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THE FIRST CYBER SUMMIT - CLINTON-YELTSIN HELSINKI SUMMIT 1997

Providing content for short time news events using Internet technologies

Master's Thesis in Organizational
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Tämän tutkimuksen tarkoituksena on selvittää kuinka digitaalisia informaatiopalveluita käytettiin Helsinki Summit 1997:ssä. Saatujen tulosten perusteella arvioidaan, kuinka tietojärjestelmiä tulisi kehittää loppukäyttäjien tarpeisiin lyhytkestoisissa uutistapahtumissa.

Tutkimusaineisto kerättiin kahdella tavalla; etnografisin havaintomenetelmin sekä WWW-palvelinten käyttötilastoista.

Tutkimusaineiston analysoinnin perusteella laadittiin malli Internet-teknologioihin pohjautuvan tietojärjestelmän malli lyhytkestoisiin uutistapahtumiin sisällön tuottamisen näkökulmasta.

Tässä mallissa tietojärjestelmä muodostaa kommunikaatioprosessin teknologisen implementoinnin perustan. Järjestelmä optimoidaan kulloiseenkin tilanteeseen ja toimintaympäristöön. Tämä tutkimus ei ota kantaa yksityiskohtaiseen tietojärjestelmän suunnitteluun, toteutukseen tai ylläpidon teknologioihin tai menetelmiin vaan keskittyy niiden taustalla oleviin yleisiin periaatteisiin.

Järjestelmämalli on tapahtumaohjautuva, eli järjestelmän ulkoiset tapahtumat laukaisevat välittömän sisällön päivitysprosessin. Tämä asettaa tehokkuusvaatimuksia sisällöntuotanto-organisaatiolle, joka myös on luonteeltaan tapahtumaohjautuva.

Tietojärjestelmän sisältö jaetaan kahteen erilliseen kategoriaan: jatkuvasti muuttuvaan sisältöön, joka vaatii mahdollisimman reaaliaikaisen päivitysmenettelyn sekä arkistoituun sisältöön.

Sisällön reaaliaikaisuus ulkoisten tapahtumien suhteen havaittiin käyttäjiin vetoavaksi ominaisuudeksi. Toinen havaittu käyttäjiä aktivoiva ominaisuus oli ns. "hype" -sisältö. Sisältö voidaan tarvittaessa tarjota käyttäjille myös Push-teknologialla perinteiseen Internet-käytön lisäksi. Järjestelmän tärkeimmät ominaisuudet ovat nopeus, käytettävyys sekä luotettavuus.

Avainsanat:
Internet, WWW, Helsinki Summit 1997, tietokonevälitteinen viestintä, tietojärjestelmät, journalistinen työ, etnografia

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1. Introduction

In the 1990's changes in society and rapid technological development have reached the level where governmental information services are faced with new challenges. The Internet has grown into a significant international medium for distributing information alongside television and newspapers. The digitalization of television and press processes and ongoing digital convergence has contributed to the constant change in the field of international media.

Such changes have opened new possibilities and challenges for both journalists and information and content providers. Different Internet and intranet solutions are nowadays offered in addition to traditional information services. Using the Internet for providing information services for journalists still enjoys an aura of novelty and high-tech prestige. The image value is however decreasing and more emphasis is put on providing useful services.

The Helsinki Summit 1997 was held in Helsinki in March 1997 for the meeting of the presidents Bill Clinton and Boris Yeltsin. Ca. 2300 journalists and technicians from 61 countries representing 766 media companies gathered in three press centers for three days. Internet technologies were used for the first time in The Helsinki Summit 1997 for distributing summit information both globally and locally. Financial Times wrote 21.3.1997 that the "1997 meeting will also go down in history as the first Internet summit" (The Ministry of Foreign Affairs memorandum, 4.4.1997).

The purpose of this study is to find out how the digital information services were used during the summit. With this information an attempt is made to clarify the issue of how digital media services should be developed for such events in the future.

Based on previous studies, literature and the findings from the Helsinki Summit 1997 a set of guidelines is presented for the utilization of digital media in such events from the point of view of content providers and journalistic end-users. Relevant literature for this case, however, is heterogeneous and diverse. The reason for such diversity comes from the use of literature from several fields of studies and varying paradigms inside different fields of study. Relevant theories and frameworks are presented in information system theories, organizational communication theories, CSCW (Computer Supported Cooperative Work) studies, mass media studies, CMC (Computer-Mediated Communication) research etc.

2. Setting

The Helsinki Summit 1997 was held in Helsinki in March. The summit was held for the meeting of the president if the United States of America, Bill Clinton, and the president of Russian Federation, Boris Yeltsin. According to the Ministry for Foreign Affairs'

media review ca. 2300 journalists and technical staff from around the world were accredited. The Ministry for Foreign Affairs, the Department of Press and Culture was the organizer of the event.

The actual days of The Helsinki Summit 1997 were 20.3. and 21.3. However, most of the journalists arrived on 19.3. Some arrived even a day earlier. The day after the actual summit, 22.3., was reserved for the meeting of the presidents Yeltsin and Ahtisaari. The whole event took less than a week and a significant number of journalists was gathered in Helsinki during the week.

The Helsinki Summit 1997 can be considered as a short time news event. It did not last for long and lots of journalists were at one location and dedicated information services were built for the journalists.

2.1.1 The Policy of Governmental Information Services

The Prime Minister's Office (Valtioneuvoston kanslia) pronouncement application instructions 23.1.1997 concern the essential principles of the government's information services. According to them the central requirements of the government's information services are offering open, reliable information on substantial matters. Reliability presupposes that the information is correct, truthful and adequate.

The information services should also be equal regionally, politically and linguistically. The information should be comprehensible. The information should be offered in the right context. Informing should be fast and issues of current interest should be offered immediately. The reliability of the information, however, should not be bargained on behalf of fastness.

Everyone who needs the information should receive appropriate and friendly service. Informing should be going two-way and the reactions and opinions of the receivers of the information should be observed.

This policy can be said to be the basis for different information services in a digital environment as well as in an analog environment. The policy of governmental information services has to be seen as the ground on which the governmental information systems have to be built. This study tries to find practical factors, which can guide how the information systems should be built on the defined ground.

2.1.2 Facilities

According to the international press the Internet was used for the first time in the summit surroundings in The Helsinki Summit 1997 (Ministry for Foreign Affairs Media review, 22.4.1997). The *Internet* can be described as the vast collection of inter-connected networks that all use TCP/IP (see chapter 3.6.3.1) protocols (Makey, 1996, 546).

The Internet connections and other facilities for the press were in three locations in Helsinki. The press center for journalists was in Finlandia Hall. Television and radio stations were mostly located in Wanha Satama. Major American television networks and the White House press were located in Hotel Intercontinental. Observations were made mostly in Finlandia Hall and Wanha Satama. The Clinton-Yeltsin press conference was held at restaurant Kalastajatorppa.

In Finlandia Hall there were 50 PCs reserved for the journalists. The PCs were equipped with 200 MHz Pentium processors, Windows 95 operating system, word processors (MS Word 7.0), printing capabilities and WWW browsers (Netscape Navigator 3.0) and they were connected to the Internet via HPY, a teleoperator in Helsinki. No separate plug-in applications were installed for the Netscape Navigator.

In Finlandia Hall, traditional information services were also offered for journalists, such as telephones, telefaxes, television monitors, news desks of the Ministry for Foreign Affairs, the Department of Press and Culture and USIS, United States Information Service and a possibility to follow simultaneous translations of the events on television monitors with headphones in English, Russian and Finnish. The accreditation took place also in Finlandia Hall.

In Wanha Satama, the live video coverage feed was offered to television stations. The video feed was also used by YLE, the Finnish national broadcasting corporation in digital format. The video feed was digitized in real-time and offered to the journalists in Wanha Satama from a video server to which ten PC clients were attached. These PC clients had a Summit browser, an application with which the digitized video clips could be played. The Summit browser was made by YLE.

The ten PCs with the Summit browser were equipped with Pentium processors, Windows 95 operating system, Internet connection, the Summit browser, Netscape Navigator 3.0 and Yahoo News Sticker which scrolled headlines from Yahoo in a banner in one side on the monitor. No separate plug-in applications were installed for the Netscape Navigator.

In Wanha Satama there were also 20 PCs reserved for the journalists with word processing and WWW browsing capabilities. The equipment were same as in the PCs in Finlandia Hall. In Wanha Satama there were also television monitors, phone lines, ISDN lines, telefaxes, a news desk of the Ministry for Foreign Affairs, the Department of Press and Culture and the information service of the Russian Federation.

In the Finlandia Hall the journalists were able to listen to the events with headphones. From the headphones simultaneous translations in English, Russian and Finnish could be chosen.

Television and radio stations were located at Wanha Satama, excluding major American networks. News agency AP had however some of their equipment in Wanha Satama. The departments were divided into small rooms, which were equipped with television,

which showed ten channels, including CNN and YLE. Some of the rooms were equipped with ISDN connections. BBC had enough room to build their own studio.

Taking care of the televising was a joint project of YLE and EBU (European Broadcasting Union). YLE planned the rooms and supplied the electricity. EBU took care of the equipment and coordination. In an interview a YLE representative told that the arrangements were made this way because YLE did not have enough resources to take care of he whole event. For example the amount of monitors was so vast that YLE could not supply enough monitors. The radio and television station were located at Wanha Satama instead of Pasila, where YLE's facilities are located, because previous experiences had shown that the facilities in Pasila are inadequate for such an event. According to interviewee summits like The Helsinki Summit 1997 are to television companies "like Olympic Games in two days".

In practice the TV journalists in Wanha Satama recorded material from the EBU's frequency and then went to coordinators to reserve satellite time for the broadcast. From Helsinki there were seven connections to broadcast abroad. EBU had fifteen coordinators, from which thirteen were in Geneva and two in Helsinki. Very few stations had their own satellite connections. Those who had were BBC, Reuters, CBS and WTN. This few satellite transmitters already created some problems in locating the transmitters because of the large security zones.

The Hotel Intercontinental was reserved strictly for the major American television networks and the White House press. No access was granted there for others for the security reasons because the president of the United States of America was also accommodated there.

2.1.3 WorldWideWeb Services

Many international WWW content providers offered a coverage on the Helsinki Summit 1997, especially the news service providers. The organizers also had WWW servers up and running during the summit. The organizer of the summit, the Ministry for Foreign Affairs, the Department of Press and Culture (http://virtual.finland.fi/), YLE (http://www.yle.fi/summit/), the organizer of the television services and A4 Media (http://www.a4media.fi/), a live picture coverage in co-operation with the Ministry for Foreign Affairs, the Department of Press and Culture were content providers from the inside of the organizing organization. In this study an emphasis is put on these services, for the reason that these content providers were not third-party service providers who took the summit as an external news event.

The Ministry for Foreign Affairs, the Department of Press and Culture offered official information about Finland and the Summit. They also offered a closed intranet service for the accredited media. This information, the digital press handbook included all the information, which in previous Summits was offered on paper to the journalists.

YLE offered background information and news from the summit in their public WWW site. YLE also offered digital video for the journalists in Wanha Satama.

The United States Information Service Helsinki, USIS, provided information about the Helsinki Summit on their web site at http://www.usis.fi. The United States Information Service Helsinki - USIS Helsinki - is responsible for media, cultural, and educational affairs for the U.S. Embassy in Finland. It is a branch office of the United States Information Agency (USIA) in Washington, D.C. USIS Helsinki provides official public statements about U.S. policies in the daily Washington File and USIA Electronic Journals. During the summit, USIS updated the official statements to their web server as soon as they were available.

A4 Media offered live still picture coverage using WebCam technology. A technician had been granted access to the pools, which were let on the closed locations such as the airport and the presidential dinner. The pools are collections of journalists who are given exclusive access to certain locations. WebCam sent 25-80 pictures a day from the pool during the three days of the summit.

A4 Media offered also audio material via Internet. Three Audioinfo webcasts were made: Clinton-Yeltsin press conference in English, the same in Russian and Yeltsin-Ahtisaari press conference (English, Finnish and Swedish).

3. Theoretical Background and Underlying Concepts

This chapter summarizes the basic concepts and theories, which are offered in the literature. The theories and models are presented in order to offer insight to the case discussed here.

In this case the relevant factors are communication between the journalists and the information officers in The Helsinki Summit 1997 and information systems built for the summit. Before one can discuss the communication between journalists and information officers one has to recognize relevant issues of communication, which underlie the specific form of communication discussed here. In the same fashion, before the information systems are built for short time news events one has to recognize the basic ideas behind information system theories. Beside these two points there are fields of studies such as CMC (Computer-Mediated Communication) and CSCW (Computer-Supported Cooperative Work) which are not irrelevant for the case. They are based, at least to some extent, to communicational theories.

3.1 Communication

There have been numerous attempts to define communication (Dance 1970, 201-210). A reason for this predicament is that there is no single approach taken to the study of communication; there are many ones. Also, communication is always being shaped,

filtered and altered due to individuals' own perceptions of reality, their attitudes, beliefs and values and their past experiences and biases (Infante, Rancer & Womack 1990, 31). In this study, the communication definitions and theories are not included because their contribution to the information system theorists and therefore to this study. The usefulness of communication models *per se* can also be questioned from the point-of-view of that they were not designed for the purpose of building information systems but they are applied, even though they come from whole different paradigm. The reason for defining communication is derived from the need to understand the communicative context in which different forms of interaction took place in the Helsinki Summit 1997.

Measurement in communication research, as well as in other social sciences, is inexact. Some theorists believe that we will never be able to make predictions about communication behavior that are as accurate as predictions about the physical world. This means in terms of defining communication that people disagree on definitions of communication because they disagree on the nature of communication. The prospects for a universally accepted definition of communication are not good, at least not in the immediate future. (Infante, Rancer & Womack 1990, 6-7)

The fact that we have no universally accepted definition of communication is not a debilitating problem. Even if we do not have a universally accepted definition on communication, one still has to use some definition to study and discuss communication.

One definition of communication is brought up by Reinsch. According to Reinsch (1991, 306) communication can be defined as a consciously intentional, verbal exchange between individual human beings using commonly held symbols and achieving partial success. He elaborates that "verbal exchange...using commonly held symbols" means either written or oral words in a natural, living language that is understood by participants. Reinsch also states that "between individual human beings" specifies human (excluding animal and machine), interpersonal (not intrapersonal or mass) exchanges.

This definition of communication is a fine example of the ongoing discussion and the lack of universal acceptance of a single definition of communication. All the points Reinsch makes could be argued against. For example, limiting the notion only to words in natural language could be argued that it does not include the aspects of non-verbal communication or semiotics.

Another effort in defining communication is to approach it from the communication process. McCroskey (1968, 6) describes in his model, derived from the Shannon-Weaver information theory (see **Error! Reference source not found.**), that in a rhetorical communication process the source encodes the message which is transmitted via a primary channel to the receiver who then decodes the message and gives feedback via a feedback channel. Thus source can adapt to a receiver's feedback by altering his or her subsequent messages and responses. The message is affected by noise in both channels. The model described by McCroskey also notes that noise may be evident prior to the communication act in conception of idea, determination of intent and selection of

meaning on the source's side and after the communication act in subsequent thought and action on the receiver's side.

Greenberg & Baron (1995, 330) follow McCroskey's line of thinking and define *communication* as "the process by which a person, group, or organization (the sender) transmits some type of information (the message) to another person, group, or organization (the receiver)". Servaes (1996, 414) states that the perspective on communication has changed and it is more with process and context, on the exchange of 'meanings', and on the importance of this process, namely, the social relational patterns and social institutions that are the result of and are determined by the process. He continues that the focus moves from a 'communicator' to a more receiver-centered orientation with the resultant emphasis on meaning sought and ascribed rather than information transmitted.

The information system theorists have used communication theories in their work. The most famous information system theory on communication is probably Shannon and Weaver's information theory (see **Error! Reference source not found.**). Other communication theories are used in the filed of information system theories as well (e.g. Searle 1969, Austin 1975, Habermas 1972, 1984). These theories are however excluded in this work, for their contribution in defining communication is in this case is seen as irrelevant despite of their unquestioned merits.

In this case the process of communication is more relevant than general description of communication. In this work an attempt is made to build a set of guidelines for providing and distributing content. The idea of communication process is more close to this work than idea of general description of communication.

Another fundamental concept is that communication is contextual, *A communication context* is a type of situation in which communication occurs. Communication in one context will have different characteristics than communication in another context. (Infante, Rancer & Womack 1990, 14.)

Infante, Rancer & Womack (1990, 15) state that generally the contexts considered are:
1. Interpersonal (communication between two people)
2. Small Group (communication involving several people)
3. Organizational (communication within and between organizations)
4. Public (a speaker addressing a large audience)
5. Mass (communication which is mediated by electronic or print media)
6. Intercultural (communication between people of different cultures)

This study has elements, which concern organizational, mass and even intercultural communication. The emphasis however will be on organizational communication from the information officers' point of view and mass communication from the journalists' point of view. However all contexts were found during the summit.

This kind of a broad notion of communication, which concentrates in the communication process and its contextual nature is applied in this study and relevant theories and models are also represented to be applied in the case discussed here.

3.1.1 Communication process

The *information theory* describes the basic communication process. It has been basis to numerous communication theories, including model described by McCroskey used as the definition for communication in this case.

Shannon and Weaver (1949) sought to identify the quickest and most efficient way to get a message from one point to another. Their goal was to discover how communication messages could be converted into electronic signals most efficiently, and how those signals could be transmitted with a minimum of error. This theory is frequently referred to as the information theory of communication (Infante, Rancer & Womack 1990, 114-115).

The term "information" in the information theory differs from how the word is usually understood. According to Shannon and Weaver (1949, 9) information is defined as a measure of one's freedom of choice when one selects a message.

In order to understand this concept of information, three other concepts must be considered. Firstly, uncertainty is closely related to information in the information theory. Information refers to the degree of uncertainty present in the situation. Uncertainty relates to the concept of predictability. When something is completely predictable, it is completely certain, so it contains very little, if any, information. Secondly, entropy, which refers to the degree of randomness, lack of organization, or disorder in a situation. The more entropy there is in a system, the less predictability. The less the predictability the greater the potential information. The third concept, redundancy, is the opposite of information. Something that is redundant adds little, if any, information to a message. (Infante, Rancer & Womack 1990, 116-117)

The critics of this theory (e.g. Reddy 1979, see **Error! Reference source not found.**) argue that it has limited utility when applied to human communication. The definition of communication as the stimulation of meaning is not addressed by the information theory approach. It has however contributed to the clarification of certain concepts, such as entropy and redundancy. Information theory introduced also a concept, which is used in great frequency today, a bit - binary digit - which is a measure of the actual amount of information in a message. (Infante, Rancer & Womack 1990, 117)

Reddy's work gives another perspective to communication in contrast to the information theory. According to Reddy's view people make interpretations from the context and language functions as a conduit. The conduit metaphor is used also in the framework of CSCW (e.g. Whitaker 1992).

Reddy (1979, 290) describes a *conduit metaphor* for linguistic communication, the major framework of which is based on the following assumptions:

1) language functions like a conduit, transferring thoughts bodily from one person to another,
2) in writing and speaking, people insert their thoughts and feelings in the words,
3) words accomplish the transfer by containing the thoughts or feelings and conveying them to others, and
4) in listening or reading, people extract the thoughts and feelings once again from the words.

In the conduit metaphor model the contextual nature of communication is emphasized. According to Whitaker (1979, 54) grammar may set the ideal for a language's usage, but conversants only approximate this ideal, largely due to their personalized mediation between abstract rules and conversational situations. Mutually recognized contextual elements are critical to such exchanges. (Whitaker 1992, 54)

Communication is a *transactional process*. By that it is meant that communication involves people sending each other messages, which reflect the motivations of the participants. People expect others to react to their messages and in turn expect to respond to the messages of others. When we communicate, we attempt to affect our environment. Communication is a process of mutual influence in which participants' motivations interact (Infante, Rancer & Womack 1990, 13).

The transactional nature of communication means each communicative situation is unique to a degree. A communication situation occurs with particular people, in particular physical and social circumstances, and during a particular period of time. (Infante, Rancer & Womack 1990, 14)

The communication situation in this case was The Helsinki Summit 1997. Information officers and journalists communicated with each other. The messages of the information officers affected to the journalists and vice versa. These reactions the messages invoked were unique to a degree. The environments and circumstances vary from summit to another, but the basic structure remains almost the same.

The Westley-MacLean model of communication (1957) was designed specifically to deal with the process of communication in a mass communication context. A key concept, which the Westley-MacLean model includes, is the *intermediary* in the communication process.

Between the original source of communication and the ultimate receiver of communication there is often another person or persons who might intervene or intrude a communication process and encode the original source's communication for the receiver. The intervening persons are referred to as gatekeepers.

Feedback is important in the Westley-MacLean model. There is a feedback channel between the ultimate receiver and the gatekeeper, between the gatekeeper and the source and also between the receivers and the source. (Westley-MacLean, 1957, 31-38)

In this case the information officers at The Helsinki Summit 1997 worked as gatekeepers in a sense that the journalist seldom had access to the original material, but it was delivered to the journalists by the information officers.

3.1.2 Communication in the Information Age

According to O' Hair (1992, 26), communication must be planned carefully because there are so many new options to consider in the creation and transmission of messages. To cope with this age one will have to know how to integrate technology with communication skills and how to communicate with people who have diverse backgrounds and a wide range of goals and expectations.

O'Hair (1992, 26-27) offers a model for strategic communication, which provides help for employees to adapt and respond to changing business environments. O' Hair's model consists of four areas:

1. *Goal setting* - Clear goals can be set for each communication situation.
2. *Situational knowledge* refers to the information one has or one can collect about the requirements for successful communication in a particular context. The chances for successful communication are improved if one knows what is appropriate and expected of you.
3. *Communication competence* - When communication is planned strategically, number of factors are chosen, such as type of message, type of channel, style of delivery. These factors demonstrate one's understanding of organization's values and needs. Communication competence also entails adapting correctly to situational demands.
4. *Control of anxiety* refers to the handling of the situations that may cause anxiety on the job, such as meetings with superiors and group problem-solving meetings. One can learn to maintain one's nervousness at a "threshold of anxiety" that energizes one's communication without destroying its effectiveness.

One of the key elements in communication competence involves selecting the proper channel. In the information age, when there are many new options to consider in creation and transmission of messages, the selection of the channel used for communication becomes even more important.

According to O'Hair (1992, 61) much variation exists in *channel richness*. When the message is designed for specific people, rich media can be considered best. The following figure describes the variations in media richness.

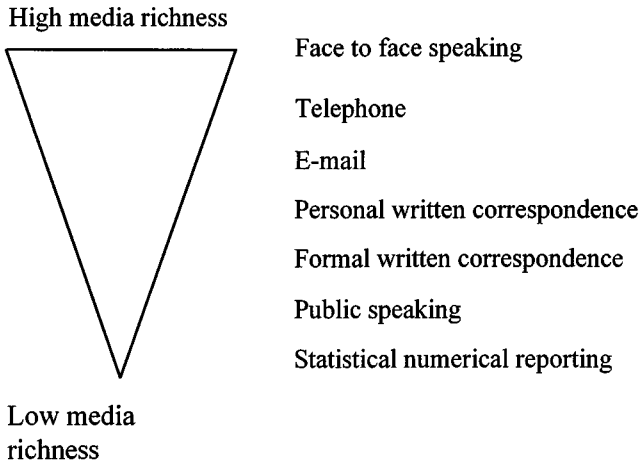


Figure 1
Range of channel richness
O'Hair, 1992

The sender considers the goal of the message and the characteristics of the intended receiver or receivers to determine the proper channel. Also speed, accuracy, feedback, appropriateness, cost, accountability (the responsibility of the receiver for responding to a message) and acceptance must be considered in the choosing of the communication channel. O'Hair (1992, 60-62).

The other Internet technologies than the e-mail are of lower media richness. Newsgroups can be considered to be somewhere in between personal written correspondence and formal written correspondence. The different WWW applications vary in this scale from near the statistical numerical reporting (a HTML document) to formal written correspondence (an announcement pushed to a client). Also the use of pictures on the WWW pages vary in their richness. A picture can be as well intimate as general.

3.2 Organizations and Organizational Communication

Organizational communication is a form of communication, which has distinctive features compared to communication in general. The organization of The Helsinki Summit 1997 was a temporary one, composed of many organizations (the Ministry for Foreign Affairs, YLE, USIS, HPY etc.).

The various definitions of organizations and organizational communication may be somewhat overlapping. In this study an attempt is made to present the models of organizations and organizational communication that are relevant to the case discussed here.

3.2.1 Organizational Information

Karl Weick's (1969) book, the Social Psychology of Information has been very influential in the field of organizational communication. Weick's model focuses on the idea that organizations come into being through continuous human activity. Weick considers communication the crucial means by which organizing occurs, and information is the key feature of the organizational environment.

Weick uses the terms introduced with the information theory, in which the meaning of the term "information" is synonymous with "what you need to know that you don't know yet" (Infante, Rancer & Womack 1990, 318). Weick also uses the concept of uncertainty reduction (see chapter 3.2.2) to show that organization members perform communication activities to reduce uncertainty from their environment. Rules and communication-behavior cycles allow organizations to cope with the uncertainty (equivocality) in messages they receive from the environment (see chapter 3.2.2). Information that is equivocal can be interpreted in several different ways. According to Weick's theory, if the information received is clear (unequivocal) organization uses rules to process and react to the information. (Weick 1969, 177)

According to Weick's theory organizations follow three steps during the organizing process: enactment, selection and retention. In the enactment phase the organization members attend to information in the surrounding environment. Rules and cycles are used to interpret the information. In the selection phase the organization makes decisions about the information it has processed about if the information is sufficiently unequivocal. If the equivocality of the information needs to be reduced, new rules and cycles has to be used to interpretation of the information. The third phase is retention in which the organization evaluates the rules and cycles used to see whether they should be dropped or retained for the future use. (Weick 1969, 177-188)

The organization of The Helsinki Summit 1997 existed and acted in the real surroundings only for a couple of days. The time was very short for an organization to work and the described enactment phase was the only step there was time enough to take. The experiences and information gathered from this summit and the preceding summits can and should be used in evaluation of the work done. However it is difficult to develop an non-existing organization for the possible next summit because the organization in future will not be the same one.

3.2.2 Uncertainty Reduction

The notion of uncertainty is one of the key elements in Weick's theory of organizational information. *The Uncertainty Reduction Theory* (URT) (Berger & Calabrese, 1975) was developed to describe the interrelationships between uncertainty, the amount of verbal communication, information seeking, similarity and attraction, the intimacy level of the communication content, nonverbal expressions of affiliation, and the rate at which individuals engage in equal amounts of information exchange. URT was initially presented as a series of axioms and theorems. The twenty-one theorems of URT suggest

that more communication creates less need for immediate and equal exchanges of information-seeking communication (Berger & Calabrese 1975, 99-112).

In an effort to explain how uncertainty reduction works beyond the initial stages of relational development, Berger (1979, 1986) has extended the boundaries of the original theory by including new concepts and refining the original ones. Cognitive uncertainty refers to a generalized state of uncertainty between individuals, while linguistic or behavioral uncertainty refers to the level of uncertainty felt in a particular conversation (Infante, Rancer & Womack 1990, 277).

Also, three levels of knowledge are described in the extended theory. Descriptive knowledge deals with statements people make to describe others' current behavior. Predictive knowledge includes statements about others' beliefs, attitudes, feelings and future behavior. When an individual reaches the explanatory level of knowledge he or she can explain why another people behave or believe in a certain way. Each level of knowledge includes the preceding level. The desire to gain knowledge about others concerns three conditions. The first condition concerns incentive. We try to find out more about people who can provide us with rewards or satisfy our needs so that we may develop strategies to obtain the rewards. A second motive is unpredictable behavior of others. When a person's communication behavior deviates from our expectations, we monitor their communication more closely to get additional information. A third motive is the likelihood of interacting with others in the future. The expectation of future contact causes people to pay closer attention to their own and others' communication. (Infante, Rancer & Womack 1990, 277)

Aforementioned three levels of knowledge are present also in this study. The observations made in the Helsinki Summit 1997 describe the current behavior of the journalists (descriptive knowledge). Based on the observations and the statistical data the second level, predictive knowledge, is tried to be achieved. This level has to be reached before any statements on the explanatory level can be made. This notion is not derived only from URT, but from common theories of science as well.

3.2.3 Organization Culture

According to Schein (1985, 21) groups and organizations in a society create their own cultures which affect the way people in them think, act and feel. Unless these cultures are learned to analyze it cannot be really understood why the organizations do some of the things they do.

According to Allen (1977, 138-139) different cultures in different organizations interpret and analyze problems in different way, they emphasize the basis to the solutions of the problems differently, thus guaranteeing different outcomes in resolving problems. This shared coding program develops partly from shared experiences and partly from the input of organization's philosophy and its key persons. If the coding program is shared between the members of an organization, it promotes the efficiency of

communication, but if the coding program is not shared it can lessen he efficiency of communication.

To define the term organizational culture, the term organization must be defined first. Schein (1985, 24) defines culture to be the deepest, unconscious level of presuppositions and beliefs which is learned and shared to every member of the organization and which determines the views of the organization itself and its environments in "self-evident" way.

