Research Roadmap Report

Clients and Users

In Construction

International Council
for Research and Innovation
in Building and Construction
Preface

The International Council for Research and Innovation in Building and Construction (CIB) in 2010 started a new Working Commission on Client and Users in Construction (W118). The aim is to strengthen the activities on the demand-side of construction as a supplement to the activities on the supply-side of construction.

One of the first tasks of the Working Commission has been to produce this Research Roadmap. The intention is to formulate an agenda for future activities, support the initiation of new R&D projects and stimulate knowledge exchange on clients and users in construction.

CIB W118 Working Commission launched its activities through the CUBES workshop (Clients and Users in Built Environment Spaces) held in Copenhagen on 13 April 2011. A second round of commentary on the roadmap took place at the second workshop in Helsinki on 17 October 2011 in conjunction with the Sustainable Building ’11 (SB11) conference. A third round of commentary took place at the CIB W118 Business Meeting in Montreal on 27 June 2012 in conjunction with the conference Moving Research Into Practice. A fourth round of commentary took place as a consultation webinar with a range of external stakeholders on 10 April 2013. The CUBES workshop and the subsequent consultations have crystallised a number of research themes.

CIB wishes first and foremost to congratulate the two Coordinators of the Working Commission W118, Kim Haugbølle and David Boyd, for taken the lead on formulating the research roadmap. CIB would also like to express gratitude to the external stakeholders and commission members who have provided valuable inputs and commentaries during the process.

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Table of content

Preface ........................................................................................................... 3
Table of content ............................................................................................. 5
Executive summary ........................................................................................ 7
Introduction ..................................................................................................... 9
Conceptual framework ................................................................................. 11
State-of-the-art ............................................................................................. 15
  Client associations and networks for practitioners ................................ 15
  Public policies and reform programs ....................................................... 16
  Research organisations ........................................................................... 17
  Main themes for research and development ......................................... 18
Future scenario ............................................................................................... 23
  Business and society ............................................................................... 23
  Buildings and society ............................................................................ 23
  Business and users ............................................................................... 23
  Construction industry ............................................................................ 24
Development strategy .................................................................................... 25
  Arenas: Where will we be active?.......................................................... 25
  Vehicles: How will we get there? ......................................................... 26
  Differentiators: How will we win in the marketplace?......................... 26
  Staging: What will be our speed and sequence of moves?.................... 26
  Economic logic: How will we obtain our returns? ............................... 27
Contributions from R&D ............................................................................. 29
  Moving from supply and demand to identifying client needs .......... 29
  Putting in context and integrating studies around the subject ........ 30
  Theorising clients as own problematic area ..................................... 30
  Connecting theory and practice ......................................................... 30
  Identifying the connection between clients and users .................... 30
  Client inventions in wider construction and social systems .......... 31
R&D agenda ................................................................................................. 33
  Agency: Roles and responsibilities ...................................................... 33
  Governance: Processes and mechanisms ......................................... 34
  Innovation: Change and continuity .................................................... 34
References .................................................................................................... 37
Executive summary

This research roadmap is intended to establish the key issues in the field of clients and users in construction in order to provide the international focus of activity and lead the research agendas for agencies around world. It addresses six themes: 1) Conceptual framework, 2) State of the art, 3) Future scenario, 4) Development strategy, 5) R&D Contribution, and 6) R&D Agenda.

The conceptual framework develops four domains which give meaning to the internal operation of the client: 1) Business and Society where the client’s purpose is determined, 2) Business and Users where the organisation of the achievement is enacted, 3) Buildings and Society where the client’s building aspirations are regulated, and 4) the Construction Industry, which fulfils the building aspirations of the client.

The state-of-the-art gives a brief overview of national client associations, international networks and national reform programs as well as various CIB permanent working commissions and temporary task groups. Current activities can be placed in three main R&D areas: agency dealing with roles and responsibilities, governance dealing with processes and mechanisms, and innovation dealing with change and continuity.

The roadmap presents a future scenario where clients and users are working together across sectors, building types and countries on a shared agenda to improve their environments, buildings in use and delivery of buildings. In this they are an active part of R&D activities to deliver buildings that enhance core businesses/services and the environment and as such are part of developing a greater social appreciation of environments, buildings and building delivery (including employment and product innovation).

In order to achieve this, a development strategy is presented which works in the broadest arena of building client and user types with a focus on themes of importance to practice. The development vehicles include close research practice collaboration working through case studies. The work is differentiated by its international comparative work on the heterogeneous activities of clients but also on a willingness to think outside the box. The activities seek funding through international agencies such as the UN and the EU alongside support from national programmes and individual client activities. The activities will be staged firstly from initiating CIB working commission conferences, then through local projects working together and reporting to a wider forum. Additional opportunities will be sought through educational programmes that improve the understanding of the importance of clients in business, society, the environment and in construction.

The divergence among clients and users as well as the variety of building types set in different national institutional and construction contexts requires managing many divergent and heterogeneous projects rather than one overarching programme of research and development. This will include:
1. Moving focus from supply and even demand to identifying client needs.
2. Putting in context and Integrating studies around the subject.
3. Theorising clients as own problematic area.
5. Identifying the connection between clients and users.
6. Determining how clients can intervene in wider construction and social systems during building

These actions commenced with the CUBES workshop (Clients and Users in Built Environment Spaces) held in Copenhagen in 2011. The CUBES workshop and the subsequent consultations crystallised a number of questions and issues within three main research areas of agency, governance and innovation, which may be addressed in future R&D activities.

