History of Nordic Computing 3

Third IFIP WG 9.7 Conference, HiNC 3
Stockholm, Sweden, October 18-20, 2010
Revised Selected Papers

Springer
# Table of Contents

## Keynote Address

A World Full of Computers: How Did That Happen? ............................................. 1

*James W. Cortado*

## Computerizing Public Sector Industries

Computerization of the Norwegian Land Register: An Early Example of Outsourcing and Still a Model for Good Practice .................................................. 13

*Bjørn Nagell*


*Johann Gribbe*


*Arne Kaijser*


*Norodd Hugenson*


*Ingeborg Torvik Solberg*

Instruments of Surveillance Welfare: Computerizing Unemployment and Health in 1960s and 1970s Sweden ................................................................. 56

*Isabelle Dussauge and Julia Peralta*

History of Electronic Prescriptions in Sweden: From Time-Sharing Systems via Smartcards to EDI .................................................. 65

*Gunnar O. Klein*

Electronic Health Records in Sweden: From Administrative Management to Clinical Decision Support .................................................. 74

*Karin Kajhjer, Ragnar Nordberg, and Gunnar O. Klein*

## Computerizing Management and Financial Industries

The Totally Integrated Management Information System in 1960s Sweden .................................................. 83

*Gustav Sjöblom*
The History of the Swedish ATM: Sparfrämjandet and Metelik
Björn Thodenius, Bernardor Bátiz-Lazo, and Tobias Karlsson

Electronic Securities: The Introduction of an Electronic Registration and Settlement System for the Norwegian Securities Market
Jan Hellström

How New Computing Technology Reformed the Audit Profession
Björn Barth Jacobsen

Computerizing Art, Media, and Schools
History of Digital Dating: "Computer-Balls" and Digital Pairing in Finland from the 1960s to the Present
Jaakko Suominen

Anna Orrghen

Jan Engh

Petri Sairkoski

Teacher Pioneers in the Introduction of Computing Technology in the Swedish Upper Secondary School
Lennart Rolandsson

Users and Systems Development
Computing on the Desktop: From Batch to Online in Two Large Danish Service Bureaus
Anker Helms Jørgensen

UTOPIA: Participatory Design from Scandinavia to the World
Yngve Sundblad

Designing Democracy: The UTOPIA-Project and the Role of the Nordic Labor Movement in Technological Change during the 1970s and 1980s
Per Lundin

The Making of a Nordic Computing Industry
Early History of Computing in Denmark
Søren Duus Østergaard

Making Business of a Revolutionary New Technology:
The Eckert-Mauchly Company, 1945–1951
Lars Heide

IBM Manufacturing in the Nordic Countries
Petri Paju

Sveinn Olafsson

Personal Computers: A Gateway to Personal Computing
Kari Kotiranta

Norwegian Computer Technology: Founding a New Industry
Yngvar Lundh

The Founding, Fantastic Growth, and Fast Decline of Norsk Data AS
Tur Olav Steine

Arne Solberg

Nordic Networking
Before the Internet: Early Experiences of Computer Mediated Communication
Jacob Palme

The Baby Networks: Nordic Positions Before the Internet
Tomas Ohlin

Development of Internet Technology and Norwegian Participation
Yngvar Lundh

The Internet Development Process: Observations and Reflections
Pal Spilling

Nordic Software Development
The Use of Interpretation for Data Acquisition and Control. Its Impact on Software Development and Project Management
Ötto Vinter

Peter H. Hughes
New Historiographical Approaches and Methodological Reflections

  Isabelle Dussauge, Johan Gribbe, Arne Kaijser, Per Lundin,
  Julia Peralta, Gustav Sjöblom, and Björn Thodenius

Text Mining and Qualitative Analysis of an IT History Interview Collection ................................................................. 433
  Petri Pajunen, Eric Malmi, and Timo Honkela

A Classification of Methods and Contributions in the Historiography of Nordic Computing ................................................. 444
  Henry Oinas-Kukkonen, Harri Oinas-Kukkonen, and
  Veronica Säävö

