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Centre of Expertise programme – Model to enhance collaboration for knowledge based growth

Parallel Session 1:
Partnerships and collaboration to accelerate integration in the value chain

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CENTRE OF EXPERTISE PROGRAMME IN GAUTENG FEASIBILITY STUDY

Executive Summary

The feasibility study was carried out as a part of the COFISA Programme which is a Cooperative Framework on Innovation Systems between Finland and South Africa, with the overall objective to enhance the effectiveness of the South African national system of innovation in order to promote economic growth and poverty alleviation. In addition, COFISA seeks to enhance collaboration between national and provincial stakeholders within the National System of Innovation.

The overall objective was to conduct a feasibility study for the inception phase of the Centre of Expertise Programme in the region of Tshwane, Midrand and Johannesburg. Special objectives included the motivation of local stakeholders (The Innovation Hub, City of Tshwane, Department of Science and Technology, universities, business and research institutes) to participate in the inception, and finally in the implementation of a pilot Centre of Expertise Programme.

This is not of an academic study and conclusions and practical recommendations are based on observations made during meetings held in Gauteng between 20.5. – 10.6. 2007. During this period 53 meetings were arranged with about 200 local representatives, from the ICT, Bio and Aeronautics industries (22 meetings), universities research and management organisations (10 meetings), other research, networking or financial organisations and governmental meetings (12) including the Department of Science and Technology and the Executive Mayor of Tshwane.

Conclusions

1. The current South African innovation system is fragmented. In most of the discussions, only narrow sectors of the economy were seen to be connected to the innovation system.
2. Many of the experts interviewed did not recognise any existing innovation chain, the relevant players or tools for product development.
3. There is undoubtedly a significant lack of qualified researchers at universities. In a global context this is most evident within the ICT and Bio sectors.
4. There is a gap in the mindset and collaboration (thinking and doing) between the researchers in industry and in universities. The current system, where universities do not produce the research which can be used to the advantage of industry, is neither competitive nor sustainable.
5. The ownership of Intellectual Property Rights, especially those created within a public funded environment, must be such that it incentivises industry.
6. There is a huge demand for a national, sustainable, transparent, independent, neutral and well resourced financing instrument. The TEKES might serve as an example of such a model.

In summary, based on the abovementioned conclusions, there is a real need for new ways of networking, collaborating and future planning. One of the instruments that can be used to achieve these objectives is The Pilot of Centre of Expertise Programme.

Proposal for the Inception phase

It is recommended that the core team at the Innovation Hub should be responsible for the inception of the pilot of a Centre of Expertise Programme in the Province of Gauteng. The inception phase should concentrate on not more than three fields, and the suggested fields are ICT, BIO and Aeronautics.

In order to test the different models, it is suggested that the coordinators should be chosen from different types of organisations. Possible sources are:

- Bio field: A Research organisation such as the Medical Research Council or Agricultural Research Council.
- ICT field: A Public research organisation such as Meraka or equivalent.
- Aeronautics: A company or industrial organisation such as the AISI or its affiliates such as National Centre of Excellence in Aeronautics, based at the University of the Witwatersrand.

The Innovation Hub should be the programme coordinator of the pilot as they have qualified professionals who understand the problems and needs of collaboration at the local level. A project plan for all three fields, with coordinators and participants, should be completed during the inception phase.

There must be a common will and wisdom between the coordinator and participants as well as agreement to their respective share in financing the project. The commitment of the Department of Science and Technology (DST), the Province of Gauteng and the City of Tshwane to the plan is critical.

CENTRE OF EXPERTISE PROGRAMME IN GAUTENG FEASIBILITY STUDY

"We know it well that none of us acting alone can achieve success."
Nelson Mandela's inaugural speech - Pretoria May 10.1994

Preface

It takes a lot of courage and innovative thinking to start a project to transfer knowledge from a successful system within a knowledge based economy of 5 million people, 21 universities and 23 science parks, to South Africa, a resource and production based economy, with ten times the number of people but with the same number of universities and only one real science park.

The results of this feasibility study show that in spite of structural differences, the knowledge, willingness and political support keep the window open for such an innovation revolution in South Africa.

This is not an academic study and conclusions and practical recommendations are based on observations during the interviews held in Gauteng between 20.5. – 10.6. 2007. Prior to the field study, the political and economical history of South Africa was research to provide an understanding of the current situation, and to avoid the influence of common opinion which can confuse political ambitions with operational decisions.

Background

This feasibility study was carried out as a part of the COFISA Programme – a Cooperative Framework on Innovation Systems between Finland and South Africa.

The overall objective of COFISA is to enhance the effectiveness of the national system of innovation in order to promote economic growth and poverty alleviation. In addition COFISA seeks to enhance collaboration between national and provincial stakeholders within the South African National System of Innovation.

COFISA´s objectives include demonstrating the effectiveness of regional innovation systems in three pilot provinces, being the Eastern Cape, the Western Cape and Gauteng. The aim is to strengthen collaboration between universities, research institutes, provincial and municipal governments and importantly, industry, and to pilot a well-functioning and sustainable support structure for enabling and promoting innovation for greater economic growth. A general overview of COFISA is attached in *Appendix 4*.

This feasibility study was fully concentrated on the Gauteng province.

Objectives of the feasibility study

The overall objective was to conduct a feasibility study for the inception phase of the Centre of Expertise Programme in the regions of Tshwane, Midrand and Johannesburg within the Gauteng Province. In addition special objectives included the motivation of local stakeholders (The Innovation Hub, City of Tshwane, Department of Science and Technology, universities, business and research institutes) to participate in the inception and finally in the implementation of the Centre of Expertise Programme in the Tshwane region, Gauteng.

