



BalticOpen.Net, Project Plan Version 1.1  
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# Project Plan

# BalticOpen.Net



Communication System Design 2004

Version 1.1, revised 2004-03-13

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## Introduction

The introduction will give the reader a short description about the background of the project and explain some of the terminology that will be used. This is to simplify the reading of the project plan.

### 1.1 Background

The project BalticOpen.net is part of the course in Communication System Design held by the Department of Microelectronics and Information Technology at the Royal Institute of Technology (KTH) in Stockholm. This is a course that gathers students from a lot of different programs at KTH as well as student with different backgrounds and nationalities. The course is held during spring 2004 and is a popular choice for graduate students.

Last year a project with a similar goal and with the same name as this year's project were run. However the results were not as good as many hoped. Obviously, this year's project in many cases has to deal with the same problems as they dealt with last year. However, many of the external factors have changed and the project team is determined to succeed.

### 1.2 Terminology

#### 1.2.1 iSpace

iSpace is the joint project between KTH and Stanford University with the goal to create an international network of usable interactive environments for collaborative, project-driven learning and working. The iSpace is for example used for a joint course in entrepreneurship with students from both KTH and Stanford held each year during late falls.

#### 1.2.2 iLounge

The iSpace can be used in special designed rooms and at KTH in Kista this room is called iLounge. The room will work as a model for the room that will be implemented at Ventspils University College.

#### 1.2.3 VentspilsOpen

This is a project that runs in parallel with BalticOpen.net. The goal of that project is to establish an open network that eventually will connect to the StockholmOpen ([www.stockholmopen.net](http://www.stockholmopen.net)) in Stockholm.

### 1.3 Disclaimer

The complexity of this project with many uncertainties and external factors that yet haven't been identified by neither the Principal nor the project team call for a project plan that is flexible with many potential outcomes. The reader needs to keep this in mind while studying the report.



## 2 Goal

First the overall goal will be presented and thereafter the specified goals for the two different parts of the project will be identified.

### 2.1 Overall Goal

The main goal with BalticOpen.Net is to *enable for and arrange an event in the first week of May that will demonstrate an interactive workspace between Ventspils University College (VeA) and The Royal Institute of Technology (KTH)*. After this demonstration there will be a good platform for increasing the collaboration between the two universities. This will enable VeA to extend their internationalization as they will become part of an international network consisting of multiple universities. It will also be an excellent opportunity for the Latvian students and researchers to reach out to a greater audience as well as exchange knowledge and experiences with educational institutions outside Latvia. Further, KTH will extend the use of iSpace and will be involved in advanced communication technology with a potential break through and showcase regarding the use of new equipment and technical solutions that could change the fiber optic market. The project is also of importance since Latvia during the time of the project will become part of the European Union. This gives even more incitements for KTH and Sweden because they have interest in extending their relations with the new members. It will also be a step in VeA's and Latvia's work with becoming a part of and getting involved in the Union.

However in order to reach the goal there are a lot of circumstances and tasks that needs to be fulfilled. This leads us to break down the overall goal to two less extensive but manageable goals after which the project organization will be structured. The goals are the following:

- Establish a high speed direct link between KTH and VeA.
- Implementing an interactive workspace at VeA.

### 2.2 Specified Goals

#### 2.2.1 Link

The goal is to *establish a direct link between KTH and VeA using the existing fiber pair that is available between Fårösund in the north of Gotland (an island outside Sweden's east coast) and Ventspils in Latvia*. This is preferably done with the use of cutting edge, but cheap, equipment with potential to gain acknowledgement and become a showcase for stakeholders involved.

Even if there is an available fiber pair between the two points in Latvia and Gotland there are a lot of obstacles regarding the direct link that complicates the task. iSpace requires at least 1 Mbps but preferably 30 Mbps so there is a demand for high capacity in the link. Then there are potential problems regarding all the different stretches of the link; as an example there are currently no connection between VeA and the fiber link that comes to Latvia. These are some of the factors that lead iBaltNet2 to further break down the goal into smaller sub goals which will be specified further under the "Project Part Specifications and Methodology" (page 9). For the project team this means that the project will be considered a success even if just some parts of the link will be working at the end of the project period and if just some of the sub goals will be reached.

#### 2.2.2 iSpace

The goal is to *establish an interactive workspace that within the restricted budget and with the given conditions meets all the demands*. This interactive workspace will then be used in the event (presenting the interactive workspace) in May that will show the high quality communication that will be provided between VeA and KTH.

Though, there are problems that need to be considered. One of them is that the goal depends on the Link between KTH and VeA and therefore needs to be adjusted to the results of that part of the project. These



dependencies will be discussed further under “Risk Analysis” (page 15) and the specification of the tasks with iSpace will be examined under “Project Part Specifications and Methodology” (page 12).

## 3 Organization

The project organization is build up of a project group consisting of members that take the CSD2004 course, the Coaching team and the Principals. The project group is then further divided into one sub-group working with the interactive workspace, called “iSpace”, and another group working with the establishment of the link called “Link”. Under the organization section the reporting routines and time management also will be brought up.

### 3.1 Project Group

This part gives a short description of some of the responsibilities that each group member holds. For a total list of responsibilities, turn to the Gantt Chart in the appendix.

#### 3.1.1 Project Manager (PM)

##### **Andreas Stenbäck, [stenback@kth.se](mailto:stenback@kth.se), 16 credits (2G1712)**

Andreas is the Project Manager of the project and also have the administrative responsibilities. He is in charge of the main part of the documentation like the project plan and the final report as well as the presentations during the project life. He is also a member of the Link team.

#### 3.1.2 Link Team

##### **Urban Eriksson, [urban@ueteknik.se](mailto:urban@ueteknik.se), 10 credits (2G1319)**

Urban is responsible for the Link team in the project. This for example involves responsibility for any trips undertaken by the Link team. Urban is also going to have part of the responsibility for the final presentation.

##### **Jonas Jolhammar, [jjo@kth.se](mailto:jjo@kth.se), 10 credits (2G1319)**

Jonas is a member of the Link team and will focus entirely on the results of this part of the project. Jonas is responsible for the license regarding the radio link and the in-depth study of the equipment to be used for the fiber link.

**Andreas Stenbäck, PM, is also part of this team.**

#### 3.1.3 iSpace Team

##### **Darwis Darwis, [iw03\\_dda@it.kth.se](mailto:iw03_dda@it.kth.se), 20 credits (2G1713)**

Darwis is responsible for the iSpace team and is also the co-leader of the project. He is in charge of the iSpace group’s trip to VeA as well as the set up and evaluation at place. He has created the static part of the website and helped with its dynamic part. Finally he is responsible for organizing the final exhibition.

##### **Elena de Castro Díaz-Plaza, [ELENADECASTRO@teleline.es](mailto:ELENADECASTRO@teleline.es), 20 credits (2G1713)**

Elena has upgraded the static part of the webpage and has developed its dynamic part. Elena is Webmaster and therefore throughout the project responsible for updating the homepage. She is also a member of the iSpace part of the project group. Elena is finally responsible for the press release at the end of the project.



### **Amos Nungu, iw03\_amn@it.kth.se, 20 credits (2G1713)**

Amos will work with the iSpace part of the project. He is responsible for the extensive testing of the interactive workspace in Sweden before the trip to Ventspils. He is also responsible for the short video which is one of the project's deliverables.

### **3.1.4 Relations and Resource for both teams regarding Latvia**

#### **Gints Neimanis, gints@venta.lv, 10 credits (2G1319)**

Gints is a system administrator at VeA and will during the first two month of the project be stationed in Sweden. He will work with the Latvian parts of the project which basically include the radio link between Ventspils Nafta and VeA as well as the iSpace at VeA. He will work as support for both the iSpace and Link team in the project.