A culture consists of three levels: artifacts, values and presuppositions. The most visible level of culture is the artifacts - the built physical and social surrounding, technology, the outcome of group's technical work, spoken and written language, the creations of art and the behavior of the group. Even though the artifacts can easily be observed, it is more difficult to find out their meanings, relationships and what deeper structures they reflect.

The second level is the values. The values proclaim how things should be in contrast to how things currently are. When a group faces a new task or problem, the first suggested solution can only have a meaning of value. This solution might arouse discussion and controversy in the group. If the solution works, the value will undergo a cognitive transformation from a value to a belief and to a presupposition. Many values are conscious and clearly expressed because they have a moral and norm-creating task in certain key situations.

The third level is presuppositions. When a solution to a problem proves itself continuously to be working, the solution will become self-evident. What was first only a hypothesis based on a value or a feeling will be gradually held as reality. There is little variety in the groups of a culture when it comes to presuppositions. (Schein 1985, 32-38)

According to Greenberg & Baron (1995, 539) *organizational culture* can be defined as a cognitive framework consisting of attitudes, values, behavioral norms and expectations shared by organization members.

The organization of The Helsinki Summit 1997 was a temporary one and it was composed of several organizations, which all had their own organizational culture. The attitudes, values, norms and expectations presumably vary between the different organizations.

3.2.4 Organizational Climate

The climate concepts, used by organization researches are analogies from physical climate. There have been numerous different concepts of climate used by researchers and relationships between different concepts of climate (such as organizational climate, communication climate, managerial climate, decision-making climate etc.) have been paid too little attention to (Lampinen 1991).

Organizational communication and communication climate are the most widely researched concepts of climate (Lampinen, 1991). The concept of communication climate is often adjacent with the concept of organizational communication (e.g. Lampinen, 1991; Guzley, 1992; Pace, 1983; Poole, 1985) In this study both concepts are for that reason presented.

Organizational climate has been identified as a critical link between the members of an organization and the organization itself (Guzley 1992, 379). Organizational climate has also associated with organizational commitment.

Organizational climate represents members' generalized beliefs and attitudes about the organization (Poole and McPhee 1983, 156). Pritchard & Karasick (1973, 126) see organizational climate as a relatively enduring quality of an organization's internal environment distinguishing it from other organizations, which:

a) results from the behavior and policies of members in organizations, especially top management,
b) is perceived by members of the organization,
c) serves as a basis for interpreting the situation, and
d) acts as a source of pressure for directing activity.

Organizational climate also associates with organizational commitment (Guzley 1992, 379). Commitment of an attitudinal nature is characterized by the following three factors (Mowday, Steers & Porter 1979, 226):

1. a strong belief in and acceptance of the organization's goals and values,
2. a willingness to exert considerable effort on behalf of the organization, and
3. a strong desire to maintain membership in the organization.

Commitment to organizations grows slowly. The longer employees are with an organization, the more time there is to evaluate the relationship to the organization. Tenure should in its part moderate the relationship between organizational climate, communication climate and organizational commitment. The more favorable the perceived organizational climate is the higher is the level of organizational commitment of employees (Guzley 1992, 385-386, 395).

By virtue of being the medium by which organizational work is accomplished, communication is related to organizational climate (Guzley 1992, 383). Communication climate has been considered separately from the larger context of organizational climate (Guzley 1992, 379). Dennis (1974, 29) defines communication climate as a subjectively experienced quality of the internal environment of an organization. The concept according to Dennis also includes a general cluster of inferred predispositions identifiable through reports on members' perceptions of messages and message-related events occurring in the organization (Dennis 1974, 29). The more favorable the perceived organizational climate is the higher is the level of organizational commitment of employees (Guzley 1992, 395).

Organizational climate has impact on communication within an organization. The commitment the members on the overall organization of The Helsinki Summit 1997 came from the commitment to the organization they belonged to. In this case the communication between the members of the several organizations (e.g. White House Press and USIS) was the basis for the organizational climate of the overall temporary organization.

3.2.5 The Introduction of New Technology to an Organization

The introduction of any new technology to an organization can be considered as a problem of cultural change. The procedures, values and self-image are based on the used technology. If the technology changes considerably, the organization has to learn new procedures and to define itself more profoundly in a way that includes deep cultural presuppositions. In highly developed and computerized information systems it has become clear that in many different fields the subordinates know more than their superiors, or that the groups which used to not have power have gained more power. Those in power often oppose new technology in order to maintain their own power. The opposition usually does not concern the new technology as much as it does to the cultural changes. When new technology is adopted the question of redistribution of power is often given little consideration. Even if these questions were handled the directors often realize too late that the new technology which is already in use brought with itself a new set of assumptions, values and patterns of behavior. (Schein 1985, 53-54)

When new Internet technologies are introduced to organizations the aforementioned issues are to be faced. To fully utilize the Internet technologies it leads to new procedures in the organization.

The same issues arise when information systems are designed to implement change in an organization. According to Markus & Benjamin (1997, 55) it is widely known that many large-scale change management projects involving new information technology (IT) fail to reasons unrelated to technical feasibility and reliability. In IT-enabled change the emphasis seems to be on people staying in prescribed roles. Information System (IS) specialists and other groups are assigned a role with specific responsibilities. But people do not always perform their assigned roles well. When this occurs, strong expectations about people's proper roles get in the way. Because "it's supposed to go that way" or "it's not my job", people do not see other ways to accomplish the same goals and do not take proactive, effective measures to keep change on track. (Markus & Benjamin 1997, 55-56)

The failure to employ best practices in IT-enabled change stems from mistaken beliefs about the causes of change – belief in IT as a magic bullet. This belief deeply held can cause people to restrict their own efforts as change agents. Change in human behavior requires direct personal contact between change agents and targets. While good design is important, successful change requires implementation planning, execution and improvisation to deal with resistance and unforeseen events. Assigning responsibility

for a complex change to a single group (or thing) is a recipe for failure. (Markus & Benjamin 1997, 66)

The issues discussed here can be as well applied from the IS system designing point-of-view (see 3.5 Information Systems).

3.2.6 Organizational Communication

The basic process of communication is similar in different contexts. Organizations, however, have a unique feature, which has impact on the communication process. That feature is organization's structure. The term *organizational structure* refers to the formally prescribed pattern of interrelationships existing between the various units of an organization (Greenberg & Baron 1995, 343). Reinsch (1991, 208) takes a managerial view and defines *organizational communication* as communication intended to affect (overthrow, modify, fortify) organizational structure. Reinsch (1991, 208) makes a distinction between organizational communication and other forms of communication in organizations, namely management communication (intended to effect a manager's decisions) and business communication (intended to help a business achieve its fundamental goal).

One key purpose of organizational communication is to direct action in an organization. To get others to behave in a desired fashion. Communication in organizations involves not only single efforts but also concerted action. Another key function of communication in organizations is to achieve coordinated action. Communication in organizations, however, has an interpersonal facet, a focus on the social relations between people. (Greenberg & Baron 1995, 332)

In organizations information may flow up (from lower to higher levels), down (from higher to lower levels) or horizontally (between people at the same level) according the organizational chart. Typically upward communication includes information, downward communication includes instructions and directives and horizontal communication includes coordination. (Greenberg & Baron 1995, 345)

The patterns determining which organizational units (people or groups) communicate to which other units are referred to as *communication networks*. Networks can be centralized, in which communication flows via a central person or unit, or decentralized, in which members of an organization are given equal opportunities to communicate with each other. Centralized networks are found out to be superior on simple tasks and decentralized networks on complex tasks. (Greenberg & Baron 1995, 347-348)

Information also flows along informal communication networks. These informal connections between people spread information rapidly because they transcend formal organizational boundaries. (Greenberg & Baron 1995, 349-352)

3.2.7 Image Marketing

Images do not play an insignificant role in today's communication. According to Rope & Vahvaselkä (1992, 62) image marketing is at work in every organization, including governmental as well as commercial organizations.

Images are subjective views of objects. Image are formed by the sum of the person's knowledge, experiences, attitudes and feelings on or about the object to Rope & Vahvaselkä (1992, 63). According to Lehtonen (1990, 17), by the concept image one can also mean the mental picture which a person or an organization consciously attempts to convey.

According to Lehtonen (1990, 18) it is characteristic for images, cognitive maps, schemes, scripts, scenarios, stereotypes and other cognitive structures that they make the perceptions of reality more complete. If a person's image about an organization is negative, the negativity has a tendency to spread to other image factors as well.

By *image marketing* Rope & Vahvaselkä (1992, 62) mean action in which by influencing a predefined target audience's images, set goals are tried to be achieved. They list the target audiences, which are not merely customers, although they are included: customers, information and PR officers, financiers, municipal and governmental groups, suppliers, personnel and owners. (Rope & Vahvaselkä 1992, 62.)

Lehtonen (1990, 18) states that according to image marketing theorists external value for products from image factors should be searched from when the level of abstraction is high. In governmental public service organizations' image enhancing projects the goals include not only improvement of position in competition with other organizations, but also it can have elements of internal marketing for organizational commitment.

The aim of marketing of public service organizations is to influence the attitudes, values and behavior of the citizens. The organizational image and the values attached to it are a primary goal in marketing and the services and products are only tools for the image building. The tendency to rather influence people's images instead of substantial informing or rational argumenting is a manifestation of the transformation from an information society into an image society. In this context, image society means the communication environment, which uses the means of image marketing in influencing people's decision-making and behavior. The images affect people regardless of the opinions of how desirable or ethically acceptable decision-making on heuristic images rather than rational thinking is held. Governmental public service organizations have to take images into consideration in planning their future. (Lehtonen 1990, 19)

The image marketing can take place also on international level. According to Kotler (1987, 8-9) nations have become increasingly interested in nation marketing in competition for tourists, exports and investments. Some nations however hardly have an image, or it is a vague one, at best.

If a nation wishes to undergo an image transplant it must recognize the process to be a difficult, long and problematic primarily for three reasons.

1. People tend to preserve their originally conceived concept of another nation in spite of counter-evidence
2. Many factors beyond a nations control affect the nation's external image (e.g. wars and scandals)
3. Images are grounded in the reality of the nation and image transformation is not possible though sign manipulation alone

Given these limitations, nations still have some scope for consciously improving the image abroad. One of the tools for nation marketing is the promotion of one or more important personages who might serve as a nation's icon to communicate the desired image. Icons are constructed primarily for internal consumption, to meet internal political objectives, but they are constructed increasingly for internal consumption as well. Kotler (1987, 8-12)

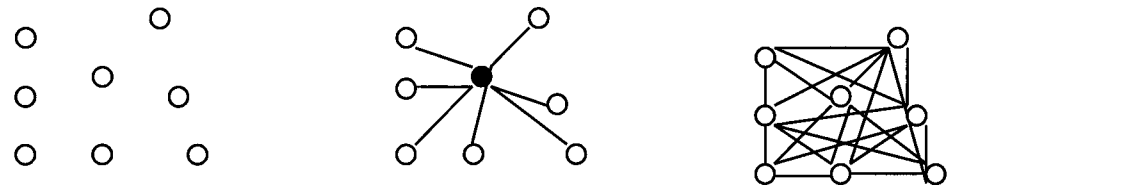
3.2.8 Decision Making and Information Technology

The dramatically decreasing costs of information technology are changing the economics of organizational decision making and decentralized control is becoming more desirable in many situations (Malone 1997, 23). To fully exploit the possibilities of new information technologies, one has to see radically decentralized organizations, for example the Internet and scientific communities, as new models of organizing work in the twenty-first century.

As improvements in technology reduce communication and coordination costs, the most desirable way to make decisions moves though three stages (Malone 1997, 23-24).

1. The first stage: when communication costs are high, the best way to make decisions is via independent, decentralized decision-makers.
2. The second stage: when communication costs fall, remote information can be brought together and centralized decisions can be made.
3. The third stage: when communication costs continue to fall, there comes a point in many decision-making situations at which connected, decentralized decision makers are most effective

Naturally, many factors other than communication costs affect centralization and decentralization, such as interpersonal trust, location of relevant information, personal motivations, organizational traditions, national cultures, governmental regulations etc. The three decision making structures are described in the following figure (Malone 1997, 27).



Independent, Decentralized Decision Makers, "cowboys"

Centralized Decision Makers, "commanders"

Connected, Decentralized Decision Makers, "cyber cowboys"

Figure 2
Three Decision -Making Structures
Malone 1997

Decentralized decision-making can be partly derived from economic history. In the last 100 years the dramatic rise of large organizations was motivated partly by the economics in the centralized decision making. Centralized decision-makers could integrate diverse kinds of remote information, and make better decisions than the unconnected local decision-makers. (Malone 1997, 25.)

In the latter part of the century another kind of change is beginning to occur. Many companies are flattening their organization by removing the layers of middle managers. The remaining managers, who are supervising more people, are delegating more decisions to subordinates. More employees find themselves with increased responsibilities. Malone (1997, 25).

In another transformation, more work is coordinated outside the boundaries of traditional organizations by outsourcing activities. Virtual corporations, networked organizations and other shifting alliances of people and organizations are performing work that single, large organizations used to handle. Malone (1997, 25).

Local decision-makers have access to local information, which is difficult to communicate to central decision-makers. This information is needed by the centralized decision-makers to make good decisions. The communication of this large amount of information to much bigger groups of decision makers is now made possible by IT at a cost and on a scale never seen before. Malone (1997, 25).

Many factors affect how decision-making power is distributed in organizations and three factors are most salient: decision information, trust and motivation (Malone 1997, 28-29). IT relates to these factors followingly:

1. *Decision information*: IT makes structures that require more communication feasible. IT can thus be used to bring easily communicable information to people who have knowledge, experience or capabilities that are hard to communicate. IT also makes distance less important in determining where decisions should be made.
2. *Trust*: IT can make remote decision-makers more effective, for example by centrally developed managing software. IT can also help in controlling and monitoring remote decision-makers. IT can also help socialize remote decision-makers and engender loyalty by, for example, business television network, email and video conferencing.

3. *Motivation*: Motivation depends partly on who makes the decisions about what workers will do, how and when they do it. Increased motivation often leads to higher quality and innovativity in work. As more work becomes knowledge work, innovation becomes increasingly critical to success. Because IT can enable both the centralized and decentralized systems, its effect on motivation is ambiguous.

3.3 Mass Communication

The mass media exert a powerful influence on society, culture and individuals. Mass communication is perhaps one of the most powerful influences in contemporary society. Some of the theories, which were considered relevant for the case discussed in this study, are presented here.

3.3.1 Media functions

The mass media serve many functions for our society. Lasswell (1948) introduced three functions of mass communication: surveillance, correlation and cultural transmission. Wright (1960) added the fourth function, which was entertainment. With the addition of the fifth function, mobilization (McQuail 1987), the following set of basic ideas about mass media functions can be named:

Surveillance
- providing information about the events and conditions in society and the world
- indicating relations of power
- facilitating innovation, adaptation and progress

Correlation
- explaining, interpreting and commenting on the meaning of events and information
- providing support for established authority and norms
- socializing
- co-ordinating separate activities
- consensus building
- setting orders of priority and signaling relative status

Cultural transmission
- expressing the dominant culture and recognizing subcultures and new cultural developments
- forging and maintaining commonality of values

Entertainment
- providing amusement, diversion and the means of relaxation
- reducing social tension

Mobilization

- campaigning for societal objectives in the sphere of politics, war, economic development, work and sometimes religion

(McQuail 1994, 78-79)

3.3.2 International Media Dependency

Mowlana (1985) made a general model of all forms of international communication. The main features of the model are shown in the following figure.

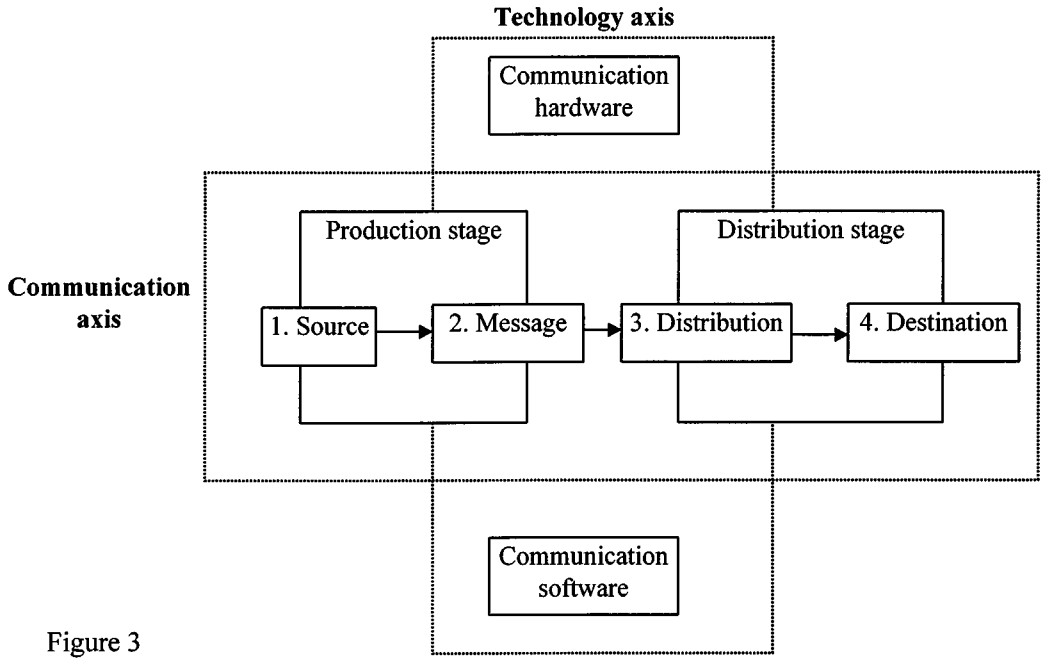


Figure 3
International communication dependency.
McQuail 1994

The model represents the sequence from sender to receiver mediated by a technologically based production and distribution system. In international communication each of the four stages can be spatially, organizationally and culturally separated from other stages. Media products, such as news bulletins, from one country may be incorporated in a message produced in another country and distributed in that or even in a third country. (McQuail 1994, 179-180)

This process is crosscut by the technology axis. Each stage is dependent on expertise and property relating to hardware or software. Hardware includes, for instance, studios, printing presses, transmitters, satellite links etc. Software in this model consists of scripts, performance rights, management, marketing etc. (*ibid.*)

The model portrays the condition of multiple dependency in the flow of communication from more developed to less developed countries. The latter are completely out of reach

from self-sufficiency in terms of media terms. All four elements, which the less developed countries are dependent of, may be controlled in the originating country. The dominance of the world news and news-film agencies reinforces the bias in the content of what is available for many news media around the world. (*ibid.*)

3.3.3 Journalistic Work

According to Hultén (1993) the journalistic process of making news begins with the assignment to a story. After that the journalist gathers the facts and edits them in a certain news format. Gradually journalists develop routines according to which they shape their news stories. Baskin & Aronoff (1992) emphasize that the information officers should know these routines. This helps the journalists to feel that the arrangements from the information officer's side are relevant and organized well.

Hultén (1993) and Miettinen (1992) stress that it is the journalist who plans the news story. They consider the form and quality of information they need for their story. Miettinen (1992) classifies information based on its form: literary (written), auditory and visual and on its nature: facts, interpretations and opinions.

Some people and institutions get more attention and privileged access as sources. Studies of news reporters make clear that news reporters do not share their sources and contacts with their colleagues. News is often reports of what prominent people say about events rather than reports of the events themselves. (McQuail 1994, 215)

Probably the best-known example of a person as news event is that of the US president. Grossman and Kumar (1981) noted that in the variety of possibilities of reporting the President there is one constant imperative - closeness to senior officials and, if possible, the President in person on as exclusive basis as possible. A great deal of news gathering revolves around people. The significance of personal contacts in any kind of media work involving attention to current social reality has been underlined by research as well as by informal accounts of news producers. The picture of the world shown through media eyes is often the result of chance encounters or informal communication networks developed by people in the media. (*ibid.*)

In the Helsinki Summit 1997 most of the journalists were not in a position to meet and interview the presidents themselves. The relevant people for journalists for making their stories were not the presidents themselves but the communication networks between the journalists and the official sources of information (e.g. the information officers).

Research on mass communication has come up with three main aspects that result in symbiosis between media and their sources. First, there is the planning and predictability, which goes with any large-scale continuous media production operation. The media have to have an assured supply of content. This need is reflected in the growth of secondary organizations, which provide content regularly. Secondly, there is the question of imbalance between information suppliers and media takers of information. Some sources are more powerful than others because of their status, market

dominance or intrinsic market value. This situation is reflected, for instance, in the privileged access of the more politically and economically powerful and the favored position of richer media and media systems in the world. Thirdly, there is the question of assimilation that arises when a mutual interest exists on the part of the media and the sources. This type of relationship may be justified by its success in meeting the needs of the public as well as those of the media organization but it can conflict with the expectations of critical independence and professional norms. This can lend itself to the suppression or manipulation of information in the interest for certain actors or institutions. (McQuail 1994, 223-224)

Spatial relationships have some effects on the selection of news. The nearer the location of news events is to the region of the intended audience, the more likely it is to be noticed. Nearness may, however, be overridden as a factor by other considerations, such as power or the intrinsic character of events (for instance scale and negativity). (Galtung and Ruge 1965, 64-90)

The term news beat means that most of the news organizations have a structure of desks or departments, which are partly based on location. Fishman (1980) explained that the news beat is not only territorial and topical it is also a social setting - a network of social relations involving reporters and sources who frequent particular places. The news beat is established in order to to facilitate the uncovering of news events, but it inevitably leads to the construction of events. What happens in a news beat is more likely to be defined as news just because it is observed. (McQuail 1994, 215-219)

Time has enormous influence as a consideration on news selection. Timeliness reinforces one of the most significant properties of communication technology - its capacity to overcome barriers of time and space. The importance of a "first" or scoop with a newspaper is often greater than any other factor in deciding on selection. (*ibid.*)

McQuail (*ibid.*) lists the following news selection factors:

- Powerful people have more access
- Personal contacts influence attention
- Places where events happen
- Places where the media is located
- Places where power is exercised
- Predictability and routine
- Proximity
- Timeliness of events
- Timing in relation to news cycle

3.3.4 The Uses-and-Gratifications Theory

One theory of mass communication is the uses-and-gratifications theory. *The uses-and-gratifications theory* considers that audience members actively seek out the mass media to satisfy individual needs (Infante, Rancer, & Womack 1990. 353). The uses-and-

gratifications theory has already been used as a methodology of studying the Internet (e.g. Rafaeli, 1986; Swift, 1989).

Blumler and Katz (1974) derive the logic of the uses-and-gratifications approach, based in functional analysis, from
(1) the social and psychological origins of
(2) needs, which generate
(3) expectations of
(4) the mass media and other sources, which lead to
(5) differential patterns of media exposure (or engagement in other activities), resulting in
(6) other consequences, perhaps mostly unintended ones

Two variables are gratification obtained (*GO*), defined as "the perceived outcome of engaging in a particular behavior," and gratification sought (*GS*), "the seeking of a value outcome mediated by the expectancy of obtaining that outcome" (Palmgreen, Wenner, & Rayburn 1981, 473). In uses-and-gratifications studies, "measurement of *GS* and *GO* at the same level of abstraction is crucial to direct comparison of communication outcomes with what is sought" (Palmgreen, 1984, 34).

In The Helsinki Summit 1997 the journalists' needs were to obtain material to be used in their work. The expectations for the Internet as a media arose with the journalists who were familiar with the media. Those journalists who had the expectations lead them to seek material from the Internet (GS). The consequences the information-seeking activity resulted varied most likely a lot depending if the material needed was found or not (GO).

3.3.5 The Internet as Mass Medium

Communication scholars faced a new challenge when the Internet emerged as medium for communication because it can be used for a wide range of ways to communicate; from intimate discussion between two people to distributing a single document to millions of people. Poole & Jackson (1993, 282) write that the emergence of new technologies which combine aspects of both interpersonal interaction and mass media, presents something of a challenge to communication theory. With new technologies, the line between the various contexts begins to blur, and it is unclear whether the models based on mass media or face-to-face contexts are adequate.

According to Morris & Ogan (1996) in creating new configurations of sources, messages, and receivers, new communication technologies force researchers to examine their old definitions: What is a mass audience or a communication medium? They continue that when the Internet is conceptualized as a mass medium, what becomes clear is that neither mass nor medium can be precisely defined for all situations, but instead must be continually re-articulated depending on the situation. The Internet is a multifaceted mass medium, that is, it contains many different configurations of communication.

One argument for a medium being a mass medium is the notion of critical mass. For any medium to be considered a mass medium, and therefore economically viable to advertisers, a critical mass of adopters must be achieved. Rogers (1986, 120) states that the usefulness of a new communication system increases for all adopters with each additional adopter. However Morris & Ogan (1996) argue that the critical mass notion initially works against adoption, since it takes a number of other users to be seen as advantageous to adopt. For example, telephone or E-mail system was not particularly useful to the first adopters because most people were unable to receive their messages or converse with them. Because a collection of communication services, electronic bulletin boards, Usenet groups, E-mail, Internet Relay Chats, home pages, gophers, and so forth-comprise the Internet, the concept of critical mass on the Internet could be looked upon as a variable, rather than a fixed percentage of adopters. Each of the specific Internet services can be viewed as we do specific television stations, small town newspapers, or special interest magazines. None of these may reach a strictly mass audience, but in conjunction with all the other stations, newspapers, and magazines distributed in the country, they constitute mass media categories. So the Internet itself would be considered the mass medium, while the individual sites and services are the components of which this medium is comprised. (Morris & Ogan, 1996)

The credibility of the information offered is another issue with mass media. Traditional mass media have addressed the issue within their organizations, hiring editors and fact checkers to determine what information is accurate. Source credibility will vary on the Internet, with commercial media sites carrying relatively more credibility and unestablished, less known sources carrying less. A much greater burden will be placed on the user to determine how much faith to place in any given source. (Morris & Ogan, 1996)

3.4 Communication Technology and Culture

It is plausible that communication technology will have an effect on the process of communication itself. It is also plausible that culture and communication are intertwined. If our experience on the world is technologically mediated, then technology itself must have some direct relevance on culture.

3.4.1 The Influence of Communication Technology on Media Culture

The influence that the technology has on culture is difficult to define, because technology is not an external autonomous entity, but it is a part of human culture. Simon Penny (1993, 153) stated that technologies remain meaningless until they become enmeshed in, and play a meaningful part in, culture.

No technology-culture effect can be established, because the technologies themselves are also cultural artifacts. Theories on the influence of technologies on culture are little

more than descriptions of observable patterns. The following figure represents a view of the process by which changing technology can influence media culture.

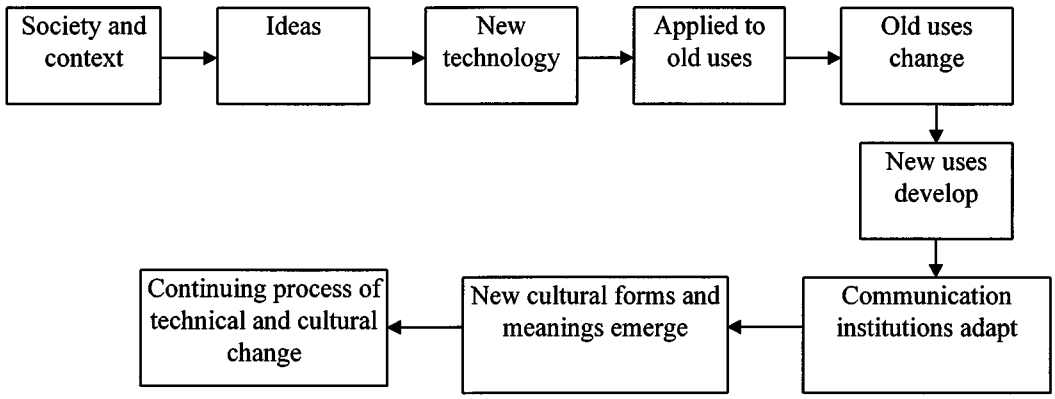


Figure 4
Interactive sequence of communication and technological and cultural change
McQuail 1994, 108

Perhaps the most important point, which the figure illustrates, is that technologies are unlikely to have a direct impact on cultural practices, but only as mediated through a relevant institution which in this case is the mass media (McQuail 1994, 108-110)

Several tendencies which follow from the characteristics of a particular media technology and its institutional development can be recognized which can constitute themselves as media biases in trying to account for technological influence on media culture. Bias does not mean determinism, but it a prediction towards certain kinds of experience and mediation. These five types of media technology bias are of experience, of content, of form, of context of use and of sender-receiver relationships. (*ibid.*)

The bias of sense experience accounts for the possibility of experiencing the world in more or less visual imagery or in more or less of an involving and participant way. There is the bias of form, with messages strongly coded, as in print, or essentially unceded, as in photographs. The bias of content refers to the terms of more or less realism or polysemy or to more open or closed formats. Fourthly, there is the bias of context of use, with some media lending themselves to private and individual reception when others are being more collective and shared. Fifthly, the bias of relationships refers to the contrasting one-way media with interactive media.