During the fieldwork, many other issues were addressed in various discussions, most of them on social-economic aspects. As these important issues were not included in the pre-defined feasibility study, the discussion and proposals will be presented later in separate document.

Why Centre of Expertise Programme?

The Finnish model of the Centre of Expertise Programme focuses on utilising top level knowledge and expertise as a resource for business operations, job creation and regional development.

The Centre of Expertise Programme was a fixed-term (1999-2006) special programme that in accordance with the Regional Development Act of Finland aimed to pool local, regional and national resources to utilise high-level expertise. This Programme provided support for regional strengths and specialisation as well as cooperation between the various centres of expertise, and concentrated on using the expertise in selected, internationally competitive fields and on the development of business activities.

The Programme was initially a part of the regional strategy and increased cooperation and the number of networked projects. In many cases it created permanent infrastructures on specific innovative multilateral fields, like surface monitoring or biodegradable human spare parts. However, the most important impact was the creation a positive image in long-term development.

This was not a funding instrument, but a catalyst for creating new projects, cooperation and commitment, and in many regions has created economic growth and an increase in the number of competitive products, services, enterprises, and jobs based on the highest level of expertise. This attracted international investment and leading experts who continuously reinforce and regenerate regional expertise.

A short description of the Finnish Centre of Expertise Programme is attached in *Appendix 1*.

Attached also is a document from the Ministry of the Interior in Finland profiling the Centre of Expertise programme 1994 – 2006; Appendix 3.

Field Study

During the three week feasibility study in South Africa, 53 meetings were held with about 200 local representatives. Included in the study were meetings with the following groups: the ICT, Bio and Aeronautics industries (22 meetings), universities research and management organisations (10 meetings), other research, networking or financial organisations and governmental meetings (12) including the Department of Science and Technology and the Executive Mayor of Tshwane.

In addition to the above two seminars in The Innovation Hub and one mini seminar with CSIR ICT researchers were held, and official and unofficial meetings with politicians, academics and other stakeholders.

Confidentiality was guaranteed throughout and all respondents were assured that no individual opinions or proposals would be made public. The report will be sent to all participants for comments and further discussion, as part of the planned commitment of the stakeholders.

The list of meetings is attached in Appendix 2.

Issues covered in the Field Study

The field study took place in the region of Tshwane, Johannesburg and Midrand within the province of Gauteng, and according to the terms of reference five core issues for the study were identified:

1. Identification of the key stakeholders in Tshwane, Johannesburg and Midrand.
2. Creation of awareness among key stakeholders regarding the Centre of Expertise Programme.
3. Determination of the interests and needs of industry, academia and the public sector for wider cooperation in and enhancement of R&D.
4. Determination of the readiness and willingness of key stakeholders to participate in the inception and implementation of a local Centre of Expertise Programme pilot(s).
5. Evaluation of the prerequisites for Centre of Expertise Programme Inception in 2007.

All the abovementioned issues were covered in the feasibility study. Awareness of cooperation and collaboration opportunities was at a high level in many interviews, but willingness and readiness to commit varied greatly, which is due to the previous experience of cooperation and collaboration or the lack thereof.

Results

Establishment of a core team

A core team for the South African Centre of Expertise Programme was established with the help of COFISA experts. The team comprised Tsietsi Maleho, Manager: Corporate Affairs/The Innovation Hub, Jeanette Morwane;

Assistant: Corporate Affairs/The Innovation Hub, Lauri Kuukasjärvi; Chief Technical Adviser to COFISA and N Tapani Saarinen Short Term Expert on the Finnish Centre of Expertise Programme.

Recognition of the key stakeholders in Gauteng

The Centre of Expertise Programme in Finland is based on the Triple Helix model (private, public sectors and academia). All the stakeholders maintain their relevant positions and roles and Science parks are the coordinators of the programme. Universities and research institutions produce new knowledge and industry implements the research results to create added value and growth to the economy.

In this model, the role of public authorities, such as national, provincial and local governments, is to facilitate the programme and associated processes, to improve and streamline the infrastructure and enable financing for proper development and research projects.

The importance of a science park (in this instance The **Innovation Hub)** as a neutral actor and coordinator of local cooperation, featured in nearly every interview that was held and the expectation of rapid and increasing activities was addressed in many discussions. This gives a clear mandate to The Innovation Hub to continue its present activities and adopt a new role in the development tasks if needed. This was supported by the main shareholder of The Innovation Hub (Blue IQ – an economic development programme of the Gauteng Provincial Government).

The local **Universities,** University of Pretoria, Tshwane University of Technology, University of Witwatersrand, University of South Africa and University of Johannesburg, were interviewed. They all have important roles in producing new knowledge and research results and could become keyplayers in enhancing the innovation system in the Province.

The role of universities in South Africa is stronger than in the Finnish or European context due to the different positioning of intellectual property rights. However, this could also be an obstacle to improving cooperation and collaboration, and could cause a significant delay in developing cooperation and collaboration, if the universities keep their intellectual property rights strictly in the public sector, and not assign these to the private sector for exclusive commercialisation.

Amongst the **research institutes** and science councils, the CSIR was identified as being strategically positioned to play a key role in the programme. In ICT the Meraka Institute together with the Johannesburg Centre for Software Engineering at WITS could play an important role in future cooperation. This should however not be exclusive with most of the other universities in the province having established ICT faculties and research activities.

