Clustering Multidisciplinary Research

Opportunities and limits, an example in Finland

Vera

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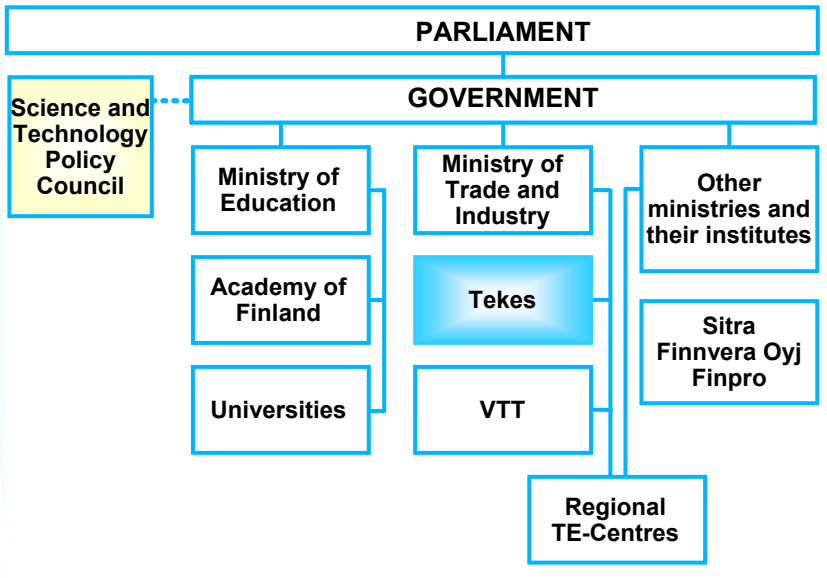
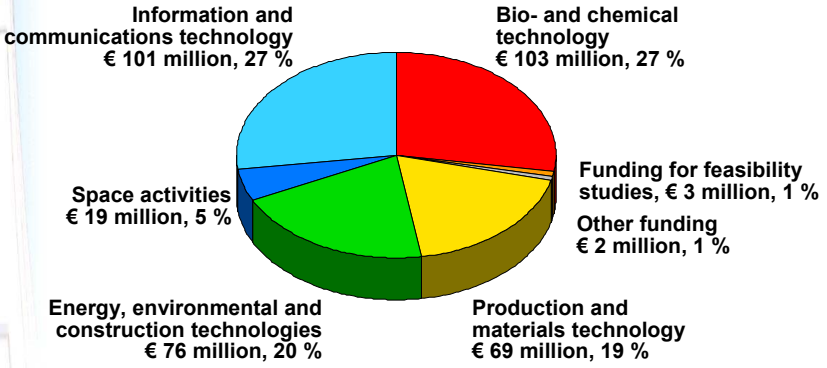
Public Sector R&D Activities in Finland

