

## Innovation co-ordination, transfer and deployment through networked Co-operation in the Construction Industry

### Coordinator's Column

*This is the last ICCI public newsletter*, and indeed the indication that we are now close to the end of the ICCI project, that will be finished by March 2004. The ambition of ICCI has been to reflect on past and ongoing national and international R&D experiences, promote the European Research Area in Construction and related sectors, and prepare the foundations that will form the grounds for future research in Construction ICT throughout Europe. Being a cluster type project, one of the prime commitments of ICCI has been the presentation and dissemination of results to a broad research and industrial community, and it is worth noticing that most of the ICCI deliverables are all of a public nature, hopefully for the benefits of the Construction IT community and the Construction Industry at large. Main recent results are synthesised in the section [Synopsis of Latest Results](#) in this newsletter, but it is worth mentioning, for instance, the Process Matrix Web application (ProMAP) that has been extended and deployed, in cooperation with the thematic network prodAEC. This tool is publicly available as freeware on the Internet (currently at <http://cib.bau.tu-dresden.de:8080/pm/main.html>), and distributed via ICCI and prodAEC dissemination channels. prodAEC has adopted the process-centred methodology developed in ICCI and enhanced the approach to enable classification and linking of relevant ICT standards to real project processes.

Another major output is the ICCI Book, targeting all actors in the Construction industry, including non-IT specialists by staying as lay as possible in technicality. The Book is expected to show readers how their businesses are being, and will be, impacted by ICT, to demonstrate added value of object based technology and new IT-based processes for their current business, and to provide the grounds towards migration to and adoption of state-of-the-art methods and tools. Eventually, versions of the Book for major EU languages are planned too, so that as many European Construction actors as possible may enjoy reading it in his own language.

RTD efforts in "Construction IT" do not stop with the end of ICCI, of course! Proposals have already been submitted in the context of the FP6 IST 1<sup>st</sup> and 2<sup>nd</sup> Calls too in 2003, and others are already planned towards the upcoming NMP and IST Calls in 2004. The Construction sector is quite active and committed to improve both research and business in its industrial field, and we must be happy and proud of this situation. Enabling deeper networking in Construction was at the heart of ICCI's intentions, and every effort in the future must be achieved to sustain the cooperation we have built up altogether in the last years. As the ICCI project coordinator, I hope you have enjoyed reading the various ICCI newsletters, as well as you will appreciate the results of the project, and I'm looking forward to new and increased fruitful collaboration in the future.

*Alain Zarli – ICCI Project Coordinator*

### Synopsis of Latest Results

The latest ICCI results are:

- **[Building . . . a Better Future](#)** (D524) is a 40-page booklet currently being finalised for publication as an eBook in the early Spring of 2004. It attempts to present ICT and its application to construction in a non-technical style (with a little humour), principally for industry practitioners but also providing a useful perspective for the research community.
- **[Vision for integration of contractual and legal aspects of ICT into networked cooperation in construction](#)** (D43) first reviews 8 different visions for ICT in the construction sector from countries around the world revealing that none really raises legal and contractual perspectives affecting ICT. An ICCI vision to provide legal and contractual support for ICT usage in construction projects is presented followed by possible ways in which such a vision might be achieved. An "ideal" scenario for ICT use is presented with a current industrial case study of the legal and contractually valid use of ICT in the engineering sector.
- **[The ICCI Best Practice Guide](#)** (D31) and **[ICCI Action Plan on Training in Construction](#)** (D32). ICT best practice is not easily identified through research projects that by definition tend to be working ahead of practice. Moreover, what suits the culture of one organisation may not suit another. Nevertheless, the report is thought provoking as it points to salient issues, technical and human, that impact best practice. Advanced ICT research shows, however that new working methods, processes, and techniques (e.g. for information and knowledge management and sharing) are possible, as evidenced particularly with the continued uptake of Internet technologies. Such advances entail change and it is clear that training is required not only in ICT but in 'softer' aspects of human and organisational management and in developing a culture of 'learning'. The view is advanced that responsibility for such changes in culture lies at the management level of any organisation, regardless of its size.
- **[Assessment and continuous updates of end users requirements](#)** (D13-2) & **[ProMAP](#)** (D14). The former presents the final extended version of the process matrix and approach incorporating newly added aspects of user requirements to process, with a review of its development history. The latter is the prototyped ProMAP application, deployed on the Web as a freeware tool (see <http://cib.bau.tu-dresden.de:8080/pm/main.html>) It is an open and easy to learn multi-user tool that supports process capture and the exploitation of collected process data by a set of useful views defined in the process matrix approach.