Local **industry** in the Gauteng Province is the key player in South African economy. From a variety of industrial fields three specific areas were chosen for closer scrutiny.

It was obvious from the framework of the Centres of Expertise Programme, that the key stakeholders in industry should be from knowledge and research based sectors, such as **Bio and ICT**. The past and recent success gained in the **Aeronautics industry** suggests that there is potential for local significance in enhancing both research and cooperation.

There are a number of possible key stakeholders within the industrial sector for the implementation of a Centre of Expertise programme, and the list of organisations interviewed during the feasibility study shows many alternative ways of building cooperation projects in the future. Choice of appropriate industry sectors will depend on the nature of the research fields to be included in the projects.

In respect of **public authorities**, the key driver of innovation policy is the **Department of Science and Technology**. This department plays a dominant role in planning activities and resources related to innovation and R&D policy. The Department of Trade & Industry is equally a key player in the National System of Innovation to address the growth and industrialised sector phases. Of concern however, is that there appears to be duplication in services and requires closer collaboration and alignment between these government departments.

The Province of Gauteng should most definitely be a stakeholder and support to future success. Due to the bipolarity of academic knowledge and industrial activities distributed between the two main city regions of Gauteng, being Pretoria and Johannesburg; it is essential to have a provincial point of view to development and policy, which will ensure stable development of project platforms through future decisions and financing.

Last but not least, **the City of Tshwane**. The goals of innovation development within the local science park and one of its most important stakeholders, being its home city, not only should, but must, be congruent. Tshwane Smart City initiative must be in crucial role in ICT development by the CoE.

Creating awareness among key stakeholders of the Centre of Expertise Programme

It was not difficult to raise the awareness and importance of programmed cooperation among the interviewed stakeholders since the innovation environment awaits and believes in the potential of the next level developments and collaboration, such as the Centre of Expertise Programme.

Determination of the interests and needs in industry, academia and public sector for wider collaboration and enhancement of R&D

The desired change in the South African political system in the middle of the 1990's affected both the innovation system and industry's ability to leverage the system. The opening of global markets forced businesses to concentrate on production and productivity which resulted in a decline in product development and related research activities in businesses, universities and research institutions.

During the last few years many businesses with wide and active research and development functions, have limited their innovation, and concentrated on production to remain globally competitive. During the same time there has been rapid restructuring of the universities and education system. Research have received attention at the policy level but implementation at the commercialization part of the innovation cycle has yet to achieve the deserved outcomes.

In today's positive political climate, industry's needs and interests are focussed on building a qualified workforce to fulfil the requirements of tomorrow. In the industrial sectors where development is made in small steps inside businesses, the need for external research collaboration exists. The two key things that need to be addressed in order to facilitate the utilisation, by industry, of the knowledge and research from universities and research organisations are: clear and acceptable rules of transferring Intellectual Property Rights (IPRs) to industry for commercialisation and raising investment, and the level and volume of research must be increased, based on the demand from industry.

The restructuring of the academic environment in the nineties created confusion which still exists today in the approach that the universities have to research. There are far too few globally qualified researchers, including post docs and leaders of research groups, to boost the knowledge based growth in South Africa's innovation industry. Many researchers are interested in pursuing more collaboration, but their capabilities are severely limited. Money is not the only impediment and an imbalance in the national education system plays a big part, where only a part of the preliminary schools are able to produce qualified university level students.

The needs and interests of the public sector are clear: more collaboration in targeted innovation fields to achieve the national objectives of job creation, poverty alleviation, wealth creation and the economic and social empowerment of all citizens.

Evaluation of the prerequisites for Centre of Expertise Programme Inception in 2007

The inception phase of the Centre of Expertise Programme is dependent on three main conditions:

- A common decision within the enabling team to concentrate on the piloting phase of the programme.
- Money should be allocated separately for the inception phase, and not be dependent on the results or outcomes of the inception phase.
- A financing instrument for first collaboration projects, which will catalyse the piloting of the South African Centre of Expertise Programme.

Conclusions

1. The current South African innovation system is fragmented. In most of the discussions, only narrow sectors of the economy were seen to be connected to the whole innovation system.

2. Many of the experts interviewed did not recognise any existing innovation chain, the relevant players or tools for product development.

3. There is undoubtedly a significant lack of qualified researchers at universities. In a global context this is most evident within the ICT and Bio sectors.

4. There is a gap in the mindset and collaboration (thinking and doing) between the researchers in industry and in universities. The current system, where universities do not produce the research which industry can capitalise on, is neither competitive nor sustainable.

5. The ownership of Intellectual Property Rights, especially those created within a public funded environment, must be such that it incentivises industry.

6. There is a huge demand for a national, sustainable, transparent, independent, neutral and well resourced financing instrument. The model for TEKES could be used as an example in the creation of this instrument.

The summary of the conclusions is that there really is a need for new ways of networking, collaborating and future planning. One of these instruments could be The Pilot of the Centres of Expertise Programme.

Proposal for the Inception phase of the Centre of Expertise Programme Pilot

It is recommended that the core team at the Innovation Hub should be responsible for the inception of the pilot of a Centre of Expertise Programme in the Province of Gauteng.

The inception phase should concentrate on not more than three fields. The suggested fields are: ICT, BIO and Aeronautics.

In order to test the different models, it might be good to choose the coordinators from different types of organisations.

