Rapport 2003:1

Country Report from Norway

OECD-PUMA expert meeting on management of large IT projects October 26-27 2000.

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Foreword

This report was prepared to a meeting on managing large public IT projects arranged by OECD (Public Management) in November 2000. The report contains a description of the decision processes and reporting routines within the government in connection with large IT-projects. It also gives a brief description of 6 different IT-projects.

The report has been published on the home pages of OECD as part of the documentation from this meeting. After the meeting the OECD secretariat published an OECD Public Management Policy Brief in which they analyse the consequences of the findings in the reports prepared to the meeting. OECD has given us permission to publish this Policy Brief as an appendix to this report.

We believe the facts and findings in this report to be of general interest. There has been strong focus on the management of public IT projects for many years. However many of the problems that have been revealed, have not found satisfying solutions. We hope that the lessons learned from the cases in this report can serve as a basis for further work in this area.

We would like to thank the organizations that have helped us by providing information to this report.

Oslo, June 2003

Jon Blaalid
Managing Director

Content

1 Introduction

This report has been prepared by Statskonsult, the Directorate of Public Management, Norway in response to OECD's invitation of 7 July 2000 to interested member countries to participate in a project on management of large IT projects in the public sector.

The invitation to participate was accompanied by a set of working definitions and a template for the country reports. These have been adhered to as strictly as possible in order to increase the comparability of the different country reports.

In preparing this report Statskonsult has addressed all Norwegian ministries to obtain their views on questions about decision processes, reporting and cases. Seven ministries provided us with answers about IT projects within their areas of responsibility. In addition, the Ministry of Finance and the Ministry of Labour and Government Administration have been asked to contribute information on topics connected to their specific responsibilities. In the more judgmental parts of the text, we also rely on the experiences of the authors as advisors to ministries and agencies on IT management issues. The content of the report is, of course, the sole responsibility of Statskonsult. Whenever possible we have referred to English translations of government documents. We have also provided the references with appropriate URLs to better enable the readers to become acquainted with the documents in question.

Within Statskonsult this report has been prepared by Senior Adviser Mari Vestre and Assistant Director General Pål Sørgaard, both from the Department of IT Co-ordination and Planning.

2 General institutional framework

Norway has a population of 4.3 million. It is a unitary state with 19 counties and 435 municipalities (from January 2001: 434). The country is a kingdom run by a parliamentary system. The ministers in the government are individually accountable to the Storting (Norwegian parliament). There are 16 ministries plus the Prime Minister's office. There are two ministers in two of the ministries. Including the Prime Minister, there are 19 ministers in the government.

As a result of Nordic co-operation, one of the authors worked two months in the Ministry of Finance in Helsinki preparing a report on IT co-ordination and public management reform in Finland and Norway 20. That report contains a more detailed description of the Norwegian co-ordination mechanisms pertaining to IT than this report.

2.1 Policy

The national IT policy is expressed in the action plan *e*Norway 1.0 7. While published by the Ministry of Trade and Industry, the action plan also addresses IT in the public sector. The plan addresses use of IT in customer services, internal administrative reform and better health services. It does not address the problems in managing large IT projects. Another central policy document is the action plan on Electronic Government 6 published by the Ministry of Labour and Government Administration. This action plan defines eight areas for cross-sectoral IT development. These are year 2000 security, infrastructure, IT security, information services on the Internet, electronic administrative procedures, electronic data interchange, electronic commerce for public procurement, and IT management and organisation.

Regarding management of IT there are several central principles and documents:

- The principle of responsibility in the line organisation. This principle, formally adopted around 1980, states that IT is mainly an internal responsibility of each agency. The logic behind this is obvious: in order to be responsible for the way an agency works, management in each agency must also be responsible for the agency's use of IT.
- As from 1 January 2000 a special procedure for risk evaluation must be applied to all investment projects (i.e., not only IT) where the total investment exceeds NOK 500 million. This procedure is further described below.

- As mentioned, the action plan on Electronic Government 6 (section 5.8) addresses IT management and organisation. The plan addresses issues like manageability, predictability and professionalism in IT work. The plan states that good implementation capacity for IT is a prerequisite for the political manageability of government administration.
- Statskonsult, the Directorate of Public Management, has made a series of standard IT contracts. There are contracts for acquisitions (hardware or software), maintenance and program development (mainly for projects which follow the waterfall model). Use of the contracts is not mandatory, but recommended. They are widely adopted by government agencies as well as by other organisations inside and outside the public sector. The standard contracts are templates that must be adapted to the case in question, preferably without modifying the juridical contents. Two of the contracts, the purchase agreement 19 and the maintenance agreement 14 are available also in English translation.
- As a result of a major IT failure in a large agency in 1996 (see the Tress-90 case below) Statskonsult undertook an investigation of the state of IT project management in several ministries and agencies (project FASIT: Pitfalls and criteria for success in major central government IT projects). This work resulted in a report on experience 8, a guide for better project management 21, and the standard contract for program development 18 mentioned above. In the report on experience Statskonsult identified 12 sources of project failure, see table 1. In the guide on project management Statskonsult makes a distinction between three distinct roles that need to be identified in IT projects. These are the role of the customer, strategic manager and supplier. These roles are often mixed in IT projects.