3.4.2 Globalization of Culture

A wide agreement exists on one of the effects of new communication technology. That is the trend towards internationalization of mass communication. The movement towards a global media culture has several sources. These sources include the greatly increased capacity to transmit sounds and moving images at low cost around the world,

overcoming limits of time and space and the rise of global media businesses (McQuail 1994, 112).

The transnationalization, which is assumed to be taking place, has a variety of meanings. It refers both to dissemination of certain broad kinds of media culture content and also to some potential effects on receiving culture. The content of transnational media will have been chosen expressly with a view to international transmission and this will usually imply a downgrading of cultural specificity in themes and settings that are considered more universal. Because of the influence of the United States in audiovisual and music production, transnational content is sometimes considered culturally North American in character. (*ibid.*)

A form of culture is increasingly often encountered which is not tied to a place or period. This contextless form of culture is, after Smith (1990, 177), born on a global telecommunication system.

One notion of globalization of culture is McLuhan's idea of global village. McLuhan (1964) looked at the process by which we experience the world through different media of communication. According to McLuhan's view all media are extensions of our senses and each new medium transcends the boundaries for experience reached by earlier media. McLuhan predicted the attainment of a global village, in which all information would be freely available for all to share. (McQuail 1994, 107-108)

Communication in global networks is not, however, globally carried out in universal fashion. Communication on the Internet also exists within developed social and cultural traditions. (December 1996)

3.5 Information Systems

Traditionally the concept of *information system* (IS) has been defined in two different views. One definition relates to its function and the other to its structure. From a structural view an information system is made up of collection of people, processes, data, models, technology and partly formalized language. All those factors form a cohesive structure, which serves an organizational purpose or function. From a functional view an information system is a technologically implemented medium for the purpose of recording, storing and disseminating linguistic expressions (messages in a natural language) and for supporting decision making. The services provided by an IS in part depend upon human capabilities and components (Hirschheim et al. 1995, 11).

Olle et al. (1991, 231-232) follow the same line and state that an information system is a means of recording and communicating information to satisfy the requirements of all its users, the business activities they are engaged in and the objectives established for them. An information system therefore supports a business activity by providing the information it needs or by automating some or all of it. They continue that it (information system) must contain (or have access to) data about entities of entity types on which it must provide information to enable the business activities.

Hirschheim et al. define (1995) *information system development* (ISD) as a change process taken with respect to object systems in a set of environments by a development group to archive or maintain some objectives.

Information system development contains the complete range of activities involved in the building process. In addition to implementing and maintaining an information system it encompasses system analysis and design. System analysis is the process of collecting, organizing and analyzing facts about a particular IS and the environment in which it is used. System design is the conception, generation and formation of a new system. It usually is based on the understanding obtained through systems analyses. The sets of methods, tools, techniques and models that are available to assist the developer is usually called information systems development methodologies (Hirschheim et al. 1995).

Mills, Linger & Hevner (1986, xiii) debate that information systems development should be practiced as a systematic business engineering discipline. This discipline can be based on principles of computer science and software engineering that applies directly to business problems.

Hirschheim et al. (1995) present seven generations of ISD methodologies. The seventh generation methodologies suggest that systems development must rely on understanding the user's work language and other experiential knowledge that can only be acquired through participation in a community's forms of life. However, as systems development means changing forms of life, it is invariably bound up with organizational politics that threaten its rationality. These approaches guide developers to focus more on the organizational and symbolic issues related to IS use rather than on thinking of technology alone.

The designers of information systems must take account for human social issues, not just technical concerns, when making architectural decisions (Cockburn 1996, 40-41). A designer puts a personal bias into designing a solution. This bias is built from a privately evolved set of principles. These principles create a force on the design and eventually meet another force that limits its use.

The principle patterns come from diverse sources of previous theories of information systems architecture. The patterns can range from broad scope to narrow. Beginning with forces having to do with people, key design principles can be established and can be concluded with detailed design decisions. By analyzing the patterns with this framework a larger context is given. The point is that important design choices have been left free and the optimal design choices differ. (Cockburn 1996, 46)

If the system to be designed deals with information technology –enabled change in an organization, the problems discussed in 3.2.5. The Introduction of New Technology to an Organization. When new information technologies are introduced to an organization's fundamental work procedures, the issues discussed are most likely to be faced.

3.5.1 Information Systems and the Internet

Organizations are getting involved with the World Wide Web (WWW) technologies at an astonishing rate. Virtually no organization had any business use with web technology prior to 1994, but by 1997 it is considered commonplace. In consequence there is much speculation of the impact of this technology on business, and thereby also for the future of IS management. The web technology will drastically change the delivery of IS services and organizational systems involved in these processes. The change will profoundly affect the way we should think, develop and use information systems: WWW technology is primarily not about developing nice web pages and distributing static information- it is about how computing platforms in the next century will be managed and organized. (Lyytinen, Rose & Welke 1997)

Lyytinen, Rose & Welke (1997) list the following components, which will make up the WWW as the future computing architecture: user interface and associated services, new telecom services, component driven applications, global scale, reflective applications, similar access for all clients, databases (centralized / decentralized), integration of both structured and unstructured data, integration of end user services with group-level services, separation of user interface and application rules and workflow support.

According to Lyytinen, Rose & Welke (1997) the traditional ISD (Information System Development) practices have not evolved with this new architecture in mind. In fact, its characteristics may require a different set of priorities for the development process. Traditional system development teams will have to change to meet these priorities.

One striking difference is the variety of skills needed and their distribution within the teams. Traditional development teams consist of software expertise. With the new emerging WWW technology the coverage of skills is much wider. More specifically, four areas of expertise need to be harnessed. These are: telecommunications, artistic/studio, BPR (Business Process Re-engineering) and software development skill areas.

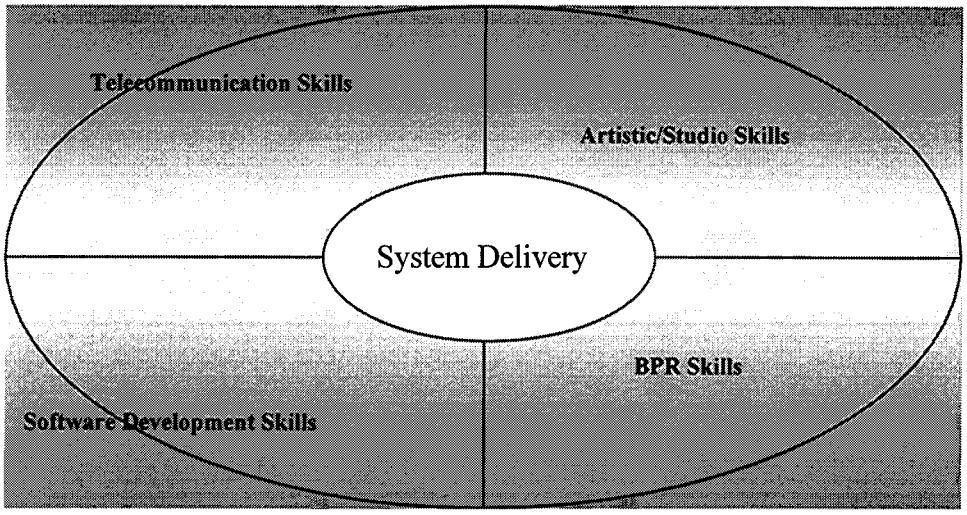


Figure 5
TABS model.
Lyytinen, Rose & Welke, 1997

All four areas will be needed to solve design problems. While each team member cannot be expected to understand details beyond their skill area, they must be able to understand each of the four perspectives and integrate these four into a common design. In addition, design teams must confront meta design issues such as to outsource, deciding on standards, managing end user interactions, resolving how responsibilities are distributed, and access and security. Finally, all information services available at the platform will need to be viewed holistically due to their distributed nature. Developers will be responsible for managing and providing a set of integrated information services rather than developing singular applications. Some of these services are developed in-house, some of them are developed by the end users and some are obtained outside the organization. Because of this "incremental" LEGO like nature of information services the new architecture will offer a tremendous room for creativity. Unlike traditional platforms, the web environment will enable a single environment for end-user and organization-wide applications and all types of information sharing. (Lyytinen, Rose & Welke 1997)

3.6 Internet Technologies

Internet is composed of several standardized or de-facto standard components. To build an information system or to research built information systems one has to recognize the most important ones of these components. The most relevant Internet technology components are described here.

3.6.1 WorldWideWeb

The WorldWideWeb (WWW) is a distributed hypermedia environment within the Internet, which was originally developed by the European Particle Physics Laboratory (CERN). Global hypermedia allows multimedia information to be located on a network of servers around the world which are interconnected allowing one to travel through the information by clicking on hyperlinks. Any hyperlink (text, icon or image in a document) can point to any document anywhere on the Internet. (Hoffman, Novak, & Chatterjee 1996)

The interactive nature of the WWW offers organization benefits in developing customer relationships. The potential for customer interaction, which is largely asynchronous under current implementations, facilitates relationship marketing and customer support (Cuneo 1995) to a greater degree than ever before possible with traditional media.

Web sites are available on demand 24 hours a day. The interactive nature of the medium can be used to hold the attention of the consumer by engaging the consumer in an asynchronous "dialogue" that occurs at both parties' convenience. This capability of the medium offers unprecedented opportunities to tailor communications precisely to individual customers, allowing individual consumers to request as much information as each desires. Further, it allows obtaining relevant information from customers for the purposes of serving them more effectively in the future. (Hoffman, Novak & Chatterjee, 1996)

Not only the service providers gain benefit from operating on the WWW. The services delivered via WWW are also more user-oriented than traditional media. The interactive nature of the Web and the hypertext environment allow for deep, nonlinear searches initiated and controlled by users. In addition, recreational uses of the medium, manifested in the form of nondirected search behavior, can be an important benefit to consumers intrinsically motivated to use the medium (Hoffman & Novak 1996.) The WWW frees customers from their traditionally passive role as receivers of communications, gives them much greater control over the information search and acquisition process, and allows them to become active participants in the marketing process (Hoffman, Novak & Chatterjee 1996).

Hoffman, Novak & Chatterjee (1996) list three items that should be focused strategic attention on in building a successful Web site:

- *Understanding evolution of sites and structural characteristics over time:* Examining the attributes underlying Web site structure can lead to insight into what makes a successful site.
- *Gaining insight into categories that do not exist yet:* Since site characteristics will change over time, tracking changes will suggest where the development is headed.
- *Keeping an eye on the leading edge to gain differential advantage:* From a developmental point of view, managers need to identify the extent to which firms are following existing models or developing new models. One path to

differential advantage will be to create innovative sites in less crowded categories, particularly as sites proliferate.

They continue to claim that the firm's relationship with the customer must take advantage of a key feature of the medium, namely interactivity, and that such relationships must be updated continuously.

3.6.2 Intranet

Intranet can be defined as a private network inside a company or organization that uses the same kinds of software that can be found on the public Internet, but is only for internal use. Intranets are commonly protected from the Internet via a firewall, which selectively allows traffic in both directions to pass. (Makey 1996, 546)

In this study two services could be referred to as intranets: the YLE Summit browser, which included digitized video material of The Helsinki Summit 1997 and the digital press handbook on the Virtual Finland web site.

Neither of these information systems was secured with a firewall. The YLE service was only in the local network in Wanha Satama and there was not a physical Internet connection to the video server. The press handbook was secured with a user name (which was *summit*) and a password (which was *1997*).

3.6.3 Protocols

Data is transferred in the Internet using various protocols. Different protocols are used in different applications. All services built on Internet technologies are based on the protocols, of which the most important ones are described here.

3.6.3.1 TCP/IP

TCP/IP (Transmission Control Protocol / Internet Protocol) is the core protocol of the Internet. The goal in developing TCP/IP was to build a network where computers from different manufacturers could equally communicate. TCP/IP was public domain and every computer that supported the protocol could be connected to the same network. (Comer 1995, 1-12)

Each computer connected to the Internet has an IP address, which identifies it. All packets of information that have this IP address as their destination address will be directed to this computer on the network. When an IP packet is sent onto the Internet it is directed to its destination by IP routers. IP routers receive each packet of information and decide where to send them based on a Routing Table, which tells the router exactly where the address is on the network. If part of the network goes down or is very busy,

the router can redirect packets of information along a different path towards their destination. (Makey 1996, 18)

3.6.3.2 HTTP

HTTP (Hypertext Transfer Protocol) is the protocol WWW browsers and servers use in Web communication. The Internet users both locally and globally received the Web pages using HTTP.

HTTP is the simple request/response protocol run over TCP/IP. It is a set of rules that a browser will follow to request data and that the remote server will follow to supply it. Data transferred using HTTP may be plain text, hypertext, images, or almost any other data. (Makey 1996, 19)

HTTP is an application-level protocol with the lightness and speed necessary for distributed, collaborative, hypermedia information systems. HTTP has been in use by the WorldWideWeb global information initiative since 1990. HTTP builds on the discipline of reference provided by the Uniform Resource Identifier (URI), as a location (URL) or name (URN), for indicating the resource on which a method is to be applied. Messages are passed in a format similar to that used by Internet Mail and the Multipurpose Internet Mail Extensions (MIME). (Berners-Lee, Fielding& Frystyk 1996, 3)

3.6.3.3 FTP

FTP (File Transfer Protocol) is used for transferring data files via the Internet. FTP provides a service of sending and receiving files of any kind between the client and server and controlling access to the files by way of security login. (Makey 1996, 20)

The objectives of FTP (Postel & Reymolds 1985, 1) are
1) to promote sharing of files (computer programs and/or data),
2) to encourage indirect or implicit (via programs) use of remote computers,
3) to shield a user from variations in file storage systems among hosts, and 4) to transfer data reliably and efficiently. FTP, though usable directly by a user at a terminal, is designed mainly for use by programs.

In the Helsinki Summit 1997, FTP was used for example by A4 Media, who transferred the real-time picture files to their server.

3.6.4 HTML

HTML (HyperText Mark-up Language) is the coding language used to create hypertext (see chapter 3.7.4 Hypertext) documents for use on the WorldWideWeb. Hypertext documents can include links to other related documents. HTML controls the format of

the text and position of form-input areas, for example, as well as the navigable links. (Makey 1996, 545)

HTML 3.2 became a World Wide Web Consortium (W3C) Recommendation in January 1997. This included tables, applets, a number of attributes in common use, and various ideas from the HTML 3.0 specification, a proposal from 1995.

Dynamic HTML extends the capabilities of traditional HTML. It was developed in collaboration with the W3C and Microsoft Corporation and is fully compatible with all existing W3C Recommendations. Much of Dynamic HTML's functionality and flexibility comes from adding "intelligence" to the user's computer. When the user passes a mouse over the object or clicks on it, the element can deliver additional information or options—without having to go back to a Web server to do so. (Dynamic HTML, 1997)

The pages on the WorldWideWeb are based on HTML documents. The commands (HTML tags) of HTML define how the web pages appear on the browser. The pages can include textual information as well as pictures, audio and videoclips. (Metsämäki 1996, 85-86)

3.6.5 Internet Applications

On the WorldWideWeb applications can be made to perform various tasks on web servers. These applications can be programmed by several programming languages, such as Java and Perl.

CGI (Common Gateway Interface) is a standard communications interface that allows web servers to communicate with back-end processes, such as databases or other server-based applications. (Makey 1996, 543)

ActiveX is a standard, which allows software components to interact with one another in a networked environment irrespective of the language they were created in. Based on a refined version of Common Object Model (COM), it has the ability to leverage the knowledge and work of the development community without a steep learning curve. (Makey 1996, 541)

3.6.6 Webcasting

Webcasting provides to each user a "push" model of automatic content delivery and offline access to the information and Web sites that he or she uses most often. (Webcasting in Microsoft Internet Explorer 4.0 White Paper. 1997.)

Webcasting is designed to meet the needs of two different types of customers: dial-up/laptop users who are often offline (e.g., home and mobile users), and LAN-based

corporate users who are usually online. Webcasting improves the dial-up experience through hands-free delivery of content for faster offline use, so information can be viewed without requiring the computer to be connected to the Internet and without the bandwidth limits of a modem. For LAN-based corporate users, Webcasting provides personalized updates to requested information by notifying each user when new content is available, without actually downloading the content. (*ibid.*)

Webcasting enables any existing Web site to be "pushed" without requiring any re-authoring or modifications to the site. This "push," or rather "smart pull," is accomplished by an application, which automatically goes through the content of a site for updated or new information on a scheduled basis ("crawling"). A user can initiate this process by "subscribing" to a Web site. (*ibid.*)

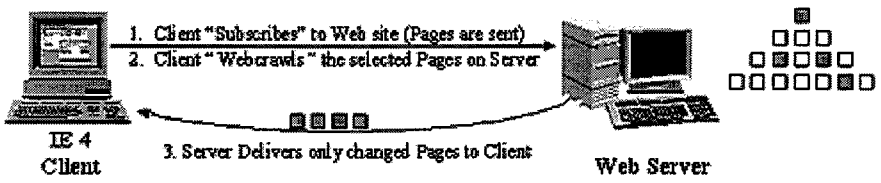


Figure 6
Subscribing to a web site for offline use – note only new or updated content is downloaded
Webcasting in Microsoft Internet Explorer 4.0 White Paper. 1997

Content authors can then optimize and personalize this Webcasting experience by authoring a "Channel," i.e., by creating a single file that indexes the content on an existing site. This file uses an open standard file format, the Channel Definition Format (CDF), for indexing and "pushing" structured content on the Internet. (*ibid.*)

3.7 Computer-Mediated Communication

In computer-mediated communication (CMC) computers are not looked at only as efficient calculators. In fact, the salient function of a computer as used for communication is not to provide computational capability, but to provide a platform for the operating system and software applications to support network data transmission and user applications. (December, 1996)

Electronic mail has been a widely used mean of communication for years. The global Internet today offers a far more diverse set of tools and contexts for communication than it has in the past. The use of the Internet also has rapidly increased, with some Internet applications, such as the WorldWideWeb, experiencing very rapid increases in use and range of expression (December & Randall, 1995).

Social presence and media richness (see 3.1.2) approaches have been applied to CMC use by organizational communication researchers to account for interpersonal effects (Morris & Ogan 1996). Social presence theory stems from an attempt to determine the

differential properties of various communication media in the degree of social cues inherent in the technology. In general, CMC, with its lack of visual and other nonverbal cues, is said to be extremely low in social presence in comparison to face-to-face communication (Walther, 1992).

Media richness theory differentiates between lean and rich media by the bandwidth or number of cue systems within each medium (Morris & Ogan 1996). This approach (Walther 1992, 57) suggests that because CMC is a lean channel, it is useful for simple or unequivocal messages, and also that it is more efficient because shadow functions and coordinated interaction efforts are unnecessary. For receivers to understand clearly more equivocal information, information that is ambiguous, emphatic, or emotional, however, a richer medium should be used.

Walther (1992) argues that it appears that the conclusion that CMC is less socioemotional or personal than face-to-face communication is based on incomplete measurement of the latter form, and it may not be true whatsoever. Though researchers recognize that nonverbal social context cues convey formality and status inequality, they have reached their conclusion about CMC/face-to-face differences without actually observing the very non-verbal cues through which these effects are most likely to be performed. (Walther 1992, 63)

Both social presence theory (Rice, 1987; Rice & Love, 1987; Short, Williams, & Christie, 1976) and social context cues theory (Sproull & Kiesler, 1991) emphasize that reduction in contextual, visual, and aural cues should cause communication in on-line settings to be more impersonal and nonconforming than communication in face-to-face settings. Both theories predict that participants' awareness of and sensitivity to others will be related to the number of channels or codes available for linking them. Face-to-face communication should breed greater awareness and sensitivity because of its multiplicity of channels, while on-line communication should be more impersonal, less inhibited, and less adaptive. This is not to say that positive personal relationships are impossible. Indeed Sproull and Kiesler (1991) note that electronic settings sometimes provide more opportunities for social relationships and less evaluation apprehensions than face-to-face settings. Nonetheless, theories of computer-mediated communication that are based on the reduced-cues perspective generally predict that positive personal relationships should occur infrequently rather than frequently. In uncertainty-reduction theory the driving force is the progressive reduction of uncertainty about the partner and the relationship (Berger, 1988; Berger, 1979;Berger & Calabrese, 1975). None of these theories requires physical proximity and frequent interaction as necessary conditions for relational development. These conditions may be helpful, but they are not necessary to arrive at predictions of how rewarding future interactions might be, how one might feel about another person, or how one might be treated by that person. (Parks & Floyd, 1996)

In a study by Parks & Floyd (1996), personal relationships were found far more often and at a far higher level of development in this study than can be accounted for by the reduced-cues perspective. They continue to claim that the reduced-cues perspective may simply become a theoretic antique, given the continuing advances in network

technology and furthermore, that if cyberspace is becoming just another place to meet, one must rethink one's image of the relationships formed there as being somehow removed and exotic. The ultimate social impact of cyberspace will not flow from its exotic capabilities, but rather from the fact that people are putting it to ordinary, even mundane, social uses. (Parks & Floyd, 1996)

3.7.1 Internet Computer-Mediated Communication.

Internet-based communication takes place on the global collection of networks that use the TCP/IP protocol suite for data exchange. To say that communication is Internet-based means that, at the data level, it conforms to a particular set of data communications protocols. However, the Internet is not the only global network. Other global networks employ different protocols, but can exchange data with the Internet through exchange points called gateways. Non-Internet communication flowing into a gateway point is translated to Internet communications protocols and sent on its way. Likewise, communication can flow off the Internet at the gateway points in the same manner: The Internet packets are translated to the non-Internet protocols necessary for communication on another network. Internet-based communication is essentially human communication via the Internet computer network. Internet-based, computer-mediated communication involves information exchange that takes place on the global, cooperative collection of networks using the TCP/IP protocol suite and the client-server model for data communication. Messages may undergo a range of time and distribution manipulations and encode a variety of media types. The resulting information content exchanged can involve a wide range of symbols people use for communication. (December, 1996)

Internet communication is not a single medium sharing common time, distribution, and sensory characteristics, but a collection of media that differ in these variables. December (1996) has defined a set of units of analysis in Internet computer-mediated communication. These are media space, media class, media object, media instance and media experience. According to December (1996) these units can be used in studies based on the uses-and-gratifications theory.

A media space consists of the set of all servers of a particular type that may provide information in one or more protocols, the corresponding clients that are capable of accessing these servers, and the associated content available for access on these servers. World Wide Web space, or the set of all Hypertext Transfer Protocol (HTTP) servers, Web clients, and content on HTTP servers, is itself composed of several spaces. There are many different (sometimes overlapping, sometimes disjointed) spheres of activity on the Internet. Media space, defined this way, is a seamless forum, in which users can observe any of the content from the servers in that space using their clients.

A media class consists of content, servers, and clients that share a defined set of characteristics. According to December's (1996) definition, a media class can be equivalent to a media space but a subclass of a single space or several spaces can be defined in terms of a media class to focus on a particular set of Internet communication.

December (1996) defines a media object as a member of a media class for which the server, client, and content are completely and unambiguously specified. A media object is concrete, whereas a media class is simply a template for defining media objects.

The fourth unit, a media instance, is a media object at a particular time. December (1996) names a fifth unit, media experience, which is tied to media instance from a subjective point of view. A media experience is a particular user's perception of a set of media instances.

3.7.2 Computer-Supported Cooperative Work

Computer-supported cooperative work (CSCW) is a field that deals with the development and use of groupware technologies in organizations. The underlying technologies may not be that different from those used in CMC, but they are used in other functions. The distinction between CMC and CSCW is fundamentally not unlike the difference between communication in general and communication in organizations. In general groupware technologies are expected to support groupwork activities, such as planning, coordination, decision making etc. (Ngwenyama & Lyytinen 1997, 71).

Computer-supported cooperative work (CSCW) systems are designed to provide an interface to a shared environment in which users are linked in multiple ways such that they will perceive themselves to be communicating as if they were in the same space. Using CSCW systems, collaborators make use of a host of tools such as networked chat and whiteboard systems, file transfer, electronic mail, and audio- and video-conferencing to work together to solve problems. When applied to educational environments, students can communicate with collaborators from institutions worldwide; the students will experience and have to contend with, cultural, ethnic, knowledge, and other differences as if they were meeting face-to-face. (Gay & Lentini, 1996)

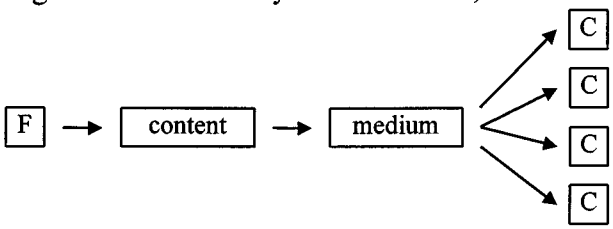
According to Gay & Lentini (1996) the advocates of CSCW systems claim that these technologies can be used to support conversations and enhance communication and that the designers of CSCW systems have to be aware of the complex nature of the communication process and the use of tools and channels to facilitate communication. As designers develop new communication tools, they need to be aware of how the CSCW system fits into existing workspace. The designers have to be aware of the ways people experience or perceive these new media for communication.

3.7.3 Delivering Content in the Internet

In traditional one-to-many media the content is delivered through a medium to consumers. Usual means of mass communication, newspapers, television, radio etc., are

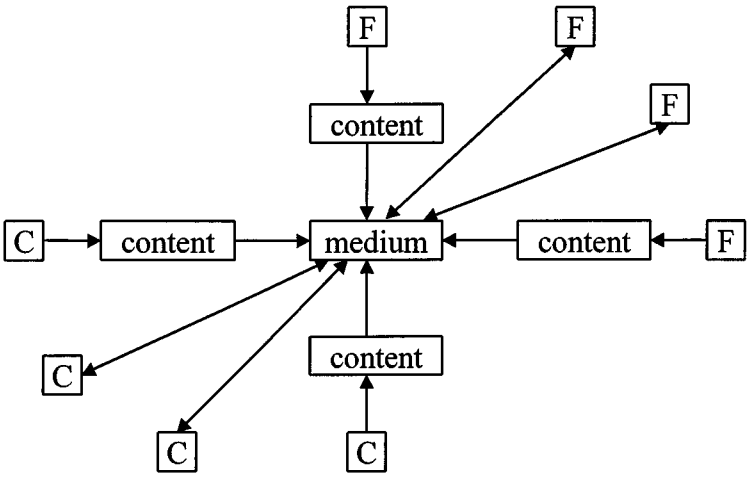
typically one-to-many media. Figure 4.5. describes the one-to-many media. (Hoffman & Thomas, 1996)

Figure 4.5. One-to-may media. F- a firm, C - consumers



Content delivering in the Internet does not follow this kind of delivering of content. The Internet is an example of many-to-many hypermedia environment. Figure 4.5. Describes the many-to-many environment. (Hoffman & Thomas, 1996)

Figure 4.5. Many-to-many media. F- a firm, C - consumers



December (1996) lists the following variety of schemes a message on the Internet can be distributed from a sender to receivers.

- Point to point: A single user sends a message to a single receiver (e.g., electronic mail).
- Point to multipoint: A single user sends a message to a number of specific receivers (e.g., electronic mailing lists)
- Point to server broadcast: A single user sends a message to a server. This server then makes this message available to any user with appropriate client software. The server may broadcast the incoming message to one or more other servers in a message propagation scheme. This server-to-server distribution scheme is used for propagating Usenet news.
- Point to server narrowcast: A single user sends a message to a server. This server then makes this message available only to a specific group of users employing clients connected directly to that server.
- Server broadcast: A server contains stored information that is available to any user with an appropriate client. This information is broadcast in the sense that

the server provides this information to any requesting client. A Web site is an example of this form of distribution.

- Server narrowcast: A server provides information to only a specific set of authorized users. Users typically provide authentication information through their client for access to information on the server.

The communication in the networked environment can also be categorized on the basis of the type of the communication. The producers and audiences on the Internet can be grouped generally into four categories (Morris & Ogan 1996):

(a) *one-to-one asynchronous communication*, such as E-mail;

(b) *many-to-many asynchronous communication*, such as Usenet, electronic bulletin boards, and Listservers that require the receiver to sign up for a service or log on to a program to access messages around a particular topic or topics;

(c) *synchronous communication that can be one-to-one, one-to-few, or one-to-many and can be organized around a topic, the construction of an object, or role playing*, such as MUDs (Multi-User Dungeons) or IRC (Internet Relay Chat);

(d) *asynchronous communication*, generally characterized by the receiver's need to seek out the site in order to access information, which may involve many-to-one, one-to-one, or one-to-many source-receiver relationships (e.g., Web sites, gophers, and FTP sites).

3.7.4 Hypertext

Hypertext, a term coined by Theodor H. Nelson in the 1960s, refers to a form of electronic text and a mode of publication. Hypertext denotes text composed of blocks of text -- what Barthes terms a lexia -- and the electronic links that join them. Electronic links connect lexias "external" to a work -- say, commentary on it by another author or parallel or contrasting texts -- as well as within it and thereby create text that is experienced as nonlinear, or, more properly, as multilinear or multisequential. Although conventional reading habits apply within each lexia, once one leaves the shadowy bounds of any text unit, new rules and new experience apply. (Landow, 1992, 3-4)

In other words in hypertext the textual content is detached from the linear structure of simple text (Paananen & Lallukka 1994, 53). Rada (1995, 1) describes hypertext as text with links among the component and hypertext system as a mechanism which provides moving along the links.

