Cross-agency cooperation based on ICT in public sector[1]

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Abstract.
This study examines the management challenges in developing inter-organisational systems. Digital government is novel because it offers some fundamentally new possibilities for how government does business. Digital government requires cross-agency cooperation because of functional needs for scale, consistency, and integration. In this study, we examine the rather successful Norwegian Altinn web portal, which is a basis for collaboration on public reporting forms in the Norwegian public sector. Based on different theoretical models, we try to explain the decision making processes during the development process of Altinn.

Introduction

It is a high priority to develop systems that may help the cooperation spanning organisational borders in order to offer the citizens easier access to public services. The development of such systems implies particular challenges, in that it requires decisions across organizational boundaries which may imply that traditional decision authority and competence are challenged.

Integration of applications and services across government are relatively more complex and problematic than similar integration in private businesses. Integration efforts in government require cross-agency cooperation, which is not necessarily forthcoming, or legally permitted (Marche and McNiven, 2003). In many governments, individual ministers and agencies are charged with executing the responsibility assigned to them through legislation and are, therefore, not eager or able to expend resources on cross-agency arrangements that were not anticipated provided for in budgetary allocations and mandates (OECD 2003).

This paper applies different theories aiming to explain how the web portal Altinn was designed and developed, and these models are validated by empirical data. One theoretical explanation is that the Altinn project was managed in a rational and hierarchical way, in line with traditional build-up of governmental agencies. Another alternative is that the design of Altinn is the result of negotiation between different interests, and finally a compromise between various stakeholders. Altinn may also have been influenced by external pressures.

Altinn - a common Internet portal for public reporting

Each year Norwegian enterprises complete a series of public reporting forms in order to satisfy the public need for information. Surveys indicate that Norwegian enterprises spend over 7300 full time equivalents on statutory reporting, just to Central Government agencies. As a measure to ease the burden of public reporting the transition to electronic reporting is of high importance in public trade- and IT policies.

In 2002 the Norwegian Tax Administration, Statistics Norway (SSB), and the Brønnøysund Register Centre (BRREG) joined forces in order to create a common Internet portal for public reporting. The portal was launched in December 2003 under the name Altinn, and has been in full operation since. More than 100 different public

[1] This paper builds on a Master thesis of Marius Pellerud, and only a small selection of its findings are discussed in this paper.

forms are available and more than 15 million forms have been submitted through Altinn. The amount of compulsory forms submitted electronically has thus grown significantly since the launch of Altinn[2].

The users of Altinn can either fill in the forms directly in the Internet portal or they can use their own IT systems to transfer data, for example salary and accounting systems or a year-end accounting package. The companies' own IT systems transfer pre-filled forms to the portal through a simple interface where subsequently the forms can be completed and signed in the portal. Efforts have been made to make the forms as easily accessible as possible. The users will automatically get a list of forms on screen when deadlines are imminent and, at the same time, get necessary online guidance on what forms to send to which public agency. Altinn automatically enters all relevant information into the forms based on the information contained in existing public IT systems and registers.

Altinn is a 24/7 solution, which gives high flexibility for the users. It allows users the opportunity to use the solution anywhere, any time. Altinn is built on a .NET platform, but there is no demand in most cases for the users to change their hardware or software. Regular access to the Internet is usually sufficient. The solution builds on a standard interface based on an open standard (XML, SOAP), and integration towards the IT systems for the enterprises is implemented through the help of web services.

The portal will be continuously developed in order to improve user interface (based on user feedback) and to enhance functionality. The responsibility to administer and develop Altinn is allocated to the Brønnøysund Register Centre. The Brønnøysund Register Centre is an administrative agency responsible for a number of national control and registration schemes for business and industry. The Brønnøysund Register Centre performs an important task by coordinating the reporting obligations of business and industry. The aim is to prevent superfluous collection and registration of information.