- **Bio field**: A Research organisation such as the Medical Research Council or Agricultural Research Council
- **ICT field**: A public research organisation such as Meraka or equivalent
- **Aeronautics**: A company or industrial organisation such as the AISI or its affiliates such as National Centre of Excellence in Aeronautics, based at the University of the Witwatersrand.

The programme coordinator of this pilot should be The Innovation Hub, which has qualified professionals that understand the problems and needs of collaboration at the local level. A project plan for all three fields with coordinators and participants should be completed during the inception phase.

There must be a common will and wisdom between the coordinator and participants as well as agreement to their respective share in financing the project. The commitment of the DST, the Province of Gauteng and the City of Tshwane to the plan is critical.

Appendix

1. Centre of Expertise Programme – Finnish model to enhance knowledge based growth
2. Feasibility Study: Centre of Expertise Programme in Gauteng; List of Companies Interviewed in May – June 2007
3. The Competitiveness of Finland is based on Expertise
4. COFISA Overview

Centre of Expertise Programme

Appendix 1

CENTRE OF EXPERTISE PROGRAMME - FINNISH MODEL TO ENHANCE KNOWLEDGE BASED GROWTH

Centres of Expertise – Forum for successful innovations

The strengths of Finland are the efficient innovative environment, the scientific and technological expertise and a high level of education. The competitive edge is built on a long-term national strategy that enhances know-how and expertise.

With continuing globalisation and technological development, the competitiveness of regions has become increasingly dependent on specialisation and the ability to innovate. The centres of expertise seek success through exploiting local excellence and growth potential.

The strengths of the Finnish national innovation system combined with effective local research and cooperation within industries have also made regions more attractive places for foreign research and development investment.

The Centre of Expertise Programme was a fixed-term (1999-2006) special programme that in accordance with the Regional Development Act aims to pool local, regional and national resources to utilise high-level expertise. The Centre of Expertise Programme provided support for regional strengths and specialisation as well as cooperation between the various centres of expertise. The programme concentrated on using the expertise in selected, internationally competitive fields and on the development of business activities.

Centres of Expertise – Key to Efficient Cooperation

The Centre of Expertise Programme was launched in 1994 in eight different Centres of Expertise. Due to its subsequent success the Government decided to extend the programme in 1998 and 2002 by appointing new centres of expertise and by increasing the number of fields of expertise in the existing centres. There currently exist 22 centres of expertise covering 45 fields of expertise, which have been appointed for the period of 2003–2006.

The task of the centres of expertise is to use internationally competitive knowledge and skills as a resource for business activities, the creation of new jobs and regional development. In order to reach their objective, the centres of expertise

- establish the prerequisites for the creation and commercialisation of innovation
- launch cooperative projects between the research sectors and industries
- continuously strengthen and modernise top-level expertise in the region
- Promote the development of creative and innovative environments.

From Nanotechnology to Culture

The centres of expertise specialise in the development of certain selected fields, the majority of which are represented by world-class expertise. Fields of expertise are selected based on the strong and developing research, education and business activities of a region. The idea is to create new knowledge-intensive business and to improve the competitiveness of existing companies. In appointing centres of expertise, attention is also paid to fields of expertise other than those relating to technology. New fields included in the programme are tourism, the experience industry, culture, new media, e-learning and design, quality and environmental expertise.

Objectives

The national objectives of the Centre of Expertise Programme are to:

- create a long-term strategy for the full utilisation of the top-level expertise in the regions
- support the specialisation and cooperation between the regions
- create new products, services, companies and jobs related to top-level expertise
- increase the appeal of the region especially in order to attract investments and professionals to the region
- continuously strengthen and modernise special expertise within the region
- improve the ability of the regions to benefit from the R&D funding that is available through national and international competition
- gather up local, regional and national resources to develop selected top fields
- promote the regional, national and international networking of the centres of expertise and the fields of expertise
- Improve the coherence of regional and national development activities.

In order to reach their objectives, the centres of expertise:

- recognise the strengths and development opportunities within their region
- create the prerequisites for innovation and commercialisation
- launch projects to develop businesses based on top-level expertise
- makes latest knowledge and expertise easily available for companies
- increase cooperation between different bodies in the development of research and knowledge-intensive business
- use human resources and intensify the use of training and education
- Activate the research and development operations of small and medium-sized companies in their fields of expertise.

MULTI-DISCIPLINARY COMMITTEE
Coordinates the Centre of Expertise Programme

The national Committee for the Centre of Expertise Programme consists of experts in the fields of economy, research and education as well as professionals working in regional and local administration. The task of the committee is to monitor and coordinate the activities relating to the programmes in different regions. In addition to the Ministry of the Interior, other representatives of central administration include the Ministry of Labour, the Ministry of Education, the Ministry of Trade and Industry, the Ministry of Agriculture and Forestry and the Ministry of Social Affairs and Health.
The objective of the committee is to coordinate the activities of the programme between different administrative sectors and centres of expertise. The committee also contributes to

the development of the programme and the selection of centres and their fields of expertise to the programme. The committee evaluates the operations of the centres of expertise annually and, based on this evaluation, drafts a proposal to the Government regarding basic funding. The committee also functions as a wider forum for discussion regarding the development of regional innovation systems.

The Finnish Science Park Association (TEKEL) is responsible for the national development project, the objective of which is to promote the cooperation between different authorities in the central and local government, to develop the operations of the centres of expertise and to increase cooperation between the centres of expertise.

The most innovative project – the top project – enables the committee to draw the centres of expertises' attention to nationally important strategies, such as

- international networking
- attractiveness of the R & D environments
- ensuring the availability of skilled labour
- development of equity finance for early stage seed and start-up companies
- enhancing regional effectiveness.