3.7.5 Hypermedia

When other components, such as images, graphics, animation and video, are added into text, the result can be defined as multimedia. If these same components are added into hypertext, the result can be defined as hypermedia which is structurally more complex (Paananen & Lallukka, 1994, 52). December (1996) defines hypermedia to be hypertext that employs multimedia. Rada (1995, 6-10) moves along the same lines and describes multimedia to assume additionally to include time-based media, particularly video and

sound and that the combination of the linking facility associated with hypertext and the synchronization facility of multimedia constitutes hypermedia.

In hypermedia one can navigate the content freely using preconstructed links. The links are made between entities relevant to each other. This supports associative thinking. Different parts of the content can be browsed the same way as in hypertext. (Paananen & Lallukka, 1994, 52)

One characteristic of hypermedia is the notion of interactivity. This concept has been assumed to be a natural attribute of interpersonal communication, but, as explicated by Rafaeli (1988), it is more recently applied to all new media, from two-way cable to the Internet. From Rafaeli's perspective, the most useful basis of inquiry for interactivity would be grounded in responsiveness. Rafaeli's (1988, 119) definition of interactivity "recognizes three pertinent levels: two-way (noninteractive) communication, reactive (or quasi-interactive) communication, and fully interactive communication.

4. Methodology

The data for this study was gathered in three ways. Firstly, data was gathered by ten observers on three locations during the summit, and secondly, user statistics from WWW servers were gathered by content providers and were given to analysis or was reported to the Ministry for Foreign Affairs, the Department Press and Culture accordingly. Thirdly, the Ministry for Foreign Affairs, the Department Press and Culture gathered a media report from international newspapers after the summit.

4.1 Methodology for Observations

The data was gathered on location using ethnographic observation methods. One reason for this method was the condition for the access to the locations for the observer group. The other reason is the applicability of the methodology. Ethnography has been previously used for wide variety of studies, ranging from neurosurgery (Nardi et al. 1993) to share trading (Heath et al., 1993).

The ethnographic method has many similarities with participant observation (Hughes et al. 1993, 18.). Sometimes a distinction is drawn between participant and non-participant observation, the former referring to observation carried out when the researcher is playing an established participant role in the scene studied (Atkinson & Hammersley, 1994, 248). That dichotomy is not very useful, because it seems to imply that non-participant observer plays no recognizable role at all.

Atkinson & Hammersley (1994, 249) list the following dimensions of variation:

- whether the researcher is known to be a researcher by all those being studied, or only by some, or by none
- how much, and what, is known about the research by whom

- what sorts of activities are and are not engaged in by the researcher in the field, and how this locates her or him in relation to the various conceptions of category and group membership used by participants
- what the orientation of the researcher is; how completely he or she consciously adopts the orientation of insider or outsider

In a sense all social research is a form of participant observation, because one cannot study the social world without being part of it (*ibid.*). In this study the ethnographic observers will be referred to as participant observers, due to the fact that all the items presented in the list above have several answers when reflected to the case discussed here.

The ten observers were students from a CSCW course at the University of Jyväskylä. The observers were supervised and guided by an experienced ethnographic field worker, Doctor Alan Munro from the University of Oxford and Licentiate Juha Knuuttila from the University of Jyväskylä. The students were given lectures and basic material about ethnographic fieldwork before the summit. Short briefings were given at least once a day during the summit.

The data was to be gathered as discreetly as possible without intervening in the journalists' work during the summit. Short interviews were made on location whenever there was an opportunity to do so without disturbing the persons observed. According to Hughes et al. (1993, 29) the observees have to be respected in their work. The observer is a guest to the setting, who must try to avoid offending people, challenging their self-esteem or otherwise behave in a crude manner.

A very important point in ethnographic observation is to preserve the anonymity of those in the setting (Hughes et al. 1993, 18-34). In this case, names are not reported. The names of the different media, of which the journalists were interviewed, are also left out. The names of the service provider companies are stated, but the names of the persons working for those companies are left unreported.

One motivation for using ethnography as a research strategy in the studies of Computer Supported Co-operative Work (CSCW) is to uncover the context-of-use in which the systems are to be placed (*ibid.*). This consideration concerns the improvement of the end-user's response to the system and through this, gives a better chance of more realizing the potential of the system.

In this case a number of systems were built-up before the summit: an intranet for viewing digital video material, closed system for accredited journalists for distributing background material of the summit, several public web sites etc. The ethnographic data was gathered aiming to documentate the usage of the systems in a real closed information-distributing event. Ethnography, or participant observation, was considered the most suitable way to gather such data. This had to be done on location.

The objective of an ethnographic field-worker is to observe the way of life, the activities, of the particular setting of concern and to display the social organization of

activities as they are revealed through involvement in the natural setting of the activity (*ibid.*). The aim of ethnography is to assemble an account of the way in which those being studied manage and organize their lives as social actors by trying to obtain an 'insider's' view of the setting.

Participant observation can be carried though in two ways, when the role of the participant is considered. The first way is that the participant can assume covertly some disguised role. In the second way the participant can act openly in the role of researcher (*ibid.*). In this case the observers did not assume any disguised roles. The access passes, given in accreditation, clearly indicated the observers with the title "Researcher". Also the name of the university, the University of Jyväskylä, read where the name of the media read in the passes of the journalists.

The data was gathered mainly by writing down field notes. It was not always possible to write down the observations right there on location. For example the recording of an on-going discussion would most likely have had impact on the discussion itself. Finding suitable occasions to write down observations depends a great deal on the flow of life within the setting (*ibid.*).

A laptop computer was also used in writing down observations. This was possible only because of the fact that there were many such devices in use by the journalists. Sitting by table writing on a computer did not draw particular attention because the same tables were used by the journalists using the same kind of a tool.

Even though the data was mainly gathered using traditional tools, such as a notepad and a pen, also photographs were taken and video and audio recordings were made. Sharrock & Button (1991, 170-171) argue that tape recordings and video on their own cannot adequately capture the nature of the activities they record but tape recording and video stand as recognizable portrayals of identifiable social occasions because they are employed in conjunction with people's everyday attentiveness to the socially situated character of their own and each other's doings. In other words, despite of its deficiency, using video and audio recordings can be used as a useful tool in ethnographic fieldwork.

The observed activities are situated in a context, which is important to understand in order to know what the observed activity is and what sense it has within the setting (Hughes et al. 1993, 31-40). Even though the activities might seem at first to be composed of trivialities and obvious and insignificant things that have little importance, they have to be tried to put in a wider context. The members of a setting display an everyday attentiveness to the socially situated character of their own and each other's actions, an awareness, which is thoroughly and inescapably in the identification of the actions, which transpire within the setting (*ibid.*).

In scientific research, it is not always possible to make exact measurements, especially when research is qualitative in nature. Especially in social sciences measurements, samples and instruments are not necessarily correct guidelines. According to Agar (1986, 12) one can learn about the world by encountering it first hand and making some sense out of it. However, according to Kirk & Muller (1986, 10) qualitative research is

an empirical, socially located phenomenon, defined by its own history, not simply a residual grab-bag comprising all things that are "not quantitative". Also Silverman (1993, 45) notes that sometimes qualitative observational research can produce finding as "hard" as those derived from other methods and that it can deliver valid information on topics which are intractable when one is limited by purely quantitative methods.

Bryman (1988, 61-66) has provided the following list of the principal characteristics of qualitative observational research:

1. Perspective of the people being studied when the events, actions, norms, values etc. are viewed
2. Description of the details to help one to understand what is going on in a particular context to provide clues and pointers to other layers of reality
3. Contextualism: The basic message conveyed from the data gathered can only be understood when the events are situated in context.
4. Viewing social life as processes, as involving interlocking series of events.
5. Flexible research designs: the previous frames of reference are possibly inappropriate. This leads to a preference for an open and unstructured research design that increases the possibility of coming across unexpected issues (Silverman 1993, 31).
6. Avoiding early use of theories and concepts, which may exhibit a poor fit with participants perspectives.

The first perspective is, however, not a necessary one. Sharrock & Button (1993, 141) note that ethnomethodology has no need for the constructs 'social actor' and 'social structure'. A given set of values is also difficult to impose on a group of people from different and diverse cultural backgrounds. In ethnomethodology not structures but everyday practices are displayed.

According to Raeithel (1996, 326) it is obvious that actor and observer both have their own privileged access to different aspects of the course of the action, but also their complementary blindness. The observer is unable to see the situation as the actor does, and the actor remains unaware of certain important aspects of his own action.

In qualitative research, when data is gathered, the aim of the observer is not to report everything noted. According to Wolcott (1990, 35) the critical task in qualitative research it is not to accumulate all the data one can, but to abandon most of the data with constant winnowing. According to Silverman (1993, 43) one of the strengths of observational research is its ability to shift focus as interesting new data becomes available.

The unpredictability of the observing situations often lead to shifts of focus. This also affects the stating of hypotheses and research questions. According to Rock (1983, 183) understanding should flow from an on-going exploration of society and it cannot be engendered by fixed schemes and carefully manufactured hypotheses. According to Raeithel (1996, 328) all ethnographic studies of teamwork show that the internal

semiotic coordination between the team members is strongly reliant on situative factors and defies formulation in terms of explicit rules.

Raeithel (1996, 334) continues that the ethnographer has no need for independent criteria, but can observe different work groups engaged in the "same" task. From the differences between the "sosiosyncratic" explanations of each team, one is able to derive indications as to their respective generalizability. The ethnographic strategy aims at producing an optimal written record and vivid description of such action-relevant meaningful spaces. It leaves the criticism and correction of the explanations specific to a particular work area either totally to the experts in the field or handling over its own results to a subsequent phase of theoretical or design-related analysis.

According to Hughes et al. (1993, 26) the fieldworker should avoid theoretical preconceptions. This is because ethnography does not want to impose a framework on the setting but to discover the social organizational properties of that setting as it is naturally exhibited. "The social world is not organized in ways that analysts and researchers want to find it" (Hughes, King, Randall & Sharrock, 1993, 26). The researchers however bring to the setting a great deal of knowledge, which is tacit, taken-for-granted and commonsense, general rather than specific. This knowledge helps the fieldworker to start to make informed guesses as what sort of things are likely to be found on the setting (Hughes, King, Randall & Sharrock, 1993, 26).

The methodology description was the basis for the observations made in The Helsinki Summit 1997. The journalists were not disturbed in their work and the interviews were made when it was apparent that the approaches of the interviewers were not intervening in nature. Even though the observers brought some knowledge of the situation with them presuppositions were not deliberately made. This had impact also for the basic stem of this study. Very accurate hypothesises were not stated before the actual observation, even though the purpose of the study was clear. An approach of stating hypothesises beforehand and falsifying or fortifying them afterwards was seen as irrelevant. This could have also biased the observations made if too strong presuppositions were laid beforehand.

To make an ethnographic study one has to get access to the site to be observed. The access to the location can be difficult to establish. In this case the observers were granted access to the two press centers and a short period to the Hotel Intercontinental, where the White House Press and the major US television stations were, by the Finnish Ministry for Foreign Affairs, the Department for Press and Culture. The access was not given to the pools, which got to those locations where the presidents Clinton and Yeltsin actually were in contact with the press. The number of places in the pools was very limited and the international press competed strongly to get in to the pools. For this obvious reason the observers were not given access to the pools.

4.2 Log File Analyzing Methods

The analyzed content providers, the Ministry for Foreign Affairs, USIS, YLE and A4 Media, gave the user statistics from their WWW servers. The statistical data was asked in a standard WWW server log file format from 19.3.1997 to 22.3.1997. The given files were in various formats depending partly on the different platforms. Log files from the Ministry for Foreign Affairs and USIS were the ASCII-files which content was space character delimited statistical information. YLE's file was an HTML document. A4 Media gave a written report.

The overall analyzing process for the log files is described in following figure.

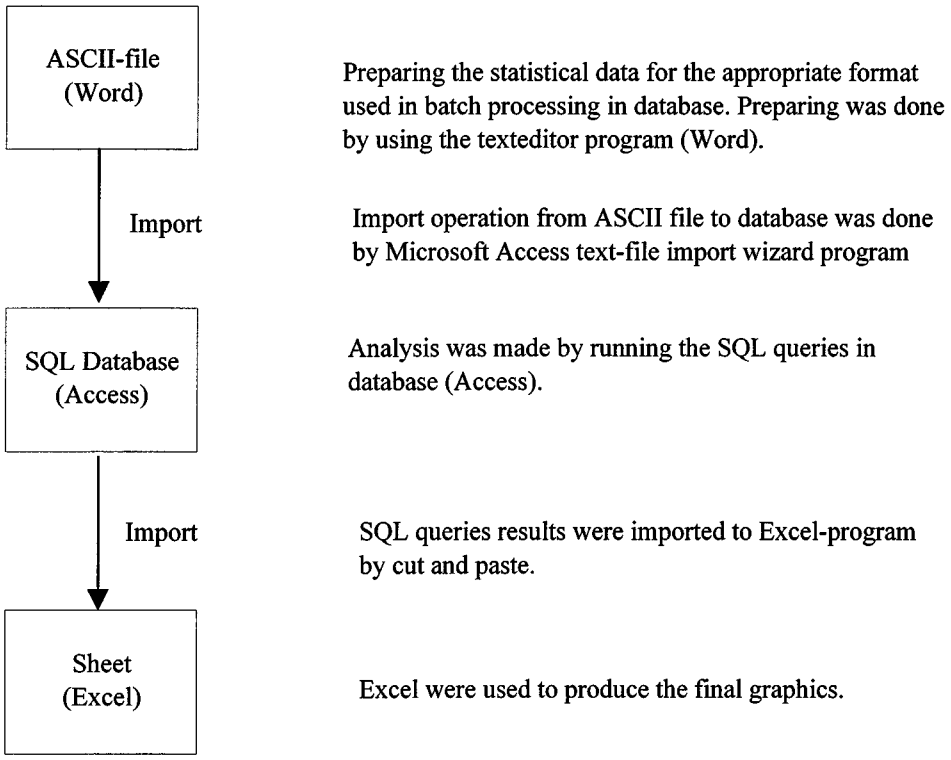


Figure 7
The analysis process of the WWW log files

Before the actual analyzing process the form of results was set. The observation focused to usage of documents in summit web servers. The usage was calculated by hits per HTML page. Any other element in the HTML document was filtered out (see chapter 3.6.4 HTML). The amount of hits were studied on time scale from 19.3.1997 to 22.3.1997. The time unit was one hour.

For further analysis, the most interesting results, namely the content of summit pages in different WWW sites, were recorded. The examination concentrates only on the main pages and the pages which were linked from that page in each summit www site.

A SQL (Standard Query Language) database for analysing queries was created. The database is simple. It contains a table for each WWW log file. The tables are identical and the structure of tables are as follows:

Field Name	Data Type	Length	Description
Page	ascii	255	HTML document name
Date	date/time	-	the day when the document was retriewed
Time	Date/time	-	the time when the document was retriewed
Num	number	long integer	number of retrievals per time unit

Table 1
Database table structure

No indexes for the optimazing purposes were defined, because the amout of entries for one table was quite low (under 15.000 records).

The main problem was that the material (log files) was in different formats and it needed to be converted to a format which is suitable for used in the database structure. The conversion was made by using the texteditor (Word). The final result of conversion was tab character delimited ascii file, which contents were compatible for the database table structure.

After the content of ascii file was imported to database nexts SQL statements were excecuted (an example from a Virtual Finland WWW log table):

```
SELECT sum(num), date, time, page
FROM virtualf
WHERE sivu like '*summit.html'  or sivu like
'*clinton_yeltsin.html' or sivu like '*speeches.html' or sivu
like '*agenda.html' or sivu like '*events.html' or sivu like
'*logistics.html' or sivu like '*mantyniemi.html' or sivu like
'*press_comment.html' or sivu like '*summitmedia.html' or sivu
like '*helsinki.html' or sivu like '*remembered.html' or sivu
like '*accredited.html' or sivu like '*international_news.html'
or sivu like '*live.html'
GROUP BY date, time, page
ORDER BY page;

SELECT sum(num), date, time
FROM virtualf
GROUP BY date, time

SELECT sum(num), page
FROM virtualf
GROUP BY  page
ORDER BY sum(num)
```

If the num column in the table was not used (like it was not in USIS log files), it meaned that one record equals one hit (compared to the Ministry for Foreign Affairs logs, which contained the number of hits per hour for each HTML document). Therefore the sum function in these SQL statements were changed to count function.

After the execution of SQL statement the query results were moved to the Excel worksheet by cutting it from the query result window and pasting it to the worksheet. Then the final graphics were made in Excel.

5. Research Questions

The purpose of this study is to find out how the digital information services were used in the Helsinki Summit 1997. This information can then be used to determine how such services should be developed for short-time news events in the future to satisfy end-users', especially journalists', needs. The literature and previous studies in conjunction of this specific case lead this study to the following research questions:

1. How did the journalists use the digital information services in the Helsinki Summit 1997 press centers?
2. How were the offered digital information services used via the Internet during the Helsinki Summit 1997?

The findings gathered with the methodology described above try to find answers to these research questions.

6. Findings

The results were gathered from several sources: user statistic logs, interviews and ethnographic notes. This chapter discusses the findings based on observations and log files.

The data gathered is quite heterogeneous. On one hand there are observations from ten observers, all having their own unique style and on the other hand there is a huge amount of data from the different server log files. The information received for analysis about the WWW site users is also heterogeneous. Every file was in a different format. The user statistics information for A4 Media services presented here come from a report A4 Media delivered to The Ministry for Foreign Affairs, the Department of Press and Culture.

6.1 Journalistic Work at the Press Centers

This chapter discusses the journalistic work based on the observations made in the press centers. In some of the findings the themes are pointed out with comments from the interviews made.

Not all the findings made during the Helsinki Summit 1997 are described here. Only the themes, which were considered to be relevant from the point of view of content

providing using Internet technologies, are included. All the material was first analyzed and structured. After that the irrelevant topics, from the point-of-view of this study, were excluded.

6.1.1 Source of Information

The journalists could get information from several sources in the press centers. One could follow television broadcasts from the TV monitors, read news agency prints, attend to press conferences, use the Internet, listen to simultaneous translations of the speeches made etc. One of the sources for information was other journalists. They discussed among themselves and in some cases gave each other information.

In an interview a Spanish freelance journalist told that the journalists cooperate more than compete for mutual good.

> He told that *"not everybody has to be "on-location" but the information and the photographs are sold to others that they can make their stories. And then some other time a favor is made the other way around."*

One journalist was observed to write his story despite the fact that the Clinton-Yeltsin press conference was on and it could have been followed from television.

The interviewed journalist also told that the journalists have their own networks via which information is distributed. New information is first revealed to the best acquaintances who then redistribute the information. In the end everyone gets the information but some get it faster than others do. A White House Press journalist's comment fortifies the free-lancer's comment when he mentioned that everything depends on individual journalist and his contacts.

The journalists of the same nationality even though not from the same media communicated a lot with each other. At least Spanish, Polish, Russian journalists spent time together and conversed with each other. Also the age of the persons was a factor for the conversation partner. These distinctions seem very natural but it is not trivial thing to be noticed since the information flows fast through informal communication.

Because most of the journalists were excluded from the pools the television monitors were important source for the journalists in The Helsinki Summit 1997. Several monitors were at both press centers. In Finlandia Hall there were two big monitor screens. YLE supplied a video projector to Wanha Satama after requests of the journalists. Also the Summit browser clients at Wanha Satama helped to satisfy the need for seeing the video material.

There was no specified pool reporter who would have shared his report to the journalists excluded from the pools. Chinese journalists asked for this kind of service and were told to wait for the print-outs to arrive from the news agencies.

The news agency print-outss were used but not as a source for writing stories. Only a few journalists were observed making notes from the print-outs.

One of the sources for information was the headphones which provided translations of the speeches. At the Finlandia Hall there was occasional trouble with the translation headphones. The voice of the translator disappeared from the frequency and no translations could be heard. On 22.3 when presidents Yeltsin and Ahtisaari held a press conference Swedish journalists who had stayed for the event were not happy for the fact that translation in Swedish was not supplied. In addition to the need of hearing the translation journalists were observed on several occasions also recording the speeches with little recorders.

The journalists took advantage of the active informing from the Russian information officers. The Russian information distribution activity was very high compared to the Americans. Russians held many press conferences and panels on 18.3. and 19.3. The information about the need for press conferences came very late to YLE, who supplied the lighting and audio to Wanha Satama. YLE technical staff member told that they had gotten the information on the afternoon of 18.3. that Russians need facilities for the evening's press conference. Neither was their foreman aware of that Russians needed such facilities for two days.

> A member of Russian embassy, however, said in an interview that *"the representatives of the Kremlin press office went everything through with the Finnish Ministry for Foreign Affairs, the Department of Press and Culture, so that there were not any great surprises"*.

6.1.2 Journalists' Tools

Cellular telephones were also widely used in Helsinki Summit. Cellular phones were for rent at the accreditation point at Finlandia Hall. A good example about the use of cellular phones came from a Russian journalist who said in an interview that he is constantly in contact with his editor-in-chief who also was at Helsinki Summit.

One of the problems came with the rental cellular phones being of the same brand and the popularity of that brand. The default sound for most of the Nokia phones is the same. Nokia phones were very common at the press centers and when someone's phone was ringing it was observed many times that several people checked whether that was their phone. Another observation was made several times about many people changing the alarm sound for their cellular phones.

Telephones are very important in journalists' work. The telephone lines are used increasingly to data transmissions in addition to transferring plain speech. A Polish journalist was observed reporting from the summit to live radio broadcast. When journalist talk on telephone they need a quiet spot for doing that. At the Finlandia Hall there was several phone booths available. At the Wanha Satama there were no separate phone booths. A journalist was observed making a long call with his cellular phone. He

walked slowly up and down the aisle of Wanha Satama and this way created his own space for making the call without disturbing anyone.

The Internet as a journalist tool has already been recognized among Finnish reporters. Finnish reporters were observed to discuss the Internet as a tool. Both good sides and bad sides were brought up in the discussion.

> Among the good sides was mentioned that *"it is good when you don't have to go anywhere or call anyone, just check the fact from the net, like I did just yesterday..."*. Among the negative points was mentioned that *"access to the net is not a problem but how to use it that you could find something useful..."*.

Finnish reporters are not the only ones using the Internet in their work. The Internet has been recognized as a tool for journalists also in Sweden.

> A jounalist from Dagens Nyheter said in an interview in Tietoviikko that "*some people consider the connection to the Internet somewhat peculiar, but it is natural these kind of services* (the Internet services in the Helsinki Summit 1997) *are arranged. Nowadays it is impossible to work without the Internet*".

When a group of British journalists were asked why they accredited and came on location even though most of the material was available from the news agencies and the Internet the answer was very simple; someone has to ask the questions. A Reuters' representative commented that *"journalism remains journalism"*.

The following table of the journalists' methods and the technology used.

Method	Alone/Group	Technology used
Watching: TV, bulletin boards, pooling, news prints	Alone & Group	TV/screen, Summit browser, Internet, notepads, recorders
Listening	Alone	TV, translation headphones, Summit browser, Internet
Conversation, interviews, infodesks	Group	Face-to-face, telephone, cellular phone
Writing news stories and transferring of the story	Alone	PC, laptop, cellular phone, fax, ISDN

Table 2
Journalists' methods and technology used
Based on Alapiha (1997, 11)

All technologies available were used in the journalists' work. The use of more advanced technologies, such as Summit browser and ISDN were used all in all less than the traditional ones and mainly by the representatives of more technologically developed countries.

6.1.3 Use of Browsers at the Press Centers

One of the purposes of this study was to follow the journalists' use of the Internet technologies during the summit. For the future development of the information systems it is important to know the journalists' use of the existing systems in the rich context of their everyday work in such occasions as the Helsinki Summit 1997. By examining the ways in which journalists used the facilities in the summit, a direction for further development of the information systems for similar contexts can be started to establish.

The workdays of the journalists went according to the prescheduled events in the summit. When an event, a press conference, formal dinner etc. took place a report was made for the media the journalist represented. The reports were made quickly, especially in the electronic media, radio and television, where publishing speed is a crucial factor. The time spent between the several events was when the Internet technologies were used in the summit. The waiting hours were spent either by working for the next story or by killing time. The Internet technologies at the press centers were used for both purposes.

The main site for our observations was located in the Wanha Satama because of the higher number of digital services available. The observations were made at the back of the building, where the computers, telephone lines and the tables for the journalists were situated. Figure 5.1. is a rough plan of the area where the computers were located. The location of the summit browser computers was troublesome because of the windows in the ceiling, which let the sun shine right on the monitors at early afternoon.

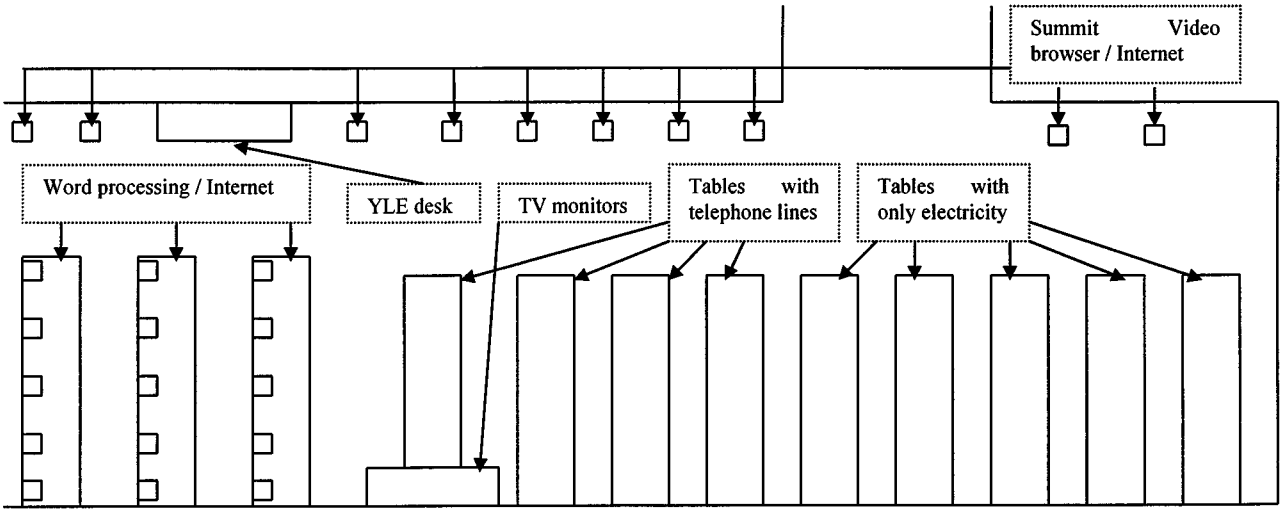


Figure 6.1. The journalists working area in Wanha Satama

The majority of the word processing PC's were occupied most of the time. The PC's were not reserved for a single journalist. The people started to use them and left after they had done their work. All the work places with telephone lines were occupied

during the official summit days 20. - 21.3. These spots were reserved for the whole duration of the summit for the media in question. On 21.3. the organizers contemplated installing more data connections to Wanha Satama due to the large amount of journalists' own laptop computers.

For the YLE's summit browser the analog video feed was digitized into MPEG-1 format using a Silicon Graphics (SGI Indigo) workstation. The video clips were then placed on the SGI server. The additional information such as title and other textual information was typed in into a Windows SQL server database on a separate Windows NT server. The Summit browsers retrieved external information from the SQL server and the video clips from the SGI. Within a couple of minutes after the digitizing process had ended, depending on the length of the clip, the video clips were available on those ten PCs, which were offered to use by YLE.

The MPG video clips were ¼ of the PAL resolution and the frame rate was 25 frames per second (fps). In Wanha Satama a 100-MB local network was built and the ten PCs had ten MB network adapter cards installed. The network and the computers were fast enough so that the video clips could be run from the SGI server.

The initiative for building a system for summit browsers came from YLE. In an interview a YLE representative responsible for the Internet services said *that "there was no an order from above*" to build the service. One motive for building the system was to show the know-how and expertise of YLE to foreign colleagues.

The summit browsers, where digitized video of the events could be played back, aroused interest in the journalists and they also were used in journalistic work. One example of this took place on Friday, which was the day the presidents Clinton and Yeltsin formally met and discussed. A male journalist was observed to use the summit browsers for journalistic purposes. First he spent over an hour listening to the previous press conferences on headphones making notes. He interrupted his work for the Clinton-Yeltsin press conference and returned to a summit browser to continue to make notes. He continued to make notes for another twenty minutes. When he was finished he was briefly interviewed. He worked for a German weekly magazine. He had been going through the previous interviews. Because he spoke both Russian and English well, he could go through the interviews by himself and get more out of them than just by depending on the translations which he was not always satisfied with. Because he did not have a hectic deadline, such as the daily newspaper journalists do have, he was able to spend more time for the stories. He was very pleased with the facilities and the services provided. He also mentioned that he was not eager to go the pools because he could get more out of the events from television than from the location itself.

