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## Information System (IS) in Public Administration

*How the implementation of Informations Systems Influences Organizational Change: Incremental or Radical Change? The Danish Case*

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*Publication date:*  
2006

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Agger Nielsen, J. (2006). *Information System (IS) in Public Administration: How the implementation of Informations Systems Influences Organizational Change: Incremental or Radical Change? The Danish Case*. Paper presented at EGPA Konference, Milano, Italy.

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***Information and Communications Technologies (ICT) in public administration.  
How the implementation of ICT influences organizational changes.  
The Danish Case.***

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**Abstract:**

According to several international studies, Denmark is currently one of the leading countries when it comes to e-government. At the same time the Danish Government, the Ministry of Finance and several interest groups have high expectations, that ICT can streamline and reorganize public administration. However, American research has emphasized that implementation of ICT does not tend to generate radical organizational change. In fact it is said that ICT tends to reinforce existing administrative arrangements. The aim of this project is to investigate a) Whether and how the implementation of ICT in Danish municipalities leads to new ways of organizing the work process, and b) Whether and how the implementation of ICT in Danish municipalities leads to improved management tools?<sup>1</sup> The research questions are answered via a multiple case study in Danish municipalities using both quantitative and qualitative methods. On a theoretical level the project operates with three competitive perspectives on e-government. Firstly, an “optimistic” perspective advocating that ICT *can* and *should* be used as a tool for reforming the ills of modern bureaucratic organizations. Secondly, a “pessimistic” perspective pointing to the fact that e-government initiatives instead of fixing such problems, may themselves worsen them. Finally, a third so-called “symbolic” perspective advocates that e-government may have an effect on a symbolic level but do *not* have any substantial effect on organizational practice.

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<sup>1</sup> This paper will only deal with theoretical and methodological approaches since the scholarship was only commenced this summer.

## **1. Introduction. The misconception between high expectations and actual results.**

According to several international studies including comparisons between OECD and EU countries, Denmark is among the leading nations when it comes to the prevalence of e-government (European Commission 2005, OECD 2005, IBM 2005).<sup>2</sup> The Internet accessibility has nearly exploded and today almost 90 % of the Danish population has Internet access either at home or at work (Danmark Statistik 2006). Furthermore it is a political ambition that Denmark shall be “World Champion” when it comes to digitalizing the public administration. This has led to the establishment of a “Digital Taskforce” in 2001 with the purpose of furthering the digital reorganization of the public sector ([www.e.gov.dk](http://www.e.gov.dk)). The past years have also witnessed extensive changes in the ICT infrastructure and a growth in public investments in ICT (Andersen 2004).

At approximately the same time as the Internet had its popular breakthrough up through the 1990’s, e-government began to play a significant role. The 1970’s and 1980’s had witnessed some experiments with ICT both in Denmark and abroad with reference to improvement of efficiency in the public sector (e.g. Duus Østergaard 1976), but it was not until the 1990’s that digitalization gained a solid ground (OECD 2005:9). The background for this can shortly be described as a result of increased demands for modernization and making the public sector more efficient on the one hand and the citizens’ wishes for more and better services on the other. This paved the way for digital solutions to meet this joint pressure. E-government is thus from several perspectives seen as an unexpectedly simple solution in the modernization of the public sector (Remmen, Larsen & Mosgaard 2004).

Extensive ICT investments in Denmark in recent years have not surprisingly brought about great expectations that ICT can increase both efficiency and secure a better service to the citizens. The central administration, leading consulting agencies, and several interest groups have had high hopes that ICT can reorganise and make effective the administrative processes and at the same time heighten the quality of service and facilitate the citizens’ access to information from the public sector. The advantages of rationalization can however not be expected to appear on its own. It takes

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<sup>2</sup> E-government has been variously defined in the literature. For the purpose of this paper E-government refers –“to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.” ( [www.worldbank.org/publicsector/egov/definition.htm](http://www.worldbank.org/publicsector/egov/definition.htm)). Other labels than e-government have also been used – such as e-governance, one-stop government and online government (Andersen & Henriksen 2005).

hard and purposive work (PLS Rambøll Management 2001, Regeringen m.fl. 2004). Digital administration is not only a technical arrangement but also very much an organisational challenge. This means that if the potential efficiency benefits are to be gained – which has been problematic so far (Andersen 2004) – it will take a reorganisation of the work processes in the public sector. In the Government's modernization programme it is said about e-government: *"To achieve the largest benefits it is necessary that the digital technologies are used systematically to rethink and change the existing organisations and work processes"* (Regeringen 2002).

