

The Construction Client as an Agent of Change

Proposal for Formas' (Swedish Research Council for Environment, Agricultural Sciences and Spatial planning) call for relevant project proposals on 5 December 2003 and relevance assessment of R&D projects from the construction client's perspective.

The Construction Client as an Agent of Change represents a vision of an active and competent player providing impetus to bring about necessary changes in built environment to achieve sustainable development in the built environment. As a representative for owners, customers and the needs of society, the construction client, at an early stage in the process, creates the conditions for other players during both the construction process and the long-term management of the finished product. Having active and competent construction clients is therefore crucial so that the industry can develop in the right direction, with greater accountability, a better environment and other qualities, and increased productivity and competition.

Research into the role of the construction client is therefore of strategic importance for society as a whole, for owners and customers, as well as for the construction industry players and stakeholders.

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Foreword

Formas is planning a call for targeted research and development (R&D) projects on 5 December 2003, which encompasses the earlier key action area

Construction Clients with the Customer in Focus. This action area has been evaluated and a number of changes have been proposed. The need for the changes was further reinforced by a report entitled *Skärpning gubbar (Shape up lads)*, which emphasises the importance of the construction client's role for the development of the entire industry. Formas has therefore sought the support of ByggherreForum (a forum for construction clients) in the form of a proposal for a call for R&D projects with an updated focus on construction client-related R&D from an innovation perspective.

ByggherreForum was formed following the restructuring of Byggherreföreningen (construction client association) to assemble the sector's construction clients and to support them in areas such as competence development. The association's primary goal is to look after the interests of construction clients and to contribute to the development of an efficient and competitive construction market that will benefit the sector's customers.

ByggherreForum has set up a working group consisting of Martin Bergdahl (Landstingsfastigheter Dalarna), Gillis Edholm (Svenska Bostäder), Sven Fristedt (Sweden Post), Anders Lindeborg (AstraZeneca), Stefan Sandsten (Vasakronan) and Birgitta Törne (Swedish National Rail Administration). Björn Svedinger acted as secretary. The working group hereby presents its proposal.

The working group's proposal has been discussed by ByggherreForum's Executive Committee; it has also been revised on the basis of viewpoints expressed by researchers and other parties concerned within Samverkansforum (Forum for Cooperation), the Swedish real estate sector's development forum (*Fastighetsbranschens Utvecklingsforum*), UFOS and Formas' expert group for "Construction Clients with the Customer in Focus." It should be noted in this regard that the real estate sector's development forum is planning an initiative to create an R&D programme for "real-estate enterprise" with an emphasis on ownership and management in connection with this construction client oriented programme.

The working group emphasises the fact that the programme will form a bridge between experts/researchers and practitioners through its goal of involving the research community in construction client related issues and encouraging and helping clients to make use of R&D results. The programme can also be seen as a supplement to other measures that are necessary within the sector, using existing knowledge in areas where construction clients have a crucial role.

Stockholm, 17 November 2003

Sven Fristedt

Chairman of the working group

1. The Construction Client as an Agent of Change

The action programme *The Construction Client as an Agent of Change* will help construction clients to develop the construction industry and help promote long-term sustainable development (social, economic and ecological) of the built environment. The programme is a continuation of an earlier programme entitled *Construction Clients with the Customer in Focus* and also takes into account the need to support the role of the construction client as emphasised in a report entitled *Skärpning gubbar (Shape up lads)*.

The Construction Client as an Agent of Change represents a vision of an active and competent player providing impetus for necessary reform of the construction industry and its products aiming at sustainable development of the built environment, taking into account society's environmental goals as well as the social and economic aspects in a broad sense.

- The construction client as owner and financier determines the long-term quality offered to customers and also the way in which the demands of customers and society will be met.
- The construction client, as purchaser of the construction sector's products and services, is the one who steers the process from concept to implementation, and thereby also creates the conditions for the use and technical management of buildings and installations for the many years of their useful life.
- The construction client, through its choice of collaborative partners, determines which skills and expertise are involved in the process. Taking a holistic approach, the construction client thus has a key role in promoting sustainable development in the industry.

Construction clients with the will and skills have great opportunities to act in a customer-oriented market. Being active as a construction client is a key factor in guiding development in the sector towards greater accountability, better quality and increased productivity. It is therefore urgent and of strategic importance to support the role of construction clients and increase their level of competence.