A female Russian journalist was also observed making notes from the digitized videos on Thursday. She spent half an hour writing notes on the arrival of president Yeltsin. She did not use headphones but merely took notes on the video, which she rewinded and replayed many times. After making notes from the video she went through the prints from the news agencies. The prints were kept on a notice board-like display close to the

desk of Finnish Ministry for Foreign Affairs, the Department Press and Culture. There was not a possibility to interview her without interrupting her work.

Two other journalists were observed making notes on the video browser during the summit. The man responsible for the video browser was interviewed two times during the summit.

> In the latter interview on Saturday he mentioned *that "people haven't really found this service yet"*. He also mentioned that "*some of journalists who have found* [the video browser service] *come here after press conferences come here right after the events to go through it immediately again.*"

One reason for people not using the video browser service very much could have been caused by the lack of knowledge on the use of computers or the operating system in question. Since the PC's had a Summit browser for digital videos, Netscape for browsing the Internet and the Yahoo news sticker the people did not find the video browser if the Netscape was the active, on-top application. As the Netscape browsers were usually widened to be used on full screen, the video browser was not visible. If a user does not know how to switch between the running applications he or she can use only the application on top. In addition the Yahoo Sticker was placed at the starting days of the summit at the bottom of the screen where the Windows 95 taskbar usually is with which the applications can be switched. The Yahoo sticker was later moved at the top of the screen not to be hiding the task bar and later the stickers were closed from running altogether.

On many occasions people were observed to move from one PC to another according the application on top. No printed info on how to use the PC's to different purposes was provided. The staff of YLE helped the users when available but since few of the PC's were located close to the YLE desk it was quite common that the users at the other end were left uninstructed.

The summit video browsers captured attention of many media. The first days were relatively slow on usage but on Friday the PC's were used quite a lot and they were also covered as stories. On Friday three film groups were observed filming the video browsers. YLE personnel also cited the increasing interest on the video browsers the further the summit went. YLE was satisfied with the feedback they received and with how the summit went from their point of view.

> "*Well, it is nice to show this system to people*" confessed the interviewed YLE personnel in the latter interview. Another YLE representative told in an interview earlier that "*even though what* (we) *do with the web is pretty much like a hobby club, we follow the field. We do not want to get caught with our pants down*".

YLE's resources for multimedia and Internet projects are approximately 1.5 persons. The positive feedback and common interest to the Summit browser imply that YLE follows the development of the field well.

The Internet browsers were also used in the press centers. A bureau chief of an international news agency told in an interview after the summit that she used to prepare to the events by looking from the web the work others have been doing, what other information providers have been putting out. This was mainly because it was made possible. Otherwise she would not have been doing it. Other journalists were observed too using the Internet for checking things out from the web.

The Internet browsers used in the press centers were Netscape Navigator 3.0. No plug-in applications were installed on the computers for Internet browsing. Right after the setup of the press centers QuickTime for Windows and RealAudio players were also uninstalled. The lack of these applications meant that in the press centers the people who already had arrived and used the browsers could not get to see or hear certain web services in the slow days before the summit started. The speeches were converted to RealAudio and one can not playback the speeches without a RealAudio player. CNN offered video clips from the summit in QuickTime format. These video clips could not be played back in the press centers due to the lack of relevant applications.

The RealAudio players were however installed before the actual summit took place at some of the PC's at the Finlandia Hall. When RealAudio service was used there at one point two German journalists asked to turn the voice off because it disturbed them.

The notes from the observations of the use of the ten PCs at browsing the Internet and the digitized video at Wanha Satama show that the use of browsers increased the further the summit went. However after the main event, the Clinton-Yeltsin press conference, this activity decreased notably. The journalists stuck to their old reliable working routines.

6.1.4 The Use of PC's in Word Processing

In Finlandia Hall there were 50 PCs and in Wanha Satama 20 PCs reserved for the journalists. They were connected to the Internet via HPY, a teleoperator in Helsinki. In Finlandia Hall part of the PCs were equipped with Cyrillic keyboards.

> In an interview a HPY technician told that it was quite difficult to find that many Cyrillic keyboards and that they "*emptied the southern Finland from the Cyrillic keyboards and still were left three keyboards short from the original plan*".

HPY's concern for their capabilities to satisfy Russian speaking journalists' need was quite justified. The fact that HPY was not provided with the information on the programs used in Eastern Europe is something to be improved on. Information on the real needs of the journalists should be established in order to be able to offer relevant services. The information on the standard word processing tools should not be too hard to obtain.

In a case that there would be a lot malfunctions and other technical problems it was essential to have technological support at hand. In The Helsinki Summit 1997 there was adequate number of professional technological support.

> On 21.3. a HPY staff member told that they "*had not encountered a problem that could not have been dealt with*". The responsible manager for the HPY services, however, stressed to the *staff "not to brag about the well-gone work and to stay alert to the very end*".

At Wednesday, 19.3. a problem was discovered in the Finlandia Hall PCs. When saving a document the program, MS Word, asked "Do you want to overwrite the existing one?". The program claimed that the document already existed and if one tried to save the document on another name by answering "No", the written text was destroyed. HPY supplied a consultant from Narda Oy to fix the problem. It remained unclear how the problem had gotten into the computers.

> In an interview the consultant said that the Helsinki Summit 1997 *was "number one target for hackers*". He also believed that the computers were properly protected.

In an interview an HPY technician told that they were improperly informed on the need for Russian programs.

> He told that they *"had no idea what programs journalists from Easter Europe use or what they would like to use*".

They had installed the programs believed to be needed and tested that word processing could be done. They thought that word-processing was the most important tool for journalists.

> He also considered a problem the fact that they "*did not have any Russian speaking staff to work as helpdesk for Russian journalists*". Later it came apparent that HPY actually had a Russian speaking person in helpdesk.

HPY removed three printers from the use at 21.3. because it was hard to install the printer to a wide variety of journalists' own computers and operating systems. They found that it was easier to transfer the text files to a computer in the local network by a floppy disk and print it from there.

6.1.5 Accreditation

When a journalist, member of technical staff or other person who had applied to be accredited arrived at the accreditation point his or hers identification was checked and the information on the application for accreditation was confirmed. The accreditation information was already on the computer at that point. Then a card, which had the accreditation information, was given to the accredited person. This card was forwarded to the personnel at the photographing point. Then the person was photographed using a video camera. A picture from the clip was digitized and moved immediately to the

machine, which printed the accreditation passes. Narda Oy had programmed the application, which took care of the whole procedure, with Visual Basic.

At one point of the summit a list of accredited Russian journalists was asked from the accreditation point by one of the observers. It became apparent that it was very hard to get any sorted listings from the program. That is quite understandable because the program was not designed to do that. The program used at the accreditation point fulfilled its function adequately.

6.1.6 The Arrival of the Presidents

In this chapter are presented the findings on the arrivals of the both presidents. These were the first actual news events during the Helsinki Summit 1997.

When the presidents arrived most of the journalists used the information facilities in writing their stories. The actual writing started before the planes landed so that the story was as ready as possible and could be sent out as fast as possible.

Some journalists were observed making notes of the television broadcasts. The journalists at Wanha Satama followed the television broadcast when the president Clinton arrived in Finland at noon 20.3. They had gathered around the monitors and followed the event quietly. Only the members of the same media exchanged comments with each other. Not everyone was interested and the people who had been writing on computers did not let the arrival interrupt their work. One television crew filmed the journalists following the arrival. The interest of the journalists stopped when the catering crate from where President Clinton was let down from the airplane was opened.

The physical condition of President Clinton was apparently their target of interest. The journalists began to wander off from the monitors right after that. In Wanha Satama approximately fifteen journalists took notes from the television monitors. The whole arrival of President Clinton was received very calmly at both Wanha Satama and Finlandia Hall. Even the condition of president Clinton (he was in wheelchair) and the maneuver with the catering crate (president Clinton had to be lift from the plane using a catering crate which did not open at first and they had to lift the crate up again to make a new try) did not arouse notable action among the reporters.

When President Clinton arrived only the airplane's noise could be heard on the Finlandia Hall's headphones. The headphones were widely used when both of the presidents arrived. Most of the journalists wore a pair.

The President Yeltsin arrived three hours later than President Clinton. At the time Wanha Satama was more crowded. However, when the television broadcast from the airport started it did get as many journalists by the monitors than when president Clinton arrived. The notable difference between the journalists watching the embargoing was that less people followed president Yeltsin's arrival but more people of the journalists made notes. When president Yeltsin started his speech only the journalists who made

notes stayed by the monitors. Most of them seemed to understand Russian. The journalists were observed to compare their notes. A Spanish journalist was observed receiving a short translation from president Yeltsin's speech from a Russian journalist.

A Russian journalist said in an interview that the biggest news about the president Yeltsin from a Russian point-of-view was that he arrived by an airplane and not by a train since this was his first trip since his heart surgery. Yeltsin was supposed to travel to Kiev earlier but had cancelled the trip.

Three Polish journalists followed the arrival of President Clinton together in Finlandia Hall. They followed the event from the big video screens and made notes. Even they all made their stories independently they discussed among themselves. During the catering crate episode they were amused and joked about it. When president Yeltsin arrived a picture of president Ahtisaari was shown. A One of the Polish journalists asked the others the name of Finnish president.

The facilities the organizers had arranged were adequate also at the airport. The Ministry of Foreign Affairs staff member told that the journalists were satisfied with the arrangements at the airport. There were enough telephone lines and reserved four PC's was enough.

6.1.7 The Clinton-Yeltsin Press Conference

The single most important news event during the Helsinki Summit 1997 was the Clinton-Yeltsin press conference on 21.3. In that press conference the results of the summit were told to the media.

At Wanha Satama the biggest crowd during the summit was gathered at the time of the Clinton-Yeltsin press conference. YLE had acquired a data projector that the television broadcast could be shot on a screen. The television monitors were however more popular than the video screen. At the Finlandia Hall the translation headphones were widely used. Most of the journalists wore a pair.

At Wanha Satama at 18.41 came the first observed loudspeaker announcement during the summit, in which people were told to turn off cellular phones and pagers. Despite of the announcements a cellular phone alarmed during the press conference. The announcements were made in English and in Russian.

From one set of television monitors came the English translation and the other a Russian translation of the press conference. When the translation started many journalists dashed to the other set of monitors where English translation was offered. The volume was adjusted at the both set of monitors which were located approximately seven meters from each other. The English set of monitors was at the end turned louder than the Russian set of monitors. This caused some fuss near the Russian set of monitors because their reserved working places were close to the monitors and they would have liked to have followed the English translation. There was some discussion about the language

but the journalist who wanted to follow the English version at the end voluntarily changed place and went to follow the other set of monitors. Some of the journalists made notes at the English set of monitors. The interest for the press conference however started to vanish gradually.

The concluding documentation, which was the result of The Helsinki Summit 1997, and its distribution was very interesting. At Wanha Satama one journalist had gotten a few copies of the concluding documentation from the Ministry of Foreign Affairs' desk and gave the copies to his colleagues. There were not enough of the concluding documents and one of the journalists went to get more. The desk was out of them and they were copying more of them. When more journalists had copies of the paper other journalists saw this and asked about it and went to get themselves a copy. After fifteen-twenty minutes (ca. 18.50) the information officers started to go around with the copies of the concluding document and asking journalists whether they already had a copy.

Another observation from Wanha Satama went along the same lines. A journalist, who had previously been observed to discuss with Japanese, Spanish and Russian journalists, got copies of the concluding document from the Japanese at 18.35. He gave one of them to the Spanish who immediately began to analyze it. A Swedish journalist noticed this and asked what the paper was. When the Swede was answered he immediately went to the desk to get him a copy and returned with a couple of copies right away.

The concluding documentation aroused discussion within the journalist groups and between the members of different nationalities and media. The original copy of the concluding document came to Wanha Satama by fax at 18.08. from USIS fax number.

At the Finlandia Hall the concluding documentation was available for the journalist before 18.30. There was a sudden rush to the USIS desk and when people were observed to carry the papers it aroused other journalists' interest. The observed Polish journalists waited a few moments before one of them went to get the concluding documentation. After showing it around other journalist of the group of three went to get a copy as well.

USIS published the concluding statement on their web site the following morning.

> The chief of USIS Helsinki told in an interview that "*finally we got them* (the concluding documents) *into the web next morning. We had only the paper copy to work from. We did not have the scanner and the copy was bad. We were tired to type it again. Actually nobody planned to have documents to be put in the net.*" Reuters Bureau Chief told in an interview that Reuters got the concluding documentation "*from somebody in the White House Press. When it came to Web it had no more news value later on.*"

6.2 Web Sites

Many Internet news and other content providers covered the Helsinki Summit on their web sites. Some covered only a few salient news which were gathered through traditional channels, from the reporters or news agencies. Some had dedicated resources

solely for web updating. A journalist told in an interview that the new technologies have already changed journalists' work a bit on the surface, but the basic foundation for the work is still the same.

> He told that "*many reporters occasionally write their stories by reading what others have already written about a subject*". He also said that new technologies will not displace pen and paper but he also added that "*a summit like Helsinki Summit differs a lot from the ordinary work*".

One has also keep in mind that even though journalists from USA, Japan and Western Europe could use PC's, all journalists had not used a graphical user interface before. Some journalists used also the Internet for the first time.

The use of the web sites is analyzed in this study on the basis of the user statistics. The user statistics have features, which have to be taken into account. All the sites mentioned kept user statistics, but the way the usage was followed varied in every case.

Every picture, audio and video file that are included on the web page have to be downloaded to the end-user separately. For example, if the web page is composed of text on the HTML document, background picture, headline picture and a picture of president Clinton instead of one downloading one HTML file additional three image files are downloaded. In many occasions when user statistics are followed the retrieval of every file is recorded. This means that when the exemplary file is browsed the user statistics detects four hits instead of one.

6.2.1 Data Connections

The computer and data connection facilities were adequate to satisfy the need of journalists. However, the amount of laptops was perhaps surprisingly high and the number of data connections was almost underestimated. The phone lines and other means of telecommunication were available to be ordered by the media beforehand in conjunction when the applications for accreditation were sent.

In future summits or other such events the number of laptop computers and other mobile working equipment is not likely decreased. When the needs for such facilities are inquired from the journalists and technical staff in the future a need for more specific inquiry could have been grown. Different data connections are becoming common and it is likely that different media in different countries use different data connection equipment. If organizers support a wider range of possibilities for data connections it is possible that more journalists could use tools they are used to use in their work. All different possibilities should be announced beforehand in such events in the future as well.

6.2.2 User Statistics

The following chapters describe the web sites and how they were used during the Helsinki Summit 1997. The user statistics sections differ between the web sites. This is due to the fact that the every user statistics, which were analyzed, were in different formats.

Not every log file had the same information. USIS delivered the log file as it was for scrutiny. A4 Media delivered a report of their own, not the data itself. TELE gave the results of a run of their data. The data from the run did show the use of the Virtual Finland server by file per hour by top-level domain. More accurate user information was not available

A very important log file, or information of the data of the file, was undelivered for analysis. HPY took care of the data communication from the press centers to the outside world. By comparing the user data from the press centers it would probably shown how the journalists used the aforementioned web sites. Because this data was unavailable, it can not be shown how the sites were used form the press centers.

To be able to analyze the user statistics better the way the use of the server is logged has to be more clearly defined. The easiest way to gain the data needed would be for the analyzers to have the administration of the server statistics.

The results from the analysis of the user statistics are not definite. The server cannot take into account the possible proxy users. The files can be cached in a proxy server to reduce the amount of traffic and to speed up the time for downloading. If there were many users who used proxy servers, the amount of hits in the log files is reduced drastically. When a document is downloaded from a web server to a proxy server and the same document is then downloaded from the proxy server it means that the log file shows only one hit to the document in question when there might be thousands of hits to the same document on the proxy server. The amount of proxy servers, which were used to download the Helsinki Summit 1997 material, is unknown. This means that the number of hits in the analyzed log files do not tell the real user amount. The number is definitely higher than what the log files indicate, but how much, it is impossible to tell.

6.2.3 Virtual Finland

Virtual Finland offered information on their pages for all the Internet users and exclusively for accredited journalists (http://www.virtual.finland.fi/summit/). A user name and password protected these pages.

The Virtual Finland pages had also links to the other information sources as well. The web sites of USIS, MTV3, YLE, Finnish Meteorological Institute and A4 Media were linked.

The same information that was on the password protected pages was available in the brochures and the leaflets available at the accreditation point. According to an information officer the leaflet had actually been printed on 17.3. from the files at the web site.

> According to an information officer one of the good points of digital information is to avoid what happened in the last summit, when quite a lot of the paper information, including "*the president's CV were found at the trash cans all over Helsinki center*".

A member of the staff of the Department of Press and Culture told that they make the updates from their office, which is located next to Wanha Satama. Some of the updates and error corrections were phoned from the Wanha Satama to the office, where an updater was working.

In an interview a staff member told that the response from the users in the Finlandia hall was mainly positive. Only thing complained about was misspellings found from the pages.

> A typical positive comment went along the line *"this is the most networked summit ever"*.

The Virtual Finland Pages were well received in both domestic and international press. The web site was praised at least in Helsingin Sanomat, The Independent and Financial Times. The fact that the URL for the Helsinki Summit 1997 pages was added well beforehand to the search engines (AltaVista, Infoseek, HotBot, and Yahoo) helped users to find the site.

The positive feedback, the observations of the usage of the web site and printing of the files from the pages and the user statistics suggest that the Virtual Finland web site was a success. The cooperation between different content providers was indicated by the cross-linking of the web sites, access to the pools for A4 Media and the possibility for YLE to build the intranet at Wanha Satama.

The following figures present the amount of retrieval of the HTML documents per hour during The Helsinki Summit 1997 of the Ministry for Foreign Affairs WWW site between 19.3.-22.3.1997. The statistics show only the retrieved HTML documents. All the hits to image files have not taken in the figures.

The first figure describes the hits to `summit.html`, the main page, of the WWW site.

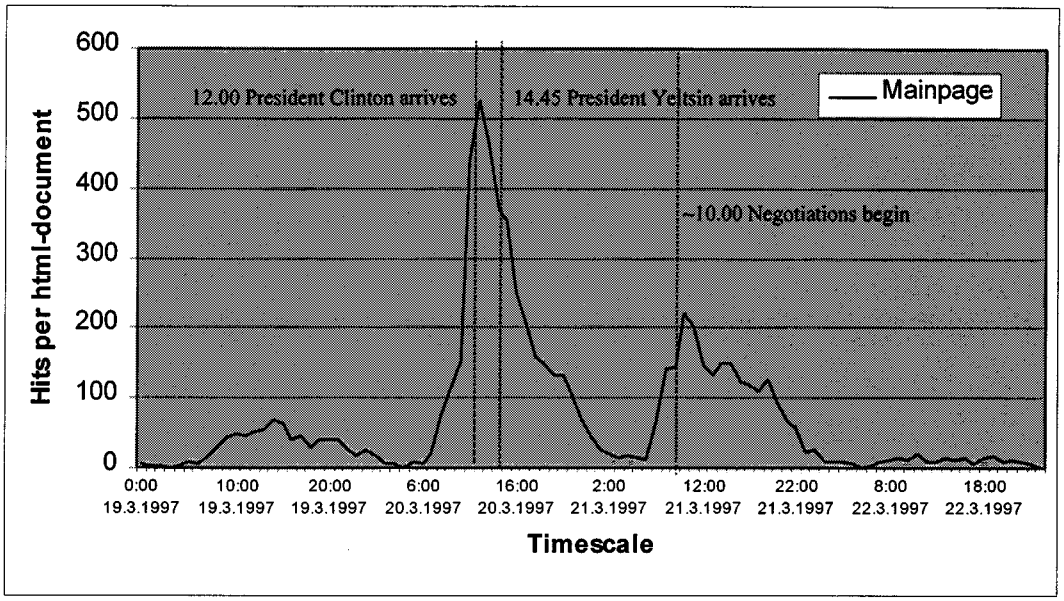
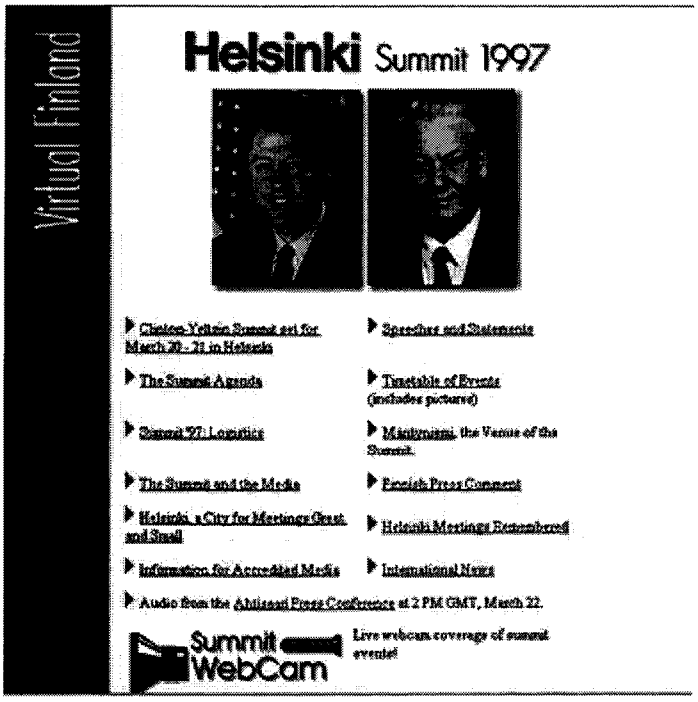


Figure 8
Usage of the summit main page at Ministry for Foreign Affairs WWW site.

The main page is a typical main page of a web site. It consists of links to other pages, which have the actual content, and functions as a central point of navigation. The figure shows two distinctive peaks. The highest points of the peaks happen between late a.m. and early p.m. on both actual days of the summit. It is noticeable that pages were retrieved through the night even though the amount of hits was low.



Picture 1
The main page of the Ministry for Foreign Affairs Helsinki Summit 1997 web site.

The high amount of hits to `summit.html` can be explained from the nature of the document. Since the navigation uses browsing through the main page, more hits are bound to come to the document. The other reason for the high rate of hits is that the links from elsewhere from the web are most likely directed to the main page of the web site.

The next figure presents the usage of the four most popular summit www pages at Ministry for Foreign Affairs WWW site.

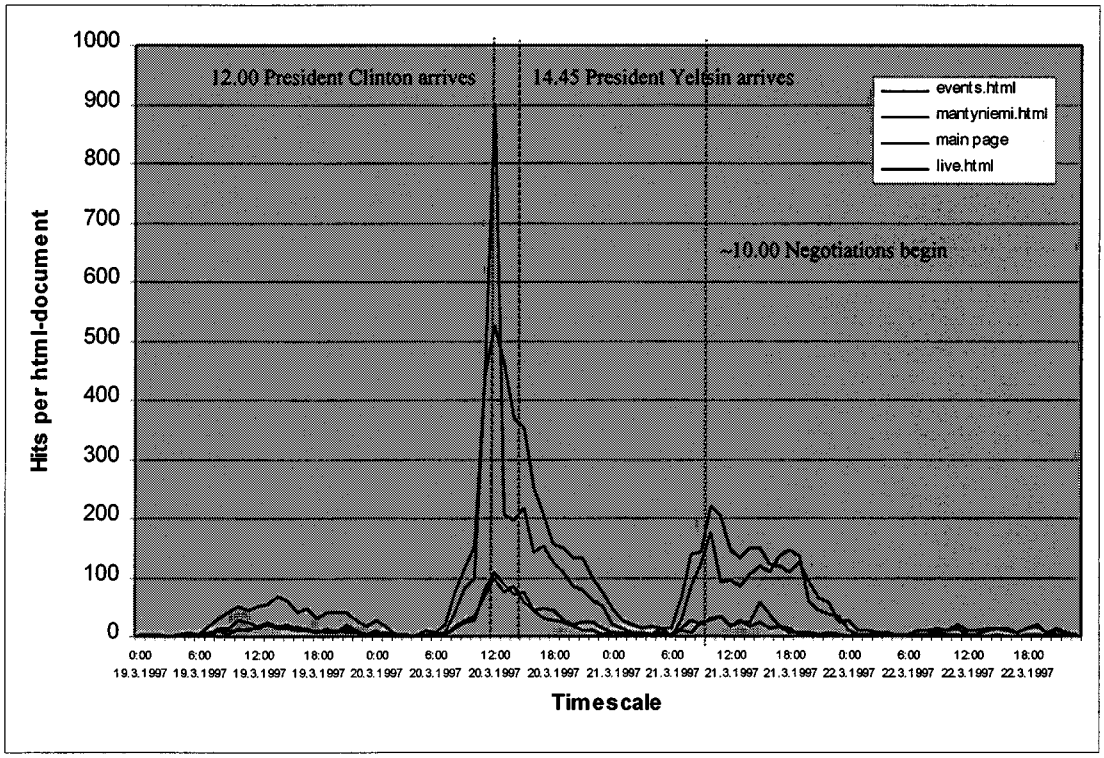


Figure 9
Usage of the four most popular summit www pages at Ministry for Foreign Affairs WWW site.

The most popular page of these was `summit.html`, the main page of the web site (see Figure 8). The second most popular page was `live.html`. The document had WebCam picture material and it was updated regularly to include links to the real-time audio services.

The figure clearly shows that the document in question has the highest peak of all the documents from the web site. The highest peak happened approximately noon 21.3. That was the moment president Clinton arrived to Helsinki airport.

The popularity of the `live.html` document can be partly explained from the fact that it was linked directly from the main page of the web site. The link was also represented at the main page with a graphical logo, which in its part helped to draw the users' attention.

The popularity of the `live.html` document can base also to the fact that the content of the page was promised to include live pictorial coverage of the summit events. Real-timeness and updatability is one of the prominent features of the Internet technologies. The possibility to follow the events real time over the Internet was most likely a reason why the document was retrieved so much.

One reason for the high retrieval rate of the `live.html` is probably the hype for new technologies used. There are always users who are interested in the services because of the new technologies used.

The high peak of retrieval of `live.html` and the time it occurred can be explained with the fact that president Clinton arrived at the time. That was the first event of The Helsinki Summit 1997, which had appeal for the users. The other factor that contributed to the peak was the fact that users were prompted on the page to reload the page to see updated picture material. The users who came to the page from the main page probably did reload the page several times to see the changes on the page. One reason for the rapid drop of the use could be that it is easier to follow the events on television than by keeping to reload the page.

Two next popular pages were `events.html` and `mantyniemi.html`. These pages were hit approximately as many times. `Events.html` had information on the events occurred during The Helsinki Summit 1997. `Mantyniemi.html` described the venue of the summit, president Ahtisaari's residence.

Both pages have two distinctive peaks. The first of the peaks occurs at the same time the overall peaks happened. The second peak of `events.html` is somewhat higher and it happened a little later than the `mantyniemi.html`'s peak. The second peak of `events.html` happened on the afternoon of 21.3. One reason for this might be that it was updated regularly to include the occurred events and people wanted to see if anything had happened during the actual day of the meetings of the two presidents.

The reason for the popularity of the `mantyniemi.html` can be partly explained from the fact that it was linked from other pages than the main page as well. That, or the fact that people are interested to see the place.

The next figure describes the usage of summit WWW pages, which passed over 50 hits per hour at Ministry for Foreign Affairs WWW site during the summit. The pages were not accessed over 50 times every hour, but at some point were hit that many times.

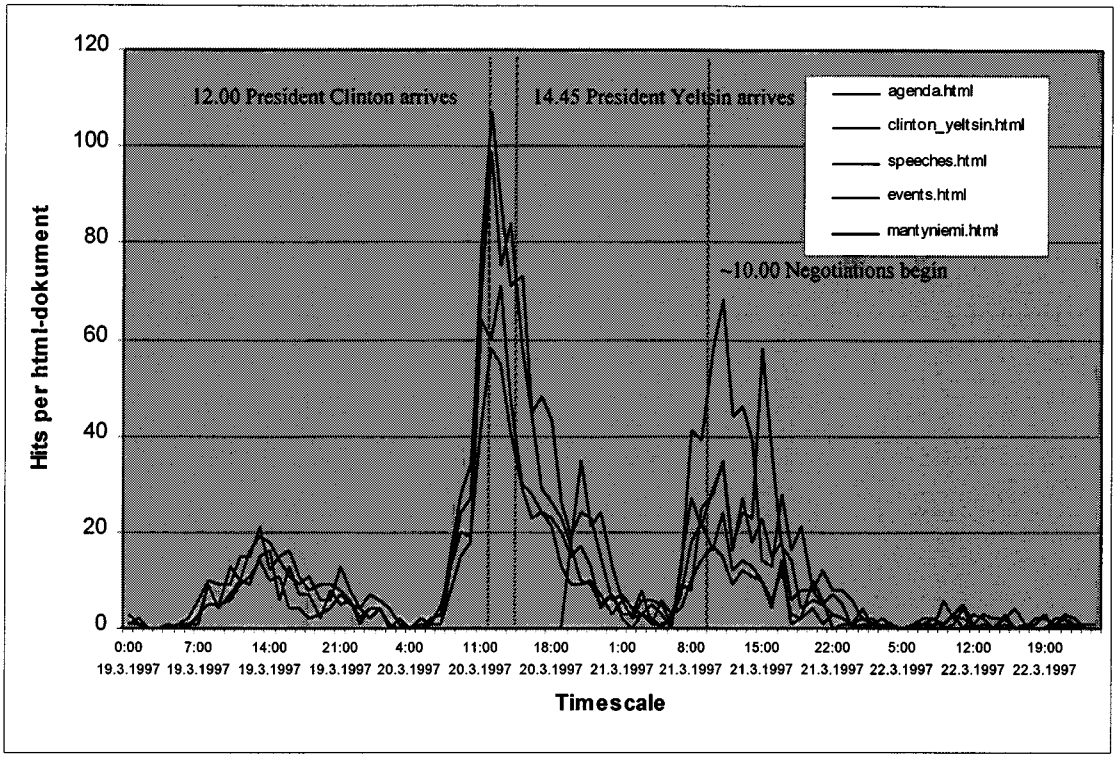


Figure 10
Usage of the Summit WWW pages, which passed over 50 hits per hour at Ministry for Foreign Affairs WWW site.