The roadmap provides a toolkit for international coordinated engagement that is conceptually sound as well as practically relevant and useful. This will enable the development of a new way of working with clients’ agendas in order to assist them in managing their change process. The divergence and disagreement in this is acknowledged but for the first time there is a forum where this can be aired, debated and learned from to provide a concerted programme for change and improvement.
Introduction

The International Council for Research and Innovation in Building and Construction (CIB) has started a process of developing a larger series of research roadmaps, which in principle will cover all the nearly 50 permanent Working Commissions and temporary Task Groups of CIB. The intention is to have a series of high status and high quality CIB publications with updates of the roadmaps at each triennial CIB World Building Congress.

The International Council for Research and Innovation in Building and Construction (CIB) hopes that this research roadmap on clients and users in construction will set an agenda for future activities, support the initiation of new R&D projects and stimulate knowledge exchange on clients and users in construction.

It is envisaged that the CIB Research Roadmaps will provide authoritative guidance for national and international research programs and funding agencies. It will be beneficial for research institutes amongst the CIB membership to use the CIB series of research roadmaps in their communication with research programs and funding agencies and show the potential added value for funded projects from being part of such a roadmap approach, and thus be able to profit from an alignment and exchange with other such R&D activities worldwide.

The authority of a CIB Research Roadmap is derived from a worldwide consultation of (and if possible consensus amongst) stakeholders and experts, including, but not restricted to, the membership of the respective CIB Commission or Task Group.

The CIB Secretariat has developed the illustration and commentary below to illustrate how a CIB Research Roadmap could be designed (see Figure 1).

![CIB Research Roadmap](image)

Figure 1. Outline of R&D Roadmap. Source: CIB secretariat.

As indicated in the illustration above, the research roadmap addresses the following six themes:
1. Conceptual framework: What are we talking about? The conceptual framework may address questions like: What are the issues, how do those interrelate, what influences all of this, who are the stakeholders, what are the relevant areas of expertise, what are the characteristics of the most relevant systems, processes and technologies.

2. State of the art: Where are we today? The roadmap will describe the state of the art on technology, best practices, differences in parts of the world, perceived problems, challenges, needs for improvement, who are the world’s leading centres of expertise etc.

3. Future scenario: The roadmap will unfold a vision on where we want to be in the future, e.g. in ten years’ time including the stakeholders’ opinions on required/envisaged future systems, processes and technologies, preferred future practices and skills etc.

4. Development strategy: What is needed in terms of knowledge, information, tools, concepts and applications to enable the respective systems, processes and technologies to develop from where we are today to where we want to be in the future?

5. R&D Contribution: How can research and development (R&D) contribute to such a development strategy, and what are the requirements for R&D to indeed contribute?

6. R&D Agenda: What is to be the agenda for research worldwide? What will be relevant areas of science and technology development, required sequences of development, priorities for research, international cooperation within the research community, cooperation between research and practice etc.
Conceptual framework

Research into construction clients is in its infancy. Construction clients are multifarious and internally complex. Thus it is extremely difficult to present an overarching model of their world. This difficulty prevents research into improving the response of the industry to clients and into helping clients be more successful clients. As Boyd and Chinyio (2006) state: ‘building is not about building but about organisational development’ for the client. The concept of a construction client is not well defined as it is only given meaning by the client’s actions associated with initiating building or operating a physical facility. Clients do not immediately describe themselves with this term as it is the business or service that they are providing that gives them identity and consumes their attention. They use a facility as a means for conducting the business or service; thus, the facility is a tool or a technology for meeting a purpose and this gives buildings or facilities a secondary interest to the client. As the facility is secondary to clients’ purposes, what success means, as regards a facility, is bound up with the clients’ success as a business or service.

The complexity of the concept of client is made worse by the fact that although the term is unitary, almost all construction clients are organisations. In order to operate, organisations divide themselves into internal functional divisions with differing activities. These divisions have their own problems and the client has to coordinate the differences. The divisions also have different relationships with the environment in which the client operates.

Defining the conceptual framework for research into clients requires putting the client’s purpose central to research. Such a placing is contrary to other work in which construction clients appear. What this other work does is consider how other stakeholders see clients from their world. In other words, construction management research on clients views clients as a problem for the operation of the construction industry (see e.g. Cherns and Bryant 1984). Planning theory sees clients as something that needs to be moderated in order to advance the public realm (see e.g. Healey 1991). Work on architecture focuses on their ability to provide an aesthetic environment for clients (see e.g. Cuff 1992 and Hays 2000). Work on real estate sees clients as providers of work for consultants (Fisher and Collins 1997) or the funders of property (Isaac 1996). Work on facilities management sees owners as providers of facilities (McGregor and Then 1999). Business and management research seldom see facilities as worthy of mention but concentrates on the business operations or service operations (Huczynski and Buchanan 2007), thus does not provide a solution to defining the domain for research. Any research on clients must be cognisant of these views but must move the research focus to the clients’ perspective.

This roadmap establishes the conceptual framework using a composite of this surrounding work. It may be that future work will establish a more specific model. The framework is shown in Figure 2. Apart from the internal operation of the client, this framework identifies four key defining domains: 1) Business and Society where the client’s purpose is given meaning, 2) Business and Users where the organisation of the achievement is enacted, 3) Buildings and Society where the client’s building aspirations are regulated, and 4) the Construction Industry, which fulfils the building aspirations of the client.
Clients exist as a business within the wider environment of businesses and society. Clients can be distinguished by the nature of their business and the constitution of their organisation principally whether they are public (McKevitt and Lawton 1994) or private enterprises (Wilson 1948). In different places in the world, different businesses are undertaken under different constitutions depending on the governance arrangement of the country and the prevailing political disposition (Bell and Hindmoor 2009). All clients have to experience a desire to building, which they see as developing their organisation for or within this environment of business and society. This development might be simply to increase capacity of production or service, it might be to undertake a new activity or it might be to improve an already performing activity. In all cases it is this sense of achievement within the environment of business and society, which drives them as a business and ultimately what drives them to building. This environment also defines the way economics of the client activity is calculated and also the economics of building (Warren 1993) making this an important discourse. This is sometimes confused as building itself adds assets to a client (Isaac 1996) inducing the client to view this as a driver to build and this may interfere with the functional reason for building. Thus, building is not just a cost but possibly an economic multiplier though it is a less fluid asset than money or stocks.

