5 Project ideas and posters
**EurekaBuild (E3790) Project Idea Form**

**Title**
Future design of building design and manufacturing processes based on integration and activation of experience / knowledge supported by ICT systems (preliminary template).

**Describe your project idea**
Current topic can be within: Knowledge growth in organizations; harvesting, analyze, validation, ontology, classification, development of IDM’s, use of BIM, future roles of knowledge workers – architects and engineers.

**Please explain briefly your expertise**
Software development, BIM, IFC, IFD, IDM, methodology, systemizing, knowledge management; - processes and – representation.

Selvaag Blue Think is a R&D department (35 emp.) owned by the home-builder company Selvaag Group (520 emp.)

**Please describe what your contribution will be to this project (financial, technological,…)**
Technological, software development, systemization, knowledge processes. Piloting, prototyping and practical use in AEC company.

**Explain which type of contribution you are looking for (financial, technological,…)**
Financial
Technological

**Contact information**

<table>
<thead>
<tr>
<th>Full name</th>
<th>Eilif Hjelseth</th>
</tr>
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<tbody>
<tr>
<td>Email address</td>
<td><a href="mailto:ehj@selvaag.no">ehj@selvaag.no</a></td>
</tr>
<tr>
<td>Organisation name</td>
<td>Selvaag Blue Think AS</td>
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<td>Address</td>
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**EurekaBuild (E!3790) Project Idea Form**

**Title**
A Repository for life cycle design and construction for BAM

**Describe your project idea**
Improve project insight & communication to ensure clients value and efficient management of risks. Efficiently process consistent product & process data throughout the project life cycle and across the extended enterprise. To create more value efficiently and to be more competitive. Therefore companies like BAM need to setup its Object repositories to start capturing data over projects and setup its catalogs.

The main focus is:
- Capture functional demands and technical solutions during engineering, estimation and production planning so proper quantity reports can be generated, aspects can be compared between project stages and solutions can be re-used between projects.
- Explore how this repository, which is setup independently from software solutions, can be deployed in a commercial model server environment.
- Our approach is: Use what’s available and learn by doing.

**Please explain briefly your expertise**
Royal BAM Group nv is one of the top ten construction companies in Europe and has a 10 year learning experience with Virtual Construction in real time building projects.

**Please describe what your contribution will be to this project (financial, technological,...)**
BAM can contribute its experiences and concepts regarding model based estimation and production planning.

**Explain which type of contribution you are looking for (financial, technological,...)**
Partners contribute with state of the art solutions regarding taxonomies, currently available content and proof of concepts which were developed in several R&D projects so far.

**Contact information**

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<tr>
<th>Full name</th>
<th>Wim Nijman</th>
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<tr>
<td>Email address</td>
<td><a href="mailto:w.nijman@bamgroep.nl">w.nijman@bamgroep.nl</a></td>
</tr>
<tr>
<td>Organisation name</td>
<td>Royal BAM Group nv</td>
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<td>Address</td>
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**EurekaBuild (E!3790) Project Idea Form**

**Title**
Development and diffusion of ICT innovations in the construction sector

**Describe your project idea**
There is a need to assess the potential non-technical barriers and enablers to achieving a better diffusion of ICT innovations in construction. The focus to this point has been on solving the technical issues, not on non-technical ones. The overall aim of the research is to map the non-technical factors influencing diffusion and further develop guidelines for the successful development, implementation and diffusion of ICT innovations in the construction sector.

**Please explain briefly your expertise**
My expertise is on sectoral competitiveness and development in construction and specifically on innovation and innovation diffusion in construction and project-based sectors. Significant in this regard is the criticality of communication vertically within the supply chain and laterally amongst suppliers with respect to specific innovations during the development phase, such that diffusion becomes normal and, therefore, integral feature of construction activity.

**Please describe what your contribution will be to this project (financial, technological,...)**
My contribution would be on the understanding of innovation and innovation diffusion in project-based sectors. This would enable new or ongoing developments on ICT in construction to better assess non-technical factors influencing the innovation and diffusion of new products or tools, and subsequently a more successful commercialisation of them.

**Explain which type of contribution you are looking for (financial, technological,...)**
I am mainly looking for projects on the development of ICT tools or products for the construction sector where I can map the innovation and innovation diffusion process.

