	I3E ***South East Europe TCP***

Best Practice Report

Finland's Strategic Centres for Science, Technology and Innovation Example: TIVIT - Producing Innovations for the ICT Industry

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Everybody please state revision index and short description of what has been done + partners involved and date.

Final approval	Name	Partner
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1. Best Practice Title

Finland's Strategic Centres for Science, Technology and Innovation
Example: TIVIT - Producing Innovations for the ICT Industry

2. Location of Best Practice

Country, region, town

Finland

3. Best Practice Executive Summary

Describe briefly (max 10 lines) the GP context (partnership, funding, objectives, approach followed, results)

In Finland, to foster research and innovation, and collaboration, multidisciplinary Strategic Centres for Science Technology and Innovation are established and involve different sectors of industry and society. Basically, they are organised as non-profit organisation, owned by industrial and academic partners, and a virtual research organisation.

In their research programmes, it is possible to generate sufficient critical mass and combine versatile competences for achieving world-class expertise and global breakthroughs.

Together with shareholders investments, centres are funded by public organisations with annual investments of some €40-60 million.

4. Best Practice Classification

Best Practice Theme

x Research Transformed to Innovative Product
x Research Transformed to Innovative Service
x Research Transformed to Innovative Methodology
x Research Transformed to Innovative Production Process
x Financial Mechanism for Transformation of Research to Innovation
x Support Mechanism for Transformation of Research to Innovation
□ Other (describe)

Best Practice Research / Application Areas

x Industrial / Manufacturing Systems
- *□ Industrial Informatics and Communications*
- *□ Intelligent Devices*
- *□ Distributed Control Systems*
- *□ Flexible Manufacturing Systems*

x Embedded Systems
- *□ Industrial Embedded Systems*
- *□ Nomadic Environments*
- *□ Private Spaces*
- *□ Public Infrastructures*

5. Description of Best Practice

5.1 Best Practice Context

Overall background of the Best Practice. Location, socio-economic, technical & policy background of the BP (max 10 lines)

TIVIT TIETO- JA VIESTINTÄTEOLLISUUDEN TUTKIMUS TIVIT OY

Information and communication industry and services (Tivit) is one of the Finnish Strategic Centres for Science, Technology and Innovation (SHOKs), see below. The idea of the centres is to foster development of Finnish ICT know-how. Tivit seeks to implement innovation policy in information and communication industry, combine and systematise research and at the same time ensure that the results are used in the business world more rapidly than has previously been possible.

Since being founded in February 2008, Tivit is fostering the transition from the research sector to the business world by both predicting the products and services of the future and also by helping new trends, technologies and ideas gain momentum. The range and nature of Tivit's work is determined by the strategic research areas as outlined by the 46 companies, universities and public organisations – of various sizes - which own Tivit.

Tivit uses information and communication know-how and technologies to build a real-time society to both increase productivity and protect the environment.

5.1.1 Policy Elements

What are the policy initiatives that have influenced the contextual environment of BP: innovation promotion policies, research funding policies, certification ect as well as relevant tools (max 10 lines)

Finland counts to one of technologically most developed European countries. Government budget appropriations or outlays on research and development (GBAORD) for 2010 amount to EUR 2.055 billion. Increase from the previous year is EUR 155 million. In nominal terms research expenditure is set to rise by 8 per cent.

Its industry belongs to the technological most advanced companies. It is typical that they collaborate with research institutions and academia, what is fostered by government.

The Finnish higher education sector is composed of 21 universities and 30 polytechnics. Geographically this network covers the different parts of Finland. About 50 per cent of the age group start their studies at the higher education level.

There are 21 state research institutes in Finland. The largest institutes are VTT Technical Research Center of Finland, the Forest Research Institute, the MTT Agrifood Research, the National Public Health Institute, the Institute of Occupational Health, and the Finnish Environment Institute. Networking is an essential element of innovativeness in Finland.

Numerous research and technology programmes create lasting partnerships between companies, universities and research institutes.

One of the Finnish collaboration platforms, the Strategic Centres for Science, Technology and Innovation (SHOK) have been established as public-private partnerships for speeding up innovation processes. Their main goal is to thoroughly renew industry clusters and to create radical innovations.

Centres develop and apply new methods for cooperation, co-creation and interaction. International cooperation also plays a key role in the operation of the Strategic Centres. Testing and piloting environments and ecosystems constitute an essential part of the Strategic Centres' operations.

In Strategic Centres, companies and research units work in close cooperation, carrying out research that has been jointly defined in the strategic research agenda of each Centre. The research aims to meet the needs of Finnish industry and society within a five-to-ten-year period.

Six centres are in operation: Forest cluster, Information and communication industry and services (TIVIT), Metal products and mechanical engineering (FIMECC), Energy and the environment (CLEEN), Built environment innovations and Health and well-being (launched in April 2009).