These deliverables add to the earlier public deliverables that can be found on the ICCI web site: <http://icci.vtt.fi> along with details of the ICCI project.

#### Result Contact Points:

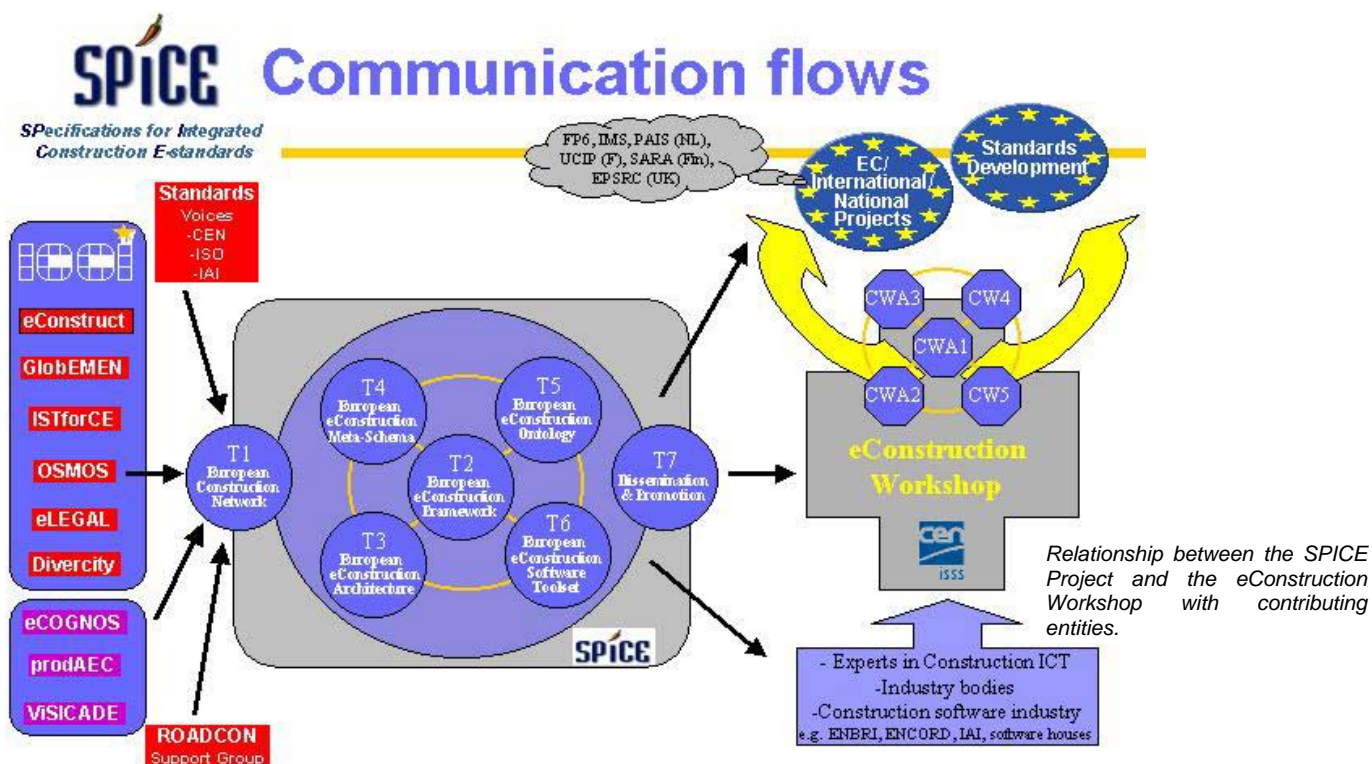
- **[Building . . . a Better Future](#)**: Abdul Samad (Sami) Kazi ([sami.kazi@vtt.fi](mailto:sami.kazi@vtt.fi)) - VTT
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- **[ICCI Best Practice Guide & ICCI Action Plan on Training](#)**: Ian Wilson ([I.E.Wilson@salford.ac.uk](mailto:I.E.Wilson@salford.ac.uk)) - University of Salford
- **[Assessment of end user requirements & ProMAP](#)**: Peter Katranushkov ([Peter.Katranushkov@cib.bau.tu-dresden.de](mailto:Peter.Katranushkov@cib.bau.tu-dresden.de)) - Technical University of Dresden