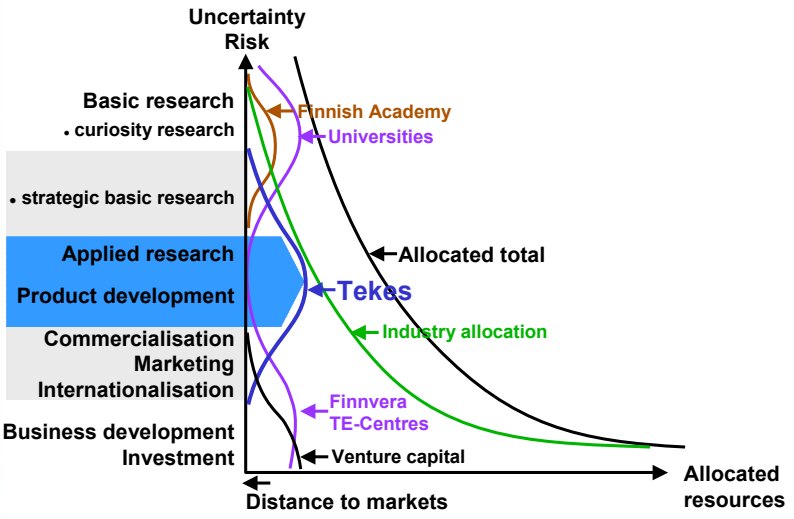


Total Tekes R&D Funding in 2000 by Field of Technology

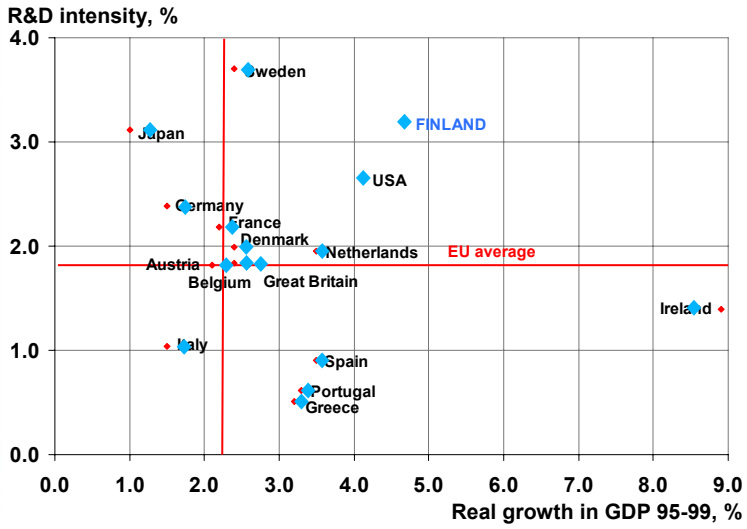
Total € 373 million and 2,297 financed projects



Allocation of R&D Resources

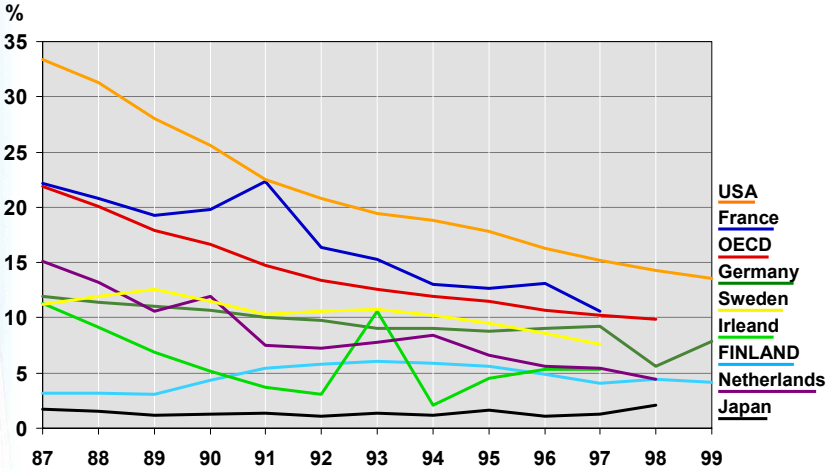


R&D Intensity and GDP Growth in Some Countries



Source: Statistics Finland

Share of Corporate R&D Funded by the Public Sector



Sources: OECD, Statistics Finland

Identified Key Technologies

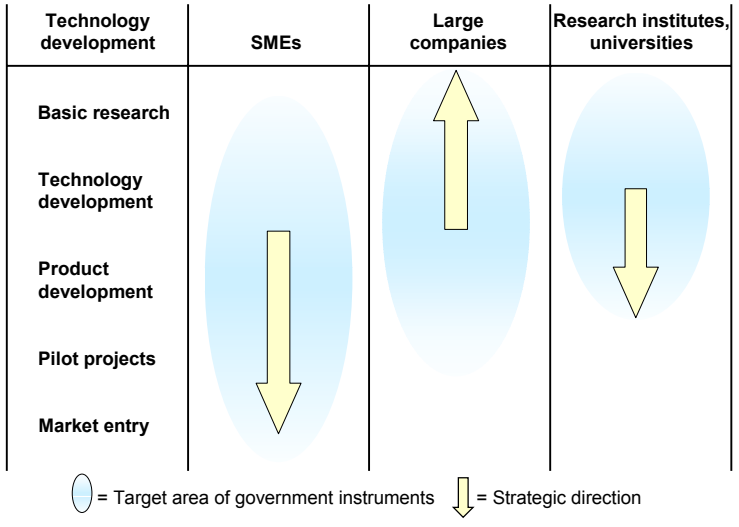
Competitiveness and renewal of existing industrial sectors

