

Proposal for Themed Session at the SIGCIS workshop October 7, 2012 in Copenhagen.

Three ICT Innovations that transformed the Danish Society – The Nordic Way

The Steering Committee and the Program Committee for the History of Nordic Computing 4 Conference, HiNC4, August 13-15, 2014, at the IT University of Copenhagen, hereby apply for a Themed Session which we would like to label a ‘practitioner session’, 90 minutes in length, at the SIGCIS workshop. HiNC4 conference website is at www.HiNC4.org

The HiNC4 conference has the overall theme ‘The Nordic Way’. It will focus on: **The innovative ICT Milestones that transformed the Nordic Societies**, and on the new ideas, systems and solutions that created the welfare societies of today. But a welfare state is more than Government – it is also a state with a modern, effective infrastructure whether it comes to financial systems, transportation, telecommunications, as well as easy access to a wide range of consumer goods. Not all ICT solutions have been successful and the conference shall throw light on possible reasons for this and lessons to be drawn.

The idea behind the proposed ‘practitioner session’ is, through three rather short talks to focus on three areas, where this ‘Nordic Way’ has been prominent in Denmark. The talks is followed by a panel discussion where a wider set of historical aspects behind the three cases as well as other ICT Innovations can be presented and discussed. This session will hopefully attract so much attention at the SIGCIS workshop, that it will provide a solid basis for possible paper submissions to and participation in HiNC4.

The proposed ‘practitioner session’ (total 90 minutes) has the following outline:

Three short presentations:

- Henning Jensen: **Dankort – a national debit card system established in Denmark in the early 1980s.**
- Søren Duus Østergaard: **The Danish Tax system and the ‘No Touch’ strategy.**
- Stig Kjær Andersen: **The Danish Electronic Health Record (EHR) – from visions to reality – a nearly two decades long journey under changing conditions.**

Each presentation is scheduled to take 15 minutes.

Panel discussion (40 minutes):

- **Chair:** Magnus Kolsjö, PwC (the former PricewaterhouseCoopers), Stockholm.
- **Commentator:** Lone Dybkjær, member of the Steering Committee for HiNC4, former member of the Danish Parliament, and former MEP.
- **The Presenters:** Henning Jensen, Søren Duus Østergaard, and Stig Kjær Andersen.
- Selected participants from the SHOT12 conference.

Organisers: Christian Gram and Jørgen Albretsen.

Brief abstract of the three papers and their relevance for the SIGCIS workshop.

Technology is often a visible testimony of a society's development and advances. This session focuses on three cases as seen from the 'practitioners' point of view, the people who were an integral part of laying the foundations for our present day Danish – and indeed Nordic – welfare society. People who either were or still are part of the development.

Henning Jensen (“Dankort – a national debit card system established in Denmark in the early 1980s.”) was a key person in the Dankort project. This debit card made it possible to provide the normal Danish citizen with a secure, one card solution for shopping and payment. The paper shows that this was not done without a political element of passing relevant laws and putting pressure on the financial sector – and on the consumer. In a sense a typical Nordic solution, where the government is taking the role of the ‘practitioner’ and telling what is good for the technological development of the welfare state.

Søren Duus Østergaard (“The Danish Tax system and the ‘No Touch’ strategy”) has researched this field of The Danish tax System and the ‘No Touch’ strategy as a case of e-government. The system has no doubt made it easier to pay your taxes – and though the tax rates can certainly be discussed, it is no longer the technology that causes all the trouble, as was the case to begin with. The ‘practitioner’ approach here is to use the new technology available (‘the Internet’) to enable a better line of communication between the citizen and the tax authority, and to make a serious effort to have technology help the citizen feel confident, that ‘the welfare state’ only collects a fair tax based on the PAYE (Pay As You Earn) principle.

Stig Kjær Andersen (“The Danish Electronic Health Record (EHR) – from visions to reality – a nearly two decades long journey under changing conditions.”) has been head of research projects, and is still heavily involved in the efforts to make the Electronic Health Record a true breakthrough – also from the view of a ‘practitioner’. His key point in the proposed paper is to show that this effort is in some respects still ‘work in progress’ and an area, where much is to be learned. The the doctors and nurses – and even the patients – were brought in and heard, but often at the wrong places in the development, and maybe under wrong pretexts.

Organisers:

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Dankort – a national debit card system established in Denmark in the early 1980s.

Henning Jensen

Abstract

In the mid 1970s the Danish banks faced a problem in controlling the payment procedures in Denmark. The use of cheques had increased dramatically, and the costs for handling a paper cheque was also increasing. Facing this the Danish banks decided to establish a common national electronic debit card system (Dankort). The system was the first of its kind in the world.