## The CEN/ISSS eConstruction Workshop <http://www.nen.nl/wseconstruction>

The **CEN/ISSS eConstruction Workshop** is the open discussion workshop launched in January 2003 with the objective of developing consensus CEN Workshop Agreements (CWAs) on the requirements and directions for future e-standards in European Construction Industry. The Workshop concludes in May 2004 with a final plenary meeting in Delft. The IST SPICE project has supported the workshop technically with main partners TNO (NL), CSTB (F) and AEC3 (UK). Dutch standardisation body NEN has provided the Secretariat.

To date SPICE has prepared final drafts for three of the five CWAs, and first drafts for the remaining two (CWA4, CWA5).

- CWA1 – European eConstruction Framework, EeF – Primarily a set of industry, process and technology trends that provide a multi-dimensional framework for assessing progress and planning future directions.
- CWA2 – European eConstruction Architecture, EeA – This is a tailoring of CWA1, mapping ICT developments onto the most relevant trends to reveal the likely needs for future ICT infrastructures.
- CWA3 – European eConstruction Meta-Schema, EeM - a critical evaluation of various meta-schema used to describe construction “things” of interest (construction products and services) on different ‘description levels’ for both definitions and specifications (types and occurrences).
- CWA4 – European eConstruction Ontology, EeO – Ontology is the terminology used to refer to “things”.
- CWA5 – European eConstruction Software Toolset, EeS – A catalogue of software tools that can assist in the development, maintenance or application of process or information models.



The second eConstruction Workshop plenary was held in Brussels in September 2003; the third is scheduled for March 3<sup>rd</sup> 2004 in London; the final plenary will be in mid-May in Delft. All are open meetings and details are on the Workshop web site (address above).

## ICCI Dissemination Zone

Being a cluster type project, dissemination of relevant information to corresponding constituencies is at the heart of **ICCI**. Not only does it present in structured form its own consolidated results, but those too of its member projects. Dissemination is primarily geared towards clusters of audiences at workshops, conferences, concertation events, and other relevant events. Where possible, the dissemination is in close alliance and cooperation with projects, organisations, etc. Active participation by **ICCI** consortium members at **ICE2003**, **CE2003**, and **e2003** were some of the highlights of the dissemination and networking process in Summer & early Autumn 2003. The process is to continue at several other forthcoming events of interest, including some of the following:

### Relevant forthcoming conferences/workshops (2004):

- **CIB W78**, W78 at CIB World Building Congress 2004, Toronto, Canada, 2-7 May, 2004, <http://www.cib2004.ca>
- **ICE2004**, 10<sup>th</sup> International Conference on Concurrent Enterprising, Seville, Spain, 14-16 June, 2004, <http://www.ice-conference.org>
- **eGLOBAL**, 17th Bled eCommerce Conference, Bled, Slovenia, 21-23 June, 2004, <http://www.bledconference.org/>
- **PRO-VE**, 5th IFIP Working Conference on Virtual Enterprises, Toulouse, France, 23-26 August, 2004, <http://www.pro-ve.org/>
- **ECPPM**, European Conference on Product and Process Modelling, Istanbul, Turkey, 8-10 September, 2004, <http://2004.ecppm.org/>
- **IC-SCCE**, International Conference: From Scientific Computing to Computational Engineering, Athens, Greece, 8-10 Sept., 2004, <http://ic-scce.upatras.gr/>
- **B4E**, Building for a European Future. ECCREDI & E-CORE Conference, Maastricht, The Netherlands, 14-15 October, 2004, <http://www.b4e.org/>
- **e-2004**, eChallenges e-2004 Conference, Vienna, Austria, 27-29 October, 2004, <http://www.echallenges.org/2004>

# Open Forum

For this final newsletter, the ICCI project is happy to introduce one of its final deliverables: The ICCI Book

