry has not always been equal to delivering what our customers have expected, and this may possibly be due to our ways of working and doing business.

New forms of co-operation are therefore a priority field in which a great deal of responsibility devolves on the clients as "locomotive" and initiator of a process of change. Partnering is one such new form of co-operation new working process which is being tested more and more widely in Sweden, where hitherto the contractors have been the prime movers of change but where clients are tending more and more to take the initiative.

Sweden differs from many other European countries in that the public sector, acting through national, local and regional government, has not made co-ordinated use of its "purchaser role". In the UK and Denmark, for example, government, through its ordering organisations, has stipulated that special reasons must be stated for not choosing partnering. In these countries, then, government has been a powerful impelling force for nearly 10 years where partnering issues are concerned. Not so Sweden, where interest in partnering was pioneered by the big contractors, often taking their cue from the UK and Denmark. In consequence, partnering in the beginning came to be somewhat suspiciously regarded in Sweden.

A "dear kid" has many names. Different firms have different names, e.g road and rail administration talk about "expanded cooperation". The problem is that "partnering" is not strictly defined. Client Forum try to straight this out by our Partnering-courses which at present are dominant in Sweden.

2.2 HISTORY

In Sweden as in many other countries, the building sector has been afflicted with a succession of grave problems - bad quality, increased costs, bad time keeping etc. - attending construction and civil engineering projects, e.g. tunnel construction projects, bridges, and damage from damp in housing projects.

This led among other things to the setting up of a Commission whose report, SOU 2002:15, "Snap out of it, fellahs" (in Swedish), addressed the problems of the construction and property management industry. The industry itself has initiated a number of studies and project, e.g. concerning the occurrence of undocumented employment in the sector.

On the civil engineering side, two big clients – the National Road Administration and the Swedish Rail Administration – together with the main suppliers and planners, launched a joint project in 2003 codenamed FIA – Renewal in the civil engineering sector, www.fiasverige.nu (http://www.fiasverige.se/Default.aspx?epslanguage=SV) .

One recurrent feature of the projects which have now been mentioned is their highlighting of the client's role in bringing about changes in the industry – "the construction client as an

agent of change" – and the importance of other forms of interaction between players in the industry, new forms of interaction leading to greater emphasis on the customer's requirements and expectations, a consensus target picture for projects, leading to more co-operation and fewer conflicts.

The growth of interest in partnering during recent years in Sweden needs to be viewed in this perspective. Not that there is anything new in other forms of interaction. Swedish industry – the main export enterprises especially – has for a long time now been running its construction and civil engineering projects on a quasi-partnering basis, more especially a form of process partnering in which the industry has collaborated with a limited number of regular suppliers over a considerable length of time.

In the housing industry, interest in new forms of co-operation grew in the early years of the 21st century, the reason being that the level of rents for the new housing planned was predetermined through the system of utility-value rent setting, at the same time as the construction companies could see that rising prices were leading to a level of tendering which would make such rents inadequate.

A rethink, based on the level of rents and on co-operation with the suppliers, was now essential if any housing was to be produced at all. Several municipal housing utilities, such as Karlstads Bostads AB and AB Svenska Bostäder, established partnering-like joint projects.

FIA was founded on initiative from the National Road Administration and The National Rail Administration. The abbreviation FIA (Förnyelse I Anläggningsbranschen) stands for Renewal in the Construction Sector. FIA gathers the whole Swedish construction business, from client to private contractor, round the insight of the necessity of change and renewal.

FIA soon hit on the idea of testing "wider co-operation" as a strategy for better civil engineering production. The approach was documented on 11th April 2004 in a manual entitled (in Swedish) "Co-operating for greater efficiency".

FIA's goal:

FIA's growing group of members works towards FIA's set of goals for renewal within the construction sector:

- Higher efficiency which gives higher quality, lower costs and increased profitability
- Better interplay and cooperation between the business actors
- Better incentive for investing in research and competence development
- More efficient mediation of the knowledge and competence that already exist
- New recruiting is secured through renewal work that gives a more positive picture of the business in the public eye

Program and tools:
FIA gathers actors who are willing to participate towards renewal. The work goes on in open forum and projects based on good ideas forming into solutions that can be practically applied. With their unique competences different business actors actively contribute to the results.

The projects results into suggestions for measures in the shape of program or new tools creating improvement within a special field. FIA's neutral chairman can in that way recommend the member organizations to introduce these programs and tools in their own business.

Program and tools:

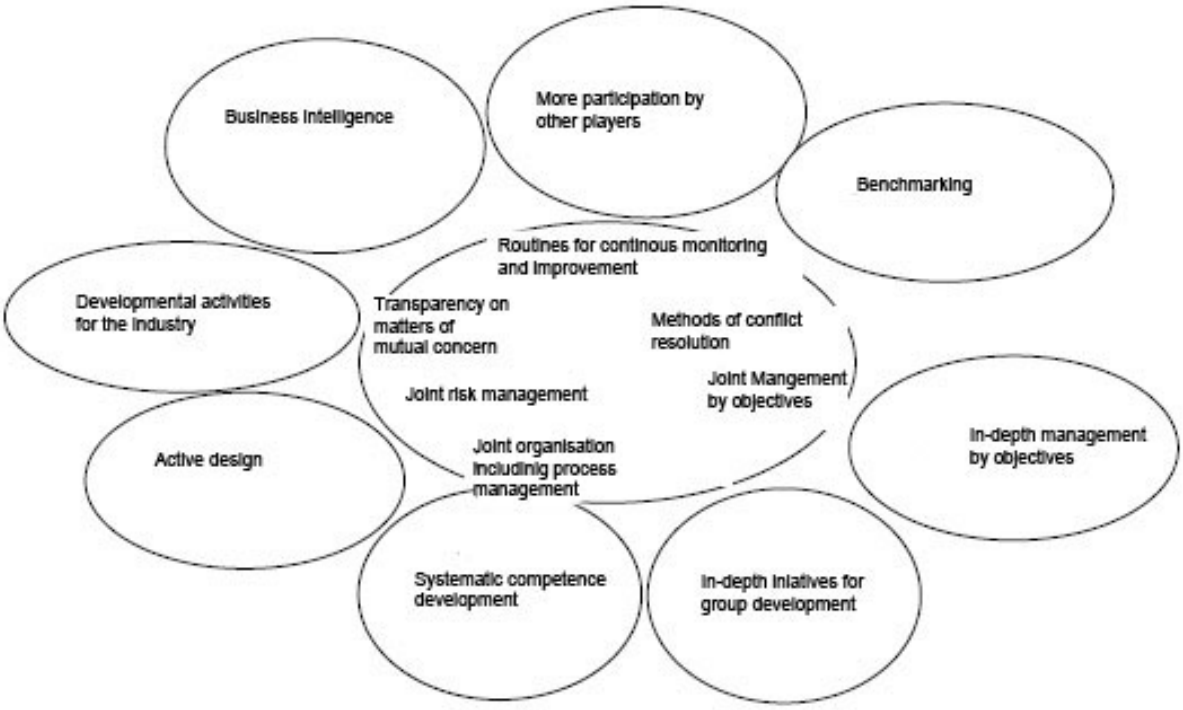
Picture books –
Risk management
Performance requirement
Systematic demand management
Efficient construction work
Efficient consultancy
Measuring

Exchange of experience Rock program
Asphalt program
Reconsiderations
Cooperation

2.3 WHAT IS PARTNERING?

There is no single, universally accepted definition of "partnering". In Sweden the starting point is commonly a number of characteristics describing partnering. One such image – "Petals of Partnering" – has been presented by Nyström (see references)

Fig 5 FIA Petals of Partnering



(FIA – Renewal in the civil engineering industry – an agency for interaction between major governmental clients, contractors and planners.

A partnering project, according to Nyström, is characterised by a number (Nyström says "not all but most of them)" of "petals" being included in the process.

Rhodin presented a similar approach in her licentiate thesis (see references).

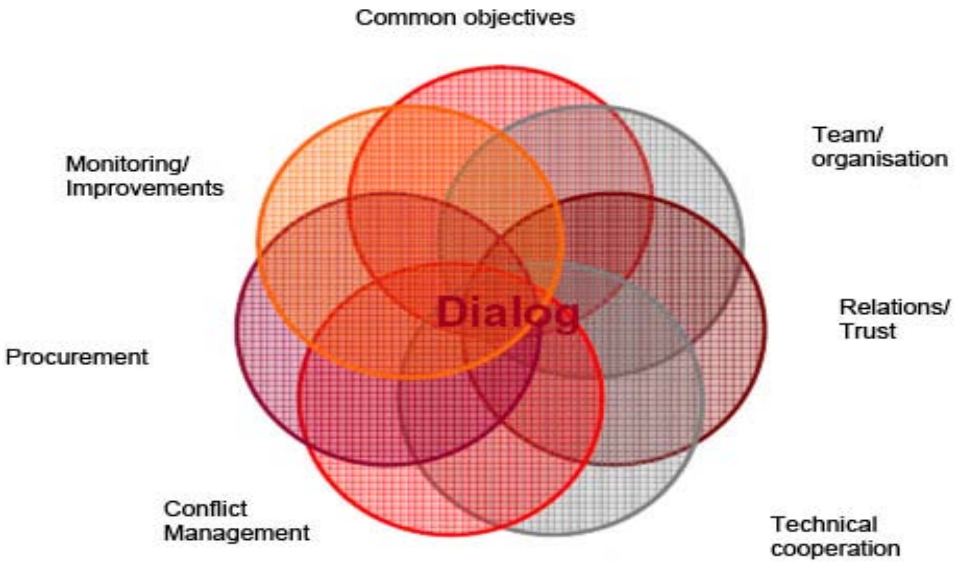


Fig 6 Rhodin's diagram

Rhodin's thesis was published in 2002, and the "petals" are based partly on reading of literature on the subject, most of it Anglo-Saxon, and a number of case studies. Nyström's PhD thesis was published in 2006 and can be seen as a further development of Rhodin's model.

On the courses run by the Swedish Construction Clients Forum in Sweden, partnership is described as an accepted process normally comprising the following activities.

Partnering: an accepted process

- Pre-qualification
- Early stages
- Workshop
- Risk management
- Right, complete team
- Constant improvements
- Problem-solving
- Open books
- Measuring and comparing

Different types of partnering

A distinction is commonly drawn between
- project partnering
- strategic partnering

Project partnering means co-operation between client and suppliers on a construction or civil engineering project. This co-operation in turn can be divided into *early* and *late* partnering.

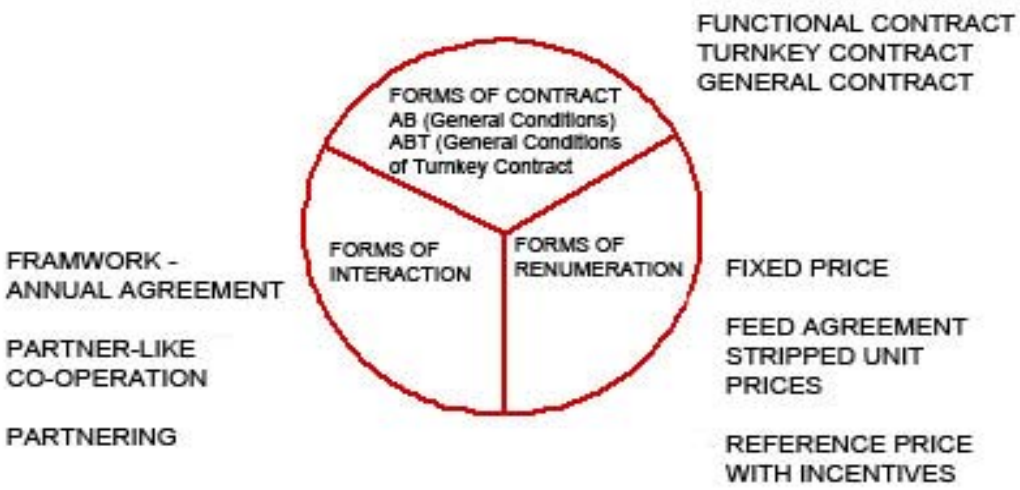
Early partnering means co-operation also including programming work, while *late* co-operation, in principle, means co-operation from the system documentation stage.

Strategic partnering means co-operation on a series of projects, often procured in the form of a framework agreement. Project series can, for example, involve the development and production of several years' housing construction for a client in the municipal housing sector.

In the training provided by the Forum, a clear distinction is made between the different parts of a partnership project.

2.4 PARTS OF A PARTNERING PROJECT

Fig 6 Three relatively independent variables



Source: Fernström (see references)

Partnering, then, is described as a form of interaction/co-operation which can in theory be freely combined with different forms of contract and different forms of remuneration.

In Sweden as in most other countries, project partnering is the paramount form of co-operation, though there are also instances of strategic partnering. Within the context of project partnering, early partnering is quite paramount and the commonest form of contract is a turnkey contract with a reference price and incentives.

Unlike the UK and Denmark, for example, Sweden has no systematic collection of statistical data from different projects to show the extent of the different forms of co-operation, remuneration and contract.

3. APPLICATION OF PARTNERING IN SWEDEN

3.1 PUBLIC CLIENTS

Most headway in Sweden has been made by our two big clients on the infrastructure side, the National Road Administration and the Swedish Rail Administration. The crisis a few years ago, when the contractors refused to tender because they were having to assume too great a risk in the projects, triggered a useful dialogue about finding new forms of co-operation, but the highly successful construction of the Öresund Bridge, completed 8 or 9 months ahead of schedule, with good incentives for all involved, provided an excellent reference for future work procedures based on greater co-operation. Out of this the National Road Administration and the Swedish Rail Administration created FIA, Renewal in the civil engineering sector, in which an effort is being made to find "wider forms of co-operation" and working approaches for all players together, in practically every strategic area of infrastructure.

All private property companies believed that commercial premises would become the natural field for partnering, but here, unfortunately, the market died out, especially where private developers were concerned, with the result that little was being built in this sector in the opening years of the 21st century. In the past years, however, the industry has experienced a "construction boom" of a kind rarely seen before. There are a number of good examples, such as Akademiska Hus, hospital construction with Landstingsservice in Värmland, a new pelletising plant for LKAB, and so on. And then there is Arcona's construction of the new Swedish Post headquarters in Solna, owned by AP Fastigheter, which is more a case of strategic partnering – lean construction.

The big growth of partnering came in municipal rental housing, which was hardly surprising, since housing construction was the fastest-growing market between 2004 and 2007. Another reason for the growth of partnering in rental housing projects is the ease with which the common objective could be identified. Almost every time a project was about to begin, in the sense of the first sod being turned and building work commencing, it was found that the costs would result in excessively high rents. Before a project even starts, the client has defined a rent level. When this is exceeded the project has to be halted and the architect, consultant, contractor and client, plus tenant, have to sit down together and find ways of modifying the project, working out new solutions and in this way arrive at a costing level commensurate with the maximum rent level. In other words, the maximum rent level becomes the common objective which everyone can rally round to accomplish, failing which there won't be any project.

A good number of instances are now to be seen in Helsingborgshem, Signalisten in Solna (the Krönet project), Uppsalahem, Svenska Bostäder, Stockholmshem, Karlstads Bostads AB and others besides.

A number of county councils have also entered into partnering. Landstingsservice in Värmland has a partnering arrangement of many years' standing with Skanska and a number of subcontractors for both new production and alterations and improvements. Karlstad is a pioneering region for partnering, distinguished by an interactive culture in which clients, contractors and installation firms have long had a trusting and interactive relationship together. In a local market, where everybody knows everybody, one can never let a partner down, because then one would be ostracised for many years to come. RegionFastigheter in Skåne has a new development project in progress at MAS, Malmö, with Peab as contractor. The arrangement is termed "trust contract" and resembles partnering, even if the partnering process has not been adopted in its entirety.

So far there are very few SME:s taking part in partnering projects.

Denmark has for many years now had the same experience of a viable partnering team becoming so firmly welded together that, with the partnering project nearing its conclusion, everyone in the team has looked round for a new project so that they can go on working together. There is, of course, the minor risk of the partnering members becoming more loyal to their partnering team that to their respective companies, but the conclusion invariably drawn is that partnering as a working approach provides a working environment and a project culture of such a kind that no partnering member ever wants to go back to the old way of doing things.

3.2 HOW HAVE THE PRECONDITIONS FOR PARTNERING ALTERED IN SWEDEN?

Out of the crisis of confidence in the construction and civil engineering industry there has come a true awakening in which "Snap out of it, fellahs", the construction co-ordinator from the National Board of Housing, Building and Planning, and the industry itself have played the part of warning bells inaugurating a process of change. At the same time, business is booming, especially housing production, which has grown from 10 or 15,000 to 35,000 dwelling units annually. Rigorous cost limits = the maximum a tenant can pay in rent call for more changes and innovative thinking.

Industrialised and industrial construction is therefore growing rapidly, which, coupled with increased demands for co-operation, with everyone pooling their experience into these new, cost-effective solutions, is almost automatically leading to new forms of co-operation or partnering, which has thus become an accepted process.

For clients, partnering is a form of co-operation where they want to discuss ways of working together on a partnering basis, and definitely not a form of contract, which contractors and suppliers are disposed to mix it up with, with all that this implies of excessive preoccupation with technology and building, matters which come up later once the partnering team for the project has been put together.

So far partnering prevails mostly among public sector developers, who in any case have to work with a structure based on public procurement under the Public Procurement Act (LOU). Initially there was a great deal of scepticism regarding the compatibility of LOU with planning, but UK and Danish examples have shown that LOU is no impediment.

