



**I3E**  
*South East Europe TCP*

## Best Practice Report

***NORDITE Programme***

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## Good Practice Report

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0.1	Creation of document	ISI	17.11.2010
0.2	Contribution	UoM	20. 1. 2011

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

Final approval	Name	Partner
Reviewer		

## 1. Best Practice Title

# NORDITE Programme

## 2. Location of Best Practice

*Country, region, town*

Sweden, Norway, Finland

## 3. Best Practice Executive Summary

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

NORDITE programme for funding of research in the area of embedded systems is being issued on behalf of VINNOVA Sweden, the Research Council of Norway and Tekes, Finland. The programme is designed to promote increased co-operative research in the fields of technology development for shortwave radio, wireless sensors, short range wireless networks and RFID or MEMS utilizing RF technology and to assist Swedish, Norwegian and Finnish research institutes and companies to further develop and demonstrate their technical expertise in that area. It had been realised in a form of two calls for projects funded by national funds in the sum of app. 15 million EURO.

NORDITE programme was running from 2005 to 2010. Results have been presented in yearly conferences. In November 2009, the final NORDITE2 Conference was held in Helsinki, Finland. It was organised by Tekes, VINNOVA, and RCN. In the conference, NORDITE2 projects were presented. With this event, the NORDITE initiative was successfully concluded.

## 4. Best Practice Classification

### Best Practice Theme

*X Research Transformed to Innovative Product*

*Research Transformed to Innovative Service*

*Research Transformed to Innovative Methodology*

*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)*



NORDITE initiative was started by VINNOVA, Sweden, The Research Council of Norway (RCN) and Tekes, the Finnish Funding Agency for Technology and Innovation. The goal was to facilitate co-operation in the fields of technology development for shortwave radio, wireless sensors, short range wireless networks and RFID or MEMS utilizing RF technology and to consolidate technological and economic development opportunities between Sweden, Norway and Finland.

#### 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)*

The NORDITE programme is a research funding policy.

The programme addressed industry, research institutions and universities. Only research groups from universities and research institutes from Sweden, Norway and Finland were eligible to submit the project proposal, although partners from abroad could participate if needed in the projects in a form of international collaboration of Scandinavian members. The groups had to be able to demonstrate their capabilities for the project. Applications, which did not belong to the above-specified focus areas, were not accepted.

The programme was implemented in a form of two calls for proposals for funding of joint projects of industrial and academic partners from at least two, preferably three countries. The projects are first funded for three years and, if successful, prolonged in the second part for the next three years. Results were presented yearly from 2007 until 2010 in joint conferences.

All results from the research projects had to be made publicly available on open project web sites.

### 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)*

VINNOVA, RCN and Tekes expected that participants from all countries would find it profitable to work together on issues of common interest and that meaningful collaboration and business opportunities may result from this joint venture. Based on identified fields of common interest in the participating countries, from the response on the joint NORDITE invitation for Expressions of Interest (EOI), VINNOVA, RCN and Tekes have defined the areas below for cooperation in projects and activities. The goal was to develop technology for the following areas:

- SW radio
- Wireless sensors
- Short range wireless networks (a few hundred meter)
- RFID or MEMS utilizing RF technology

While the list itself is general, proposals were supposed to be specific in terms of objectives, methodology and deliverables as well as market potential. A proposal could address more than one technology area, if there was an obvious linkage in terms of data, location, or user needs. The research should have been motivated and guided by companies, which participated actively in the project steering group.

### 5.2 Objectives

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

The main goal of the project was to foster the research and development in the three Scandinavian countries and to consolidate technological and economic development opportunities between Sweden, Norway and Finland by supporting Swedish, Norwegian and Finnish research institutes and universities in their effort to develop state-of-the art research in the above-mentioned fields. It was planned to connect Scandinavian industry in the field and to bring them to the leading position..

The countries were before good developed in this domain, some companies even had the leading role (e.g., Nokia). Through the technological and other trends, the area has been identified as a particularly lucrative and of high potential for industrial growth.

### 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)*

In March 2005 a Sweden-Norway-Finland the first call for proposals for research projects for technology development within the fields of SW radio, wireless sensors, short range wireless networks and RFID or MEMS utilizing RF technology was published by VINNOVA, The Research Council of Norway (RCN) and The National Technology Agency of Finland (Tekes). The purpose of the Call for Proposals aimed to solicit project proposals from a team composed of Swedish-Norwegian-Finnish universities and research institutes in beneficial areas for Sweden, Norway and Finland.

