

Project Plan

Services Forecast Sensitivity analysis

1. INTRODUCTION

The Nokia Mobile Phones (NMP) Market Forecasting and Analysing unit has several tasks concerning mobile market. The unit consolidates global forecasts, evaluates forecasts, communicates forecast results, develops new and existing analysis processes and tools, maintains internal and external networks. The unit has three main products, which are:

- short term mobile phone market monitoring
- long term mobile phone market forecasting
- mobile services and applications monitoring and forecasting

This present project focuses on monitoring and forecasting the mobile services and applications revenues. The mobile services are defined by all the services distributed through mobile networks and used with mobile devices. The mobile networks refer to wide-area wireless networks (cellular networks), and the mobile devices are defined to be devices that have connection either directly or indirectly to mobile networks.

The mobile services and applications markets are modeled through on several characteristics, which define and describe the markets. These characteristics include factors such as the number of subscribers, usage times, tariffs, etc. The process main target is to forecast and model the services revenues. The process and the model do not concern industrial mobile services and application markets.

The modeling tool is built on Microsoft Excel platform and it uses Excel spreadsheet calculation and macro language procedures. The model allows distributed data gathering, centralized data consolidation and calculation, and distributable reviewing and reporting.

2. OBJECTIVES OF THE PROJECT

This project has one main objective. The main objective is to analyze and improve the mobile services and applications monitoring and forecasting model through sensitivity analysis. The main objective can be divided into several sublevel objectives. We have divided it to five sublevel objectives. Therefore, to accomplish its main objective the project also aims to:

- Identify the most critical input variables from the model, which cause largest fluctuations in the output variables.
- Identify the most insignificant variables from the model, which cause only weak and thus meaningless fluctuations in the output variables.
- Find out the magnitude of changes caused by fluctuation of each critical variable in different market situations.
- Find out the magnitude of changes caused by mutual influence of critical variables in different market situations.
- Identify weaknesses in the model and recommend improvements to the model

The main objective and sublevel objectives can be divided to two distinctive tasks. The first intention is to identify the most sensitive (critical) input variables. That is, input variables which cause the most variation in the output variables. The second intention is to concentrate to these sensitive key variables and carry out in depth sensitivity analysis.

3. ACTIONS NEEDED

Project team decided that the most efficient way to achieve the project objectives is a process including five stages. These five stages are the following:

- Stage 1: Fully understand the mobile market model provided by Nokia through documentation, discussions and experimentation.
- Stage 2: Understand the sensitivity analysis through theory of experiment design and analysis.
- Stage 3: Identify the critical and insignificant variables through experimenting
- Stage 4: Carryout in-depth sensitivity analysis for the critical variables.
- Stage 5: Documentation of project

These five stages consist of tasks which have been identified to be necessary in order to achieve the project objectives. The tasks and the work estimates are presented in a table below. The work estimates are in hours, which represent the amount of work needed by an average employee to fulfill the task. The work estimates are based on joint estimates given by the project group. The total estimated amount of work required is 571 hours and the estimated error included in the work estimates is 20 percent. Therefore the error range is though 457 to 658 hours.

ID	Task Name	Work
1	Project plan	16 hrs
2	Theory study: Design and Analysis of Experiments	48 hrs
3	Practical Study: Excel-model	32 hrs
4	Theory study: Visual Basic programming	32 hrs
5	Project meeting 1 - Study review	15 hrs
6	Test Plan 1 - Critical variable identification	32 hrs
7	VB programming 1	24 hrs
8	Testing 1	8 hrs
9	Test result analysis 1	32 hrs
10	Project meeting 2 - Result review 1	10 hrs
11	Progress Report	32 hrs
12	Test Plan 2 - In-depth analysis	16 hrs
13	VB programming 2	24 hrs
14	Testing 2	16 hrs
15	Test result analysis 2	32 hrs
16	Project meeting 3 - Result review 2	10 hrs
17	Additional testing	32 hrs
18	Final report	80 hrs
19	Project management	80 hrs

4. SCHEDULE OF THE PROJECT

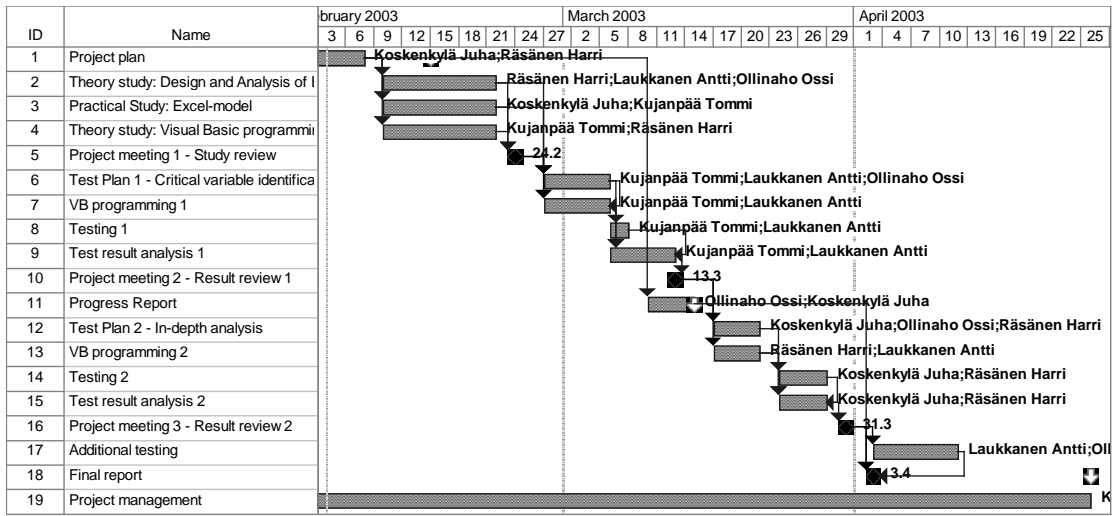
The project has three important milestones. The deadlines for each of these milestones are:

- Project Plan deadline 14.02.2003
- Progress Report deadline 14.03.2003
- Final Report deadline 25.04.2003

It was also considered important to have clear schedule for the project and each of its tasks. Thus, following project schedule was formed:

ID	Name	Start	Finish
1	Project plan	Mon 3.2.03	Fri 7.2.03
2	Theory study: Design and Analysis of Experiments	Mon 10.2.03	Fri 21.2.03
3	Practical Study: Excel-model	Mon 10.2.03	Fri 21.2.03
4	Theory study: Visual Basic programming	Mon 10.2.03	Fri 21.2.03
5	Project meeting 1 - Study review	Mon 24.2.03	Wed 26.2.03
6	Test Plan 1 - Critical variable identification	Thu 27.2.03	Wed 5.3.03
7	VB programming 1	Thu 27.2.03	Wed 5.3.03
8	Testing 1	Thu 6.3.03	Fri 7.3.03
9	Test result analysis 1	Thu 6.3.03	Wed 12.3.03
10	Project meeting 2 - Result review 1	Thu 13.3.03	Fri 14.3.03
11	Progress Report	Mon 10.3.03	Fri 14.3.03
12	Test Plan 2 - In-depth analysis	Mon 17.3.03	Fri 21.3.03
13	VB programming 2	Mon 17.3.03	Fri 21.3.03
14	Testing 2	Mon 24.3.03	Fri 28.3.03
15	Test result analysis 2	Mon 24.3.03	Fri 28.3.03
16	Project meeting 3 - Result review 2	Mon 31.3.03	Wed 2.4.03
17	Additional testing	Thu 3.4.03	Fri 11.4.03
18	Final report	Thu 3.4.03	Fri 25.4.03
19	Project management	Mon 3.2.03	Fri 25.4.03

The tasks and the members dedicated for each task is demonstrated in figure below. The figure was needed to clarify the relationships between tasks and to illustrate the progress of the project to its members and interested parties (client and supervisor).



5. RESOURCES ALLOCATED FOR THE PROJECT

The project team contains five members, which are the primary resources allocated for this project. The project team members are part-time dedicated to the project. The project members and their areas of responsibility are presented below:

- Juha Koskenkylä, Project Manager, student at the department of Engineering Physics and Mathematics, Helsinki University of Technology. Two years experience in software project management and several years of experience from mobile services and applications markets.
- Tommi Kujanpää, VB programming and understanding of the forecasting model, student at the department of Electrical and Communications Engineering, Helsinki University of Technology. Two years experience in mathematical modeling, eLearning-Systems and teaching.
- Antti Laukkanen, VB programming and model testing, student at the department of Engineering Physics and Mathematics, Helsinki University of Technology.
- Ossi Ollinaho, Experiments design and documentation, student at the department of Engineering Physics and Mathematics, Helsinki University of Technology.
- Harri Räsänen, Experiments design theory and VB programming, M.sc (Econ.), student at the department of Computer Science, Helsinki University of Technology.

In addition to its primary resources, the project team has also connections to the client (Nokia) and to the supervisor (HUT). These connections can offer guidance and information for the project team throughout the project. However, the participation of these “secondary” resources is very limited. The contacts with the client and the supervisor are:

- Kaisa Seppä, Market Forecasting Manager, Nokia Mobile Phones.
- Timo M. Partanen, Market Forecasting & Analysis, Nokia Mobile Phones
- Ahti Salo, Professor System analysis laboratory, Helsinki University of Technology.
- Antti Punkka, Student department of engineering physics and mathematics, Helsinki University of Technology.

6. RISKS CONCERNING THE PROJECT

The project members have identified several risks concerning the project. The most critical risks are following:

- Visual Basic programming. Currently the project group has only little knowledge and experience of Visual Basic programming. The mobile market model tool uses VB and though it is essential to have basic knowledge from VB in order to successfully fulfill the project objectives. The project schedule might delay because of this fact. A learning period of VB has been inserted to the project schedule in order to reduce this risk.
- Nokia dedication. The whole project is based on the mobile market model developed by Nokia and though it is important that the project group receives all the necessary information from Nokia in time. The project group can reduce this risk by trying to anticipate and acquiring information as soon as possible from Nokia.
- Project member dedication and cooperation. The project members are new to each other and the participation for the project is part-time. Though their capabilities are fairly unknown and their dedication can fluctuate heavily. This could cause delays in the schedules and problems in the cooperation. Besides this, the project member number makes the project coordination harder as if there were e.g. only three members.