On the civil engineering side as well, the partnering concept is quickly catching on, very much thanks to the dialogue inaugurated by FIA, Renewal in the civil engineering sector, between the National Road Administration and the Swedish Rail Administration on the one hand and leading contractors and consultants on the other. Further on we can briefly describe the report on "wider co-operation", another expression for partnering, which they have compiled together. De facto, the national road administrations of the Nordic countries have decided that all complex projects are to be undertaken on a partnering basis.

3.3 IMPORTANT ACTIONS FOR PARTNERING

The client/orderer decides whether a partnering deal is to take place.

Project Partnering:
Client, architect, contractors, installation firms and strategic suppliers included in the team for complex projects, MSek 10-12, but complexity decides.

Strategic Partnering:
Developer/contractor - Installation firm - Long time cooperation

Part of the customers' operation in order to achieve repeat effects and reduce costs.
- Constantly surprising the customer and exceeding his expectations
- Relational activities, confidence building, trust and transparency
- Attracting, recruiting, developing and retaining the right associates
- Technology and early stages 3-4D cad/extranet, communication

3.4 WHAT DO WE SEEK IN PARTNERING?

Developing and changing the construction and property management process
- Holistic solutions for the customer
- Everyone focusing on the customer

Long-termism in projects
- Functional contracting
- 5-10 years warranty

Ongoing cost reductions
- Shortened through-put times/early fixing of costs

Innovative thinking and creative solutions for the customer

Open books
- Mutual incentives
- Conflicts and problems resolved within the team

Creating win-win for all team members in the project!

Here, bullet-itemised, are the general preconditions for partnering:

- Relation-building, i.e. building on mutual trust, transparency, sincerity and reliance
- Finding a common vision, goals and interim targets, based on the customer's best interests, which everyone can agree on and work to achieve
- Open and frequent accounting of production costs
- A common incentive regarding the final outcome
- A partnering leader and putting the right team together
- Risk and conflict management
- Follow-up, i.e. continuously measuring the results of partnering and working with ongoing changes

3.5 OTHER FORMS OF VOLUNTARY ARRANGEMENT

The other formS of arrangement mentioned in the guidelines are alliances and construction consortia. These forms hardly exist in Sweden. One contractor – Arcona – has formed a fixed team of companies including architects, building services consultants, building and services contractors and special contractors (e.g glazing). Arcona has worked with this concept for a number of years.

4. WHAT MAKES PARTNERING A SUCCESS?

A form of cooperation which will be preferred by all team members. As a team member one puts in everything one knows (unlike tendering). Together the team com up with new solutions/contribute towards better solutions in one another's fields. Team member are happy together and raise their game when they have
- common objectives, fun together, mutual trust
- struggle for a common inventive, outcome, everyone contributes
- a culture which people are proud be a part of
- a creative environment
- solving problems together without contention

(Fernström, see references)

The big change for the future, leading to a breakthrough of partnering, is that more and more developers are beginning to perceive its advantages and that they have more and more references to completed projects, with the result that they not only wish to continue with partnering but can see clear opportunities for improvement. Added to which, everyone concerned finds that working this way is more fun.

People experience a sense of participation, they can have their say and last but not least, they take pride in being involved in partnering projects.

The National Road Administration and the Swedish Rail Administration, as the dominant big clients on the civil engineering side, have been developing their procurement routines and agreements for many years now but still experienced co-operation problems, and a group was therefore set up within FIA to develop their co-operation procedures.

Their form of co-operation also has to defer to and be capable of using their standard contracts, e.g. procurement regulations for contracting and consulting services, contracting agreements, administrative regulations for contracting, assignment contracts and assignment descriptions for consultants. They distinguish between forms of procurement, implementation and operation.

Here again, wider co-operation must be feasible irrespective of the form of contract and remuneration, fixed pricing is recommended for management and profits, and the incentive agreement focuses on purely production-related costs, which are easier to follow up with open books.

Wider co-operation, just like partnering, can be adapted to the scope and complexity of the project. Their structured report, on www.fiasverige.nu (http://www.fiasverige.se/Default.aspx?epslanguage=SV), is recommended for study (only in Swedish).

5. 1KNOWLEDGE DISSEMINATION – EXPERIENCE INTERCHANGE

Courses

As mentioned earlier, partnering was introduced into Sweden on a certain scale by the big contracting enterprises, beginning in 2002. Clients were very suspicious of the new form of co-operation to begin with. As part of a process of building up knowledge of partnering among clients, the Swedish Construction Clients Forum began providing courses in 2004.

From slow, hesitant beginnings, the training activities have now assumed considerable proportions and in principle now comprise the following training programmes:

- a partnering course of 2x3 days including field trips to the UK and/or Denmark
- a partnering course of 2x2 days in Sweden
- 2x2 days' training for partnering leaders – a new professional role
- a half-day seminar in various places in Sweden

So far about 350 persons have undergone partnering training.

Some 400 people have taken part in the seminar activities. Partnering training is also provided by commercial course providers in Sweden.

Network

The Swedish Construction Clients Forum has established a network for developers and other players, based on the training courses. The network, which at present has 200 members, can be accessed via the website www.byggherre.se/Verksamhet/Nätverk för byggherrar/Nätverk partnering.

The basic idea for the network is to make it easy to contract firms and persons with different experience of partnering

Assistive facilities, new operational committees

Partnering tools
In the spring of 2007 the Agreements and Regulations Operational Committee revised the Forum's bipartite (orderer and contractor) and tripartite (orderer, consultant and contractor) versions of the partnering agreement template/idea. Work is currently in progress on uploading fill-in versions of both revised editions to the membership section of the website. In the fill-in versions, some of the basic texts are fixed and others are suggestions which can be altered and added to according to the project in hand. Explanations and commentaries accompany most points in the document. The membership section of the website also includes a declaration-of-intent template/idea for drawing up a partnering agreement. They are used by most construction clients (otherwise the big contractors formulate the contract. It is based on the AB-system and will primarily be used if the "partnering project" collapses.

The next stage in producing assistive devices for partnering will be to devise a template/idea for a construction contract and an administrative provisions section to be used in stage 3.
In the autumn of 2007, as part of the development of new assistive devices for partnering, the Swedish Construction Clients Forum formed a new operational committee on partnering issues.

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ANNEXES

1 Partnering projects - List of examples
2 Case studies
3 Questioning study in construction clients' experience of partnering

Annex 1

Examples of Partnering in Sweden

The Krönet-Signalisten rental property in Solna

The archetypal partnering-based rental property project. When building was about to begin there was a cost overrun, i.e. the maximum permissible rent level was exceeded. The project was halted and the client, Signalisten, sat down with the architect/consultant, SWECO/FFNS, and the contractor, NCC, to work out new project solutions which would achieve the aim of keeping within the maximum rent level.

It took about a year for agreement to be reached and construction to begin at the right cost.

The Hallsberg shunting yard, a MSEK 250 project which had to be completed in 3 months

A partnering project within the Swedish Rail Administration, for which the Hallsberg shunting yard with its 28 tracks could be kept closed for 3 months. To ensure viable planning of details and production, the partnering team was appointed one year ahead of the construction start, and in this way the team was able to develop the production process and prepare for production by means of prefabrication etc.

The project was completed on schedule, the target cost was contained and the works, with 200 or 300 people on the site, were excellently managed. Everyone was satisfied with the partnering process except the heads of planning, who would rather have planned the whole project in detail before a contractor was appointed. Surprise, surprise!

Karlstad Bostads AB (KBAB) and Skanska – a strategic partnering project

Close co-operation in Karlstad came into being many years ago, before the term ”partnering” was minted. KBAB wanted to continue this co-operation and, moreover to build similar rental properties, and so an agreement has been signed for long-term co-operation in the form of partnering for 6 years ahead, with Skanska undertaking both new production and alterations/improvements on KBAB’s behalf.

The new Public Procurement Act (LOU) allows a maximum of 4 years’ collaboration, but longer periods are permissible for repetition involving exactly similar projects.

Karlstad is a forward-looking instance of the way in which partnering creates long-term relations. Here Skanska has created for itself a market, together with Akademiska Hus and Landstingsservice, Värmland, as well as KBAB, a market in which all their construction is to be based on partnering. This is a very difficult market for competitors to gain access to, and why change suppliers if you have a successful co-operation which everyone is pleased with?

Uppsalahem’s procurement of rental properties on a partnering basis

Uppsalahem’s construction manager went on a client training programme from which every participant returns home intent on trying out partnering. True enough, the utility put out a partnering invitation under LOU and of the 4 contractors submitting tenders, only one was equal to the occasion. At local level there was insufficient know-how for conducting a dialogue with the developer.

One firm declined, pleading lack of partnering resources, the firm with the best housing scheme could not even talk about partnering, and a third contractor submitted a turnkey

contract scheme, i.e. missed the whole point of the invitation. Hopefully this will change in future and more contractors and suppliers will go in for training their local managers. The developers want to see competition in the future as well.

The construction manager seized the new opportunities presented by LOU and interviewed the tenderers before awarding the project.
NCC got the job and carried out a very successful start-up with a workshop, during which active use was made of British experience of carefully reviewing every risk that could be seen in the project, i.e. together with the partnering team eliminating risks, quantifying the remaining ones and allotting them to the party best qualified to handle them.

The National Road Administration in Göteborg – the Göta Tunnel as a win-win project

The new Göta Tunnel, opening in March 2006, was a highly complex project costing MSEK 3,000 for burying the traffic clearway past the Opera down into the Port of Göteborg. In time this will change the face of Göteborg, creating a wonderful waterfront promenade free from vehicular traffic.

The project was procured as 4-5 turnkey contracts but was subsequently turned into what is termed a win-win project; in other words, the parties switched to partnering. The result of the project is brilliant, despite very difficult ground conditions and also foreign contractors, costs and time inputs were kept within limits and in-depth interviews were conducted with all those involved. Nobody wants to return to the old way of doing things.

In partnering, managers and associates have a way of working which formerly they could only dream of. Trust, transparency, early information, direct solution of problems and an absence of conflicts.

Akademiska Hus, Karlstad

Akademiska Hus do not observe LOU, because they are considered to be exposed to competition in the market. For the procurement of new university facilities in Karlstad they have prepared very carefully worked-out tendering documents which are certain to set a standard in-house.

Using a large proportion of soft parameters and a closely defined scoring system, they were able to make direct comparisons between 4-5 tenders for the Karlstad project, which was budgeted at about MSEK 250 or 300. One stipulation unlikely to have been acceptable under LOU was that of local presence and resources as an important soft parameter, which of course augmented Skanska's chances of landing the project, as indeed they did. But the most important new departure was in-depth interviews of all key persons who were going to be involved in the project, to examine their suitability for it. This was very rewarding and it is a working approach which many developers ought to adopt. Reading between the lines of CVs is no easy matter, and they often tend to be standardised documents with perhaps a tenuous relation to reality.

Summing up

Consider the above as a few typical examples of partnering projects. There are any number of others in which everyone can find ideas which fit in with their particular project. Co-operation has to be evaluated in a different way from technical solutions, and so references, reviews with tenderers and interviews with key persons are destined to become infinitely more important in future.

As has already been remarked, the best way of learning about partnering is by drawing on an interchange of experience and learning from those who have previously had experience. To developers this is a new way of working, but it emboldens them to test new ways of working faster and enables them to avoid elementary mistakes.

Annex 2

Case Study 1
REBUILDING OF HALLSBERG SHUNTING/SORTING STATION

Background
Banverket or The Swedish Rail Administration is responsible for the total Swedish rail transport system, including both passenger and freight transportation. The rail network comprises around 17 000 km of track.

For freight transport Hallsberg is the central key shunting station for sorting of goods in rail cargo wagons to different locations in Sweden. With increased volumes the facility had to be expanded, but there was also a demand to increase safety and reduce damages on goods handled. The project of rebuilding and upgrading Hallsberg shunting facilities with a total of 28 tracks and a new signal system was a very complex project based on.

During production the station had to be closed down, which meant no sorting could take place. Therefore it had to be made in shortest possible time (between July 5th and October 29th – in practice 3 months), i.e. a very pressed production time.

Extensive production planning with good collaboration between all parties involved was a must to succeed. Alternative production methods, preassembly and other ways to increase efficiency was essential

A total rebuilding cost of 250 MSEK or 27 m Euro with 350 - 600 people working on the site at the same time in 2 shifts. A great logistic problem.

Complex technology

Based on this partnering was selected as the most suitable process. Procurement was made according to EU regulations and the partnering team where appointed 10 month (August 2003) ahead of production start.

Preparation time – 10 months
The participants were paid a fixed price for management and overheads plus a target price with incentives on the production costs. A start workshop was held in September to set the organization of the partnering team, plus forming of a collaboration team where even engineers and sub contractors where participating. The workshop created a target document with 15 common goals for the team.
To be mentioned among the goals – focus on close collaboration, maximize pre production and pre assembly outside worksite, problems or deviations should be handled and taken care of in less than 24 hours, relations based on trust, openness, honesty and supporting each other, information and team building for all personnel etcetera.

The contractor and the other team members were not used to have resources set off for common evaluation and development of the design drawings. Something the client has to demand in future projects. But no doubt the result was modified and improved drawings and solutions that could further guarantee and secure the tough time schedule.

Because the signal system supplier was delayed the real common production planning did not start until April. But still the early planning meant that client and contractor worked towards

the same goals, built trust and a good relation plus that the production resources could be guaranteed early to really keep the time schedule.

The target price with incentive where set right before production start with the goal to save 5% of the target price. In the end the target price were exactly reached.

Production and result

The production started on time and where finalized without a single day delay, even if 20% more work was added during production. On the worksite were 350-600 people working at the same in two shifts. 350 deviations occurred and were handled during production, mainly to be referred to ground work and cable channels that had to be moved. Continuous inspections during the production meant that the final inspection could be carried out in less than an hour with almost zero defects.

What can be improved and learned

- The design engineer/consultant should have been on the partnering team.
- Subcontractors and suppliers should be procured by client an contractor together.
- In Sweden there should be developed an AB for collaboration(today only for conflicts).
- The client should place a higher value on organization and competence at procurement (40% or more).
- Great emphasis should be spent by client and contractor to get team members that can collaborate and like to work in a team.
- Key personnel from contractor should be named with CV in the quotation.
- A more clear risk distribution between parties should be worked out.
- The economy system for open books should be defined before production start.
- What can change the target price must be more clearly specified and set much earlier.
- Standard prices and hourly rates should be specified before contract is signed or in the quote.
- Banverket (Swedish Rail Administration) is today the largest user of partnering in Sweden and utilize it both for investments in new projects and for outsourcing of operations.

Case study 2
GÖTA TUNNEL

Background – project description
The Göta tunnel is a large urban environmental scheme in Gothenburg. It can take 65000 vehicles a day under the centre of the city, thus relieving surface roads near the edge of the harbour and opening up a waterfront along the river for development. The client is Vägverket, the Swedish National Road Administration. Five consortia built the project representing Skanska, NCC, LBT, SBS, YIT plus Vägverket Produktion. The project was successfully inaugurated in the summer 2006.

The tunnel has three sections. The central part consists of twin bores each 1 km long and up to 30 m deep, which will each take three lanes of traffic. This section runs in rock and has been created through explosive techniques. Entry and exit to the rock tunnel is through 'cut-and-cover' tunnels with a total length of around 0.6km and a depth of up to 18m, constructed in unstable glacial deposits. These sections have poured concrete diaphragm walls, with the actual tunnel constructed from box segments within the walls.

Planning started in the 1990s but construction was delayed by expenditure restraints. However, the line of the tunnel was settled and, in broad terms, its principal components and the works required were determined. Construction commenced in 2000 with the main constructions awarded in 2001. The total contract cost is 3.4 Billion SEK (310 b Euros).

The project is being carried out through five main packages of work: for the rock tunnel, each entry tunnel, surface works such as new roads, and the installation of services. With the exception of the rock tunnel, each has been let as a design-construct contact on the basis of a statement of requirements (which implicitly include detailed technical issues since they require compliance with the specifications and standards of Vägverket). Construction of the rock tunnel is through a construction-only contract

The contracts are conventional, essentially being for a fixed price with arrangements for variations. The technical aspects of the design-build contacts were subject to intense examination before the award of contract and therefore significant changes after award of contract were unlikely. However, there is potential for sharing gains in that it is still possible for contractors to propose different ways of working or technical details to save costs. If these are approved, Vägverket will expect a proportion of the savings.

The successful contractors were selected, following a pre-qualification process, through a second competition in which proposals were evaluated under seven headings in priority order: technical aspects, price, implementation plan, timescale, organisation, quality record, and aesthetics. Scores under each heading were weighted to achieve a final overall score.

Partnering relationships and client input
While the project was being carried out through conventional contracts, all parties have accepted a 'Win-Win' partnering 'agreement' or "late partnering" under which they seek to work to common objectives (with the vision that the Göta tunnel "should be the most successful urban improvement project and beneficial to all") and to accept targets such as 'no litigation'. This has underpinned relationships and is proving effective.

Within the infrastructure sector partnering is also named "extended collaboration", using three steps depending on the level of collaboration/relationships. Another reason for this is compared to partnering is that the government organisations like Swedish Rail Administration

(Banverket) and Swedish National Road Administration (Vägverket) has a number of standard contracts that must be used even for partnering.

The process of creating an integrated project team committed to common objectives commenced with large gathering of managers and staff, with partners, in the Gothenburg Opera House with presentations of the project plus a nice get together party to get to know each other. The common objectives agreed to:

- Reduce costs, keep time schedules, agreed quality plus improved efficiency
- Avoid conflicts, satisfied Client plus end users/customers
- Minimize disturbances for surroundings
- Create additional values including, an attractive worksite, improve image for construction plus participating brand names, to have fun and the project as a reference

Vägverket has in addition developed a 'Right First Time' initiative directed at all workers on the tunnel which promotes the principles of high quality, high environmental standards, and good safety performance. This programme has been devised in collaboration with the contractors but the resulting literature, distributed to the workforce through the contractors, is 'branded' with a logo derived from the overall project, rather than any of the individual participants.