Research Directions Profile in the Computing Museum of the Institute of Mathematics and Computer Science, University of Latvia (IMCS) ... 453
  Richards Balodis, Juris Borzovs, Inara Opmane, Andrejs Skuja, and
  Evi Jaune Ziemelis

Panel Discussion

What Can We Learn from the History of Nordic Computing? .................. 462
  Tomas Ohlin, Harold (Bud) Lawson, Sören Danu Østergaard,
  Ingeborg Torsvik Solberg, and Nina Wormbs

Author Index .............................................................................. 465
The Baby Networks:
Nordic Positions Before the Internet

Tomas Ohlin
Formerly of Linköping University and Stockholm University
tomas@telo.se

Abstract. This paper discusses the computer network situation immediately before the arrival of the internet. In various countries, there were a number of isolated network “islands,” following different standards of technical characteristics called videotex. The paper discusses the different regional standards that were used and what types of services were made available, and asks what role the Nordic countries played in this development and in the transition to the internet.

Keywords: CEPT-3, internet, Minitel, Prestel, standards, TCP/IP, TeleGuide, videotex, Viewdata.

1 The International Background

One does not have to be religious to be challenged about how it all started. All of a sudden, there were islands, and all of a sudden, island organizations started ferry lines of connection. The internet was born and, after a few years, there were so many users. Then, who defined the islands? Were there islands everywhere, even in the Nordic countries? Moreover, what language did they speak for connection?

There are several priests in this church. How did it start? Was it a big network bang—a concentrated point of supreme intelligence that simply blew up?

Some of us who were there refer to the story of a growth of small islands that enlarged intermittently. Surely, the course was not quite smooth. Many analysts stressed early ARPANET computer connections and their technically formatted messages. Some refer to university computer connections that developed between academic computer science departments, while others point directly to early versions of TCP/IP and preach that only with this standard did it all become possible. Many of us applaud Tim Berners Lee, who received all his medals for defining the web grammar.

The technological pioneers were active in the 1960s. The DARPA collection of large—primarily military—computers became technologically connected at that time, becoming the ARPANET. The same period also already saw the development of the TCP/IP protocol. Pioneering connection experiments took place in several countries in the 1970s, and time-sharing also appeared on the market, building up local star networks around centralized computer stations.

Tim Berners-Lee and his scientific group published their ideas about the world wide web much later, in 1989. The HTML and HTTP languages and the URI grammar were born soon afterwards, around 1990–91.

2 The Importance of the 1980s

So what happened between the 1970s, the times of the ARPANET and its followers, and the 1990s when the internet arrived? The answer is that the period of the 1980s was the time of videotex, internet’s forerunner.

What role did that type of system and technology play? How can we describe this development, technology, structure, and/or user influence?

Applications had an important role here. Several mail-oriented systems, as well as computer conferencing, emerged at different points of time in the 1970s. Thereafter, interactive services based on those systems spread in the 1980s. Nevertheless, when did user oriented networking really “start”? In addition, were Nordic developers and enthusiasts around, at the time of the “birth”?

There are different types of answers to this. Certain experts tend to stress the importance of the basic technology and network structure, while others refer to the situation of the information providers, and yet a third group take the perspective of the user and analyze types of services.

How did so many technologically inexperienced users suddenly become aware of these new possibilities of contact? How did it eventuate that hundreds of thousands of users started to connect through early mail forms, and that certain large groups began to use numerical addresses like 3615 (in France), to connect to communications, advertising, and telephone type services through new terminal devices, or home or office equipment? This all happened long before the PC.

3 Characteristics of Videotex Systems

We cannot completely exclude the comments about technology here, since it influenced network structure. Videotex was a type of communication characterized by a type of transmission, speed, interactivity, and user-screen presentation form.

Transmitted on packet switching networks and with coordinated gateway protocols, the message transmission speed of videotex was 1,200 bps in and 75 bps out. The presentation screens contained 24 rows and 40 columns for characters and picture elements.