5.1.2 Socio-economic & Other factors

Other contextual factors such as customer / target market addressed, international validity, customer density, economic conditions, customer values, research area addressed (max 10 lines)

According to Harvard Business Review, March 2009, at the present moment Finland is the second “hottest” hotbed of innovation. The aim of Tivit’s activity is to retain and advance this status.

While the academic institutions exhibit a very high state of the art in science and technology, Tivit made it for its task to focus on application in the business world by utilising the opportunities that new technologies provide.

Tivit gathers the various projects and plans from these spheres into wider research programmes. By connecting different partners from bot research and industry it raises the level of expectations of innovation, gives rise to new study in the least-researched areas and seeks additional funding from private and public donors in order to still further enhance the quality and success of projects.

5.2 Objectives

Aim of the project, specific objectives & strategies to achieve these objectives (max 10 lines)

The main goal of Tivit is to provide all necessary conditions to form ecosystems of partners from industry, academia and public institutions within which new ideas can be created, cross-fertilised, developed, implemented and marketed.

By working together swiftly and efficiently all of the companies and institutions involved in the projects can enlarge and enrich their know-how and business activity. In addition, the know-how and experience born in these activities can be both transferred onwards into new projects and copied and used in new market sectors.

6. Process

Describe the project including key concepts and the overall approach followed. Indicate project end users, target market, main project phases, problems encountered and solutions, problem resolution (max 10 lines)

The Strategic Centres for Science Technology and Innovation are multidisciplinary organisations in a form of a legal shareholding company and involve different sectors of industry and society. Research of a high standard plays an important part in Strategic Centres. It is an essential requirement for new technology, innovations and other applications.

Each Centre consists of the coordinating function, a non-profit limited company, jointly owned by the shareholders, and a virtual research organisation. The company's shareholders include relevant companies, universities and research institutions.

As an example, in this good practice, Tivit - Information and communication industry and services - has been studied.

6.1 Project Design

Project design based on targeted market complete understanding, project structure, policies and procedures, management and implementation actions (max 10 lines)

The preparation stage of Tivit's projects is open to all interested parties, and information concerning preparation stages already underway can be found on Tivit's website. Tivit's projects do not normally have stipulated application periods – though one may be imposed by the main source of funding if such a deadline is seen as beneficial.

Tivit's programmes must comply with the criteria laid out by Tivit's board. Tivit coordinates the work during the preparation stage and – on that basis of that work –makes a formal application to a public funding body. In order for an association or company to take part in Tivit's programmes, it must (1) approve of the given project's consortium agreement, (2) fulfil the conditions of the body funding the project (i.e. if Tekes is the contributor then the general conditions of Tekes must be fulfilled), and (3) also agree to be an active player in the new ecosystem.

The Academy of Finland provides funds on behalf of universities and research institutes involved in Tivit programmes. In order for a research project funded by the Academy of Finland to become a part of a Tivit research programme, a separate application should be made.

A project must comply with the following criteria:

- Contributes to the Tivit mission, SRA program mission and objectives and Tivit foresight analysis
- Proves the novelty and strategic impact of the research
  - Remarkable breakthrough targets
  - The state of art analysis indicates the world class level of the research
  - The scenarios and/or roadmaps of the outcomes indicate the innovativeness and the impact within the time frame of 3-5 years
- The coherence of the research program
  - The projects or the sub-areas of the program clearly are linked together and perform the objectives of the program as a whole
  - The program is application/business driven and multidisciplinary
- Balance between the industry and research at program level
  - Industry driven focus areas

  - The consortium represents capable actors and competences of the presumed ecosystem
  - The research questions are tackled by leading edge research partners
- International collaboration and impact
  - Credible influence in international research actives, standardization, etc.
  - Business impact globally

6.2 Project Management

Activities relevant to project coordination and management, project documentation and reporting, quality control, validation and verification (max 10 lines)

Tivit has an optimally lightweight structure and works in a straightforward, transparent and open fashion. The basis of Tivit's activity is determined by the research areas laid out by the 46 companies, universities and public organisations that own Tivit. This group is comprised of large companies, together with small and medium-sized organisations. The fact that Tivit is owned by different types and sizes of organisation means that different opinions and viewpoints are voiced whenever decisions are made. This, in turn, makes it possible to make innovative headway and engenders belief in the future – while also ensuring an effective combination of solid engineering know-how and business practice.

Management Team consists of Chief Executive Officer, Chief Technology Officer, Media Coordinator, Controller, Project and Development Manager (Business Concepts) and Programme Directors for each of the programs, who actually come from the leading industrial companies (Nokia Siemens Networks, Elisa, Nokia, IBM, Sanoma Entertainment)

The decisions are taken by the board which has 12 members and 12 deputy members, all coming from industry.