In undertaking this organisational purpose then the building is a framework that is populated and activated by users who fulfil the clients’ ambition etc. Thus, the way the building contributes to the business through users is critical (Evans et al. 2004; Saxon 2005). The difference between client and user needs to be careful acknowledged and their relationship better understood. The client may have a very functional attitude to what the building is doing but the users experience it in a much more physical and emotional manner. Thus, the client might be interested in how productive the building allows users to be, whereas the users may be more interested in the way they identify with the building and what it does for them and to them.

The client’s building aspiration fits within not just the business environment but also the building/land and social environment. This is in most countries set within a regulatory policy framework (Baldwin and Cave 1999), which
works outside (and often against) the business environment. It is here that the long term meaning of the building is controlled and how it fits within the spatial development of society. This is a complex interaction as individual clients see this as a cost and constraint, but they may benefit in the longer term through sustainability of the built and natural environment.

Finally, the client's building aspiration is delivered via the construction industry (Cherns and Bryant 1984). Clients experience the reliance on professional skills to meet their objectives; however they are always questioning these and trying to demand more. The construction industry’s operations are reasonably well researched however the relationship with the client is seen through a supply and demand model. Such models do not acknowledge the contradictory interactions between clients and the industry, which need to be researched in more detail. The fragmentation of the industry is also evident and difficult for the client to handle with the way design is separated from construction being the most fundamental. There is a strong legal framework in this relationship and this is set within business and societies wider interactions. Thus, changes to the way buildings are procured, particularly in the public sector, seem to dominate operations with the assumption that it is easy to design and build if these are sorted out. In this new relationship with clients, there is a growing expectation that the client uses their power to develop the industry and to develop the technology of the industry. This new dimension is confusing for clients who are used to a more conventional supplier/purchaser arrangement. Again, clients only receive benefits in the long term from such initiatives rather than on an individual project, thus they are difficult to evaluate. Similar pressures come from an expectation to support the local community and local workforce during construction which again affects the ability to judge value from investment.

Set in this framework, the key conceptual areas include business management, public sector management (McKevitt and Lawton 1994), facilities management (Alexander 1996), real estate asset management (Isaac 1996; Peterson 2002), development planning and governance (Cullingworth and Nadin 2006; Bell and Hindmoor 2009), building procurement (Rowlinson and McDermott eds. 1999) and building supply chain management (London 2008). In order to describe the state-of-the-art in this composite universe of individual disciplines requires three cross cutting themes of agency, governance and innovation: 1) roles and responsibilities, 2) processes and mechanisms, and 3) change and continuity. Roles and responsibilities define the identity and the influences of the parties in and surrounding the client. Processes and mechanisms define how interactions take place between the parties and how these come together to create and manage buildings. Change and continuity defines the dynamic conditions of the client and the surrounding organisations set within the context, which might be local or global.
State-of-the-art

Based on Haugbølle & Boyd (2013), this chapter maps client associations and networks for practitioners along with some public reform programmes and international research organisations. Further, this chapter identifies three research themes: agency, governance and innovation.

Client associations and networks for practitioners

A range of countries have established designated national associations or networks committed to address client and user issues in a general sense. This is not to say that other more locally based network does not exist e.g. in the German “Länder”, with a more narrow scope on e.g. social housing, or with a focus on property management and development. Most of the designated client organisations are located in the well-developed countries and more specifically in the Northern part of Europe. These include among others:

- Norway: Norwegian Building and Property Association spanning the previous Construction Clients Forum, the association for key figures for benchmarking and the network for facility management (http://www.nbef.no).
- United Kingdom: Construction Client’s Group at the heart of Constructing Excellence (http://www.constructingexcellence.org.uk).
- Denmark: Danish Association of Construction Clients (http://www.bygherreforeningen.dk).
- New Zealand: Construction Clients’ Group as part of the Construction Excellence initiative (http://www.constructing.co.nz).

A number of other international practice-based initiatives are in place or emerging around the world. These include but are not restricted to the following:

- CECODHAS Housing Europe – the federation of public, cooperative and social housing (http://www.housingeurope.eu).
- Council of European Municipalities and Regions (http://www.ccre-cemr.org).
- International Construction Clients Forum – a network of client associations etc. initiated by CIB.
The landscape of client bodies is frequently changing as these arise often around a particular theme and act for a short time before being dissolved. Thus it is not possible to present the landscape of client bodies definitively. For example a number of informal networks exist among for example public procurers in the Nordic countries within defence construction and postal services. Similar a number of time-restricted networks in relation to e.g. R&D projects also emerge from time to time.

The associations and networks mentioned have individually developed various sets of objectives and strategies. It is characteristic that only a few of these associations and networks – most notable the Swedish Construction Clients Forum – have developed designated R&D programs. The R&D activities seem to be more of an ad hoc nature than the result of strategic decisions. A second characteristic is that most of the R&D related activities as well as teaching and learning activities are strongly thematic in nature. Obviously the themes and headlines are formulated differently from organisation to organisation. In generic terms, the themes addressed by client associations and networks include:

- Legal issues like contracts, agreed documents etc.
- Organisational issues like lean, partnering and other types of collaborative arrangements along with integrated delivery systems.
- Managerial issues like process management, user involvement, health and safety, leadership, respect for people etc.
- Value and performance management like benchmarking and key performance indicators.
- Sustainable issues including energy and environmental performance of buildings and urban spaces.
- Digitalisation of the building process like building information modelling as well as automation.
- Asset and facility management.