Creation and growth of new sectors

Sustainable development, future energy solutions

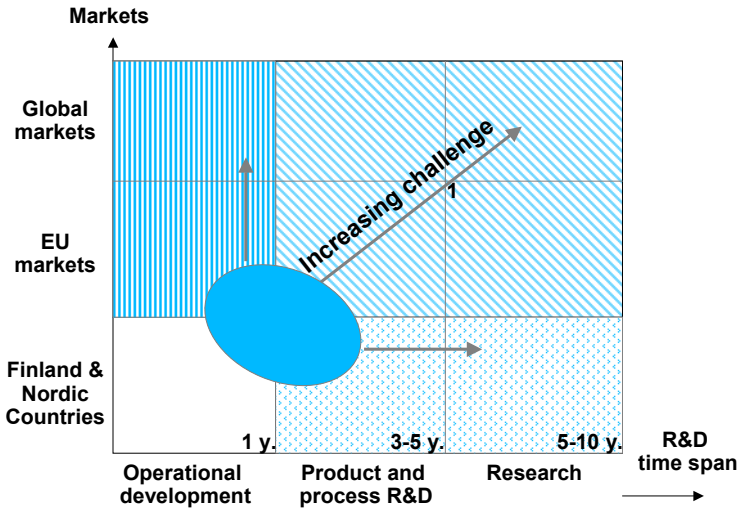
Information and communication technology
Biotechnology
Production technology and processes
Material technology
Business know-how of the new economy

Target Areas of Tekes



Source: Rand Europe

Marketing Targets of R&D Projects



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 and results are partially public, but the results of industrial projects are proprietary

Key Figures of Technology Programmes

- 50 on-going programmes in 2001 with a total extent of EUR 1.3 billion
- Each programme lasts 3- 5 years
- Tekes usually finances half of programme costs
- Annually 1600 - 2400 company participations
- Annually 700 – 900 research unit participations

Construction Technology Programmes in Finland

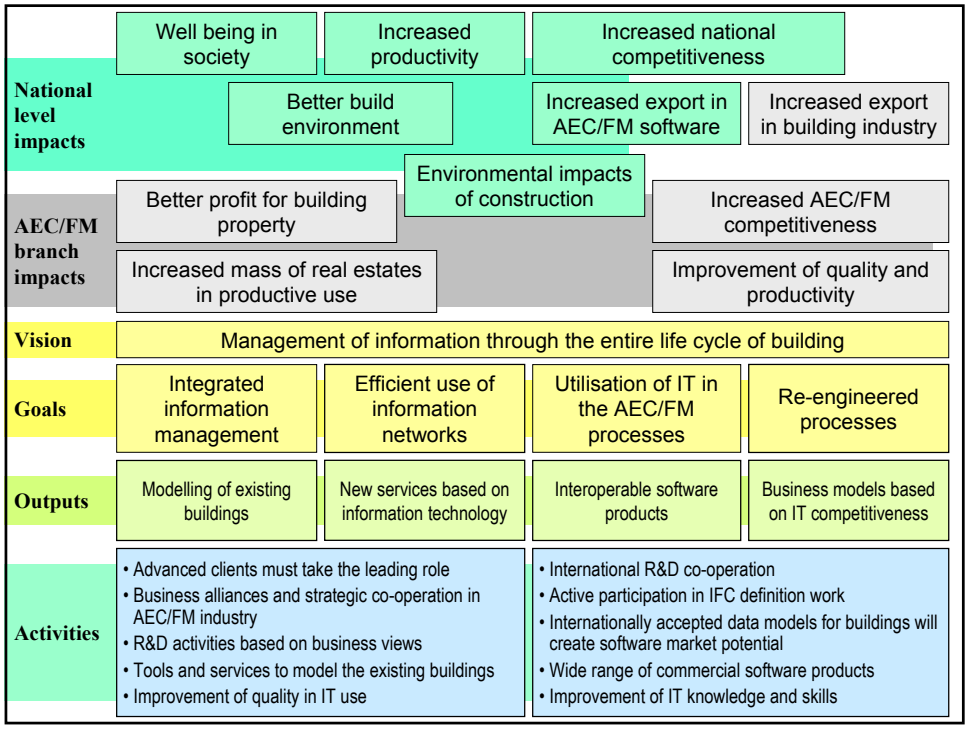
Vera - Information Networking in the Construction Process	1997-2002	**44 M€**
ProBuild - Progressive Building Process	1997-2001	**13 M€**
Healthy Building	1998-2002	**21 M€**
Rembrand - Real Estate Management and Services	1999-2003	**21 M€**
INFRA - Civil Engineering and Services	2001-2005	**24 M€**
Value Added Wood Chain	1998-2003	**58 M€**
Stone - Technology and Development Program for the Stone Industry	1999-2002	**10 M€**
Divan - Technology and Development Program for the Furniture Sector	1999-2002	**13 M€**
Total budget		**204 M€**