Some fundamentals for the system in 1980.

All Danish employees must have a bank account, because of the Danish tax system PAYE (Pay As You Earn). The employers must deliver salary- and tax information electronically to the banks.

The financial market was split between many commercial banks and many savings banks. Business customers were mainly in the commercial banks, private customers mainly in the savings banks. Saving banks were by law restricted in their business opportunities.

There were a limited number of computer centers within the financial industry. All medium scale and smaller banks/savingsbanks were members of common dp-centers, and there were only about 15 centers to cover the whole Danish financial industry.

A “Danish electronic cheque” had to be developed. The idea was launched in mid 1970s.

The technical system.

Which terminals should be used?

None on the market could fulfill the demands for transmission and security. (Encryption)

So completely new terminal equipment had to be developed.

The network.

Every shop – even the smallest outlet - should have a terminal linked to a computer center. How could it be done in 1980? Every shop was expected to have a telephone. Therefore data communication had to be via the telephone network. But the max. speed at that time was 300 baud, and many switchboards were still analog.

The central computer?

The demand was: handling 200 transactions per second (A very high demand at that time.)

Only the biggest airline ticket reservation computer could fulfill that demand. The price for such one was not acceptable. Thus a new computer type (hardware and software) had to be constructed.

But the biggest challenge was political.

The banks wanted to have the users and the shops to pay for the system.

They would not repeat the failure from the cheque system, which was very expensive.

The shops would not pay anything and started a “say no to the Dankort” campaign.

The users would not pay anything. “Why should I pay money to the banks for paying with plastic cards in shops?”

Using cash is free. In fact, legislation was necessary (privacy protection, split of costs, etc.)

Slow introduction

The whole idea behind the new debit card system was that it should be a 100 % it solution.

But in fact the first introduction (Sept. 1st, 1983) was a paper based system. The fully electronic system was

introduced 1½ year later. The delay was mainly for political reasons.

About the author:

Henning Jensen holds a Master's Degree of Economics from the Copenhagen Business School, graduated 1964.

After 18 months of military service he worked in the it-business until retirement in 2004. The last 15 years as project manager in the Association of Danish Insurance and Pension Funds Companies, positions held were among other the "year 2000" coordinator. Before that job he was project manager for the Dankort System. In the 1970s he was it-manager in Falck (a rescue and firefighting company operating in the whole of Denmark). The "it-education" was established by 5 years employment in IBM in late 60`es.

Henning Jensen has for about 40 years been a member of the Danish Data Processing Association. He has been board member during 10 years, been representative in the Nordic Data Union (chairman 1974-1977) and been heavily involved in the huge Nordic data conferences (NordDATA) in about 12 years. He is now member of the senior council in the Danish Data Processing Association.

He is also a member of Dansk Datahistorisk Forening.

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The Danish Tax System and the 'No Touch' strategy

Søren Duus Østergaard

Abstract

In 2004 the Danish Tax Administration won the Danish e-Business price for successful implementation of the 'no Touch' solution TASTSELV which provides the Danish tax payers with a unique, fast and accurate solution handling pre-assessment of income and tax declarations. This paper describes the milestones towards this result which is based on several decades of development of IT-support leading to a World Class taxation system.

The early days – Birth of Datacentralen

Already in 1958 the Minister of Finance invited a group of IT specialists and public servants to lay out the foundations, barriers and prerequisites to develop a 'pay-as-you-earn' (PAYE) taxation system.

In 1959 the first recommendations were ready which led to the creation of I/S DATACENTRALEN on Dec. 17, 1959. This organization took over the existing Unit Record installations from central Government, acquired 'computers' and started to develop the new tax system. The organization was created as a joint organization between central government, local government, and counties.

Supporting systems and launch of the PAYE

As it was a clear prerequisite that each tax payer could be identified, this led to the development of the Danish Citizen Registration System. So in 1968 the CPR-system was established, in itself a milestone for the further development of social benefit and illness insurance systems.

Also the employers would need to have a unique identification, and here it was already partly established as the income related common supplementary pension system ATP was enacted in 1964, which required a central database of employers. This was later developed into the Central Employers Register, the CVR.

With these prerequisites in place the PAYE system was launched in 1970, one year delayed. At the same time the first major municipal reform was taking place reducing the number of local authorities from 1300 to 277, and simultaneously a major change in the organization of the local tax authorities. The local government data centers were merged into Kommunedata and the borderline between Datacentralen and Kommunedata had to be re-defined. In spite of these major organizational changes the PAYE system was effectively launched.