Theoretical perspectives

Organisational development through rational design processes

Our assumption is that the decision making processes resulting in the development of Altinn as an inter-organisational system can be understood in the light of organizational theory. One point of departure is viewing public sector as strict hierarchical and where decision processes are rational. In this theoretical framework, organisations are managed through formal power and rational instrumental decisions (Christensen et al 2004; Ekeberg 2001, Røvik 1998). This *instrumental- hierarchical perspective* reflects the formal structure of the public sector, where each institution has its own specific competence and decision authority. It is expected that decisions from top management are being executed on all lower levels. The decision making is following a goal-rationality, where this rationality is sunk into the organisational structure and in this way influences the actors' behaviour.

The development of Altinn can be explained in different ways according to this perspective. One may be that the existing systems for data collection from private enterprises are inefficient and result in low quality data. Another understanding can be that improved user orientation leads to better services and thereby reduces burden on the enterprises. A third explanation can be that better services will increase the income.

This instrumental perspective implies that the development of a system like Altinn primarily is a rational design process; identifying the problems and challenges and then solve these in an optimal way. The overall task is to provide correct and sufficient information as basis for correct decisions.
The corresponding hypothesis is thus: Cross-agency cooperation through system development is a rational and hierarchical governed design process based on well-defined goals and specifications.

[2] To day, 18 state agencies are using Altinn for online data collection from industries or citizens, see https://www.altinn.no/cms/1044/altinn/

Organisational development through negotiations between various interests

It is, however, also possible to view Altinn, which is the result of the cooperation of three independent public agencies, as being designed through compromises between different interest and stakeholders (March & Olsen 1983; Aberbach & Christensen 2005). This perspective is based on a hypothesis that decision processes are not only linked to the organizational unit, but also to different coalitions, both internal and between the agencies. These coalitions can be between actors at the same level in the hierarchy, between actors with the same professional background, or between actors that may have same interests (as e.g. belonging to the same union). According to this view, the decisions related to the development of Altinn are taken by many actors, and in many ways, not only by the managers in each agency (Cyert & March 1992). Such decisions are thus not necessarily documented in any formal way. The corresponding hypothesis is accordingly as follows*: Cross-agency cooperation through system development is the result of negotiations of interests between actors and coalitions.*

Research model and methods

Departing from the hypotheses stated above, the units of analysis are both the three agencies involved and actors participating in the project. While the independent variables linked to the agencies describe their various attributes, the variables linked to the actors includes their organisational linkage, their professional background, the type of task they were involved in, etc. Other variables describes their involvement in decision making processes, whether they felt identity to internal groups and/or external organisations, and to what extent they did express own interest in the project. The dependent variables in the study are the decision structure and the arguments that may have been the basis for the decisions. The research model can be illustrated in this way:

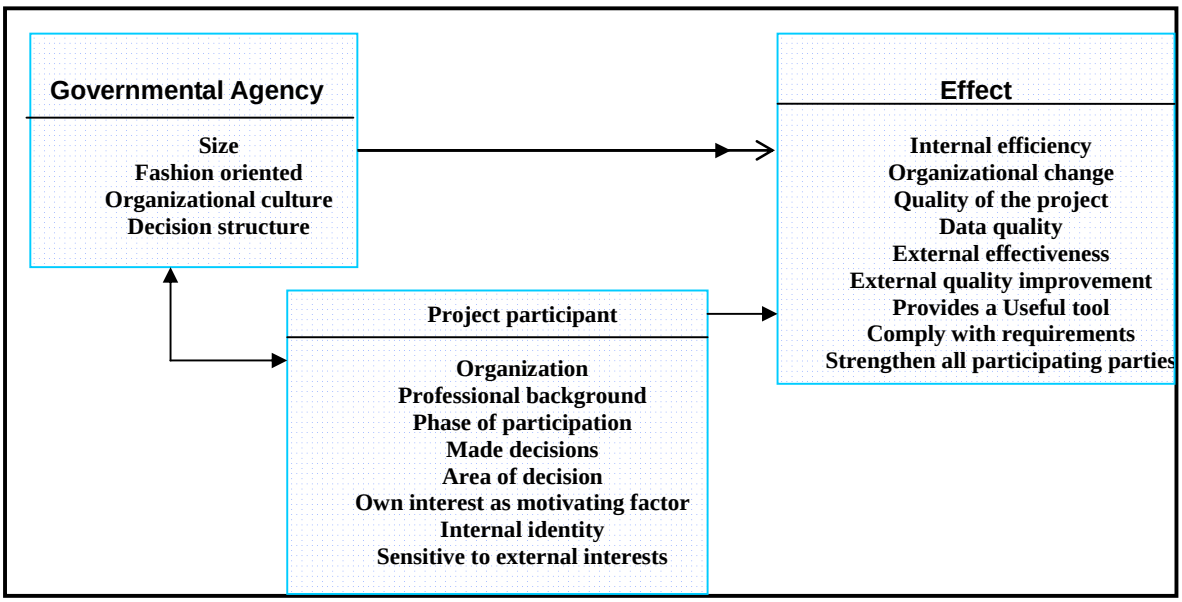

Figure 1: Overall research model

This study is based on different types of data collection. The first phase consisted of analysis of relevant document and relevant websites, followed by interviewing one important stakeholder in each of the three agencies initiating this project. These interviews were taped and transcribed. The third phase consisted of an Internet based survey, by using *Nettskjema*[3] to collect responses from all available project participants. 59 participants were initially contacted, 32 responded while 4 said they were not relevant. This implies that 54.2% responded, which was somewhat disappointing.

[3] This service is provided by USIT at University of Oslo, see https://wo.uio.no/as/WebObjects/nettskjema

Accordingly, both qualitative and quantitative data have been collected and analyzed, which imply that both theoretical and empirical triangulation have been applied (see e.g. Yin 2003: 97-101). This has been necessary in order to get as much relevant data as possible on both management and project participants.

Validity and reliability

The data collection methods imply several challenges related to validity and reliability. The interviews with stakeholders were conducted to map their agencies' standpoints on policies related to the project. A critical question is thus to what extent these respondents really represent their respective organisations. Furthermore, it is some uncertainty related to the quality of the data from the survey, which was collected more than two years after the project was ended: People may have forgotten important facts or viewpoints, or the significance of conflicts may be under- or overestimated. Some of the respondents have entered new job at another employer and may not want to answer all questions related to past history. There is also validity problems related to the operationalization of the decision making processes; to what extent do the answers reflect these processes. We do, however believe that the available data provide us with substantial insight into this project.

Analysis

Objectives and perceived effects

From the formal mandate, we see that the Altinn project was originally motivated by three main objectives: i) to reduce the burden for private enterprises, ii) to make the data processing more efficient and iii) to provide better services (FIN 2003). It is thus important to see to what extent do the respondents view on the project concurrent with these stated objectives. They were asked to indicate their perception of the objective of Altinn, by rating each of the following expected effects on a scale from 1 to 10. They could also provide their own perception.

Table 1: The respondents perception of the effects of Altinn

Respondents perception	N	Min	Max	Mean	Std. deviation	
Improves peoples perception of public sector	32	2	10	8,03	1,805	
Improved communication between public sector and enterprises	20	1	10	7,37	2,059	
Quality improvements of data collection	28	1	19	7,04	2,285	
Increased external effectiveness of data collection	31	1	10	7,03	1,198	
Strengthen participating parties	30	1	10	7,00	2,133	
Changes in work processes	30	1	10	6,97	2,341	
Correspond to requirements	31	2	10	6,61	1,874	
Quality improvements in work	29	1	10	6,41	2,244	
Useful tool for own tasks	28	1	10	6,21	,2,470	
Improving efficiency in own organization	30	1	10	6,03	2,484	

It is interesting to note that the highest score is given to the perception that Altinn improves peoples (the citizens) perception of public sector. This indicates that to create legitimacy among citizens is viewed as most important by the participants. Objectives directed towards effects for users are given higher support than internal effects. The impression is that the project participant are emphasizing the effects upon users, and to a lesser extent the quantitative effects. The quality improvement on collected data seem to be rated about average, indicating that the project participants primarily were focussing on the positive effects upon the users, and less on the measurable results.