The need to improve competence is associated with an increased awareness of the importance of a holistic approach to the issue of adjusting to the demands of enterprise and society, technical systems, areas of expertise and players, as well as seeing every building and installation as a whole – from concept to realisation, usage, alteration, and finally, demolition. This holistic approach requires that the construction client, early on in the process, begins to create the conditions for other players, both during the construction process and the building's long-term management, requiring collaboration that combines different areas of expertise.

Research into the role of the construction client is therefore of strategic importance for society as a whole, for owners, customers and all of the various players and stakeholders in the construction industry.

2. The programme's goals and structure

The purpose of the programme is to make the construction client more competent as an agent of change to promote sustainable development in the built

environment. This involves changing attitudes and processes as well as creating and implementing methods and techniques that will help to improve efficiency and conserve labour, capital and raw material resources

The programme will use research and development (R&D) to create awareness of the role of the construction client and provide the construction client with the knowledge and expertise to act however the client deems appropriate, and to increase awareness among construction clients about the significance of active participation in R&D activity and of utilising R&D results.

The programmes overall goals are to ensure that:

- the demands of owners, customers and society are met while maximising the use of resources
- the technology available to achieve sustainable development is integrated in a systematic way in construction and management
- effective systems are established in the sector to manage and control quality
- the procurement of services or products is done in ways that encourage competition and renewal of processes and products.

It is also important to develop the construction client perspective in education and training within the sector. Collaboration with universities/colleges is therefore of strategic importance. Making full use of international experience is also an important aspect of the programme.

The programme consists of three parts that form a three-dimensional matrix or “cube” to be developed in cooperation with researchers and industry professionals working for companies.

- A. The construction client’s identified development needs (Ch. 3)
- B. Proposed key action areas for the programme’s R&D (Ch. 4)
- C. The nature of R&D projects within the framework of the programme (Ch. 5)

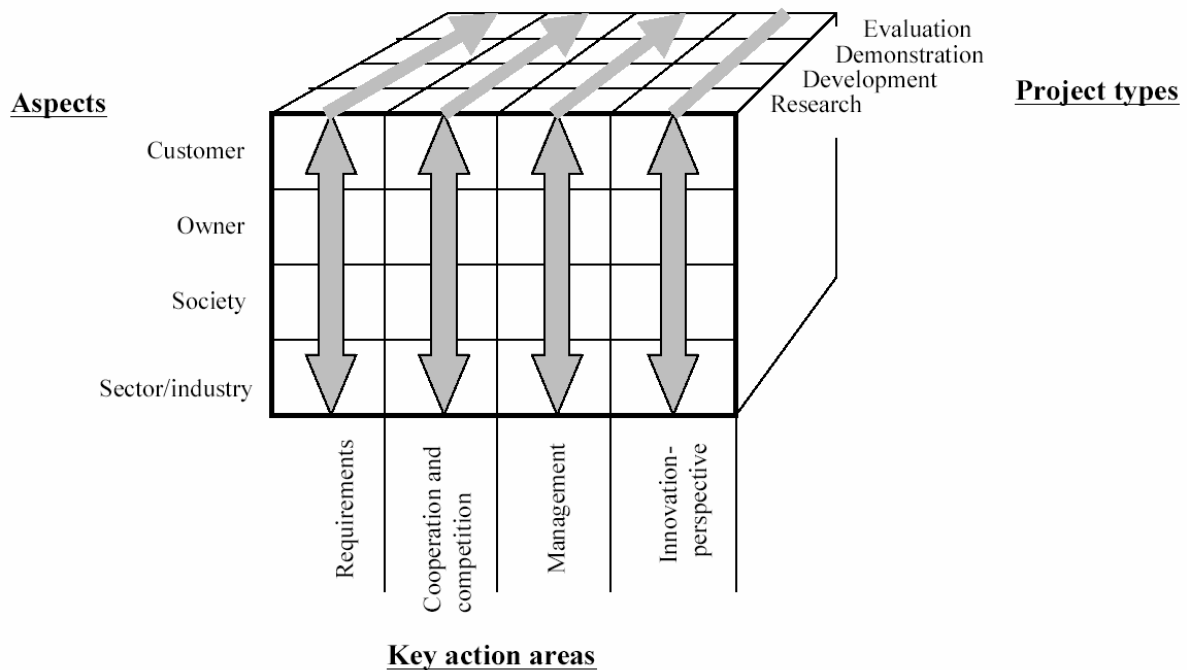


Figure: “ The Construction Client as an Agent of Change” has the structure of a three-dimensional matrix with co-financed projects.