**Contact information**

<table>
<thead>
<tr>
<th>Full name</th>
<th>Kristian Widén</th>
</tr>
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<tbody>
<tr>
<td>Email address</td>
<td><a href="mailto:Kristian.widen@bekon.lth.se">Kristian.widen@bekon.lth.se</a></td>
</tr>
<tr>
<td>Organisation name</td>
<td>Division of Construction Management, Lund University</td>
</tr>
<tr>
<td>Address</td>
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EurekaBuild (E!3790) Project Idea Form

> Title
Stakeholder management and communication in construction projects

> Describe your project idea
Any construction project involves a number of stakeholders with various, and sometimes diverging, claims upon project implementation and decisions processes. Thus, the issue at hand is for the project organisation to perform sufficiently in accordance when managing relationships with project stakeholders. An increased understanding is needed of the stakeholder management process during different stages of a construction project. An important aspect in stakeholder communication is to give the right kind of information, in the right way and at the right time. If this process various ICT solutions, correctly used, could be a successful way of obtaining a improved stakeholder communications process. The focus of this project idea will be stakeholder management processes during the construction stage on site.

> Please explain briefly your expertise
I have studied processes and method for analysing stakeholder impacts on project decision in the early planning stages of a property development process. These methods are, however, general for a variety of projects and can be used in different stages. The analysis of stakeholder impacts will act as an input to a stakeholder management process, and basically examines the need and extent of communication to stakeholders.

> Please describe what your contribution will be to this project (financial, technological,...)

> Explain which type of contribution you are looking for (financial, technological,...)

Contact information

<table>
<thead>
<tr>
<th>Full name</th>
<th>Stefan Olander</th>
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<tbody>
<tr>
<td>Email address</td>
<td><a href="mailto:Stefan.oolander@hekon.lth.se">Stefan.oolander@hekon.lth.se</a></td>
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# EurekaBuild (E!3790) Project Idea Form

## Title

DESIGNING FOR CONSTRUCTION SITE SAFETY

## Describe your project idea

Rigorous safety measures to improve construction site safety have been the subject of positive interest and support from the construction industry. These measures focus on both reactive and proactive steps. Despite the positive interest, fatalities’ figures continue to raise concern. Fatalities are due to the many obstacles that stand in the way of the full and proper implementation of safety measures. It is necessary to question whether or not more stringent safety measures are capable of being employed effectively and if the cost of doing so is realistic.

The industry needs to tackle these safety issues and barriers by adopting a ‘design for safety’ approach as the primary means for improving safety on construction sites. This concept entails addressing the nature of barriers and failures from the concept stage, through the detail design stage, procurement stage, construction stage and, finally, completion. By analysing the barriers at all these stages, it is hoped that a solution will be able to be implemented.

Incorporating additional safety measures from the concept stage through to completion, perhaps with the aid of artificial intelligence (AI) and informational support to workers, might help to improve the implementation of these measures. It is anticipated that a ‘smart safety’ approach would be able to detect unsafe acts or unsafe conditions. Using the new Mercedes S class as an analogy, where the vehicle is able to detect a hazard and warn the driver approaching it, so too should it be possible to warn workers of impending hazards and danger.

It is hope this new approach to ‘design for safety’ will be able to determine risk before undertaking any task, and detect hazards – reducing or eventually eliminating them – before and during construction and, finally, be able to propose remedial actions.

## Please explain briefly your expertise

16 years of practical experience gained in construction provides a strong motivation for this research into safety issues. Previous (doctoral) research focused mainly on looking at proactive safety factors for construction sites and how they affect safety performance. A more recent focus is the correlation between construction accidents and the educational background of workers.

## Please describe what your contribution will be to this project (financial, technological,...)

**‘Smart safety’ design for construction**

The primary interest is in producing pragmatic, reliable, ready-to-use systems that are able to determine risks from the point at which a hazard is identified and then, subsequently, taking steps to eliminate the hazard. The result is not seen in terms of a single computerised system, but more as a matter of focusing on the adoption of appropriate measures throughout the construction process in order to reduce as many unsafe acts and unsafe conditions as possible. It is anticipated that one of these measures might well be in the form of an AI approach, involving software design with some manual detection.
> Explain which type of contribution you are looking for (financial, technological,...)