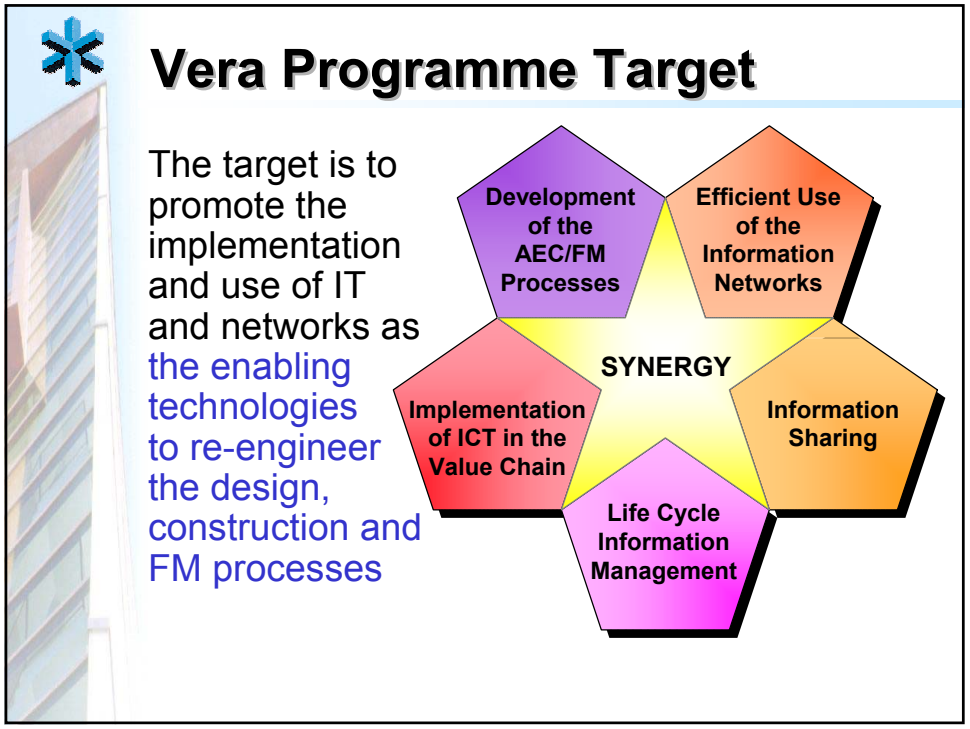
Key elements

- The target is defined in wide collaboration with the industry and academia
  - ”Pre-marketing” ⇨ commitment and shared vision already in the beginning
- Loose framework - only few key projects might be defined in the beginning
  - Flexibility in project selection
- Industry driven
  - Most project proposals from the industry
  - No funding for research institutes or universities without industry funding
  - Industry funding is a ”feasibility study”