Table 1. Sources of project failure.

1 Project not anchored in plan of operations or IT strategy	7 Plans and estimates made on an insufficient basis
2 Unrealistic goals, overly ambitious, lack of focus on ability to run the project	8 One-sided focus on technology, lack of emphasis on development of organisation and skills
3 Unclear relations of organisation and responsibility	9 Choice of technology has too often become a choice between either being in the very front or lagging behind
4 Too large, too all-embracing systems – deliverables not split according to functions and deadlines	10 Lack of skills – especially on the management level
5 Insufficient project management and follow-up, lack of readiness for change management	11 Negligence of changed requirements and new conditions for the project
6 Contracts left in a drawer instead of using them as a tool for managing the project	12 Inadequate attention to division of work between internal development and commercial suppliers. Lack of care when trying to commercialise the systems.

2.2 Funding

The main, and actually only, principle concerning the funding IT projects is that they are funded using the same mechanisms as those used for funding other projects and investments. The budget system is based on gross budgeting, annual budgeting and budgeting using budget limits.

Gross budgeting means that income and expenses are kept separate. This applies even for agencies with large revenues. Also, agencies are not allowed to use credits to fund investments. There are exceptions to this rule. There are, e.g., some net budgeted agencies. There are also some state enterprises, and they have considerable freedom in financing their investments.

Annual budgeting means that normally funds are allocated and spent on an annual basis. Unspent funds can be carried forward to the next fiscal year up to a limit of 5% of the annual budget. For special purposes, typically for large investments, special accounts (the so-called "post 45") can be used, within which large amounts more freely can be carried forward from one fiscal year to another. Such accounts are normally limited to a period of three years.

Budget limits mean that there are relatively fixed amounts allocated to each ministry. Within these limits the ministries enjoy considerable flexibility. A ministry can finance a large investment in one of its agencies with little interference from the Ministry of Finance provided there is room for the investment within the ordinary limits of the ministry. Similarly, there are normally stable funds for each agency. As an example, Statskonsult has an annual budget of around NOK 80 million (EUR 19 million), and the ministry does not split this amount into funds for salaries, investments or other expenses. As a result, Statskonsult can launch small IT projects without ever informing the ministry. Larger agencies, like the revenue authority, can in practice fund very large IT projects within their ordinary budgets.

There are mechanisms to fund projects and initiatives outside the principle of budget limits. Such projects must be accepted in the budget process. There is considerable competition between "good" initiatives, and the Ministry of Finance will have to turn down several worthy projects. The budget process is, of course, highly political. The Ministry of Finance experiences artificial inflation of the needs of the other ministries, while the other ministries experience unjustified rejections from the Ministry of Finance. Since a project in practice needs to have a certain size in order to achieve funding outside ordinary budget limits, there is an incentive to increase the ambition level (and risk) of a project in order to obtain funding.

The special procedure for risk evaluation of large investments applies to all projects above the threshold amount, irrespective of whether the project is funded within the budget limit or receives separate funding.

2.3 Decisions and assessment

In the discussion below, it will be stated several times that there are no fixed rules or special procedures for large IT projects. This makes the text somewhat abstract. In addition to the general answers to the item in the report template, we have therefore chosen to add text from one specific (and very large) example, the SIAMO project in the Labour Market Agency (SIAMO stands for "Service og Informasjon for et Arbeidsmarked i Omstilling" which means "Service and Information to a Changing Labour Market"). This project first got special funding on the state budget in 1998 and is planned to complete by the end of 2002. The total budget is NOK 675 million (price level of 1998) (EUR 83 million). Further details about this project are provided in the section on cases.

2.3.1 Who makes the procurement decision

It follows from the above discussion of funding that there is no fixed rule on who makes the procurement decision in relation to a large IT project. This may range from the Director General of a large agency to the Storting. Most large IT projects will in practice be accepted by at least a Director General ("ekspedisjonssjef") in the ministry in question. Several ongoing projects have been accepted by the Storting.

Example: As regards the SIAMO project, the decision to start the project was made by the Storting as a part of the annual budget decisions.