Though expectations have been high, it seems as if the realisation of the potentials is less great. International studies have proposed that the digitalization of the public sector does not tend towards a revolution – rather it favours a strengthening of the existing organizational structures (Ballamy & Taylor 1998, Garson 2004, Kraemer & King 2003). Kraemer and King find that despite the extensive changes in ICT infrastructure and massive economical investments in e-government projects, ICT has still not shown itself as a catalyst for administrative reforms. *"...it continues to be a useful instrument of administrative and incremental change, but it is no more capable today of bringing about institutional change and administrative reform than it was fifteen years ago"* (Kraemer & King 2003). Based on a review of leading periodicals in the period 1997 – 1996 Dansiger and Andersen also argue that *"Given the standard political science notion of transformation in terms of fundamental change, the articles in this study suggest that the answer is no"* (Andersen 2004). International experiences thus indicate that implementation of ICT does not entail radical organizational change.

## **2. Research questions**

The seemingly disparity between massive economical investments in and high expectations to ICT on one hand and the lack of actual results in the shape of organizational change on the other is the source for this research. Inspired by international experiences is an overriding hypothesis that ICT does NOT act as a catalyst for organizational change in public administration. However, organizational change consists of many aspects and should not be treated as unambiguous entity. In a Danish context it will be investigated, *whether, how and why the implementation of ICT in Danish municipalities lead to A) new ways of organizing the working process and B) to improved management tools?*

To answer these questions, the Danish Municipalities' experiences with Electronic Case and Document Management must be studied in detail. The Danish Government, Central Administration and others view the Electronic Case and Document Management systems as one of the pillars of "Project e-Government" (Finansministeriet 2001), since it enables a construction of digital work processes where paper is not the central element in case work. It is assumed that Electronic Case and Document Management will entail large rationalization gains, streamline information managing, improve management information, heighten efficiency in the work processes and contribute to a better service for the citizens. The hopes are high especially at municipal level, since this is the place in Denmark where the majority of the public resources are administered.

Three aspects will be looked at closely. Firstly, whether the implementation of Electronic Case and Document Management systems results in changes in the organization of the *internal* work processes? Does the digitalization cause a reorganization of the work processes and the competence distribution – and if so – how? Or is it rather "business as usual" in the way tasks are managed? What does possible implementation barriers consist of? Some examples can be resistance towards change among staff members, technical difficulties, insufficient management and do the management want change at all?

Secondly it will be investigated if – and if so how – the implementation of Electronic Case and Document Management systems changes the *external* interaction patterns. How is the interaction between public sector and citizens, and between public sector and business sector effected? Such changes associated with ICT should increase transparency but can it also result in some negative effects? And how does digitalization effect the overall quality of the case work? Are the citizens given access to their own cases on the Internet? And is the possibility utilised if so?

Finally it will be investigated whether the implementation of Electronic Case and Document Management entails an improvement in control capacity. Is better management information achieved and is the coordination of work processes strengthened? Is the result a heightened hierarchical control? And if so – how is this expressed?

In this paper it is not possible to answer all these questions – this will not be possible until the empirical data collection has been completed. Instead I will discuss possible consequences of

digitalization from a more theoretical point of view with three perspectives on e-government as point of departure.

### **3. Further on the three perspectives on e-government**

In the literature it has been argued that there is a lack of any theoretically defined framework guiding e-government research (Andersen 2004). In a study of 170 papers published at three major e-government conferences it was found that theory generation and theory testing is not frequent, whereas case studies (no theory, no structured data collection) and product descriptions (no analysis or test) are common (Grønlund 2004). In general, studies in e-government often take a consultative or normative approach (Andersen & Henriksen 2005).

