



INTERNATIONAL COUNCIL FOR RESEARCH AND INNOVATION IN BUILDING AND CONSTRUCTION

# INFORMATION

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## W102 – Information and Knowledge Management in Building

**Third joint CIB W102-UICB meeting**

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### **Information and Knowledge Management for a Changing Building Industry**

*by*

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#### **Introduction**

The Coordinator, Colin Davidson set the context for the discussions. He reminded participants that "Information is an all-pervading ingredient in building, common to research and practice. Only by giving proper consideration to the flow of information, research results can be usefully translated into innovation and further adapted to provide the knowledge base for best practice".

W102 has to tackle information at several levels simultaneously and:

**1.** follow the evolution of research interests in the building sector;

- 2.** follow the evolution of practice in the context of globalization and the increasing pace of work;
- 3.** keep abreast of changes in the information environment (specifically the new 'tools');
- 4.** know about current changes in the use of knowledge and its management for decision making.

#### **The meeting**

The following themes were discussed: information for innovation, information for performance-based building, information and design, information for the knowledge society, and information services. A series of decisions and recommendations were made.



## Information for innovation

One of the key problems related to innovation can be summarized as "how-do-we-know" - and its converse: "how-do-we-tell".

A case history report described the Network of Construction Creativity Clubs in the U.K. Set up to facilitate interaction between innovators, users of innovations and academics, already 23 events have enabled 80 presentations to be made.

The plan was to provide a balanced set of communication modes: personal contacts, networking (by providing names, addresses, etc.) and publication (in a newsletter, a book, and on a web site). Not surprisingly (bearing in mind the characteristics of the building industry), there was more interest in the meetings and the person-to-person relations, and much less in the publications.

An Australian program addresses the specific problem related to small and medium enterprises (SMEs), where it is necessary to develop means to get information about innovations out - rapidly and in a form that will interest the potentially-concerned decision-makers. Specific tools have to be designed, based on the dissemination of business cases, accompanied by technology demonstrations on how to improve SMEs' efficiency. Furthermore, there has to be a link between any technology watch service and the deep knowledge of the 'client' SME.

First experience with this program suggests a number of important principles: a) have something specific to 'sell', b) reach the top-level decision-makers in the firms, c) implicate the whole supply chain and d) explore alternative motivational methods.

## Information for performance-based building

New Zealand has nearly ten years' experience with a performance-based code, set up originally as a way of moving away from fragmented regulations.

An educational program was planned to accompany the introduction of the code - particularly since it was recognized that the performance concept is very 'intellectual' and that it would have to be inculcated into a 'non-intellectual industry'. This education program fell victim to budget cuts. Despite the fact that there have been many presentation seminars, articles and other publications, full understanding of the principles is still poor.

There is a five-step adoption process: 1) Knowledge, 2) Persuasion, 3) Decision, 4) Implementation and 5) Confirmation. In reality, communication often stops at step 2. It is necessary to realize (a) that the different stakeholders (particularly the smaller players) have different needs and (b) that different situations call for specific kinds of information about the code, notably regarding the durability clauses.

From the New Zealand experience, a clear

recommendation emerges: accompany the introduction of performance codes with the involvement of communications specialists and educators.

## Information and design

Information, in the project context, is often categorized by the concerned participants in the building team. Instead, emphasis should, from the outset, be laid on who actually *uses* the information, since the information that is required does not fall into neat and well-understood categories. For example there can be a difference between 'contractor-needed information' and 'information produced by an architect because he or she thinks the contractor needs it'.

Interestingly, Information Technology (IT) is having an impact on the spread of design tasks. Through IT, it is becoming easier to produce documentation 'off-shore' in low-wage localities where document production costs can be reduced by 90%.

What, one must ask, are the risks that accompany this move to offshore document production? There must be stability in the home-country's market. There must be careful coordination and control (which represent an added cost). There is a tendency to use 'generic' details (thus undermining the architectural 'signatures' of the home offices and the home countries). There is exposure to technological 'glitches' (such as a breakdown in the telecom. network), suggesting the scope for selecting offshore firms that are set up in well-equipped technology parks.