2.3.2 On what information basis is the decision taken

Normally an agency will run a pilot project, feasibility study or something similar before making large investment decisions on its own or proposing to the ministry that an investment should be made. Again, there are no fixed rules as to how risks are evaluated, but a ministry may request an independent evaluation of an investment proposal.

Example: The government's proposal to adopt the SIAMO project was based on detailed plans from the Labour Market Agency. The ministry had hired independent specialists to undertake quality assurance of the plans and assessments from the agency.

2.3.3 Relation to project characteristics

The answers to the questions above depend on several factors. As previously explained, a large agency or a ministry with a large general budget limit may accommodate larger projects without passing the decision upwards in the system than what can be done by smaller agencies and ministries with tighter limits. Politically important projects may receive more attention at the ministerial and Parliament level than do projects that only deal with internal administrative affairs. And, as explained below, there are special procedures for investments above 500 million NOK.

2.3.4 Ex ante and ex post assessments

There is, per se, no agency, institution or authority responsible for ex ante or ex post assessment of projects, but there is a special procedure for risk evaluation of large investments and Riksrevisjonen (Office of the Auditor General of Norway, a body reporting to the Storting) performs some evaluations. We will describe this in more detail.

The Office of the Auditor General continually audits all ministries and agencies, and thus also audits large IT projects. Since the Office of the Auditor General essentially is a control body *external* to the government administration, it will only report on findings that are severe enough to warrant special reports to the Storting. This is clearly a very powerful mechanism. It can only be used in severe cases, however, and it does not form part of a systematic process of ex post evaluations from which the government administration can continually learn to improve its handling of large projects.

In 1997 the Ministry of Finance started a project on risk evaluation of large investments. The project was inspired by a series of projects with significant overspending (bridges, IT, large buildings, military investments) and subsequent harsh criticism from the Office of the Auditor General. The existing procedures were analysed, and found to be of insufficient relevance to the kind of investment projects undertaken. A new regime for ex ante evaluations was proposed and put in operation in the year 2000.

2.3.5 Content and nature of assessments

In the new regime for ex ante evaluations all investments above NOK 500 million (EUR 62 million) must undergo independent risk evaluation after the planning stage (pilot study). These evaluations are performed by independent companies, which have entered into a framework contract with the Ministry of Finance. The Ministry of Finance and the responsible ministry acquire the evaluations in partnership in order to obtain full insight into the result of the evaluation. The evaluations address project delimitation, project charters and management models, contract strategies, factors of success and failure, and a

comprehensive analysis of risks based on investigations of estimate uncertainties and event uncertainties. Different techniques are in use in order to produce a total indication of risk.

The projects must present prioritised lists of uncertainty-reducing measures. When many good measures are available, the project can be funded with a limited budgetary reserve. If few measures are available, a larger budgetary reserve is needed. As the total project budget (including reserves) must be allocated within the responsible ministry's total allocation (possibly delaying other initiatives), the ministries will have strong incentives to undertake uncertainty-reducing measures.

Since this is a new regime it is too early to present an evaluation of its effects. It has so far been used in 6 projects, and only one of these is an IT project.

Example: The SIAMO project started before the new procedures for ex ante risk evaluations were in place. As mentioned, an external risk evaluation has been undertaken. During the project period external risk evaluations will be repeated independently of the risk management in the project. When new sub-projects (they may be large!) are started, they will be evaluated with respect to risks such as complexity, IT maturity, technology and organisation. Risk factors should be divided into external factors that cannot be influenced and internal factors that can be reduced through actions undertaken by the project. The risk factors are followed up during the whole project period.

2.3.6 Progress monitoring and reporting

There are no specific practices on progress monitoring and reporting, as this depends on who has responsibility for the project. When a project is an internal matter in an agency, it will be up to management in that agency to deal with monitoring and reporting. For larger projects it is common, but not mandatory, to set up specific steering groups to follow up the projects. Sometimes these steering groups receive assistance from independent quality assurance personnel. When the ministry is involved in the decision about the project, the ordinary reporting chain between agency and ministry will also deal with the project. This kind of reporting is not very frequent. For very large projects a ministry may choose to set up special and more frequent reporting procedures.

Example: In the SIAMO project the agency reports monthly to the ministry. The reports address issues like general status, financial information, deviations from plan (and actions taken), change management, risk evaluation per sub-project and in total, and need for decisions by the ministry.

2.3.7 Measuring attainment of benefits

There are really no common practices for this. When the promised benefits are in terms of increased efficiency or reduced workforce, the benefits will be attained in terms of reduced budgets in the future. In some cases, however, very clear goals have been set while there is no effective way to measure the benefits. In some agencies, there has been a concerted effort to ensure that reduced efforts in some areas have resulted in more time spent on new work areas of high priority. Whether this yields better results in the new work areas may be very hard to measure.