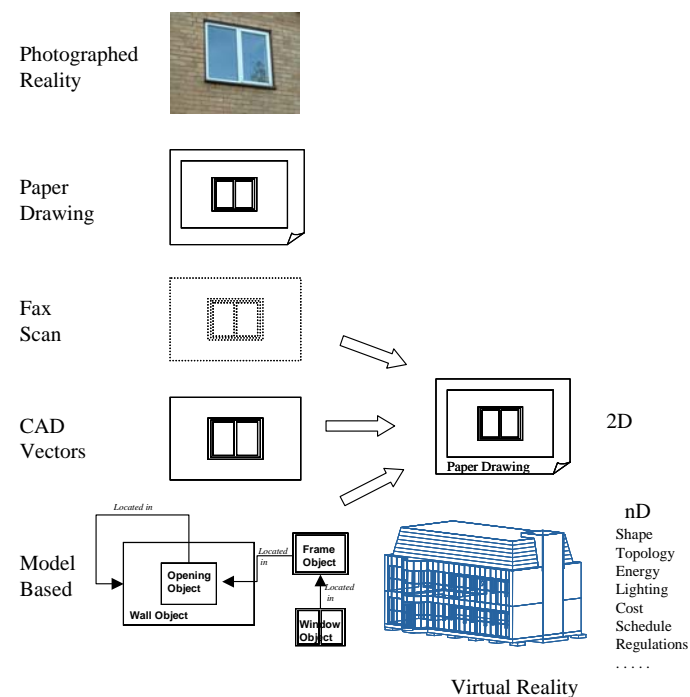
## Building . . . a Better Future

The ICCI project has not been research but *about* research. It has pulled together the threads from around a dozen or so recent research projects and initiatives on ICT in Construction and presented a coherent picture of what has been happening in EC, nationally and internationally. The research projects and results reported have been largely technical, usually expressed in IT terms more than those of construction practitioners.

Of course, construction practitioners are a broad group – with diverse expertise and discipline/work skills. Some (albeit a relative few) will be able to appreciate the thrust of the research because they have been directly involved or have been exposed to some of the concepts through software suppliers and industry initiatives like IAI. For the majority, however, what is reported and described will be quite alien.

Yet Information and Communication Technology has brought about massive changes in other industry and business sectors – impacting the organisation of industries, the foci of companies, the tools used, the processes and procedures followed, and the individuals involved in management and operation. Look no further than supermarkets, banking and travel to see that.

### The ICCI Book



ICCI wanted to reach beyond those academic and research institutions and software and industry companies who have contributed to the research to a wider industry audience. Hence the ICCI Book entitled "Building . . . a Better Future".

### Some ICCI Book Excerpts

- Look at more exploitation of ICT, including exchanging information (not just drawings) with others... Surely ICT could keep us in better touch with suppliers.
- We need better and easier ways for remote groups to "understand" projects from different perspectives. Progress of different trades; the future work plan; the up-to-date master plan to comply with... Appropriate ways for the workforce to see this too!
- Land lines and GSM phones, IP telephony, video links and application sharing help make remote person-to-person communication quite as productive as face-to-face contact. Mobile phones, computers and PDAs allow site personnel to access anyone, anywhere rather than particular locations. In a way it closes a loop, because project masterminds can be present at construction sites, just like the great master builders of the past. Virtually, at least.
- The kind of workflow needed to undertake effective cross-border process management amongst virtual teams in construction projects presents not only considerable technical challenges but even greater cultural challenges. Timely preparation is key.
- A web of services ... Software companies, big and small, will become service providers relying on the in-come from day to day use of their software rather than from the one-off sale of shrink wrapped software. Users will always have access to the very latest versions of software.
- The efficient storage, retrieval and reuse of information and knowledge, facilitating teamwork, remains a hot research and development topic. Rightly so, since knowledge and experience is an organisations most valuable asset. Knowledge of what ICT can and cannot achieve is part of that, but social interaction in the workplace - people mixing and talking together – remains the essential ingredient

It is deliberately more a booklet in size, so as not to deter readers by a heavyweight appearance and it is written in two page chapters to encourage readers to "dip in" rather than read cover to cover. It is not a textbook but intended to stimulate awareness rather than teach – although hopefully there will be things to learn irrespective of prior knowledge, or lack of it.

Of particular relevance to the research community may be the first chapter that deals with a summarised, but very real, Construction Project post mortem. *It hardly mentions ICT*, but it does appraise methods, procedures, successes, failures and people for all of which industry needs improved solutions. ICT is part of those solutions and an enabler of change with huge potential.

### Content

So, what is the provisional content of the book?

The content page below provides some insight on the breadth of material. There are five main sections – an industry perspective already referred to; various views on cooperative/ collaborative working; the handling of information; construction as an evolving e-industry; and supporting appendices.

