Paper 13:

# New Media in the University of Helsinki: Information and Communication Strategy and its Implementation

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The University of Helsinki has developed a strategy for using information and communication technologies in university education. This strategy is summarized and some concrete technical applications are briefly presented, including the use of virtual seminars on the WWW, the production of a multimedia CD-ROM on Finnish history and the integration of remote classrooms through video conferencing.

# Methods and Approaches

## Background

- The University of Helsinki comprises 9 faculties with 30 000 students and 2500 teachers and researchers. The University operates in over 60 buildings, which are connected by a campus network consisting of an ATM backbone for the larger buildings and an ethernet connection for the smaller ones. Remote sites are connected with ISDN. The campus network is connected to the Finnish University Network (FUNET) and to the Internet with a 155 Mbit/s ATM service.

Over half of the networks inside the buildings are still old-fashioned ethernet connections which are unsuitable for carrying multimedia, however a large (GBP 3.3 million) three-year cabling renovation project has just begun.

The number of PCs connected to the network has steadily grown from 5900 (end of 1995) to 8000 (end of 1996) and to over 10 000 (end of 1997). There are also about 500 UNIX workstations and 100 PC network servers on the campus network. Approximately 900 of these PCs are available for students to use - about 200 of them 24 hours a day, 360 days a year.

Each new student is given a computer account and an e-mail address upon enrolment at the university. The number of people in the University community that are reachable by e-mail has grown from 13 400 (end of 1993) to 29 000 (end of 1995) and to 38 000 (end of 1997). Our central e-mail server delivers about 90 000 e-mail messages each day.

## Strategies

- At the University of Helsinki, information and communications technologies have been available for teaching and research since the 1960s. In recent years, information technology has increasingly been gaining ground as a tool in teaching. The development of information and communications technologies is inseparable from the development of teaching at the University of Helsinki.

In 1995, the Ministry of Education drew up a national strategy for education, training and research in the information society. This strategy contains proposals for exploiting information technology and information networks in order to raise the level of education and research.

The Universitys information strategy for the years 1996-2000 has a double focus: the provision of basic information technology services and the efficient, long-term development of information systems at the University of Helsinki.

The Finance and Policy Plan of the University of Helsinki for the years 1997-2000 gives an outline for the development of teaching. A central aim is the exploitation of new technologies at all levels of university education. According to the Finance and Policy Plan all graduates from the University must have basic skills in the state-of-the-art information and communications technologies. Good use must be made of the opportunities offered by open and distance teaching, as well as by recent technological advances.

The Committee for the Development of Information and Communications Technologies in Teaching recommends that students be offered computing courses right at the beginning of their studies so that they can make full use of their computer skills throughout the course of their studies. In practice, teaching should be arranged so that teaching methods involving information and communications technologies are combined with traditional modes of teaching. The advantages of this approach are twofold: computer skills are updated and teaching methods upgraded on a continual basis.

## Measures

### Training

- As information and communications technologies are becoming everyday tools in teaching, new kinds of skills are required of teachers: they not only have to be competent in using the new technologies as part of teaching, but they also have to able to develop working and teaching methods that enhance learning. The University has been offering

training in basic computer skills to the teaching staff since 1985. During the last four years the variety of courses in information and communications technologies in teaching has increased considerably. The courses have covered, among other things, the following:

- production of CD-ROM materials

- computer graphics and video

- distance teaching

- planning and production of multimedia material

- production of teaching materials for the World Wide Web

- project workshops

The number of courses arranged every year is about 30, with a total of 300 participants. The length of courses ranges from one-day seminars to programmes lasting a whole term.

## Motivation

In addition to requiring investments in education and research, the promotion of the new technologies requires disseminating information about new teaching methods and equipment. In order to support feasible development projects and applications the University has introduced an annual award for the development of information technology in teaching.

The University has used the following methods of motivation and promotion:

- information meetings and demonstrations of new applications of information technology in teaching and ongoing projects,

- creation of a network between experts and laymen by study groups dealing with information technology,

- information on successful projects disseminated to the public at large through the press and TV, and

- The Information Technology Award: distribution of GBP 2800 for technical applications in use and GBP 11,000 for project plans.

## Support

- Investments in information technology become ineffective without well-organized support services. Besides user support, expert help is needed in introducing new technical applications in teaching and in producing teaching materials.

The University focuses on the following support services:

- continuous training and professional upgrading of the computer support personnel in the departments,

- construction of a databank for the WWW on the basis of a survey on information technology projects,

- development of a register of experts.

## Funding

Most of the development projects involving modern technology in teaching that have been carried out at the University of Helsinki have received special funding.

