



Main Functions of Tekes

(National Technology Agency of Finland)



Total Tekes funding ~2.4 billion FIM / year (400 million €)

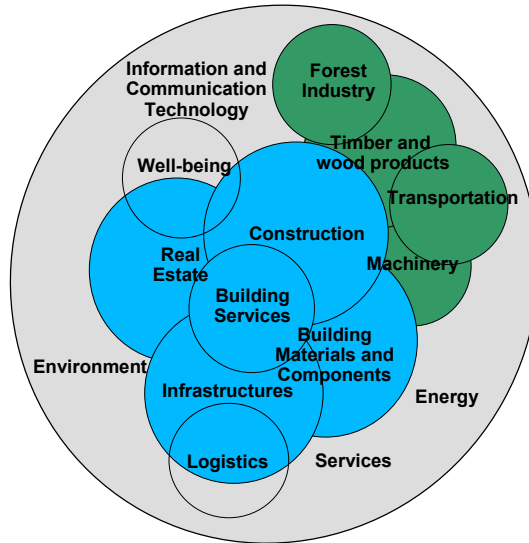


What are Technology Programmes?

- extensive programmes initiated by Tekes and consisting of numerous projects
- focused on a key technology sector
- implemented in co-operation by companies and research units
- companies can participate with their own projects or by joining in common research projects
- projects are partially public, but all the results are owned by the organisations participating in the project



Teke: Construction and Wood Technology Cluster



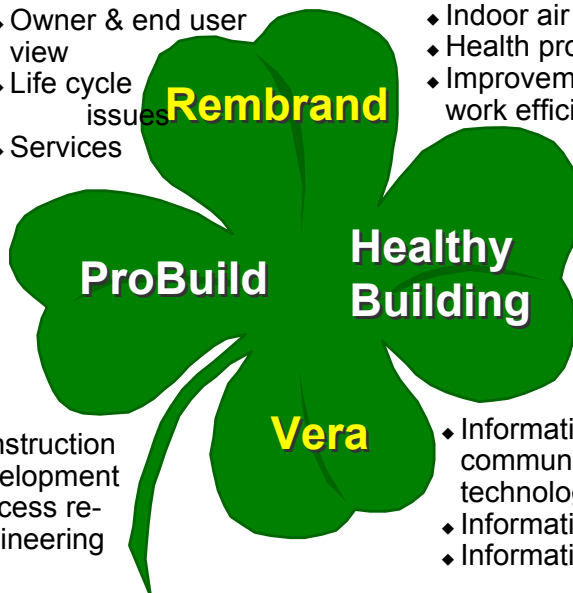
Programme “four-leaf clover”

- ◆ Owner & end user view
- ◆ Life cycle issues
- ◆ Services

- ◆ Indoor air quality
- ◆ Health promotion
- ◆ Improvement of work efficiency

- ◆ Construction development
- ◆ Process re-engineering

- ◆ Information and communication technology
- ◆ Information networks
- ◆ Information lifecycle