The Ministry of the Interior has given recognition in the form of funding for the realisation of the most innovative projects. In 2001, recognition was given to the "Multipolis-Metropolis" project of the Oulu Region Centre of Expertise and in 2002 special funding was given to the "Cooperation Network for Micro Systems Technology" project of the Helsinki Region Centre of Expertise.

The committee encourages the centres to develop national expertise and connections to international networks of excellence within their own fields and areas of emphasis. However, the activities of the new centres that began operations in 2003 focus – to begin with – on the stabilisation of forms of cooperation and the launching of joint projects at regional level.

Committee for the Centre of Expertise Programme

COMMITTEE FOR THE CENTRE OF EXPERTISE PROGRAMME

MEMBERS	DEPUTY MEMBERS
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	Katri Welin Sales Secretary Kuljetus Welin Oy
Hannu Paasovaara, Managing Director CCC Group Software Production	
Martti af Heurlin, Director General Tekes, National Technology Agency of Finland	Antti Heiskanen, Development Manager Tekes, National Technology Agency of Finland
Olav Jern, Executive Director Regional Council of Ostrobothnia	Pentti Hyttinen, Executive Director Regional Council of North Karelia
Ari Saarinen, Counsellor Ministry of Education, Department for Education and Science Policy	Pirkko Liisi Kuhmonen, Senior Adviser Ministry of Education, Department for Cultural, Sport and Youth Policy
Riitta Kaijansaari, Product Group Manager Metorex International Ltd.	Seppo Kangas, Production Director United Sawmills Ltd.
Veijo Kavonius, Director, Ministry of the Interior Department for Development of Regions and Public Administration	Marikki Järvinen, Ministerial Adviser Ministry of the Interior, Department for Development of Regions and Public Administration
Paula Nybergh, Director General Ministry of Trade and Industry, Technology Department	Riitta Mansukoski, Senior Adviser Ministry of Trade and Industry, Technology Department
Kari Nenonen, Mayor City of Oulu	Tero Hirvilammi, Deputy Mayor City of Turku
Anneli Pirttilä, Rector South Karelia Polytechnic	Jaakko Tarkkanen, Rector Laurea Polytechnic
Risto Lammintausta, CEO Hormos Medical Ltd.	Sampsa Haarasilta, Director Quality and Product Development Oy Karl Fazer Ab
Kaisa-Leena Lintilä, Director of Regional Development Ministry of the Interior, Department for Development of Regions and Public Administration	Tarja Reivonen, Ministerial Adviser Ministry of the Interior, Department for Development of Regions and Public Administration
Markku Lukka, Rector Lappeenranta University of Technology	Leila Risteli, Director University of Oulu Learning and Research Services
Jussi Toppila, Labour Market Counsellor	Ministry of Labour, Policy Department

Jarmo Palm, Ministerial Adviser
Ministry of Labour

Ritva Dammert, Research Director
Academy of Finland

Timo Kolu, Special Researcher
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Marjut Pitkänen,
Vice President
Lapin Lomahotellit Oy - Lapland Hotels

Päivikki Palosaari,
Managing Director
Levi Center Hullu Poro

Jouko Isolauri, Ministerial Counsellor,
Health/Medical Affairs
Ministry of Social Affairs and Health

Kaija Hasunen,
Ministerial Adviser
Ministry of Social Affairs and Health

Pekka Saarela, Director
University of Art and Design

Asko Mäkelä, Director
Finnish Museum of Photography

Kirsi Viljanen, Senior Adviser
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PERMANENT EXPERTS

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Kyösti Jääskeläinen, Director
Tekel, Finnish Science Park Association

Esko-Olavi Seppälä,
Chief Planning Officer
Science and Technology Policy Council of
Finland

Timo Kekkonen, Programdirector
SITRA, Finnish National Fund for Research
and Development

Anssi Paasivirta, State secretary
Ministry of Trade and Industry

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Ministry of Education
Department of Education and Science
Policy

Appendix 2

Feasibility Study: Centre of Expertise Programme in Gauteng
List of Companies etc. interviewed in May – June 2007

ICT

Institution	Name	Designation
Non-Zero Sum Development	Bob Day	Consultant
Johannesburg Centre for Software Engineering	Prf. Rex van Olst	Director
Cisco Systems	Peter Masemola	Managing Director
Gijima AST Holdings Ltd	John Miller	CEO
Electronics Industries Federation	Eileen Leopold	Director
B-Link	Douglas Southgate	Project Manager
SAP	Danie Kok	Director: SAP Research
Cornastone	Lufhuno Nevhutalu	CEO
Da Vince Institute	Dr Roy Marcus	CEO
Venture Solutions	Stephan Lamprecht	Consultant
Eskom	Dr Steve Lennon	Senior Manager: Technology
Expertron Group	Walter Smuts	Managing Director
Luuk	Tobie van der Spuy	Director
Tswelopele Solutions	Daki Nkanyane	Managing Director
Q-Sens	Hardy Jonck	Director
Parsec	Petrus Pelser	Managing Director
MMB Service Providers	Dries Prinsloo	Director