The documents `events.html` and `mantyniemi.html` are described in Figure 10. The documents `agenda.html` and `clinton_Yeltsin.html` were accessed about as many times. The hits follow the same pattern the more popular pages were hit. The only page, which pattern does not follow the other pages' patterns is `speeches.html`.

The document `agenda.html` consisted of agenda of The Helsinki Summit 1997 and the history behind the agenda. The document `clinton_Yeltsin.html` consisted of a description of the arranging of the summit in Helsinki. `Speeches.html` consisted of links to the transcriptions of the speeches the presidents gave during the summit and background material in form of the several statements. One reason for the later interest for the `speeches.html` was that the content of the document increased during the summit.

The next figure describes the Usage of summit WWW pages which did not pass over 50 hits per hour at Ministry for Foreign Affairs WWW site.

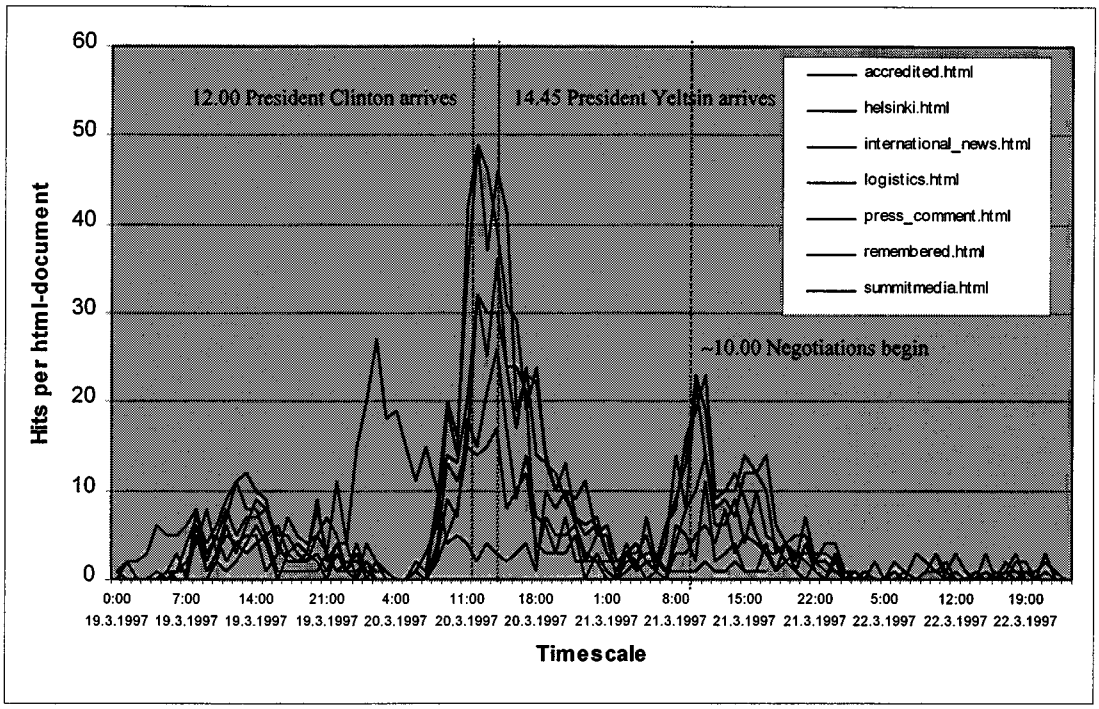


Figure 11
Usage of summit www pages which did not passed over 50 hits per hour at Ministry for Foreign Affairs WWW site.

The documents `accredited.html`, `helsinki.html`, `international_news.html`, `logistics.html`, `press_comment.html`, `remembered.html` and `summitmedia.html` were not accessed as much as aforementioned pages from the Ministry for Foreign Affairs web site.

`Accredited.html` consisted only of a link to the restricted service (http://virtual.finland.fi/summit) for accredited people. The restricted WWW service is analyzed later in this chapter. `Helsinki.html` consisted of the history of the city of Helsinki as a host to meetings and summits. `International_news.html` consisted of links to news services concerning The Helsinki Summit 1997 around the Internet. `Logistics.html` consisted of a description of the presidents' arrival and staying in Finland. `Press_comment.html` consisted of comments of the press on The Helsinki Summit 1997. `Remembered.html` consisted of the history of former summits held in Helsinki.

The pattern of the retrieval of the pages is pretty much the same. The only page, which does not follow the pattern as closely as others, was `summitmedia.html`. That page consisted of information on the press centers and the media representatives in The Helsinki Summit 1997. One reason for differing pattern might be that the international press did arrive before the actual summit began and they were interested on the information, which concerned them.

The next two figures describe the total usage of summit WWW pages at Ministry for Foreign Affairs WWW site. The latter figure shows the division of the hits the pages got during the summit.

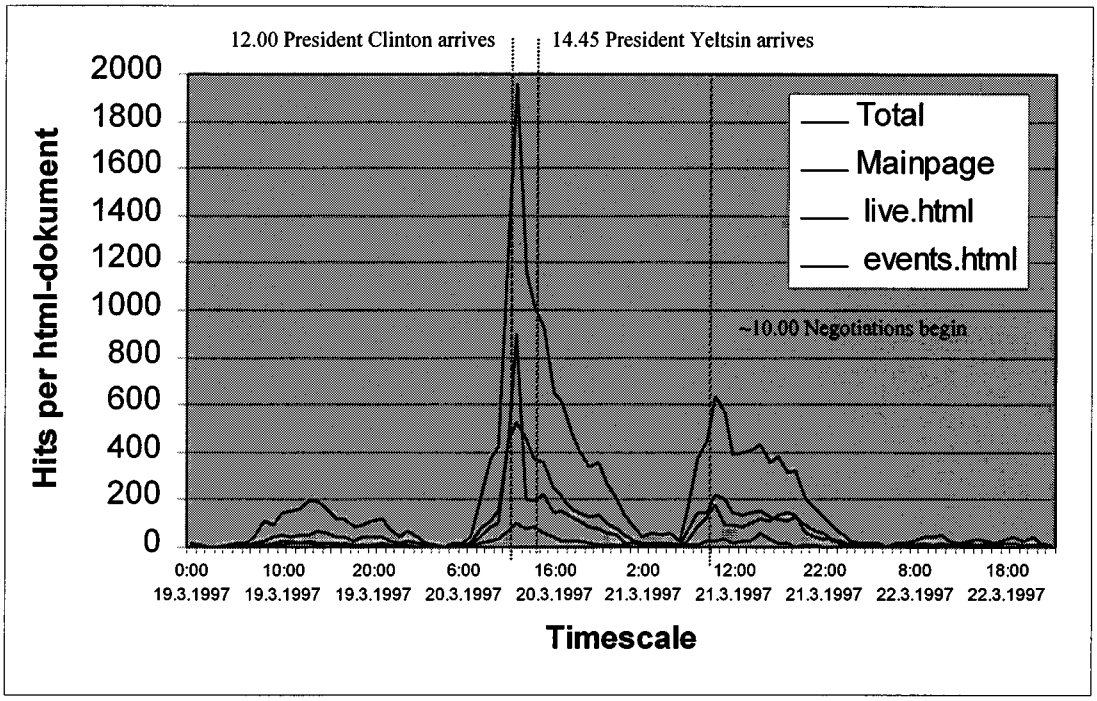


Figure 12
Total usage of summit WWW pages at Ministry for Foreign Affairs WWW site.

The pattern of the total usage of the summit is very close to the pattern the most popular pages. The highest peak happens when the first actual event of the summit took place, namely the President Clinton's arrival.

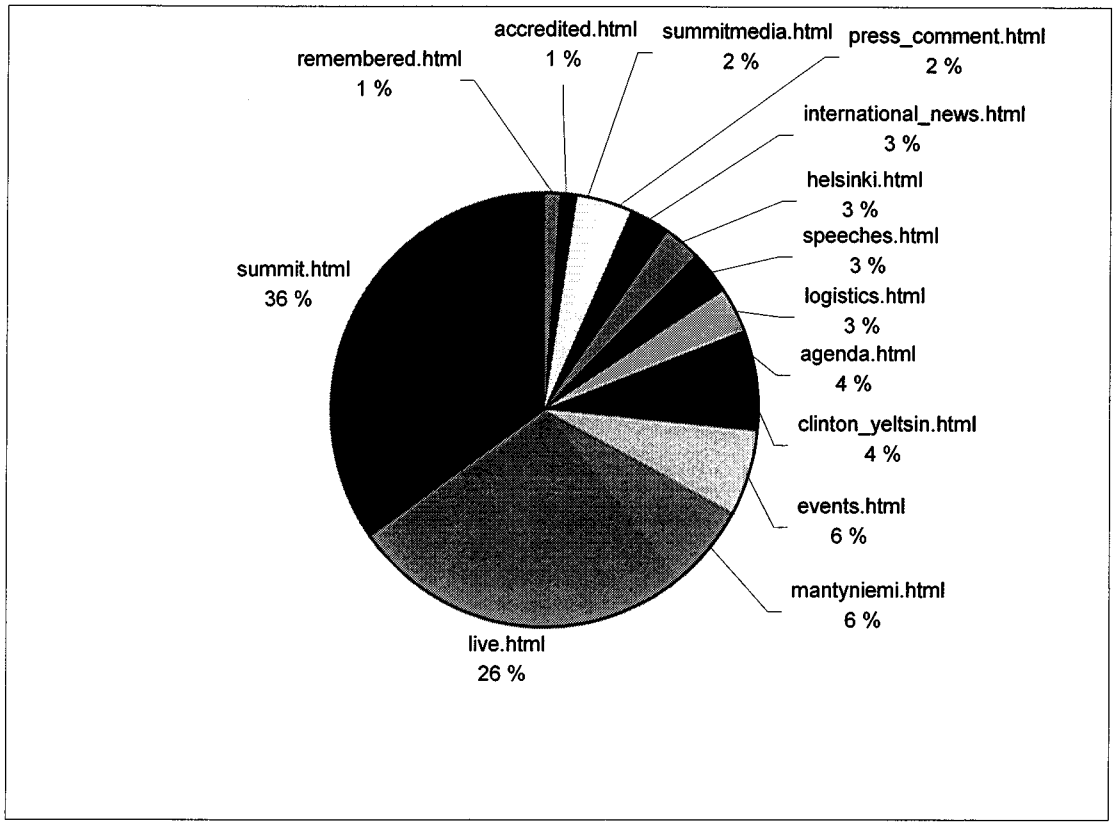


Figure 13
The total usage (19 860 hits) of summit www pages per page during the summit 19.3.1997-22.3.1997 at Ministry for Foreign Affairs WWW site.

It is noticeable that the `press_comment.html` is among the less retrieved documents of the web site. Despite of the fact that the document functions as a navigation page from which there are links to 14 documents, which have real content for the users. There are two possible alternatives for the reason. The structure and the GUI (Graphical User Interface) make it difficult to find the documents or that the content does not hold interest among the users of the web site.

The following three figures show the amount of hits of the HTML documents in the WWW server of the Council of State, at http://www.vn.fi/, of which the Virtual Finland was part of. Figure 14 and Figure 15 describe the total usage of the Web site of the Council of State. The Virtual Finland's pages resided on the same server. The log file given to analysis does not distinguish the Helsinki Summit 1997 pages from the other pages on the server.

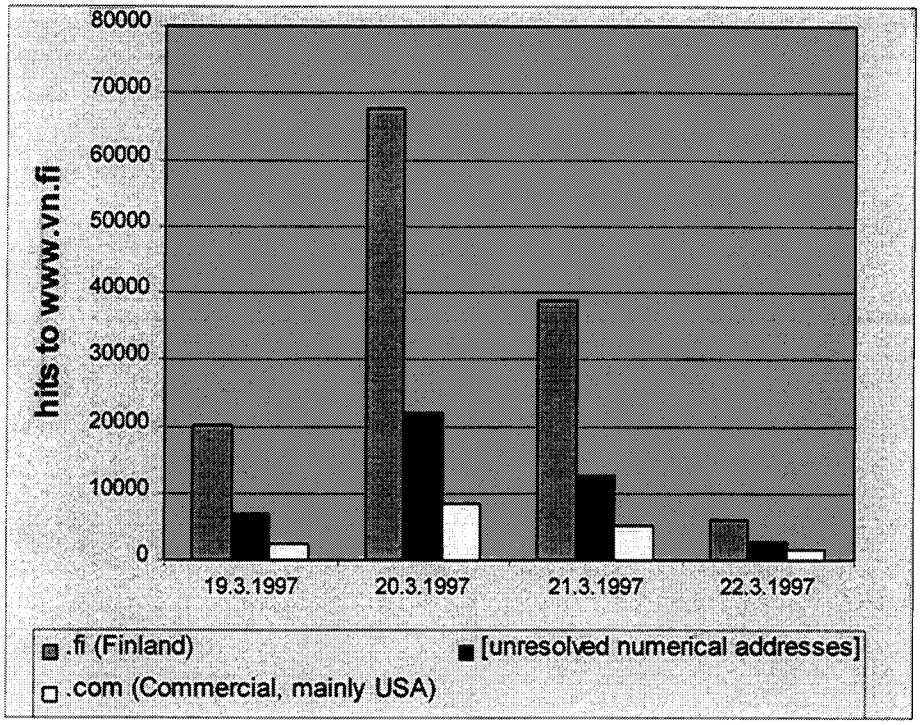


Figure 14
Three top-level domains which most requested documents from http://www.vn.fi/ during the Helsinki Summit 1997.

The information about the top-level domains where the HTTP requests came could not be derived to show only the Helsinki Summit 1997 pages. Despite the fact that the figures show the amount of hits to the other Council of State's pages as well as the summit pages, the usage increased significantly according to the events of the summit.

The most hits to the Council of State's web server came from Finland. The second group includes hits from unresolved numerical addresses. In remains unknown where these hits came from. The third group, .com, are mostly from USA. However, .com domains are used worldwide and the exact origin of the hits can not be deduced.

Figure 15 presents the data of the previous figure on a timescale.

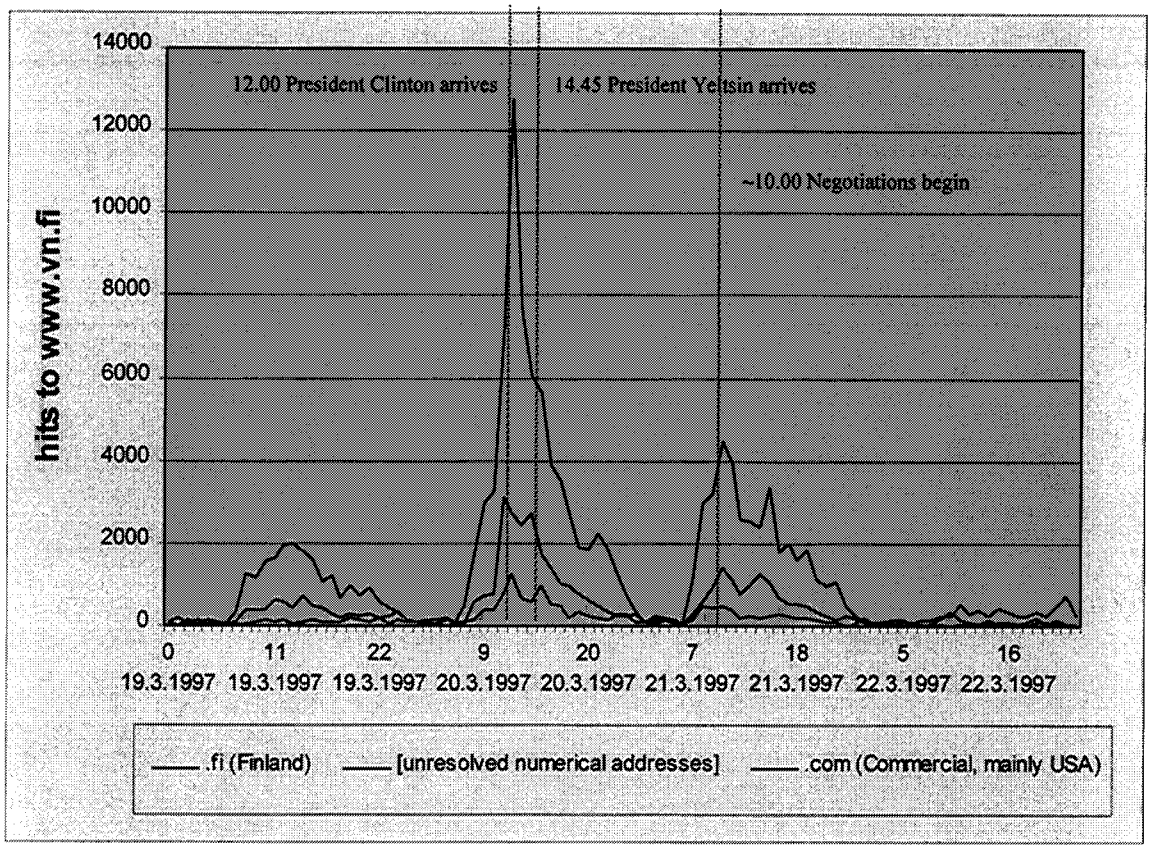


Figure 15
Three top-level domains which most requested documents from http://www.vn.fi/ during the Helsinki Summit 1997 on a timescale.

The pattern of the hits follows the same tendency as the previous findings as the figure indicates. Highest peaks from .fi, unresolved numerical addresses and .com domain users happened at the WWW site of the Council of State. It is worthwhile to notice that after the arrival of President Clinton the hits the amount of hits rapidly decreased. During President Yeltsin's arrival the hits from .com and unresolved peaked again, but .fi did not, even though the decrease did slower for a while.

The next figure shows the next top-level domains from where the requests came to the Council of State web server.

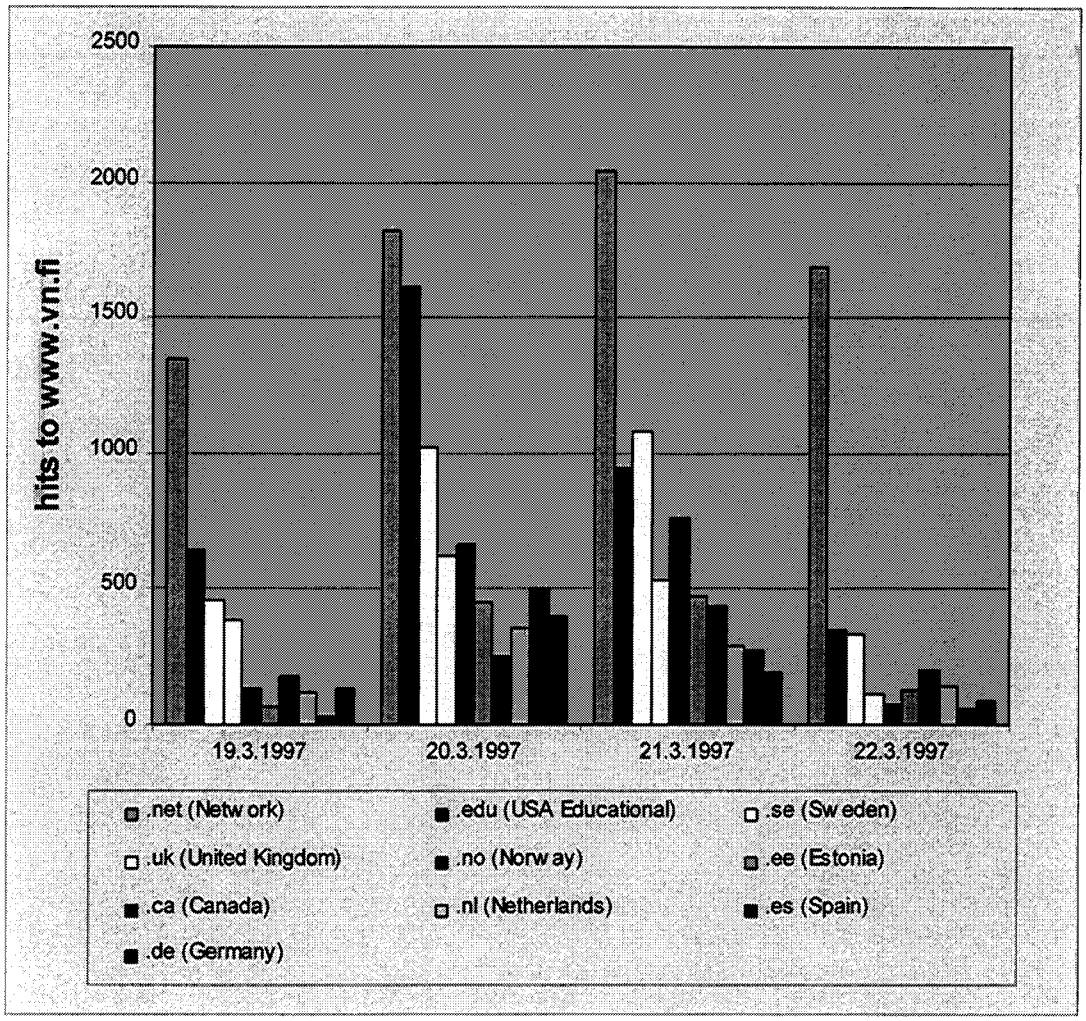


Figure 16
Top-level domains, which most requested documents from http://www.vn.fi/ during the Helsinki Summit 1997 (excluding .fi, .com and unresolved numerical addresses, see Figure 14)

.net and .edu domains are, like .com domains, mostly located in the United States of America. However the domains can be located elsewhere in the world as well. The next in order are Sweden, United Kingdom, Norway, Estonia, Canada, Netherlands, Spain and Germany. The full list of top-level domains hitting the server during the Helsinki Summit 1997 is in Appendix 1.

The following two figures show the amount of hits of the HTML documents in the restricted WWW site at http://virtual.finnad.fi/summit/.

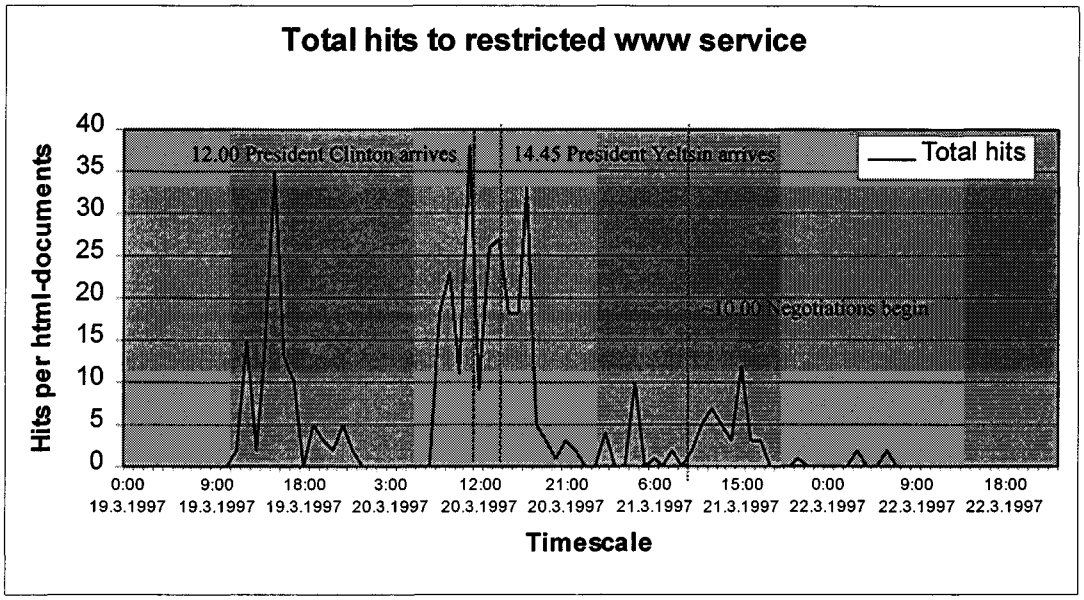


Figure 17
Total number of hits to the restricted WWW service

The pattern shows that the hits came mostly on 19.3., when the summit had not actually started yet and the journalists had spare time because the summit was rescheduled to begin a day later, and 20.3., the first actual day of the summit. On the second day when the presidents met the usage was low. After the summit the hits were almost non-existent. This can be partly explained by the content. Most of the material on the restricted web site included background information and information about practical arrangements, such as transportation and pooling. The need for information about the practical matters was reduced because the journalists had already been accustomed to the context and knew how things worked. On the other hand the background information about the summit was not that important anymore, when the actual event had begun and there were "real news" to report.

The following figure shows the division of the hits among the documents at the restricted web pages.

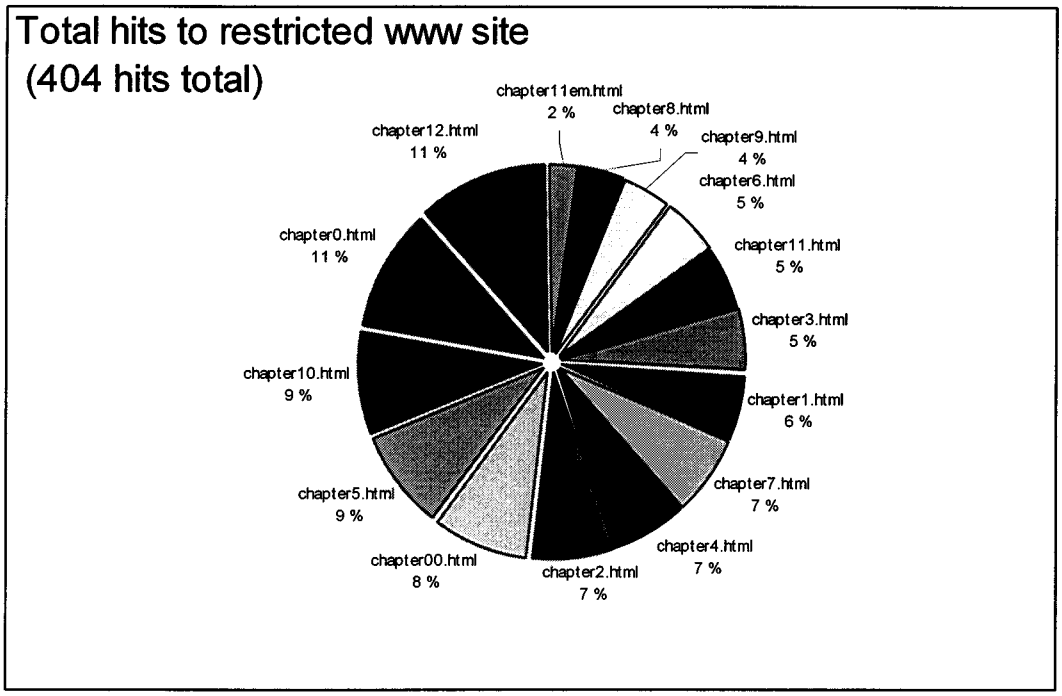


Figure 18
Total hits to the restricted WWW site

The figure shows that the hits were separated quite evenly among the documents. The pages had information on venue of the Summit, international press centers, registration and accreditation badges, program and press conferences, pooling, other arrangements, transportation, accommodation, background to the venues, Curricula Vitae of the President of the Republic of Finland Martti Ahtisaari, Mrs. Eeva Ahtisaari, the minister for Foreign Affairs, Tarja Halonen, embassies in Helsinki, emergency numbers, banking, currency exchange, post offices, international dialing, car rental, eating, shopping, arts and entertainment and some Finnish words and idioms.

The low amount of hits can be explained partly from the fact that the journalists were poorly informed about the existence of the service. The other alternative is that the information was uninteresting but that claim seems hollow based on the fact that such documents (e.g. the venues of the summit) were hit fairly a lot at the public web site.

6.2.4 USIS Helsinki

The USIS web server, which runs an Apache server software, was maintained by two persons during the summit. A bridge from the Finlandia Hall to the American embassy was built up with an ISDN router. 10 PC's were linked to the bridge using Novell LAN connection. The PC's had also Internet connections. The personnel of the USIS library made the content updates from the Finlandia Hall.

> According to the person responsible for the technical solution "*everything went with ease during the summit*". He was interviewed by telephone two weeks after the summit.