Results and lessons learned

There had been problems – one contractor was reputed to be losing money. And there was a minor delay. For Vägverket a very successful project, especially considering the complexity of the project and problems that occurred where solved together without conflicts, which has not been normal case in infrastructure projects before in Sweden.

The Göta Tunnel project mixes conventional procurement principles and contractual routes, chosen for reasons with relate to the scale and complexity of the project, with new approaches to relationships within those contracts. It has not been possible to make a direct link between these approaches and any time or financial benefits but there is an overall view that the Win-Win agreement has been beneficial.

When the project was finalized, extensive interviews was carried out with all personnel. The result is stunning. Not a single person wants to go back to the traditional way of working in construction. It is a great and much more fun way to work in collaboration and team work, where problems are solved early and together, avoiding conflicts.

After the tunnel was opened for traffic, the city environment improved dramatically with less traffic jams and a better traffic flow, lower noise levels, exhaust gases diminished and the waterfront along the river can now be developed as an attractive city environment for Gothenburg. Today 55 000 cars per day out of 65 000 cars traffic utilizes the tunnel.

Because of this the project has been nominated as one of the best city environment projects that has been designed and engineered in Sweden.

The future for partnering

Vägverket or the Swedish National Road Administration has set their target for 2010 that 1/3 or 30% of all projects, both investment and operations should be procured as partnering using there special version called extended collaboration. Today it is only around 10%

Case Study 3

PARTNERING IN PUBLIC HOUSING WITH THE PROJECT "KLOCKARBO" OWNED BY UPPSALAHEM

Background

In Sweden we have over 300 public housing companies owned and operated by the local communities. They are partly social housing but mainly compete on the open market having close to 50% market share of the rental apartments in Sweden or 900 000 apartments.

Uppsalahem is one of these companies, that just celebrated its 60 year anniversary. Owns and operates 12 500 rental apartments and 600 office premises with a total market value of 850 m Euro and an annual turnover of 85 m Euro with 230 employees. Building around 4-500 new apartments every year.

The partnering project we will describe is Klockarbo, see picture, with 116 new apartments, to be built in an old industrial area of Uppsala that should be converted into an attractive living area. Project value 14 m Euro. Project start in 2005 and finalized in 2007/2008. Participants in partnering:

Construction client	Uppsalahem AB
Architect and engineers	A5 Arkitekter &Ingenjörer AB
Contractor	NCC Construction AB

Procurement

As a public owned company the EU directives must be used (in Sweden called LoU). With the Architect there was already a frame agreement plus that general description of the project, so they where well informed. The client wanted to have an early involvement of the contractor.
Evaluation of soft parameters.
Organization with CV for persons responsible for design, purchase and production. Project to be carried out with company personnel only. 40% of value in evaluation.
References for collaboration, design and technology. Documented experience of housing construction. In later projects even experience of partnering
Quality and environmental systems
Focus on willingness to change, new design and production methods
Fixed price for administration and profit plus open books for production costs with an incentive system with shared risks/gains.

Why Partnering?

Focus on the project! To be driven as "The Project Inc".
To early take advantage of the total team knowledge and experience
To secure and lower the cost, to shorten and secure time schedules at the agreed quality level
Risk management and effective problem solving with the conflict stair
Open books for everyone
A more fun way to work

The partnering process

The design phase had a special incentive where the architect got 45% of the saving. Very rare that design was finished ahead of schedule and a good saving was achieved. Extremely valuable to have the architect and engineer as part of the partnering team.

Project start with a 2 day workshop with a partnering lead from the contractor. Together the partnering team set.

Corner stones for the project, se picture 1
A common vision " Klockarbo – partnering for an attractive living"
Common goals for the project under for headings, customer, economy/time, design/production and collaboration, total 17 goals written down on a one page partnering declaration and signed by all participants. The moral contract for the project.
All goals to be measured and followed up during continuous workshops throughout the project including technical goals as well as how the collaboration works.
Problem solving by a "conflict stair". Problems solved at lowest possible level within a set time, then to be lifted to next level – from theme groups(task team) to partnering group(core team) or up to steering group(principal team).

Risk management where the partnering team sat down and evaluated all possible risks. Tried to eliminate them, documented, calculated, set times and responsible person for the remaining risks. First meeting documented 60 risks and at the end of the project close to 200 risks where noted and taken care of.

Results
The project was finished on time with a substantial saving to share among the partnering team. Since this project was finalized the client has started 3-4 new partnering projects and partnering will be the normal way of carrying out projects.

A great advantage to have the architect as part of the team, especially to learn and get experience for coming projects. Even sub contractors for installation should be part of the team, which was not the case in this project.

Lessons learned
Be more specific and clear about the organization. Distribute clearly the responsibility and work within the team.
Implement the partnering thinking all the way down to the worksite
Follow up and handle all the risks that has been identified regularly.
Partnering does not come by itself – regularly follow up and develop the team, otherwise they will fall back into the traditional way of construction work.

Case Study 4

POUS PROJECT ÖSTERGÖTLAND REGION – REBUILDING OF LINKÖPING HOSPITAL

Background

The region of Östergötland has 416 000 inhabitants, which represent 4.6% of the Swedish population. For this the region has 4 major hospitals.

The POUS project is to rebuild, modernize and develop the University Hospital in Linköping. Total project value is 110 m Euro to be spent between 2006-2011, i.e. 5 years construction time. The hospital started in 1895 has been expanded over many years and consists today of over 50 buildings of different age and condition.

The general plan for the hospital is to make it as an integrated part of the centre of Linköping with nice parks and aesthetic investment to improve the environment. To improve hospital care, service and logistics for patients as well as personnel many departments has to be relocated , which means most all buildings must be rebuilt and modernized, 4-5 buildings demolished plus some new premises built. Totally the project consists of 70 different smaller projects.

The project is procured as project partnering for the total project, but in reality it means strategic partnering with 70 part projects with possibility to use the experience curve to increase efficiency and lower costs for each part project by using the same partnering teams over the whole project.

Partnering agreements have been signed with 2 main contractors, 4 installation companies and 7 consultant/architect companies according to following

A large contractor NCC plus one local contractor Åhlin & Ekeroth(with 43 m Euro turn over) plus Bravida, YIT, NEA och Ventkontroll as installers

Seven architects and consultants/engineers, Carlstedts Arkitekter, FL Arkitekter, WSP, Ramböll, Theorells, LEB och GMKI

The evaluation was based on 50% organization and competence, 30% execution plan plus 20% hourly rates for consultants and for contractors 40% competence, experience and suitability, 30% execution plan, organization and production plus 30% price including material, hourly rates and overhead. The client set tough demands on personnel to be used demanding at least 5 years experience of complex projects, then the deep interviews by the facilitators could focus ability for collaboration and team work instead. The procurement followed the EU directive.

Design and production phase

All partnering personnel located in same facility. Extremely important especially for consultant to make sure they work 100% on the project and that problems can be solved between the desks.

3-4 external partnering leaders are recruited from a process company with no experience of construction, working as facilitators/coaches. Responsible for workshops but also to work as “partnering controllers” to regularly follow up that the different teams functions well. Every 3-6 months, team building has to be revitalized, otherwise risk that the team falls back in to traditional construction habits.

No target prices and incentives are used, because of the amount of projects. Instead a bonus system based on three parameters is used.

Satisfied customer (end user) measuring when building is finalized and the operator has moved in.

Achieving the budget, which has been set by the supplier himself

Holding the time schedule, also set by the supplier himself

Maximum bonus 2-2.5% which is lowered both if you go below and over set time and budget. In order words it is a bonus to achieve exactly the set times and budget. There is also a bonus for project specific goals.

It is an increase in meetings with continuous workshops, but they can be kept short and secures the follow up of the project.

Result and lessons learned

A project like this cannot be procured in a traditional way. Must in such case be procured as 70 different projects. By working project by project with the same teams a clear increase in efficiency can be seen and the client estimates a cost saving of at least 10-15% probably more. The experience picked up and new knowledge in rebuilding of old buildings is great for the whole team.

The partnering teams include client, architects, engineers, contractors plus installation companies. The contractors have to work in partnering relations with their sub contractors (doors, windows, glass etcetera. The client would have liked to have even control system and security (alarm and locks) companies onboard the team.

A mayor problem with the large contractor has been: too low educational levels for personnel and a far too high turnover of personnel. The smaller contractor has a stronger culture hereby keeping their personnel better. The problem might have been strengthened because of the peak in demand we have right now in construction in Sweden. The contractor has also had a lack of skill how to organize his team in a proper way.

The future

The Client will definitely continue to use partnering for complex projects and has already started 3-4 new partnering projects. Key questions for the future.

The Client to be even more demanding in selection of personnel from consultants and contractors. Interviews to be used for finding out suitable skills for team work.

Using the partnering leaders(facilitators) to really evaluate personal skills when it comes to collaboration and team work plus motivation

Getting team members (entrepreneurs) that can come up with continuous improvements and alternative solutions that give the client lowered costs and more value for money. Today too many people with only production focus.

Case Study 5
PROCESS PARTNERING FOR HOUSING PROCUREMENT
"Development procedure and active participation in the procurement of housing"

Based on a presentation by Allan Leveau, Svenska Bostäder, June 2007

We work with
Concept building solutions, flat packs, modern buildings etc.
CM, Prefab
Frame agreement Prefab units
Frame agreement Prefab volumes
Competition in the employment sector

Preconditions, frame agreement: fictitious tendering project.

Complete property development documentation for Ramverkstan precinct
The aim is to sign, in accordance with LOU, a co-operation agreement with a number of contractors with a view to the early commencement of close co-operation
Early stage: programming or system procurement stage
When examining the contractor's estimate, we will make comparisons with a previously prepared project estimate and Ramverkstan precinct
The agreed level is a benchmark value
Form of contract: turnkey
Form of remuneration: on account with incentive 70-30% with reference to an agreed benchmark cost
Fixed fee for organisation and temporary factory

The agreement
will be based on ABT 94 (General Conditions for Turnkey Contracts)
contract period 19th December 2006 – 30th September 2010 inclusive
project in three stages, with suborders placed for each stage
the client alone is entitled to decide on continuation to the next stage
the scope and timing of suborders will be decided by the client
the co-operation agreement has been concluded with five contractors

Prefabricated units

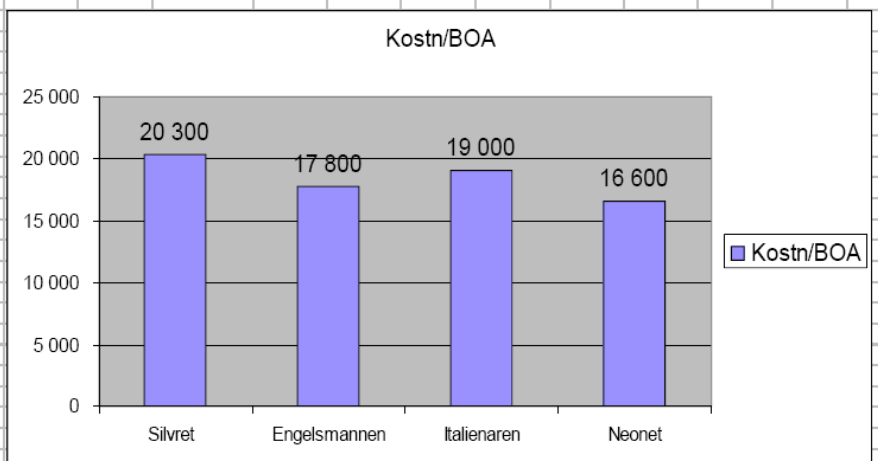
1	Peab Bostad AB	MSEK 222/195 apts
2	Skanska Sverige AB	MSEK 185 /163 apts
3	Veidekke Bygg Stockholm AB	MSEK 148 /130 apts
4	Värmdö Byggentreprenader AB	MSEK 111 / 98 apts
5	NCC Construction Sverige AB	MSEK 74 / 65 apts

Prefabricated volumes

1	Lindbäcks Bygg AB	MSEK 202.5 /180 apts
2	m3 Bygg- & Installationsgruppen AB	MSEK 157.5 /971 apts
Total:		MSEK 1,100 /971 apts

Set-offs
Curtailment option after every stage.
Documents are the property of SB.
Contractor paid for out-of-pocket expenses.
Production at benchmark cost with incentive.

	Kostn/BOA	Antal Lg	
Silvret	20 300	50	2001
Engelsmannen	17 800	97	2002
Italienaren	19 000	43	2004
Neonet	16 600	104	2006



Cost/heated dwelling area

Experience from Typhuset
From tender on tendering documents to project planning and from there to strategic partnering
Created in partnership by contractor/subcontractor – architect – client
Building in great confidence, with everyone knowing everyone else and intent on making a contribution
The same building contractor with the same subcontractor and the same project organisation
Problems are solved in the first building
Volume discounts can be used and prices kept down
Everyone profits by an efficient and well-planned process – a win-win situation
Lower developer costs
The cost of production has fallen by as much as 15%

Experience from volume production
Project created in partnership by client and volume manufacturer
Using the volume manufacturer's architect
Fabrication in a factory under cover
Allowance made for the installations
Transport operations and measurement chains are kept within limits
Think about the joins between volumes
Production time is 20-50% shorter
Inconvenience to local residents is minimised
The cost of production is 15-25% lower than with site construction

Summary of completed projects based on co-operation agreements
The old co-operation agreement, 2001-2005:
8 projects and a total of 733 dwelling units

The new co-operation agreement, 2006-2009:
5 projects have been sub ordered or are in the process of being sub ordered, 430 dwelling units approx.

The volume construction agreement, 2001-2005:
170 student flats

96 “ordinary” flats

Altogether about 1,500 dwelling units ordered on the basis of co-operation agreements

Conclusion from:
“Process partnering”
The production cost of industrial production is SAC 16,000-19,000 per sq. m. available space (including grants but not garaging/parking spaces)
Student flats are SEK 1,000-1,500 more expensive per sq. m. available space
All industrial production is based on technical systems and repetitions
Interactive partnering is a sine qua non

Further examples can be obtained from the courses run by the Swedish Construction Clients Forum and from the Forum’s partnering network (see below).

Annex 3

THE FORUM'S EXPERIENCES OF PARTNERING PROJECTS

Sweden differs from many other European countries in that the public sector, acting through national, local and regional government, has not made co-ordinated use of its "purchaser role". In the UK and Denmark, for example, government, through its ordering organisations, has stipulated that special reasons must be stated for not choosing partnering. In these countries, then, government has been a powerful impelling force for nearly 10 years where partnering issues are concerned. Not so Sweden, where interest in partnering was pioneered by the big contractors, often taking their cue from the UK and Denmark. In consequence, partnering came to be somewhat suspiciously regarded in Sweden.

An attempt to explain why clients opt for partnering and how they have experienced it is presented in a graduate thesis by Andersson/Johansson, Lund University Faculty of Engineering (LTH). Their research took the form of a questionnaire study among members of the Swedish Construction Clients Forum in 2006.

Underlying data
The reason for there being different numbers of answers to the various questions is that not all respondents answered all the questions.

Experience of partnering
The respondents had various degrees of experience, but the majority had gained medium-large experience of partnering.

Preparatory work by the client – Phase 1
Sources of experience and knowledge
The four principal means of gathering experience and knowledge are, in ranking order, "other developers", "own previous projects", "training" and "from the contractor".

Reasons for using partnering
Table 1, below, gives the respondents' ranking of their reasons for opting in favour of partnering. The ranking is shown in the table header, and the other figures show the breakdown of the respondents' answers between the different reasons.

Ranking order	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	No numbering
Complex project	3	3	1		1			1	2
Dispute avoidance		1	1	2	3	3			1
Risk distribution	1		3	3	3		2		1
Meeting deadline	3	3	3		2	1			2
Keeping costs down	2	6	3	3					4
Maintaining quality	1	1	2	5	1	2	1		1
Will to improve	6	2	3	3		1	1		4
Other reason							1		0

Table 1. The respondents' ranking of their reasons for choosing partnering.

Partnering models used
Project partnering is by far the commonest form of partnering in the study, and more than half the respondents stated that they had used it from an early stage of things. Only a few of the respondents employ strategic partnering.
Adviser involvement
Three-quarters of the respondents used partnering leaders. In most such instances – nearly half the projects studied – the partnering leader was recruited from the contractor's company. Next to this, almost one-third used a partnering leader outsourced from a neutral party. The partnering leader's
participation was fairly evenly distributed between the three phases, with a slight predominance for phase 3.

Joint production of purchasing documents – Phase 3
Associate involved
The two commonest associates in phase 2 are "architect" and "consultant". It is also relatively common for the contractor to participate in this capacity. Interestingly, not one single respondent included the supplier.

Use of the Public Procurement Act (LOU)
Roughly two-thirds of the respondents procured projects in compliance with the Public Procurement Act, most often by open procurement.

Evaluation of the tender
Nearly half the respondents stated that the tender was evaluated by 61-80% soft parameters. One interesting observation is that no respondent has reported tenders being evaluated in 51-60% or 91-100% soft parameters.

Soft parameters in the invitation to tender
A quarter of all the projects include references as a soft parameter in the invitation to tender. Another quarter included the project organisation in the invitation.

Hard parameters in the invitation to tender
The commonest hard parameter in the invitation to tender was "fixed price for management and profit", with "incentive solution" as the second commonest.

Evaluation of partners
"Point-scoring" was the commonest method of evaluating partners, and "interviews with tenderers" the second commonest, while customer references were the third commonest.

Implementation with planning and production – Phase 3
Associates taking part
The commonest team members during this phase are "client" and "contractor", but "consultant" and "architect" are relatively common as well.