Dawn of the Internet – the 'No Touch' strategy

In 1993 the Customs & Tax authority launched the voice response system offering citizens to check and change their pre-assessment using the telephone. Security was provided via a pin code. Already in 1996 more than 600.000 taxpayers used this. Use of the Internet as input system was launched in 1995. Later it provided full access to assessment and declarations, so already in 2004, 44% of the tax payers used this service while 23% still used the voice response system.

This paper will describe, how the breakthrough of pre-filled in tax returns, use of digital tax file, and tax payers reporting of bank account info was gradually developed. This effort was backed by the first official Danish e-Government Strategy, published in 1999, and headed by now former MEP Lone Dybkjær.

About the author:

Søren Duus Østergaard, M;A econ.,

External lecturer at the Danish IT University teaching e-Government at the Masters' level.

He has retired from IBM after 40 years, primarily working with Government, Education and Science, Health. The last 15 years of his career he was Senior e-Government Advisor for IBM in Europe, Middle East and Africa.

He was a member of the Danish Technology Board from 2002 to 2009, a member of the IT Council for Greenland from 2007 to 2009, and is currently a member of the think tank 'Denmark 3.0' lead by the Danish IT organization.

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The Danish Electronic Health Record (EHR) – from visions to reality - a nearly two decades long journey under changing conditions.

Stig Kjær Andersen

Abstract

Introducing complex systems as EHR nationwide is a long and complex process, and has a history with many important angles. We have chosen to focus on the context and conditions that the EHR planning, development and implementation had to exist in. .

Realizing the volatility and the importance of conditions are important knowledge elements in the understanding of why the history is as it is.

The Danish General Practitioner's EHR took off from "no one had it" to full implementation at all GPs over a short span of years. The context and conditions for the accomplishment in this period are characterized by a stable conservative IT infrastructure, a stable standardization organisation operating in political neutral waters (MEDCOM), systems with a few clear well defined goals, and clear monetary incentives. The Municipal EHR system has had a similar history.

In the timespan it has taken to get from start to a functioning EHR at hospitals, the general conditions have been uneven and quite different from the GP's EHR history and we are, despite all the years, not yet at the end of the pathway.

The vision of a hospital EHR system is persistent over the years: It has to be always available, always updated and carrying all information, the user only has to enter specific information once, and it will be available for all sorts of secondary purposes imaginable.

On the contrary, the common understanding on what really constitutes a hospital EHR system has been a moving target, not on a theoretical level but simply on a practical and political level.

Several dedicated cross-organizational organisations did see the light of the day. They served as organizer, policy maker, governmental standard proposer in the cross field between ministry, national board of health, regions, and hospitals. They all have some decision power and expertise, but were more or less lacking resources to implement solutions.

The dilemma between having structured data or free text as the basis for the clinical content of an EHR is an EHR architectural issue and was also a major discussion point. The dilemma had a major influence on the design, development, implementation, and reuse policy of data from the systems at the hospital level. It has been like a swinging pendulum between a depth structuring of the underlying complex data models vs. simple free text information. Two major "schools" did emerge in the beginning of the century: G-EPJ, the basic EHR structure; a detailed complex overall data model supporting a deductive diagnostic process, and SUP, Standardized patient information; a scheme for structured "wrapping" of all types of clinical information, special for exchange purpose. G-EPJ was developed over a couple of years but failed in the synchronisation of development, clinical verification and test, and commercial development. SUP acted as a temporary data exchange platform between commercial systems and was the basis of the e-journal, which later became a successful national initiative.

The EHR upstart period has survived three national strategic plans, all characterized by having:

- a political offset,
- goals related to the time period they were created in,
- a platform for political resource negotiation,
- and lack of proper post evaluation.

They did serve their purpose in a changing political environment.

A hundred year old tradition for documentation and knowledge sharing has been transformed by EHR systems, and we see them as an increasingly important part of the professional healthcare system in Denmark. It has been a road not only paved with successes, but also failures.

About the author:

Stig Kjær Andersen, Associate Professor, Department of Health Science and Technology, Aalborg University, Denmark.

Curriculum Vitae

Professional experience

Associate Professor at Aalborg University
From 01-10-1986

Education

Title: Ph.D.
Year of graduation: 1977
Place of education: Aarhus University
Title: Master of Science
Year of graduation: 1974
Place of education: Aarhus University

Selected recent publications:

Balancing centralised and decentralised EHR approaches to manage standardisation. / Rosenbeck, Kirstine Hjære ; Rasmussen, Anne Randorff ; Elberg, Pia Britt ; Andersen, Stig Kjær.
In: *Studies in Health Technology and Informatics*, Vol. 160, 2010, p. 151-155.