- Financial support
- Experts in AI, C++, Visual Basic 6

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Remarks

Date

To be sent back to secretariat.ectp@esib.fr and ...
EurekaBuild (E!3790) Project Idea Form

> Title
Building Analysis and Evaluation Tools

> Describe your project idea
Research problem
There are already some commercial applications that have been developed to work directly with building data from BIM applications, but these are restricted mostly to traditional analysis tasks such as structure, energy use, daylighting, and cost. A significant body of academic research can be devoted to developing analysis tools for other aspects of building design such as circulation, habitability, egress, emergency evacuation, ventilation, and so on, as well as "softer" criteria (those that are harder to quantify) such as aesthetics, cultural fit, the Chinese system of feng shui, etc.

Background
The architectural profession has devoted substantial time, effort, and research to develop guidelines for good building design for varied aspects and criteria. All of these are currently captured in text form in numerous handbooks of architectural standards. However, adoption of these "good design principles" has been difficult to enforce, because the drawing- and CAD-based processes that were in place so far made it extremely difficult to check a proposed building design for the satisfaction of specified criteria. Even when the guidelines were captured in the form of software tools, the design information had to be input into the tools manually, which was an extremely tedious process in addition to being fraught with inaccuracies. This is why quality control has not yet become an integral part of the building design process.

This scenario has changed radically with the advent of BIM. Since BIM applications capture the representation of the building design in an intelligent format, a BIM model of a building has the necessary semantics for it to be automatically evaluated and analyzed for the satisfaction of all criteria that can be captured algorithmically in a computer program. The proposed research problem is work that would not typically be undertaken by commercial software vendors, but it would be critical in making analysis and evaluation a more integral part of the design process and instituting better quality control than what we have in place today. It may not guarantee great architecture in the future, but it will at least ensure that bad designs don't get built.

> Please explain briefly your expertise
Professor of architecture at the Faculty of Architecture and Fine Art of the Norwegian University of Science and Technology (NTNU).

> Please describe what your contribution will be to this project (financial, technological,...)
We are looking for collaboration parties from the industry as well as from research organizations. Providing we can establish the necessary funding, we intend to assign a PhD student to this research topic.
**EurekaBuild (E!3790) Project Idea Form**

> Explain which type of contribution you are looking for (financial, technological,...)

Cooperation partners and financial support

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**EurekaBuild (E!3790) Project Idea Form**

> **Title**

Intelligent or Smart Objects for use in BIM

> **Describe your project idea**

**Research problem**
What is the best way to connect BIM applications with real-world building products listed in manufacturers' catalogs? Does the manufacturer have to develop BIM object libraries separately for every BIM application, or is there some common format for developing these that will allow them to be used by any BIM application? Where should these object libraries reside: within the application, within a shared server in a firm, or online on the manufacturers' website?

**Background**
One aspect of BIM that still remains to be properly researched and resolved is that of the individual models of building elements that are needed to populate a BIM model of a building. Currently, each BIM application has its own library of generic content, and the BIM models being produced by these applications do not necessarily have real-world object attributes. Until issues such as these are resolved, product manufacturers will be reluctant to go about the task of developing BIM models of their products, which will remain a significant obstacle for widespread BIM implementation in the industry.

> **Please explain briefly your expertise**

Professor of architecture at the Faculty of Architecture and Fine Art of the Norwegian University of Science and Technology (NTNU).

> **Please describe what your contribution will be to this project (financial, technological,...)**

We are looking for collaboration parties from the industry as well as from research organizations. Providing we can establish the necessary funding, we intend to assign a PhD student to this research topic.

> **Explain which type of contribution you are looking for (financial, technological,...)**

Cooperation partners and financial support

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### Integration versus Interoperability: Re-examining the Relevance of the IFC

#### Describe your project idea

**Research problem**

In light of the increase in the number of solutions that directly integrate with the mainstream BIM applications, what impact does it have on the relevance of the IFC file format? What is the effectiveness of solutions that rely on the IFC to work with BIM applications or BIM data compared to solutions that integrate directly with BIM applications?