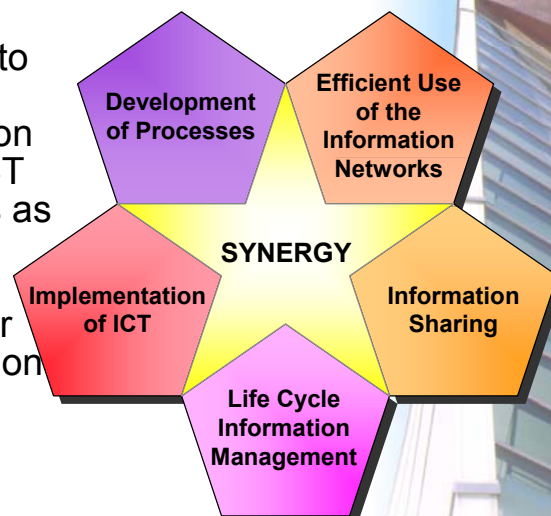


Information Networking in the Construction Process

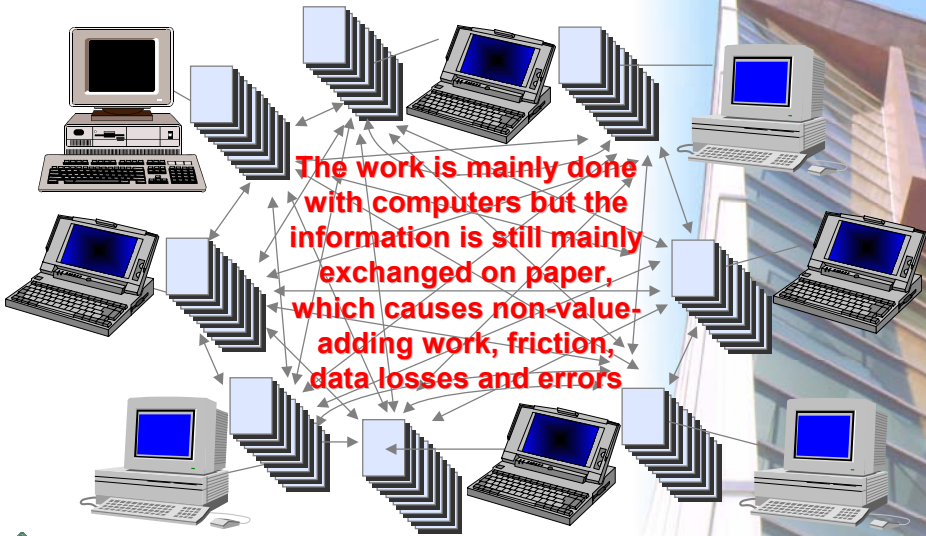
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Vera Programme Components

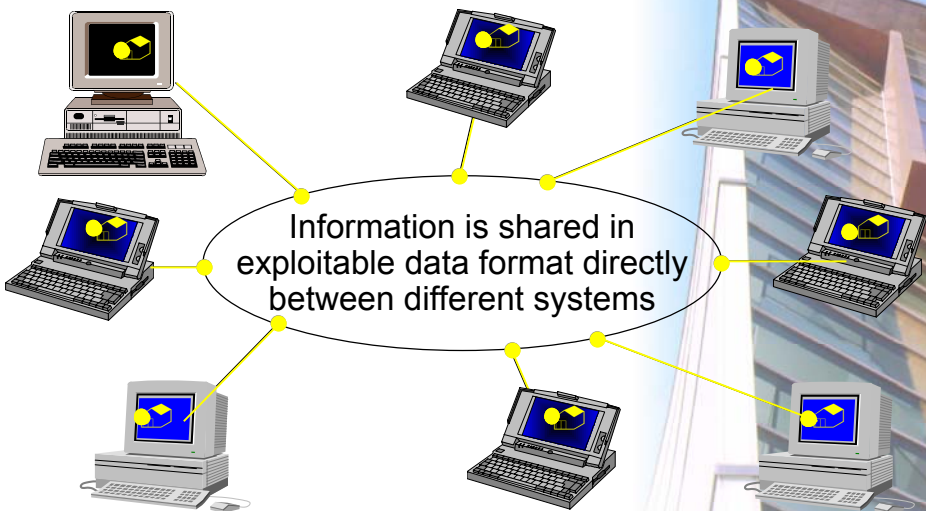
The target is to promote the implementation and use of ICT and networks as the enabling technologies to re-engineer the construction and FM processes



Current Situation



Goal in the Future



Technological Possibilities

- Software technologies
 - product model development - IFC
 - object oriented software
 - middleware, model servers, data repositories
- Information networks
 - virtual workgroups
 - project data access
 - product data access
 - information management through web
 - e-business

Vera Programme Volume

- Information Networking in the Construction Process
 - Finnish national Construction IT Programme by Tekes (National Technology Agency)
 - Schedule - six years; 1997 - 2002
- Total volume

<i>Original budget</i>	~170 million FIM (~28 million €)
Current estimation	~240 million FIM (~40 million €)
~40...45 % by Tekes	~100 million FIM (~17 million €)
~60...55 % by the industry	~140 million FIM (~23 million €)
- Current situation

