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# Local strategy papers (Partner 5, FH Stralsund)

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## 0 About this document

The University of Applied Sciences Stralsund fulfils an import part in the Baltic Rural Broadband Project. That is mainly stocktaking of available network hardware and the validation concerning functionality. This documents describes the strategy of the project team, how to successfully participate in the EU project. In addition it should clarify the self-perception of the project team and in which way they want to take part concerning transnationality, exchange of experience and international help.

Therefore the first chapter deals with the general action areas relating of the project. The second is about the actual situation, whereas in the third a complete SWOT-analysis is done. Chapter four and five figure out the short and long term goals of the local project team.

## 1 Action areas

This chapter is about the general action areas which are covered in relation to the complete EU project.

### 1.1 Organisation

Before clarifying *what* is done, it is necessary to give an overview *who* is doing something. Therefore the following list shows, in what groups all members of the local project team are organised. Of course, some members belong to more than one.

#### 1.1.1 *Personal employed at the university*

On the one hand, that are scientific employees like the professors or scientific assistants. On the other hand there are people from the management or administration of the university. In addition any external employees like consultants or assistants for special tasks belong to this group either.

#### 1.1.2 *Institute of Broadband Technology*

This institute was founded 2002 by five professors. The goals are improving research, development and teachings in broadband technology. Therefore there are modern workplaces and a well-equipped laboratory. In addition the institute keeps a close cooperation with the Siemens AG at Greifswald. As a result newest hardware and technology is provided which allows state-of-the-art research and teaching.

The main focusses of the work at the Institute of Broadband Technology are

- DWDM (optical transfer mode systems)
- Mobile radio and WLAN

- quality assurance in convergent networks, prototype developing
- Protocols and services in modern networks

### **1.1.3 Steinbeis-Transferzentrum**

#### ***“Projektierung und Evaluierung von Netzwerken Stralsund”***

This Transfer Centre has many competences all around networks. That are for instance:

- EMC-Tests
- Performance analysis
- High speed networks (ATM, Gigabit Ethernet)
- Concepts for security, firewall, cryptographic procedures
- quality assurance, especially prioritisation

### **1.1.4 Students**

As teaching and development is one of the main task of an university there are students who work for the project.

## **1.2 Overview of action areas**

In the last four years many activities had taken place, which are very similar to the things done in the Baltic Broadband Project. The Institute of Broadband Technology for instance developed innovative mechanisms for realising the last mile and validates them by prototypes. In this way they are able to proof the feasibility of new techniques, which is much valued by many national and international telecommunication companies, who take advantage of their work. As a result they gained a lot of experience in a field, which carries the most problems in connecting rural areas.

The Steinbeis-Transferzentrum for network under the leadership of Prof. Dr. Bernhard Stütz, who is local project leader and responsible for workpackage 2, gained a very good international reputation for the results of the constant measurements being done there. Hardware like switches and other Ethernet based devices are tested under circumstances which closely emit the conditions of real use. That is possible because of two reasons. On the one hand the personnel working there has thorough knowledge of the technology as well as its real application. Additionally they are able to combine their deep experience with a academic and scientific approach.

On the other hand the Transfer Centre has a measurement equipment on hand which is unique for German universities. For example there are network traffic generating and measurement devices of SPIRENT and Deflector With this equipment it is possible to analyse the most interesting properties of Ethernet devices. This is the implementation of

traffic prioritisation, the behaviour under load and the interaction of them.

## 2 Stocktaking – Present Situation

At the moment there are many hardware measures being performed. That are for instance the WLAN and WiMAX tests which took place in the course of the Baltic Broadband Project. In addition tests of network switches and hardware firewalls produced by well-known companies like Hewlett Packard, SMC or DLink had taken place.

Half year ago The University of Applied Science Stralsund and its competences in the field of network product benchmarks had been fameless at official agencies, companies or the populace of the federal state of Mecklenburg-Vorpommern. This had sometimes lead to the amusing situation, that the results of the Steinbeis Transfer Centre Stralsund were better known at international expert groups than they attract local awareness. But this had extremely changed. A lot of publication for the project was generated by the Regional Broadband Conference held in October 2006 and its following reports on TV and radio. In a addition there was a secondary report about the work of the Steinbeis Transfer Centre and its collaborating teamwork with Baltic Rural Broadband Project. There had been many articles in all kind of press, from the or the university's organ over the local newspaper to the professional expert magazine "network computing". Now even citizens' action committees engage themselves with the topic of rural broadband supply.

As a result there are tests planned with the public utility company of Neubrandenburg. They will include indoor and outdoor measurements of WiMax hardware using the 3.5GHz band.