**Background**

With BIM implementation gaining momentum in the AEC industry, this would be a good time to revisit the issue of integration—where applications working together using the same file format or through application programming interfaces (APIs)—versus interoperability—where applications are able to exchange information using an open file format like the IFC. Vendors such as Autodesk and Bentley have already developed integrated suites of BIM solutions for architectural, structural, and MEP design on the same platform (Revit and MicroStation respectively) and are busy expanding their “ecosystem” of solutions by encouraging third-party vendors to develop supporting applications that integrate with their BIM solutions using APIs. These are important topics that need to be researched in order to provide the industry with guidance on the best way forward. Considering the significant amount of resources that have already been invested in the IFC and are continuing to be invested, it is important to re-examine its importance and relevance so that the resources are not wasted.

#### Please explain briefly your expertise

Professor of architecture at the Faculty of Architecture and Fine Art of the Norwegian University of Science and Technology (NTNU).

#### Please describe what your contribution will be to this project (financial, technological,...)

We are looking for collaboration parties from the industry as well as from research organizations. Providing we can establish the necessary funding, we intend to assign a PhD student to this research topic.

#### Explain which type of contribution you are looking for (financial, technological,...)

Cooperation partners and financial support

Contact information

<table>
<thead>
<tr>
<th>Full name</th>
<th>Knut Einar Larsen</th>
</tr>
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<tbody>
<tr>
<td>Email address</td>
<td><a href="mailto:knut.e.larsen@ntnu.no">knut.e.larsen@ntnu.no</a></td>
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<td>NO 7020</td>
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Innovation in AEC industries?

Building as an inter-disciplinary Process

Building Performance or "building" "performance"

i4Ds Portrait:

The Institute for 4D Technologies and DataSpaces (i4Ds) is working in the German speaking region of Switzerland and is internationally active with focus on R&D for ICT solution for the AEC industry.

http://www.i4ds.ch
Strategic Objectives:

1. The i4Ds is an inter-disciplinary Institute with a high degree of Information Technology

2. Core Business of i4Ds are R&D for ICT Solutions for the AEC Industry

3. The competencies of the Virtual Environments and Data Spaces will be used for the Core Business but both fields may develop independently

Main Research:

4D Technology

R&D Fields:

4D Technologies
Process Modelling and Optimization
Virtual Environments
Data Spaces
Set up a Consortium to propose Research Projects within the (6th) EU Research Framework Programme

**EurekaBuild Project Idea Form**

**Research Topics: Virtual Design and Construction**

A.) Visualization of building processes (4D--Technology, Virtual environments, Animation, Videos, etc.)

B.) Modelling of Products, Organisation and Processes (POP--Models) supported by intelligent agents

C.) Development of metrics for the quantification of the efficiency of Products, Organisation and Processes and corresponding visualization methods

D.) Digital Models and applying Building Information Management systems (BIM)

---

**Research Topics: Virtual Design and Construction**

E.) Development of tools for the simulation and for the support of Lean Construction processes

F.) Development of Process Design Patterns

G.) Development of knowledge based models for automating processes

H.) Development of advanced working environments for performance predictions using 3D/4D models and design of integrated User Interfaces for VDC applications and communication platforms
Research Topics: Virtual Design and Constraction

I.) Development of ICT systems to support integrated collaborative environments in AEC

J.) Development of advanced geometric, structural and semantic reasoning methods

K.) Real time monitoring and control throughout the construction process (whole life cycle)

L.) Social and cultural issues

M.) Augmented Reality visualization of the building process on site

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<tr>
<th>Institution</th>
<th>Coordinator</th>
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<th>Topics of interest</th>
<th>Working days for preparation</th>
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<tr>
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<td>Prof. Dr. Monfried Vogel</td>
<td>Approved</td>
<td>N</td>
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<tr>
<td>CCHR, Universiti of Teesside</td>
<td>Prof. Dr. Nathanael Davoud</td>
<td>Approved</td>
<td>N</td>
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<td>TICATA Department, University of Bath, Bristol</td>
<td>Prof. Dr. Iinterople Collett</td>
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<td>CCOVE, Freie Universitat Berlin</td>
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<td>Prof. Dr. Arto Käkki</td>
<td>Approved</td>
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<tr>
<td>VTT, Technical Research Centre of Finland</td>
<td>Prof. Dr. Antti Kallioinen</td>
<td>Preliminary approved</td>
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<td>FI</td>
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<td>GTI, Swiss Federal Institute of Technology, Zurich</td>
<td>Prof. Dr. Christian Schaufelein</td>
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<td>ECC, Consolidated Contractors Company, Dubai</td>
<td>Dr. Zunbar Hadad</td>
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<td>CFE, Stanford University</td>
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Letter of intent:

The Centre for Construction Innovation & Research (CCIR), University of Teesside, UK, and the Institute of 4D–Technologies & DataSpaces (i4Ds), University of Applied Sciences Northwestern Switzerland, plan to establish a consortium in order to propose a research project within the 7th (or possibly 8th) EU Research Framework Programme. The projects will address open problems in Virtual Design and Construction (VDC).

The procedure for establishing a consortium and submitting a proposal will be as follows:

1.) Research institutions and Industry partners which might have a possible interest to participate in such a project are asked for their commitments. A commitment is expressed by designating a contact person, assigning a number of working days which will be allocated for the preparation of a proposal, listing research topics of particular interest and indicating if the institution would be willing to take the project lead.

Note that in the FP7 also partners from non-EU countries may participate in research projects, although partners from industrial countries (USA, Japan, etc.) generally are not eligible for funding.

2.) The proposed research topics will be discussed with the designated contacts and an aggregated research outline will be finalised. Subsequently, the consortium will be consolidated and first drafts of the proposal will be worked out.

3.) Possible Calls within FP7 or FP8 will be identified into which the projects might fit. A final proposal will be generated iteratively by the consortium partners — and submitted.

Tentative timeline: 2007 constitution of consortium → 2008 preparation of proposal → 2009 start of project

Please complete the following list of research topics, the commitment details (add your logo to the header) and return the document to n.n.dawood@tees.ac.uk or manfred.vogel@finw.ch

If you know any partner institutions which should be in the consortium, feel free to forward this document to them.

Research topics of interest:

(Please feel free to extend this list)

A.) Visualization of building processes (4D–Technology, Virtual environments, Animation, Videos, etc.)
B.) Modelling of Products, Organisation and Processes (POP–Models) supported by intelligent agents
C.) Development of metrics for the quantification of the efficiency of Products, Organisation and Processes and corresponding visualization methods
D.) Digital Models and applying Building Information Management systems (BIM)
E.) Development of tools for the simulation and for the support of Lean Construction processes
F.) Development of Process Design Patterns
G.) Development of knowledge based models for automating processes
H.) Development of advanced working environments for performance predictions using 3D/4D models and design of integrated User Interfaces for VDC applications and communication platforms
I.) Development of ICT systems to support integrated collaborative environments in AEC
J.) Development of advanced geometric, structural and semantic reasoning methods
K.) Real time monitoring and control throughout the construction process (whole life cycle)
L.) Social and cultural issues
M.) Augmented Reality visualization of the building process on site
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<th>Coordinator</th>
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<td>4Dz, Univ. of Applied Sciences</td>
<td>Prof. Dr. Manfred Vogel</td>
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<td>CCIR University of Teesido</td>
<td>Prof. Dr. Neshwan Dewood</td>
<td>Approved</td>
<td>No</td>
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<td>ICATA Department University of Brescia, Brescia</td>
<td>Prof. Dr. Angelo Ciribini</td>
<td>Approved</td>
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<td>CCVE Fraunhofer IAO, Stuttgart</td>
<td>Dr. Manfred Dangelmaier</td>
<td>Approved</td>
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<td>Bauhaus Universität, Weimar</td>
<td>Prof. Dr. Bernd Fröhlich</td>
<td>Approved</td>
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<td>HLRB, Universität Stuttgart</td>
<td>Uwe Wössner</td>
<td>Approved</td>
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<td>A, H, I, M</td>
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<td>VTT Technical Research Centre of Finland</td>
<td>Prof. Dr. Arto Kiviinen</td>
<td>Preliminary approved</td>
<td>No</td>
<td>FI</td>
<td>Potentially: A, B, C, D, E, G, H, I, K (must check resources)</td>
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<td>SBB Swiss Federal Railways, Bern</td>
<td>Johannes Schaub</td>
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<td>CCC Consolidated Contractors Company, Athens</td>
<td>Dr. Zuhair Hadad</td>
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Reasons for BAM to deploy Virtual Design & Construction

Improve project insight & communication to ensure clients value and efficient management of risks
Efficiently process consistent product & process data throughout the project lifecycle & across the extended enterprise
Reduce failure costs - improve efficiency, quality, project control
To create more value efficiently and to become more COMPETITIVE

A 10 year learning by doing approach paid off, but BAM needs to explore longer term solutions

BAM EurekaBuild Project Idea
Companies such as BAM need to setup its Object Repositories to start capturing data over projects and setup its catalogues.