BIOTECH

Institution	Name	Designation
Dept of Science & Technology	Ben Durham	Manager: Biotechnology Unit
BIOPAD	Dr Agatha Masemola	Projects Manager
Egolibio	Charles Dettman	CEO
Enzymes SA (Pty) Ltd	Rodney Blower	Managing Director
Sylvean Biotech	Donrich Jordaan	Managing Director
SAPPI	Dr Tony Leske	Manager: Environmental Management
Medical Research Council	Petro Terblanch	Executive Director
TB Alliance	Christo van Niekerk	Clinical Research
Foundation for Professional Development	Dr Gustaaf Wolvaardt	Executive Director
University of Pretoria	Eugene Cloete	Water Research
Ayanda Biosytems	Dr Solomzi Makohliso	CEO

AEROSPACE AND DEFENCE

Institution	Name	Designation
Global Research Alliance	Reinie Biesenbach	Executive Director
AeroSud Engineering	Dr Paul Potgieter	Managing Director
AISI	Phillip Haupt	Director
National Aerospace Centre of Excellence	Francois Denner	Director
PBMR	Dr Adi Paterson	Manager
ARMSCOR	Mr. Robbie Muller	Senior Manager: Defense Institute

The Competitiveness of Finland is BASED ON EXPERTISE

In recent reports on competitiveness and growth potential of countries, Finland has been amongst the leading countries. The strengths of Finland, to mention a few, are the efficient innovative environment, the scientific and technological expertise and a high level of education which exist in the country. These strengths combined with effective research and cooperation within industries make Finland an attractive place for international research and development investment.

The competitiveness of Finland today is based on long-term strategies that rely on knowledge and skills. The development initially decided upon in the 1980's has proven successful. Since the beginning of the 1990's, the volume of research and development investment has tripled and its share of GDP is now approximately 3.5%, which is one of the highest of the corresponding figures in the world. The share of hi-tech products for exports has quadrupled in the last ten years and is now over 20%. The ICT industry has grown into one of the three industries, together with forestry and the metal industry, which form the foundations of the economy. The Research School system that was also launched in the beginning of the 1990s has succeeded in increasing the number of university students graduating with a doctorate. The number of researchers per thousand employees is currently over 10 in Finland, which is by far the highest figure within the OECD countries.

The knowledge intensive production structure and the competitive advantage gained by Finland present challenges, the most significant of which relate to the amount of public research funding, the development of business expertise and the utilisation of information technology in more traditional fields as well as on the public sector. The government plays an active role in increasing the public funding of research and development.

From a national point of view it is the companies, universities, the Academy of Finland, research institutions and the National Technology Agency of Finland that have had a key role in the development of the innovation system. The majority of public technology funding is channelled via the National Technology Agency of Finland. In addition to national bodies, the regions – and especially large cities – have also increased invest-

Mirva Kurtila

Centres of Expertise – Key to Efficient Cooperation

The Centres of Expertise specialise in the development of certain selected fields, the majority of which are represented by world-class expertise in Finland.

The task of the Centres of Expertise is to use internationally competitive knowledge and skills as a resource for business activities, the creation of new jobs and regional development. In order to reach their objective, the Centres of Expertise

- establish the prerequisites for the creation of innovation, for production and commercialisation
- launch cooperative projects between the research and economy sectors
- continuously strengthen and modernise expertise in the region
- promote the development of creative and innovative environments

The quality of Finnish research and development activities as well as the efficiency of both public and private technological cooperation is internationally recognised. Several international companies have located their research and development activities in Finland. The Centres of Expertise cooperate closely with polytechnics, research institutions and companies in order to create developed business models, with the practical work is usually carried out by local technology centres. The Centres of Expertise also make it easier for foreign companies to relocate to the area and to enter into cooperation with local research units and companies. Correspondingly, local companies are able to strengthen their own core competencies through the network of Centres of Expertise, which is based on national as well as international connections and resources.

Centre of Expertise Programme – the Finnish Model

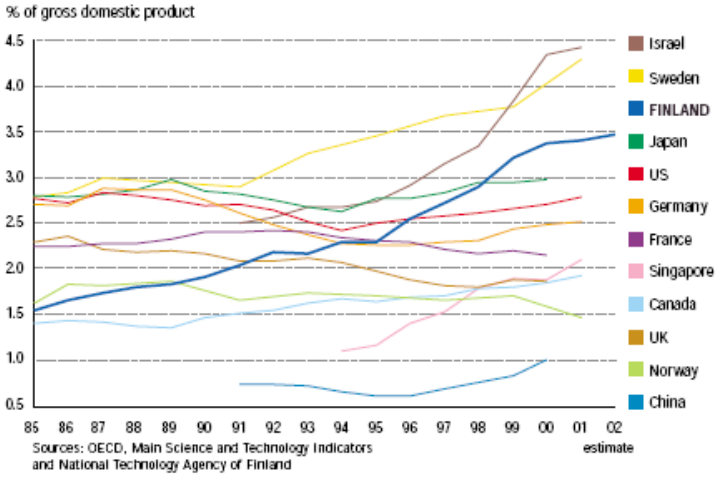
The Centre of Expertise Programme is a temporary special programme that in accordance with the law on regional development aims to allocate local, regional and national resources to utilise top-flight expertise.

The Centre of Expertise programme provides support for regional strengths and specialisation as well as cooperation between the various Centres of Expertise. The programme concentrates on using the expertise in selected, internationally competitive fields and on the development of business activities.

ment in science parks and technology centres. The Centre of Expertise Programme was launched by the government in 1994 in order to support the development of regional innovative environments.

As internationalisation and technological development accelerate, the competitiveness of regions has become increasingly dependent on specialisation and the ability to innovate. The Centres of Expertise cooperate with other complementary national activities and bodies to create a sound platform for the future growth and success of the regions.