Conflicts between terminology and EHR information models as obstacles to semantic interoperability : a scientific review. / Pape-Haugaard, Louise B. ; Rasmussen, Anne Randorff ; Elberg, Pia Britt ; Andersen, Stig Kjær.
In: *Studies in Health Technology and Informatics*, Vol. 160, 2010, p. 1374.

Evaluation of different database designs for integration of heterogeneous distributed Electronic Health Records. / Frank, Lars ; Andersen, Stig Kjær.
In: 2010 IEEE/ICME International Conference on Complex Medical Engineering, 13-15 Juli, 2010, Gold Coast, Australien. IEEE Press, 2010. p. 204-209.

Pitfalls when integrating terminology systems and EHRs. / Pape-Haugaard, Louise B. ; Rasmussen, Anne Randorff ; Rosenbeck, Kirstine Hjære ; Andersen, Stig Kjær.
In: *SHI2010 Proceedings: 8th Scandinavian Conference on Health Informatics, 23-24 August 2010, Copenhagen, Denmark*. ed. / Ann Bygholm ; Pia Elberg ; Ole Hejlesen. Trondheim : TAPIR Akademisk Forlag, 2010. p. 34-38.

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Chair: Magnus Kolsjö

Magnus is a consultant and e-government expert at PwC (formerly PricewaterhouseCoopers) in Stockholm. He has a background in politics and is one of the architects behind the Swedish government's public administration reform agenda that has been implemented since 2006. As political adviser to then minister for local governments and financial markets Mr Mats Odell, Magnus advised the Swedish government on several e-government issues such as open data and the implementation of the PSI-directive, social media in the public sector and the formation of the E-delegation that is now responsible for promoting e-government reform in Sweden.

As a consultant Magnus work with helping municipalities, counties and government agencies with strategic issues and professional development around their e-government efforts. But he also holds educations for politicians, managers and employees, and participates in various discussion forums.

Work experience

Manager, PwC Sweden, 2011 –
Consultants and e-government expert

Political adviser, Ministry of Finance 2006 – 2010

Political adviser to the minister for local government and financial markets, working with issues regarding public administration reform, government employment policies and privatizations.

Deputy director, Christian democrats 2010

Deputy director for the Christian democrats in the Swedish parliament responsible for coordinating the production and ensuring the quality of policy statements and political material and helping to help to strengthen both the external and internal communications.

Political adviser, Christian democrats 2002 - 2006

Political adviser to the Christian democrats in the Swedish parliament advising the deputy party leader and parliamentary group leadership on strategy as well as issues connected to public administration, state owned enterprise and equality.

Recent publication: **E-förvaltning under lupp** (eng. E-government under the magnifying glass)
<http://www.pwc.se/sv/innovation-teknik/publikationer/e-forvaltning-under-lupp.jhtml>

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Commentator: Lone Dybkjær

Lone Dybkjær, born May 23rd 1940 in Copenhagen, daughter of departmental architect Kristian Vincents MAA and head of section Else Vincents.

Political career

Member of the Danish Parliament for Social Liberal Party 1973 - 77, 79 - 94, 2005 - 2011.

Member of the European Parliament 1994 - 2004. Minister for the Environment, June 3rd 1988 - December 18th 1990.

Social Liberal Party's spokeswoman during the years on various matters, e.g.: Foreign policy, European affairs, energy, environment, labour market, public health, technology and gender equality and 2005-2011.

Education and jobs

M.Sc. in chem. eng., Technical University of Denmark 1964. Head of the information secretariat, Technical University of Denmark 1970-1977. The Danish Academy of Technical Sciences (ATV) 1964 - 1970.

Member of the board for the Oslo Centre for Peace and Human Rights from 2006. Co-chairwoman at the Asiatic University for Women in Bangladesh from 2000. Chairwoman of the National Institute of Occupational Health, Denmark 1998-2001. Member of the Task Force on Higher Education 1997-1999.

Publications and Rewards

Report, »Det Digitale Danmark«, (Digital Denmark), 1999. »Uden for talerrækken – på tomandshånd med en moderne politiker« (Outside the Agenda – tête à tête with a modern politician), 1998. Report, »Infosamfundet år 2000«, (The information society in 2000), 1994. Report, »Erfaringer med statslige aktieselskaber« (Experience with state-owned limited companies), 1993. Subeditor of the book »Borger i Danmark« (Citizens in Denmark), 1969. Various pamphlets and contributions to books. Birdlife Award 1993. European gold medal for building conservation 1991.

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