The projects were supposed to provide results in form of technology development that can be utilized by Swedish, Norwegian and Finnish companies. Based on a Memorandum of Understanding (MoU),

the idea was to facilitate co-operation in the fields of technology development for SW radio, wireless sensors, short range wireless networks and RFID or MEMS utilizing RF technology and to consolidate technological and economic development opportunities between Sweden, Norway and Finland. The main goal of this initiative is to support Swedish, Norwegian and Finnish research institutes and universities in their effort to develop state-of-the art research in the above-mentioned fields. The research topics defined in this CFP have been defined based on identified fields of common interest in the participating countries from the response on the joint NORDITE invitation for Expressions of Interest (EOI).

Swedish, Norwegian and Finnish teams (research institutes and universities) with expertise in the area of the program were invited to specify research and technology development projects for which they foresee a significant market exists. This market potential should have been confirmed by at least two companies by signing an agreement of participation. At least two representatives from two different companies had to participate in a steering group of the project.

Minimum requirements for the projects were:

- Research groups from two countries, (three preferable)
- A steering group with a steering group manager
- Agreement of participation from at least two representatives from two independent companies from Sweden, Norway or Finland (not necessarily from two countries). The companies' contact persons should participate actively in the project steering group to guide research objectives
- Suitable amount of travelling and guest research stays should have been defined in the project plan and reasonably balanced between countries in the project
- A consortium agreement had to be signed between the participating research institutions in each project
- There shall be one national contact person for each country for each application. The national contact person shall be responsible administrating the national funding of the project
- There should have been a project leader (possible the national contact person) from each country and one of those would also be responsible for the overall project.
- The level of funding by VINNOVA, RCN and Tekes had to be in balance (funding of one source should not be more than twice the funding provided by the sum of the others)
- Only costs accepted by each funding country are eligible, depending on the funding organization
- The projects launched in call 1 were expected to end by 31.12.2007, except ongoing PhD education
- All results from the research projects shall be made publicly available on open project web sites

### ***Technology development***

In order to evaluate technical innovation and challenges, the bidder had to clearly document (with references) any previous work, which demonstrated the technical feasibility of the work proposed. In the case of new technology or applications, studies based on comparable techniques could be cited, along with a discussion of how the anticipated results from the proposed project may differ. At the end of the project the research groups should demonstrate and visualize results and provide an updated utilization plan.

### ***Assessment criteria***

The bidder was to describe in their proposal research targets, linked to the project objectives, which were supposed to be used to assess the success of the project. The project assessment criteria included technical and managerial assessment.

Based on this call, 23 applications were received, among which six have been selected.

## 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 best practice presented in this document deals with a programme, consisting of funded projects dealing with related topic based on wireless and mobile communications.

In the first part of the NORDITE programme, among 23 proposals, six projects were funded:

- **WISA** project: Wireless sensor and actuator networks for measurement and control
- **IntelliSense RFID** project
- **WILATI** project: Wireless Interference-limited High-throughput Access Technologies and Applications
- **SARFA** project: RF MEMS Steerable Antennas for Automotive Radar and Future Wireless Applications
- **CROPS** project: Cross-Layer Optimization in Short-Range Wireless Sensor Networks
- **Printed RFID** project

In the second part (NORDITE2), some projects have been prolonged and some new added:

- **WISA, Phase II.**,
- **MOSART**: MEMS Based Reconfigurable RF Systems for Software Radio, Wireless Sensors MMID,
- **WILATI+**,
- **SARFA**,
- **CROPS, Part 2**

Short contents and presentations of the projects are available on internet.

## 6.2 Project Management

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

Each project was led by a steering group and was supervised by representatives of the funding organisations.

The steering group had to follow the progress in the projects. Representatives from the funding agencies may have attended steering group meetings. Any proposed changes to the scope of the work, etc, were to be discussed with the steering group and reported to the funding agencies, significant changes in objectives or the scope had to be accepted by the funding agencies in advance. A change in the steering group was considered as a significant change in the project. There should have been a project leader from each country and one of those was also responsible for the overall project.

In addition to the progress reports, VINNOVA/RCN/Tekes staff could contact the project leader and the steering group company members to review the progress. This has taken the form of conference calls among the parties.

Reporting of the progress in the projects had to be done according to the rules, which each funding country has. Reporting had to include technical progress, publications, resource consumption, reached milestones and progress in the work packages.

## Good Practice Report

The reports included both financial and technical reporting. The overall project reporting was done three times, in February 2006, in February 2007 and the final report in February 2008. Steering group meetings should have been held at least three times during each year and the meeting minutes should be sent to the funding agency contact persons for follow up. Reporting included technical progress, publications, resource consumption, reached milestones and progress in the work packages.