Team building
A very large proportion of the projects carried out some form of team-building activity.

Workshop
Practically all projects included a start-up workshop, and all the respondents stated that the workshop focused on co-operation, not on technology. The commonest item on the start-up workshop agenda was "common objectives", but "organisation", "team building" and "partnering declaration" were common items as well.

Joint appraisal of risks

Three-quarters of the respondents state that they carried out a joint risk appraisal. The financial risk was the main point of emphasis in these joint appraisals.

Conflict resolution method
A very large proportion of the projects managed their conflicts with the aid of a conflict staircase model.
Organisation of the partnering project
"Steering group" is the commonest organisational component, followed by "partnering group". The remaining components are fairly evenly distributed between the other alternatives.
Use of incentive solution
An overwhelming majority used incentive solutions in their projects. A small proportion employed a form of bonus which could be likened to an incentive. The commonest structure of the incentive solution is "exceed/stay below agreed benchmark price". Second commonest is "fixed price for management and profit". The contractor and the developer are the main incentive beneficiaries. The other parties figure a good deal less often.

Continuous workshops
Three-quarters of the respondents state that they conducted workshops continuously as the project proceeded. The two commonest workshop agendas were "measuring co-operation" and "measuring outcomes/targets", followed by "constant improvements" and "safety and health".

Partnering team training
Only one-third of the projects included training for the partnering team. All of those stating how the training was organised replied that it was conducted in-house.

Partnering agreement
The contactor is the party most often procured under a partnering agreement, followed by the architect and consultant.

Major alterations in the course of the project
Only two respondents reported any major alterations in the course of the project. One of them commented:

"We changed project leaders, owing to parental leave. Thanks to the form of co-operation, this was no problem."

Change of view
In addition to the facts emerging from the replies to the questionnaire, certain consistent trends are evident in replies to the question of whether the respondents' views on running a partnering project have changed since the project took place. The respondents invariably highlight the following:

The importance of the choice of people.
The importance of having a suitable organisation.
The value of mutual close confidence.
The relevance of continuously monitoring goal achievement.

Financial and technical outcomes
In the questionnaire study, the actual outcome of projects was evaluated with the aid of 18 different statements. The respondents were asked to indicate, on a five-point scale, the extent of their concurrence with each statement.

The partners' commitment to the partnering process

A very large majority of the respondents felt that all partners were committed to the partnering process.

Common objectives
In nearly all projects, the respondents found that a common objective had been established.

Trust within the team
An overwhelming majority of the respondents found that there was a very high level of trust between the partners in the team.

Risk in relation to profit
Many of the respondents felt that all parties assumed a risk commensurate with their estimated profit, though answers on this point showed a certain degree of spread.

Pooling resources
Nearly all respondents agree that all parties were willing to pool their resources.

Open problem-solving
The majority of respondents felt that all parties encouraged open problem-solving with no bones made about differences of opinion.

Cost reduction and efficiency improvement
The great majority of respondents agree that all parties in each project looked for new ways of cutting costs and making the project more efficient.

Management support
An overwhelming majority of the respondents agreed that all management levels, top management included, supported the partnering process.

Communication
The absolute majority of respondents felt that communication was non-confrontational.

Roles and allocation of responsibilities
Many of the respondents agree that roles and responsibilities were clearly defined in the partnering process, though a relatively large number take a neutral stance on this point.

Co-operation in the project
A very clear majority of the respondents felt that there was better co-operation in the partnering project than they believed would be the case in a traditional project.

Schedules
Most of the respondents felt that schedules were adhered to better in the partnering project than they believed was possible in a traditional project.

Catering to the customer’s needs
The respondents found they were able to cater more adequately to the customer’s needs in the partnering project than they believed was possible in a traditional project.

Cost increases
Most of the respondents agreed, partly or entirely, that cost increases were smaller in this project than in a traditional project.

Legal disputes
A very clear majority of the respondents felt that legal disputes could be more effectively averted in the partnering project that they believed possible in a traditional project.

Extra time for the client
Most of the respondents partly agreed with the statement that the client devoted more extra time and effort to the partnering project than to a traditional project, but answers on this point show a certain degree of spread.

Working with partnering in future
Practically all the respondents a very much in favour of working with partnering in future projects.

COUNTRY REPORT

UNITED KINGDOM

CONTENTS

1. Introduction

1.1 Brief overview of country

The UK has a total area of some 245000 km², and 12,500 km of coastline. The climate is temperate and it is not subject to many natural hazards, although climate change is increasing annual losses from storms, flooding and coastal erosion. The population in January 2008 was estimated to be 61.3 million with a growth rate of 0.3%, slightly less than in previous years. Although there has been a natural increase since the late 1990s, net international migration into the UK (notably from other EU Member States) has been an increasingly important factor in population change.

Since emerging from recession in 1992, the UK economy enjoyed the longest period of expansion on record prior to the financial crisis of the past year. Currently (December 2008), a short-term decline is forecast owing to the impact of the international credit crisis. Services, particularly banking, insurance, and business services, account for the largest proportion of GDP.

1.2 Overview of UK construction sector

The construction sector enjoyed steady growth for over a decade up to 2008, with output in 2006 being some €200Bn or 8.2% of UK GDP. The industry consists of over 250 000 firms and employs 2.1 million people, 40% of whom are self-employed. It accounts for 7% of total employment in UK. While there has been some consolidation in middle-ranking firms, over 90% of companies employ fewer than 10 persons.

Table 1 shows the breakdown of construction output in 2006[98]

	€m
New residential construction	39392
Residential repair, refurbishment etc	46770
New non-domestic-building	61627
Non-domestic repair, refurbishment etc	31294
New civil engineering works	13317
Civil engineering repair, refurbishment etc	10045
Total	202445

Table 1: UK construction output in 2006

Industry output is currently in decline, but Government investment in new and refurbished public sector buildings, typified by the commitment to replace or renew every secondary school, will ensure that non-domestic building will remain at a high level, aided by PFI arrangements. Civil engineering works will also be boosted by such major projects as CrossRail although overall this sector has shown a decline in recent years. New private housing output has decreased sharply owing to difficulties in the mortgage market but the government has increased the budget for new social housing over the period 2008-11by 60% compared with the previous three-year period and intends that output should rise to 70000 units annually. Overall, however, the immediate prospects are difficult, with growth being resumed in 2010 or 2011.

The UK industry is highly competitive in global markets for design and other specialist professional expertise, now including associated financial, legal etc services as more

[98] Euroconstruct – November 2007 (conversion at 1Euro = £0.682

countries adopt PPP forms of project procurement. By contrast, UK contractors have not developed a global presence although some housebuilders have overseas subsidiaries. And overseas ownership of contracting firms has increased in the past decade. Similarly, overseas ownership of construction product and materials suppliers has increased.

The steady growth of construction output since the 1990s has been sustained in part by an international workforce, with workers from new Member States of the EU being prominent. Pressures on capacity have also led to increased use of off-site construction methods, particularly in the housing sector where both timber and steel construction systems are well established. Climate change issues have been recognised in changes to Building Regulations, with the government stating that these will by 2016 require all new homes to the 'zero carbon'. The extension of that target to non-domestic buildings is under consideration.

1.3 The construction business system and recent changes

Since the 19th century, the construction business system in the UK has been based on the separation of design and construction, with design undertaken by architects and engineers bound by strong professional loyalties[99]. The professional institutions for architects and engineers have responsibility for setting entry qualifications and accrediting educational courses, and for determining the scope of the works carried out by their members. (For example, until recently architects could not act as developers.) Architects have not only been the leader of the design team (for buildings) but have acted as the client's representative in managing the works.

Contractors have traditionally been appointed through a competitive tender based on detailed drawings accompanied by a 'Bill of Quantities' prepared by a 'quantity surveyor' whose role is to determine from the drawings the quantities of materials and works (eg m² of plastering) required by the project. The contractor is asked to indicate his unit price for each item, as well as the overall total, and these prices are used to determine the payment for any variation in the works during their execution. Under this system, there is strict separation of responsibilities, with the architect (or, for civil works, the consulting engineer) taking overall responsibility for the design and being required to approve any variations (proposed by either the client or the contractor).

The contractor acts as a 'general' contractor, appointing and co-ordinating the specialist sub-contractors and taking overall responsibility for delivery and for the quality of the final output. Since the 1970s, however, the proportion of sub-contracting has steadily increased, with many projects having several tiers of sub-contractors. This fragmentation of the industry – in part a legacy of uncertain market conditions in the 1960s and 1970s which deterred firms from taking on permanent employees - has created difficulties in communication and in the assignment of specific responsibilities.

The highly competitive market in which contractors have traditionally operated has militated against investment in labour or technology. Financial returns have been low, with firms exploiting opportunities offered by late design changes to increase their profits. Short-term project horizons have not provided the security required for development of skills and the collection of data that would support improvement of project processes.

Private house construction shares these characteristics. It is dominated by developer-led construction, with the principal actors being developers who acquire land and obtain the necessary planning permissions. Construction is then often completely sub-contacted on a competitive basis, with the developer co-ordinating the activities of the different contractors on a site which may have tens or even hundreds of houses under construction. Social housing is procured through more conventional client-contractor relationships, although social housing providers have in the past few years been amongst the most innovative in exploring new types of relationship.

[99] For a historical review, see Institutional reform in British construction: partnering and private finance. G M Winch. Building Research and Information 28(2) pp141-155 (2000)

Design-build was introduced in the 1960s and has become a common procurement route for standardised types of building such as industrial buildings and retail parks. A survey of contracts in use in 2004[100] found that the proportion of work undertaken using design-build had stabilised at slightly over 40% of the total value of construction workload. Other forms of procurement – notably construction management - have been relatively widely employed since the 1980s and in the past 10 years the government has promoted more 'integrated' forms of procurement (see later Chapters). Since the 1980s also, the growth of Public-Private Partnerships, with the private sector taking responsibility for funding, constructing and operating a public facility, has also stimulated greater integration of functions, with construction interests often being part-owners of a company formed to construct and operate the facility, at least during construction and initial operation.

This was the background to the preparation of several seminal reports in the 1990s which led to the introduction of more collaborative practices.

[100] Contracts in Use: A survey of building contracts in use during 2004. Royal Institution of Chartered Surveyors. London (2006)

2 Stimuli to the introduction of voluntary arrangements - High level enquiries and reports

2.1 Background to the 'Latham' report

A sequence of reports over a period of 40 years drew attention to deficiencies in the delivery performance of the UK construction sector. They are summarised in the paper by Fisher and Green which forms Appendix 4 to the National Audit Office's first report on modernising construction[101]. All identified the traditional fragmentation of responsibilities in the industry as a principal cause of difficulties, with the lack of trust and collaboration in the industry being manifest in a high rate of litigation over defects and in late delivery of projects. Prior to 1990, some clients moved to design-build and other more integrated contract forms in an attempt to overcome these difficulties but until the 1990s there was no concerted effort to stimulate collaborative approaches across the industry.

The situation changed in the early 1990s as a result of the conjunction of several driving factors:

- Significant changes at senior Ministerial levels following the change of Prime Minister, bringing about a new focus on competitiveness in UK industry
- Increasing concerns from utilities and transport operators, previously publicly-owned but privatised in the 1980s, about the business value that they were obtaining from their substantial expenditures on construction
- The experience of North Sea oil and gas companies, which in response to low oil prices in the 1980s had cut the cost of developing new fields through the CRINE (Cost Reduction Initiative for the New Era) initiative which included the introduction of partnering and other forms of collaboration
- The creation of several joint initiatives by private sector clients and suppliers, aimed at promoting collaborative ways of working. Notably, the Reading Construction Forum sponsored an influential report on partnering.[102]

2.2 The 'Latham' report and its follow-up

In 1993, the government appointed Sir Michael Latham, a Conservative MP with a long background of experience in housing and construction, to undertake a Review of Procurement and Contractual Arrangements in the United Kingdom. The objectives were

> 'To make recommendation to government, the construction industry and its clients regarding reform to reduce conflict and litigation and to encourage the industry's productivity and competitiveness'

The report from this review, *Constructing the Team*[103] was published in July 1994. It covered many aspects of industry performance, including tendering procedures, dispute resolution, relationships between main contractors and sub-contractors, payment systems, contract forms and the structure of representative bodies in the industry. It emphasised the role of clients and recommended that Government should be a 'Good Practice' client. In relation to partnering, it quoted with approval a document by the Chartering Institute of Purchasing and Supply (the professional body for procurement specialists) that:

> 'Partnering includes the concepts of teamwork between supplier and client and of total continuous improvement. It requires openness between the parties, ready

[101] Modernising Construction. National Audit Office. (2001) Report HC87 Session 2000-2001
[102] Trusting the Team - the best practice guide to partnering in construction Reading Construction Forum. (1995) ISBN 0 7049 0503 5
[103] Constructing the Team HMSO London (1994) ISBN 0-11-752994-X

> acceptance of new ideas, trust and perceived mutual benefit. Partnering can only be successful with the commitment of the Chief Executives of the organisations concerned and by the selection of individuals with a determination to work together. We are confident that partnering can bring significant benefits by improving quality and timeliness of completion whilst reducing costs. It can be applied to the construction industry through longer term agreements or option contracts.'

The report suggested that the Government should indicate to public sector clients that 'such relationships could be beneficial and certainly deserve some experiments.'

While *Constructing the Team* did not give great emphasis to partnering, it gave strong endorsement to new forms of contract which placed a responsibility on the parties to act fairly and 'in an atmosphere of mutual collaboration', and which had 'firm duties of teamwork, with shared financial motivation to pursue those objectives'. And it wished to see the introduction of 'project insurance' (ie insurance for all parties in the project rather than individual parties taking out their own insurance) and 'trust funds' (ie project bank accounts) out of which all parties would be paid. These would, it was argued, reduce the incidence of disputes over responsibilities and payments when difficulties arose.

The Report led to legislation, notably on issues of payment, and also in 1995 to the creation of the Construction Industry Board (CIB), which brought together representative bodies for different sectors of the industry, its clients, and the government. These 'umbrella' representative bodies were themselves federations; for example the Construction Industry Council represented design and other construction professional, its members being the professional institutions for architects, engineers, cost consultants etc. There were similar bodies bringing together associations of main contractors and builders, product and materials suppliers and specialist sub-contractors. The way in which the Board promoted collaboration is discussed in Chapter 4.

Client representation

The fact that clients were represented at this senior level was significant. Clients had previously not had a national representative body but in response to the Latham report a Construction Clients Forum, with both private and public sector clients, was formed. Some major clients remained outside the Forum in previously established groups such as the Construction Round Table, but the Forum was able for several years to be a client voice at the highest levels, and contributed to the climate of change by producing such documents as 'The Client's Pact with Industry, published in 1999. This committed Forum members to good client practice including 'promoting relationships based on teamwork and trust' but also set out the clients' expectations of the industry.

The subsequent history of client representation - documented in Reference 3 - is, though, one of some tension and frequent changes in structure. By comparison with the representative bodies for supply interests, client bodies have been poorly funded and have not gained the support of key parts of the client community. Hence coherent introduction of change in client practice has rested heavily on the instructions and guidance to public sector clients.

2.4 Stimuli for further change in the late 1990s

The change of government in 1997 caused the performance of the construction sector to receive renewed attention. The incoming government recognised that construction was central to its plans for enhanced investment in health and education services and it also wished to boost housebuilding through the release of funds accumulated by local authorities through 'right-to-buy' legislation enacted by the previous administration under which local authority tenants had been able to purchase their homes.

However, there were concerns that the CIB, being composed of representative bodies, would not promote the radical changes that major clients for the industry, who were influential with

Ministers, thought were required. Accordingly, the government established a new review of the industry, which would examine the issues from the clients' perspective.

2.5 The 'Egan' report and its follow-up

The Construction Task Force was chaired by Sir John Egan, Chief Executive of BAA plc, the privatised operator of Heathrow, Gatwick and other major airports. Its members were drawn principally from client and funding interests, but it also included the Managing Director of Nissan (UK) Ltd, whose factory had achieved very high levels of productivity. The Task Force had the following terms of reference:

> 'To advise the Deputy Prime Minister from the clients' perspective on the opportunities to improve the efficiency and quality of delivery of UK construction, to reinforce the impetus for change and to make the industry more responsive to customer needs.'

The Task Force reported in July 1998. Its report, *Rethinking Construction*[104], was strongly influenced by the chairman's experience of collaborative, long-term relationships in the motor industry. (Sir John Egan had previously been Chief Executive of Jaguar Cars.) Amongst its conclusions, it identified the fragmentation of construction processes as a major barrier to efficiency and recommended greater integration of responsibilities for design, construction and operation, with construction and operational expertise being fed into the design process. It also concluded that 'the repeated selection of new teams in our view inhibits leaning, innovation and the development of skilled and experienced teams' and recommended long-term relationships, commenting:

> 'An essential ingredient in the delivery of radical performance improvements in other industries has been the creation of long term relationships or alliances throughout the supply chain on the basis of mutual interest. Alliances offer the co-operation and continuity needed to learn and take a stake in improving the product.'

Against the definitions used by the Study Team, therefore, the report was recommending 'framework arrangements' and 'strategic partnering'. It advocated 'partnering the supply chain' which it summarised as:

- Acquisition of new suppliers through value-based sourcing
- Organisation and management of the supply chain to maximise innovation, learning and efficiency
- Supplier development and measurement of suppliers' performance
- Managing workload to match capacity and to incentivise suppliers to improve performance
- Capturing suppliers' innovations in components and systems

These characteristics might be interpreted as 'strategic partnering' in the context of this study.