## **3.2 Coach and Co-Coaches**

#### **Sermed Al-abbasi, sermed@imit.kth.se, Coach**

Sermed is the coach of the project and will therefore work as support and mentor for the project group. His role is to coach the project whenever necessary and he was also coach for the end of the project BalticOpen.net 2003.

#### **Ulf Jennehag, Ulf.Jennehag@mh.se, Co-coach**

Ulf is co-coach and will assist Sermed in his work with supporting the project. Ulf is situated at Mid-Sweden University in Sundsvall.

#### **Gigu Mathew, iw02\_gza@it.kth.se, Co-coach**

Gigu was a member of the project BalticOpen.net 2003 and therefore has severe insight in the project situation. He is also a part of this year's VentspilsOpen, a project with which this years BalticOpen needs to coordinate.

## **3.3 Principal**

#### **Björn Pehrson, bjorn@it.kth.se, Principal**

Björn is one of the principals of the project and is involved in much of the negotiations with third parties interest in the fiber link. Björn is also part of the teaching team for the course CSD 2004 and is a professor at the Department of Microelectronics and Information Technology in Kista.

#### **Aivars Zeimitis, zemitis@venta.lv, Principal**

Aivars is the representative principal from VeA. He is dean for the Faculty of Economics and Management. He is interested in the project while it will internationalize VeA and improve the possibilities for studies and research at VeA.

## **3.4 Reporting**

Meetings with the whole project team will be held at least bi-weekly. These meetings will be under the responsibility of the PM and he is responsible of sending out the agenda at least one day in advance. MOM:s will be produced. Mandatory points on the agenda should be:

- Oral report from iSpace and Link teams. These should include presentation of the project parts regarding time and resources
- Deliverables status
- Review of the risk analysis
- Lessons learned



Meetings with the Principal and Coaching team will be held at least every second week. The responsible person from the project group is the PM who arranges the meetings with the steering group. MOM:s will be produced from these meetings. Mandatory points on the agenda should be:

- Oral report of BalticOpen.net progress and status in response to time-schedule and resources
- Deliverables status
- Request of changes in project plan, schedule, goal.

MOM:s will be posted after each meeting on the internal part of the project website.

PM will also compile bi-weekly progress reports that will be shared with the steering group (Principal and Coaching team) and uploaded on the internal part of the homepage. The first progress report will be available on the 13<sup>th</sup> of February 2004 and the last the 7<sup>th</sup> of May 2004.

### 3.5 Time Management

Individual time will be reported with the help of the report scheme "Time Management Report" (see appendix). The time will be reported in mh (man-hours) and with accuracy up to a quarter of a mh. Weekly reports will be emailed to the PM who files them. They will be evaluated at the end of each month.

## 4 Deliverables

The deliverables are divided into external and internal deliverables. This part will give a short description of each one of them.

### 4.1 External Deliverables

The external deliverables will be posted on the official part of the homepage and are subject to the time plan specified by the teaching team of CSD 2004. The following deliverables are considered external:

- Project plan  
This plan should be posted on the project website, latest at the 6<sup>th</sup> of February. This is a document that should be finalized according to the criteria specified on the CSD course homepage. This document shall further work as a guideline for the project work.
- A mid-term presentation  
This presentation will be held the 22<sup>nd</sup> of March. The purpose is to inform the teaching team as well as the other students within the same cluster in the course CSD2004 about how the project work is progressing and give them updated information regarding the project.
- Final report  
This is the extensive report that is due on the 14<sup>th</sup> of May. This report will describe the whole project with focus on the results that were reached.
- Final oral presentation  
This is held the 24<sup>th</sup> or 25<sup>th</sup> of May and it should in 30 minutes conclude the project with focus on the results. This presentation should be based on the outcome specified in the final report.
- Video  
This deliverable should be a short Video production explaining the project. The production should be finalized by the 18<sup>th</sup> of May.
- Press Release  
This deliverable is a press release that is due the 19<sup>th</sup> of May.



- Final exhibition  
This is an exhibition held at Electrum Atrium in Kista. It is held the 27<sup>th</sup> of May and the purpose is to give the principals and other interested persons an opportunity to learn about the project as well as discuss it with the project group.
- Lessons Learned paper, including Individual Contribution Papers from all group members individually  
This is due at the 28<sup>th</sup> of May and the purpose is to get the project members to think back and learn about and evaluate some of the issues that had been handled. It is also a tool for the teaching staff of CSD to learn about what the students have learned and what they might need more help dealing with.
- Event demonstrating the interactive workspace  
An event demonstrating the results of the project and the success of reaching the goals. The format of this event hasn't yet been specified but the aim should be to attract some interest from media and/or stakeholders within the business. The demonstration will be held in the first week of May.

The deliverables will be finalized as specified in the “Gantt Chart” (see enclosure).

## 4.2 Internal Deliverables

Internal deliverables are documents and tasks that are used to keep the project on schedule. They are also used as recourses to simplify the project management work. The deliverables include:

- MOM:s  
The purpose is to conclude the meetings and the outcome of those. These documents will give the members who didn't attend the meeting a chance to get updated and the project team the possibility to go back and use it for information purpose.
- Progress reports  
The progress reports are supposed to inform the steering group about how the project is progressing. It will also work as a motivator for the project group. The document will be put on the internal homepage every second week.
- iSpace midterm report  
This is a report that will be used for the midterm presentation. This will conclude the work with the iSpace from the start to mid March. It is due at the 17<sup>th</sup> of March.
- Link midterm report  
This is a report that will be used for the midterm presentation. This will conclude the work with the Link from the start to mid March. It is due at the 17<sup>th</sup> of March.
- iSpace team report  
This is a report describing the iSpace team's work and results. This is due the 6<sup>th</sup> of May. This report will be used while completing the Final Report.
- Link team report  
This is a report describing the Link team's work and results. This is due the 6<sup>th</sup> of May. This report will be used while completing the Final Report.
- Weekly time management reports  
This is documents supporting the time management issue. While different persons within the project have planned to put different amount of time into the project this needs to be evaluated.

The deliverables will be finalized as specified in the “Gantt Chart” (page 21).

## 5 Detailed Project Plan Specification and Methodology

This section will in greater depth identify the two components of the project. First the Link will be discussed and there will be a presentation of the different options the Link team has and about which methodology that will be used. After that the iSpace component of the project goal will be explained in the same way. Finally the document handling process will be presented.

### 5.1 Link

The Link part of the project can be visualized with the help of figure 1.0 illustrated below.