> The fact that there was very little material, which was to be published during the summit, helped arranging the content updating. "*The need for updating was quite low.*"

USIS Helsinki takes WWW as a media very seriously. The homepage is considered a very important medium. The WWW is an easy medium from the Finnish point of view because of the high know-how on the computer technology. Large UNIX computers are well spread and they are used a lot, especially at the universities. Despite the high-end technology the information and the accessibility to the information is the key issue in the USIS Helsinki WWW services.

The image of the Helsinki Summit was very important for the USIA officials. The topic was discussed among the officials after the summit and the fact that The Helsinki Summit 1997 was referred to as "Internet Summit" was considered relevant. In Finland using the Internet has become quite common and the talk about "Internet Summit" was not considered as significant as it did in the USA.

The following figures present the amount of retrieval of the HTML documents per hour during The Helsinki Summit 1997 of the USIS Helsinki WWW site between 19.3.-22.3.1997. The statistics show only the retrieved HTML documents. All the hits to GIF images have not taken in the figures.

The first figure describes the hits to the main The Helsinki Summit 1997 page and total hits to the WWW site.

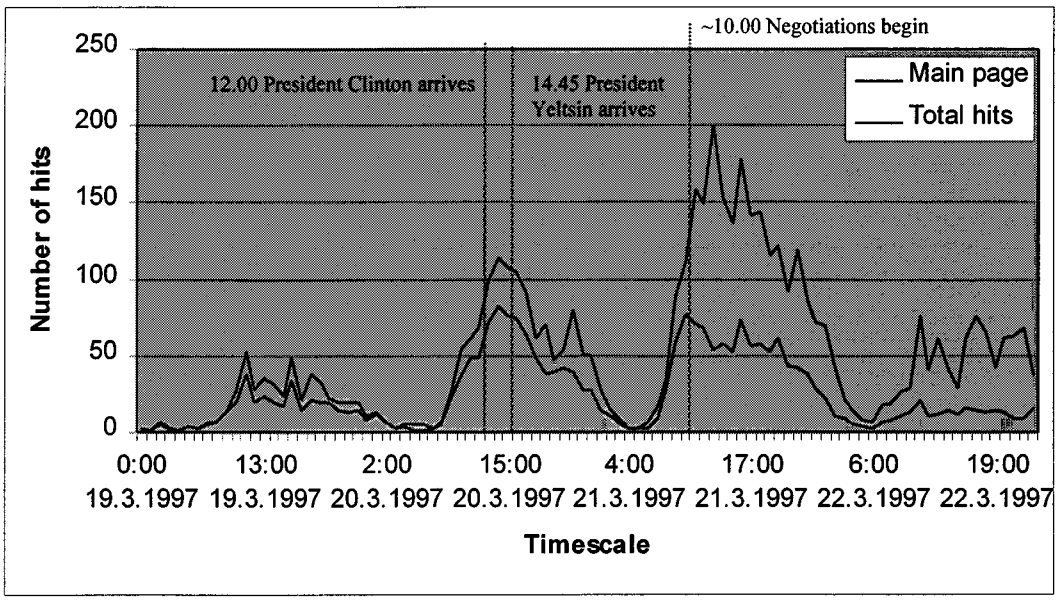


Figure 19
Usage of the summit main page and total hits to USIS WWW site between 19.3.1997 – 22.3.1997.

The main page (`summit.htm`) is a typical main page of a web site. It consists of links to other pages, which have the actual content, and functions as a central point of navigation. The figure shows two distinctive peaks. The highest points of the peaks happen between late a.m. and early p.m. on both actual days of the summit. The Virtual

Finland web site also had two peaks. When compared, the highest peak of total hits to the USIS web site was on the second day of the summit when the Virtual Finland WWW ste had the highest overall peak was on the first day of the summit.

The high amount of hits to main page can be explained from the nature of the document as was the case in the Virtual Finland web site. Since the navigation uses browsing through the main page more hits are bound to come to the document. The other reason for the high rate of hits is that the links from elsewhere from the web are most likely directed to the main page of the web site.

The following figure presents the usage of the six most popular summit WWW pages at USIS WWW site between 19.3.1997 – 22.3.1997 excluding the main page. The main page is excluded from the figure because now the division of the hits can be shown more clearly to the content of the site.

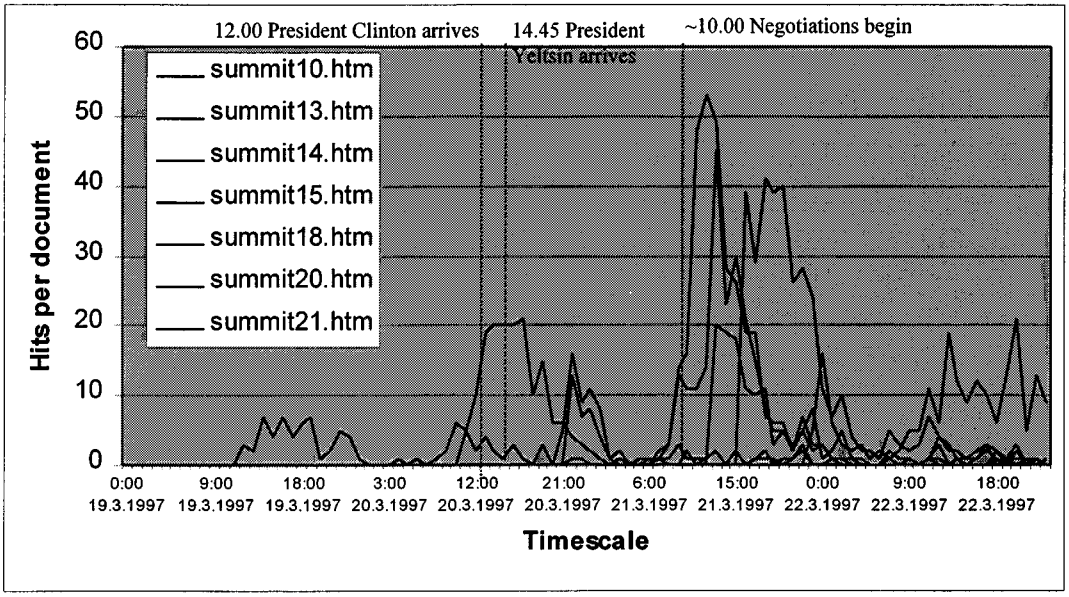


Figure 20
Usage of the six most popular summit WWW pages at USIS WWW site between 19.3.1997 – 22.3.1997 excluding the main page.

The document `summit15.htm` had the highest peak of the site. The document contains the transcript of briefing on Cliton visit with Finnish officials. The other documents included transcript of Albright Berger briefing on Helsinki summit (`summit10.htm`), transcript of Clinton news briefing on upcoming Helsinki summit March 19 (`summit13.htm`), White House Press briefing (`summit14.htm`), White House report on March 20 (`summit18.htm`), transcript of McCurry briefing in Helsinki (`summit20.htm`) and transcript of Clinton/Yeltsin press conference (`summit21.htm`).

The next figure presents the total usage of the most popular summit WWW pages during the summit at USIS WWW site including the main page (`summit.htm`).

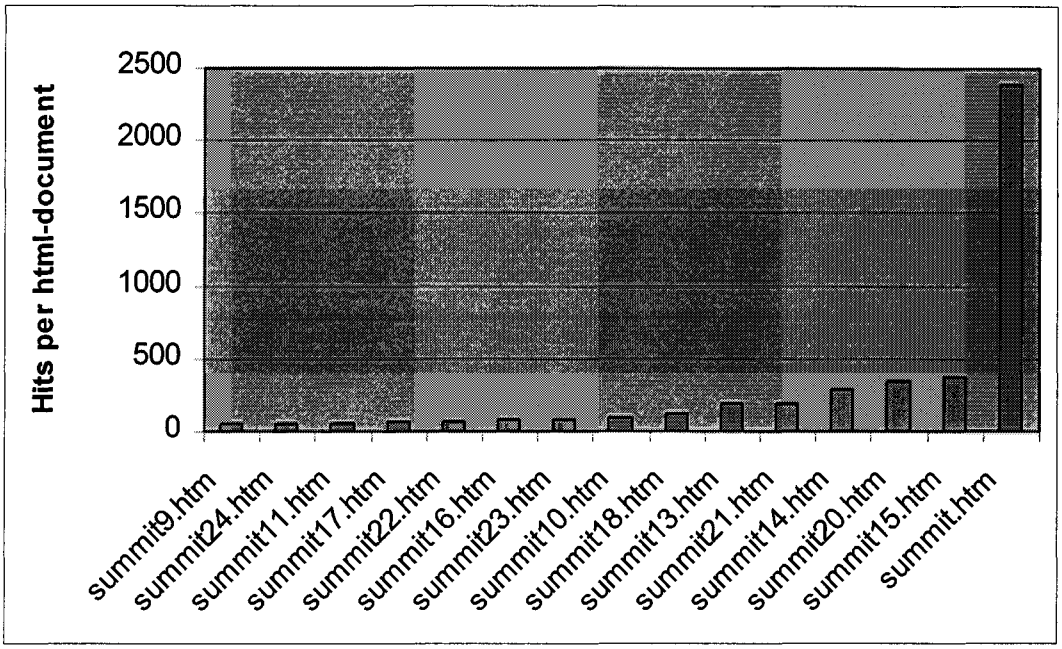


Figure 21
The total usage of the most popular summit WWW pages during the summit 19.3.1997-22.3.1997 at Usis WWW site.

It is worthwhile to notice that the main page was retrieved more than the 14 most popular content pages summed up. The pages in the figure are the ones that got over a one per cent of the hits during the summit.

The following table shows how much the pages were actually hit during 19.3.1997-22.3.1997.

Hits	WWW document	Main page included	Main page excluded
6	summit1.htm	0,1 %	0,2 %
8	summit25.htm	0,2 %	0,3 %
11	summit30.htm	0,2 %	0,5 %
11	summit32.htm	0,2 %	0,5 %
11	summit33.htm	0,2 %	0,5 %
11	summit35.htm	0,2 %	0,5 %
12	summit26.htm	0,2 %	0,5 %
12	summit29.htm	0,2 %	0,5 %
13	summit31.htm	0,3 %	0,5 %
13	summit27.htm	0,3 %	0,5 %
14	summit34.htm	0,3 %	0,6 %
16	summit36.htm	0,3 %	0,7 %
16	summit28.htm	0,3 %	0,7 %
18	summit19.htm	0,4 %	0,7 %
23	summit6.htm	0,5 %	1,0 %
24	summit8.htm	0,5 %	1,0 %
26	summit7.htm	0,5 %	1,1 %
26	summit4.htm	0,5 %	1,1 %
30	summit12.htm	0,6 %	1,2 %
33	summit5.htm	0,7 %	1,4 %
50	summit9.htm	1,0 %	2,1 %
52	summit24.htm	1,1 %	2,1 %
61	summit11.htm	1,3 %	2,5 %
66	summit17.htm	1,4 %	2,7 %
75	summit22.htm	1,6 %	3,1 %
78	summit16.htm	1,6 %	3,2 %
88	summit23.htm	1,8 %	3,6 %
103	summit10.htm	2,1 %	4,3 %
122	summit18.htm	2,5 %	5,0 %
187	summit13.htm	3,9 %	7,7 %
197	summit21.htm	4,1 %	8,1 %
288	summit14.htm	6,0 %	11,9 %
341	summit20.htm	7,1 %	14,1 %
379	summit15.htm	7,9 %	15,7 %
2389	summit.htm	49,7 %	

Table 3
Total hits 4810

The two rightmost columns show the percentage of the documents retrieved. The division of the hits to the content pages becomes more apparent when the main page (`summit.html`) is excluded (the rightmost column).

6.2.5 YLE

YLE offered news and background information at http://www.yle.fi/summit/. The site was published 18.3. The summit was held 20.-21.3.

On the first day the home page for summit at the YLE site worked only with Netscape Navigator. With MS Internet Explorer the home page did not seem to be in order. At the home page there was an interactive animation. The interaction was made with JavaScript programming language. The script changed a piece of graphic when mouse was moved to a certain location and a button seemed to change color. MS Internet Explorer showed these graphic elements at the bottom of the page, while Netscape Navigator hid them. The additional graphical elements had to be downloaded to a browser at the same time with the actual graphics so that the transition between the graphic elements was smooth. However, the script was made in fashion that worked only in Netscape Navigator. The home page was fixed later the same day. Also an observed misspelling was fixed during the first day.

An inconsistency was found in YLE Summit site. When "Clinton profile" section was selected from the home page the link led to the White House web site (http://www.whitehouse.gov). When "Clinton profile" was selected from a page deeper in the structure, the link led to another page in the YLE site from where one could choose a link to the White House. This inconsistency was also fixed during the summit.

The YLE site was at first updated from Pasila, where the YLE offices are. During the actual summit days a dedicated person came to Wanha Satama to take care of the updating of the content. The room where YLE worked at Wanha Satama was very warm. At least two persons worked in a room where were three PC's, one SGI worn station, an SGI server, four computer monitors, a TV monitor and other equipment such as RAID drive rack and a switch for network.

The following figures present the amount of hits to the YLE WWW site during The Helsinki Summit 1997 of between 19.3.-22.3.1997. The statistics did not show the distribution of hits to the different pages. It remains unclear of the data whether the hits to the images on the page are included or excluded. The statistics however indicate the activity of the web site users during the summit.

The first figure presents the total use of YLE's summit site at http://www.yle.fi/summit.

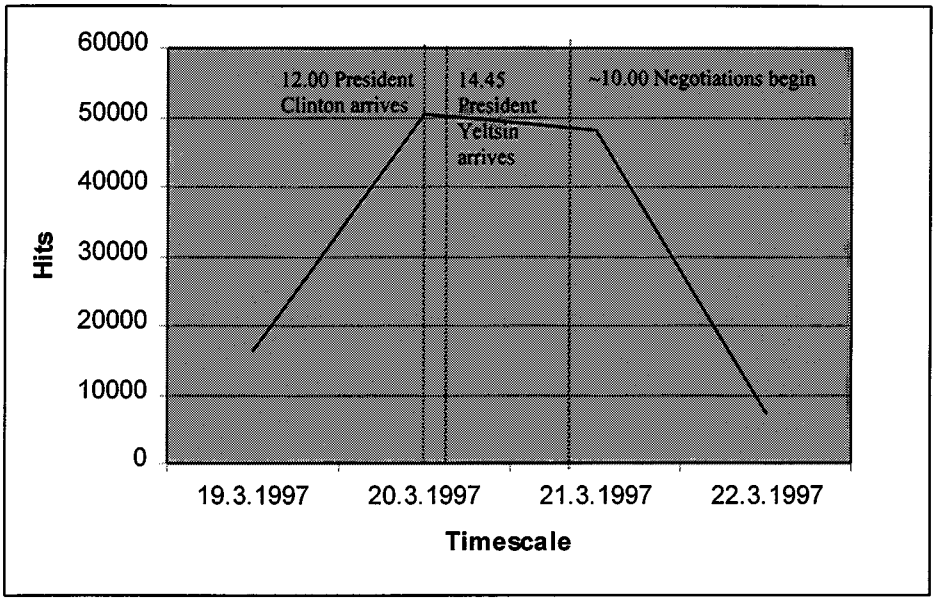


Figure 22
Total usage of the YLE summit WWW pages per day during the summit 19.3.1997-22.3.1997.

The figure clearly shows that the activity of the web site users gradually increased when the summit came closer. The highest peak occurred during the first day at the summit. The usage dropped drastically before the second day of the summit was over. This indicates that the end-users did not use the YLE summit web site in reviewing the results of Helsinki Summit.

The following figure presents the distribution of the hits on an hourly basis.

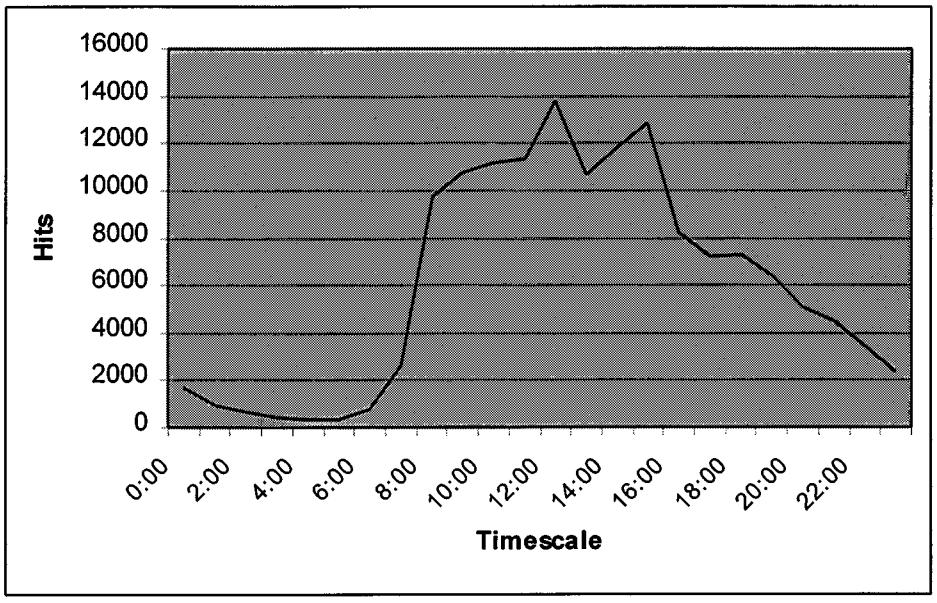


Figure 23
Total usage of the summit www pages per hour during the summit 19.3.1997-22.3.1997 at YLE WWW. The hour statistics is a sum per hour from four days (19.3.1997-22.3.1997).

YLE's summit web site was used mainly in the active hours of the summit. The highest peak coincides with the time of the arrival of President Clinton, which was the first significant event of The Helsinki Summit 1997.

6.2.6 A4 Media

A4 Media offered content from Helsinki Summit in two forms: live audio and live pictures. Offering live material via the Internet demands special technologies. These services were actualized using RealAudio and WebCam technologies. A4 Media was assigned to provide these services by the Ministry for Foreign Affairs, the Department of Press and Culture.

The A4 Media services were updated using multiple file transfers. In interviews with the person responsible for A4 Media services and the person who was responsible for the technology used, the reason was found out for the quite complicated way the WebCam and Audioinfo were realized and updated. A4 Media had changed from one ISP (Internet Service Provider) to another just before the summit and this information was not updated in all name servers. This made the file transfers and overall performance more difficult.

A4 Media Audioinfo in Helsinki Summit was a system of broadcasting live press conferences and related events via Internet. Audioinfo was realized by using RealAudio technology by Progressive Networks.

Three Audioinfo webcasts were made: Clinton-Yeltsin press conference in English, the same in Russian and Yeltsin-Ahtisaari press conference (English, Finnish and Swedish). All audio streams were sent from the Finlandia hall, from where the Audioinfo computers were connected straight to the modem bank of the media laboratory of Telecom Finland. All the streams were encoded and were available for listening from the server real-time. The streams were also archived for later use. The archived files were available immediately after the live coverage. The server enabled maximum of 1000 simultaneous users.

The audio source came from the mixing table of the Finlandia Hall. The original source of the Clinton-Yeltsin press conference came from the restaurant Kalastajatorppa via YLE's connections. The Russian audio had suffered notably in the transfer from Kalastajatorppa to the Finlandia Hall. The low quality of the stream might have been a factor for lowering the number of listeners.

The table 5.1 includes the user statistics for the three audio stream webcasts. The table describes the real situation without the possible errors, which can be derived from the hits to the cached documents in the proxies. The audio streams cannot be cached.

	Clinton-Yeltsin, English	Clinton-Yeltsin, Russian	Yeltsin-Ahtisaari
Live	950	244	123
Archive	788	249	261

Table 4
A4 Media audio stream users

The capacity of the server, a number of 1000 simultaneous users, was adequate.

Six weeks after the summit there has been a steady flow of users listening to the archived audio streams. The streams have been listened to typically a few minutes at a time. The times of the hits are divided to the different times of the day. The following table describes the listeners of the archived audio streams after the summit. The top three domains are included in the table.

	Clinton-Yeltsin, English	Clinton-Yeltsin, Russian	Yeltsin-Ahtisaari
week 13	53, .fi, .us	11 .fi, .jp, .pl	32, .fi, .ca
week 14	5, .fi, .ve	2, .fi	2, .fi
week 15	32, .fi, .us, .se	0	13, .fi, .us
week 16	21, .fi, .se, .ee	14, .fi, .ru, .no	9, .fi
week 17	9, .fi, .hu	8, .fi, .us	3, .fi, .us
week 18	9, .fi, .se, .fr	12, .fr, .fi	0

Domain abbreviations: .fi-Finland, .us-USA (.com and .net domains), .jp-Japan, .ca-Canada, .ve-Venezuela, .se-Sweden, .ee-Estonia, .ru-Russia, .no-Norway, .hu-Hungary, .fr-France, .pl-Poland

Table 5
A4 Media audio stream users after the summit

The low number of users of the A4 Media audio streams can be partly explained with the vast range of supply. YLE also webcasted the Clinton-Yeltsin press conference in audio and in video streams. Also television stations (at least CNN and YLE) broadcasted the press conference live. The most distant A4 Media Audioinfo receivers live were in Brazil, Mexico and Canada.

When the existing systems for digitized speech were used at Finlandia Hall it caused negative reactions because no headphones were available. If audio services are offered in a room where many people work headphones are needed to avoid disturbance.

A4 Media offered live still picture coverage from the Helsinki Summit 1997 using WebCam technology. A technician had been granted access to the pools, which were let on the closed locations such as the airport and the presidential dinner. WebCam sent 25-80 pictures a day from the pool during the three days of the summit.

WebCam technology was quite new for A4 Media as well. They had started to utilize the technology only two weeks prior the summit. According to the interviews made with A4 Media personnel they had gotten the system to work properly only two days before

the start of the summit. One of the problems was low availability of the software and hardware needed for the operation. The software was ordered from Netherlands and the camera used was ordered from USA.

The pictures were taken on a digital camera and transmitted to the server using a portable PC and a cellular telephone. The compression ratio for the pictures was 60 %. The pixel size of the pictures was 320 x 240. With this configuration the pictures were transferred in approximately 30 seconds, when the transfer rate via cellular phone was 9600 bps. Also six larger images were sent for later use from the archive, when there was no need for immediate live coverage.

The pictures were transferred via www.summit.audioinfo.com domain, which is on the server of Telecom Finland, even though the files could have been transferred using FTP straight to the server using www.audioinfo.com or www.a4media.fi domains. These domains however are connected to the Internet with 256 kbps connection. The connection was considered too slow and the file transfer were made using faster connections to the Telecom Finland's domain. This arrangement however caused complexities. In the first day of the summit, five additional commands were required to publish the pictures on the web. An operator at the facilities of A4 Media executed these commands. This procedure slowed the transfer of the images to a minute 45 seconds at the fastest. Some arrangements were made at the second day and only two additional commands were required. The transfer time was cut down to one minute at the fastest, from which approximately 30 seconds went to the transfer using cellular phone data connection.

Before the pictures were put on the public server a text about the picture was written as a GIF image and then both pictures were put on the server using FTP file transfer. The texts included subtitle of the image and another information, such as schedule of the following WebCam coverage. The operator who transferred the pictures and the text pictures to the server was in a constant contact with the camera operator using cellular telephones.

Only one person, who had also access to the pools, used all the field equipment, the camera, the laptop computer and the cellular phone data connection. In an interview the technician told that it was hard to do the operation alone well. Another technician for the camera could have been a great aid so that the other could have operated the computer better. Now the technician had to point the camera with another hand and use the computer hanging from his neck with the other.

> According to the technician the pointing of the camera to the right direction and keep it pointed there was especially hard in pools which *was "three hours of waiting and two minutes of elbowing*". He could stand back from the thickest crowd because he had a stand for the camera that was light enough to be raised over the journalists and photographers.

The portable PC started to slow down at the lowest level of usability after an hour of use outdoors, where the temperature was -5 degrees Celsius. When the WebCam PC was with the pool on location when President Clinton arrived the LCD display froze and the

system could not be used. The transmission of the pictures ceased at that point. The technology worked adequately indoors.

The WebCam images were hit followingly:

Table 5.3. A4 Media WebCam hits

17.3.	213
18.3.	284
19.3.	506
20.3.	**6584**
21.3.	**4870**
22.3.	1135
23.3.	189
24.3.	212
TOTAL	13 780

The image files can be cached in proxies. The total number of hits can vary approximately from 15 000 - 25 000 according to the A4 Media. A month after the summit the images are hit from ten to 50 times a week.

7. Discussion

In this chapter the findings from the observations and the WWW site statistics are discussed reflecting the findings to the theoretical background presented earlier. The case was very interesting. Many theories were needed in the attempt of achieving any relevant understanding about the issue of providing content in short time news events using Internet technologies.

Enlightening point of the problem field of content providing in the Internet was brought up in a discussion of Finnish journalists described in chapter 6.1.2. There is lot of material in the Internet but it is hard to find. For this reason an information system for distributing relevant content to end-users should be established.

The web sites in early 1997 have been built up only for many reasons. Some are made for the reason that other organizations, especially competitors, have one too. On the other hand, some sites are built to serve interested Internet users. The motives, reasons and the ways of executions of web sites are many. That was also the case with the web sites of the Helsinki Summit 1997.

> For example the chief of USIS Helsinki told in an interview that they "*did* it (putting the summit onto the net) *for hell of it. It has taken the life of its own. In fact there is an internal competition* (among USIS offices) *of various geographical areas of having good web sites, started in Singapore 1996. Of course our web services are an extension of American foreign policy.*" Also, a member of Russian embassy said that they

> *"would have wanted to use the Internet but* (they) *had no technical preparedness for it at the time* (of The Helsinki Summit 1997)".

The use of Internet technologies in The Helsinki Summit 1997 helped to create an image for Finland as a country of high technology. According to the Ministry for Foreign Affairs' media review the use of Internet in The Helsinki Summit 1997 was reported in a favorable fashion. Financial Times wrote that the "*1997 meeting will also go down in history as the first Internet summit*". The Independent, Swedish news agency TT and a Tanzanian newspaper reported Finland as a country with high technology. Morgunbladid from Iceland wrote "*sauna, hard liquor and tango are replaced with cellular telephones and the Internet*".

According to Heiskanen, Newman & Similä (1997) information systems developers approach their work with a number of explicit and implicit assumptions and these assumptions play a central role in guiding IS development. Furthermore, they claim that these assumptions as well as the activity based on them can be used for developing practice oriented and scholarly acceptable theories of IS development.

Based on information generated from the data gathered at The Helsinki Summit 1997 a set of guidelines is presented here to describe the overall process of providing information in short time news events using Internet technologies.

The set of guidelines for providing content for short time news events using Internet technologies concentrates on the overall process of building an information system for the end-users and the communication process behind it based on the data gathered from The Helsinki Summit 1997.

The whole notion of information system must be based on communication. The systems built for the sake of building information systems are redundant. The approach to communication in this study that of a process by which a person, group, or organization (the sender) transmits some type of information (the message) to another person, group, or organization (the receiver) with the emphasis on the communication process and its context and on the importance of this process, the social relational patterns and social institutions that are the result of and are determined by the process.

The four key elements in the communication process are the *sender*, the *receiver*, the *message* and the *context*. This study revolves around the use of Internet technologies in the content providing process. For this reason a fifth element is stated, the digital *media* used. In this case the media is the information system built with Internet technologies in order to achieve its communicative function.

The first element, the organization (sender), in this case was an unusual one. The organization of the summit press services was based on the fact that for a short period of time a large group of journalists is gathered at same place for the same purpose and they need information services. It consisted of several organizations, which all have their unique organizational culture. The short life span of the Helsinki Summit 1997 organization was too short to have developed a clearly distinguishable organizational

culture. The members of the summit organization brought with them the values and norms of their organization. It should, however, be noted that the Helsinki Summit organization worked intensively with each other before and especially during the summit. This helped in the process of forming an organizational culture in the temporary Helsinki Summit organization.

The second element, the receiver, was the group of end-users of the information services built for the summit. Several information services were available at the Helsinki Summit 1997, of which some were realized with Internet technologies. Only two of the Internet technology based services was dedicated only to the accredited journalists, which were the press handbook at Virtual Finland's web site and the YLE's Summit browser. The other services were available to the other Internet users as well. The end-users are thus divided in two groups: primarily, the accredited journalists on location who use the system as a tool and secondarily, the Internet users globally.

The receiver of a message in recent communications theories is seen not only as a passive receiver. For example the uses-and-gratifications theory (see chapter 3.3.4) considers that audience members actively seek out the mass media to satisfy individual needs. The needs of the end-users from the point-of-view of content were derived from the user statistics presented in chapter 6.

The third element, the message can be referred to as the content of the information services at The Helsinki Summit 1997. A phenomenon that became apparent was that the documents which content was updated and were not static documents were the most retrieved from the WWW sites. This can be inferred that the updated content, as real-time as possible, was the most interesting form of information.

Another interesting form of content was the one realized with new technologies such as WebCam. Part of the interest comes from the novelty of the technologies used. On the other hand, some of the new technologies make more real-time content-providing possible, such as the WebCam and streaming audio, which were used in The Helsinki Summit 1997.