Public policies and reform programs

A range of public policies and reform programs with an emphasis on clients – and less pronounced users – have been initiated on national and international scale. The main focus of most of these policies and programs is to stimulate innovation in construction, in particular within the areas of sustainability, performance improvement and building information modelling.

For example, the Construction Industry Development Board (cidb) in South Africa has developed a range of tools for procurement, delivery management and stakeholder management (http://www.cidb.org.za). In the Nordic countries, policies have been formulated over the years with a focus on the role of the client as pioneer or change agent in construction. Constructing Excellence in the UK is the single organisation embracing all industry stakeholders with the task of driving the change agenda in construction towards improved industry performance. The R&D activities include a range of member’s task groups on various themes, the National Platform for the Built Environment along with the Modern Built Environment Knowledge Transfer Network (http://www.constructingexcellence.org.uk). In Australia, the recently established Sustainable Built Environment National Research Centre
(SBEnrc) is targeting the role of clients, among others through one of its priority areas on Driving Performance through Procurement.

On a European scale, the European Commission has launched the Lead Market Initiative as an important addendum to the prevalent supply-side strategies dominating the European R&D programs like the 7th Framework Programme. The Lead Market Initiative for Europe aims at fostering the emergence of lead markets of high economic and societal value. Six markets have been identified as lead markets: eHealth, protective textiles, sustainable construction, recycling, bio-based products and renewable energies. The policy instruments include standardisation, legislation, public procurement and supporting activities. One of the central initiatives has been to establish networks of public procurers or contracting authorities in order to stimulate innovation through public procurement or pre-commercial procurement of products and services (http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/).

The role of procurement has also played a significant role within the United Nations system. Several handbooks on procurement have been produced and in particular the United Nations Office for Project Services (UNOPS) and the United Nations Environment Programme (UNEP) has issued various guidelines towards improved procurement, in particular sustainable procurement.

It is also worth noting that the national building research organisations and funding agencies pursue aspects, which address clients concerns often determined by the national governments. It is important to be aware of this work, but it is difficult to assimilate as this is often theme-specific. Similarly, many of the large construction companies undertake client research as part of their marketing to do with what product or method of procurement that they will offer. The advent of for example private finance initiative in the UK has meant that such companies are continually searching for a new relationship to present to the market.

Research organisations

CIB has established more than 50 CIB Working Commissions and Tasks Groups dealing with a broad range of subjects on construction. Given the central and inclusive role of clients in the building process, the work of all of the working commissions and task groups will in principle be relevant to clients. However, most of the commissions and task groups take a supply-side perspective rather than a demand-side perspective. Some of these permanent commissions and temporary task groups may address issues related to clients and users in various international contexts more explicitly without necessarily taking the client as the starting point of their activities or analyses. Among the permanent Working Commissions, the following may be included, but not restricted to:

- W065 Organisation and Management of Construction.
- W069 Residential Studies.
- W070 Facilities Management and Maintenance.
- W084 Building Comfortable Environments for All.
- W092 Procurement Systems.
- W096 Architectural Management.
- W110 Informal Settlements and Affordable Housing.
- W111 Usability of Workplaces.
- W113 Law and Dispute Resolution.
Among the temporary Task Groups, the following execute activities and provide analyses relevant to clients and users:

- TG59 People in Construction.
- TG68 Construction Mediation.
- TG72 Public Private Partnerships.
- TG76 Recognising Innovation in Construction.
- TG84 Construction Reform.
- TG85 R&D Investment and Impact.

For more information on the CIB Commissions and Task Groups, please consult the CIB website (http://www.cibworld.nl).

Other established international research networks and communities exist with a stronger focus on the operation of facilities like the European network for facility management EuroFM (http://www.eurofm.org) or specific types of users, for example the European Network for Housing Research (http://www.enhr.net) and the Nordic Consumer Research Interdisciplinary Network ConriN (http://www.conrid.cfk.gu.se/).

Main themes for research and development

The state-of-the-art of the roadmap has identified three main themes for research and development on agency, governance and innovation, which needs to be addressed: 1) roles and responsibilities, 2) processes and mechanisms, and 3) change and continuity.

Agency: Roles and responsibilities

The major problem with regard to roles and responsibilities involves the belief whether clients can act independently to achieve their aim or whether they are always required to act in the way their environment expects them to act. The significance of this for practice is about how clients operate and how they are able to change. In academic terms this is related to the classical debate on the relationship between agency and structure (Giddens 1984).

Put differently, do sociotechnical structures determine the behaviour of actors or are structures the result of human agency? Over time a range of different positions have evolved in sociology, philosophy etc. One main position is the structuralist position in which the agency of actors can largely be explained by reference to the socio-technical structures, which more or less determines what actors can do. In the opposite end of the scale, another position underlines the capacity of individual actors to determine the outcome of their actions. In between these two positions, a number of alternatives like constructivism (Berger & Luckmann 1966) try to find a more balanced position between the two.

Based on a collection of papers from various theoretical starting points, Oudshoorn & Pinch (eds. 2003) show the creative agency of users in shaping socio-technical change as well as how agency is constrained by government regulations, gender relations etc.