At the approach of the 1980s, the challenge regarding the character representation language for videotex in Europe stood between the UK—with its Viewdata system, renamed Prestel, and France—with Teletel and the Minitel terminal (whose production cost was 100 Euro!). France had a clear formal lead; in user numbers, which had increased enormously (in 1984, there were already 1.8 million Minitel users and, in 1993, 6.3 million users). Nevertheless, the cultural differences played a role, and a number of European countries chose Prestel instead of Teletel for their networks.

An attempt to unify the standards based on compatibility problems was tried by the central European telecom organization CEPT, which defined a common videotex standard in the late 1970s. Implementations were introduced at the beginning of the 1980s. An increasing number of countries successively chose the CEPT-3 as standard, since it was flexible and technically efficient. However, several countries had already invested in Prestel and Teletel.
The Nordic countries that found themselves, individually, with the initial choice of the Prestel standard, later changed to CBPT-3. However, these decisions were mainly unilateral.

Important parts of the struggles concerning the standards were fought based on applications. A number of large companies invested in services that depended on standards and, as it transpired, during the 1980s, the network operators were not strong enough to force the unification of standards. In addition, the global plurality of videotex made cooperation difficult. For example, in the U.S., the NAPLPS standard (North American Presentation Level Protocol Syntax) grew in the 1980s, while in Canada, which was an early videotex enthusiast, the more graphically able Teledesic standard was used quite extensively. On the other hand, in Japan, the flexible CAPTAIN could present the Japanese language visually, which Japanese applications naturally needed. This confusion about global standards did not help national cooperation.

The terminals used for videotex came from a line of major equipment producers, including some from Nordic countries. During the later part of the 1980s, software that made communication in videotex format via PC possible became available for PCs.

In the Scandinavian countries, this network concept for the information market was first called “teledata.” The Swedish PTT, Televerket, used the term “Datavision” for a time, but the U.S.-rooted term “videotex” [1] was finally chosen by many in the middle of the 1980s.

4 Pioneering Work

From the 1970s and onwards, an important influence emerged in the U.S. regarding services that early emphasized message communications. Public mail and computer conferencing appeared before 1970 [2]. Jacques Valle and Bob Johansen at the Institute for the Future, in Menlo Park, were also among the early creators of new social contact systems.

With regard to the Nordic development, mentioning these pioneers is relevant. Turoff and Hiltz were visitors and discussion partners not only in Sweden (on several occasions from the middle of the 1970s), but also in Vallee. In particular, Johansen visited Sweden on numerous occasions until the end of the 1980s, discussing and implementing project ideas. These pioneers were influential and in 1977, Bernt Thorngren and Tomas Ohlin implemented public mail applications in the north of Sweden [3]. In addition, Jacob Palme developed his important KOM system in 1976, after inspiration from Turoff and Hiltz [4].

However, for Europe in general, France defined a user market, although, in all honesty, France received its inspiration from the United Kingdom. Around 1970, Sim Fedida at the British Post Office experimented with a connection between the telephone and the television. The issue was expanding and finding new applications for the telephone network. His invention, called “viewdata,” allowed the user to “see the text.” Fedida aimed at the home user, whose telephone usage at the time was low.

Ceefax complemented viewdata in the UK, which was a TV bound one-way teletext service that used a few upper lines of the TV picture for centrally produced text and comments. This was followed in numerous countries, as centralized TV bound short text services were evident and understandable.

At the same time, French experiments were being carried out [5]. In 1970, services for numerical calculations via the telephone were presented in Issy-les-Moulineaux. Issy continued to be early with its creative appetite. Later in 1972, the French telecommunication institute CCETT was established, in order to bring together telephony and TV research. At the SICOB fair the same year, flexible message output was shown, both in synthetically vocal form and visually. In Véluzy, a practical demonstration of a screen presentation was attempted. Telecommunications analysis expanded and, in 1975, the French X.25-bound Transpac data network was presented.

In 1975, much to the surprise of the French developers, they discovered that the UK intended to start a Viewdata service very soon. The French were hurt. In 1976, President Valéry Giscard d’Estaing asked Simon Nora to produce a visionary report about the information society. This work, by Simon Nora and Alain Manz [6], would become important for the expansion of applications and for user understanding of public network services. With support from the French government, it helped pave the way for Minitel and for its successors also internationally. There were other visionary reports at that time (such as the “Instant world” report, produced by the Canadian government, work led by Douglas Parkhill, Canadian Ministry of Communications), but they were not many.

