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## Editorial...

### Welcome...

to the fifth ManuBuild Newsletter. With this release we would like to draw your attention to the upcoming international ManuBuild conference "The Transformation of the Industry – Open Building Manufacturing Systems", which will be held on 25-26 April 2007, at the Doelen Congress Centre in Rotterdam, Netherlands.

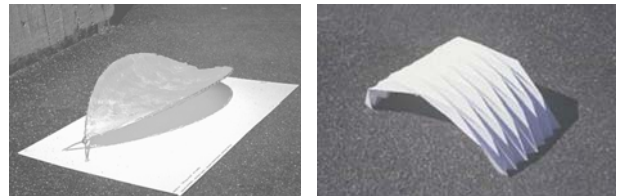
As foretaste of the contents and issues that you can expect to be covered at the conference, we would like to present one highlight: Building System Concepts, which is just one of the ManuBuild core themes addressed at the conference (besides Business Processes, Production Technology, Information and Communication Technology, Training and System Integration).

All newsletters (current and past versions) are also available at the [ManuBuild Web Site](http://www.manubuild.org) ([www.manubuild.org](http://www.manubuild.org)) and at the [Community of Interest](http://www.manubuild.net) ([www.manubuild.net](http://www.manubuild.net)).

## Building System Concepts

This theme deals with the physical aspects of the product – building system concepts. Therefore a set of methodologies for developing building systems from functional requirements are developed and verified through a number of tangible examples. This approach makes it possible to use the same methods to focus on certain features, for example sustainability, of a building or certain user-group like families with children.

Based on design values that are related to the user and client, ManuBuild identifies the definitions, concepts and design methods needed for building manufacturing systems to facilitate quality architecture. It is here that the use of technical platforms to develop contemporary architecture is demonstrated, through the incorporation of all the knowledge in the value chain into the design phase. The results from this will be presented in the format of three typologies relevant for Central Europe, Scandinavia and the Mediterranean region.



*One brief, but different results (source: NCC)*

The two examples above give an outline for the way of working used in ManuBuild (methodologies illustrated by products). They constitute two very different typologies (tensile mesh and folded diaphragm respectively) that are based on a common foundation – on exactly the same brief. Both can be customised into many different solutions of materials, colours and so on. In ManuBuild, the common basis of the typologies is the approach to design, the design tools. These tools include the concept of activity spaces, rural-to-urban transect as well as dimensional and tolerance strategies for the components and methods for directly involving end-users, clients and architects in the design process.

This will all be incorporated into building templates, which serve as a decision guidance considering a variety of aspects of building manufacturing. The focal point is the development of the design phase processes which allow interaction with stakeholders, especially users. The customer will be able to select, modify and adjust the houses' aspects (design, qualities) and related issues (cost, time, taxation, etc.). A number of building templates is being developed, categorised by different user classes for manufactured buildings. ICT (Information & Communication Technology) will be used for interactive design, for example with on-line decision

capabilities. The results will tentatively be presented in the form of computer applications or data libraries.

ManuBuild strives to develop components that will offer 'plug & play' capability and permit the seamless assembly of new and open building components and systems. For such smart components, that add value to the client and user, the concrete, steel and fibre reinforced polymer composite has been picked as an example for illustration. Composite materials consist of two or more distinct physical phases, one of which, the fibrous, is dispersed in a continuous matrix phase. Composites offer the designer a combination of properties that are not available by using traditional materials (concrete, steel and wood). Having access to a light-weight partition wall is pivotal to flexibility of the home over the life-cycle. The ManuBuild partner Mostostal from Poland is developing a partition wall element based on glass fibre.



*Glass fibre during the preparation process for FRP partition wall element (source: Mostostal)*

The window is an important factor in the quality of a room. An efficient process that facilitates quality windows would be an improvement in both value-adding and resource management. Bringing client values together with manufacturing aspects is a new process, which has consequences both for the product performance and the efficiency of the process. Studies of factories and buildings, augmented with interviews and workshops, are used to identify the cost-drivers and the architectural value-bearers. Work is also carried out on multi-functionality in materials that facilitates improvements in other parts of the process and structure, for example fabrics that change phase and can reduce heating costs, self-compacting concrete (old example) reduces need for manufacturing.