In construction-related research, the work of Boyd and Chinyio (2006) is probably the most thorough example of recent work on the agency of construction clients. According to the Swedish Academy of Engineering Science (IVA 1997), the client must maintain a broad spectrum of competences in
order to manage planning, execution and operation of a building. The client role is defined through its relationship between supply chain (production) and the various stakeholders including the owner, the customer (users) as well as society in general. The client has the responsibility to identify requirements in particular those of the users, communicate these to the potential suppliers and selecting appropriate procurement framework. During the process it is the client responsibility to interact with supply side and stakeholders when necessary and finally take deliverable of the completed project, oversees its commissioning and its acceptance by users, and arranges for evaluations of performance in order to inform future projects. In a study of industrialised single-family housing, Haugbølle & Forman (2006) have drawn attention to the multi-centeredness of clients/users/owners/facility managers etc. by showing how users of single-family houses hold multiple perspectives, which are time-dependent in two ways coupled to the life-cycle of the building as well as the life-cycle of the actor.

Governance: Processes and mechanisms
The major problem with regard to processes and mechanism is how client organisations operate internally and collaborate with the external environment of suppliers, policy makers etc. Clients themselves are organisations but so are the bodies and agencies that surround them and who they supply. In academic terms, these issues of organisation, management, decision-making etc. is often referred to as governance.

Thus, the second research and development theme to be addressed is governance meaning the act of governing, which includes the rules, processes and mechanisms, and behaviour that affect the way powers are exercised. Governance is a multi-faceted concept, which typically takes place at different levels: project governance, corporate governance and regulatory governance, in particular for public clients and for urban developments. Good governance is often associated with openness, accountability, participation etc.

In construction, focus may be on the client's ability to handle the relationship with all stakeholders of the building, be they the owner, the customer, society or the building industry (IVA, 1997). As the interface between users and suppliers, the clients have a central role in developing the construction sector into a demand-driven sector and providing a better user/client satisfaction.

One of the core processes for a client is the procurement of facilities and the associated services. For a number of years, the Working Commission W092 on Procurement Systems within CIB has discussed the proper design of procurement strategies and systems so as to ensure the best performance of the building. Rowlinson & McDermott (eds. 1999) provides a fine overview of procurement strategies and systems including contractual arrangements, organisational issues related to e.g. briefing, emergent issues like new technologies, and procurement systems in practice in relation to partnering as well as methods and criteria for evaluating and selecting contractors. New collaborative arrangements like partnering and public-private partnerships have been the main focus of much research in recent years (see for example Gottlieb & Haugbølle 2013).

In 1999, the present coordinators of W092 (Rowlinson & McDermott eds. 1999) edited a thorough overview of procurement systems. First, the collection describes the background of W092 and introduces the key issues, which have emerged through time like procurement strategies and systems, contractual arrangements, forms of contract and the nature of the construction process. The second part deals with organizational issues in procurement
systems with a focus on e.g. the client organization, strategic briefing, value management, organizational design and project success factors and organizational learning. In the third section, emergent issues in procurement systems are approached like the importance of culture, sustainability and the use of new web-based technologies. Finally, the anthology deals with procurement systems in practice in relation to partnering as well as methods and criteria for evaluating and selecting contractors.

Innovation: Change versus continuity

The third research theme for practice concerns how it is possible for organisations to change. In particular, how is it possible for clients to innovate themselves as well as to assist the construction industry. Innovation is generally considered to be the key driver of improved wealth and welfare. Again this involves not just clients themselves but the system of organisations surrounding clients. In academic terms this can be seen as socio-technical transition or the implementation of innovation. Thus, the third research and development theme to be addressed is innovation, or more generally speaking change versus continuity.

Several definitions of innovation, technological change, technical development etc. can be found in the literature. One of the more authorised definitions is provided by OECD in its Oslo Manual (OECD & Eurostat 2005). Compared to the two previous editions, the Oslo Manual now acknowledges four types of innovations: product, process, marketing and organisational innovations (OECD & Eurostat 2005). The third edition of the Oslo Manual on collecting and interpreting innovation data defines innovation as (OECD & Eurostat 2005: 46):

‘An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.’ (emphasis in original)

As Dodgson et al. (2002: 54-55) points out, analysts have dealt with four types of questions related to the nature of innovation activities, sources of innovation, innovation process and innovation systems. Within the demand-pull model, von Hippel (1986) has been highly influential in showing the importance of users in the development of new technologies. Von Hippel (1986: 791) has in particular introduced the concept of lead users:

"Lead users are users whose present strong needs will become general in a marketplace months or years in the future. Since lead users are familiar with conditions which lie in the future for most others, they can serve as a need-forecasting laboratory for marketing research. Moreover, since lead users often attempt to fill the need they experience, they can provide new product concept and design data as well."

Innovation in construction has to recognise the systemic and complex nature of construction in order to succeed (Barrett ed. 2008; Gann & Salter 2000; Gann 2002). National public policies play a crucial role for innovation in construction as emphasised in an international review of the differences and similarities of national policies within different institutional regimes by Mansau & Seaden (eds. 2001). Stimulating innovation in construction is often attempted through various national reform programmes (George et al 2004) or by using (public) procurement as a driver (Edler & Georghiou 2007).