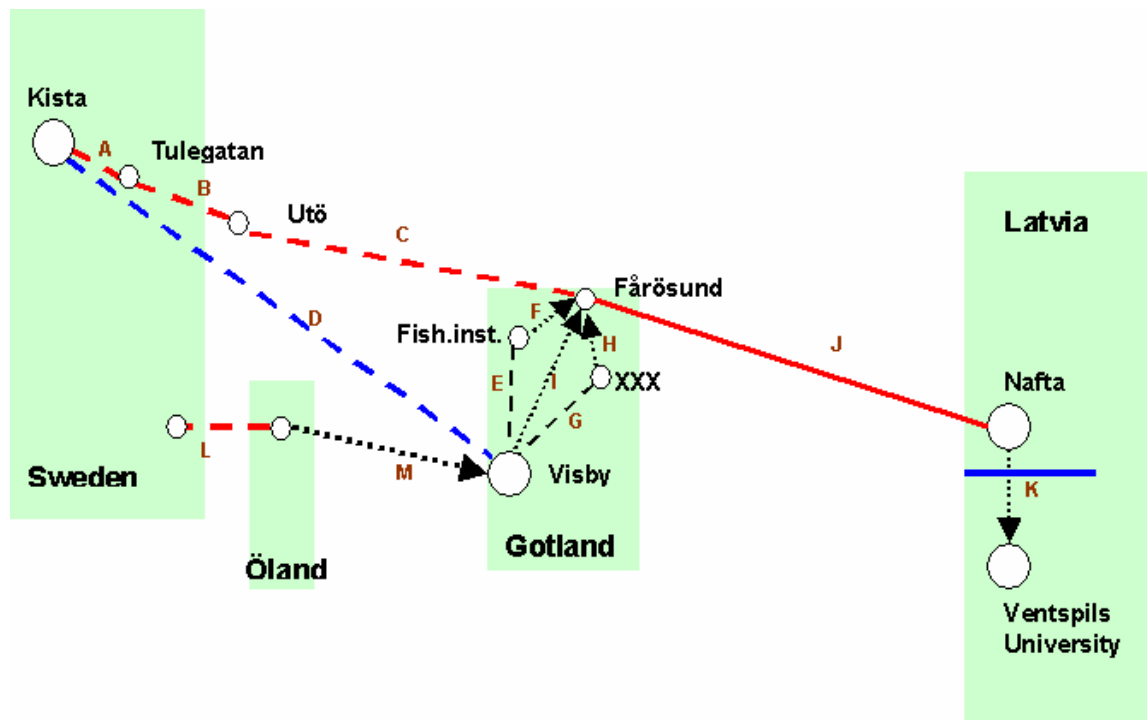


Fig. 1.0

The letters in the figure represent links that will now be explained further.

iBaltNet2 has chosen to divide this task into three parts. The first part is the link from VeA to Ventspils Nafta and this is represented by the letter K. The second part is the stretch from Ventspils Nafta to Fårösund which is the link J. The last stretch is from Fårösund to Kista. This is the links A, B, C, D, E, F, G, H, I, L and M.

#### 5.1.1 Stretch 1 (VeA to Nafta)

There is at the moment no link between VeA and Ventspils Nafta (this is the place where the black fiber pair to Gotland and Fårösund starts). There are several options on how to solve this problem and the best solution would be a fiber cable. This option, however, is too expensive and the cost could reach 130 000 Ls which is approximately 1.7 M SEK (this according to Gints Neimanis, System Administrator at VeA and part of iBaltNet2). Another option is to connect the two points with the help of a radio link. iBaltNet2 has done some research regarding that matter and the costs would be remarkably lower. The distance, which needs to be examined further, is approximately 8 km. The research on the manufacturers



of radio equipment ([www.mikrotik.com](http://www.mikrotik.com) and [www.saftehnika.com](http://www.saftehnika.com)) shows that equipment based on 802.11a standard costs from US \$ 1300 plus tax and more and the capacity is from 17 to 34 Mbps. This should and will however be examined further during the start of the project. There is a great chance of the radio link becoming the bottleneck of the link between VeA and KTH. The equipment used is therefore of extraordinary importance.

The last aspect regarding this part of the link is that in order to install a radio link it might be necessary to apply for a license from LTSI (Latvia Telecommunication State Inspection). This will be examined within the project.

#### **Activities corresponding to Stretch 1:**

- Examine different options of radio equipment
- Find out if a license is needed for the radio link and if so, apply for one

#### **5.1.2 Stretch 2 (Nafta to Fårösund)**

This is the stretch from Ventspils Nafta to Fårösund on Gotland. The industrial syndicate Hulvent is the owner of a fiber between these two points and there is an existing agreement that a fiber pair can be used by KTH and VeA for education and research purposes for up to two years. The projects mission is to use this existing link but this however involves a problem in that it is still dark.

Therefore transmission equipment is needed and there are ongoing negotiations with Ericsson regarding this matter. The current status of the negotiations with Ericsson is that they have showed severe interest in lending Ethernet Gigabit transmission equipment to the project in order to try to establish a connection. The negotiations and work regarding this is now internal on Ericsson and the project group is waiting for a report regarding the progress. It is part of the BalticOpen.net's goal to support Principal Björn Pehrson in the continuing negotiations with Ericsson.

Under this stretch it is also the case that the length of the fiber probably is on the limit for what Ethernet Gigabit equipment of today can handle. This could be used when negotiating with manufacturers or other potential stakeholders because the link could be used as a showcase for cheaper solutions than the ones used today. iBaltNet2 has done very limited research on the topic but after discussions with initiated persons at Banverket and Nortel Networks there are believes that such equipment is available today. If succeeding to use Ethernet Gigabit equipment on the link it could result in publicity and this would certainly gain interest and goodwill to the project. This is something that the project group will keep in mind while working with this task.

#### **Activities corresponding to Stretch 2:**

- Support negotiations with Ericsson
- Do parallel studies about suitable transmission equipment for the 175 km long stretch between Ventspils Nafta and Fårösund, Gotland

#### **5.1.3 Stretch 3 (Fårösund to Kista)**

As can be seen in figure 1.0 there are several options how to establish this link between Fårösund and Kista and these needs to be examined further. iBaltNet2 have ranked the options in decreasing order and priority.

#### **Alternative 1 (C-B-A)**

The best solution in this part would be that the negotiations with Stokab are resulting in that the project gets its own fiber pair between Tulegatan and Fårösund. That will lead to a Giga Bit connection from Kista to Ventspils Nafta. However, even if Stokab agree on lending the project a fiber pair there is still no transmission equipment for the fiber. This could possibly be solved if negotiations with for example Ericsson turns out well.



### **Alternative 2 (C-B-A)**

Another good option is to use the working connection that Labs2 has between Kista and Fårösund. Labs2 is already renting a couple of fibers from Stokab but the question is if the project can borrow capacity from them. An obstacle is that Labs2 don't want to reveal when they will have a working link that could be lend out. This might be a sign of that their work with the link is delayed. Alternative 2 will as in alternative 1 lead to a fast connection but probably not in a Giga Bit speed.

### **Alternative 3 (I-D)**

This alternative is to use SUNET's connection to the university in Visby and then rent capacity from Gotlands Kommuns fiber between Fårösund and Visby. The SUNET connections capacity is after a short study (done by Björn Pehrson) defined to be rather high and a Giga Bit connection could be the case. The problem here is that we don't know if we can combine SUNET with Gotlands Kommuns Internet connection and if any of the parts are interested in such an agreement.

### **Alternative 4 (F-E-D)**

Another similar option to alternative 3 is to use the connection between Visby and the Fishing institute (<http://mainweb.hgo.se/Inst/Forskning.nsf/dokument/FEBEC2F239526CF2C1256E28003E7DD1!OpenDocument>) that Visby University College has in Fårösund instead of Gotlands Kommuns connection. However, problems remain as we don't know the speed of the connection as well as we might have to use a radio link from the Fishing institute to our fiber in Fårösund.

### **Alternative 5 (H-G-D)**

This alternative is also dependent on a link from Visby to the mainland so regarding that issue it is the same as the case above. This alternative however uses an existing commercial link between Visby and a Village near Fårösund but the possibilities of lending bandwidth have to be further examined. Also here we might need a radio link to get all the way to the fiber between Fårösund and Ventspils Nafta.

### **Alternative 6 (M-L instead of D)**

In this alternative the team will investigate the possibility of having another solution from Visby to the mainland than the one using SUNET. During a meeting with Anders Comstedt the link over Öland was introduced.