RESEARCH AND DEVELOPMENT INVESTMENT IN SPECIFIED COUNTRIES



Sources: OECD, Main Science and Technology Indicators and National Technology Agency of Finland

The result of 10 years of the programme is a strong and efficient network of Centres of Expertise in Finland, which has been created to meet the demands of an open and international information society. The science parks that house the Centres of Expertise have matured into important locations and investment targets for international companies and top professionals.

From Nanotechnology to Culture

The programme was launched in 1994 in eight different Centres of Expertise, due to its subsequent success the government decided to extend the programme between 1998 and 2002 by appointing new Centres of Expertise and by increasing the number of fields of expertise in the existing Centres. There currently exist 22 Centres of Expertise covering 45 fields of expertise, which have been appointed for the period of 2003–2006. The Centre of Expertise programme is the cooperative network responsible for the development of the different fields of expertise. Fields of expertise are appointed based on the strong and developing research, education and business activities of a region and the expertise in these fields is then utilised further, for example, in developing new businesses in the region and by improving the competitiveness of existing companies. In appointing Centres of Expertise, attention is also paid to fields of expertise other than those relating to technology. New fields of expertise included in the programme are tourism, the experience economy, culture, professional expertise and design, quality and environmental expertise.

Competitive tendering is a central aspect of the realisation of the Centre of Expertise programme. Appointment to the programme requires a cluster of expertise that is at the highest international echelon. In addition to the level and quality of expertise, selection is based on the innovation and impressiveness of the activities of the companies as well as the organisation. Only the best regional programmes have been granted a Centre of Expertise status. The Centres of Expertise also compete for the basic funding granted by the state on an annual basis, as the continuing of development work in the Centres of Expertise is dependent on this funding. The amount of basic state funding handed out to the Centres of Expertise totalled approximately 8 million euro in 2003. The total funding volume of the projects launched by the Centres of Expertise between 1999 and 2002 was 330 million euro.

Qualification for the catalytic basic state funding requires regional initiative towards the programme. Significant regional funding towards the Centre of Expertise programme has originated from cities that have invested considerably in the infrastructure of science parks and technology centres as well as providing direct funding for the programme.

Forums as Innovative Growth Platforms

Programmes at the Centres of Expertise are realised through cooperation between the economies of the areas, cities, polytechnics, technology centres, research institutions and other publicly administered regional bodies. The principal projects, which are significant from the point of view of regional development, and which are realised in connection with the programme, represent the most important part of that cooperation. It is essential that the participating bodies commit themselves actively to achieving the specified programme objectives. The central technological organisations usually have principal responsibility for the organisation of the operative activities of the Centres of Expertise.

The projects that are realised in connection with the programme are based on the development needs and capacities of companies and the innovation system, which naturally vary from one region to another. In addition, the fields of expertise differ in the phases of their life cycle and therefore different Centres of Expertise face different threats and opportunities. The central starting point, however, remains the strengthening of cooperation between companies and the research sector. The programme aims to create close cooperation between experts in the research, education and business sectors of a region and a field of expertise. Synergy and joint projects that aim at developing the innovation environment help to create better prerequisites for the growth of business activities in existing companies and the founding of new companies.

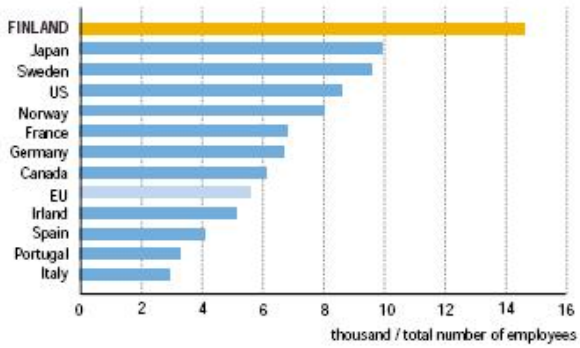
Via the network of Centres of Expertise, companies can get access to information and skills that are based on national and international connections and resources.

The Centres of Expertise base their activities on the technology centres services that include e.g.

- project management
- business development and marketing services
- technology transfers
- incubator and company development activities

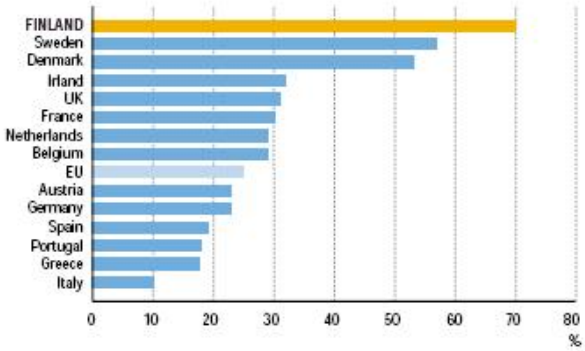
Petri Hyyppä, University of Kuopio

THE NUMBER OF RESEARCHERS IN CERTAIN OECD COUNTRIES

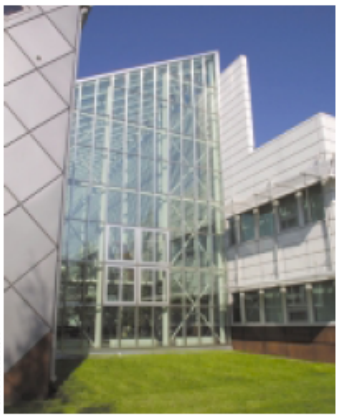


Sources: OECD, Main Science and Technology Indicators

THE SHARE OF COOPERATING COMPANIES OF ALL INNOVATIVE COMPANIES



Source: Towards a European Research Area – Key Figures, European Commission 2001



Jussi Pitkänen

– patenting, licensing and funding services
– business premises
– development of operational environments and models