In construction, a notable internationally initiative is the establishment of the CIB Task Group 58 on client and construction innovation and the 'clients driving construction innovation' conferences in Australia (see e.g. Brown et al. 2005 & 2006). Despite the quality of the individual papers, most of the contributions tends to focus on the subject matter e.g. information and com-
munication technologies, sustainability or performance assessment rather than discussing the concept of the client and how clients act as change agents. Building on the conferences in Australia, Brandon & Lu (eds. 2008) has pursued the agenda of clients as change agents in construction by collecting a range of papers addressing the context of innovation, the process of innovation and how to move ideas into practice. Behind the strategy of client as change agent, it is believed that the client through the choice of procurement methods, targeted goal setting, acting as a lead user etc. can have a decisive impact on the products and services from the building industry on behalf of the owner/end-user.
Future scenario

Buildings are long term assets and develop with the needs of economics and society. The future will see dramatic growth in the building stock of developing countries but with a steady growth in developed countries focussed on housing and regeneration. In the latter there will be radical changes in form with changes in transportation and communications. In this future scenario, clients and users will strive towards three main goals:

- Clients and users will work together across sectors, building types and countries on their shared agenda to improve their environments, buildings in use and delivery of buildings.
- Clients and users will be a part of R&D activities that sees buildings and the delivery of buildings as enhancing core businesses/services and the environment.
- Clients and users will be a part of developing a greater social appreciation of environments, buildings and building delivery (including employment and product innovation).

This means adopting and adapting to changes and challenges related to the four areas identified in the conceptual framework.

Business and society

The first area is Business and Society where the purpose of buildings is set economically, technologically and socially. One of the challenges that continue to exist is the design of buildings to facilitate their better use which supports the core business taking place in the building. The challenges from the financial crisis will continue with further pressure from globalisation of business, education, travel and leisure activities.

Buildings and society

The second area is Buildings and Society where the regulation of spatial activities is conducted and sets the agenda around such areas as conservation, sustainability, infrastructure and regeneration. In the mature developed economies, focus will move more and more to the regeneration of the existing building stock. Here the importance of sustainability (in particular energy savings/CO₂ reductions) and climate adaptation will increase as part of conversion or refurbishment of these buildings.

Business and users

The third area is Business and Users with its focus on the way buildings are used and experienced. Here there are developing challenges of usability and adaptability due to shifting demand. In addition there will be a growing importance of indoor environmental quality as associated with the wellbeing of building users. The emergence of generation Y (“why”) will increase the need to create stimulating learning environments and radically change the perception of work from being a space for activity rather than a place to go.
This will increase the focus on mobile solutions rather than stationary facilities.

Construction industry

The fourth area is the Construction Industry, which forms part of the supply side. Major changes will occur in production systems and materials driven by enhanced design tools allowing new shapes and forms. Buildings will be funded using new financial instruments based on the leasing of assets which will require integrated procurement systems and collaborative practices. These will increasingly draw in clients and users into the innovation and process development in both the construction and materials supply industries.
Development strategy

The development strategy is based on the framework for strategic design by Hambrick & Fredrickson (2005) that requires answers to five questions (for an overview, see Figure 3):

- **Arenas**: Where will we be active?
- **Vehicles**: How will we get there?
- **Differentiators**: How will we win in the marketplace?
- **Staging**: What will be our speed and sequence of moves?
- **Economic logic**: How will we obtain our returns?

**Arenas**: Where will we be active?

The arenas of the development strategy focus on developed countries, mostly Europe and the Pacific region. All types of buildings and all relevant types and activities of clients and users may be included.

**Figure 3**: Overview of R&D strategy. Source: Authors.
The starting point will be the identification and addressing of key themes, which are of interest to practice in line with the general observation of client bodies’ existing development programmes.

Focus will be on R&D projects, educational programmes and guidelines and tools for successful client practices. The research and development projects may include various types of projects like: Theory building activities, development of tools, methodologies etc., demonstration projects and systematic evaluations.

Vehicles: How will we get there?

Due to the field being divergent and scattered, convergence of R&D activities will take place through networking and remote interaction.

The activities of the CIB W118 Working Commission on Clients and Users in Construction can play an instrumental role as the platform for collaboration between research and practice, sharing of lessons learned and collecting clients’ best practice case studies.

Given the thematic approach already applied by client associations etc., the most likely approach forward will be to initiate thematic projects. This will probably also make it easier to acquire funding for R&D projects since few R&D programmes have such multifaceted objectives as clients will typically be facing.

Differentiators: How will we win in the marketplace?

One core differentiator is the adoption of an analytical stance, which takes the clients and users as its starting point rather than the construction industry. Thus, buildings are not about building. Instead it will be necessary to think out of the “construction box”.

Another core differentiator is the recognition of divergence, multiplicity and heterogeneity. Clients and users are heterogeneous entities who operate in very different domains and for multiple purposes.

A third differentiator is the ambition of having an international outreach to draw on experiences from other settings and to do comparative studies across different institutional and national contexts.

Staging: What will be our speed and sequence of moves?

A stepwise approach is suggested containing four steps forward:
– Step 1: Establish CIB W118 commission activities, in particular through a series of successive conferences and the development of an international handbook published by a leading international publisher.
– Step 2: Gain momentum of commission work through seeking external funding, projects with practitioners etc.
– Step 3: Establish international comparison projects connection practice and research.
– Step 4: Establish graduate and master teaching programmes, which will both train future clients and support research programmes.
Economic logic: How will we obtain our returns?

Raise funding for R&D activities is a major challenge. In for example UK, despite the third attempt at supporting a clients’ group, and by far the longest-lasting, it is hard to persuade clients that they should fund something which is not often their core business. As pointed out by the UK Construction Clients Group: Is there a case for public funding as a) such groups provide a vital customer focus for the supply side, and b) they directly benefit the public sector procurers?

Another approach could be to have construction clients or governments set aside a certain percentage of construction project costs for funding of R&D projects. This is already done to some extent by some clients, but not on a wider scale.