In several cases, an IT project is undertaken to facilitate a new way of operation, e.g. a new set of rules for computing taxes, a new benefit for families with small children, etc. In these cases attainment is the simple result that the new way of operation actually works.

Example: In the SIAMO project there is a stated efficiency benefit which will be attained through reduced budgets for administrative purposes in the future. Moreover, there is a separate subproject working on current work practices and resource consumption, future organisation and work practices in case handling, increased visibility of possible benefits, and organisational consequences.

2.3.8 Financial auditing ex post

Again, this will depend on who has responsibility for the project, and also on the funding of the project. The responsible level will perform auditing as appropriate. If the project has been given separate funding by the Storting, the project will be visible in the government's annual reports.

The Office of the Auditor General will also conduct a financial audit. This audit, however, mainly addresses the legality of the way money has been spent. The Office of the Auditor General may also choose to audit specific projects in more detail.

Example: In the SIAMO project, which has separate funding, the ministry will report to the Storting in the annual budget on how the budget will be spent next year and how it was spent last year.

2.4 Management models

2.4.1 Relationship between agencies and ministries

In the Norwegian public administration, the directorate model is fairly well implemented. This means that the ministries are relatively small (around 250 employees in average) and in principle should work as secretariats for the ministers, preparing material for processes in government and the Storting (e.g., the annual budget), and implementing policies on behalf of the ministers. The latter includes management and follow-up of the ministries' subordinate agencies. Directorates, i.e. agencies governed by a responsible director general, deal with other tasks. It is considered good public management to delegate the practical implementation of policies to the agencies, and thus to keep only political and strategic issues in the ministry.

In general the agencies enjoy considerable independence (arms length agencies). As mentioned above, agencies may (and are expected to) initiate and fund IT projects within their annual allocations. In large agencies projects of substantial size may be run this way. Therefore, as some ministries report, the ministries do not have an overview of the IT projects in their subordinate agencies.

In Norway, each minister is individually accountable to Storting (like Denmark and Finland, but unlike Sweden). The minister is in principle responsible for all activity in the ministry's subordinate agencies. As a result, directorates are normally governed directly by the ministry. Boards of directors are uncommon, and if used they often have limited responsibilities. There may in many cases be a discussion on where the limit goes between adequate overall governing of agencies and a practice that satisfies the needs arising from the responsibility of the minister.

2.4.2 Management models for large IT-projects

There are no commonly adopted management models for large IT projects except what can be derived from the line principle (see section on policy) and what is otherwise stated above.

As to recommendations and guidelines, Statskonsult has published a booklet on guidelines for the management of large IT projects 21. In the booklet, three roles are identified. These are the roles of strategic management, customer and supplier. In other terms, this is a distinction between those who make the decisions, those who have a need and those who provide the solution. The general recommendation is that care should be taken in the identification and fulfilment of these roles, as severe problems may arise if this is not clear.

In a practical situation, there are several groups of actors that have a relation to these three roles:

- The responsible ministry
- The agency's senior management
- The "owners" of the future system, often the managers in the relevant part of the agency
- The end users[1]
- The agency's IT department
- The project group
- External commercial suppliers (if any)

In the guidelines there is a general warning against unclear roles. A common problem has been that the agencies' IT departments have ended up with a mix of roles, sometimes indeed with all three roles. The guidelines also contain some advice on what type of assistance can be bought from external suppliers. These range from a fully responsible supplier of a ready to use system, via consultants used within the project organisation of an agency to independent, external quality assurance.

[1] End users were not included in the guidelines for the management of large IT-projects, but for the sake of completion, they are mentioned here.

3 Cases

The first two cases are described on the basis of published material, the rest are based on material collected especially for this report.

3.1 Case 1: Tress-90

National Insurance Administration, Ministry of Health and Social Security

This project was the first publicly known and by far the biggest IT scandal in Norway. The project was stopped after several years of development and at a considerable economic loss. It was followed by inquiries by Riksrevisjonen (Office of the Auditor General) and official hearing in the Storting in February 1996 9.

3.1.1 Purpose

The purpose of the project was to develop a common electronic case handling system for all the Local Social Security Offices (approximately 460, one in each municipality, the largest cities has up to 20). The National Insurance Administration is responsible for these offices and took the initiative to develop the system. When the project started, the Local Social Security Offices used two different case handling systems and they were to be replaced by a totally new system. The project also included extensive investments in a new technological infrastructure in all the Local Social Security Offices.

3.1.2 Economy

Tress-90 was a fixed price project that included computers, systems development and education. Total cost was NOK 1.2 billion (EUR 150 million). The cost of the software development part of the project amounted to about NOK 26 million NOK (EUR 3.4 million).