The report commented that:

> 'There is already some evidence that [partnering] is more demanding than conventional tendering, requiring recognition of interdependence between clients and constructors, open relationships, effective measurement of performance and an ongoing commitment to improvement…..An essential aspect of partnering is the opportunity for participants to share in the rewards of improved performance.'
>
> 'Effective partnering does not rest on contracts. These can add significantly to the cost of a project and often add no value for the client. If the relationship between a constructor and employer is soundly based, and the parties recognise their mutual

[104] Rethinking Construction Department for the Environment, Transport and the Regions (1998) ISBN 1 85112 094 7

> interdependence, then formal contract documents should gradually become obsolete. The construction industry may find this revolutionary. So did the motor industry….'

One might observe that this vision has not been attained; contracts are still the foundation of construction relationships although forms of contract have evolved which incorporate more collaborative processes. But the report was correct in emphasising that partnering does not rest on contracts; it rests on a willingness (which may be reinforced by incentives) to exhibit and promote collaborative behaviours which then influence the project environment in which the contract is fulfilled.

The report identified aspects of performance of particular relevance to clients – for example the time taken to construct a project, and the predictability of that time, and similarly the project cost and its predictability – and proposed annual targets for improvement in these. In identifying predictability or time and cost as important dimensions of performance, it was addressing the poor performance in these respects revealed in studies of government construction projects carried out by Bath University (see Section 5.1).

By contrast with *Constructing the Team,* the report placed less emphasis on the collaboration of diverse, but distinct construction interests and focussed more on the relationship between clients and contractors. It was heavily process-orientated, with little reference to the role of design in the production of a built environment that met clients' needs effectively. This created some tensions within the industry when its recommendations were being implemented. The John Egan's later report (see below) redressed the balance somewhat

In order to implement the changes advocated, *Rethinking Construction* proposed the creation of a 'Movement for Change' – a network for developing skills and exchanging experience, and a Housing Forum to do the same for housing. In addition, it proposed a Knowledge Centre to be a focus for good practices, and demonstration projects to show how new ways of working could be carried out in practice, and their benefits. Like the Latham report, it also said that government should commit to being a best practice client.

In different ways, all the Report's proposals were implemented. Chapter 4 summarises how the bodies that were created took forward the recommendations addressed to industry and Chapter 5 the ways in which government took up the recommendations of the report.

2.6 'Accelerating Change' report

In order to maintain the momentum for change, in 2002 Sir John Egan was invited by the Strategic Forum for Construction (a successor high-level body to the Construction Industry Board) to review progress in the implementation of *Rethinking Construction*. His report *Accelerating Change*[105] particularly stressed to need for client leadership and for projects to be undertaken by integrated teams.

> 'The major long-term benefit from integrated team working is the potential for relationship continuity. Integrated teams should be based, wherever possible, on strategic partnering. Knowledge and expertise can then be transferred more effectively from one project to the next. Whilst this is clearly of benefit to repeat clients, the benefits to one-off clients should not be ignored, as such teams will be better placed to offer them an improved service based on past experience, the ability to innovate, and though the development of a culture of continuous improvement.'

It set a target that 20% of construction projects (by value) should be undertaken by integrated teams and supply chains by the end of 2004, rising to 50% by the end of 2007 (see Chapter 8 for an review of progress towards these goals).

[105] Accelerating Change – a report to the Strategic Forum Construction Industry Council (2001) ISBN 1 898671 28 1

The report also noted that SMEs needed assistance in participating in integrated teams and announced that the Strategic Forum would develop a 'Toolkit' to assist firms to help clients and individual supply side members to assemble integrated teams, and that there would be a package of education and training on the subject to meet the needs of SMEs and of small and occasional clients.

The Toolkit (available as a download from www.strategicforum.org.uk) consists of two linked sets of workbooks setting out key questions for participants in integrated project teams and integrated supply chains, with guidance and references to supporting advisory material. The latest version dates from late 2004.

2.7 Summing up

These two high-level reports in 1994 and 1998 were crucial in establishing the need for change to address the fragmentation of the industry and in setting out the directions for change. They were of different character; the 'Latham' report drew on many inputs from representative bodies, stressed teamwork and was concerned to reform the institutional arrangements through which construction operated. The later 'Egan' report presented a distinctive view from the client sector, emphasised client/supply relationships and looked to individuals and individual firms to bring about change. They were complementary in that the first report established an environment in which the need for change was recognised and engaged construction representative bodies in the process; the second contained sharper criticisms, provided examples of successful collaborative practices from outside the industry and set demanding targets. *Accelerating Change* kept up the pressure. More than ten years later, these three reports are still a reference points for change in the industry.

3 'Approaches' to the promotion of voluntary collaborative arrangements

It is convenient to structure the presentation of how 'voluntary arrangements for collaboration' have developed within UK construction by reference to the various 'approaches' used to promote such arrangements. These are summarised in this chapter, with Chapters 4-7 providing more detail[106].

The discussion focuses mainly on the way in which collaborative forms of project organisation (eg partnering) have been encouraged, with less reference to the development of collaboration in the supply chain, ie 'construction consortium' type of collaboration, although the widespread use in public sector procurement of Private Public Partnerships and of framework arrangements (as in the National Health Service – see Chapter 5) has had the effect of encouraging firms to come together in this type of collaboration.

The UK has promoted collaborative forms of project organisation through a number of routes, each serving to reinforce the impact of the others. They may be characterised as follows:

- Establishing promotional bodies and mechanisms (particularly demonstration projects) (Chapter 4)

  Each of the reports discussed in Chapter 2 led to the creation of a body (or in the second case, a set of bodies) to take forward the report's proposals. These bodies had high-level backing from the government, including official and at times Ministerial attendance at their meetings. They received government funding during their initial periods of operation and were able to commission and publish promotional material and to arrange training and other activities in support of the changes being promoted. In particular, the Movement for Innovation, which was established in 1999, identified 'demonstration projects' which embodied collaborative practices and promoted their outcomes, showing through Key Performance Indicators that these projects produced superior performance than industry norms.

- Adoption by Government and other public bodies in procurement actions (Chapter 5)

  The power of public purchasing was used to promote new ways of working. Government endorsed the recommendations of the reports and incorporated advice on collaborative arrangements in its guidance to Departments and public bodies. The Treasury produced guidance in 1999 and in 2000 the newly-created Office of Government Commerce (OGC), the Agency of the Treasury responsible for setting policy on and overseeing Government purchasing, initiated 'Achieving Excellence', a programme aimed at radically improving the performance of government Departments in construction procurement. OGC has consistently promoted collaborative forms of project organisation since then. The government issued similar guidance to local authorities. Large government client organisations, such as the National Heath Service and Defence Estates, developed their own programmes to promote collaborative arrangements.

  The public sector accounts for around 40% of the market for construction in the UK and these initiatives therefore had the potential to influence that proportion of the market.

[106] For an account from the client's perspective of the industry changes in this period, see 'Change in the Construction Industry: an account of the UK Construction Industry Reform Movement 1993-2003' D M Adamson and A H Pollington. Routledge (2006) ISBN 0-415-38599-7

- Endorsement by audit bodies (Chapter 6)

  The National Audit Office (NAO), which is responsible to Parliament for auditing Government expenditures and investigating the value for money obtained from Government programmes, reviewed the changes introduced in two reports published in 2001 and 2005 and commented favourably on their impact. These reports were a clear endorsement of collaborative arrangements, vital for their adoption by public bodies.

  The Audit Commission, which audits local authorities and health service bodies, similarly made clear that it would be looking for evidence that these public clients had adopted collaborative ways of working.

- Monitoring and promotion (Chapter 7)

  As part of the arrangements now established for monitoring the performance of the industry, there are annual reviews of project performance against the Key Performance Indicators. These include assessments of the use of 'integrated' forms of project structure. The launch of the annual set of performance indicators is an occasion for promoting the progress of the industry in meeting delivery and other performance objectives, and for showing how demonstration projects which utilise collaborative arrangements out-perform industry averages.

4 Promotional bodies

4.1 Construction Industry Board

The Construction Industry Board (CIB) brought together the principal representative bodies from the supply side of construction together with clients' representatives and government. Its task was to promote adoption of the recommendations in the Latham report that were addressed to the industry. Through working groups, it produced 13 reports which were guides to good practice for the industry. The report of Working Group 12 *Partnering in the Team*[107] was published in 1997. It stated that:

> 'Partnering is a structured management approach to facilitate teamworking across contractual boundaries. Its fundamental components are formalised mutual objectives, agreed problem resolution methods, and an active search for continuous measurable improvements. It should not be confused with other good project management practices, or with long-standing relationships, negotiated contracts or preferred supplier relationships, all of which lack the structure and objective measures that must support a partnering relationship.
>
> The critical success factor for partnering is the commitment of all partners at all levels to make the project a success. The result is that the partnering agreement drives the relationship between parties rather than the contract document.'

It asserted that 'the benefits of partnering are cumulative, so that strategic alliances[108] produce significantly more advantage than single project arrangements' and that 'the greatest benefits are obtained when the partners come together at the earliest stage of the project'. Further, partnering required:

> Commitment – from the top of the organisations concerned
> Dedication and hard work
> The appointment of a 'Partnering Champion' in each organisation
> Training in team building
> A workshop held by an independent facilitator, to promote mutual understanding and develop joint problem-solving skills

The report presented the benefits of partnering through statements made by industry figures, and included case studies. The benefits, coming from a combination of the early involvement of the principal supply interests and the adoption of more collaborative ways of working, included:

- Cost savings through better design and improved site processes, with areas for future savings identified
- Increased commitment from supply interests, because of the prospect of future work
- Faster construction, leading to better returns for the client
- Greater confidence that the project will be achieved within budget and to programme
- Faster recovery from unforeseen site problems
- Generation of a 'can-do' attitude which seeks to overcome problems
- Savings on tendering costs, and in administration generally

This CIB report can be considered the first high level, pan-industry, officially endorsed report that advocated the use of partnering in construction, although it referred to other documents,

[107] Partnering in the Team Construction Industry Board (1997) ISBN 0-7277-2551-3
[108] This use of 'alliances' corresponds to 'strategic partnering' in the terms of this study.

for example, the Reading Construction Forum report referred to earlier and a European Construction Institute report[109], which had promoted the concept to more limited audiences.

The CIB reports were widely distributed, with the aid of government funding. But the Board did not itself engage in promotional activities other than an annual conference. By contrast, the recommendations of the later 'Egan' report were very actively promoted to the industry.

4.2 The Movement for Innovation and its associated bodies

The 'Egan' report led to the creation of several bodies aimed at promoting its messages:

- The Movement for Innovation was established, with government funding, to promote changes generally in construction. In contrast to the Construction Industry Board, its Board was composed of individuals appointed for their experience of new ways of working – it did not have appointees from representative bodies.
- The Housing Forum was established to promote the same changes in housing (particularly the social housing sector)
- In 2000, the Local Government Task Force was set up to promote new practices in local authority construction procurement and management
- The Construction Best Practice Programme was established to be the 'Knowledge Centre'.

In 2002, these separate bodies were brought under one 'Rethinking Construction' umbrella which, following further changes – including the cessation of direct government funding in 2006 - has evolved into the present 'Constructing Excellence' organisation[110]. This body also now provides the executive for the Construction Clients Group – the present representative body for clients.

The changes in 2002 reflected a perception that having multiple bodies detracted from the clear 'branding' that the documentation and promotional activities needed, and enabled 'Rethinking Construction' to be seen as the national focus for the promotion of change in the industry.

The strategy adopted by these bodies for promoting more collaborative ways of working and the other changes advocated in *Rethinking Construction* may be summarised as:

1) Establish demonstration projects, with performance monitoring systems, which incorporate new ways of working

2) Provide national benchmarks with which firms and clients can compare their performance

3) Show that, using these benchmarks, the ways of working in the demonstration projects have business advantages

4) Promote these to firms and clients

5) Provide case study information so that firms and clients have guidance on the measures that led to these business advantages

6) Provide training and assistance to facilitate take-up.

[109] Partnering in the Pubic Sector: a toolkit for the implementation of post-award, project-specific partnering on construction projects. European Construction Institute. Loughborough ISBN 1 873844 43 4

[110] For further information, see www.constructingexcellence.org.uk

4.3 Strategic Forum

Following the demise of the Construction Industry Board, the principal representative bodies within the construction sector (including clients) formed the Strategic Forum for Construction. This continues to provide a top-level focus for change in the industry, notably through the promotion of integrated approaches to project delivery. Key outputs from the Strategic Forum have been the *Accelerating Change* report, the Integration Toolkit and the *Profiting from Integration* report (see Chapter 8).

4.4 Demonstration projects and Key Performance Indicators

Recognising that exhortation would not be sufficient, the Movement for Innovation established demonstration projects which would show to the industry in general the benefits to be obtained from new ways of working. This approach drew on the experience of using demonstration projects to promote new technologies and management approaches to improve energy efficiency in industry and housing in the UK. Not all included an explicit element of collaborative working but a large proportion had this as a principal focus.

Demonstration of benefits required the development of performance metrics. A Key Performance Indicator (KPI) Working Group was established to develop indicators that clients and supply interests would accept as meaningful. These indicators would not only measure the performance of demonstration projects, but would be the basis of an industry-wide monitoring system so that progress towards the performance improvement goals set by the 'Egan; report could be monitored. The report of the Working Group[111] was published in January 2000 but on the basis of its initial conclusions a first set of national performance indicators was produced in 1999. The indicators reflected the dimensions of performance emphasised in the 'Egan' report, such as the level of costs and the time take to complete a project, and the predictability of both costs and timescales.

The demonstration projects were selected from projects put forward by firms and clients. By 1999, the Movement for Innovation could publish a list of 128 projects. In its report for 2002, Rethinking Construction compared the performance of 99 'construction' demonstrations and 53 'housing' demonstrations with the national figures revealed by the 2001 review of the industry. On almost all measures, there was superior performance in the demonstration projects.

There was some criticism that the initial selections were not sufficiently stringent, owing to a desire to engage many organisations in the change process. And in follow-up reviews there were also questions about the relative impact of new ways of working on performance – it was suggested that the fact that the projects were to a degree open to scrutiny would have improved their performance and that firms might have nominated projects with their best management teams. A further finding of reviews was that collaborative ways of working had not penetrated beyond 'first tier' suppliers – in other words that the collaboration was not extending down the supply chain. Sub-contractors were continuing to experience traditional attitudes and behaviours.

Despite these comments, there was general agreement that the demonstration projects had motivated and informed firms and clients and the programme has continued, with many Case Studies still being published by Constructing Excellence on its Website.

4.5 Promotion and training

The information gained from the demonstration projects was summarised in Case Studies made available through the Construction Best Practice Programme. The Programme also produced guides and toolkits to assist firms in adopting new ways of working. Consultancy

[111] KPI Report for the Minister of Construction. Department for the Environment, Transport and the Regions, (2000) Product Code 99 CD 0820

assistance was also provided. The 2002 report of Rethinking Construction records that CBPP had 1500 publications available and in that year had given more than 150 briefings to Directors of firms.

Although the level and focus of activity has changed, particularly with Constructing Excellence now being dependent on industry subscriptions and other non-government income, the philosophy underlying its activities has not. The regional 'clubs' for exchange of experience in new practices initiated by Rethinking Construction still operate and publication of the annual set of national Key Performance Indictors (which continue to be supported by the government) provides firms with benchmarks with which to compare their performance. The Case Studies from demonstrations and other guidance material then assist firms and clients in adopting more collaborative practices.

5 Collaborative arrangements in public procurement

Within the UK government, the Treasury is responsible for setting policy on public procurement, although other Departments (eg the Department for Communities and Local Government in relation to local authorities) issue guidance to public bodies in their spheres of responsibility. Since 2000, the focus for policy guidance for government Departments has been the Office of Government Commerce, an agency of the Treasury. This Chapter examines the development of advice on collaborative arrangements contained in official guidance since 1999. It also provides examples of policy statements and practices from individual large public clients and of advice to local authorities.

5.1 Early drivers for change

An Efficiency Unit scrutiny of government procurement of construction[112] in 1995 found that government bodies were partly to blame for the poor performance of the industry and made recommendations to improve the structure and management of government projects and the skill level of government clients. As a consequence, the Treasury commenced revision of its guidance to government clients, the outcome being the set of Guidance Notes published in 1999 (see below).

It also commissioned Bath University to carry out a pilot study of the delivery performance of government projects. The report from this study, published in 1998, showed that government projects had a poor track record of delivery against cost and time targets, with 73% of projects exceeding the tender price and 70% exceeding time estimates. This led to the commissioning of a more comprehensive study whose report was published in 1999. Again the findings showed poor performance, with 50% of projects exceeding the pre-tender budget and 66% over-running on time.

The Treasury was aware of developments in procurement practice taking place within construction and prior to the publication of the 'Egan' report, had created the Government Construction Clients Panel (GCCP) which brought together representatives of the principal government clients of construction to improve government procurement. With the aid of the GCCP, the Treasury developed its own guidance on partnering[113] which endorsed the guidelines on partnering[114] produced by the European Construction Institute, an industry 'club' of clients and contractors drawn mainly from engineering construction (ie the energy industries, process plant and off-shore construction). These new ways of working were promoted to all Departments and other bodies of central government.

5.2 Procurement Guidance in 1999

In 1999, following *Rethinking Construction*, the Treasury issued a set of procurement guidance notes. One of these concerned Teamworking, Partnering and Incentives[115] . It cited the Reading Construction Forum report *The Seven Pillars of Partnering*[116] for evidence on the savings to be obtained through project partnering and in general the guidance note drew heavily on that report and its predecessor *Trusting the Team*[117].