In order to connect components in a quick and reliable way, a range of connections and interfaces (both standard as well as flexible) for joining and combining pre-fabricated elements and components are being developed, based upon performance requirements and manufacturing efficiency. They are used as verifications of the new methodologies for manufacturing (for example Design for Manufacture and Assembly) which are adapted to the traits of the construction industry. This is a radical change in the current way of work. Standardisation strategies for interfaces are essential to establish an open system. Standardisation is being suggested in the format of a standardised part request form.

All of the above mentioned developments are incorporated as a demonstrator in form of multi-function integrated modules combining the various new components and connections. 'Stretchable' solutions are being developed to offer the potential for multi-functional space and usage from particular combinations of standard modules (3D) and panels (2D), thus offering greater architectural freedom and adaptability. Dimensional coordination and tolerance strategies are vital features of the openness of the methodology. Social sustainability will be facilitated through adaptation of the home by the individual user and through flexibility over the life cycle. The corresponding principles are verified against three base scenarios covering the different needs of the end users along their aging: the young couple without children, the family with children and the 55+ couple.

## 25-26 April 2007 – ManuBuild International Conference

The international ManuBuild conference "[The Transformation of the Industry – Open Building Manufacturing Systems](#)" takes place on 25-26 April 2007, at the Doelen Congress Centre in Rotterdam, Netherlands.

Interested in ManuBuild? Want to discuss open building manufacturing and the new approaches for building concepts, business processes, production technology, information and communication technology, training and system integration with international experts and the ManuBuild partners?

Then you are just one click away – visit [www.manubuild.net](http://www.manubuild.net) for further information and register to the conference.

## Partners

The ManuBuild Consortium consists of 23 partners from 9 countries in Europe:

Corus Group (UK), [www.corusgroup.com](http://www.corusgroup.com)  
(Coordinator)

VTT Technical Research Centre of Finland (FI),  
[www.vtt.fi](http://www.vtt.fi), (Technical Coordinator)

Dragados S.A. (ES), [www.grupoacs.com](http://www.grupoacs.com)

Empresa Municipal de la Vivienda, SA. (ES),  
[www.emv.es](http://www.emv.es)

FCC Construcción S.A. (ES), [www.fcc.es](http://www.fcc.es)

Fraunhofer Institut für Arbeitswirtschaft und  
Organisation (IAO) (DE),  
[www.rdm.iao.fraunhofer.de](http://www.rdm.iao.fraunhofer.de)

Mostostal Warszawa S.A. (PL),  
[www.mostostal.waw.pl](http://www.mostostal.waw.pl)

NCC Construction Sverige AB (SE), [www.ncc.se](http://www.ncc.se)

Taylor Woodrow Construction Ltd. (UK),  
[www.taylorwoodrow.com](http://www.taylorwoodrow.com)

YIT Construction Ltd. (FI), [www.yit.fi](http://www.yit.fi)

Universidad Carlos III de Madrid (ES),  
[www.uc3m.es](http://www.uc3m.es)

Construction Industry Research and Information  
Association (CIRIA) (UK), [www.ciria.org.uk](http://www.ciria.org.uk)

Consolis Oy Ab (FI), [www.consolis.com](http://www.consolis.com)

Enterprie Software Ltd. (FI),  
[www.enterprie.com](http://www.enterprie.com)

Graphisoft R&D Rt (HU), [www.graphisoft.com](http://www.graphisoft.com)

Building Research Institute (PL), [www.itb.pl](http://www.itb.pl)

IVF Industrial Research and Development Corp.  
(SE), [www.ivf.se](http://www.ivf.se)

Fundación Labein (ES), [www.labein.es](http://www.labein.es)

Nuova Quasco (IT), [www.quasco.it](http://www.quasco.it)

TNO Building and Construction Research (NL),  
[www.bouw.tno.nl](http://www.bouw.tno.nl)

Technische Universität München (DE),  
[www.bri.ar.tum.de](http://www.bri.ar.tum.de)

University of Salford (UK), [www.salford.ac.uk](http://www.salford.ac.uk)

Institut für Arbeitswissenschaft und  
Technologiemanagement (IAT), University of  
Stuttgart (DE), [www.iat.uni-stuttgart.de](http://www.iat.uni-stuttgart.de)

**European Construction Technology Platform**  
ManuBuild partners also actively participate in  
the ECTP ([www.ectp.org](http://www.ectp.org)) defining the strategic  
research directions for the construction sector.

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