3.1.3 Functionality

The system was to cover all the tasks performed at the Local Social Security Offices. It contained administrative procedures in connection with calculations of different kinds of social security payments and various administrative tasks. The two existing systems had to be maintained and kept running in parallel with developing the new system.

3.1.4 Time frame

The decision to start the project was taken in 1989. The project started with deciding system architecture and acquiring technical infrastructure. The part of the project that included designing the new system started 1 April 1992, with 1 March1993 as completion date. It was a fixed price project. However, the requirements were not fixed and already half a year later, the supplier wanted to renegotiate the agreement because of numerous changes and additions to the requirements. There were many revisions in the plans and finally came the decision to stop the project from 12 March 1993. The main reason for this decision was that the project was far behind schedule.

3.1.5 Organisation

The National Insurance Administration was responsible for the total project management and the co-ordination between the subprojects. The Ministry of Health and Social Affairs did not play any active part in the project. It did not participate in the project organisation. Progress and budget reports were made as part of the ordinary reporting between Ministry and Agency.

3.1.6 Project management

Project management was handled within the National Insurance Administration. Many of the sub-project managers were inexperienced and lack of professional project management was pointed out as a main reason for the problems the project ran into. A large amount of money was paid for modules that were not finished.

3.2 Case 2: FLID

Directorate of Taxes, Ministry of Finance and Customs. *22*

3.2.1 Purpose

The purpose of the project was to introduce IT-based tools in the Local Tax and Registration Offices (about 4300 users in 435 different locations, one in each municipality). In addition to the acquisition and roll out of the technical infrastructure, the project included development of an electronic case handling system and a central national register. These systems replaced manual routines. The project also included implementation of organisational changes, training and considerable investments in technical infrastructure.

3.2.2 Economy

Total expenses in the pilot period came to NOK 197.1 million (EUR 24.4 million). The amount included development, testing, and implementation of

organisational changes at the Local Tax and Registration Offices. The hardware acquisitions, software, training and establishment cost for the user support organisation was estimated at approximately NOK 445 million (EUR 55.5 million).

3.2.3 Functionality

The administrative system performs control of tax forms and calculations of income tax. The system also contains administrative routines and systems administration. The central national register is a database containing information about Norwegian citizens.

3.2.4 Time frame

Planning started in 1986. In 1987 the directorate of Taxes started running pilots at 9 Local Tax and Registration Offices. The number of pilot offices was gradually extended. When the system development was completed, the total system ran through a pilot period. Rolling out of the finished system took place in three distinct groups from 1992 to 1994.

3.2.5 Organisation

The system was developed internally with some hired consultants. The acquisition and roll out of technical infrastructure were organised as a separate project that started after the system had been tested and run in pilot installations.

3.2.6 Project management

The project management organisation was led by the project director. There were separate projects for developing the administrative system and the National Central Register.

3.3 Case 3: TOPP

Norwegian Public Service Pension Fund, Ministry of Labour and Government Administration.

3.3.1 Purpose

The project started as a result of an external analysis. The Ministry commissioned both this analysis and the IT project. The purpose of the project was:

- To develop an IT system that could handle frequent changes in regulations pertaining to the calculations of pensions.
- To reconstruct the organisation according to the new work processes introduced by the new IT system.

3.3.2 Economy

Total cost of the project: NOK 86.1 million (EUR 10 million), NOK 68.1 million, (EUR 8 million) special funding from the state budget, NOK 17.7 million (EUR 2 million) cost of own labour resources. There is an additional need of about NOK 200 million (EUR 25 million) to improve the data quality in connection with the changeover from old to new system. This was not included in the initial estimates.

3.3.3 Functionality

The system is an electronic case handling system that includes calculations of pensions. It is flexible and allows for frequent changes in the regulations.

3.3.4 Time frame

The Norwegian Public Service Pension Fund ran a pilot project that included a cost/benefit analysis before deciding to run the project. The main project started in 1995 and finished in February 2000. In 1997 it was enlarged due to an extension of the project itself, combined with cost overruns. The completion date was postponed 1 year due to problems with access to key personnel and greater complexity than expected in advance. Statskonsult is conducting an evaluation of the project and the evaluation report is due early in 2001.

3.3.5 Organisation

The managing director of the Norwegian Public Service Pension Fund has been the “owner” of the TOPP project. A steering committee with representatives of the Norwegian Public Service Pension Fund and hired experts from the consultant company have been leading the project. Representatives of the Ministry were originally members of the steering committee, but withdrew in order to avoid mixing roles. There was continuous reporting on deviations form plan and/or budget. In addition the cost/benefit analysis was adjusted after each stage. The project has also been a topic of the ordinary steering meetings three times a year between the ministry and the agency.