For each of the alternative above especially cost and performance factors needs to be investigated and considered.

### **Activities corresponding to Stretch 3:**

- Take contact with stakeholders such as Stokab and Labs2 in order to investigate the possibilities of using their link between Utö (where we will connect to the link to Kista) and Fårösund.
- Investigate if it is possible to connect from Visby to Swedish mainland
- Contact with fishing research center
- Possibilities of using commercial network on Gotland

### **5.1.4 Agreement**

Of great interest for the project is that there exists a three-sided agreement between Ventspils City Council (<http://www.ventspils.lv>), Hulvent AB and Foco 16 Latvia. This agreement needs to be examined in greater depth but the basic meaning is that Foco 16 Latvia has agreed to help financing the link between Kista and VeA with up to 21 000 euro. The project group also has to take into consideration that after the 1<sup>st</sup> of May 2004 the Ventspils City Council can break this agreement so it is desirable that the link is up and working by then. This is something that iBaltNet2 will work for and the project BalticOpen.Net has it as one of its sub goals.



### Activities corresponding to the Agreement:

- Study the agreement between KTH/VeA, Hulvent and Foco 16 Latvia regarding the financial help with transmission and radio link equipment.

## 5.2 iSpace

This is the other component of the project goal and the aim here is to create an interactive workspace at VeA that at least will have some of the functionalities that the iSpace between KTH and Stanford University has. This workspace however is heavily dependent on the speed of the link between VeA and KTH and therefore this part of the project must be adjusted to the development of the Link team results and progresses with the project. The best scenario is that the BalticOpen.Net comes up with a high speed solution that allows the interactive workspace to use many demanding features. The worst case scenario is some kind of conferencing system with the possibility for upgrading if VeA gets a faster connection.

The most urgent difficulty regarding this part of the project is to come up with a solution that can fit the very limited means that the project group has. The group has been promised at least 25 000 SEK by Principal Björn Pehrson and VeA has assigned 6000 SEK for conference system equipment. This however is not much compared with the multi million SEK iLounge that is the interactive workspace room at KTH in Kista.

Another obstacle that needs to be considered is that VeA today doesn't have any room that can be assigned to the interactive workspace. This will also be taken into consideration by the iSpace team.

VeA however provide some hardware which can be used for realizing the iSpace. The equipment is:

- 2 Video Projectors
- 2 TV Screens, 29"
- 2 Radio Microphones
- 1 Panasonic DV Camera
- 1 VHS Camera
- 2 web cams
- 6 computer speaker
- 2 notebooks with WLAN card
- 1 PC with WLAN card

Due to the budget constraints, we will utilize the use of this hardware. The iBaltNet2 has come up with three preliminary solutions based on this that will work as a framework in the future project work. These alternatives are defined as basic, intermediate and advance solutions and are presented below.

### 5.2.1 Basic Solution

In this solution, iBaltNet2 will design an iLounge providing the video conferencing with minimal interactive possibilities. The video conference will enable VeA to interact with KTH and the iSpace only for group participation.

The required hardware will be:

- 1 PC with 2 Video Cards for the server
- 2 Video Projectors
- 1 DV Camera
- 2 or more Notebooks or PCs as the clients
- Sound equipment (Mixer)
- Microphones

The layout of the room will be as in figure 2.1,

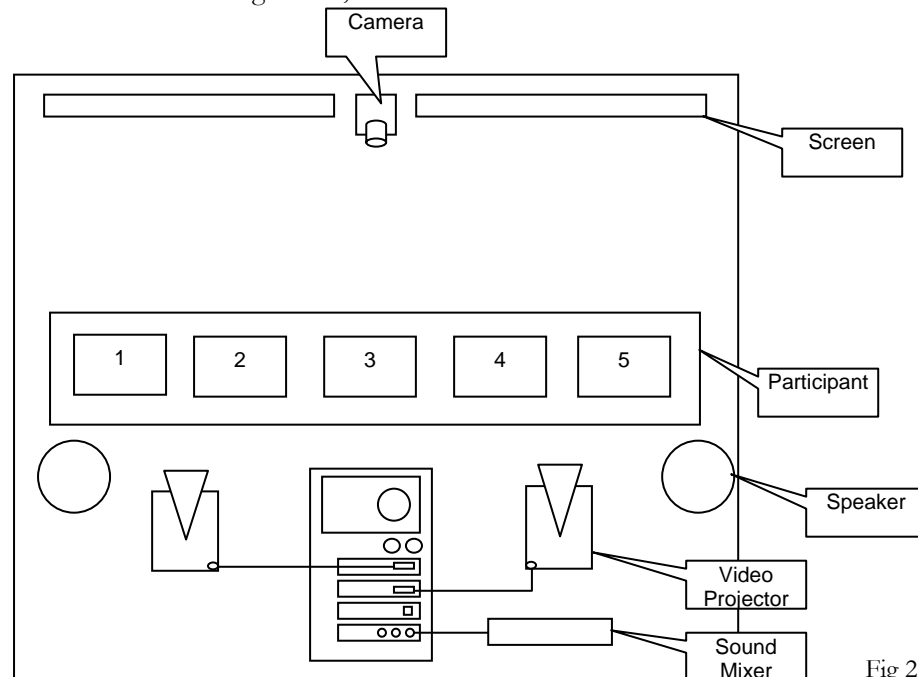


Fig 2.1

This approach will require the smallest budget because most of the hardware is already provided by VeA. As it looks today the only equipment that needs to be purchased is the sound equipment to ensure the quality of the sound. However, this solution will have several drawbacks but only two main disadvantages will be given as examples here:

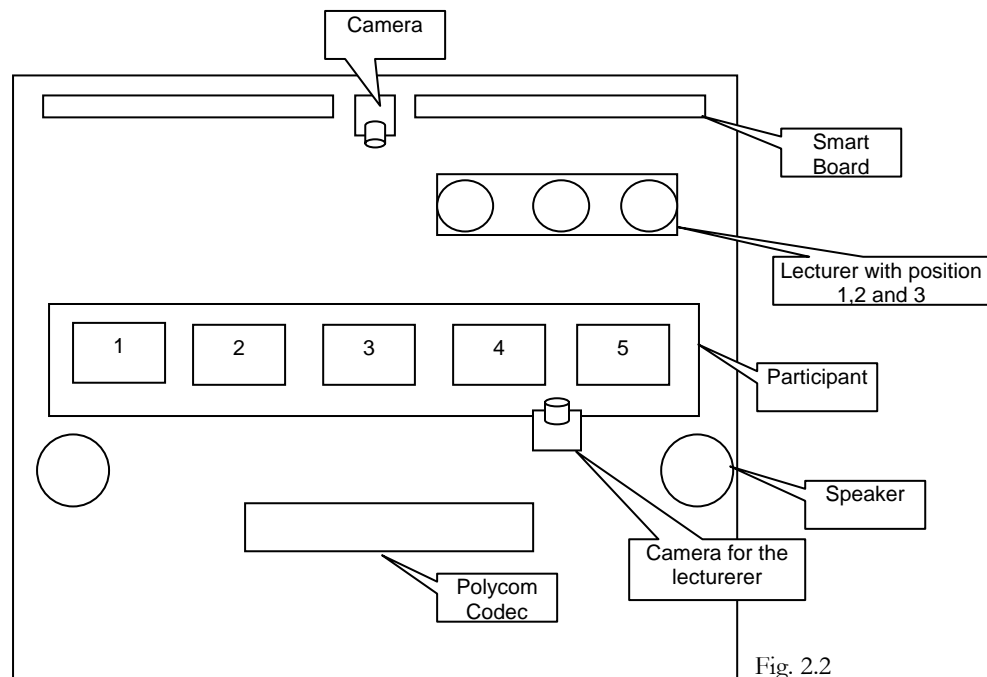
- The lightning in the room might not be sufficient because there are no improvement of existing light
- There will only be one way conferencing, KTH will be the host and VeA will be the participant.