- Since 1995, the Ministry of Education has been allocating funding to Finnish universities for the development of the information society. In 1997, the University of Helsinki received GBP 920,000 for the development and maintenance of information networks and equipment, and GBP 780,000 for development projects dealing with information strategy.

- In 1997, the University allocated GBP 194,000 to the faculties and departments for the development of applications of information and communications technologies in teaching.

# Shared Margins - Virtual Seminars and Co-Authoring

- The House of Agathon is a WWW-based conferencing system specially designed to meet the needs of seminar-working and co-authoring. Agathon provides a forum for discussion in the paper margins, so to speak. This simulates the "old" practice of scribbling notes in the margin of a paper, but with the difference that the paper itself can be written and edited in the course of the discussion.

Agathon is being developed at the Faculty of Social Sciences of the University of Helsinki. It has been used experimentally in seminars, in a course-material development project, and in a few co-authoring projects.

## Shared margins and more

While it is true that several similar kinds of tools exist either as commercial products or as freeware, Agathon has some very special features which make it a unique system. This was the main reason why Agathon — still an ongoing project — was begun in the first place. Some of its features are listed below.

- Shared margins: This is the key concept which originally motivated the development of Agathon. The idea is that users can make specific comments about each paragraph. The discussion is then shown in the margin of the paper next to the commented paragraph.

- Keywords and indexing: Papers can be marked for keywords, which can then be used to create a hyperlinked index. Keywords can be shown in the margin so that users can easily move between related papers.

- Roles, message types and rights: Within a seminar, participants are assigned different roles (eg. respondent, opponent, member, teacher, visitor). There are different types of messages (chapter, paragraph, comment, spelling comment, etc.) and these are linked by different rights (e.g. respondents have the right to edit chapters, however visitors do not have the right to read spelling comments).

- Diff and versioning: Texts can be edited and old versions saved and shown in diff-format (e.g. old text in red and new text in green). New versions can be proposed and accepted to take the place of the current authorized versions.

## Using Agathon

The most characteristic feature of virtual seminaring is the independence of place and time. This not only provides flexibility in participating but also enhances the quality of discussion: comments are more carefully thought over.

Web-publishing (Agathon has a tool for exporting papers to ordinary web pages) induces better quality of writing. The fact that thousands of web users can read the paper does provide incentive to put some extra effort into writing.

Shared margins has turned out to be a very resourceful concept. Active co-writing is very stimulating and text literally writes itself in the margins of the paper.

The use of message types can lower the barriers to active participation in the discussions. If a paper has a casual discussion context students might be more willing to share their thoughts.

A common problem in virtual seminaring is motivating users to participate. It is not just a problem of motivating the students to use computers for communicating: virtual seminars demand more work because of their asynchronous nature. In order to facilitate virtual discussion students need to be motivated to work more, and papers need to be shorter or seminars need to be organized differently.

Networking is always unreliable and precautions are necessary. In Agathon, papers can be written off-line in a special format and then imported to Agathon.

Teachers need also motivating: on-line discussion is hard work and takes more time than normal classroom discussion. So far, the use of Agathon has been on the shoulders of active and enthusiastic teachers. The next step is to make virtual classrooms a fundamental part of university teaching.

More information on Agathon:
http://www.valt.helsinki.fi/staff/harmo/agathon/

# Integration of Remote Classrooms by Video Conferencing

• Networked learning can be arranged by several ways. The University of Helsinki has research centers and open learning units in different parts of the country. To promote the co-operation between the main university in Helsinki and these smaller units, it is necessary to use information and communication technologies. Virtual classrooms for seminars and lectures can be arranged by video conferencing. In some cases this may be the only possible way to arrange the university education, and in the long run it certainly is a way to cut costs by reducing the need to travel long distances. However, the integration of two educational units and/or classrooms by telecommunication is a difficult and demanding process. On the other hand, video conferencing can be a very effective and motivating application because of its highly interactive component. Together with other applications it is possible to create flexible and supportive learning contexts for students.

This includes:

- video conferencing for seminars and groupwork

- e-mail-based communication for individual support, guidance and evaluation

- CD-ROM- and/or WWW-based material delivery, and

- groupwork programming (WWW) for ongoing project work and analysis.

An introductory project, which has tested two-way video conferencing and Internet access for linking two classrooms in a long-term arrangement, has been carried out at the secondary school level. During a four-year period the University Training School has supported the small, remote Kilpisjärvi school in northwestern Lapland. So far, the pupils of this school have participated virtually in over 700 lessons which were produced in Helsinki. The Kilpisjärvi project has encouraged other faculties to use compressed video conferencing in University teaching. So far the communication has been arranged by ISDN-applications. In future, ATM-based technology will replace most of these links. The development of improved technology is of course one cornerstone for effective and fluent communication in virtual classroom. On the other hand the results of the Kilpisjärvi project show that integration of remote classrooms is basically not only a question of technology itself, but also of close co-operation between two units and their staff. This approach certainly demands rethinking of the instructional processes, and it will affect both the provider units and remote units in several ways.