3.3.6 Project management

The project was divided into 5 stages. The main contract is with a large consultant company (Andersen Consulting). This main contract has been followed by sub-contracts for each stage.

Each stage contained analysis, design, construction, tests and roll out. The contract was signed after the design phase of each stage. According to the contract, the project could have been stopped at any stage.

3.4 Case 4. SIAMO

***Directorate of Labour, Ministry of Labour and Government Administration** 2, 3*

3.4.1 Purpose

To develop a new overall system for the local labour offices (approximately 3700 users).

3.4.2 Economy

Total cost NOK 675 million (price level of 1998) (EUR 83 million). The last two years the allocations over the central government budget have been reduced compared with the initial plans, and this has led to displacements in the original phases of the project even though the total frame of the project has not been changed. However, it has not given rise to serious problems for the project.

3.4.3 Functionality

The system covers most of the needs of the Local Labour Offices. The project is divided into four:

1. New case handling system.
2. New financial management and personnel system finalised in 1999.
3. External user services for job-seekers and employers. First version finalised in June 1998.
4. New technical infrastructure finalised in 1999.

3.4.4 Time frame

The planning of the system started in 1995 and the project started in the summer 1997, financed by the Directorates ordinary budget. From 1998 the project got special funding on the state budget. In spring 1998 there were serious problems in the development of the new case handling system. The problems were due to the chosen developing-tool, not satisfactory plans, organisation and managing of the project. The project was reorganised and the contract with one of the suppliers was terminated. It was decided to acquire a case handling system instead of self-developing it. The problems have not affected the planned date of completion. The other parts of the project have been delivered according to schedule.

3.4.5 Organisation

The project is now organised in 4 sub-projects and there are steering committees both for the project as a whole and for each of the sub-projects. The Director General is member of the steering committee for the main project. The project organisation also includes a project counsel with employee representatives from all levels of the organisation and from the trade unions.

The Director General and the project management were heavily criticised in an internal audit report because of the problems mentioned above. As a result, the Project Director was replaced. The use of external consultants for planning, follow up and quality assurance was exceeded and the Ministry established tight reporting routines and followed the project closely. These reporting routines are used as example in the previous sections of this report.

3.4.6 Project management

In spring 1998 criticism was directed at the project management because of the problems mentioned above. The Director General of the Directorate of Labour admitted that the project management responsibilities were not undertaken in a professional way. Major alterations were made as mentioned above. Before the problems in 1998 the project tried out both reporting true the hierarchy/line and direct from the project manager to the Director General.

The project manager now reports directly to the Director General. The project is using a contract for incremental systems development that is quite new to the public sector.

3.5 Case 5. Hydra II

The Norwegian Water Resources and Energy Directorate, Ministry of Petroleum and Energy

3.5.1 Purpose

The project relates to the development of hydrological databases in order to establish a national hydrological archive.

3.5.2 Funding

The project was financed through the ordinary budget. Up to now about 20 person-years have been spent. System maintenance requires about 2 person-years. Hardware investments were also handled within ordinary budgets.

3.5.3 Functionality

The system replaced an earlier system that did not satisfy the requirements regarding flexibility, data capacity and support of new technology in front end systems. Management wanted to be up front technologically with efficient use of computer-based tools. The system handles long time data series with variable resolutions in space and time. It can also handle other environmental data.

3.5.4 Time frame

The planning of the system started in 1991. Development started one year later and in 1994 the first version was put into operation. The system is being continuously maintained and new modules are added.

3.5.5 Organisation

The system was developed using internal resources. It was followed up through ordinary reporting in the Directorate according to line principles and half-year/year reports.

3.5.6 Project management

Project management was weak and unprofessional when the project started. There was much focus on being up front technologically and on system design, and little focus on risk analysis. However due to close contact with the users and good skills in analysis and design, the system now functions according to expectations. It has a good structure, is well documented and easy to maintain.

3.6 Case 6: Diskos/PetroBank®

Norwegian Petroleum Directorate, Ministry of Petroleum and Energy

3.6.1 Purpose

The project is the result of collaboration between the Norwegian Petroleum Directorate and petroleum companies in Norway. The purpose of the system is to establish a common petroleum technical database. Petro Data AS, which was founded in 1993 as a joined venture between the companies IBM, PGS an TNN, has been assigned the operational responsibility for the database according to contract with the Diskos group (the Norwegian Petroleum Directorate and 16 petroleum companies, figures by October 1999).