In this project three perspectives on e-government will be used as a theoretical framework - an optimistic, a pessimistic, and a symbolic perspective. The experiences and attempts that have been done with Electronic Case and Document Management in Danish municipalities will be critically evaluated in relation to these perspectives.

In the “*optimistic*” perspective ICT can be seen as a tool to streamline public administration to secure a better and cheaper public service delivery. In this point of view ICT *can* and *should* be used as a tool for reforming the ills of modern bureaucratic organizations. This perspective criticizes the key features of the Weberian bureaucracy - rigidity of rules has led to a situation in bureaucratic organizations where processes are highly inflexible (“red tape”) and information is held in “silos” and not shared appropriately. Thus ICT can be seen as a driver and enabler of change and reform (Jain 2004). The optimists are rather normative, focusing heavily on how to improve the public sector; that is, the enabling role of ICT.

This perspective can be seen in connection with some overall reform ideas about the public sector that has been known worldwide as *New Public Management* (e.g. Hood 1991, Lane 2000, Lægreid & Christensen 2002). It would be wrong to view New Public Management as a complete and consistent set of theories, even though it consists partly of a core of theories derived from the so-called economic institutionalism. Although New Public Management is a heterogeneous “movement”, there are commonalities that can be distinguished. An underlying common assumption is that there is no fundamental difference between public service and any other service production,

and among its key concepts are efficiency and effectiveness, measuring of performance, and a focus on the citizen as a consumer in a (quasi)market (Linen 2005).

Management theories such as New Public Management and other forms of rational reform theory share a common belief that problems can be solved through rational considerations, at the same time as formal structure determines behaviour. A simple model can illustrate this belief.

Goal → structure → behaviour → result

In rational reform theory rational formal structure is assumed to be the most effective way to control and coordinate the complex relational networks involved in modern technical and work activities. Problems can be solved through rational consideration and as mentioned formal structure determines behaviour (Antonsen et. al. 2000). Within the rational universe, inspiration can be traced all the way back to Taylor's Scientific Management, where focus is placed on making procedures effective and utilizing the potentials in the technology to produce change (Hatch 1997). Inspiration can also be traced to contingency-theorists such as Mintzberg (1979), and as already mentioned newer currents such as Reinventing Government and New Public Management. Here the idea is that through central planning inspired by organizational forms from the private sector, it is possible to radically change the public sector. In this connection ICT is often seen as the decisive means to this end (Bellamy and Taylor 1998, Jæger 2003, Adam et. al 2003).

As a direct contrast to that perspective we find the "*pessimists*". They point to the fact that the enormous investments in ICT have lead to no improvements in the public sector – rather the opposite. The ambitions following e-government have by no means been fulfilled, and instead the development has been characterized by a number of ICT-scandals, just as the citizens on a number of levels have shown themselves uninterested in utilising the electronic services. In Denmark we have witnessed that a number of large ICT projects, e.g. the development of electronic patient files (EPJ), have exceeded the budget on several occasions and have been seriously sidetracked. At municipal level it has been put forward, that the most digitalised municipalities have the largest administrative expenses, just as there has been no reduction in staff as a result of the introduction of electronic work routines (Hougaard 2002, Ugebrevet Mandag Morgen, januar 2004). Some would thus say, that e-government reforms have the opposite effect than intended – the more digitalization

the larger administrative expenses. It has been claimed that instead of fixing problems with bureaucracy, e-government initiatives may themselves fall prey to these problems (Jain 2004). However the pessimists are not that prevalent in the debate and in the previous years relatively few people have claimed that e-government should not be part of the future.

Besides these perspectives, there is also a third perspective inspired by theories on new institutionalisms and the theses of de-coupling between politics and action. The point is here that organizations say one thing but do something else, and that the introduction of new rules and organizational forms often resemble a modern ritual and have astonishing little effect on the actual activities (Mayer & Rowan 1977, Brusson 1989, Brusson & Olsen 1993). It is argued that public reforms may have an effect on a symbolic level but do *not* have any substantial effect on organizational practice – it is rather “business as usual”. This is also relevant for research in e-government because it might help to explain the problems and challenges of making e-government efforts work as they were intended (Linen 2005).