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[112] Construction Procurement by Government – an Efficiency Unit Scrutiny (1995) ISBN 0 11 430141 7
[113] Strategic Partnering in Government. Central Unit on Purchasing. Guidance No 57
[114] See Reference 8
[115] Teamworking, Partnering and Incentives. Procurement Guidance No 4. HM Treasury, London (1999)
[116] The Seven Pillars of Partnering – a guide to second generation partnering Reading Construction Forum (1999) ISBN 0 7277 2690 0
[117]

In 'Key points for Senior Management' this note stated that:

> 'Partnering has been shown to yield significant savings in time and cost. Longer term strategic partnering arrangements have been shown to yied the greatest benefits with cost savings of up to 40%.
>
> Commitment and clear leadership by example and involvement are required from senior management for teamworking and partnering to succeed……
>
> *Partnering should e adopted as far as possible on all new and existing contracts*. [italics added]
>
> Partnering arrangements, whether project specific or longer term do not replace the need for competition at the outset of the contract. The competition should be on the basis of value for money over the life of the facility and not on cost alone. It will need to address each organisation's culture and commitment to work in a collaborative manner to drive down unnecessary costs whilst delivering the required quality.
>
> Incentives should be included in contracts or in partnering arrangements, to encourage designers, contractors and/or other suppliers to provide benefits to the client significantly beyond those contracted for.'

It therefore gave strong support for the introduction of partnering and cited with approval the Construction Industry Board report *Partnering in the Team* discussed in Chapter 4.

Guidance Note No 5 emphasised the importance of teamworking and offered guidance on how it might be developed. It then noted that:

> 'partnering extends the definition of teamworking by adding the need for a more formal structure to be agreed by the parties which:
>
> - identifies the common goals for success
> - sets out a common resolution ladder for reaching decisions and solving problems
> - identifies the targets that provide continuous measurable improvements in performance
> - Sets out gain share and pain share arrangements (incentives) where these are not included within the formal contract'

The guidance noted that these were normally set down in a 'partnering charter' but it emphasised that:

> 'the partnering agreement and charter do not replace the need for a formal contract'.

Further, a single partnering charter might cover a number of suppliers and the client, even though there were individual contracts with each supplier. The partnering arrangement and charter should not create a contract or a legal partnership and should contain an express provision making it clear that it is not intended to be legally enforceable.

The guidance also listed activities which could contribute to the development of a partnering and teamworking culture:

- 'Partnering workshop (at the start of the project)
- Regular project workshops
- Partnering charter
- Identify and agree common goals
- Agree measurable continuous performance improvement targets
- Agree dispute resolution ladder
- Incentive mechanism
- Public acknowledgement of team achievements

- Open book accounting
- Common offices
- Common filing system/database
- Arrangement to encourage partnering all the way down the supply chain
- Use of a partnering 'coach' available at all times
- People appraisal – arrangements for ensuring that the right people are in place and that they have the necessary attributes or, if they do not, that they are actively acquiring them'

The guidance identified that partnering could be either for a single project or could be 'strategic'; the latter would be implemented though framework agreements or contracts written to cover a number of projects. It noted that 'strategic partnering is evolving at a rapid pace', did not offer specific guidance on this aspect of partnering, and referred to *The Seven Pillars of Partnering* for advice on the subject.

Finally, it discussed incentives and how these must be structured to deliver greater value for money, emphasising that they should be arranged as far as possible so that the actual party delivering the saving (eg a sub-contractor) received the reward, and not a party higher up in the supply chain.

5.3 Achieving Excellence programme and OGC guidance

The Office of Government Commerce launched 'Achieving Excellence in Construction', a programme to improve government procurement practices, in 1999. It thus gave effect both to the Efficiency Unit study and *Rethinking Construction*, and was spurred by the findings of the Bath University studies.

The programme set out a comprehensive approach to improving performance, notably through introducing a 'Gateway' process of project approvals. The targets for achievement by March 2002 included:

- '100% of departments to use partnering/teamworking as appropriate', and
- '100% of departments to use innovative procurement strategies based on integration of the supply chain'.

In 2003, Achieving Excellence was re-launched for a further three years with a new set of Construction Procurement Guides that reflected experience since 1999 and the development of procurement policy. Each carried a prominent endorsement from the National Audit Office. In revised form, these still provide the essential guidance for government construction clients.

Preferred procurement routes

OGC Guide No 6 'Procurement and Contract Strategies'[118] established that there were three recommended procurement routes for government construction works:

- Public Private Partnership
- Prime Contracting[119]
- Design-Build

[118] Available from www.ogc.gov.uk

[119] Prime Contracting was defined as 'having a single contractor take responsibility for management and delivery of a project, including demonstrating during the initial period of operation that operating cost and performance parameters can be met in accordance with a pre-agreed cost model'. It thus differs from design-build in that the contractor accepts greater responsibility for meeting operating cost and performance targets.

Other (including traditional) procurement routes were only to be used when they could be demonstrated to be clearly superior to these three.

All three preferred routes therefore involved a degree of integration in supply chains and provided a suitable basis for the addition of partnering arrangements

Framework agreements

OGC Guide 6 also provided guidance on Framework agreements. These:

> '…..may be used for Prime Contracting and Design-Build contracts. They can also be appropriate for maintenance contracts. Clients with small or occasional projects should consider collaborating with others in a similar situation to share a framework agreement…'
>
> 'Each framework agreement must be advertised and competed for in accordance with the EU Procurement Rules. It should be noted that there is no commitment under a framework agreement for either party to undertake any business until the first contract is 'called off'

Framework afreements are expected to result in savings in cost and time through:

- 'No requirement for re-bidding each individual project
- Continuous improvement by transferring learning for one project to another
- Improved working relationships
- Continuous workflow
- Speed of procurement'

Partnering

Updated guidance on partnering was provided in OGC Guide No 5 *The integrated project team – teamworking and partnering*. The advice on teamworking in this guide showed little change from that in the 1999 guide with the same title; however, that on partnering was more fully developed.

In relation to strategic partnering, the Guide said:

> 'Strategic partnering involves the integrated supply team and the client organisation working together on a series of construction projects to promote continuous improvement. Strategic partnering can deliver significant savings, eg up to 30% of the cost of construction. With this kind of arrangement, a contract or framework agreement is awarded to an integrated supply team for a specific period of time. The team prices individual projects within the contractual arrangement.'

It stated the principles of partnering to be:

- 'Early involvement of key members of the project team
- Selection by value, not by lowest price
- Common processes, such as shared IT
- A commitment to measurement of performance as the basis of continuous improvement
- Long-term relationship in the supply chains
- Modern commercial arrangements based on a target cost or target price with shared pain/gain incentivisation'

Thus this extended the list of partnering attributes in the 1999 guidance, but omitted reference to dispute resolution procedures.

Under 'why partnering is worth doing', the Guide stated that:

> 'long-term collaborative relationships can promote better value for money by encouraging clients and suppliers to work together as a integrated project team to:
>
> - Improve design, including operational efficiency and health and safety performance
> - Minimise the need for costly design changes

- Identify ways of driving out inefficiency in the construction process
- Repeat good practice learned on earlier projects
- Minimise the risk of costly disputes
- Identify incentives to deliver tangible improvements in the quality of the construction and reductions in the time and whole-life cost
- Integrate the whole supply chain

Partnering down the supply chain, including suppliers of products and materials, was advocated:

> 'Specialist manufacturers and suppliers may be part of joint venture arrangements, a consortium or a teamworking/alliancing agreement. It is important to note that supply chains should also adopt partnering principles. Supply chain relationships of this type are essential to obtain the maximum benefits from partnering for clients and the industry.'

The Guide asserted that 'partnering is applicable to all projects' but is particularly appropriate when:

- 'the project is complex and business requirements are difficult to specify
- The client has similar project requirements over time, giving scope for continuous improvement in cost and quality
- construction conditions are uncertain, solutions are difficult to foresee and joint problem-solving is essential'

Finally, the critical success factors were:

- 'a shared risk register, with risks allocated an managed across the team
- clear, measurable objectives for health and safety, sustainability, improving value for money in construction quality, delivery times and whole life costs that are agreed between the client and the other organisations that make up the integrated team
- clear identification of who does what and reporting lines with defined roles and responsibilities for coordinating aspects of the design and construction process
- performance measurement and benchmarking of both the client and supply team members' performance to promote continuous improvement; the aim is to identify and resolve problems and to share best practice
- target cost arrangements involving the ring-fencing of profits underpinned by open book accounting that makes payment processes visible to all
- arrangements for sharing efficiency gains – so that all parties in the team benefit – and incentives for everyone in the integrated team to work together to develop innovative cost-effective design solutions
- clear design quality targets set to promote innovation'

Forms of contract

No specific form of contract was recommended, but Guide No 6 noted that the form of contract chosen should facilitate working in a collaborative manner. New forms were being developed but standard forms were also evolving to accommodate the 'cultural changes' arising from new ways of working.

5.4 Examples of collaborative arrangements in large government clients

Each government department and agency with responsibilities for procuring construction works procurement developed its own strategy towards procurement in the light of the overall OGC guidance. The approaches of three major government clients are summarised below; each illustrates a different aspect of collaboration:

- Defence Estates, which has used Prime Contracting extensively.
- The National Health Service, which established framework arrangements for projects which were not financed through PPP. These are also examples of 'construction consortia'.
- Highways Agency, which has developed strategic partnering

Defence Estates

Defence Estates (DE) is responsible for all the non-operational facilities of the Ministry of Defence, with an annual expenditure of around £1 billion. Even before publication of the 'Egan' report, it had reviewed its procurement of construction and concluded that there was large room for improvement. In 1997, it instituted two pilot projects on collaborative procurement under the title of 'Building Down Barriers'. These concerned the construction of two sports facilities at a total cost of some £14m. The projects were monitored by academic research groups, the results being summarised in Appendix 13 of the NAO report *Modernising Construction.* A comparison with projects procured through conventional routes showed that capital costs were around 5% higher but whole-life costs were 7% and 14% lower and there was a reduction of around 30% in construction time, with very low wastage of materials and significantly higher labour productivity. These projects were influential in the development of Defence Estates' subsequent policy on construction procurement.

DE has adopted PPP/PFI and Prime Contracting as its preferred procurement routes and under the latter route has appointed consortia for:

I. maintenance and smaller construction projects within a whole region (it has divided the UK into seven regions) These contracts are let for a minimum of seven years, extendable to ten years.

II. the operation of specific functions over more than one region, for example it has let three contracts for the operation of water supply and treatment services which between them cover the UK (this is associated with a PPP funding).

Prime Contracting is a natural route for the agency, since it is a procurement strategy that his been used for some years in the development and supply of defence equipment. It is defined by the agency[120] thus:

> 'A Prime Contractor is one having overall responsibility for the management and delivery of the contracted requirement on time, within budget and fit for the purpose for which it was intended, including demonstrating the operating cost parameters can be met.'

DE recognised that, in contrast to the 'hard' issues of price, warranty, quality etc, 'soft' issues (approach to collaborative working, trust, openness etc) would be important in the selection of Prime Contractors' it therefore employed a specially developed Soft Issue Bid Evaluation Tool (SEBIT) to help instil objectivity into the selection process.

Under the Prime Contracting arrangements used, a target cost is agreed together with a target fee (in effect, a profit level). The total represents the agreed target price. Variations from that target price result in changes to the fee, giving the Prime Contractor an incentive to achieve cost savings; there is also an agreed maximum price beyond which the Contractor bears all additional costs. In the operation of the contract, performance measurement plays a central role, to monitor continuous improvement targets and to demonstrate the benefits of new ways of working.

DE has also established Suppliers Associations which bring together its regional Prime Contractors and the contractors for its water supply and treatment facilities in order to exchange experience and to develop collaboration.

[120] Prime Contracting in the MoD Estate. Available from www.defence-estates.mod.uk/publications

Owing to the scale of Defence Estates' operations, the first Prime Contracts were not let until 2003/4. There are indications in Annual Reports of the agency that savings are being achieved and an NAO study in 2005 reported favourably on progress but no overall assessment has yet been made of the impact of Prime Contracting and associated collaborative arrangements. The current target is by 2010 to achieve 30% whole-life savings by comparison with 2004/5 and a new performance monitoring system is being introduced to enable this to be monitored.

National Health Service (NHS)

Health services in England and Wales are delivered through local 'trusts' which operate both primary care (General Practitioner) and acute (hospital) services. The trusts are responsible for the procurement and maintenance of hospital buildings and are increasingly taking a financial stake in primary care premises, although General Practitioners operate as small businesses and many own their premises. All major developments now take place through Public-Private Partnerships, with the local trust as client. The NHS centrally provides guidance to the trusts and has established national arrangements to facilitate the procurement of health premises financed by trusts. Particularly relevant to this study is the NHS ProCure 21 programme[121].

Launched in 2000 as a response to *Rethinking Construction*, ProCure 21 is a national framework arrangement for supply chains (ie construction consortia) wishing to work on hospital projects that are directly financed by health trusts. Each supply chain is a consortium headed by a main contractor, called the Principal Supply Chain Partner (PSCP), and including key professional (design, cost etc) advisers. The PSCPs with their respective consortia (12 originally, but one has since left the arrangement) were selected from over 120 expressions of interest through procedures that met EU Public Procurement requirements; accordingly, trusts are able to use them without the need for further OJEU advertisement. The ProCure21 framework was originally intended to run until 2008 but has been extended to 2010.

Trusts select a PSCP and associated supply chain from the members of the framework through a competitive process and work with them to develop the scheme and a Guaranteed Maximum Price (GMP) for the works, under arrangements agreed centrally in the creation of the framework. Any extra costs not consequent on client changes are borne by the PSCP and the supply chain while savings are shared 50:50 with the trust. The early involvement of the main players in the supply chain brings advantages and a culture of collaboration is fostered by the use of a contract form that encourages early warning of project issues and collaborative problem-solving. Because inclusion in the framework could lead to work from a large number of NHS trusts, the consortia have a great interest in achieving success on their current projects and therefore placing themselves in a good position for future contracts.

The central NHS organisation provides other facilities for trusts, such as maintaining a list of accredited Project Directors and tools for design evaluation and risk assessment. Similarly, the central organisation allocates auditors to the projects; the PSCPs and their supply chain are subject to 'open book' reviews.

The latest available data indicate that 61 projects totalling £284 million have been completed, 65 projects with a value of £585 million are on site and a further 131 schemes with an expenditure of £901 million have been agreed. Projects completed in 2006 showed that 94% of schemes were completed within budget and 89% on time, with no cost premium over traditional contracting methods. In addition to the time saved in selecting contractors, small projects (up to £5 million) are typically being completed seven weeks earlier than with conventional procurement, and larger projects (£5 to £15 million) 17 weeks earlier, owing to better planning.

[121] Available from www.nhs-procure21.gov.uk

Highways Agency

The Highways Agency[122] is responsible for the construction and maintenance of motorways and other trunk routes and has similarly selected consortia for its works. Its principles of procurement include:

- Early creation of the delivery team, which allows more scope for innovation, improved risk management, better forward planning of resource requirements, shorter construction periods and other benefits
- An integrated and incentivised supply chain, which benefits from the knowledge and experience of specialised contractors
- The maintenance of a competitive and sustainable supply chain, though making forecasts of future requirements and creating improvement targets within longer term relationships
- A partnership approach based on long-term relationships, with performance measurement and continual improvement targets.

These are further developed in the statement in the agency's Review of Procurement Strategy 2005:

'To build and improve our long-term partnerships we have developed:

- Area Maintenance contracts lasting up to seven years subject to good performance
- Early Contractor Involvement contracts covering the project planning, design and construction period for major projects, including packaging them together where possible
- Frameworks for delivering a range of services covering consultancy, technology, surveys and small projects
- The Cultural Assessment Framework (CAF) to measure behaviours and the success of project partnering to support long-term relationships
- Communities between suppliers of similar services - maintenance, major projects, construction management, and some frameworks - with Agency programme and project sponsors, to enable forward planning, retention of key personnel, sharing of best practice and knowledge transfer
- Project Partnering Charters, and embedded them.

The Agency's Annual Report for 2006/7 states that it has achieved cumulative savings of £156 million in procurement against a target of £200 million by 2007/8.

5.5 Collaboration in local authority construction procurement

From 2000, local authorities in England and Wales became subject to the 'Best Value' regime [123] in which there was a statutory duty on authorities 'to secure continuous improvement in the way functions are exercised, having regard to a combination of economy, efficiency and effectiveness' They were required to develop strategies which set out how their corporate objectives would be achieved and the criteria against which progress would be measured, publish annual performance plans and undertake programmes of fundamental performance reviews. This provided a context for and stimulated the introduction of different ways of providing services, including through framework and partnering arrangements.

[122] www.highways.gov.uk
[123] Best Value guidance Department for the Environment, Transport and the Regions Circular 10/99 (1999)

4Ps guidance

In 1996, the associations representing local authorities in England and Wales created an organisation for providing guidance and training to local authority staff in new forms of procurement, particularly those which involved private finance and partnering. The organisation was given the title of 4Ps, standing for Public Private Partnership Programme.