3.6.2 Economy

The development of the system was financed though collaboration between the Norwegian Petroleum Directorate, three Norwegian oil companies (which

formed the original Diskos group) and IBM (later taken over by a seismic company called PGS (Petroleum Geo-Services). All the current members of the Diskos group contribute with yearly funding for the maintenance of the system. Development costs are distributed according to an algorithm decided by the management committee. In addition, all the companies pay for access to the database.

3.6.3 Functionality

DISKOS 5 is a common national data repository for exploration and production related data. The DISKOS/PetroBank® software has been developed to handle digital seismic, data on wells and production data. It handles complicated ownership of data with frequent changes. Petro Data AS has established an operation centre where large amounts of data are stored in a secure way. Access to the data is secured through special security solutions.

3.6.4 Time frame

The project was started in 1993 and the first version of the database was put into operation in 1995. The system is being maintained continuously.

3.6.5 Organisation

The Norwegian Petroleum Directorate is operator for the database and leads the Management committee and the Steering Group. All members of the project have to sign an accession document that describes the decision process and the budgeting process. A group of 5 members participate in the Steering Group. There are work groups that define data types. These work groups keep close contact with system developers and the project management. The objective of these work groups is to ensure that the user requirements are handled satisfactorily. All principal decisions are treated in the Diskos Management Committee.

3.6.6 Project Management

The Norwegian Petroleum Directorate is responsible for project management. This includes the project manager position, the secretary and legal assistance. The Norwegian Petroleum Directorate is also responsible for the book keeping.

4 Lessons learned

Previous large failures have created a certain fear of new failures. Awareness about the problems with large IT projects has therefore increased in later years.

There is, however, a lack of tradition in dealing with IT-related issues in management and in governing agencies in the government administration. IT has to a large extent been seen as a purely technical matter, in isolation of other issues. A special problem is how a ministry can deal appropriately with IT in its subordinate agencies while at the same time not interfering unnecessarily with internal matters of the agencies. Sometimes ministries govern IT in their agencies close to unknowingly, for example in terms of working with bylaws, which need to be implemented in IT systems to have an effect, but not bringing the IT related considerations into the work with the bylaws. Statskonsult has documented that top level managers in the government administration have little IT competence 12. This may partially be explained as a matter of seniority, but part of the explanation may also lie in the lack of IT issues in the typical educational backgrounds of senior government employees. There appears to be a difference in the IT content in the typical educational backgrounds of business and government managers.

Norway has a very tight labour market. While this is a blessing in terms of a relatively low rate of unemployment, it means that the shortage of new IT related occupational groups is a real problem. Government struggles to be competitive in terms of compensation and in terms of offering interesting tasks. As a result, government may lack the capacity and competence needed to fulfil its intentions with regard to the use of IT.

IT investments are different from other investments in their relatively high level of risk and uncertainty. While in traditional investments uncertainty is normally eliminated in early pilot studies, this is often not the case with IT. The design activity is proportionately larger for IT projects than for other construction projects. It may make sense, and is technically feasible to delay selected decisions to a very late stage of the project. Government has in general had problems in dealing with risks, as reflected in the motivation for the new regime on risk evaluation of large investments. This new regime clearly is a step forward, but its threshold may be too high for IT investments. Moreover, it is not evident how the procedures can be used cost effectively for smaller IT projects.

In systems development, it is a matter of fact that requirements do sometimes change, although professional practices should try to eliminate as many uncertainties as early as possible in the projects. The need for change management results in challenges in budgeting and contracting. Often, these

challenges are not met, resulting in projects deviating considerably from the contracts, rendering the contract useless as a means of managing the relationship to the supplier. Statskonsult's IT contracts do not handle incremental systems development sufficiently well. Statskonsult has co-operated with research and industry in developing a more open-ended contract, called PS 2000. Experience from use of this contract has not yet been collected, but it has been used in the SIAMO project.

Within a relatively hierarchical organisation such as the Norwegian government administration, project work traditions are not very strong. This may pose challenges in many areas, but is clearly felt in the area of IT. Managing projects is never easy. As described in the section on management models, there is a need to work with the different roles of various actors with respect to an IT project. Specifically, there are difficulties with steering groups. There is considerable variation in how the notion of steering group is understood. Sometimes they are used as mere discussion groups. There is no common understanding as to whether a ministry can or should participate in a steering group for large IT projects within one of its agencies.

There are examples of projects which are highly successful in isolation, but which appear to struggle with issues of co-operation with other parties. Co-operation between agencies to reduce the burden on businesses through better co-ordination of data collection is hard to achieve. In addition, exchange of data between agencies is subject to problems. The problems are not technical, but more in terms of achieving the appropriate alignment of practices in the agencies. As a result, data may be transferred successfully, while severe problems related to "data quality" persist.

