Processes & ICT (FA7)

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OSLO, Norway, May 7/8 2007

R&D Funding opportunities

7th Framework Programme FP7

ICT
NMP
ENERGY
ENVIRONMENT
TRANSPORT

RTD projects on top-down topics

ERABUILD
Joint calls for international RTD projects in national programmes

Σ! EUREKA EUREKABUILD
RTD projects on bottom-up topics

Competitiveness and Innovation Framework Programme CIP

Demonstrations & take-up actions

Entrepreneurship and Innovation (EIIP)
ICT Policy Support
Intelligent Energy - Europe (IEE)
ECTP - Quick overview

- One out of ~36 European Technology Platforms
- Role: propose R&D priorities in the construction sector
- Membership: 1000 stakeholders
- Outputs:
  - Vision 2030
  - Strategic Research Agenda
  - RTD action plan (SRA-IAP)

EUREKABUILD Workshop – Oda – 11/05/2007

ECTP - Implementation Action Plan

- From the vision 2030... to the SRA-IAP

Vision 2030

February 2006

November 2006

June 2007
FA PICT - From roadmaps to RTD ideas

Building blocks for future RTD projects

FA PICT – Roadmap
Example → Digital models

- Business interfaces to product models, Domain specific functional product description
- Model-based decision support, physics simulation & visualisation, LC & sustainability assessment, etc.
- Standardised API to digital models, objects right management, process based access to product data
- Human aided design models, Domain specific models & context based views
- Merging of partial models, Model change management, Federated Model Servers, Real time model updating, Distributed model synchronisation, Building model knowledgebase
- Configurable building components, De-centralised product catalogues, Design and analysis automation
ECTP – 9 RTD priorities

A. Technologies for Healthy, Safe, Accessible and Stimulating Indoor Environments for All (SRA 1.1)
B. Innovative Use of Underground Space (SRA 1.3)
C. New Technologies, Concepts and High-tech Materials for Efficient and Clean Buildings (SRA 2.1)
D. Reduce Environmental and Man-made Impacts of Built Environment and Cities (SRA 2.2-1.2)
E. Sustainable Management of Transports and Utilities Networks (SRA 2.3-1.4)
F. A Living Cultural Heritage for an Attractive Europe (SRA 2.4)
G. Improve Safety and Security within the Construction Sector (SRA 2.5)
H. New Integrated Processes for the Construction Sector (SRA 3.1-3.2-3.4)
I. High Added Value Construction Materials (SRA 3.3) (and Nanotechnologies for Materials in Construction)
   + 1 transversal topic for SMEs
   - Technologies and Engineering for Innovative Added-value Offered by SMEs in the Construction Sector


- Technologies for healthy, safe, accessible and stimulating indoor environment for all.
- Underground innovative construction technologies.
- Reduce environmental and man-made impacts of build environments and cities.
- Sustainable management of transport and utilities networks.
- A living cultural heritage for an attractive Europe.
- Improve safety and security within the construction sector.
- New integrated processes for the construction sector.
- High added value construction materials.
- Nanotechnologies for materials in construction.
- Technologies and engineering for innovative added-value services offered by SMEs in the Construction sector.

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**Scope of the SRA IAP**

- How we plan to implement the ECTP R&D Priorities (9) and R&D items (60) in the period 2007-2013
- Information needed:
  - Research Items: what? when? how?
  - What has been done and what has to be done
  - Budget (7 years) and timing (roadmap)
  - Which instrument (kind of project: R&D, Infrastructure, dissemination, standardisation...?, EC/national ?,...)
  - Role of the stakeholders (especially SMEs)
  - ...
- No start from scratch, but go further from the work already done
- Vision / Agenda: 9 Selected Priorities --> IAP 2007-1013
SRA IAP – Content (1/2)

- **Current version V0.4**
  - Will be presented during the next SG meeting (22 May)
  - (should be) Endorsed by HLG 21 June
  - ICTs are mentioned more or less in all research priorities.

- **Introduction**
  - Vision - SRA - 9 Selected Priorities - IAP 2007-1013

- **SRA Summary**
  - 3 pillars and 13 Research Areas

- **Prioritization Process**
  - Introducing the 9 major Priorities

- **Implementation of the R&D Priorities**
  - Priority A to I
    - Brief description of the Priority and rationale
    - Main development issues and targets
    - Expected Impact
    - State of the art
    - Synergies with other Priorities and other ETPs
    - Research items: 1, 2, 3...
    - Involvement of SMEs
    - Planning and Budget needed
    - List of some major recent projects

SRA IAP – Content (2/2)

- **Transversal Issues**
  - Clients and Users
  - R&D Infrastructures
  - Standards

- **Roadmap Summary**

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- **Conclusion**
Projects proposed to E13790 EurekaBuild that are most relevant to PICT:

- ES15 - Integrated Platforms for Mass Housing Design and Construction
- NL04 - Virtual Construction
- PL03 - Knowledge Based Software for Geo and Transport Engineering

ES15 - Integrated Platforms for Mass Housing Design and Construction

- Create a platform to promote the interaction among all stakeholders participating in the design and construction of mass housing throughout the whole building lifecycle - facilitating:
  1. automatic generation of design solutions (housing layouts, housing aggregations) which will give rise to a knowledge-based system;
  2. Integration of design & construction processes around a building integrated model (knowledge-specific data extraction; building as assembly of components);
  3. communication among the stakeholders taking part in the processes, from design to construction, and from maintenance to demolition:
     - customization of housing layouts with participation of users;
     - integration of industrialized building components accessible from digital repositories;
     - monitoring of building performance though computer model.