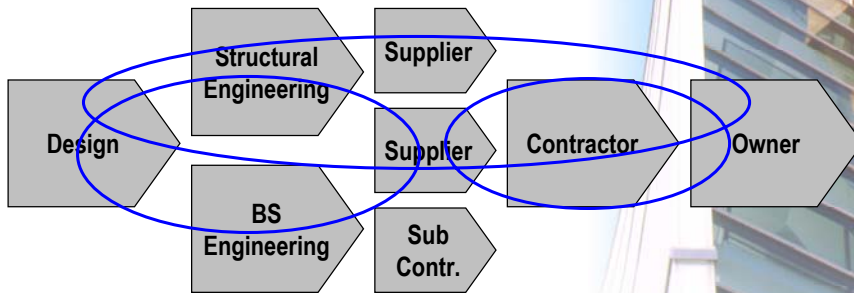
Research projects:	31	/	20 million FIM	(3.3 million €)
Industrial projects:	70	/	120 million FIM	(20.0 million €)
Total:	101	/	140 million FIM	(23.3 million €)

Short project presentations in the web: <http://cic.vtt.fi/vera/english.htm>

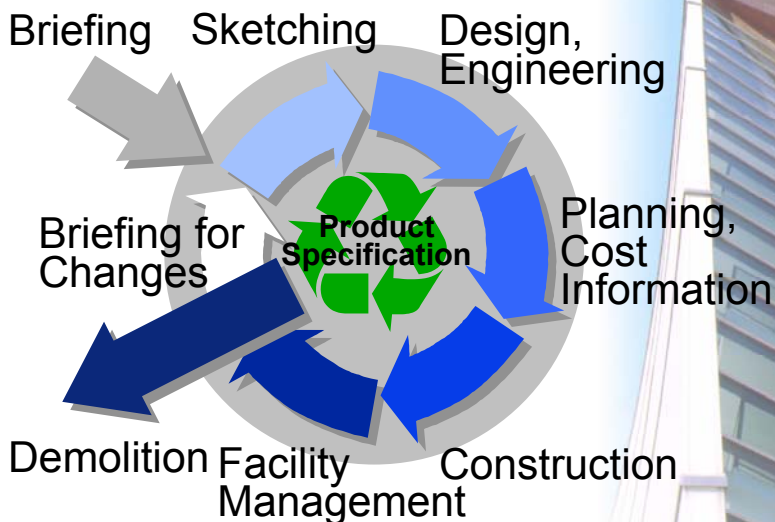
Project Principles



- Develop the construction/FM processes and IT solutions simultaneously and promote R&D in networks
 - Projects which include several parts of the value adding chain in construction process
 - No interest in projects for just one domain



Information Lifecycle



Barriers to the Change

- The pre-study for the programme in 1996-1997 showed that the lack of IT skills and know-how in the industry is the major barrier to the wider implementation of IT
 - wide range of education is a necessity
 - co-operation with universities and other education institutes
- The change to data sharing is not only technical - it is even more cultural
 - new work processes
 - true co-operation in projects

Design & Engineering Processes

- Models can contain complex rules for behaviour and relations between objects
 - (semi)automated design integration and code checking
 - easy and cost efficient evaluation and simulation at any project stage
 - thermal, lighting and performance simulation
 - more accurate cost estimation
- New service areas for designers
 - LCA/LCC services
 - information maintenance
 - FM services...

Design & Engineering Processes



- Moving from "drafting" ⇒ information management
 - paper document ⇒ digital information
 - traditional documents ⇒ product models
 - "document" ⇒ a view of the model from a specified angle at a specified moment
 - the actor who needs a specific view can produce it directly from the data
 - **technical and juridical problems**
- Information will be produced for:
 - decision making and production
 - use and maintenance of buildings
 - simulation & VR

Construction Process



- Information as a part of the product:
 - building maintenance database based on as-built information can be delivered as a part of the product
 - product information must be a part of the electronic procurement and commerce
 - electronic product libraries with direct interface to design and procurement software and building data models - XML ?
- Need for development
 - eCommerce
 - product information & software tools
 - construction processes
 - contracts

Lifecycle Management

- Key people are the clients; building owners and facility managers.
 - they will have the most benefits
 - they can set the requirements
- Better tools for early decision making
 - LCA and LCC tools
 - maintenance simulations
- Better tools for FM/PM
 - better budgeting tools
 - more effective use of spaces
 - better management for preventive maintenance
 - lower costs for maintenance

ICT Strategy

- Technology already exists, the problem is how to use it - **with your partners**
- Connection to your core business ?
 - why, what, how, when, who ?
 - model your processes
 - re-engineer the problem areas
 - balance the short and long term needs
- When you know what you need for your own activities, you can set the demands for information
 - strategic alliances & partnership