3. Developmental needs of the construction client

The construction client’s role is to develop projects from concept to implementation while satisfying the owners’, customers’ and society’s requirements.

The construction client needs to possess a broad range of expertise and the ability to understand the specified requirements, how they relate to each other and their various consequences. The client should also have the capacity to communicate these through programmes etc., to choose forms of implementation and to conduct the necessary procurement. The client needs to be able to competently steer the process so that the finished project is handed over to be managed and used with the appropriate quality standards in relation to the specified functional, execution, time and cost requirements.

Below is an outline of a number of strategic areas where development is needed in the processes that relate to the construction client’s various relationships.

The customer aspect

All value-generating processes start with the customers’ requirements. Different kinds of end customers/users/tenants have different ways of expressing their requirements e.g. as prospective customers in a housing or local market, known customers commissioning purpose-built buildings, and installation users. It is part of the construction client’s job to ensure that customer requirements are identified.

Strategic development needs

- Ability to define customer requirements and models for developing these in relation to costs and other consequences, particularly from a sustainability perspective taking into account operation, maintenance and flexibility for future alterations.
- Models for dialogues with customers during the early stages of product decisions using new tools to visualise and simulate functions and describe the consequences of the various requirement levels and scenarios.
- Tools for analysis of customer requirements, comparison and evaluation of requirements with a mutual impact. Models for handling requirements with structures that can be applied throughout the construction and management process.
- Methods for verification and documentation of functionality, comfort and other quality requirements from customers.

The owner aspect

The construction client as a strategic part of the owner's venture must satisfy the requirements for the project according to the owner's business concept. The focus here is the professional client within companies, organisations, government agencies etc. with ongoing operations (so-called user-, manager- and seller-clients). In a constant process of adaptation, the construction client's role is often executed as part of the technical management of a building. Many so-called one-off clients are formally classed as construction clients according to the Planning and Building Act (PBL), but they choose to bring in consultants or contractors to execute the construction client responsibilities.

Strategic development needs

- Definition of project goals. The ability to understand and be able to justify a construction investment, paying special attention to the longevity and flexibility aspects in relation to the owner's values and requirements. This requires knowledge of the role of the installation, home, or property maintenance in the core business of the owner whose values must be integrated into the object and its functions.
- Governance systems to manage a construction process that is adapted to the owner's needs and the management systems that are applied within the owner's core business.
- Financial analysis of investment, annual costs and revenues in a whole-life perspective. Models for life cycle analysis (LCA/LCC models) that take into account operation, maintenance and the object's market value (residual value). Models for handling uncertainty and risk.
- Models for handling management programme requirements relating to operation and maintenance, including documentation requirements and document management adapted to administrative needs.

The societal aspect

Society's regulatory frameworks – laws, standards, rules etc. – regulate the design and function of buildings and installations, as well as the planning, construction and management processes. Their relationship with the surrounding community also raises issues of aesthetics and environment impact

in a broad sense. The construction client must be responsible for compliance with the rules of society, while also recognising that it is important for these rules to evolve.

The societal aspect also dictates that construction clients help the sector to develop so that the necessary competence is available in a supplier market. The construction client has a special responsibility to ensure a holistic perspective in the sector's education/training, R&D, standardisation etc. This task is also one of the formal industry responsibilities of the public transport authorities.

Strategic development needs

- Connection between projects and plans. The ability to participate in formal and informal planning processes. Developing acceptance processes that include the relevant skills and models for conducting dialogue regarding local opinions. The ability to handle issues concerning societal infrastructure, preparedness and robustness.
- Interpretation of political goals. Creating criteria that can be applied in practice as well as operational requirements and goals for sustainable development
- The construction client perspective in ongoing R&D within the sector that guarantees that innovations, i.e. products, processes and work tools, are adapted to society's and the client's demand for a holistic approach.
- Implementation of R&D results. As agents of change, the construction clients are responsible for helping to ensure that innovations are tested and put to practical use by taking the appropriate steps to implement R&D results. Demonstration projects that promote cooperation with academia and contribute to feedback are prioritised.

The industry aspect (the role of the customer)

As a customer in the construction process, the construction client shall state relevant stipulations in the procurement stage and follow up on these during the implementation stage by organising and managing the construction process, either through its own resources or by insourcing consultants, contractors and suppliers. This requires skills in handling the various phases in the construction process in compliance with the relevant regulatory frameworks, and the ability to select partners for effective forms of collaboration.