Cross-agency system development as a rational design process

Our main hypothesis was that cross-agency cooperation through system development is a rational and hierarchical governed design process based on well-defined goals and specifications. When asking how the managers and project participants felt that the project was governed and managed in a structured and unambiguous way, we got among others these responses, as shown in table 2 below.

Table 2: Cross table for variables Organization versus hierarchical management structure

Employer	Degree of unambiguous management of the Altinn project				
		Not significant	To some degree	To a large degree	Total
Tax Administration	Count	1	6	7	14
	% within	7,1%	42,9 %	50,0%	100%
BRREG	Count	1	3	1	5
	% within	20%	60%	20%	100
SSB	count	0	4	1	5
	% within	0 %	80,0%	20%	100
Another public agency	Count	0	0	2	2
	% within	0%	0%	100%	100%
Consultant	count	0	1	4	5
	% within	0%	20%	80%	100%
Total	count	2	14	15	31
	% within	6,5	45,2%	48,4 %	100%

As we see from the figures, the representatives from Brønnøysund Register Centre perceived the management least structured and unambiguous. This may be explained by that these representatives were physically located far away from the project leaders and may have had less contact.

50% of participant from the Tax administration, the dominating partner, perceived the project as structured, while the corresponding figures from BRREG and SSB was 20%. This may imply that the role of the Tax administration was most important, as they also represented the major financial and personnel resources in the project. One conclusion can be that perception by the participants is according to the formal relative strength between the agencies, which then supports a hierarchical perspective.

The qualitative data from the interviews, however, do not support these conclusions unanimously. While the representative from Tax administration was in line with a hierarchical view, the viewpoints from the two other were closer to support a negotiated opinion. An example of the former viewpoint do we find how he assesses the role of the deceased Chief Executive Officer (Tax president) Bjarne Hope as the main decision-maker[4].

[4] It should be added for reader not familiar with the Norwegian public sector; Bjarne Hope, which was a very dynamic Chief Executive officer, had background in informatics, and had worked with such project for more that 20 years. He died June 30. 2006.

"*In the Tax administration we have one central decision maker, which is Bjarne Hope. [..] That is how it should be, that the top-manager makes the decisions, based on proposals from everybody else*. "(Tax Administration 2005 [interview])

The notion of viewing the Tax administration as the locomotive for developing new interactive services to the citizens was also however emphasized. The interviewees from SSB admitted that he had that role, and added: "*The price for having a locomotive is that it comes first. And that is what we all accept without any serious problems"* (SSB 2005 [interview]). A corresponding view do we also find in this quotation: "*It may be that it was a close cooperation, but it was closely linked to the involvement of the Bjarne Hope. It is clear that he was much more involved than others"*

However, all three interviewee did agree in that the cooperation had been rather successful. The survey data indicates furthermore that project collaborators with technological or economic background, said that that more involved in decision making that others.

Cross-agency cooperation through system development is the result of the negotiations of interests between actors and coalitions.

The second theoretical framework that we will examine is to what extent the decisions made has been the result of negotiations, and even that they have been influenced by other arguments than those given by their own managers. The challenge of testing such hypotheses is linked to how to get valid answers that can verify such assumptions, as employees in an organisations are not be likely to admit that they have been following other interests, if that is really the case. These data were collected long time after the decisions were made, which means that the analyses are based on data of varying quality. We do however believe that it has been possible to identify some possible effects of coalitions, their resources and how this has influences the project.

Internal coalitions

We have looked at possible patterns of community feeling and acting jointly. The primary aim of the project was to develop a technological system. At the same time, the implementation and use of Altinn has both legal, economic and various other consequences, which allows for active participation of many different professions. Table 2 shows a cross table for these two variables: professional background and identification with the project.