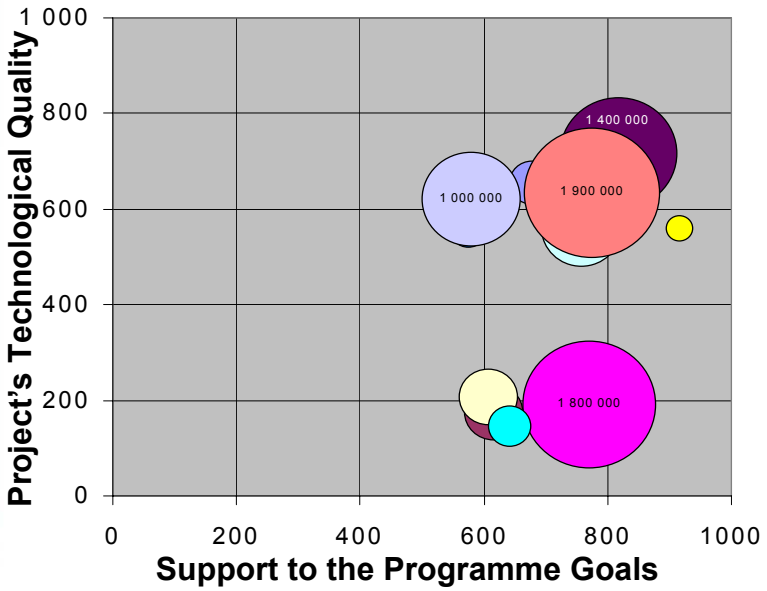
Vera Technology Programme

- Information Networking in the Construction Process
- Schedule - six years; 1997 - 2002
- Total volume
  - ~45 % by Tekes € 20 million
  - ~55 % by the industry € 24 million
  - Total budget € 44 million
- Project allocation 1997-2001
  - Research: 37 projects € 4.7 million
  - **Industrial: 93 projects € 30.3 million**
  - Total: 130 projects € 35.0 million
- URL: http://www.tekes.fi/english/vera/

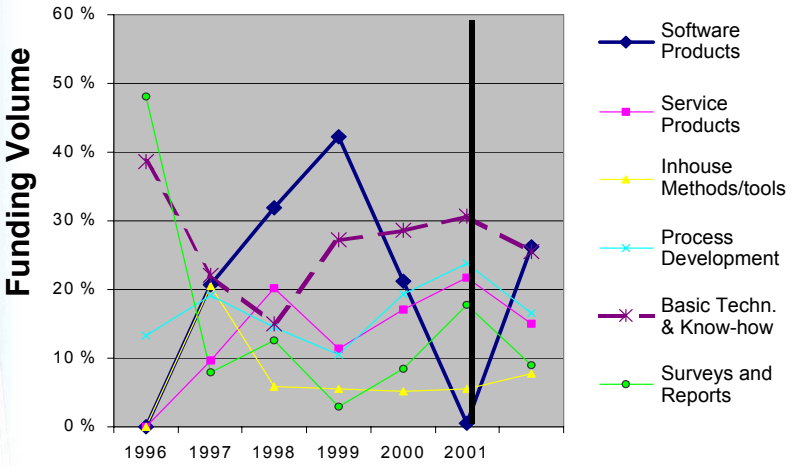

National level impacts
Well being in society
Increased productivity
Increased national competitiveness
Better build environment
Increased export in AEC/FM software
Increased export in building industry
Environmental impacts of construction
AEC/FM branch impacts
Better profit for building property
Increased AEC/FM competitiveness
Increased mass of real estates in productive use
Improvement of quality and productivity
Vision
Management of information through the entire life cycle of building
Goals
Integrated information management
Efficient use of information networks
Utilisation of IT in the AEC/FM processes
Re-engineered processes
Outputs
Modelling of existing buildings
New services based on information technology
Interoperable software products
Business models based on IT competitiveness
Activities
• Advanced clients must take the leading role
• Business alliances and strategic co-operation in AEC/FM industry
• R&D activities based on business views
• Tools and services to model the existing buildings
• Improvement of quality in IT use
• International R&D co-operation
• Active participation in IFC definition work
• Internationally accepted data models for buildings will create software market potential
• Wide range of commercial software products
• Improvement of IT knowledge and skills


Vera Programme Target
The target is to promote the implementation and use of IT and networks as the enabling technologies to re-engineer the design, construction and FM processes
Development of the AEC/FM Processes
Efficient Use of the Information Networks
SYNERGY
Implementation of ICT in the Value Chain
Information Sharing
Life Cycle Information Management