The context, the fourth element of a communication process, of The Helsinki Summit 1997 was quite unique. The leaders of two superpowers came to Helsinki to hold a summit, which resulted in the arrival of over 2000 journalists in one location to follow the meeting. The party who took over the arrangements of the summit, the Ministry for Foreign Affairs, the Department of Press and Culture, was the core organization of the whole summit organization, which was composed of the members of many organizations. The context of organizational communication was essential in the organization's work. The fact that the receivers were journalists and the other fact that a medium, which can be considered a mass medium, were used present the context on mass communication to this case.

The fifth element of the communication process in short time news events is media. The relevant media in this case were the information systems, which were built on Internet technology de facto standards.

The communication process in content providing in short time news events using Internet technologies is based on the five elements described above. One salient observation about the communication process was that the peaks in the user statistics coincided with the actual events in the summit, most notably the arrival of President Clinton. When something happened and it was told on the pages, the user statistics peaked. The information delivering process can be inferred as event-driven.

This leads to the conclusion that there is a need for quick updates when events occur. This requires organization, which is constant on duty in providing content. If the needs of the journalists are to be met the information providing should be as rapid as possible.

From this can be inferred that the context, the media and the receivers must be considered basic components for the content-providing process. The event-drivenness of the communication process means that the content, the message relies on the event itself and the sender, the organization, is needed constantly to make the content in form of a message that the media could be used in delivering the message to the receiver.

The crucial part of the communication process from this viewpoint is the organization, which provides the content to the pages. The overall organization in The Helsinki Summit 1997 was temporary and consisted of many parties. From the content providing point-of-view the issue is problematic. The members of different organizations produced material on different servers. A4 Media provided live pictures and audiostreams to some server, the timetable of the summit was updated on another sever, the transcriptions of the speeches were on some other server etc.

Different organizations want to produce material on their own web pages, which is very understandable in itself. But when the organizations work together the information providing should been done in a way which serves the end-user. Easy access to the documents is vital for the usability of the services.

For example, the different web sites can naturally be linked with each other, but the linking should be done in a more meaningful fashion than only linking the main page of some other server. The best result from the end-users' point of view is gained when the linking is done as accurately as possible to the actual content. Linking a web site from another web site adds at least one more level between the end-user and the content he or she is interested in. If the web sites are linked only because they include some information about the event it would be helpful if a description is added with the link about the content and services the other site includes. This applies especially to the end-users who are not aware of the status and services of the content providers.

The content providers in the Helsinki Summit 1997 did co-operate in the web site development through the event.

> The chief of USIS Helsinki told the following about the cooperation between Ministry of Foreign Affairs (MFA): "*Here web sites and their linking helped. It was good to have mutual linkages between our site and MFA's site. They had something to offer*

> *when we did not in the beginning. It was fine that MFA put out things about Mäntyniemi etc. When MFA run out of things* (to offer for media), *we had it. Now we were acting as separate entities. Next time relationship will be much tighter. The question of boundaries becomes interesting. You have to be specific with source. We are not putting together a site for the future summits.*"

Building information systems calls for careful planning, cooperation and organizing so that the information can be accessed by the end-users easily.

> The chief of USIS Helsinki told from their experience that *"we should do events planning better. We ran after White House and fetched things and put them in the Web".*

The sender organization faces another problem in addition that they need to be alert all the time during the event. The usage of Internet has growth dramatically just during the last tree years (Puirava 1997, 45). Therefore the technological base of Internet and Internet based information systems is very young and it is developed continuously. Also there has been very little research on Internet based information systems development and how that kind of systems are used. Despite the huge expansion of Internet only few people has used it (Puirava 1997, 46) and so the most people are not familiar with this new technologies. In The Helsinki Summit 1997 the usage of the browsers, especially YLE's Summit browser, increased the further the summit went.

> This notion was present also in an interview with an YLE representative who told that "*people haven't really found this service yet*".

In organizations technological oriented people are mostly interested in Internet and Internet is frequently only seen as a technological problem. In many larger organizations there are people who know the technology and can make something with them. These people, usually IT personnel are often given a big responsibility in making these services. This leads to the situation described in chapter 3.2.5 Introducing New Technology to an Organization. The people who know the technologies gain more power on the fields they themselves are not experts on. This gained power is however accordingly to the role they formally have in the organization and the system is bound not to be a complete success.

It is extremely important to clarify people roles and the tasks, which belong to each role. Clear roles and predetermined responsibilities help the content providing process. Especially the personnel who develop the Internet based information system and who are the content producers should be distinguished as it was done in Virtual Finland web site development. In Helsinki Summit 1997 a systematic effort was made defining the roles and responsibilities of the personnel beforehand. It could be claimed, however, that usually the success of the whole process of content providing is based on people's own motivation, commitment and will to make the work done as well as possible.

The organization building the information system has to give the actors clear roles. The TABS model Lyytinen, Rose & Welke present (see Chapter 3.5.1 Information Systems and the Internet) gives a description what skills are needed when Internet based

information systems are started to be designed. The skills needed are telecommunication skills, which include the infrastructure, artistic skills in designing graphical interfaces, BPR skills for the actual business processes of the organization, and software development skills for the applications. Member of a skill area has to understand each other's perspectives for the team to work. If these requirements are not met inside the own organization something has to be outsourced that the system could be built.

The TABS model is a good start of how to organize such a system design. It however lacks to points, which should be taken into account. These are the actual content producer skills and the communication skills. Also BPR (Business Process Re-engineering) skills are not always possible to take account to, because the system has to be build very fast (like in Helsinki Summit97 with only 6 weeks time to make it all happen) and BPR usually takes a longer period of time to be implemented.

The design and implement of information system has to based on understanding the object system's facts and environment in which it operates (see chapter 3.5 Information Systems). Due to the young age of Internet the development of an information system based on Internet technologies arouses fear that too much is concentrated on new technological matters. The developers should focus more on the organizational and symbolic issues related in IS use than on thinking of technology alone. The comprehension of target systems' requirements has to be brought to the developing process from the very beginning.

The content producers in these kinds of cases can be of various sorts: photographers, text writers, speech recordists, videographers etc. The important aspect is that the content has to be in certain digital formats. All material cannot be produced straight to the right format. This requires skill to digitize the material for example by scanning, or converting the material to suit meet the Internet de facto standards.

The organization that provides the content to the information system must make independent decisions. The decision making model Malone presented (see chapter 3.2.8) describes three decision making structures, of which the connected, decentralized decision making structure is most relevant in this case.

After the content has been created, digitized and converted to suitable format if needed, it then needs to be moved to the web. This requires another person or group of persons who does the creating and updating of the web pages manually or with some automated process.

The content producing happens in two parts: first when the service is created for the first time and when the contents are updated when more material can be used. The creating of the web site is not as time-critical as the updating process is. In creating the designing the service the designers in all groups of the TABS model are at hand, and usually there is more time at hand.

The updating of the web site requires speed in publishing the material. The updating process is however quicker anyway, because the pages, the structure of the site,

interface and applications are already designed. These resources, however, have to be allocated. Like Reuters Bureau Chief said in an interview "when the concluding documentation came to web it had no more news value."

The communication skills are required to understand the nature of the whole process. The information system is not designed for the sake of designing information systems but to carry through a communication process using a special medium, the Internet.

The WorldWideWeb is recognized as a mass medium (see chapter 3.3.5 The Internet as Mass Medium). In the recent communication literature the receiver is seen more with the resultant emphasis on meaning sought and ascribed rather than information transmitted (Servaes 1996, 414). This is exactly the case with the Internet when the receiver of the message him/herself uses the media to find information needed.

The 'push' technologies and the notion of webcasting brings the usage of the Internet as a mass medium closer to the traditional forms of mass communication where receiver literally receives the subscripted channels without actively seeking content.

The information systems bring in one very usable feature in comparison to the traditional mass media. That is archiving and an easy access to the archives. There was notably a need for archiving the speeches made. Journalists recorded the speeches with little recorders and the Summit browser was used to writing stories and checking the content of the speeches. Also the YLE personnel were asked if the speeches were available also on text. Considering that the journalists themselves choose what material they use in their work it would help their work if wider range of material could be offered via different medium. Because journalists aim for their own view of affairs (Hultén 1993) it is their advantage if they can watch and listen to the events when they choose. The Internet technologies make it possible distributing for example digitized speech, like theA4 Mediainfo did.

The aforementioned factors are described in the following figure:

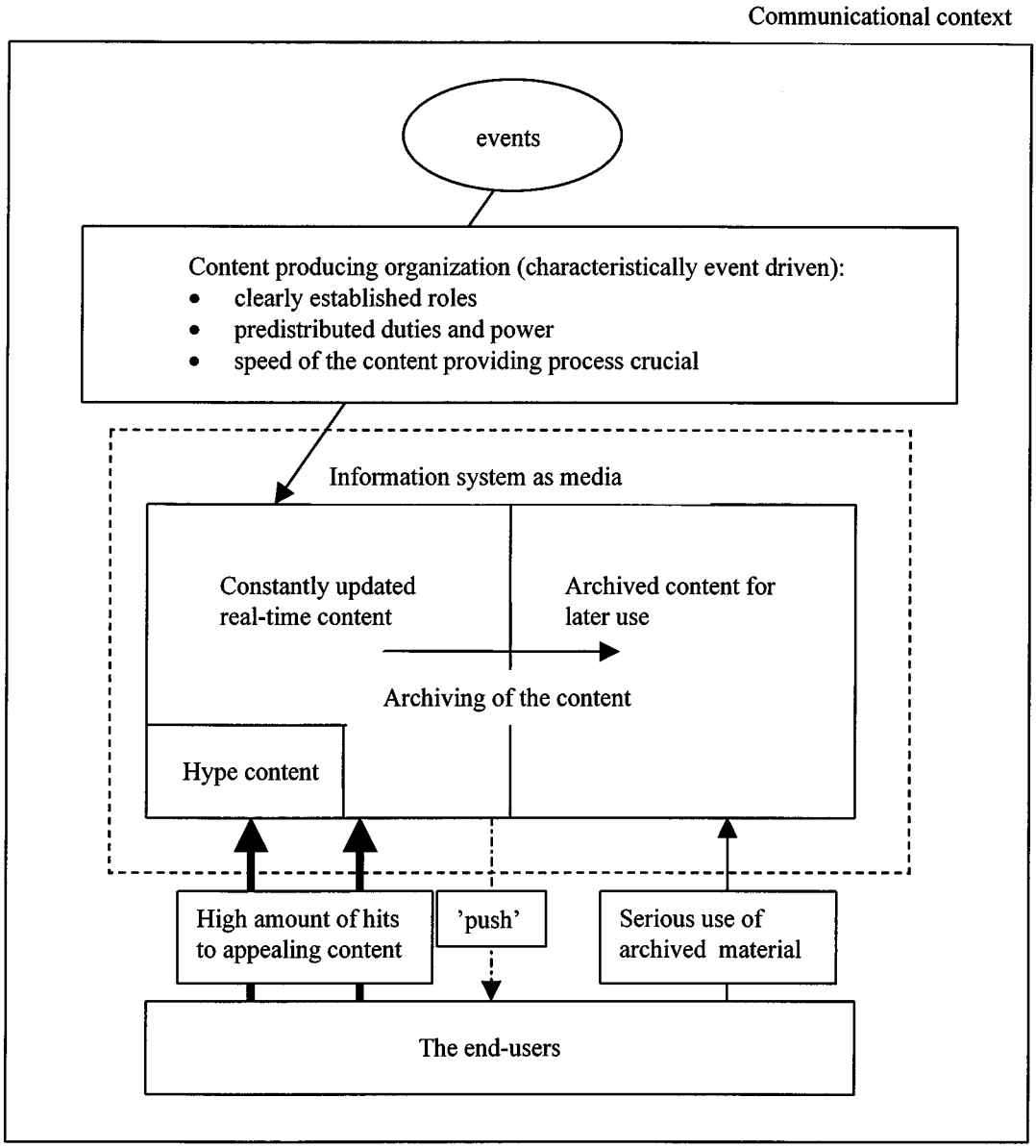


Figure 24
Content providing environment for short time news events using Internet technologies

The purpose of this figure is to assist in the understanding of real life's communication environment in short time news event. This can be used as a basic tool in IS developing phase.

Information system, which is used as media, is the core system, which carries the technological implementation for the communication process. It must be optimized every time for the current situation and environment. This presentation does not concern the detailed IS design, implementation and maintain techniques or methodologies and the used technological infrastructure but concerns the principles behind them.

The communication processes take place in the same communicational context. The system is event-driven, which means that external events occur, which have to be

transferred to the content of the information system. This requires efforts from the content providing organization.

The organization, which creates the content, is characteristically event-driven. The organization is formed to serve a single event. Each member in the organization has to be given clear roles and areas of responsibility. The predefined roles have to be adapted in such way that the roles match the duties to be performed. The power over issues involved should be clearly defined and distributed for the system development to have a possibility to be a success (see chapter 3.2.5 The Introduction of New Technology to an Organization.). Bottom line is that the people, their motivation and commitment, make the organization work. If support can be given to them beforehand by defining the roles and responsibilities, it helps the personnel to fulfill their functions.

As stated earlier, the speed of the event-driven content providing is a crucial issue. The content has to be produced and then transferred to the information system to be distributed to the end users to have any news value to them.

The content in the information system is divided in two separate categories: the constantly updated content, which is as real time as possible and the archived previous material. The findings of this study indicate that people are interested in real-time content. The highest user peaks were directed to the documents of which content was updated. The other observed use was that of fact checking. Journalists used material, which was archived for the further use. For example the YLE Summit browsers were used as a source for news stories in a content providing sense. The content of the digital press book at Virtual Finland restricted site was another example of the content archived for use later than the moment material was produced.

The event-driven content is thus created and transferred to the real-time content side of the information system. After predefined timeframe the content item is then archived for later use. The timeframe after which the content items are to be archived depends on the nature of the news event. In The Helsinki Summit 1997 there was no need for quick archiving since the number of events which were the basis for content was somewhat slow.

The real-timeness was one found factor what appealed to the end-users. Another detected factor for enticing users to the service was 'hype' based content. Hype in this sense means something exclusive, controversial or enjoys the consensus of being otherwise interesting at the moment. The hype for the Internet was no doubt one point which was later remembered of the Helsinki Summit 1997 press services. According to the Ministry for Foreign Affairs media review, the Internet was one salient factor in arrangements of the summit. The Internet thus seemed to still enjoy hype, which interests people.

The hype was the Internet in itself in The Helsinki Summit 1997. The services which used 'new technology', namely the WebCam and the Summit browser interested people according to the findings of this study. The hype does not have to mean technology or

the media used. It can also be derived from the actual content of the information service, even though this was not the case in The Helsinki Summit 1997.

If the real-timeness and the hype entice the quantity of users to the information service, the archived material entices the users who are willing to give time to the use of the system. The observed journalist from an European news magazine was a good example of this. He spent over an hour with the Summit browser despite of the fact that the last evening of the summit was going on. When the information system is used as a tool for news writing the archives should be carefully planned and an easy access should be offered to the users.

The real-time content can also be pushed to the end-users if needed. The webcasting technologies are still in development phase, but the familiarity of receiving information from a mass media and the eased time-consuming information gathering provide a basis for the webcasting technologies to have a possibility to become more common.

The requirements for the information system described here are undoubtedly many. The most important of these requirements can be listed followingly:

- *Speed* – the system has to enable rapid producing, transforming and delivering of the content
- *Usability* – the end users have to be provided with an easy access to the information needed.
- *Reliability* – the system has to be designed on a robust enough infrastructure that the usability is not endangered in normal circumstances

The content of The Helsinki Summit 1997 was the presidents' speeches and the statements given during the summit. There were only a few occasions public speeches were given. The most important function of the information officers was or should have been to record the contents of the speeches and distribute them evenly and as fast as possible. This was partly achieved and could have more efficiently achieved using carefully planned technological solutions. One has to keep in mind that the organizing country, Finland, is advanced in Internet technologies. The technologies used daily in Finland are most likely not familiar to every journalist. On the other hand the demands for different arrangements increase when the technologies become more common. The interest for the use of such technologies was however high in other more advanced countries in the field of Internet communication.

A journalist of a major European newspaper gave in an interview an interesting point that he did not even want to get in to the pools because he could follow the events better form the monitors. In his opinion the journalists on location can not get as much from the events than from the monitors. This naturally requires that the televising of the events, directors and other technical staff has to be professional and the service carefully planned and realized. YLE has good reputation of making real-time televising and that can not be considered as a problem in Finland.

Multilingual technical helpdesk is also an important issue. The need for that kind of a service is hard to estimate. The level of technical know-how of the journalists from different countries and different media should be found out and compared to the amount of computers to arrive to an estimation for the need of multilingual technological support. In any case, that kind of a service would probably be highly valued.

When the Internet technologies further develop and become more common it contributes to the decreasing need for being physically on location and in the pools. It would be, however, too much to argue that the Internet and other media would cease the need for press centers and other such apparatuses. Even though the basic material can always be distributed on the Internet, someone has always to do the basic journalistic work of asking the questions. Same thing applies to the photographers and television crews. Picture and video material can also be distributed over the net but some media always want to make and use their own unique material.

The issue of Internet technologies becoming more common affects the journalists' work on another level as well. When journalists are used to the Internet as a tool they can better utilize the services. The ideal in the events like the Helsinki Summit 1997 would be to offer a journalist a working environment he or she is used to and tell the availability of the content beforehand. This however requires that the journalists around the world start to use the Internet as a tool. Today journalists only from more Internet-wise developed countries can use these services well.

This means that when the Internet technologies are started to use more the demand for useful services increases as well. This means that the service providers have to follow the development of the field and the level of utilization of the services in press closely.

The Internet technologies can and in the future will more be used as a tool for workgroups and teams. This could have been possible already in the Helsinki Summit 1997. For example the information about the accredited people could possibly have been useful to other purposes than the actual accreditation as well. For example, by using an ODBC compatible database to store the information with careful planning of the database used the database could have been used for different kind of queries about the people accredited. The database could have had also the e-mail addresses and homepage URLs as well as telephone and fax numbers. This would have required more thorough pre-planning of the application to include other uses of the application as well.

This information could have also been distributed from the database with Internet technologies. The database could have been made accessible with an Internet browser, so that the journalists could have more easily contacted each other and find information about each other. Other journalists were, as stated earlier, an important source of information for journalists.

The shift to more networked content providing has impact on journalists' work on another level, that of power. Not having material available for example when President Clinton arrived on the Internet empowered the accredited journalists. If the results of the Summit had been available in the net, it would have dispowered to some degree the

accredited journalists. Those who are staging further summits for publicity must very carefully think what effects immediate Internet- publication will cause to their plans.

In such summits the basic fieldwork for the journalists can not be done. They depend largely on the documents the information officers have to offer and the press conferences held at the press centers. This leaves a great responsibility and challenge on the organizer's shoulders to satisfy the journalists' needs.

8. Evaluation

It can be argued that the ethnographic observation methodology was the best, and probably the only, reasonable way to gather information about the way that the Internet technologies were used in the Helsinki Summit 1997. Conventional methods such as questionnaires and structured interviews were ruled out for various reasons.

Firstly, the number of journalists and other technical staff was quite high, ca. 2300. When the numbers of information officers, presidential staff, security personnel, organizers, service providers and other are included the number of people in the Helsinki Summit 1997 is well over 3000. The number of interviews or questionnaires should have been very high that the results could have been seen as statistically valid. There were not enough researchers that this kind of an approach could have been carried through.

Secondly, the group of people observed was very heterogeneous. The journalists came from different types of media (television, print, and radio) from different countries (61) and different cultures. The needs and routines between the representatives of different media using new technologies vary. Same thing can be argued to apply to the representatives of different cultures. To create a scientifically reliable and valid questionnaire or a stem for interviews that covers the whole range of journalists and information officers would have been downright impossible. That would have been too blunt a tool.

Thirdly, the people attending to the Helsinki Summit 1997 were busy. It would have taken too much valuable time of the journalists to be structurally interviewed in-depth or to fill a lengthy questionnaire. Ethnographic observation did not interrupt or interfere anyone's work, which was not only one of the very basic principles of the methodology in question but also was a pre-requisite for the observers to have any kind of access to the sites.

To say that ethnographic methodology was the best tool available does not mean that the process of observation was not troublesome. There were factors, which made the work more difficult.

The amount of observers was small in comparison to the journalists, information officers and service providers. This however does not lessen the value of the

observations made. The observers acquainted themselves to the sites to be observed beforehand and planned their activities accordingly. The observers met at least daily to coordinate the observations.

The observers were granted access but only partially. One of the three main sites, the Hotel Intercontinental, was not given access to. The Hotel Intercontinental lodged the major American television networks. These journalists could not be observed at all during the Helsinki Summit 1997. One reason why the access was not granted to Hotel Intercontinental came from security reasons. President Clinton took residence there during the summit.

The fact that there were three separate sites did not make the observation work any easier. The observers had to be divided between the sites, which caused decreased the level of cooperation and meant that time had to be used in commuting between the press centers.

The security was most likely one reason also to the exclusion of the sites where the actual news events took place, namely the press conference, airport and other places the pools had access to. It could have given some additional insight to the process of distributing information from the very beginning of information distribution chain.

In addition to ethnographic observation, information was derived from the log files of the aforementioned WWW sites. The information from the usage of the WWW sites told how the WWW sites were used. Additional and very interesting information could have been acquired if the statistics of the traffic from the press centers to the WWW sites would have been available. This information was however not available from HPY. The comparison between the observations made at the press centers and the log files from the traffic to the WWW sites could thus not be made.

This study was made partly by methods of ethnographic research. Not all observers were experienced ethnographic field workers. This made the recognition and possibly the explanation of the events harder. It is quite possible that an experienced field worker could have noticed something that left this time unnoticed. However, the observer group was guided and supervised by an experienced ethnographic field worker, Doctor Alan Munro from the University of Oxford. The group was instructed by a professional at least once a day. The inexperience of the observers was pretty much compensated with a professional instructor.

A more exhaustive data from the use of the browsers could have been achieved with more careful observing of the journalists browsing the Internet and the restricted services. The observations of the usage did not cover all 60 PCs at two press centers all through the summit. That is, however, a general problem. Observing everyone is virtually impossible without an observer per observee.

The analysis of the web server statistics was also troublesome. The data from different sources came in different forms and formats and an overall analysis, applicable to every server, was impossible to make because some statistics showed things the other did not.

Another factor, which made the analysis more difficult, was the amount of unresolved IP addresses in the server logs. The amount of those addresses was quite high (see appendix 1 for details) and if these addresses could have been resolved it would have offered more accurate information.

If the user statistics could have been obtained how much the users at the press centers used the Internet and the other services it would have given a clearer picture for content analysis and the journalists' Internet behavior.

If there had been a possibility to gather data from other short time news events as well, the findings could have been on firmer ground. The findings based on one case alone can, however, show directions in which the findings clearly are heading.

Despite these issues the stated research questions were not left unanswered. The methodology used was in fact the only way one could come up with such data as was gathered in this study. Also, even if the statistics did not show everything in the same way they did show the most important thing, which was the content the end-users were actually interested in.

With this study new information was found about the use of Internet technologies in short time news events was obtained. The study succeeded quite well in answering the research questions and offered evidence for making suggestions about the development process of information systems for short time news events. The setting was quite unique for conducting a study but the results of the study can be generalized to other short time news events as well. Combining ethnographic methodology to the analysis of server log files gave more tools and a wider range of support for the findings than using only one method for gathering data. The phenomenon that the methods supported each other suggests that this combination could well be used in further studies, which have similar setting and purposes.

9. Perspectives

The Helsinki Summit 1997 showed that the use of Internet technologies in short time news events are not unproblematic. There is definitely a need for further studies in the field.

Applying the uses-and-gratifications theory's GO / GS analysis (see chapter 3.3.4) on such event would give more information at the receiving journalists' end of the communication process. Since the Internet can be considered as a mass medium and the theory has already been used in the studies concerning the Internet ot would provide fruitful information.

The information systems development methodologies do not necessarily apply to the needs of building information systems for short time news events based on the Internet technologies. The IS theories have been built for traditional models and they lack some

of the requirements the Internet brings with it. By studying such events a more suitable model or framework could be built.

The organizational theorists have also uncharted territory in the temporary organizations which consist of members of other organizations. The power relationships, the values and the norms and the whole organizational culture differ somewhat a lot in less structured than the ordinary organizations.

The emphasis on information systems in short time news events is on the content provided with the system. The content creating and its delivery in such events are the key issues in building such systems. The methods of providing content are however less than satisfactory and a lot of work is needed to answer to the high need for such methodology.

In further studies it should also be ensured that all possible server usage data is gathered. The data in this study did not contain every possible detail, such as browsers used and average visit duration. It should also be ensured that the user statistics from the press centers is made available. With this data it could be analyzed how the journalists used the information systems from the press centers. This is not an easy task since the environments and the facilities change in every case. Anyhow this would most likely give insight to the use of the digital information systems in the journalists' work. This could be achieved when aforementioned issues are considered before the system and the infrastructure is built.

To acquire more profound understanding about content providing in short time news events using Internet technologies should material be gathered structurally from several summits and other such short time news events.

Making a model of a virtual summit could also make very interesting research. The compression algorithms and the data connection infrastructures develop constantly and the audio and video data can be more easily transferred. If a framework for the different requirements, both journalistic, technological and, in some sense, political could be brought up a concept for virtual summit could possibly be built. This is, however, not necessarily relevant for immediate future. The technological development does not seem to be slowing and the day for the technological readiness is not too far away. The technological possibilities are not enough for making up good information systems and such frameworks and theories are needed before the systems should be designed and implemented.

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Appendix1: Hits to http://www.vn.fi per top-level domain during the Helsinki Summit 1997

Top-level domain	19.3.1997	20.3.1997	21.3.1997	22.3.1997	Sum
.fi (Finland)	20132	67689	38885	6007	132713
[unresolved numerical addresses]	6912	21855	12629	2578	43974
.com (Commercial, mainly USA)	2402	8443	5179	1557	17581
.net (Network)	1343	1823	2041	1689	6896
.edu (USA Educational)	645	1613	946	347	3551
.se (Sweden)	460	1018	1081	335	2894
.uk (United Kingdom)	387	625	530	110	1652
.no (Norway)	133	668	765	71	1637
.ee (Estonia)	63	452	470	129	1114
.ca (Canada)	176	254	439	201	1070
.nl (Netherlands)	120	353	289	140	902
.es (Spain)	26	503	275	60	864
.de (Germany)	135	397	196	87	815
.lt (Lithuania)	0	47	655	35	737
.us (United States)	186	226	275	4	691
.hu (Hungary)	126	22	376	141	665
.be (Belgium)	130	110	337	76	653
.dk (Denmark)	182	99	281	47	609
.org (Non-Profit Making Organizations)	57	131	248	113	549
.au (Australia)	96	123	154	112	485
.jp (Japan)	34	135	206	99	474
.pl (Poland)	143	88	138	90	459
.ch (Switzerland)	162	197	44	54	457
.gov (USA Government)	160	158	64	12	394
.fr (France)	41	135	159	56	391
.pt (Portugal)	0	67	129	23	219
.br (Brazil)	11	94	83	28	216

.is (Iceland)	21	40	141	7	209
.lv (Latvia)	0	56	141	0	197
.lu (Luxembourg)	13	134	10	0	157
.at (Austria)	15	103	30	0	148
.it (Italy)	13	71	38	26	148
.mil (USA Military)	20	52	65	0	137
.gr (Greece)	0	107	0	6	113
.int (International)	25	43	39	0	107
.mx (Mexico)	41	12	40	0	93
.kr (South Korea)	29	0	18	40	87
.za (South Africa)	47	34	0	0	81
.ie (Ireland)	8	20	30	22	80
.ro (Romania)	0	58	20	0	78
.th (Thailand)	1	0	16	61	78
.bh (Bahrain)	26	40	0	8	74
.ar (Argentina)	0	0	51	19	70
.yu (Yugoslavia)	0	0	25	45	70
.il (Israel)	34	7	10	15	66
.sg (Singapore)	21	11	29	0	61
.eg (Egypt)	59	0	0	0	59
.tr (Turkey)	4	52	1	0	57
.my (Malaysia)	0	0	26	25	51
.nz (New Zealand)	0	24	0	20	44
.su (Former USSR)	0	18	5	19	42
.cn (China)	1	17	23	0	41
.hr (Croatia)	0	31	0	0	31
.cz (Czech Republic)	1	0	25	0	26
.ru (Russian Federation)	0	2	21	1	24
.si (Slovenia)	0	16	0	1	17
.ad (Andorra)	0	15	0	0	15
[unknown]	0	14	0	0	14

.cl (Chile)	0	0	9	0	9
.hk (Hong Kong)	0	0	0	9	9
.ae (United Arab Emirates)	0	1	3	1	5
.ni (Nicaragua)	5	0	0	0	5
.sk (Slovak Republic)	4	0	0	0	4
.co (Colombia)	0	3	0	0	3
.tw (Taiwan)	2	0	0	0	2
	34652	108306	67690	14526	225174