The Economic Structure of the Regions has become more Diverse

Between 1999 and 2002, approximately 900 projects took place under the aegis of the programme and 15,000 experts from different fields participated actively in these projects. The projects dealt with both the modernisation of traditional fields and the creation of new areas of growth. According to an interim estimate that was published in 2003 companies have participated more actively in activities organised directly by the Centres of Expertise. The number of companies participating in the realisation of the programme continues to increase annually and in 2002 there were 3,000 participating businesses, the majority of which were small companies of less than 10 employees. The programme has taken another positive turn as large companies have also clearly become more interested in the activities presided over by the Centres of Expertise

Between 1999 and 2002, the immediate effect on employment of the projects that were realised in connection with the programme were significant: 5,700 new jobs mainly related to top-level expertise were created and 316 new companies were founded. The level of expertise in the fields covered by the programme as well as the level of technology has increased and the ability of the regions to make use of the research and development funding has been enhanced. The 1,400 new products, services and operational models that have been created in response to the activities of Centres of Expertise are also evident to the extent that the Centres have increasingly adopted the role of innovator. The production structure modernisation in the regions and the structural diversification of the economy are the most significant long-term effects.

The National Objectives of the Centre of Expertise Programme:

- to create a long-term strategy for the full utilisation of the top-level expertise in the regions
- to support the specialisation and cooperation between the regions
- to create new products, services, companies and jobs related to top-level expertise
- to increase the appeal of the region in order especially to attract investments and top-level experts to the region
- to continuously strengthen and modernise expertise within the region
- to improve the ability of the regions to benefit from the R&D funding that is available through national and international competition
- to gather up local, regional and national resources to develop selected top fields
- to promote the regional, national and international networking of the Centres of Expertise and the fields of expertise
- to improve the compatibility of regional and national development activities.
- thousand/ total number of personnel

In order to reach their objectives, the Centres of Expertise:

- recognise the strengths and development opportunities within their region
- create the prerequisites for innovations, production and commercialisation
- launch projects to develop businesses based on top-flight expertise
- communicate the latest knowledge and expertise
- increase cooperation between different bodies in the development of research and knowledge intensive business
- use human resources and intensify the use of education
- activate the research and development operations of small and medium sized companies in their fields of expertise

COOPERATION FRAMEWORK ON INNOVATION SYSTEMS BETWEEN FINLAND AND SOUTH AFRICA

BACKGROUND

The Government of South Africa (SA) is emphasizing the future importance of science, technology and innovation to all sectors of society in the belief that sustainable development of technology and human capital will generate economic growth and wealth as well as promote poverty alleviation. This has lead to a science and technology (S&T) policy based on the development of a South African National System of Innovation (SANSI).

Finland's success in the development of its National System of Innovation (NSI) has contributed to its technological pre-eminence and economic growth, making it a global leader in competitiveness.

The Governments of SA, through the Department of Science and Technology, and Finland, through the Embassy of Finland in Pretoria have jointly launched a cooperation framework with the overall objective of strengthening the SANSI.

The 30-month COFISA programme will focus on capacity development of key stakeholders and knowledge transfer between the first and second economy. However, a critical focus of COFISA will be on provincial and local government level innovation challenges, in particular in Gauteng, Western Cape and Eastern Cape, providing appropriate policy advice and identifying a range of strategic interventions to address these challenges, drawing on Finland's experience in innovation, science and technology.

COFISA will also seek to foster a spirit of collaboration between national public agencies, provincial/municipal level government, the private sector, and academia in order to generate sustainable economic growth and employment.

OBJECTIVE

The *overall objective* of the COFISA Programme is:

Enhanced effectiveness of the South African National System of Innovation contributing to economic growth and poverty alleviation.

This objective has been derived from South Africa's National Research and Development Strategy which gives expression to the national goals of economic development, the improvement of the quality of life for all citizens, and in particular the three strategic objectives:

- Achieving mastery of technological change in the South African economy and society (Innovation)
- Increasing investment in South Africa's science base (Human Capital and Transformation)
- Creating an effective government science and technology system (Alignment and Delivery)

CHALLENGES FACING THE SANSI

COFISA will attempt to address key problems prevalent in the SANSI:

National level deficiencies in understanding the workings of the SANSI and its necessary evolution:

- Lack of foresighting capabilities at national and provincial levels.
- Lack of a shared understanding between SANSI stakeholders as to the roles, operation and interactions of SANSI components.

Insufficiently developed provincial systems of innovation that are poorly integrated with the SANSI:

- Lack of provincial innovation mechanisms such as science parks.
- Poor communication and collaboration between national and local levels.

Lack of realisation of the potential of S&T and innovation to address issues in rural and impoverished communities:

- Lack of connection between the first and second economies.
- Lack of the application of S&T and innovation to poverty issues.

Insufficient regional collaboration in knowledge transfer concerning innovation systems in Sub-Saharan Africa.

FOUR-TIER APPROACH

To achieve its overall objective and purpose, COFISA has been designed around four interdependent components.

Component 1: Enhancement of the SANSI at the national level

Component 2: Province-level implementation of the SANSI

Component 3: Piloting of mechanisms for rural innovation as integral components of the SANSI

Component 4: Stimulating knowledge sharing about innovation in sub-Saharan Africa