### 5.2.2 Intermediate Solution

In this option, we will try to overcome some of the drawbacks with the basic solution. Here more devices are added to improve the basic solution. Some possible improvements are:

- The room will be designed to better display the video. Here iBaltNet2 will arrange some additional lights in the room to enhance the visual performance.
- Enabling two ways lecture sessions. In the basic approach only KTH could host the session. In this approach, also VeA will be enabled to host the lecture sessions. In order to do this an additional camera, speaker and microphone will be needed. To organize this equipment, iBaltNet2 will use a Polycom Codec. Using this kind of codec, iBaltNet2 can omit the sound mixer because the codec has the ability to produce good sound quality.
- Having the VeA as host requires improvement in the term of interactivity. Therefore, we will use the smart boards instead of the projectors. The size of the smart board will depend on the size of the room. This is an optional choice. It is also possible to still have a room with projectors or TV screens.

The layout of the room will be as in figure 2.2,



### 5.2.3 Advanced Solution

For the advanced solution, iBaltnet2 intend the use of a smart board for the display and applying a video conferencing package from Polycom. The package will include the codec, camera, audio equipment, microphone and wireless keyboard. Some outstanding features from this package are:

- Camera that have the ability to zoom, tilt and pan
- Extended microphone pickup and intelligent automatic camera pointing technology
- The session can now be recorded and stored digitally for future viewing with Digital Conference Recording.

We will also focus on improving the room by adding curtains and adjustable light. The room layout itself will be similar to the one in the intermediate design (See Fig 2.2).

#### Activities responding to iSpace:

- Pre-study of the alternative iSpace rooms.
- Audio & Video Communication (Video Conferencing) study
- Communication Infrastructure (communication between the various devices in the iSpace) study
- Designing a room (stationary or mobile)
- Coordination with VentspilsOpen



### 5.3 Document handling process

The process will contain the following steps and will be used for external deliverables.

1. The document is sent to all group members via e-mail.
2. All group members are obliged to read the document and reply with their opinion.
3. Once everyone agrees, the document can be uploaded to the webpage with version specified.
4. If someone decides to make changes, he/she should ask and write an e-mail describing:
  - 4.1 Document to change
  - 4.2 Author and date of last modification
  - 4.3 Reason for why the document should be changed.
  - 4.4 Modification that he/she would like to do.
5. This application should be replied and approved by the PM and/or the responsible for the specific part of the project team (Urban for the Link team and Darwis for the iSpace team).
6. Once the modification is approved the new document should follow the same steps as the rest (go to step 1).

## 6 Time Plan

See Gantt Chart page 21.

## 7 Activities and Milestones

IBaltNet2 will begin the BalticOpen.Net project with a study phase. During the study phase, all group members will focus on studying the objectives and goals of the project. Each topic to study will result in a written report as an outcome. For the team working with the Link, the study phase will last until the first week of March. For the team working with the iSpace, the study phase will be due the last week in February. At the first week or at the latest the second week of March 2004 the study results will be available at the projects internal web site.

March 2004 will be the month of the realization of the study phase. As we have the list of feasible solutions, we will attempt to apply them. The team working with the Link will probably do a trip to the site (Gotland and/or Ventspils) to observe the landscape in order to get an overview of the situation at place. After obtaining the equipment, the Link team will prepare for the installation.

By the first week of April 2004, the outcome of the iSpace team's work will be ready to be tested. The testing will be divided into two phases. The first phase will test the iSpace by trying to connect the video conference equipment and the notebook, as well as make sure that the video conferencing and iSpace is running well. In the second testing, we will try to connect the video conferencing device, notebook to the iLounge at KTH. After this testing, the iSpace will be implemented at VeA by the iSpace team which will do this on site in Ventspils.

## 8 Risk Analysis

For a good risk analysis, it is important to identify the cases that can appear and slow down the development or change the planned outcome of the project. We have in this section tried to identify the most possible risks. As recommended at the CMD2004 webpage, we have decided to estimate the probability of that these cases occur (P) and the consequence (C) if it occurs. Both P and C were estimated and graded in a scale from 1 to 5 where five is the highest probability and the worst consequence. The risk is measured by multiplying P and C. The solution can be found in table 1.0.

<i>Nr</i>	<i>RISK</i>	<i>P</i>	<i>C</i>	<i>R=P * C</i>
1	Someone get sick or need to be absent for some days	3	1	3
2	Internal problems in the group	2	3	6
3	Someone does not finish with what he/she is supposed to do	2	4	8
4	Group members lack of knowledge	1	4	4
5	Project plan needs to be changed	4	3	12
6	Problems with time and deadlines	4	4	16
7	There is no enough money for iSpace	4	4	16
8	One or more existing device(s) for the iSpace is not working due to malfunctioning or incompatibility.	3	3	9
9	Problems in getting equipment/money for the fiber link	4	4	16
10	If we don't get the license in time for the radio link in Latvia	3	4	12
11	Gints needs to leave earlier	1	3	3

Table1.0

We have decided to further consider all the cases that have a risk value superior to eight. For these ones, we will study what the actions to follow are, what the expected results after these actions are and who should be the person in charge. The result can be found in table 2.0.

<i>Nr</i>	<i>Action list</i>	<i>Expected result</i>	<i>Responsible</i>
5	Make changes in the project plan and discuss the changes with the steering group.	A new version of the project plan	Project Manager
6	Identify the problems and make an action list to solve them. In case we cannot affect the factors that caused the delay, inform the steering group and revise the goals and time schedule.	Works finished in time for deadline or a new project plan with revised goals and/or time schedule.	Project Manager
7	Come up with a cheaper but possible solution.	iSpace with minimum requirements.	Darwis
8	Buy a new device to replace the one not working.	New working device.	Darwis
9	Examine new options of getting a link working. Examine the option of upgrading the existing commercial link. Inform iSpace team.	More bandwidth on existing link or potentially an iSpace with minimum functions.	Urban
10	Use the existing link with less bandwidth.	iSpace, minimum of functions.	All

Table2.0

## 9 Stakeholder Analysis

The entities that have interest in BalticOpen.Net have been identified and categorised into four types:

- 1) **Let:** lets the team work as it wants and shows indifference to the project
- 2) **Block:** blocks the project so that the team will run into difficulties completing the work
- 3) **Help:** helps the project
- 4) **Make:** helps the team accomplishing the work within the project.

Their current positions have been identified (as exact as possible in the beginning of the project) and based on that the actions that should be taken to move them into the desired position. This could be seen in table 3.0.