4Ps summarises[124] the characteristics of partnering thus:

> 'At its most basic level, partnering is used as a concept within traditional procurement to try and avoid the adversarial culture that potentially occurs. It is used as a protocol within existing contractual arrangements to ensure that all parties work together to ensure the success of the contract.
>
> Alternatively, specific contract forms that expressly use the concepts outlined in the Latham and Egan reports have been developed. These include PPC 2000 and NEC Option X12. The concept of partnering and integrating the team around the project has led to the implementation of Early Contractor Involvement schemes whereby the contactor has been appointed at an early stage to assist in the design and preparation of the project, using his experience and skills to achieve improvements in constructability and construction economy.
>
> The developments in partnering have enabled many local authorities to develop approaches to integration of service delivery by bringing together different forms of procuring individual services, eg as a series of framework contracts, under an overall partnering framework involving all the service providers and the local authority. This approach enables the benefits of different procurement approaches for different areas to be fully realised whilst ensuring that integration and improvement of the overall service is delivered.
>
> *Advantages*
>
> - Envisages a collaborative role between the local authority and service provider in the discharge of the service provider's obligations under the contract, and therefore a less adversarial approach than traditional procurement
> - If the contract is of sufficient length, the service provider may take a longer term view on investment to improve the service
> - Tends to encourage more output-focussed thinking
> - Encourages a "win-win" attitude
> - Gives opportunities for synergies from linking the design and construction aspects of projects
> - Risks are more explicitly identified than in traditional procurement leading to a better prediction of out-turn costs and timescales for delivery
> - The collaborative approach enables more flexibility if changes to service requirements are needed
>
> *Disadvantages*
>
> - Depending on the form of partnering used, many of the disadvantages of traditional procurement can remain if the basis of the contractual relationship is a traditional form of contract
> - The examples of using the principle into the operational phase of services are limited
> - Partnering requires commitment from both parties to carry out partnering activities and there is a resource requirement needed to ensure that sufficient time can be committed to developing and maintaining the relationship required at all levels of both local authority and service provider

[124] www.4Ps.gov.uk

- The inclusion of a contractor or service provider at an early stage in the development of a project may be difficult in terms of selection criteria and the difficulty in demonstrating Value for Money at this early stage of the process
- Payment may not be linked to service outcomes
- There is generally no commitment from the public sector to maintain funding at an agreed level during the life of the contract

4Ps produces ‘packs’ of procurement documents and guidance for different types of local government applications (education, police, leisure etc). These include model contract forms.

6 The role of audit bodies

It was essential that the bodies responsible for auditing government and other public sector organisations should be fully supportive of collaborative forms of procurement and project delivery. Extracts from key reports on this subject are presented here.

6.1 NAO report *Modernising Construction* (2001)

The National Audit Office (NAO) reviewed government initiatives to improve the performance of construction in 2000, with its report being published in January 2001[125]. The NAO made clear that they approved of the changes being introduced. The Executive Summary to the report noted that:

> 'A succession of major studies have highlighted the inefficiencies of traditional methods of procuring and managing major projects – in particular the fallacy of awarding contracts solely on the basis of the lowest price bid ……..
>
> Studies have identified the potential for major savings…….specifically, by industry and its clients adopting a more collaborative approach strongly founded on a competitive process with appropriate risk sharing in which value of money is obtained for all parties through a clear understanding of the project's requirements, transparency as to costs and profits, underpinned by clearly understood rights and obligations, and appropriate incentives.
>
> This report highlights good practice……which if applied more widely could achieve sustainable improvements in construction performance……. through changing their approach to procurement and management of construction, the larger spending departments and agencies estimate that they will achieve efficiency gains of over £600 million annually and improve the quality of construction.'

The report went on to note that:

> 'Private sector clients are increasingly establishing long term collaborative relationships or partnering with construction firms for the benefit of both parties – client and supplier. The benefits include client and contractor working together to improve building design, minimise the need for costly design changes, identify ways of driving out inefficiency in the construction process, replicate good practice leaned on earlier projects and minimise the risk of costly disputes.
>
> Partnering does not mean that departments have a cosy relationship with contractors – thus increasing the risk of less value for money and possibly fraud and impropriety. If established reliably, partnering can provide departments with greater assurance that value for money is being achieved. For example, partners should still be appointed competitively, and clear improvement targets should be set There should be commitment by both parties to continuous improvement, and open book accounting……is key so that departments can have assurance about contractors' cost and efficiency improvements.'

The NAO had 'strategic partnering' particularly in mind when making these comments.

The NAO emphasised the importance of monitoring performance:

> '……reliable performance measurement is needed to ensure that planned benefits are achieved and remedial action is taken quickly when performance is less than satisfactory.'

[125] See reference 4

They further noted that departments needed to invest in training staff in the skills required to be effective clients

The report included a review of the academic literature on partnering and examples of how four major government clients had changed their practices.

This NAO report was crucial in establishing that more integrated forms of procurement, and more collaborative forms of project structure (both types of changes being mandated by the government in Achieving Excellence) were acceptable in terms of public sector accountability provided appropriate procedures and safeguards were established.

6.2 NAO report *Improving Public Services through Better Construction* (2005)

The NAO returned to the subject of construction performance in 2005. Their second report[126] reviewed progress since 2000, notably by examining data on 142 government projects, with a combined budget of around £1.2 billion, delivered between April 2003 and December 2004. They found that there had been significant improvement (55% of projects were delivered on budget, compared with the 25% figure found by the Bath University study in 1999) and the actual level of overspend was smaller (4.1% compared with 6.5%). Across all government construction expenditure, this improvement would be worth £800. Furthermore, 63% of projects were delivered on time compared with 34% in 1999.

The report estimated that the benefits across central and local government programmes of collaborative ways of working would be over £1billion while better programme management, resulting in faster construction (including grouping smaller projects into larger programmes) would result in more than £700 million additional savings.

The NAO attributed the improved performance to the Achieving Excellence programme developed by the Office of Government Commerce (see below) but commented that this guidance was not always followed because 'many public organisations do not have the appropriate skills and experience to implement it effectively'. They considered that Departments needed to make more progress in various areas including:

> 'Ensuring that supply chains are appointed at the earlier opportunity, fully integrated, and that there is sufficient tension in framework agreements.'

They were clear that 'the client is at the heart of well managed construction' and included amongst the characteristics of successful construction clients:

> '*The adoption of longer-term planning* providing suppliers with greater certainty and stability in work and funding
>
> *Understanding which procurement route is best suited to their circumstances* using contracting arrangements that:
>
> - encourage good practice and collaborative working
> - maintain competitive pressures
> - involve target costs and performance incentives (over the life of the asset) agreed with the entire delivery chain, and
> - secure payment of specialist suppliers
>
> *Secure the early and continued involvement of the main contractor and key specialist suppliers* in the design of the project, and the active management and tackling of risks to safety and delivery.'

[126] *Improving public services through better construction* National Audit Office (2005) Report HC 364-1 Session 2004-2005

The NAO reported that three of the major public clients that they had studied in 2001 had obtained significant financial savings as a consequence of introducing more collaborative ways of working (in the fourth, widespread introduction of collaborative project arrangements was too recent for the benefits yet to be assessed):

- The Environment Agency estimated the savings to be around 4% of project costs, with additional savings of the same magnitude in administrative and legal costs owing to the number of claims from contractors falling to zero.
- The Highways Agency estimated savings in project costs of £67 million in three years and also noted that contractors' claims had reduced very significantly.
- NHS Estates reported a reduction in project costs of 1-4% and faster delivery of projects which equated to savings of a further 3.5% and reduction in claims worth a further 3% compared with previous experience.

The report included case studies of the successful implementation of collaborative project management which offer examples of supporting techniques such as workshops, pain-gain sharing incentives and project insurance.

A report produced in 2005 by the Auditor General for Northern Ireland[127] similarly endorsed the move towards collaborative procurement and the other initiatives taken by the Office of Government Commerce.

6.3 Audit Commission

The Audit Commission is the body that audits English local authorities, health service bodies and other public bodies not under direct government control. It produces relatively little guidance of its own but audits for Value for Money against 'best practice' guidance issued by other bodies including the Department for Communities and Local Government, the Office of Government Commerce, the Housing Corporation, 4Ps etc.

As an example of its endorsement of collaborative practices, a recent study by the Commission of procurement in Housing Associations[128] (bodies which provide social housing with the aid of both government and private sector funding) emphasised that 'active contract and performance management' was a key factor in securing good project performance. This study did not deal with the procurement of new construction, but included examples of savings in buildings-related services achieved through collaboration, some being particularly relevant to SMEs. Thus, for example:

> 'Some associations take contract management a step further into supply chain management…..the involvement of the client in the chain of businesses/suppliers that are providing a product or service. ……This approach is more suited to a longer-term relationship between the client and supplier, such as in partnering contracts.
>
> Liverpool Housing Trust (LHT)…….actively supports its contractors in programmes to improve their performance. By helping these companies understand their own business better, LHT has achieved efficiency improvements throughout the supply chain. Total savings to the trust over the last three years from the partnering contract for heating systems have been in the region of £1.1 million. The improved boilers supplied through this arrangement have saved tenants £80 each in annual fuel bills.
>
> LHT employed a consultant in 204 to carry out a detailed business analysis of their heating installation and maintenance partners. Under several partnering framework agreements, they had access to much cost information but wanted better intelligence on what was driving cost increases. ……Contractors moved from initial suspicion to understanding the value of the exercise……One of the issues highlighted was that

[127] Modernising Construction Procurement in Northern Ireland. Northern Ireland Audit Office (2005)
[128] Better Buys: improving housing association procurement practice. Audit Commission (2008) ISBN 1-86240-541-7

> many of the companies were small businesses started by skilled craftspeople which had grown and now needed different skills to manage them.
>
> LHT has had no price increases in the last year and are paying far less than many organisations to install their heating systems. There is also a focus on quality throughout the partnering team.'

The report noted that under the collaboration established with their suppliers, LHT worked with the boiler manufacturers and installers to tackle the failures experienced in boilers after three years of operation. This was traced to an issue of water quality, with the result that new systems were installed that saved £90000 annually in boiler replacements and £112000 in running costs for the tenants.

7 Monitoring and promotion

As noted in Chapter 4, two of the key initiatives taken by the Movement for Innovation were the creation of a system of Key Performance Indicators (KPIs) for construction, which could operate both at the level of individual projects and at the level of the industry, and a set of demonstration projects which incorporated the practices advocated in *Rethinking Construction*, including collaborative ways of working.

Each year from 1999, the publication of the annual set of Key Performance Indicators (KPIs), and comparing the national figures with those of demonstration projects, has provided an occasion for drawing attention to the benefits to be gained from adoption of collaborative practices, with the Case Studies and other material and activities (eg benchmarking clubs) provided by Constructing Excellence being sources of guidance for clients and firms on the use of collaborative forms of procurement and project management. The 2007 report[129] from the demonstration programme, for example, showed that for each of the 20 performance indicators used the average performance of the demonstration projects exceeded that of the industry as a whole, as measured through the annual Key Performance Indicator surveys.

In addition, the KPIs have themselves included data on the growth of such practices, and on perceptions by clients and contractors of the degree of integration in project teams and supply teams, which might be regarded as proxy for the degree of collaboration in projects.

For public bodies, other forms of monitoring are relevant. All are subject to efficiency targets and those with large construction budgets have reported progress in their use of collaborative procurement methods and the savings made as a result. The previous Chapter reviewed some of the national audit reports that have also kept up the pressure for change.

[129] Demonstration Project Programme. Annual Report 2007. Available from www.constructingexcellence.org.uk

8. Extent of application of voluntary collaborative arrangements and experience of their use

8.1 Extent of use

Although the UK has an industry-wide Key Performance Indicator system of monitoring construction activity and performance, there are no national data on the extent to which voluntary arrangements are employed. The report *Taking Advantage* (see Chapter 9) *noted that:*

> 'There are no measured data from which it is possible to quantify the volume of work procured through frameworks as a percentage of the overall construction market or to chart its growth over time. There is no evidence indicating how much work is now managed under framework and what proportion of that work may have moved from SMEs to larger contractors'.

At the same time, there is ample evidence that frameworks, with or without partnering elements, are widely used in both the public and private sectors:

- The National Federation of Builders survey cited in Chapter 10 found that a high proportion of their SME members considered that the public sector market for construction had been affected by the introduction of frameworks.

- Previous chapters have illustrated how major government clients and local authorities have adopted this approach

- Recent references to the use of frameworks in a leading construction trade journal have involved the following major construction clients:

  BAA plc (airport operator)
  Prison Service (England and Wales)
  Tesco (leading supermarket chain)
  Learning and Skills Council (further education facilities)

- Some contractors are now adopting an explicit framework approach to their use of sub-contractors and suppliers.

A recent report on the use of 'integrated' project teams[130] concluded that there had been an increase in integration across the supply chain, with around 20% of the principal interests (with the notable exception of M and E Contractors) reporting in 2007 that 80% or more of their work was carried out through integrated team processes, this figure having risen from 10-15% in 2005.. The data used in the report will in general have come from the larger organisations in the industry and so will relate to the larger projects; hence the proportion of construction turnover being undertaken through integrated project teams will be higher than the figures at first sight suggest. While the exact form of integration was not specified, the report may be regarded as an indication of the growth in use of 'voluntary collaborative arrangements' although the relationships among team members will not necessarily include the types of incentive to of voluntary collaboration considered in this report..

This report was the outcome of an enquiry by the Strategic Forum which reviewed progress against the target set in *Accelerating Change* that by the end of 2007 at least 50% of projects should employ an integrated approach. Clearly, this has not been met. The report therefore reviewed the barriers to the use of integrated project teams, reiterated the business case for their use and made recommendations for future promotional activities.

[130] *Profiting from Integration* Strategic Forum for Construction November 2007)

8.2 Impact on overall construction performance

While the introduction of more collaborative ways of working has undoubtedly impacted on performance of individual project, and the NAO report in 2005 was able to bring forward data to illustrate the impact across more than 100 government projects, the impact on national construction performance is less easy to determine. A review in 2008 of the KPI data published annually since 2000[131] found that these showed a mixed picture, with clear improvements in the proportion of projects being delivered on time, and in quality and safety measures, but a decline in some 'hard' measures such as construction times and costs. The article concluded that the data provided little evidence of significant overall improvement as a consequence of *Rethinking Construction,* ten years after its publication.

It may be, of course, that the KPI data disguise the impact of other factors, such as higher specifications, or the impact of new regulatory measures on both the product (eg higher energy efficiency standards) and the process (eg more stringent health and safety and waste management requirements). And the vast proportion of smaller projects, particularly in the domestic sector, have not been affected by *Rethinking Construction.*

8.3. Reviews of experience

Several reports have surveyed experience with collaborative forms of relationship.

A survey conducted to inform *Profiting from Integration* indicated that contractors considered that the early appointment of key members of the project team led to savings of 2.5% of project cost. Non-quantifiable benefits identified in the same survey and in the accompanying case studies were in line with those put forward in the guidance material from public bodies etc referred to earlier and include:

- Shorter and more certain construction times
- Reduction in risks
- Greater ability to secure and programme necessary materials etc
- Higher quality construction, with fewer (or zero) defects on handover
- Fewer disputes
- Enhanced client satisfaction

A report for Constructing Excellence and the BRE Trust[132] brought together evidence of performance improvement from published sources (eg the NAO report of 2005) and from individual clients and contractors. It included data from Cambridge University showing a 20-30% reduction in the unit costs (in real terms) of non-laboratory buildings over the period 1995-2005. This was attributed in large measure by the authors of the report (who included the former Director of Estates for the University) to improved procurement processes and relationships. The data from contractors also pointed to significant gains from new ways of working – one produced figures to show a three-fold improvement in site productivity over 1993-2004 while another had found that while profitability had not increased greatly, projects were much more consistently profitable. The report did not attempt a national projection of benefits, but concluded that there was strong evidence that partnering and similar arrangements led to improved performance.

A recent academic study[133] sought to identify evidence from the Constructing Excellence demonstration projects of changes in the industry. It concluded that there was evidence that the industry had responded to the client-led requirement for different ways of undertaking projects, with considerable success in terms of the delivery of projects. However, there was little evidence of transfer of learning from one project to another, or that contractors were taking the in initiative to build such collaborative thinking into their business processes. Thus

[131] Egan 10 years on. R McMeeken. Building 9 May 2008 pp30-33
[132] The Business Case for Integrated Collaborative Working. (2007) Available from www.constructingexcellence.org.uk
[133] Analysis of types of continuous improvement: demonstration projects of the Egan and post-Egan Agenda. R Olayinka and H Smyth. Proceedings of Cobra 2007, RICS Foundation, London

'continuous improvement' was a feature of specific programmes, where there was a continuing relationship between a client and a contractor or supply team, rather than a concept embedded in the industry.

Support for this view that the impact of collaboration is partial comes from another academic study, this time of the experience of specialist contractors of partnering.[134] This found that a significant proportion (28%) had had experience of a partnering relationship between the main contractor and themselves, but this was not strongly linked to the existence of a partnering relationship with the client. The general view was that project partnering did not extend beyond the principal parties to the project and to 'Tier 2' suppliers. It was thought that clients should pay more attention to the way that partnering concepts and arrangements extended down the supply chain.

The Royal Institution of Chartered Surveyors published a review of partnering experience in 2005[135]. Based on interviews with participants from both client and supply sides, this drew attention to the need to recognise that the parties differed in their commercial objectives, and this inhibited the development of partnering, and emphasised the need for investment in the relationship by both sides if traditional attitudes and relationships are to be changed. It also found evidence of 'lip service' being paid to the partnering concept; some 'partnering' arrangements appeared to transfer a disproportionate of risk to the contractor. Despite these reservations, however, there was evidence that tangible benefits could be obtained, and those who had experience of genuinely collaborative relationships were positive about their impact both on the working environment and on the ultimate output.

There is therefore a consistent message at the project level that collaboration can bring benefits, but it must be genuine and it requires investment on the part of the client in the development of the necessary project culture and processes. This theme runs through all the guidance and reports, from the early 'Seven Pillars of Partnering' to the later Strategic Forum Integration Toolkit and the conclusions of the RICS report.

However, construction is an industry with a huge range of types of project and a correspondingly large range of firms and clients. Occasional clients, in particular, may not consider it worthwhile to invest in the capabilities and understanding required to be able to play the significant role in project development and execution that collaboration implies. Much of the evidence from the Demonstration Projects is derived from projects where the client organisation is frequently commissioning construction works and is therefore in a position to secure the benefits from more collaborative ways of working. The data in the latest Strategic Forum report may suggest that, while there is undoubtedly scope for further use of collaborative procedures, there is a natural limit to the volume of works for which these approaches provide clear benefits and that limit may be lower than the 50% target of *Accelerating Change*.

