

## Introduction to the I3CON project

**By Christophe Lesniak**  
(FP6/I3CON Scientific Officer)

The European construction sector, representing some 10% of GDP and one quarter of industrial output, is the largest industrial cluster in the EU and supplies our living and working infrastructure. The European Construction Technology Platform (ECTP) aims to take the construction sector to a new high level, by identifying and analysing the major challenges that the sector faces in terms of society, sustainability, technology, etc. and by developing strategies for how to address these challenges in the coming decades, in order to fit the society needs and to contribute to the Lisbon strategy.

### Research priorities

Following consultation, the ECTP completed a European Strategic Agenda entitled "Challenging and Changing Europe's Built Environment"(SRA) in late 2005. This SRA is based on 7 Focus Area (FA) : *Quality of life* for a more sustainable built environment, *Materials*: to develop modern functional materials for the future of construction, *Networks*: for an integrated network of utilities and infrastructure, *Underground construction*: preparing the future of underground construction in Europe, *Cities and buildings*: for cities being the most desirable place in which to live and work, *Processes and ICTs*: industrialisation of new working processes interconnecting actors of the construction industry,

*Cultural Heritage* : A Living Cultural Heritage for an Attractive Europe and approximately 25 *National Construction Technology Platforms*: which is an operational powerful network to collaborate at European level.

The ECTP is involved with 6 other TPs in the European "Lead Market" initiative for the energy efficient building of the future (COM 502 Final). For this purpose collaboration has started in order to provide a consolidated answer with Steel, Hydrogen/Fuel Cell, Forest, Photo Voltaic, Solar Thermal and Sustainable Chemistry platforms. Buildings can play a vital role in reducing carbon dioxide emission (CO<sub>2</sub>) by reducing energy consumption.

### I3CON

The project aims to enable the transformation towards a sustainable European construction industry delivering technologies for an **integrated smart building services system** using distributed control systems with embedded sensors, wireless connections, ambient user interfaces and autonomous controllers. The I3CON new Industrial business model and the developed control systems will contribute to manage and monitor efficiently the buildings needs while fulfilling everyone's comfort requirements.



From July 1999 to December 2003, Christophe was Programme Officer in the Directorate "Industrial Research" Unit G2 attached to the priority NMP (Nanotechnologies, Materials and Processes). His work covered the development of relevant European research Programmes or policies in the field of production, engineering and ICT technologies with a special interest in rapid prototyping and manufacturing, process quality, reliability, metrology and pre-normative techniques.

From January 2004 to date, he has been responsible for the Construction activities in the unit RTD-G2 "Products, Processes and Organisation". He is in charge at EU level of the European Construction Technology Platform.

Therefore the project will contribute to the overall strategy of all industrialized nations to reduce the construction environmental footprint.

## Performance-based business models

By *Sven Schimpf*



In today's business, the use of innovative components and technologies in the construction sector is getting increasingly important.

In this development the application of new business models that bridge the gap between planners and operators play a crucial role to enhance the sustainable application of these solutions.

Looking at the internet economy, existing models such as private public partnership (PPP) and the private financing initiative (PFI) are just a starting point at the use of new business models.

Work package 2: Performance Based Business Models in the I3CON project is dealing with the challenge of developing rules, guidelines and performance indicators for performance-based business models. Performance-based business models are those that focus on the delivery of value as an end-product to the customer.

A core question is how this value can be measured and be translated into a valid revenue model for the supplier that is bound to the performance of the delivered value.

An example for a performance based business model from

another sector is the payment per mileage for cars. The value for the customer is the transport from point A to point B, whereas the revenue model for the supplier is that he gets paid for each driven kilometre. This avoids heavy investment cost for the supplier and extends the business model of the supplier in the direction of the operation of the car.

In the construction sector, exemplary new performance-based business models such as light or energy contracting are only at their starting point and far from being in common usage. Factors such as a high number of different stakeholders being involved in the building lifecycle do not make it any easier to use such models. Our objective is to support the construction sector in their aim at developing new, appropriate performance based business models to create revenue by providing most valuable products and services to their customers.

## Work package progress

### Work Package 5: Lifecycle Services and Facility management

Package leader:  
**Dragados SA**

Work Package 5 will develop the requirements of the business models developed in WP2 - Performance Based Business Models. Other Work Packages impose conditions on the services to be developed under WP5 as well. On the one hand, services must meet the requirements of the business models of WP2. On the other hand, the limitations, advantages and disadvantages of the building system architecture being developed by WP3 must be considered.

In WP5, value-driven services and lifecycle metrics (and other measurement criteria for them) will be developed. Basic research activities are covering to the following areas:

- Concepts and methods for service engineering.
- New value driven services
- Mobile productivity tools and methods
- Service configuration tool
- Service integration management.

The partners involved in WP5 are: Dragados, Draaijer & Partners, Instapro, Istanbul Technical University, Jama-Ur, Lonix, Perspectix, SAES Ingenieros, University Carlos III de Madrid, University of Stuttgart and VTT. Activities within WP5 will start at month 6.

## Forthcoming Events

### ***First International Conference on Industrialised, Integrated, Intelligent Construction. Loughborough, 14-16 May 2008***

Revolutionary construction and production technologies are needed to enable the development of a sustainable European construction industry, which will deliver flexible and adaptable building space that uses less resources and provides optimum environment to the occupants improving their quality of life and productivity.

This will be achieved by using distributed control systems with embedded sensors, wireless connections, ambient user interfaces and autonomous controllers. New added-value business models with highly specialised SMEs working in radically contracted supply chains will deliver high performance spaces, smart business services and lifecycle solutions.

The International Conference committee is pleased to announce the first call for abstracts which will be followed by submission of full papers for the successful abstracts. Abstracts and papers will be peer reviewed by the conference scientific committee.

Abstracts are invited on recent advances in the field of industrialised, integrated, intelligent buildings. Topics of interest include the following:

#### **Industrialised building service system**

- Open Building Services systems architectures and standard interfaces
- Models and reference solutions for mass customisation
- Prefabricated, quick installable product systems.
- Performance based contracting and real-time performance metrics
- Conformance testing and certification practices including the Energy Performance of Buildings Directive (EPBD)

- Market research on industrialised building services

#### **Advanced applications of real-time integrated buildings**

- Integrated user interfaces providing access to all building information.
- Utilisation of real-time building information in reactive and proactive building management - Utilisation of real-time building information in enterprise applications
- Life cycle optimisation of integrated building services
- Life cycle information sharing and management through Building Information Modelling (BIMs).
- Integration of indoor climate control and services to occupants of spaces
- Building services management
- Usability of integrated building services

#### **Technologies for intelligent building services**

- Networked intelligent building service products
- Standards for building automation and control
- Integration of building information systems using Web Service technologies
- Wireless sensor networks in buildings
- Recent development within the International Alliance for Interoperability Industry Foundation Classes (IAI/IFC) like new domain models, model servers, data access interfaces and new design tools
- BACS objects in model based applications

Usage of simulation, for example guidance, control action design, prediction, training etc.

Abstracts should not exceed one page in 12 pt font and should include a descriptive title, the main results and achievements to be presented, five keywords and the name and email address of the corresponding author.

Key dates:

- **Review reports and notification:** 28 January 2008
- **Revised papers due:** 29 February 2008
- **Conference dates:** 14 -16 May 2008

Please submit your abstracts electronically to  
I3CONF@Lboro.ac.uk.

The conference is organised by the **I3CON** (Industrialised, Integrated, Intelligent Construction) European Integrated Project in the FP6 NMP programme, and Loughborough University, UK.

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Looking forward to your contributions

## I3CON Newsletter

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