The overall project was divided into phases, with a series of milestones at critical points in the work. Each milestone shall be qualified with associated tasks to be completed. Payments were to be linked to the milestones and reports.

### 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)*

Two separate calls for proposals were made during the programme, in which projects were selected for funding. The first call for proposals was announced in spring 2005; the second call followed in spring 2007, when those projects already receiving funding have presented the results of the first two years of research and specify new project content in order to apply for a second period of funding. The second call was also open to projects that were not funded from the first call. Each funding agency has funded national part of the overall project, including costs from research exchange.

The project teams formed joint ventures and worked on the projects. Their success was presented and evaluated on conferences.

### 6.4 Project Evaluation

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

The success of the programme has been validated on conferences which were organized yearly between 2007 and 2010. The key conferences were organized in March 2007 and in Helsinki in 2009 as a conclusion of the first and the second phase, respectively.

#### ***NORDITE 1 Conference March 22, 2007-Stockholm-Sweden***

The first call ended with the NORDITE Conference which was held on March 22, 2007-in Stockholm-Sweden. All project members as well as the steering group members were invited to the conference. The conference was held in the centre of Stockholm at the conference centre Norra Latin.

A number of persons not involved in the NORDITE-projects has also been invited, e.g. technical journalists and members from the COSINE-project. Each NORDITE project was expected to be orally presented during the conference. Each project also had the possibility to demonstrate its project result in a poster session in the afternoon, cf. also the attached tentative conference program. The conference ended with a panel discussion. The panel was made up of representatives from the different NORDITE-projects. When preparing for the panel discussion the representatives have been asked to consider questions like:

- Advantages and disadvantages with the NORDITE cooperation.
- What can be learnt from the first call of the NORDITE program?
- Is three enough? Should there be more countries in the cooperation?

## **NORDITE 2**

The first NORDITE2 Conference was organised on 19th of November.2008 in Stockholm and the second on 4th November 2009 in Helsinki, Finland.

## **7. Description of Research team/Institution**

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

The programme was initiated by national funding organisations of Sweden, Finland and Norway: VINNOVA, Sweden, The Research Council of Norway (RCN) and Tekes, the Finnish Funding Agency for Technology and Innovation. Their collaboration was based on a Memorandum of Understanding (MoU). Each organisation has funded partners coming from their own country, but the teams had to be multinational.

Project partners were coming from universities, research institutes and industry.

For a project team, a number of limitations applied. A consortium agreement had to be signed between the participating research institutions in each project. The research groups had to come from two countries, (three preferable). They must have presented agreement of participation from at least two representatives from two independent companies from Sweden, Norway or Finland (not necessarily from two countries). The companies' contact persons should participate actively in the project steering group to guide research objectives.

There should have been a project leader (possibly the national contact person) from each country and one of those was responsible for the overall project.

## **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.)*

Each funding agency has funded the national part of the overall project, including costs from research exchange.

The total funds allocated for NORDITE projects in call 1 were:

Tekes: 2.2 million EUROS RCN: 2.1 million EUROS VINNOVA: 2.2 million EUROS

The expected total funds for NORDITE projects in call 2 were:

Tekes: 3 million EUROS RCN: 2 million EUROS VINNOVA: 3 million EUROS

The level of funding by VINNOVA, RCN and Tekes had to be in balance (funding of one source should not be more than twice the funding provided by the sum of the others). Only costs accepted by each funding country are eligible, depending on the funding organization.

## 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 was transferred. Carefully selected topics covered most important and pervading areas of mobile and embedded applications, together with industrial manufacturing issues.

Another important policy aspect was the fact that project partners had to come from different Scandinavian countries. This way, the cross-fertilisation in the geographic domain was utilized.

Last but not least, through the rule that relatively different partners had to act together, they have learnt 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.)*

Scandinavian companies are already among the leading ones in this area. The intent of the programme is to help them to preserve their position.

The action was supposed to make long lasting connections between the partners and to come out with new products. The project itself and the funding was limited to the time span between 2005 and 2010 and has seized last year.

There is no information whether the joint ventures formed within the projects have survived after the end of the NORDITE programme.

## 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

*Name, address, tel., fax, e-mail, URL*

Tekes

juha.tanskanen@tekes.fi

www.tekes.fi

VINNOVA

ylva.backlund@vinnova.se

www.vinnova.se

Research Council of Norway (RCN)

he@forskningsradet.no

www.forskningsradet.no

### 14. Contact of financial mechanism facilitator

*Name, address, tel., fax, e-mail, URL*

See left.