The platform will have a modular architecture, and it will be based on existing technologies (web services, .NET technology, XML schemas), and it will support standards being developed by IAI and IFC.

- Expected partnership: software developers, construction companies and public administrators.
NL04 - Virtual Construction

- Application of 3D-objects in combination with Product Data Management
  - widely used in many industrial sectors, with spectacular improvements
  - present building & construction process is not yet suited for this approach:
    - 3D-objects are being used in the design phase but not for communication in the design & construction process.
    - Processes are focused on ‘roles’ rather than focussed on ‘products’.
  - **Proposition:** change the construction process towards a process which is object oriented. Crucial information in a 3D-environment takes care for a continuous feedback to the various players. Uniform agreements on the process and the meaning of information are of decisive importance to reach process integration → Both 1 RTD-project and 1 demo-project
  - **Expected partnership:** All stakeholders in the field with both technological and financial contributions.

PL03 - Knowledge Based Software for Geo and Transport Engineering

- Knowledge based software for computer aided design and management of industrial projects with application in geotechnical & transport infrastructure engineering.
  - Creation of a hybrid, hard-soft code for individual use by an engineer, contractor or enterprise, based on his own professional experience included in an intelligent data-base.
  - Final results should formulate a reasonable methodology of engineering computations taking into account local, non-technical (social, economical) core of the engineering activity.
  - The new tool of computer aided design and management will help in more credible and very fast estimation of costs and resources in the local social and economical context of the engineering activity thus it will support the competitiveness of the user.
  - Potential customers are individual engineers or enterprises all over the world.
  - **Expected partnership:** Financial and technological partners.
Other EurekaBuild ideas in the ICT field (1/2)

- ES03 - Human Safety in Industrial & Construction Activities and Complex Environments
- ES08 - Intelligent Building Energy Efficient Management System
- ES10 - New systems to Monitor the Long Term Behaviour of Historic Buildings
- ES11 - Decision Support System (DSS) for the Agenda 21 Deployment
- FL01 - Alternative Solutions for Community Energy Supply
- PL04 - Networked Quality Management System For Concrete

Other EurekaBuild ideas in the ICT field (2/2)

- BE01 – TELINSPEX ~ virtual inspection kit for detection of major problems in structures.
- ES01 - 3D View of Structural Discontinuities on Dimensional Stones
- ES16 - HOME-MONITOR Monitorisation of Energy Performance in Housing
- FR04 - Design and Rehabilitation of Sustainable Buildings and Cities
- NL07 - General Expert Knowledge and E-learning
- NL08 - General Flood Risk Assessment System
- NL10 - Knowledge Framework for Road Construction
- NL12 - Sensor and Remote Sensing Technology for Early Warning of Flooding
Cooperation between 20 European partners
4 years, Sept 2006 / Aug 2010 - 13 million euro budget
Project Coordinator: NCC Construction in cooperation with Bouygues, Hochtief, Max Bögl, Bögl & Krysl & YIT
Technical coordinator: TNO
"Integrated project" - co-funded by the European Commission within FP6 - www.inpro-project.eu

Main Objectives:
- Introduce & generalise 3D-design and Building Information Models in the European construction sector
- Develop strategies and business models for a new building design process which
  • enforce open cooperation of project partners
  • consider the building’s whole lifecycle
- Transform the Early Design phase of a building

An InPro tool to get the whole industry moving!
- Aiming at grouping up to 75 members (Max), representing both industry & research
  • A “not-too-big” efficient set of partners to improve breakthrough
- Requirements in order to join
  - Identification of mutual benefit for InPro & Cluster members
  - Member willing to participate actively
  - Approved by all InPro partners
- Possible involvement
  - Workshops, news, virtual forum, etc
  - Deliverable reviews
  - Participation in tasks
- No membership fee
  No InPro-funding for participation
Cluster members: possibility to co-ordinate own “short-term” industry initiatives
- Based on InPro outcomes and deliverables...
- Aligned with European priorities: EC, ECTP, EurekaBuild, ...

Set up of applicative project(s) - trial/evaluation/best practices/other? - based on InPRO results (software platform), centered on the early design phase of a construction process and possibly linked with one of these uses cases:
- Coordination of architectural & building services design
- Approval workflow
- Energy analysis – link with efficient buildings
- Construction scheduling
- Model based reference description
- Client requirements processing & assessment
- Cost Management...