6.3 Project Implementation

Main elements associated with the project implementation. Realization of new idea, or new technological realization or improvement / novelty to known technology and means to achieve this. Innovation associated with the project realization in terms of new products, services, methodologies. Marketing, advertising and customer service. (max 10 lines)

The basis of Tivit's work is its research programs. Strategic Research Agendas (SRAs) capture each of the program's overriding themes and focal points and provide a description of the context each program.

The SRAs are approved by the board of Tivit, and are normally reviewed on an annual basis. Research programs last from two to four years and ensure that the long-term focus of each programme is aimed at the market needs of industry. For this reason Tivit both has a need - and also ensures the possibility - of modifying the content and focus of its research programs should the need arise.

All of the SRAs are public and participation is welcomed from all types of organisation, small, medium-sized or large which are interested that the results and implications produced by the SRA and research project are utilised to maximum effect.

There are currently SRAs six research and programs underway. These are:

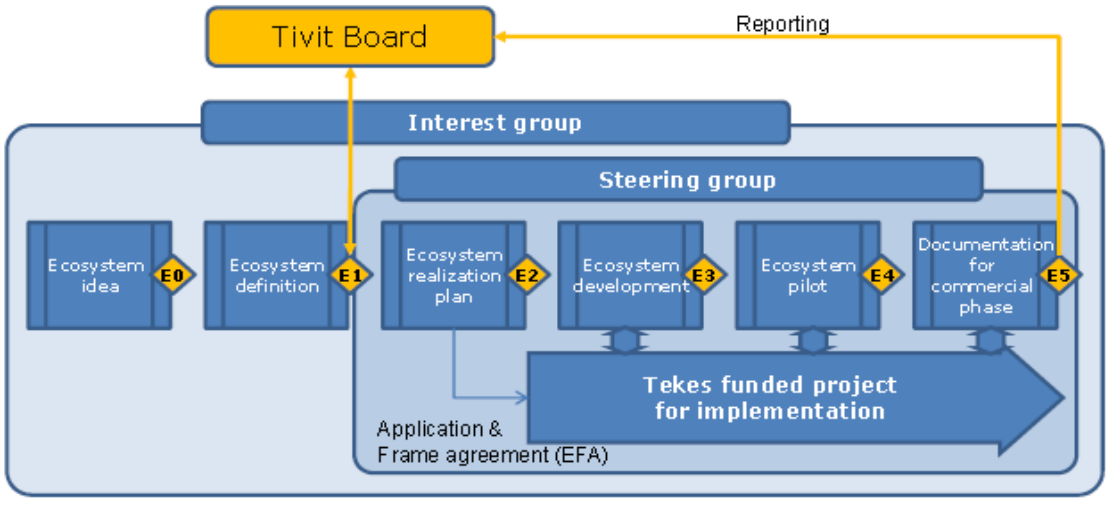
- *Future Internet*

Developing the Internet Technology of the Future

- *Flexibles Services*
  Highly-Developed Electronic Services – in which the needs of local production are emphasised
- *Device and Interoperability Ecosystem*
  New Reality and Networking Intelligent Devices and Spaces
- *Cooperative Traffic*
  Road Traffic and Travelling for the Next Generation
- *Cloud Software*
  The Value Chain of Internet Services, Sustainable Development, User Experience and Information Security
- *Next Media*
  Media's New Revenue Models
-

Each SRA aims for breakthrough and seek to give life to those ecosystems which promote international business. The aim is to create a strong community of researchers, which entices still more highly-skilled people and players on board.

In addition to the research programmes, within Tivit both business concepts and business ecosystems can be created. Business concept creation projects not only increase the pace of development of both products and services and prepare markets for their arrival, but also make it possible to receive almost instantaneous feedback from the market – thus reducing the risk of the commercial solution proving non-successful. Below is a scheme of creation and functioning of an Ecosystem for a specific project.



An interesting idea are Tivit Interactive Webinars: a bi-weekly webinar is an initiative to highlight and promote Tivit's programs. It is also an effort to boost communication in the global ICT sector. Everyone can join and watch these free-of-charge presentations where representatives of the different programs showcase their latest results as well as take a look at current topics and future challenges.

A 15-minute webinar session is held every two weeks, on Wednesdays, at 3:00 PM according to a public schedule.

Apart of that, a blog on all project is organised on Tivit portal.

6.4 Project Evaluation

Project feedback mechanisms and evaluation mechanisms. (max 10 lines)

From the portal, it was not possible to see what mechanisms are employed to evaluate success of particular projects. Obviously, and possibly the only relevant mechanism is success of a project in terms of knowledge generated and innovation transferred, and products developed and marketed.