## Information for the knowledge society

A European Union-funded project aims at facilitating access to information within the building industry. It is founded on the principle of providing a network of national gateways through a common platform. In this way, it is possible to access technical information (e.g. BRE's on-line bookshop), product information (e.g. standards, not manufacturers' information), software tools (e.g. for structural engineering), best practice guidance, information about specialized equipment and an industry who's-who (by types of projects and types of skills). In essence, creating a 'virtual technology park' is the aim, making an 'invisible assistant' available.

Supporting tools include classification tables, a thesaurus, user profiles, and infrastructure for e-commerce, language translation, discussion forums and security.

W102 also learnt about work conducted within W078 - "IT for Construction". W078 sees its mandate as the application of *integrated* IT for construction, which includes a wide range of sub-themes, such as: computer-integrated construction and construction processes, decision-support and intelligent systems, process and product modeling, document and document handling (on the Internet) - within project

teams, and the use of past knowledge and institutionalized learning.

### Information services

Some members of W102 run well-known information services. For example, IRB (Germany) continues to run the ICONDA (the International Construction Database) which is available both on CD and on-line. At present 21 countries (about 30 institutions) provide inputs. Selector.com (Australia) is an information sales, production and technological innovation enterprise. It works on the principle that the information producers (the product manufacturers or suppliers) pay for the information, which is free for the users. It only includes information about products for which relatively complete information is available – rather than also having summary information about almost all available products.

The new version of selector.com includes the ability to retain a set of documents that have been looked at for ready recall and use e.g. with the possibility of downloading details for use in the client's office's drawings.

The Information Services of CSIRO provide a service to the 250 staff members with a team of five people (four in Melbourne and one in Sydney), though some questions also come from the public. Sometimes, information brokerage services are provided – at a charge. In all cases, a lot of lateral thinking is required, suggesting that it is important to focus on a 'hidden Internet', i.e. on the databases behind the Internet, which cannot be found through the normal search engines. Experience shows that it is important to focus quickly on the subject behind the question and not focus only on the question as posed.

At BRANZ, research information is 'reinterpreted'; it is definitely *not* a simple task to design a communication output at the right level for a particular audience. The draft papers are circulated to the BRANZ scientists to check that nothing has been misinterpreted during the reinterpretation process. This information is then communicated through accredited advisors, seminars, bulletins, the magazine 'Build' and Good Practice Guides.

At present, there is an emerging demand for electronic information; the position that BRANZ has adopted is to put on the web any information that is too expensive to print, e.g. appraisal certificates as pdf files. However, the web site will probably never be profitable.



W102 members enjoy a sunny break at CSIRO, Melbourne

### Decisions and recommendations

The meeting was doubly productive, because participants acquired new knowledge from each other and because a number of projects were proposed or restructured.

Regarding **performance**, it was decided to look at the general barriers to the *communication* of performance, possibly by making an inventory or model. This would include the qualitative content of performance documents and the related knowledge-communication aspects. Incidentally, a working relationship with W060 has been established.

Regarding **information distribution in the context of a multi-industry**, it was recognized that there is a fuzzy edge between the various socio-economic categories found within the industry and the tasks they are variously called upon to perform. Of particular concern is the up-take of information stemming from research.

Regarding **technology watch and SMEs**, it was felt to be important to collect models of initiatives in this area, eventually including systems that have developed in other industries. Here, cooperation with the new TG47 is felt to be essential.

Regarding **developing countries**, it was recognized that W102 should continue its long-standing concern, with a project on identifying and making available what might be called 'an essential library or IT set-up'.

Regarding **on-going research**, it was noted that W057 had had an unsuccessful project (called CIBORG) aiming at providing up-to-date information about *ongoing* research within CIB. While too big for W102, it was felt that this subject was important and should be drawn to the attention of the CIB Secretariat.

### Next meetings

W102 has been invited by the **Zoran Djorjevic** of the



**University of Belgrade** to hold the 2002 meeting there – towards the end of June or early July; members will be consulted shortly about the preferred timing.

The meetings in 2003 and 2004 will probably be held at Strathclyde University and in Ottawa respectively.

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More detailed information can be found at:

[www.grif.umontreal.ca](http://www.grif.umontreal.ca) by clicking on 'Réseaux' and on the CIB W102 logo (or by clicking on 'English', 'Networks' and on the CIB W102 logo).