Although some funding for R&D projects may be provided by international agencies like the European Union or regional funding agencies like Nordic Innovation, the majority of R&D funding will most likely stem from national sources. The national funding will partly be provided through targeted R&D projects partly through basic funding at research institutes funded either directly by the government or through various national funding schemes based on students’ tuition fees or earning of progress points through educational programmes. Given these conditions, coordination of national funding by aligning self-interested parties will be the most viable road ahead.
Contributions from R&D

The contributions from R&D on clients and users rest on three core supporting arrangements:

– First, bring together the experience and expertise of researchers and practitioners, from within the CIB and other relevant associations, organisations and networks, in a purposeful, structured and productive engagement with each other.

– Second, develop, share and disseminate appropriate information, theories and practical processes with regard to successful client management in their interaction with the business/service world, with regulation, with building use and with building supply.

– Third, encourage and support new practical and research activities on clients, users, regulators and suppliers.

Users and clients play an important role in shaping: directly through interaction with the industry and indirectly through preferences, choices, behaviour etc. Thus, getting a better grasp of the aspirations, needs and behaviour of users and clients will offer an important new road for the industry to deliver value for money. Given the political attention towards clients and users, the time seems ripe to bring CIB into the forefront of this emerging field of research, development and training.

Attempts to formulate a single approach to research and development with clients and users is believed to be non-viable as there is extensive divergence among clients and users when it comes to qualifications, discretionary powers, institutional settings etc. along with the different characteristics of the national construction business systems. It points towards a strategic outlook that will recognise and encourage multiplicity, divergence and heterogeneity rather than convergence and homogeneity. Thus, the working commission will be occupied with developing theories and terminologies that recognises and understands the divergence, multiplicity and heterogeneity of clients and users.

The study of clients is under-researched and is confused by the variety of positions surrounding the notion of clients. Clients are not unitary; they are amalgams of stakeholders. They are surrounded by different forces driving them to build. Every client, never mind client types, is different because of the different context of their business. Some high level contributions from R&D include:

1. Moving focus from supply and even demand to identifying client needs.
2. Putting in context and integrating studies around the subject.
3. Theorising clients as own problematic area.
5. Identifying the connection between clients and users.
6. Determining how clients can intervene in wider construction and social systems during building.

Moving from supply and demand to identifying client needs

By the nature of its constitution, the CIB has concentrated on the supply side of construction. As regards clients the supply side is really only important
during building; thus to a great extent it is an annoyance. The industry has a demand side which is populated by clients but this does not recognise the particular needs of clients but only what they need to provide for the construction industry. On the opposite side, clients are studied as commercial and service organisations within business schools but this focus is on the longer term viability of their strategy and operations. The act of building is a time of organisational development for clients and the particular problems of this whilst, at the same time, they are managing the building process as well are complex and not dealt in business management research. Thus, there is a research gap of identifying 'what clients need during building and how the construction industry can better meet these needs'.

Putting in context and integrating studies around the subject

There are in fact a large number of studies which can contribute to this agenda. These needs to be identified, studied for relevance and consistency, and connected together. Each CIB working commission and task group has something to offer for clients and this needs to be requested and drawn out. A framework needs to be set up into which this disparate research can be placed so that it can build up into a comprehensive body of work with utility for clients and the industry helping clients.

Theorising clients as own problematic area

This framework which integrates studies is another aspect of work, which is critical for clients and for the industry. Because clients are complex and because building is a time of change for clients then such a framework is difficult to develop. In this respect, the framework of Boyd and Chinyio (2006) is too complex to be useful! Theorising needs appropriate simplification, which focuses on priorities whilst at the same time having an overarching connection which allows for the dynamic complexity to be addressed.

Connecting theory and practice

Theorising can be extremely useful for academia and for strategising by clients and the industry; however, this is often criticised as having little direct impact and value. The aspect of how ideas are useful in practice needs to be addressed. The priorities identified above may help with this but the complex and high risk decision making by clients in real time needs to be acknowledged and factored into new approaches.

Identifying the connection between clients and users

Buildings are productive when they do not just work for a commissioning client but for the people that use the building. The gap between these two aspects of clients is seldom acknowledged and causes clients and the industry considerable problems. Again, the conventional approach that undertakes briefing, space-planning and space-making through a study of current users on the one side does not address the commissioning clients' desire for organisational development on the other. Also the operation of the building-in-use both as a physical entity and as a social infrastructure does not feed back into building design and again hampers the commissioning clients' desire for organisational development. All this needs to be exposed and integrated into a client framework.
Client inventions in wider construction and social systems

Clients, particularly large and repeat clients, have been presented with a duty to be responsible within their social and spatial contexts. All clients have to act within the regulatory system and this sometimes fraught interaction impacts on the industry. In addition, clients have also a social duty to develop the regions in which they act; thus contributing to: infrastructure, local training and the social governance of the region is becoming more a part of their remit. One of the major concerns is the environment and the issue of sustainability. Again this impacts on the industry to accommodate approaches, which enhance the clients standing and credibility.

On the other hand, clients have been asked to lead the industry in changing its approach and culture. Thus, clients are recommended to adopt innovative solutions and assist the industry in developing new methods whether through industrial manufacture or cooperative procurement. The client is presented with a dilemma whether to simply address its own short term concerns thus losing credibility or to accept its role to intervene in the wider construction and social system thus potentially becoming non-economic or non-viable.
R&D agenda

Based on Haugbølle & Boyd (2013), this chapter proposes a number of research questions within the three research themes of agency, governance and innovation.

Agency: Roles and responsibilities

With regard to agency, this research theme raises a number of questions with regard to clients and users in construction. To mention a few:

– Map the content and scale of clients' and users' value chains in various national and institutional contexts.
– Analyse how sociotechnical structures shape the roles and responsibilities of clients and users in construction.
– Develop a coherent model of what constitutes a client and a user under different structural conditions.