These descriptions of the information society made it apparent that both the private and the public sector would be interested in new types of communications. Contributions indicated that the citizen as well as the consumer was interested. Applications and services of a democratic nature started to appear; questions were raised about the possibilities of electronic voting.

Pioneers such as Yoneji Masuda in Tokyo, defined a space where thoughts about cooperation could be expressed on public platforms. Masuda visited Sweden on several occasions at the end of the 1970s, and even discussed Nordic public applications, in his monumental book “Information Society” [7]. He proposed a democratic arena that provided citizen access on the new online platforms.

5 Early Videotex Networks

At the beginning of the 1980s, a number of different national videotex networks were created, several of them conceptually inspired by the French system. Packet switching technology was used for the supporting structures.

The influence of the French videotex system had certain characteristics:

- a decentralized system structure allowed local hosts to be connected everywhere in the network.
- flexible payment was centralized, combined with telephone bills,
- public e-mail was introduced.
- Annuare Electronique, a centralized telephone book, was provided online in France.

These characteristics of the pioneering French systems were not introduced in the videotex systems of all other countries, but they played important roles in these countries’ national expansion. Table 1 lists which standard was utilized and the year of the official launch of videotex services (trials were conducted earlier) in European countries.
6 The Nordic Connection

In several countries, there were groups of enthusiasts who recognized what was happening. Widespread interactivity attracted attention, creating interest and tension. Established technological market forces took a stand, usually restrictive at the beginning. Furthermore, several representatives of the existing telecom networks and industries considered the initially small islands of videotex users as competitors.

Finland was an early videotex country. Inspired by the French development and through early personal contacts, they began to conduct experiments in Helsinki at the beginning of the 1980s. The leading newspaper, Helsingin Sanomat, was active, together with the inspired developer Jaako Hanuksela. An analysis was made concerning online news and experiments were carried out locally and shown at Nordic conferences. Other early producers of Finnish information included the business chain Aktievisionen (financial services, developed by Paul Östling), LantbruksData (services for farmers), ATG (administrative services for gambling), TINA (Teledata 3 Norr, with regional services), and Riksdagen (public information services), as well as banks and insurance companies.

Videotexföreningen developed ethical guidelines for videotex already in 1985 [9]. These were among the first such guidelines published globally.

A group of Swedish industrialists created the company TeleGuide in 1988. The organizations behind this company were IBM, Esselte, and Swedish PTT - Televerket. The aim of Teleguide was to repeat the French success with Minitel, for example, in Sweden, Videotexföreningen was formed in 1983, and later expanded into InformatiorProducentFöreningen, IPF (with active chairman Tomas Persson). Internationally, the Association for Videotex Information Providers already existed. The driving market forces behind the development of Swedish videotex were Aktievisionen (financial services, developed by Paul Östling), LantbruksData (services for farmers), ATG (administrative services for gambling), TINA (Teledata 3 Norr, with regional services), and Riksdagen (public information services), as well as banks and insurance companies.

In Sweden, a parliamentary commission, Informationsteknologiutredning [8], including leading politicians, was formed in 1978. Its secretary was Tomas Ohlin. The newspapers had been actively supporting the creation of this commission; they were concerned about the possible competition from electronic information forms. The results of the commission’s analysis were rather broad, it was noted that this media change would take time. Actually, the regulation of commercial online information (advertisements) was politically proposed, but never implemented. Similar commissions or public analysis groups were created in other countries.

The late 1970s and the beginning of the 1980s were times of analysis. Existing market forces had to become involved.