Explore

As is:
For model based engineering, estimation, production planning purposes object definitions, properties and taxonomies are setup PER PROJECT.
Specialisation trees are inconsistent; definitions vary, so data cannot be re-used over project.
The lack of inconsistent property sets causes even problems to compare within 1 project.

To be:
An object repository, setup independently from software solutions, in line with standardization efforts, should enable BAM to design a consistent data flow through different disciplines.
A consistent process of decomposition and specialisation should be supported.
Flexible but structured object libraries should be build up, based on several projects.

Main focus:
Capture functional demands and technical solutions during engineering, estimation and production planning
so proper quantity reports can be generated, aspects can be compared between project stages and solutions can be re-used between projects.
Explore how this repository can be deployed in a commercial model server environment
Define short and long term steps for usage in house - how to maintain links to standardisation efforts

BAM Contribution:
BAM can contribute its experiences and concepts regarding model based estimation and production planning

Partner Contribution:
Partners contribute with state of the art solutions regarding taxonomies, currently available content, and proof of concepts which were developed in several R&D projects so far.

Approach:
Use what's available and learn by doing.
CASA™ Knowledge Suite

CASA™ Master Planner
Project development and configuration

CASA™ House Designer
Product development and design

CASA™ Supervisor
Project delivery and information management

CASA™ Experience
Learning and knowledge management

CASA™ is a trademark of Selvaag BlueThink AS
Patent pending for CASA™ Supervisor
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Contact information
Full name: Elif Hjelseh
Email address: ehh@selvaag.no
Organisation name: Selvaag Blue Think AS
Address: Box 544, Økern
City: Oslo
Zip: N-0512
Country: Norway
Tel.: + 47 23 13 70 00
Fax.: + 47 23 13 74 04
Selvaag BlueThink develops methodologies and IT-applications that dramatically improve product and project development capabilities of home builders. CASA™ Knowledge Suite supports the development of flexible housing products which are quality assured through automated use of corporate knowledge. The digitally represented housing products are used in projects to automatically create detailed documentation and visualization.

Knowledge based automated design
The building industry is on a quest for improving quality and at the same time reducing waste and cost. One approach is knowledge based automated design. Automated design increases quality and reduces the time spent in design and engineering documentation by activating and managing corporate knowledge.

Applications and services
CASA™ Knowledge Suite organizes experience and knowledge by the collection and categorization provided by Experience. The knowledge is automatically applied by House Designer to support design, engineering and detailed analysis of housing products. Master Planner puts the knowledge together for complete projects, and Supervisor brings the knowledge back to the construction site as digital models and quality documentation for each house.

Experience
Experience supports the collection and refinement process of experiences made in product development and at construction sites. The application supports a number of workflows for deviation reporting and error handling, technical clarification, customer issues, etc. The methodologies and tools ensure a unified knowledge management process and makes the knowledge searchable and accessible as part of the available analysis tools.

House Designer
House Designer supports product developers by automating knowledge and actively presenting best practice solutions and enabling mandatory rules to be used. The applications suggest and validate solutions based on the organizational knowledge using "Knowledge Based Engineering" technology. The technology supports automated reasoning over multiple parameters supporting the developers in their decision-making.

Master Planner
Master Planner support project developers with a workbench enabling him by drag and drop type functionality to edit a complete project. The project scenario is immediately validated and visualized. At the same time, the developer will be presented with cost and revenue estimates including building, infrastructure and landscaping.

Supervisor
Supervisor represents different housing products with base configurations and available, predefined options allowing customization for both projects and end customers. The easy to use graphical interface enables the user to explore the different variations allowed for each house and supports project and end customers by immediately available 2D and 3D presentation of the complete house. Production of required project and technical documentation is also automated. The application allows mass customization without loosing quality.