A central challenge is the need for a shift in focus from building as an end in itself to building as a means to achieve objectives related to the activities of the users in a building during its lifecycle. Put differently, how do clients and users value buildings in terms of costs and benefits to their organisation and organisational development? Consequently, a prerequisite will be for clients and users to be knowledgeable about their own values and needs, and to juxtapose, converge or otherwise position these in relation to other stakeholders. Thus, it is important to fully explore client needs and user values in different domains by mapping the content and scale of clients' and users' value chains in various national and institutional contexts.

A second core research question is related to how sociotechnical structures shape the agency of clients and users in construction. The ability of clients and users to influence the course of events is not only linked to their own will and wishes, but is shaped in part by their structural position, among others their roles and responsibilities. Public regulation, policy-making, market conditions etc. are among the conditions that shape the practices and behaviour of clients and users. Understanding the dualism between agency and structure is essential in order to identify the space for action available to clients and users.

A third core question to be addressed is the question of what constitutes a “client” and a “user”. Understanding both terms and their various configurations under different structural conditions are imperative to develop theories and conceptual frameworks, which can be used to build a coherent model or even theory of clients and users. Viewed from a management perspective, the problem could be expressed as contingencies, convergence and contradictions in an organisation between the different roles and associated responsibilities. This will be essential to identify the client's and users' core competences and how these can be developed.
Governance: Processes and mechanisms

With regard to governance, this research theme raises a number of questions. To mention a few:

– Analyse clients’ and users’ strategies, competencies and practices for procurement, management and use of built facilities in a life-cycle perspective.
– Assess different methods for involvement of users and stakeholders in decision-making processes on construction and operation.
– Understand the mechanisms behind successful/failed projects and why some tools etc. may be more appropriate than others.

The first research objective is to analyse clients’ and users’ strategies, competencies and practices for procurement, management and use of built facilities in a life-cycle perspective. The performance of built facilities depends on the behaviour and practices by clients and users, and vice versa. Insights into the differences and similarities of these strategies, competences and practices may provide researchers and practitioners with an improved understanding of the scope of action, useful inspiration on different approaches to solve problems etc.

The second objective is to assess different methods for involving users and stakeholders in decision-making processes on construction as well as operation of built facilities. These methods may include the use of new types of collaborative agreements like partnering and public-private partnerships in order to support a more demand-oriented construction industry. Other methods may be oriented towards managing the differences between customer needs and company objectives. To master existing methods and develop new methods for involvement and collaboration are instrumental for construction clients in order to provide more value for money to the customers.

The third objective is to understand the mechanisms behind successful/failed projects and why some tools etc. may be more appropriate than others. Studies of interactions and changes of processes and mechanisms are relevant because they are instrumental in bringing about sustainability, identify boundaries, managing information and developing briefing tools. Understanding the mechanisms and processes behind successful/failed projects are prerequisite to develop appropriate guidance material for clients and users. For example how to manage the different phases in the early phases of the construction project and dilemmas like chaos versus planning, ideation versus rule-following etc.

Innovation: Change and continuity

With regard to innovation, this research theme raises a number of questions. To mention a few:

– How can clients and users act as change agents of the construction industry?
– How do clients use buildings as instruments of change within client organisations?
– How will new technologies like BIM impact on clients and users?
– How can clients and users support the move towards a sustainable future?

There are at least two different dimensions with regard to innovation when it comes to clients and users. First, clients and users as change agents may induce change in the construction industry. In recent years, policy makers
have advocated for construction clients to take on a greater responsibility for stimulating innovation through (public) procurement of construction products and services. However, this strategy seldom addresses some of the underlying dilemmas being faced by construction clients. The first dilemma is related to the issue of who will benefit from any extra effort from the client side. For most one-off clients the incentives for stimulating innovation is hardly present. For repeat clients, the situation may prove different. However, both types of clients will meet a second dilemma, namely that of risk. Doing things differently compared to industry practice and standards inevitably increases risks. Thus, for example public construction clients will often be caught between two different objectives: secure safe spending of public money and taking on risks for adopting new technologies.

Second, buildings themselves are instruments in the hands of clients to change the very business of the client organisation. As clients come to build they are exposing their values about building to their organisation and of their people. These values alongside the industry standards and norms determine the means and ends of an engagement around change. The client change and building change is set within an external environment, which provides purpose for the change but also constrains it. Client satisfaction requires achievement in three areas: in the building, in the organisation and in the people. When the client organisation is changing to meet some organisational aspiration, conflicts of purpose and conflicts of values often becomes apparent.

A third question is related to the role of new technologies and what impact they may have on clients and users. New technologies and methodologies like building information models, lean construction and integrated project delivery offer a range of new opportunities and threats to clients and users. Opening the black box of technology and establishing a library of case studies may provide deeper insights into the potential of new technologies and how these may be utilised appropriately.

A fourth group of questions may address how clients and users can support the move towards a sustainable future. Clients play a particular important role with regard to procurement of sustainable buildings and refurbishments, while the behaviour of users has an equal importance with regard to the operation of buildings. Providing insights, showcasing best practice and developing new guidelines and simulation methods could be valuable contributions towards a sustainable future.
References


This document is part of a series of CIB Research Roadmaps to be launched from each of the CIB Working Commissions. CIB W118 Working Commission on Clients and Users in Construction was established in 2010. The Research Roadmap provides a conceptual framework for understanding client and users in construction, describes state-of-the-art in the field, envisage a future scenario and a corresponding development strategy, identifies how research can contribute, and sets out a research agenda for future activities.