## **3 SWOT-analyses**

### **3.1 Strengths**

As already described all project participants together have extensive knowledge and a wealth of experience in measuring network devices. As the design and execution of test cases had been done constantly, the unique equipment of hardware for analysing and measurement get its money worth.

Very important is the fact, that both, wireless and wire based components are tested. Wire based devices like switches, routers, hardware firewalls and VPN-gateways together usually build the framework, in which wireless technology is applied. As a network needs to be understood as a complete system, it is important that not only each part operates in the given specifications. It is essential to ensure that all devices work truly together.

In addition at a university of applied science new researches with a focus on the direct practical application always take place. That are for instance the ongoing further developments done by professors or just the great amount of dissertations wrote by students.

### **3.2 Weaknesses**

Compared to wire based technology the wireless progression is rather new. Therefore most of the experience is a result of dealing with the wire based one. During some test cases missing knowledge or experience became obvious, like the functionality of special operation modes.

### **3.3 How strengths outweigh weaknesses**

Although most of the experience is a result of dealing with the wire based technology the tested features like prioritisation are in principle the same. This knowledge is transferable to wireless network technology, which is proofed by the measurements done in 2005.

But the most important aspect, is that the focus is not on the wireless technology itself. The local project group thinks about true wireless solutions where always wire based components take part. Wireless components are never used alone, it is the complete context which needs to be analysed. Therefore the local project team at the University of Applied Science Stralsund is capable of the needed knowledge, experience and technical equipment to provide a suitable estimation.

### 3.4 Opportunities

The local project team has the unique chance to spread out their knowledge and experience to all European project member being interested in the help of the Stralsunder partner. They can support many network projects and perform measurements of the devices just needed. In addition they are able to support others with the publication of their own device measurement results providing informations about the behaviour in the test case environment.

As the project members at the University of Applied Science Stralsund are capable of the man power, knowledge, experience and the mobile equipment they are even able to visit others and performing measurements on the spot, assuming a prior consultation or date agreement.

### 3.5 Threads

Because the standards of WLAN and WiMAX change rapidly, hardware with new features is often not available at the market, which leads to aggravating circumstances.

The measurements results are presented in a scientific way, providing just the information which could be concluded. There is no popular conditioning like a “winner” or honour symbols for products being the best one in a special category. Nowadays this might be a problem, because people are accustomed by less scientific media, that information is more visualized. But this kind of information is not and cannot be delivered in such a field of tests. Actually there even will be no buy recommendation, because the decision for the right product strongly depends on the requirements of the network.

### 3.6 How opportunities overcome threads

In the last months the situation of WiMAX hardware changed, because step by step the a WiMAX standard is developed and the manufacturers supporting it become certified. This cleans up the market and simplifies the development of test cases, because the standard clarifies, which features are necessary and which are just optional. This process is still on the move but there are many achievements and there will be more in the near future.

Its the same with new WLAN standards like the a-standard which is implemented on more and more devices on the market.

Of course there will always be new technologies and features, but as the people working at the Institute of Broadband Technology and the Steinbeis Transfer Centre for networks are experienced in handling them they are able to deal with the resulting problems.

The locale project members always seek for conversation with others being interested in their work. They quickly react on enquiries of people having questions. Measurement is understood as a service and therefore communication is an essential part of it. People interested in special measurements for them are treated as customers, so test cases are planned with the customers and results are discussed and explained. As a consequence the scientific work and outcome or the missing general buy recommendation should be understood without any disadvantages for the work group at Stralsund.

## 4 Short term goals

The local project team got some enquiries for network measurements. That is for instance the public utility company of Neubrandenburg. As WiMAX tests and broad WLAN measurements had been applied, the following and actual publicity makes it for more hardware manufacturers interesting to participate in more tests. Bjarke Nielsen, a broadband project member from Djursland, Denmark, asked for the measurement of two WLAN-Routers he brought along the workshop held on October the 10<sup>th</sup> in Stralsund.

The goal of the local project team is to handle all enquiries in a suitable way, so that all parties involved are satisfied. They want to share their knowledge with all people being interested in, supporting international enquirers in a transnational way.

Another goal is to broaden the experiences made with the wireless technology in order to reside as a competence carrier for broadband networks.

During the second term of 2006 and the first of 2007 the local project team will use the actual publicity to publicise the results of the tests done so far.

## 5 Vision

A positive side effect of the Baltic Rural Broadband Project is, that many forces which went already in the same directions, were united. As a result, measurements could be done with a team of high calibre individuals, capable of deep knowledge and thorough experiences.

The vision is, that new high aims in future are kept achieved as before. That means that the project members furthermore successfully support people building up networks by performing measurements of network devices. The aim is to deliver and publicise new technology's key information to all being interested in. That could be done, for instance, for all European project partners in a transnational way, even beyond the duration of the project.