7. Description of Research team/Institution

Short description of R&D team and institution (max. 10 lines)

Tivit is a private legal body owned by 46 organizations, among which are industrial companies, universities and public organizations:

The Aalto University Foundation
The Aalto University School of Art and Design Foundation
Arcada Stiftelsen University of Applied Sciences
Central Ostrobothnia University of Applied Sciences
CSC – IT Center for Science
Culminatum Innovation
Cybercom Plenware
Digita
Elektrobit Technologies
Elisa
Ericsson
Finnmedia
F-Secure
Haaga-Helia University of Applied Sciences
Helsinki Metropolia University of Applied Sciences
Hermia
Inno-W
ITS Finland
Jyväskylän Turbiini
Jyväskylä University
Lappeenranta University of Technology
Laurea University of Applied Sciences
Mikkelin University of Applied Sciences
NetHawk
Nokia
Nokia Siemens Networks
Okmetic
Oulu University
Prizztech
Reaktor Innovations
Stonesoft
Suunto
The Tampere Technical University Foundation
Tampere University
Technopolis
Technopolis Ventures
Tectia
Teleste
TeliaSonera Finland
TIEKE – The Finnish Information Society
Turku Science Park
The University of Eastern Finland
The University of Helsinki Funds
VTT Technical Research Centre of Finland
VTI Technologies
Åbo Akademi University

8. Applied Financial Mechanism

Describe financial mechanisms applied in transformation of research into innovation within BP, as well as means of connecting scientific research team and financiers (max. 1000 char.)

Tivit was founded by a group made up of more than forty different firms, universities or public bodies. The centre coordinates an annual investment of approximately forty million euros in research in and development of ecosystems based on ICT technology.

Tekes is currently the main source of funding for projects – though the proportion of funding provided by the Academy of Finland is set to increase. The EU is another possible future source of funding.

In order to help fund its work, Tivit collects an administrative fee from all of the groups and companies taking part in a given project. The fee – as with other projects funded by Tekes – currently stands at 2% of the project's total budget. Tekes approves the administrative fee as an expense in the Tekes funding of research partners.

In addition to Centres' shareholders, which include relevant companies, universities and research institutes, public funding organisations have made a commitment to providing funding for the centres in the long term. Around half of the funding comes from public donors, while the other half comes from participants.

Within each Strategic Centre, some €40-60 million annually are invested in research.

9. Impact and benefits

Describe achieved benefits of R&D team and/or enterprise implemented innovation, as well as impacts on institutional and policy levels. (max. 1000 char.)

The impacts of, and benefits for industrial companies and research teams are obvious. Through the common research and development, the innovation is transferred.

Last but not least, through the fact that relatively different partners are collaborating, they learn from each other and the joint ventures formed were a trustworthy experiment whether such a liaison could be successful.

10. Sustainability

Provide information on sustainability of innovation after financial aid within implemented financial mechanisms, and some multiplier effects as replication and extension of the action performed in BP. Expected use of Best Practice and lifecycle considerations. (max. 1000 char.)

Centres provide a permanent cooperation and interaction forum for companies and research organisations. They facilitate long term strategic research with the goal to retain the lead of Finnish industry in the domain of industrial informatics.

11. Repeatability and transferability

Lessons learned from the project implementation team. Repeatability and transferability of the project. (max. 1000 char.)

The programme is easily repeatable and transferable to other countries or regions, provided there is political and financial interest . Actually, such clusters, networks, projects etc. can be found. Also, EU through its regional funds also supports such projects. However, such narrow-focused programmes could not be identified.

Unfortunately, there is not much information about the experience gained from this programme. Basically, there are calls for proposals, programs of conferences and documents of some projects.

The programme itself did not have a portal, but was distributed among portals of the funding organizations Tekes, VINNOVA, and RCN.

12. Evaluation

Describe reasons and evaluation criteria why the described example is a best practice. (max. 1000 char.)

In conclusion, the characteristics can be subsumed in the following:

- State institutions have identified very quickly emerging new high technologies, where some Scandinavian companies and research organizations were already leading.
- Regional joint ventures were formed, giving opportunity to the new-coming members to faster gain knowledge, and at the same time the leading companies and institutions to get more support in resources and in funding
- Results were publically presented and are available on the internet. This way, not only the partners but also other organisations, involved in the projects of NORDITE programme and also others could benefit from the projects.
- Although there is not much information available, the programme seems to be good organized and led. The collaboration rules are well elaborated, the projects funded are very interesting and represent the highest technology in the domain.

13. Contact of research team/institution	14.Contact of financial mechanism facilitator
Name, address, tel., fax, e-mail, URL	*Name, address, tel., fax, e-mail, URL*
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