Table 3: Cross table for variables professional background versus Identity

Professional background		Perception of identity			Tota
		Not significant	To some degree	To a large degree	
Technology	Count	2	7	4	13
	% within	15,4%	53,8 %	30,8%	100%
Social sciences	Count	4	2	1	7
	% within	57,1%	28,6%	14,3%	100%
Economy	count	3	3	3	9
	% within	33,3 %	33,3%	33,3%	100%
Legal	Count	1	0	0	1
	% within	0%		100%	100%
Total	count	10	12	8	31
	% within	33,3	40	26,7 %	100%

The analysis shows that the technologists had more feeling of community identity, which may indicate that this group have had the possibility to influence the decision processes, even more than just decisions related to tech-

nical issues. Even though there are few informants, it is reasonable to believe that such coalitions have been influential.
Another possible source of coalitions across organisational borders can be linked to having common tasks in different agencies. One such task is the design of web-based forms for data collection, which was the aim of another project (ELMER 2001:1)[5]. The main objective was to solve problems relating to a variety of interfaces and approaches through a common architecture for electronic data collection.

Influence from private sector interests

On the question of influence from outside interests, it seems that interest group from industry and enterprises have had significant influence on decisions. This shows in particular that the Tax agency and BRREG along with other actors emphasize such influence. It is surprising that the Tax administration, which the interviewees indicated that were managed in a rather strictly hierarchical way, also accepts influence from external interests. On the other hand, SSB which appeared more egalitarian and non-bureaucratic turned out to be less receptive to such influence. There are (at least) three ways of explaining this. One possibility is that our belief that hierarchical organisations does not accept external influence, is not correct. If so, there are other organisational functions that allows for such influence. Another possibility is that there is discrepancy in the understanding of their corporate structure between management and those working in the project organisation, which is rather likely. A third explanation is that our data is inconsistent and/not representative. However, 75% of the respondents expressed some or significant identity with the project organisation, which may support the second explanation.

Concluding discussion

Our main conclusion is that there is no unambiguous support for either of the two main hypothesises. On the one hand, from the interview with the Tax administration we found an emphasis on formal hierarchy and rational decisions, seeing the organisation as an instrument for top management. The same understanding was neither shared by the informants from the two other agencies, nor from the project participants. This implies that the first hypothesis, assuming rational and hierarchical governed system development processes is not confirmed, but not completely rejected either.

The interviewees demonstrated rather limited consciousness about the objectives for Altinn. They underlined its strategic role and as an example of a cooperative effort in the government. The survey, however, emphasized the anticipated positive *external* effects for enterprises and industry in general.

The second hypothesis did nor get unambiguous support. One the one hand, the expressed feelings of identity with the project were not very high. On the other hand, community feelings among same professionals with same background across organisational barriers seem significant. The interviews indicate that there have been important negotiations between both agencies and within each of them. However, the differences in size and organisational power are substantial, which indicates considerable negotiating skill, and that the solutions must have been acceptable for all parties. Furthermore, it seems that interest group from industry and businesses have had significant influence on decisions.

The Tax administration is an actor in the government which emphasizes user orientation high and occupied with how it is being perceived by the environment. Altinn is aiming at contributing to a public sector that appears unified and co-ordinated. It is a distinct goal for Altinn to help public sector proving good services to its citizens and

[5] The ELMER-project was established in 2000 as a collaboration between Ministry of Trade and Industry (Nærings- og handelsdepartementet, NHD), Confederation of Norwegian Enterprise (Næringslivets hovedorganisasjon, NHO) and Federation of Norwegian Commercial and Service enterprises.(Handels- og servicenæringens hovedorganisasjon (HSH) in order to promote the use of electronic forms.

private enterprises. Altinn is in this way an ICT-solution gradually becoming part of a user-oriented IT infrastructure in public sector.

We had expected to see considerable challenges linked to have old (legacy) systems to talk together, accessible through a common web-based interface. This seems not to have been the case. However, some path-dependencies have been identified, limiting the development of new solutions. The existing, paper-based forms for data collection, which have their specific legal basis, have had strongly influenced the design of Altinn. We thus see technological, organisational and legal path-dependencies, which we believe are characterizing this type of cross-agency co-operation and inter-organisational systems.

It is thus not surprising that the decision-making processes related to the development of Altinn have not been unambiguous. Rather the opposite, as we believe that a hierarchical, silo-based model of management is not adequate with respect to managing the new, digital government.

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