No.	Task Name	MAR																																		
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	01	02	03	04
<b>Tasks for team working in Link</b>																																				
1	Study the Contract																																			
	PIC: Andreas																																			
2	Study the Radio Link																																			
	PIC: Urban																																			
3	Study the transmission Equipment	●	→																																	
	PIC: Urban																																			
4	Licence																																			
	PIC: Jonas																																			
5	Contact iSpace and Visby University	●	→																			→														
	PIC: Andreas																																			
6	Trip to Gotland															●	→																			
	PIC: Urban																																			
7	In depth study of the equipment																					●	→													
	PIC: Jonas																																			
8	Installation, Preparation																																			
	PIC: Urban																																			
9	Implementation																																			
	PIC: Urban																																			
<b>Tasks for team working in iSpace</b>																																				
1	iSpace Pre-study																																			
	PIC: Darwis																																			
2	Audio & video communication Study																																			
	PIC: Amos																																			
3	Study and Implement the device communication	●	→																			→														
	PIC: Darwis																																			
4	Specify and Finalize equipment to use																													●	→					
	PIC: Amos																																			
5	Designing a Room for iSpace																													●	→					
	PIC: Elena																																			
6	Testing and evaluation 1																																			
	PIC: Amos + Elena																																			
7	Testing and evaluation 2																																			
	PIC: Amos + Elena																																			
8	Planning the trip to Ventspils																																			
	PIC: Darwis																																			
9	Trip to Ventspils																																			
	PIC: Darwis																																			
<b>Tasks related Deliverables</b>																																				
1	Preparing Project Plan																																			
	PIC: Andreas																																			
2	Progress Report 1																																			
	PIC: Andreas																																			
3	Progress Report 2																																			
	PIC: Andreas																																			
4	Progress Report 3									●	→	■																								
	PIC: Andreas																																			
5	iSpace Mid-term Report												●	→	■																					
	PIC: Amos																																			
6	Link Mid-term Report												●	→	■																					
	PIC: Jonas																																			
7	Mid Term Presentation															●	→	■																		
	PIC: Andreas + Darwis																																			
8	Progress Report 4																						●	→	■											
	PIC: Andreas																																			
9	Progress Report 5																															●	→			
	PIC: Andreas																																			
10	Progress Report 6																																			
	PIC: Andreas																																			
11	iSpace Final Report																																			



No.	Task Name	APR																											
		05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	01	02
<b>Tasks for team working in Link</b>																													
1	Study the Contract																												
	PIC: Andreas																												
2	Study the Radio Link																												
	PIC: Urban																												
3	Study the transmission Equipment																												
	PIC: Urban																												
4	Licence																												
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	PIC: Andreas																												
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	PIC: Urban																												
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2	Audio & video communication Study																												
	PIC: Amos																												
3	Study and Implement the device communication																												
	PIC: Darwis																												
4	Specify and Finalize equipment to use																												
	PIC: Amos																												
5	Designing a Room for iSpace																												
	PIC: Elena																												
6	Testing and evaluation 1																												
	PIC: Amos + Elena																												
7	Testing and evaluation 2																												
	PIC: Amos + Elena																												
8	Planning the trip to Ventspils																												
	PIC: Darwis																												
9	Trip to Ventspils																												
	PIC: Darwis																												
<b>Tasks related Deliverables</b>																													
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	PIC: Andreas																												
2	Progress Report 1																												
	PIC: Andreas																												
3	Progress Report 2																												
	PIC: Andreas																												
4	Progress Report 3																												
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	PIC: Amos																												
6	Link Mid-term Report																												
	PIC: Jonas																												
7	Mid Term Presentation																												
	PIC: Andreas + Darwis																												
8	Progress Report 4																												
	PIC: Andreas																												
9	Progress Report 5																												
	PIC: Andreas																												
10	Progress Report 6																												
	PIC: Andreas																												
11	iSpace Final Report																												



No.	Task Name	MAY																													
		03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
7	In depth study of the equipment PIC: Jonas																														
8	Installation, Preparation PIC: Urban																														
9	Implementation PIC: Urban		●	→																											
<b>Tasks for team working in iSpace</b>																															
1	iSpace Pre-study PIC: Darwis																														
2	Audio & video communication Study PIC: Amos																														
3	Study and Implement the device communication PIC: Darwis																														
4	Specify and Finalize equipment to use PIC: Amos																														
5	Designing a Room for iSpace PIC: Elena																														
6	Testing and evaluation 1 PIC: Amos + Elena																														
7	Testing and evaluation 2 PIC: Amos + Elena																														
8	Planning the trip to Ventspils PIC: Darwis																														
9	Trip to Ventspils PIC: Darwis		●	→																											
<b>Tasks related Deliverables</b>																															
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4	Progress Report 3 PIC: Andreas																														
5	iSpace Mid-term Report PIC: Amos																														
6	Link Mid-term Report PIC: Jonas																														
7	Mid Term Presentation PIC: Andreas + Darwis																														
8	Progress Report 4 PIC: Andreas																														
9	Progress Report 5 PIC: Andreas																														
10	Progress Report 6 PIC: Andreas																														
11	iSpace Final Report PIC: Darwis + Elena		●	→	■																										
12	Link Final Report PIC: Urban		●	→	■																										
13	Draft Final Report/Progress Report PIC: Andreas		●	→	■																										
14	Video PIC: Amos								●	→	■																				
15	Press Release PIC: Elena									●	→	■																			
16	Final Presentation PIC: Andreas + Urban															●	→	■													
17	Final Exhibition PIC: Darwis + Jonas																●	→	■												
18	Lesson Learned PIC: Andreas																									●	→	■			



## 11.2 CV

The presentation of the group members.

### Darwis, Darwis

#### PERSONAL DETAIL

Date of Birth : January 16, 1977  
Place of Birth (city, country) : Medan, Indonesia  
Nationality : Indonesia  
Gender : Male  
Address in Sweden : Kista Allevag 36A:7  
16455, Kista-Stockholm, Sweden  
Phone : +46 76 2350235  
Email : [iw03\\_dda@it.kth.se](mailto:iw03_dda@it.kth.se)

#### EDUCATION

##### ROYAL INSTITUTE TECHNOLOGY (KTH), Stockholm, Sweden ([www.it.kth.se](http://www.it.kth.se))

Duration : September 2003 - up to the present  
Major : Internetworking

##### BINA NUSANTARA UNIVERSITY, Jakarta, Indonesia ([www.binus.ac.id](http://www.binus.ac.id))

Duration : September 1995 - July 1999  
Major : Computer Science  
Degree Awarded : Bachelor of Computer Science  
GPA : 3.52 (in the scale of 4.00)  
Achievement : Best Graduate Award

#### PROFESSIONAL EXPERIENCE

Company Name : Fujitsu Systems Indonesia  
Date Employed : July 01, 1999 - August 15, 2003  
Department Name : Center of E-Solution Research and Development  
Nature of Business : System Design, Development and Integration  
Location : Jakarta, Indonesia  
Job Title : System Analyst, Programmer, Team Leader  
Job Responsibilities :

- Analyzing user requirements
- Designing, developing and documenting system application
- Involved in project estimation and project management
- Involved in project members recruitment
- Administering local server

#### COMPUTER SKILL

- Operating Systems : Window 9x/NT/2000/XP, Red Hat Linux, Sun Solaris
- Programming Language : Visual Basic, Visual C++, C++, Assembler, Turbo Pascal
- Web Server : MS Internet Information Server, Oracle Application Server, Apache
- Web Development : ASP, JavaScript
- Database Skill : ORACLE, MS SQL Server, MS Access, PostgreSQL
- Database Programming Skill : Oracle PL/SQL, MS T-SQL
- Internetworking : Zebra (Linux)
- Project Management Concept : SDEM90 (Software Development Methodology)
- Other : Adobe Photoshop, MS Project

#### LANGUAGES

Bahasa Indonesia : Mother tongue  
English : Fluent



BalticOpen.Net, Project Plan Version 1.1  
Homepage: <http://www.balticopen.net>  
Mail to: [csd2004-team20@csd.ssvl.kth.se](mailto:csd2004-team20@csd.ssvl.kth.se)