Strategic development needs

- Project implementation methods based on cooperation with an interface between the various players who share responsibility and risk in a rational way. Models for evaluating tenders taking into account the "soft" value of such things as expertise and reliability in long-term commitments.
- New forms of cooperation, which, from the customer perspective, increase competition within the sector and improve productivity and the quality of products and services. Management by objectives with incentives for participating parties, and models for assessing changes in the level of quality or deviation from targets.
- Work tools for evaluating technical solutions from a whole-life perspective when choosing between different alternatives so that the technology available to achieve sustainable development is integrated in a systematic

way. The ability to apply new procedures relating to IT and the environment, both in the early stages and during the construction process up to completion and transfer.

- Models for applying functional requirements in contract work, including procedures for follow-up and verification.
- Management systems that facilitate communication and participation, promote skills and leadership, and guarantee the quality that is required. Indicators for precision in planning and follow-up processes.

4. The programme's prioritised action areas

Four overall action areas are being prioritised in the programme. These span all of the aspects that the construction client needs to deal with and are of strategic importance to the programme's overall goals; they will help to bring about sustainable development by generating knowledge and competence to improve efficiency and maximise the use of labour, capital and raw material resources.

The innovation aspect of the construction client's role

A greater fundamental understanding of the construction client's role is needed in order to maximise the client's potential to act as an agent of change. The construction client's role needs to be analysed. How is it organised among various owners with different business concepts, different operations and different projects – construction, installation, new homes, alterations etc.? What are the obstacles and opportunities when working towards sustainable development?

Strategic areas:

- ❖ The construction client's perspective on "sustainable development". The ability to interpret political goals that are often expressed in functional terms needs to be developed with respect to both effects and measures. Like other requirements, these political standards must be transformed into requirements and targets that are operationally applicable in the construction and management processes.
- ❖ The construction client's role in innovative processes. How will construction clients participate in relevant R&D programmes so that the holistic approach is applied and R&D results are put to use? How do we motivate the owners? How do we motivate clients to be engaged so that innovations can be tested in practical situations in controlled conditions when they are introduced onto the market?
- ❖ Comparisons with other countries and sectors. A broader perspective is needed to develop the role of the construction client. This applies both to awareness of self-education for renewal in the role as an agent of change, and to creating different activities in a market that is becoming increasingly international with foreign suppliers and EU-compliant regulatory frameworks. Increased participation in EU and CIB activities is one way to increase awareness of the world around us.

Management of requirements and goals in the design process

The construction client must clarify and define what is required by owners, customers and society, and communicate these requirements in programmes and calls for tenders. The construction client also assumes the role of customer in the construction process, i.e. the party with the ability to specify functional, environmental and other quality requirements, as well as to ensure that these requirements become verifiable goals in the construction process.

The construction client as an agent of change for sustainable development must, as an active client, have the capacity to stipulate relevant and verifiable requirements. It is important to develop the skills and models needed to identify, evaluate and formulate the design process requirements and transform these into verifiable goals.

Strategic issues

- ❖ Systematic requirements management and establishing goals. Models for managing requirements and goals including methods for evaluating and comparing requirements from different stakeholders. Tools and processes that guarantee that the end product corresponds to the stakeholders' requirements.
- ❖ Formulating and applying functional requirements. Coordinated models for expressing functional requirements from general business-related requirements in the early stages of a project, to detailed construction-related requirements at later stages, and continuing into operation and maintenance. Requirements must be verifiable at the level they are stipulated.
- ❖ Systematic management of uncertainty. Models need to be developed to handle risk and opportunities relating to the stakeholders' requirements and situations.
- ❖ Dialogue with parties stipulating requirements. Adapting requirements management to the design process, using models for visualisation and simulation etc. in negotiations with the parties stipulating the requirements.

Cooperation and competition

The process of developing new forms of cooperation is ongoing in this sector in order to stimulate development and improve quality and efficiency. This applies both to the various forms of cooperation for individual projects and long-term cooperation in processes using different forms of partnering. The need for collaboration during the earlier stages and in the management stage will increase when new guarantee undertakings are introduced.

The new forms of cooperation bring new opportunities, but also require construction clients to be active and raise the level of expectation with respect to the client's skills in the procurement process and ability to act as a "playmaker" in the process. The construction client's role as an agent of change also involves being responsible for developing supplier markets for sustainable development and ensuring that the new conditions for the players do not limit competition.