Thus, there are a number of alternatives to be found contrasting the rational (or technology-deterministic) approach to understanding the interaction between technology and society. The “optimistic” perspective can be criticized for a tendency to treat technology as a variable that effects the organizational conditions or makes it necessary for the organization to adapt to the technology. This separation makes it difficult – or plain impossible – to see how the technical and social are fundamentally interconnected and jointly can give rise to unexpected results (Svenningsen 2004). Therefore it seems reasonable to involve a social constructivist perspective on technology, where focus is put on the fact that social actors determine the direction in which technology is developed (Jæger 2003). In constructivist technology-theory, technology and society are developed in close interaction and it is to a large extent the social actors who determine in which direction technology is developed. Since I presume that change is characterized by complexity and diversity, I believe that a constructionist perspective can contribute to a more nuanced understanding of the consequences of e-government initiatives.

#### **4. Measuring change – a case study in Danish municipalities.**

In the last part of this paper I will present at short introduction to the considerations taken in to account regarding the research design and the methods considered for the process of data collection.



Measuring organizational change is often an extremely difficult task. Even seemingly simple questions can be difficult to answer. What constitutes change? Is it a small or a large change? What is thus a large (radical) change? The different theoretical perspectives have already shown us that there are different conceptions of organizational change. Also, it is not an easy job empirically to map the changes that e-government initiatives have given rise to. Among other things we need to talk to relevant actors (from top management to staff members) in a number of municipalities that have implemented Electronic Case and Document Management systems.<sup>3</sup> Combined with studies of documents, existing research and so forth it should provide input to test the given hypotheses – the optimistic, pessimistic and symbolic perspective.

The first part of the research (taking place in the summer of 2006) depends on an electronic survey designed for top managers in all 98 municipalities in Denmark. The survey covers questions about the political and administrative organization of the municipalities as a result of a recent extensive reform where the number of municipalities has been dramatically reduced from 274 to 98. At the same time questions are posed to the way the new municipalities position themselves to two central challenges that will be accentuated in connection with the reduction of municipalities: The communication efforts and the digitalization of the administration.

The second part – and the weightiest – is based on a multiple case study in four specific municipalities. Based on the above mentioned survey four cases will be chosen – two "best" cases and two "worst" cases. The purpose is to secure variation between the cases in relation to how far the municipalities have come in the digitalization process. The case method means that the chosen cases cannot be used for generalizations in statistical terms but instead in analytical terms (Yin 1994). In the study of the selected cases both qualitative and quantitative data are used. It consists of the completion of semi-structured interviews with key-informants at top management level and representatives from street-level-worker level. Furthermore accessible and relevant documents and information from the selected case-municipalities will be used.

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<sup>3</sup> Because of the limited period of the project it is not possible to conduct a longitudinal study. Instead the research must be based on evaluations from relevant actors in a given period.

## 5. Final remarks.

The seemingly disparity between the high expectations to e-government and the lack of actual results is the source for this research. With three perspectives on e-government ("optimistic", "pessimistic" and "symbolic") as points of departure, this paper has discussed possible outcomes of the digitalization of the public sector. It seems indisputable that the "optimistic" view on e-government (which seems to be the most widespread) should be complemented. It seems fruitful to look towards the new-institutional theory universe and the social constructivists for help. This opens up for a perspective where the technological and the social are fundamentally interwoven, and furthermore points in the direction that there can be a lot of symbol-politics attached to large e-government reforms or initiatives.

The project is too recently commenced to give any empirical answers. But it is a central premise for the empirical focus of the project that the large public investments in ICT (e.g. Electronic Case and Document Management systems) should be followed by systematic knowledge in stead of merely assumptions about the outstanding qualities of the systems. Equating e-government and automatic gains in terms of a better, cheaper and more democratic public sector is too simple and this paper wishes to distance itself from that view.

## 7. Literature

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