Chinese : Fluent  
German : Basic  
**Japanese : Basic**



## Elena de Castro Díaz-Plaza

### PERSONAL DATA:

Address : Forskarbacken 12, 216  
104 05 Stockholm  
Phone number : +46.735.619.750 / +34.659.26.97.82  
E-mail : [elenadecastro@terra.es](mailto:elenadecastro@terra.es)  
Birth date : March 12, 1981  
Nationality : Spanish

### UNIVERSITARY EDUCATION

Since 1999 Master of Science in Computer Science (last year)  
Universidad Politécnica de Madrid (U.P.M)  
  
Since 2003 Master of Science in Engineering in Communication Systems (last year)  
Kungliga Tekniska Högskolan i Stockholm (KTH)

### COMPLEMENTARY EDUCATION

Since 2003 Double Degree Erasmus  
Kungliga Tekniska Högskolan. Stockholm  
  
2003 (march) Economic Analysis for Project Management  
Athens Program

### COMPUTER SCIENCE

- Programming Languages:
  - Ada, C (POSIX), C++, Oz, Haskell, Basic, D-Base, VHDL, Java, JDBC.
- Web Design with Database Access:
  - PHP, HTML, DHTML, SQL, My\_SQL
- Operating Systems:
  - Linux / Unix / Solaris
  - MS-DOS, Windows 9X, Windows XP, Macintosh.
- Word, Excel, Emacs, Internet (ftp, http, telnet, ssh)
- Good skills to learn quickly new programs or new programming languages.

### EXPERIENCE

April-June 2003 Grant holder in Computer Science Department Programming web pages with database access.  
Rectorate of Universidad Politécnica de Madrid

### LANGUAGES

Spanish : *Mother Tongue*  
English : *Fluent*, spent two summers in Ireland studying at Trinity College Dublin.  
French : *Basic*. Did an Intensive Course in Alliance Française and one *university course*  
Swedish : *Proficient*, Intermediate Level. Currently improving it in KTH, Stockholm.

### HOBBIES

Innebandy, Golf, Reading, Travelling.



## Urban Eriksson

### **PERSONUPPGIFTER**

Född : 1975-12-23  
Adress : Åmåsängsvägen 52, 792 34 Mora  
Telefon : 0250-17691, Mobil: 070-674 17 49  
E-post : urban@ueteknik.se

### **UTBILDNING**

Hoppas ta en civilingenjörs examen 180p på KTH under 2004 2002-07 .  
Teknologi Kandidat (inriktning elektronik) 120 p Högskolan Dalarna 1999-09 . 2002-07  
Gymnasium, 3 årig Teknisk 1992-08 . 1995-06

### **ARBETSLIVSERFARENHET**

Egen företagare .UE teknik. Ljud och radioinstallations företag 1997-06 .  
Grundade Radio Siljan i Mora, arbetade som VD och tekniskt ansvarig 1995-10 . 1999-09

### **ÖVRIG ARBETELIVSERFARENHET**

Sommarvikarie/inhoppare som programledare/tekniker på Sveriges Radio, Falun 1999-10

### **PERSONLIGT**

Född i Sollentuna men uppvuxen i Dalarna.  
Gillar motorcyklar (som går för fort) samt mycket intresserad av ljud och teknik.  
Har viss förmåga att bli lite för engagerad i vissa uppdrag.

### **ÖVRIGT**

Har under flera år arbetat som ljudtekniker i både radio och live sammanhang. Har även byggt upp ett flertal radiostudio, OB-buss samt radiodistributionsnät i form av datanät, radiolänkar och sändare. Mitt egna företag .UE teknik., där jag själv verkar, har ansvar för all teknisk utrustning på Radio Siljan, .från mik till sändare..

Under mina år på Sveriges Radio har jag även till viss del arbetat med de senaste digitala ljudredskapen så som Mandozzi och satellit länkar.

Som examensarbete på Högskolan Dalarna konstruerade jag tillsammans med en studiekamrat ett styrsystem till Sveriges Radio. Systemet byggde på kommunikation över TCP/IP nätverk där vi skrev all programkod samt gjorde kretskortslösningen.

Har god förmåga att arbeta i samt leda grupper till kreativa resultat.

### **REFERENSER**

Mats Hjelm, styrelsen Radio Siljan 0250-17795  
Bosse Råsäter, teknisk chef SR Dalarna 023-77 77 00



## Jonas Jolhammar

### PERSONUPPGIFTER

Födelsedatum : 1978-12-12  
Adress : Långseleringen 3 1 tr, 162 53 Vällingby  
Telefon : 070-3144279  
Civilstånd : Singel

### UTBILDNING

Aug 2002 - ? Högre årskurs, Civilingenjör i elektroteknik gren trådlösa system KTH, Stockholm.

Aug 1999 - Jun 2002 Elektroingenjör 120 p Högskolan Dalarna, Borlänge.  
En kort beskrivning av några kurser följer här. Kursen *Mikrodatorteknik* gav kunskap om hur en mikrodator är uppbyggd och hur man programmerar en sådan i assembler. I kursen *Datorsystemprojekt* ingick jag i projektgrupp som konstruerade ett villalarm med vissa "smart home" funktioner. I projekt ingick bla assemblerprogrammering, konstruktion av kretskort i CADint, tillverkning av kretskort och programmering av I2C-bus. *Digital Signalbehandlig* gav kunskap om hur man digitaliserar en signal och hur man sedan bearbetar den med bla FFT och DFT. Det ingick även hur man konstruerar digitala filter, simuleringar och liknade gjordes i matlab. *Grundkurs i telekommunikation* gav en inblick i hur man beräknar signal/brus förhållandet i olika kommunikationssystem samt olika filterberäkningar. *Reglerteknik grundkurs och försättningskurs* gav kunskap om PID- regulator och hur man arbetar med Laplace och Z- transformen inom reglerteknik samt modulering. Simuleringar och liknade utfördes i matlab. Jag har även läst två kurser i C++, Programmeringsteknik och objektorienterad programmering. Jag och en studiekamrat gjorde ett examensarbete tillsammans som innefattade att konstruera ett system för överföring av seriell data via TCP/IP nätverk. Med hjälp av bla en mikroprocessor gjorde vi en prototyp som man kunde ansluta seriell data till, i vårt fall R-232, som sedan kunde skickas över TCP/IP nätverk. Vi gjorde allt från tillverkning av kretskort till implementering av en enkel TCP/IP-stack i mikroprocessorn. Examensarbetet var en nyttig erfarenhet eftersom det både gav en god inblick i hårdvara och mjukvara. Studierna vid Högskolan Dalarna resulterade i en kandidatexamen inom elektroteknik.

Mars - Okt 1998 Värnplikt K1, Kungsängen.

Aug 1994 - Jun 1997 Naturvetenskapliga programmet Västerdalarnas Gymnasium, Malung.

### ARBETSLIVSERFARENHETER

Jag har inte så stora arbetslivserfarenheter eftersom jag mest har gått i skola. På sommarlov och övrig icke "skoltid" har jag bla jobbat som snickare, vaktmästare, industriarbetare, lagerman och affärsbiträde på en elfirma.