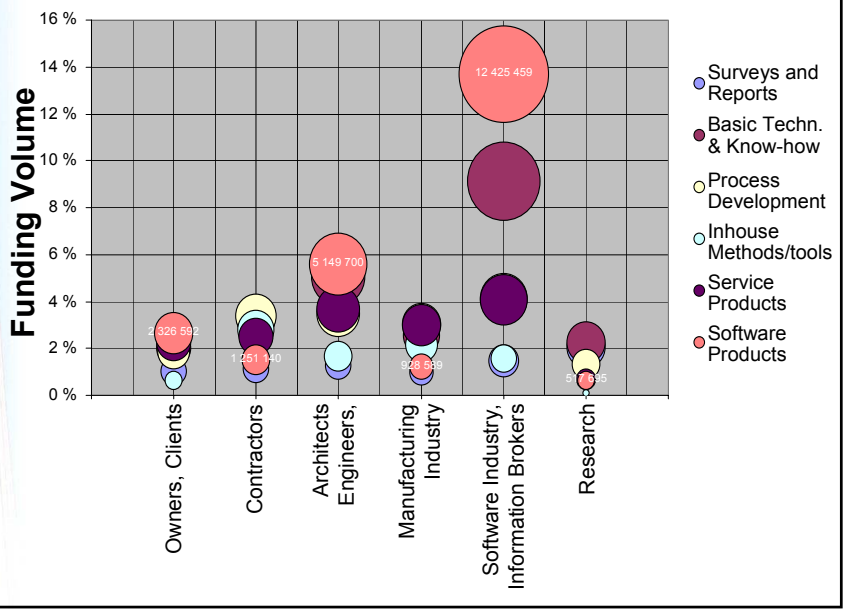
Example: Project Portfolio 2001



Example: Project Type Analysis



Example: Value Chain Analysis



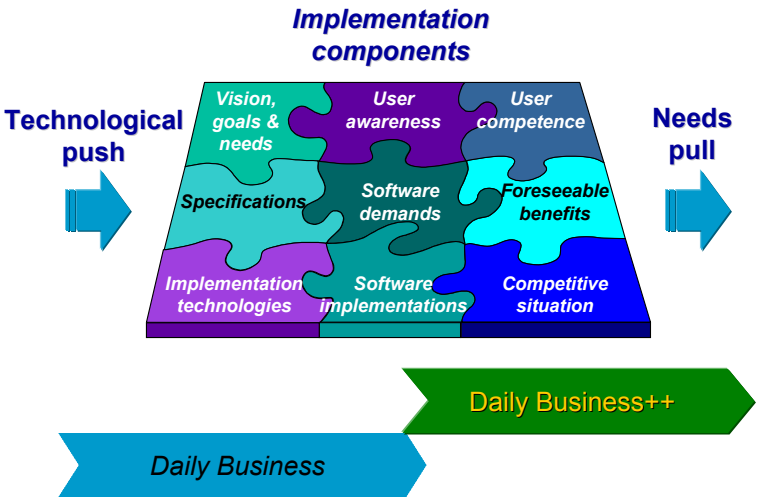
Some Observations/Remarks

- Finnish Technology Programmes are somewhere between EU Framework Programmes and Integrated Projects
  - Projects are proposed and managed by the team
  - Project and project's steering group selection are the tools to guide the projects
  - Project approval proposed by the Programme Manager and Technology Manager, in Research Projects also the Programme Steering Committee makes recommendation - **the strongest emphasis is always on the support to the programme goals**
  - Final approval of projects always by Tekes

Some Observations/Remarks

- Some differences
  - IPs ”Must contain research” - in Finland not required from SME projects
  - IPs: ”Can contain training” - in Finland: NO! *(but perhaps we should ?)*
- Main challenges
  - How to ”sell” the idea to the industry?
  - How to get the maximum leverage effect from the limited public funding?
  - How to select the most potential projects and partners?
  - How to achieve the critical mass to change the industry?

Implementation of technological leaps



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