## Virtual classroom and organizational demands

• The decision to use virtual classroom instruction between two or more units is by itself already a very complicated evaluation process, even before the actual on-line instruction starts. Integration of two classrooms means that each participating unit or institution has a strong influence on the other. In a long-term project of co-operation each participant must reconsider its existence and operations, including timetables, division of labour, areas of responsibility, decision-making processes, organisation and processing of information and many technical details. This kind of reorganisation can also lead to resistance among the teachers and staff. On-line education arrangements are producing stiff competion between institutions. The long-term aim - to dominate domestic markets or even reach out to include global markets - makes this competition even tougher.

Some negative aspects are also obvious:

- teacher professions are lost

- local features are lost because of centralised delivery and administration

- real interaction is reduced and compensated for by technical communication

- instructional processes depend on technical applications (technical problems occur and new skills are needed).

The use of remote classrooms and flexible learning techniques always involves two organizations: the home institution or classroom and the remote facility. Teachers and staff should be involved in the processes of organisation and co-ordination from the very beginning. The following aspects should be considered:

### 1. Institutions and staff

- analysis of values, goals and uses of distance education

- technical resources available (hardware, software, applications)

- financial and personal resources available

- cordination: timetables, reservations, help desks, technical testing and support

- responsibility, division of labour, information service

### 2. Curriculum

- aims of the virtual clasroom

- timetable and other course arrangements

- need for face-to-face meetings

- evaluation

### 3. Teacher

- motivation and skills for network co-operation

- skills for telecommunication

- an understanding of advanced media technology

### 4. Interaction

- interaction between teacher and students

- interaction between students

- interaction between student and study material

### 5. Students

- access

- motivation

- media skills

# Historiakone - Suomi 1800-1995, a Cd-Rom of Finland's History

- Historiakone is a multimedia application of Finland's history. It contains over 10 000 pages of text with hypertext links, around 2000 authentic documents, 2500 photographs, 100 video or audio files, over 300 short biographies, and a large statistical database which can be updated via the Internet.

The Historiakone project was launched in 1994. Its purpose is to test the suitability of new information technologies, especially multimedia and hypertext, to historical research and higher education and to create a large digitized information base. The final goal of the project ultimately became the production of a CD-ROM for use in schools and universities. The project has been undertaken in co-operation with Finland's main historical archives, libraries and museums.

# Strand 2: Innovative Delivery:
## Methods and Approaches

## Functions

The interface and functions of Historiakone are planned and designed in such a way that the user needs no special skills. Besides schools, which are the target audience, Historiakone is aimed to everyone interested in history. The availability of different levels of the interface and its very large contents, including authentic documents, make it viable also as an academic research tool and learning environment.

The information contained in Historiakone is organized in five categories (1) everyday life, (2) economy, (3) society, (4) population and (5) environment. The user can choose the year to study using a timeline. Moving in time, browsing through the five categories and using thousands of hypertext links combine to create the main user interface. Moreover, contents can also be studied systematically using the 'Tools' feature of Historiakone. From indexes a user can directly choose documents or pictures to view, or go to a specific part of the application. Statistical data can be studied and viewed systematically with a special interactive 'data machine'. This enables the user to handle numerical data more flexibly in studying special issues or long-term trends.

The possibility of studying history from different points of view enhances the user's ability to relate various economic, social, cultural and environmental aspects. Moving in time helps to understand various different historical phenoma and processes in greater depth. Pictures, photographs and audiofiles are carefully selected to support texts. Together with hypertext links to authentic documents and across the contents, such features create a new kind of learning experience. Each user can also make (and save) his or her own paths through the contents for future use.

Historiakone is designed so that its contents can be upgraded using FTP. The aim is to produce different historical materials on the Internet for users of Historiakone.

## Working process and experiences

The best authoring programs for databased multimedia applications with extensive use of hypertext links are those programs which use card metaphor. Information in card metaphor programs can be arranged systematically. Hypertext and other kind of links can be created almost without restrictions. After an evaluation process "SuperCard" was selected as the most suitable authoring program.

Historiakone is produced using a specially designed 'content editor'. Writing texts is done in two stages. First the text content is created and edited in a text outliner. Then it is imported to the 'content editor'.

'Content editor' is a "SuperCard" application. It has the same basic functions as the final Historiakone and a large selection of specially made tools for editing and writing text, creating and editing links, and importing pictures. The layout of the interface is exactly the same as in the final version in Historiakone, so writers see the results of editing the content directly.