### FRITIDSINTRESSEN

Jakt, fiske och snöskoter



## Gints Neimanis

### **PERSONAL DETAILS**

Date of birth : 16 March 1969, Riga, Latvia  
Identity No. : 160369-12228  
Email : gints@venta.lv

### **EDUCATION**

1999.-2003 Master Studies at the Latvian Academy of Agriculture, Faculty of social sciences; Mag.sc.soc.  
1993.-1995 Master Studies at the Latvian Academy of Agriculture, Faculty of Agriculture  
1987.-1993 the Latvian Academy of Agriculture, Faculty of Agronomy,  
education: highest, speciality: agronomist, degree: Bachelor of Sciences

### **Successfully completed the following courses:**

2002.g. „Microsoft Solutions Framework Principles of Component Design”  
1999.g. Graduate of the "LOLA - Learn About Open Learning" course organised by the "Herriot Watt" University, Edinburgh, UK and Phare Program.  
836 "Securing Web Access using Microsoft Proxy Server 2.0"  
832 „System Administration for MS SQL Server 7.0”  
1998.g. 826 "Create. & Config. a Web Server using MS IIS 3.0"  
1997.g. 803 "Administering Microsoft Windows NT 4.0"  
687 "Supporting Microsoft Windows NT 4.0 Core Technologies"

### **PROFESIONAL EXPERIENCE**

1997 up to present Head of IT and technical teaching equipment Lab at Ventspils University College  
1995.-1997 The chief expert in the Farmer training department of LLKC KCI, work at EU Phare projects.

### **LANGUAGES**

Latvian : Mother Tongue  
Russian : fluent  
German : good; fluent in spoken and written language;  
English : good in reading, average in spoken and written;

### **INTEREST AND HOBBY**

LAN technologies and network administration  
Open Source software  
Rafting



## Amos Muhunda Nungu

### PERSONAL DETAILS

Date of Birth : September 9, 1975  
Address : C/o FARAJA MAKWASA RÖSVÄGEN 3  
151 53 SÖDERTÄLJE SWEDEN  
Phone : +46732129096,  
Email : [amosnungu@hotmail.com](mailto:amosnungu@hotmail.com)

### EDUCATION

Sept.2003 up to present Royal Institute of Technology (**KTH**) - Internetworking Masters Program **SWEDEN**  
1999-2002 University of Dar es Salaam (**UDSM**) - BSc. (Hons) in Computer Science  
**TANZANIA**  
Feb - August 2002 University Computing Centre (**UCC**) - CISCO NETWORKING PROGRAM -  
Certificate Leading to CCNA.  
**TANZANIA**

### PROFESIONAL EXPERIENCE

Company Name : SOFT-TECH CONSULTANTS LTD (<http://www.stcl.com>)  
TANZANIA  
Date Employed : July 2002 -Sept. 2003  
Location : Tanzania  
Job Title : Software Developer  
Job Responsibilities :Programmer, System analysis and design, Technical support,  
System and Database Administration to in-house Servers  
(window 2000 & MSSQL Server 7.0/2000).

Company Name : Nordic Clinic (<http://www.nordic.or.tz>)  
Date Employed : MARCH 2002  
Location : Tanzania  
Job Title : IT Consultant and WEBSITE DESIGNER

Company Name : Agumba Intesol Holdings Limited (<http://www.agumba.com>)  
Date Employed : June - Sept.2000 and June - Sept.2001  
Location : Tanzania  
Job Title : Network Administrator  
Job Responsibilities :General Hardware and Network Troubleshooting, also as a  
tutor.

### OTHER SKILLS

Programming : Pascal, C, Visual Basic, VB Script(asp), Java and HTML.  
Operating System : Linux (Red Hat), Microsoft Windows.  
Databases : MS Access, MS SQLServer 7.0/2000, Postgresql.  
Others : Macromedia Products, IIS & Apache web servers.

### LANGUAGES

Swahili : Mother Tongue  
English : Speak fluently and read/write with high proficiency.

### HOBBY

Watching TV, Reading Novels, Volleyball, Swimming & Technology.  
I have Climbed Mount Kilimanjaro 19,335.6 ft (5895 meters). Highest Mt. In Africa, second  
in the world.  
I have been to Serengeti and Manyara National Parks.**REFERENCES** Uponrequest.



## Andreas Stenbäck

### PERSONAL DETAILS

Address : Studentbacken 25/500  
115 57 Stockholm  
Contact : 070-454 22 73 (Mobile Phone)  
08-673 17 67 (Home)  
Email : [stenback@kth.se](mailto:stenback@kth.se)  
Personal Number : 791017-5558

### EDUCATION

2000 *MSc in Engineering and Business Management,  
KTH Royal Institute of Technology, Stockholm, 180p*  
Major in Communication Systems.  
Grade average in December 2003 is 4.80 (of 5.00). Examination in 2004.

2001 *BSc in Business Economics,  
Stockholm University School of Business, Stockholm, 120 p*  
Examination in 2004.

2002 *Exchange studies  
University of New South Wales, Sydney, Australia, one semester*  
Courses in International Business, Business Data Management, Social Science and  
Data Networks. Grade average 78.5 (of 100).

2003 *Course at Mid University, Sundsvall, 5p*  
Course in Operating Systems with the grade 5 (of 5).

2002 *Exchange studies at San José State University, California, USA, one semester*  
Exchange studies through the network GE4 (GE3 in the USA). Scanning processes  
both at home university (based on grades) and then by GE4 (based on application  
letter and grades). Courses in Computer Structure, Statistics, Marketing and Cost  
Accounting. Received highest grade A (scale A-D) in all courses.

1998 *Studies at Actilingua Academy, Vienna, Austria*  
Language course in German with the result "Sehr Gut" (Very Good) in both speaking  
and writing.

1995-1998 *Natural Science program at Bäckängsgymnasiet, Borås*  
Received a scholarship for outstanding results. Average grade from upper secondary  
school was 18.94 (of 20.00).

### WORK

2003 *IBC Euroforum, Stockholm*  
Working part time as conference host.

2001 *Kungsörs plastics AB, Kungsör*  
Created and implemented a database system for maintenance and spare parts.

1999 *Lyckeskolan High School, Kinna*  
High school teacher, primarily in math and Swedish.

1993-1998 *Stora Enso Packaging, Skene*  
Work in production during summer and winter vacations.



### **MILITARY SERVICE**

- 1999-2000 *Artillery chief for a company at PB9 (P4), Skövde*  
Finished my military duty as a conscript second lieutenant with very good grades, 10-9-9 (of 10-10-10).  
Was also elected to represent other conscripts as company representative and deputy brigade representative. The military service had 300 hours of leadership courses.  
Participated in a NATO initiated peacekeeping drill in Norway.

### **NON-PROFIT**

- 2003 Co-founder and part of the project management for Excitera Mobile Award, a programming contest for mobile phones. Excitera is the student driven entrepreneurial organization at KTH Royal Institute of Technology.
- 2001-2002 Vice chairman of the local housing committee Fysikern, Stiftelsen Stockholm Studentbostäder.
- 2002 Responsible for maintenance in San José International House which led to a scholarship for, in a strong way, contributing to the community in the House.
- 1999-2000 Company representative and deputy brigade representative during military service. This meant representing 130 and 600 conscripts as a member of the brigade and regiment committee as well as taking part of conferences all around Sweden.
- 1997-1998 Initiator and founder to Bäckäng Upper Secondary School Radio Station which meant financial as well as operational responsibilities.
- 1996.1998 Exchange student in both Espelkamp, Germany and Gorzow, Poland.

### **SCHOLARSHIPS**

- 2003 Henrik Göransson's Sandviken Scholarship.
- 2003 General Scholarship Fund for good results at KTH Royal Institute of Technology.
- 2002-2003 Internationalization fund, Industrial management, KTH Royal Institute of Technology.
- 2002 Certificate of Appreciation and Scholarship at San José International House.
- 1998 Scholarship for outstanding results at Bäckäng Upper Secondary School.

### **LANGUAGES**

- Swedish: Mother tongue
- English: Fluent
- German: Adequate, six years of pre-university studies and language course in Vienna.

### **REFERENCE**

References are given on demand.