7 User Influence

In several countries in the 1980s, information providers formed branch-oriented organizations. For example, in Sweden, Videotexföreningen was formed in 1983, and later expanded into InformatiorProducentFöreningen, IPF (with active chairman Tomas Persson). Internationally, the Association for Videotex Information Providers already existed. The driving market forces behind the development of Swedish videotex were Aktievisionen (financial services, developed by Paul Östling), LantbruksData (services for farmers), ATG (administrative services for gambling), TINA (Teledata 3 Norr, with regional services), and Riksdagen (public information services), as well as banks and insurance companies.

Videotexföreningen developed ethical guidelines for videotex already in 1985 [9]. These were among the first such guidelines published globally.

A group of Swedish industrialists created the company TeleGuide in 1988. The organizations behind this company were IBM, Esselte, and Swedish PTT - Televerket. The aim of Teleguide was to repeat the French success with Minitel, for example, in Sweden, Videotexföreningen was formed in 1983, and later expanded into InformatiorProducentFöreningen, IPF (with active chairman Tomas Persson). Internationally, the Association for Videotex Information Providers already existed. The driving market forces behind the development of Swedish videotex were Aktievisionen (financial services, developed by Paul Östling), LantbruksData (services for farmers), ATG (administrative services for gambling), TINA (Teledata 3 Norr, with regional services), and Riksdagen (public information services), as well as banks and insurance companies.

Several of these services were in early forms of development, but the marketing was offensive.

Due to a lack of collective financial support, plans for joint Nordic activity were drawn up but not implemented. The TeleGuide company did not receive any public support and was only able to attract 22,000 customers. The PTT interest decreased over time and, after three years, the project was discontinued. It had been too early: there was no market for its services.

8 The PTT Positions

The activities of the PTTs [10] were offensive at the beginning; telephone based profits were still substantial. However, conceptually, the plans were conservative, from user perspectives. The old single market thinking ruled. PTTs employed many
In order to service these markets, the PTIs, banks, and insurance companies.

In the early 1990s, many observers had noted Minitel and the different videotex islands, and they had been increasingly convinced that this was a development on which to expand.

In this author's opinion, there is no doubt that the internet would have taken much longer to arrive were it not for the experiences gained from the regional videotex systems. The concepts of the electronic market and the open platforms were already established when the internet arrived.

Videotex had an obvious educational effect on the coming online market. It was the first widely distributed system, which enabled users to become acquainted with interactivity, with early public access, thus becoming a pioneer system for democratic dialogue.

It is often important to be at the right place at the right time. Successful inventions have historically arrived at a time when there is sufficient user understanding. The invention of a technical standard and a network grammar is a beautiful achievement. However, large groups of users form the basis for the real gold medals.

Strangely enough, in 2010 there are still a number of Minitel terminals in France. Phonebook services and personal mail are, to some extent, still used with this equipment, although such use must surely be declining. It is amazing, however, that a network invention from the 1970s can survive for over thirty years in these times of explosively rapid technological development. Videotex paved the way for the internet, and platforms for the many, although there is a lesson in that social platforms need time to mature.

11 Conclusion

If not for videotex, the internet would have arrived on the international (including the Nordic) user market several years later than its actual introduction. Some reasons for this relate to user maturity. Videotex enabled millions of new network users to gain an understanding of the new system. Although not an earthquake in the technical sense, its speed and standardization was only low. It was, however, a system that introduced user interactivity, which was a substantial contribution to network expansion. Suddenly, users found themselves with influence.

What can we say about Nordic contributions? Although the Scandinavian countries were early, they were not at the forefront. However, they did provide important test markets for the coming videotex systems. Actually, during discussions with Frank Burgess, general manager of Prestel in the middle of the 1980s, he confirmed quite clearly that expansion into the Nordic markets had been a necessity for Prestel, and this had provided training for other market developments. Burgess visited the Nordic countries frequently and was keen to maintain close contact with Scandinavian representatives.
This is also relevant for the introduction of CEPT-3. There was close contact between the Nordic countries and CEPT representatives in the middle of the 1980s. The Scandinavian countries were important start up markets that were used to test several aspects, both technically and with regard to new applications. The Nordic countries were important partners for the expansion of videotex and they helped pave the way for the internet, about ten years later.

References

   http://people.dsv.su.se/~jpalme/s1/history-of-KOM.html