Strategic issues

- ❖ Evaluation of experience from completed collaborative projects with respect to how the parties experienced the procurement process, cooperation during the implementation process, and the effects on the finished product.
- ❖ Models and tools for the client to use when dealing with the division of responsibilities, management of requirements and goals, remuneration and incentives, and assessing the impact of changes and deviation in particular in collaborative projects.
- ❖ Information management and documentation to coordinate product stipulations and production as well as the transfer of information from these stages to the product usage stage, in line with the construction client's expectations for a holistic approach.
- ❖ Models for developing supplier markets for competition and sustainable development. Adequate models for technology procurement. Standardisation. Benefiting from experience from other sectors.

Management system for management and control of quality

The construction client must ensure that the end product corresponds to the stipulated requirements. The goal is satisfied end-customers as well as satisfied owners. This requires a system of quality control of the clients' own activities including the client's responsibility of ensuring that the players involved apply the appropriate management systems in their own processes as well as the required delivery and acceptance controls.

Strategic issues

- ❖ Evaluation of experience from the management systems used today by construction clients. What are the shortcomings and how can they be fixed? How can quality management be integrated into other business management systems? How do we integrate skills development and leadership into these systems?
- ❖ Transfer of experience from management systems used by other players in the construction sector and from other sectors to support continued development in line with the specific needs of the construction clients. A new empirical approach is necessary to move development forward.

5. Implementation issues

The programme is to be implemented in the form of projects with clear goals and definitions to be specified in project descriptions and funding decisions. The programme will encompass projects of various kinds, such as research, development, demonstration and evaluation projects. It will be jointly funded by Formas and the construction clients involved, each covering 50 per cent for the programme as a whole.

The quality of the project proposals will be judged based on various criteria that will depend on the type of project. Assessment of the projects' relevance is based on the overall goals for the programme as a whole (Chapter 2); that the project deals with issues in the specified key action areas (Chapter 4); and that

the project is expected to provide benefits corresponding to the development requirements referred to in Chapter 3.

Types of project

The following types of projects are possible with varying degrees of co-funding in a mix within the programme:

- Research within the scientific community
 - 100% Formas (limited part)
- Research in consultation with construction client companies or industry organisations
 - 100% Formas (clients provide experience)
- R&D in cooperation with construction client companies or industry organisations
 - 50% co-financing
- Development and implementation of R&D results in concrete projects
 - 25% Formas
- Demonstration projects and evaluation projects
 - the project itself - 0% from Formas
 - processing and spreading information about general results - 50% from Formas

Projects must have a time limit, but it is important to secure financing to cover a period of at least three years. A long-term perspective is necessary for research, particularly when taking into account timeframes for postgraduate studies, which is an important aspect for the participation of universities. A long-term perspective is also important for construction clients, particularly with respect to the time needed to be able to complete demonstration projects with normal production processes.

The participation of construction clients

The selection of participating construction clients is of strategic importance. One point of departure is that their participation should be motivated by the approach that the client is the owner of a recurring process and that process development is a profitable investment.

Another strategic factor is that the clients that participate in the programme must be interested in the sector's development and be prepared in the longer term to commit to be part of some form of structure, similar to the one used in the Swedish Government's Bygga Bo dialogues and in Rethinking Construction (UK). It is therefore important for the clients involved to participate in the project directly in their capacity as companies, and allow the industry organisations like ByggherreForum (construction client forum) to take on a coordinating role.

ByggherreForum believes that coordinated R&D activity is of strategic importance in the endeavour to development the role of construction clients and it is in favour of active participation in the programme. One possible solution is therefore that ByggherreForum could make a working group available to address such issues as:

- the relevance of project proposals
- ongoing follow-up and contacts with R&D projects
- consultation regarding the construction client perspective in other relevant programmes

- implementation issues
- participation in the creation of demonstration projects as working models
- establishing contacts with universities to stimulate cooperation
- cooperation with other industry organisations

Creating demo projects as models

Demonstration projects are an important factor in the sector's development, both as meeting places for the researchers and professionals to exchange experiences and ideas, and as tools in the innovation process to implement R&D results. It is important for the Construction Clients as Agents of Change programme that demonstration projects are developed as working models within the framework of normal production.

Demonstration projects can become arenas, i.e. meeting and work places to support the collaboration necessary for the sector's development. Used correctly, these projects will accommodate the construction clients' responsibilities to the sector and the research community's academic qualification requirements, as well as the companies' requirement of seeing the benefits in a short space of time. They also provide incentives for project players' to be engaged and for concrete efforts to promote development.