For those clients who do go down the collaborative route, the challenge is to find the balance between securing the benefits from collaboration and keeping the relationships suitably keen through pressure for performance improvements. Hence the emphasis in the guidance on clear targets and associated monitoring systems.

[134] The views and experiences of specialist contractors on partnering in the UK. J R Mason. Construction Management and Economics Vol 25 pp519-527 (2007)

[135] Partnering practice in the relationship between clients and major contractors. G Wood. RICS Research Papers Volume 5 Number 2. London (2005)

9 Factors relevant to successful application

The extracts from official and other guidance quoted in previous sections have shown that there is a high degree of consensus about the ways in which collaborative ways of working may be stimulated and maintained.

Behaviours and client leadership

Since collaboration is a voluntary act, the first requirement – implicit in much of the guidance but explicit in the more detailed training material such as the *Integration Toolkit* - is that those concerned have to make a conscious decision that they wish to adopt such an approach to the project of programme.

In particular, the role of the client is crucial since they determine the character of the relationship between the supply chain and the client and generally 'set the tone' or create the environment for the project. It is generally considered that the greatest benefits from collaboration come when the client is fully engaged in the process and this has been focus of official policy and guidance. (Although, as the Strategic Forum publications make clear, integration of the supply chain brings benefits even where the client is not involved.)

Thus the first requirement for success is that the client is fully committed to undertaking the project (or set of projects) in a collaborative manner and willing to work in a way that is consistent with that stated intention. This means that they are participative, and receptive to proposals form other members of the team, accepting the need to compromise at times but with a clear view of the project objectives. "Client leadership' is a phrase that appears frequently.

Organisational measures

A number of specific actions can serve to reinforce the stated intention to collaborate:

- The preparation of a document committing the principal parties to the aims and spirit of the project, in the form of a 'Partnering Charter'

- The development of methods of dispute resolution that avoid recourse to legal processes. Sometimes these are structured to provide a means of involving progressively more senior members of the project team and may be backed by a formal statement (eg in the Partnering Charter) that there will be no recourse to legal action.

- An initial 'kick-off' workshop to enable key members of the project team to become more familiar with each other and to ensure that there is mutual understanding of the project aims and constraints, and clear allocation of responsibilities. That workshop may also set the targets and success criteria to be used in subsequent monitoring. Other workshops may be held at key stages in the project

- Having such targets and monitoring procedures, so that there are frequent opportunities for mutually reviewing both progress with the project and the quality of relationships amongst the project team. Such monitoring is particularly important for frameworks, to keep up the pressure for continuous performance improvement.

- Encouraging all members of the team to put forward ideas and crediting them when these result in benefits for the project, including (and particularly) through establishing financial incentives. These may take the form of pain/gain sharing, with individual members of the team gaining from their ideas but also from the ideas put forward by others, thus reinforcing the 'integrated team' culture.

- Co-locating members of the team in 'project' offices, to facilitate interactions and engender a common approach

- Establishing common IT and project administration systems, to minimise communication barriers

- Establishing remuneration systems that provide the client with appropriate protection against cost over-runs while also giving incentives to partners. these can include a Target Price against which is the reference point for savings and additional costs and a Guaranteed Maximum Price to provide assurance to the client. Many projects have used an 'open book' approach, so that actual costs are known to key partners and financial

- Attention to communications, by whatever means are appropriate – newsletters, project meetings, internal Website etc.

In addition to these managerial and organisational measures some more structure developments have been introduced with the aim of promoting and supporting collaboration.

Contract forms

In the past ten years, new forms of contract which reflect more collaborative ways of working have been introduced. For example, they include dispute resolution procedures based on internal resolution rather than litigation. Many projects have used these forms of project and generally they have been considered helpful in providing a contract structure that aligned with the intentions of the project parties. The RICS 2004 Survey of Contracts in Use (Reference 3) found that the proportion of work undertaken using partnering forms of contract accounted for 6.6% of the total UK construction workload based on value. However, many 'partnering' projects have been based on more traditional forms of contract although perhaps with modifications. Or the parties may separately have agreed to adopt certain procedures and processes.

The use of use of a 'partnering' form of contract appears therefore to be a helpful but not essential factor in successful collaboration. However, as more experience is gained with the newer forms of contract, they may supersede traditional forms, at least for larger projects.

A recent development has been the publication of a 'preconstruction services agreement' contract for the provision of contractors' services at the early stage of a project, when they act as an adviser on design issues

Project insurance

While project insurance (cf practice in Belgium) has been advocated as a means of underpinning the joint responsibility of project partners to the success of the project, such insurance has not been readily available in the UK and so almost all projects have been undertaken with the parties maintaining their separate insurance provisions. This is contrary to the aim that each partner should seek the best for the project, and can inhibit the promotion of ideas that would lead to improvement performance, but which may carry risk. Hence some partnering arrangements have included a 'no blame' provision and an undertaking that there will be no recourse to litigation.

However, there has been some use of project insurance. Perhaps the best known example was the insurance taken out by BAA plc for the construction of Terminal 5 at Heathrow. BAA assured their construction partners that there would be no recourse to litigation, thus providing an environment in which ideas for addressing the considerable challenges of that project could be freely developed. It has been reported that this contributed significantly to the success of the team in bringing in that very large and complex project on time and to budget. BAA have now, however, stated that they will adopt a more conventional approach to risk allocation in future projects, in order to place more risk with contractors and secure cost

savings. Future projects, though, are unlikely to be as complex as Terminal 5 and this illustrates that the form of collaboration chosen needs to be suited to the project.

Project insurance also covers the operations of some UK alliances. When alliances are intended to operate for some years, there is the opportunity to establish a claims record and so insurers have more scope for matching premiums to their risks. The same build-up of experience may be found in frameworks and other forms of longer term collaboration.

Several UK insurers have now produced project insurance schemes and currently several pilot projects in the public sector are being undertaken with this form of insurance, with monitoring by university research staff under the auspices of the Strategic Forum. The Chief Executive of SECO (Belgium) is a member of the Steering Panel for the initiative.

Project bank accounts

The creation of project bank accounts – where all payments related to the project pass through a single account - have been advocated as a means of promoting collaboration and also to give the smaller parties to a project more assurance on payment issues. This arrangement was used on a Defence Estates project with, it is reported, a marked impact on the relationships in the project:

> 'By using a single project bank account, Defence Estates was able to ensure the timely payment of all parties working in the supply chain. This mitigated the risk that the prime contractor might unfairly withhold payments to subcontractors. In addition, the single bank account helped to protect the Ministry and the project from financial failure when the main contractor went into liquidation.'[136]

Project bank accounts have been endorsed by both the Office of Government Commerce and the National Audit Office, following research which indicated that reducing uncertainties over payments to sub-contractors could take 2.5% from project costs. Two major banks are now offering such accounts. Project bank accounts facilitate prompt payment to suppliers and therefore are in line with the EU policy to overcome late payments which led to the Late Payments Directive (2000/35/EC).[137]

Both project insurance and project bank accounts are means of supporting collaborative arrangements, and are strongly promoted by some practitioners. However, they have not been widely used in the UK and many successful collaboration have taken place without the benefit of such arrangements.

[136] *Improving public services through better construction: Case Studies* National Audit Office (2005): Report HC 364-2 Session 2004-2005

[137] The information on project insurance and project bank accounts is taken from *Profiting from Integration*

10 Relationship to European policies and requirements

10.1 Public sector procurement

The account provided in Chapters 5 and 6 of official promotion of partnering and frameworks, and of their endorsement by audit bodies, illustrates that in the UK these arrangements were considered to be compatible with EU Public Procurement requirements even before the Works Directive was revised to make explicit provision for frameworks.

All official guidance on the use of partnering, frameworks or other kinds of voluntary arrangements make clear that the procedures used for selecting firms for these arrangements must comply with EU requirements. To take a typical example of the guidance:

> 'Partnering is acceptable under EU rules if:
>
> - It is competitively arranged
> - The client's needs and objectives are clearly stated in the OJEU advertisement
> - The contract is for a specified period.'[138]

In practice, this means that the intention to establish a framework is advertised in OJEU in the normal way, with firms and/or construction consortia being invited to demonstrate their suitability for inclusion in the framework. There is then a second competition for the work on a specific project among some or all of the firms in the framework but this is can be conducted more rapidly than if the selection process started from the beginning. Thus in the ProCure21 arrangements, health trusts identify several Prime Supply Chain Partners as potential contractors for their work and assess their suitability for the particular project. The need strictly to adhere to procurement rules has been underlined by two recent legal case in Northern Ireland[139] where contractors have sued following non-selection for framework agreements, with the result in one case that the Court ordered the framework to be set aside.

Advertisements for individual projects where it is intended to employ partnering principles normally state that this is the intention, in order that the willingness and ability of firms to work in a collaborative manner may be taken into account in the selection process. This represents a development from practice in the early days of partnering in UK construction, when the partnering aspects did not feature in the selection the principal parties to the contract and were introduced after then had been selected. It is an indication that collaborative principles are increasingly embedded in projects from the start.

10.2 Competition policy and SMEs

COM(2008)394[140] represents the latest overview of EU policy towards SMEs. It notes that

> 'The EU and the Member States should adapt public policy tools to SME needs. They should make use of the Code of Best Practice providing guidance to contracting authorities on how they may apply the EC public procurement framework in a way that facilitates SMEs' participation in public procurement procedures.'

In the UK, concerns have been expressed over the possible implications of the growth of collaborative arrangements for SMEs. These have particularly focussed on the use of

[138] The integrated project team – teamworking and partnering. Achieving Excellence in Construction Procurement Guide 5. Office of Government Commerce. London 2007
[139] Reported in 'Building' 28th November 2008 p59
[140] Think Small First - a Small Business Act for Europe (COM(2008)394)

frameworks by local authorities, since local authorities have significant demands for maintenance and minor building works that traditionally have been carried out by local SMEs.

The National Federation of Builders, a prominent trade association for small builders, contractors and house builders in England and Wales, published the findings of a survey of their membership in 2007.[141] This found that, of the 460 companies that responded to the survey, 142 (37%) reported a drop in their public sector work (including health service and central government work), with no clear distinction between larger and smaller firms. The most frequently cited reason for this was 'changes in public sector procurement practices' with a greater proportion of firms in the smallest category by turnover (less than £0.5 million) giving this as a reason. There is thus some indication that the smallest firms are experiencing changes in their traditional markets, and further probing in the survey found that a prime reason for this was increased administrative requirements, which bore particularly heavily on the smallest firms.

In response to the concerns, guidance has been produced on how local authorities and other bodies can take the interests of SMEs into account when establishing frameworks. This includes guidance issued to support the Small Business Friendly Concordat [142], a government-supported code of practice for local authorities issued in 2005, which states that authorities should:

- consider SME involvement in order to fully exploit lower costs, innovation, competition and improved services
- identify steps needed to improve SME capability and thus further enhance competition

More specifically for construction frameworks, in 2007 the Local Government Task Force of Construction Excellence published guidance[143] on how frameworks may be structured to encourage SME participation, with examples both of such frameworks and of SMEs that have successfully participated in frameworks and grown as a result. While aimed at local authorities, the guidance is generally applicable.

The guidance notes that it is not possible under EU procurement rules to confine framework opportunities to SMEs or to apply selection criteria which restrict entry to local firms. But measures suggested which are compatible with EU rules include:

- seeking opportunities for SMEs who might previously have been contracted directly by the authority within the supply chains of larger firms within the framework so that they continue to undertake work for the authority, but through the larger contractor

- having different frameworks for projects of varying sizes, for example a framework for projects under £500k which would be suited to very small firms

- modifying the total amount of work offered within a framework to suit the capabilities of the SMEs within it, so that they have a steady flow but the authority's work accounts only for a proportion of their workload

- having tendering and performance management arrangements that do not impose requirements on SMEs that are outside their capabilities

- identifying skills gaps and training needs and stimulating appropriate provision

However, SMEs wishing to work successfully within frameworks have also to acknowledge that these bring new requirements, notably in terms of a commitment to understanding and

[141] The impact of public sector procurement on SME construction companies. National Federation of Builders. London (2007)
[142] Available from www.communties.gov.uk
[143] Taking Advantage – how SMEs can become successful framework contractors. Constructing Excellence (2007) Available from www.constructingexcellence.org.uk

meeting the authority's needs and to improving performance. This may require investment in training, at all levels. With the framework providing greater assurance of work, and defining cost and payment structures, there is a firmer basis for the appropriate investment.

10.3 Employment conditions, training etc

One consequence of framework arrangements is that the firms within the framework have greater assurance of future workload. This is relevant to the general EU objective of providing the workforce with skills that enable individuals to fulfil their potential, so enabling them to enhance their contribution to the European economy. The *Taking Advantage* report provides examples where this has occurred, including:

- One contractor in a framework invested £1m in a purpose-built Training Centre which serves both itself and firms in its supply chain
- Another used the senior management capacity released through the framework to promote capacity and skill development in SMEs in its supply chain
- Several firms referred to their ability to maintain apprenticeship programmes

The greater involvement of clients in project delivery, manifest in the monitoring processes for partnering and similar relationships, means that aspects of performance such as safety, which previously have been considered the responsibility of the contractor and other suppliers, now have increased visibility. This has reinforced the changes in responsibility brought about through the introduction of the Construction (Design and Management) Regulations 2007 which themselves were stimulated by EU legislation.

10.4 Other policy areas

The EU is committed at the highest level to a policy of sustainable development. With some 40% of EU carbon emissions being attributable to energy use in buildings, and construction accounting for greater consumption of raw materials and production of wastes than any other industry, the way in which the built environment is created and operated is central to this policy aim. Achieving high environmental performance in buildings requires careful consideration of the interactions between building fabric and service systems, in order to minimise energy use while maintaining optimal comfort conditions. Further, the use of unfamiliar products and materials, such as renewable energy systems and recycled materials, may raise both design and construction issues. Collaboration across all members of the project team is therefore essential if high performance is to be achieved.

Several of the projects where integrated project teams or forms of collaborative working have been used have involved the construction of buildings which aimed to exhibit high levels of environmental performance. An example is a primary school cited in *Profiting from Integration* which incorporated renewable energy systems, rainwater harvesting, passive ventilation and materials with low embodied energy.

Voluntary collaborate arrangements therefore facilitate the interactions that are necessary for the achievement of a more sustainable built environment and therefore support this EU policy aim.

11. Conclusions

The account of UK experience given in previous sections indicates that the initiatives taken over the past 10 years, since publication of *Rethinking Construction*, to introduce greater collaboration into the operating practices of the construction sector have had an impact, notably on the practices adopted in projects financed by public funds. Even so, the picture is mixed. A Parliamentary Report published in July 2008[144] found that while progress had been made much remained to be achieved. It commended the guidance issued by the Office of Government Commerce, but noted that OGC were not in a position to enforce its use and that some Departments did not follow its recommended practices. It found that frameworks were now common in local authorities, but that many were failing to manage them will and to derive the level of benefits that they should. It noted, revealingly, that while it was widely accepted that clients were at the heart of successful projects, client skills were not on the agenda of the national Construction Skills organisation.

It is perhaps not surprising that it is difficult to identify from national statistics the impact of the adoption of more collaborative ways of working. Many are, in any case, intangible. The organisations that have been responsible for promoting new approaches have, though assembled numerous examples of both financial and other benefits on individual projects and the annual assessment of the performance of Construction Excellence demonstration projects supports the general conclusion that such benefits do occur. While in the early period of the change initiative, it was possible to argue that the projects selected as demonstration projects had, for whatever reason, more capable managers and that their success was not the result of the new practices, sufficient examples have now been assembled for this argument to be discounted. There is consensus amongst industry bodies that integration of supply teams and the fostering of collaboration within projects indeed produces superior outcomes.

Different approaches to the promotion of collaborative arrangements have been identified and discussed. While these have interlinked and reinforced each other, it is arguable that the crucial approach has been the adoption of new approaches by public sector clients, supported by audit bodies. Although the other approaches provided evidence of benefits, awareness, capability development etc, it is unlikely that these by themselves would have caused change. Essentially, the industry has responded to its clients (or a significant element in the client base) requiring a change in the way that it operated, and being willing similarly to change and to invest in the necessary processes. In these circumstances, the use of the word 'voluntary' in relation to the new arrangements is debatable, since there was clear client requirement for a change in behaviours and practice, although that is not to suggest that the changes were introduced over industry opposition.

The potential for further application of voluntary collaborative arrangements is uncertain; there are indications that a plateau has been reached. But with many hundreds of clients operating in the public sector, it would be surprising if this had happened in a period even of 10 years and the Parliamentary report cited above is clear that there is still a great deal of scope for improvement. Efforts to promote higher efficiency through the use of such arrangements will continue, and as noted in Chapter 10 such an approach is essential if new buildings and other constructions are to achieve high levels of environmental performance.

Overall, even though in many parts of the sector traditional contracts and practices still apply, the period since 1998 has seen significant change in the approach of major clients and many firms. But with the construction sector entering a difficult period, some commentators have speculated that clients and contractors will revert to more traditional ways of working in order to extract the lowest prices from suppliers and sub-contractors. Long-term relationships have been found in the private sector for many years, but equally some parts of the private sector are likely always to give greater weight to short-term financial considerations. As an example,

[144] Construction matters. Business and Enterprise Select Committee. HC127-1 The Stationery Office, London (2008)

the recent down-turn in the demand for new housing caused some developers to impose price reductions on suppliers in a manner which runs directly counter to the approaches studied here. The next few years may be the real test of whether the industry and its clients have genuinely taken to heart the advantages of collaborative arrangements.