Customers
Selvaagbygg and Selvaagbyggas launched a 3 year project in 2005 to realize efficiency effects from using Selvaag BlueThink’s applications through re-industrialization and automation of design, engineering and documentation. The first housing project utilizing the tools was the low budget housing project Tuenveien in Fet municipality, close to Oslo, built in 2004.

Selvaag BlueThink AS is a wholly owned subsidiary of the Selvaag Group and develops methodologies and IT-based tools for knowledge based industrialized house building. We believe that long term plans, innovation and pioneering efforts lay the foundation for a high value creation and a long term, solid earnings.
Improved design process

- Ability to impact cost and functional capabilities
- Preferred design process (BIM)
- Traditional design process
- CASA™ Knowledge based design process
- Cost of design change

PD: Pre Design
SD: Schematic Design
DD: Design Development
CD: Construction Documentation
PR: Procurement
CA: Construction Administration
OP: Operation

Graphic originated by Patrick MacLeamy, AIA
SEAMLESS INTEGRATION OF DATA FOR DESIGN, CONSTRUCTION AND MAINTENANCE OF INFRASTRUCTURE INSTALLATIONS

BASED ON THE NORWEGIAN NATIONAL ROAD DATABANK (NVDB) TECHNOLOGY

ViaNova will make use of the technology developed in the NVDB-project for integration of data for all phases of an infrastructure project.

ViaNova seeks foundings, partners and pilot projects to realize this goal.

Ongoing pilot project:
Planwork - "Sydhavna"

Statens vegvesen
Norwegian Road Authorities
STAND-INN BuildingSMART: Smart standards for the building life

Objectives

- Investigating, testing and promoting innovative approaches and best practices based on open standards
- Setting up practical guiding services for stakeholders
- Establishing Pan European innovation networks for the integrated life-cycle and management of the building environment

Actors

Companies
- EnviChina, Norway
- EPM Technology, Norway
- Senate Properties, Finland
- Ljussteck Konsult AB, Sweden

Innovation Consultancies
- AEC3 Ltd, United Kingdom
- Faithful & Gould Ltd, United Kingdom
- Ingenieurbüro Dr.-Ing. Wolfram Trinius, Germany

Standardisation Bodies
- Standards Norway, Norway
- Swedish Standards Institute (SIS), Sweden
- Ente Nazionale Italiano di Unificazione, Italy

Clusters
- IAI, Norway
- IAI, Italy
- CIB, The Netherlands
- International Alliance for Interoperability, International Council, United Kingdom
- IAI International Council Ltd, United Kingdom

Interest Organisations
- Asociación de Investigación de Industrias de la Construcción (AIDICO), Spain
- Confederation of Finnish Construction Industries RT, Finland

Information Service
- The Building Information Foundation, Finland

Research Centres
- SINTEF Byggforsk - Building and Infrastructure, Norway
- VTT - Technical Research Centre of Finland, Finland
- CSTB, France
- Fundación LABEIN, Spain
- UNINOVA, Portugal
- Belgian Building Research Institute, Belgium
- China Academy of Building Research, China
- China Institute of Building Standard Design & Research, China

Universities
- Centre for Built Environment - University of Gävle, Sweden
- Vilnius Gediminas Technical University (VGTU), Lithuania

Coordinator
SINTEF Byggforsk
Prof. Dr. Ing. Svein E. Haagenrud
Phone: +47 22 96 5843
e-mail: svein.haagenrud@sintef.no

www.europe-innova.org
### Innovation and Standards

#### STAND-INN

**Highlights of challenges**

**Vision:** Sustainable value creation for customers over the lifecycle of buildings using information models.

**The buildingSMART Vision**

Mission: to provide guidance on how standardisation supports innovation and "building smart", by actively disseminating information about sustainability and BIM standards.

**IFC + IFD**

Building Information Model

**IFC:** How to store and exchange information
- Industry Foundation Classes

**IFD:** Uniquely define what information you are storing and exchanging
- International Framework for Dictionaries

**IDM:** Which information to exchange and share, and when
- Information Delivery Manual

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STAND-INN is supported by the European Commission under the Europe INNOVA initiative.

> www.europe-innova.org