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### Publication

The Book will be published initially in English in early Spring 2004, most likely as a downloadable e-book. Some paperback copies may also be produced. Versions in other major EU languages are also planned in due course.

The ICCI partners want the Book to have a wide distribution, particularly through direct channels to industry. Proposals from external parties who can assist in that in any way will be welcome.

## Featured ICCI Projects: INTELCITIES

This section is to feature one or more of the projects clustered under ICCI, or in relationships with ICCI. In this last issue, we feature the *Intelcities* project, which is an FP6 Integrated project to start in January 2004.

### INTELCITIES: Intelligent Cities (IST-2002- 2.3.1.9)

**INTELCITIES** is an Integrated Project from EU FP6 / IST programme that brings together 18 cities, led by Manchester and Siena, with 20 ICT companies including Nokia, Microsoft and CISCO and 36 research groups including University of Salford, CSTB and VTT to pool advanced knowledge and experience of electronic government, planning systems and citizen participation from across Europe. It will help achieve the EU policy goal of the "Knowledge Society" by 2010 through new forms of electronic governance of cities and greater social inclusion through enhanced access to services by citizens and businesses.

The main objective of INTELCITIES is to create a new and innovative set of interoperable e-government services to meet the needs of both citizens and businesses. This will provide interactive citywide on-line applications and services for users that will make all aspects of what is "going-on" in the city available to all. This will support:

- the everyday needs and requirements of citizens and business through 24 hour access to transactional city services;
- more efficient city management and administration by integrating functions and services across city authorities, regional and national governmental agencies, utility and transport system providers and citizens/NGO networks;
- much more innovative and effective approaches to urban planning through more reliable city modelling, using advanced visualisation and predictive techniques, which will enable citizens and businesses to play a far more participative and inclusive role in influencing how planned changes in the city will affect their lives.

INTELCITIES will demonstrate a 'integrated project' approach to all aspects of its work, including:

- providing innovative but user-friendly interactive on-line discussion forums so that citizens, officials, businesses and community organisations/NGOs can work together in more inclusive ways to enhance local decision-making processes;

- developing new mechanisms for negotiation and arbitration in order to help remove or resolve disputes over local development that constrains urban regeneration, whilst at the same time enhancing citizens' rights in urban decision-making processes;
- using lessons learnt from best practice in different socio-economic environments to build a new interoperable and integrated platform for city e-government services, based on open systems, and capable of being both scalable and transferable;
- developing practical and effective results which are capable of materially supporting economic regeneration and social inclusion by enabling a more **intelligible and intelligent city** to develop.

This new form of electronic governance is at an experimental stage in which learning by doing in cities is the key, especially in terms of developing and utilising best practice. Prototype system development will test interactive forms of electronic service delivery over different technology platforms, e.g. iDTV, PC based and mobile, in diverse socio-economic environments. The underlying objective is to ensure that all the applications and services can be made to work together in a seamless and interoperable manner. At the same time the project will address key human factors in order to ensure that these approaches maximise support for social inclusion so that all citizens, regardless of gender, age, ethnicity and disability, will be able to use the applications and services in ways which will increase their knowledge of, and involvement in, the city. Ultimately the aim is to ensure that people can use these to enhance their lives and to participate more fully in the information society and the knowledge economy.

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## ICCI in a Nutshell

ICCI targets ICT research and development for the construction industry in the European IST programme. The focus is mainly on:

- ⇒ Industry requirements and needs in the global eBusiness;
- ⇒ ICT infrastructures for construction projects;
- ⇒ Human and organisational aspects for ICT in construction;
- ⇒ Legal and contractual aspects of networked co-operation in construction;
- ⇒ Dissemination and awareness;
- ⇒ Integration, strategy and future plans for IT in construction.



#### ICCI consortium members

ICCI has 9 participating organisations from 6 EU countries:

Finland: VTT

France: CSTB

Germany: TU Dresden

Slovenia: University of Ljubljana

UK: USAL/ISI, Loughborough University, AEC3

The Netherlands: TNO, TU Delft

#### ICCI member projects

ICCI clusters 6 major IST projects focussing on construction IT:

OSMOS: <http://osmos.vtt.fi>

eConstruct: <http://www.econstruct.org>

Divercity: <http://www.e-divercity.com>

ISTforCE: <http://www.istforce.com>

eLEGAL: <http://eLEGAL.vtt.fi>

GLOBEMEN: <http://globemen.vtt.fi>

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