The recommendation from the FASIT project 21 on pitfalls and criteria for success addressed a series of issues related to the project. However, connections between project internal successes and actual implementation of the project results in the user organisations are still lacking. We may now see a development where more professional project managers are hired in, to the benefit of the project itself, but sometimes detrimental to the relationship between the project and the line organisation.

As mentioned in the section on funding, it appears that there are some incentives in the budget process that may indeed encourage larger, more sophisticated and more risky project initiatives than what would be formulated based on internally defined needs. A careful proposal, neatly designed in small modules, may end up as too small to be worthy of attention in the larger budget process.

Although not really touched upon in this report, we have experienced large differences between different agencies in terms of how IT is managed and funded within the agency. In some agencies there is a strong, central control over IT development and investments. In these agencies there is little variation between the branch offices in how they use IT. In other agencies there is a tendency to deal with IT locally in the regional or branch offices, and the central directorate thus has much less power over IT investments and the use of IT in the organisation.

5 Possibility and value of a questionnaire

In Norway, every four to five years a major survey of the government's use of IT is undertaken. The last survey 11 includes data from 1999. These surveys provide considerable data in terms of total costs, kind of equipment, software and networks, etc., but they do not cover the number of projects, much less the number of failures or amounts lost. While such data indeed would be interesting, they would probably be very hard to obtain.

Collecting data in this field is very hard. In Norway we have seen difficulties in identifying IT related costs. Sometimes it may be hard to identify failed projects. There is an understandable urge to be successful, which may, however, make learning from past experience harder. Moreover, finding a set of indicators which is objective enough to justify comparison between countries, yet of sufficient relevance to tell us something useful, is probably very hard. Thus, while we see a need for a better factual basis with regard to the organisation of IT, we think we have a job to do in finding the right ways to address the right questions.

We hope the expert meeting will help clarify some of these issues. In our view we do not need more data to document that there are serious problems in this area. We should therefore look at what activities and fact-finding we can undertake in order to improve the situation. From a Norwegian point of view we would suggest the following topics for a more concentrated fact-finding process:

- Examples of budget procedures for and risk management of IT projects.
- Experiences with more open-ended (e.g. incremental or experimental) systems development processes and with questions relating to the use of contracts and to rules for public procurement in such processes.
- Experiences with different models for how ministries govern subordinate agencies with respect to IT. Topical questions would be whether ministries should relate to projects in the agencies, why and how. We could also look at how IT issues can be taken into account in the work of the ministries, e.g. in their work with bylaws and other regulations.
- Experiences with recruitment of IT personnel in government administration. Data on where the attractive candidates go, effective measures to make government attractive, etc. may be relevant.
- Experiences with outsourcing and other models of contracting with business, difficulties with such contracts, especially in the long term.
- Experiences with processes for improving the relationship between IT-related efforts and other plans and strategies within government administration.

6 References

In this list of references we have included the documents referred to in this report. Whenever possible we have included URLs to documents available online. For ordinary publications from Statskonsult we have dropped the URL. Most reports from Statskonsult can be found at http://www.statskonsult.no/publik

We have also included some references to classical literature on IT failures, e.g. Ackoff 1, Boehm 2, Oz 17, and Willcocks 23.

1. Russel L. Ackoff. Management Misinformation Systems. *Management Science,* 14(4):B-147–B-156, December 1967.
2. Aftenposten Interaktiv Netthinnen 21. October 1998. Datafiasko til 675 mill. i Arbeidsdirektoratet (IT failure for 675 mill. in the Directorate of Labour) See http://www.aftenposten.no/nyheter/nett/d56624.htm
3. Aftenposten Interaktiv Netthinnen 22. October 1998. (Løwer: Hanish har ansvaret) (Løwer: Hanish is responsible (Løwer was the Minister of Labour and Government Administration at the time and Hanish was the Director General of the Directorate of Labour) See http://www.aftenposten.no/nyheter/nett/d56719.htm
4. Barry W. Boehm, Software Risk Management. *2nd European Software Engineering Conference,* pages 1–19, University of Warwick, Coventry, UK, September 1989. Published as Lecture Notes in Computer Science, 387, Springer Verlag.
5. DISKOS, The Norwegian data repository for petroleum data. See http://www.npd.no/engelsk/projects/diskos/diskosfr.htm
6. Electronic Government: Cross-sectoral development of information technology in central government adminisration. Action Plan, Ministry of Labour and Government Administration, Oslo, 13 January 1999. http://www.odin.dep.no/aad/engelsk/publ/rapporter/002001-990156/index-dok000-b-n-a.html
7. *e*Norway 1.0. Action Plan, Ministry of Trade and Industry, Oslo, 29 June 2000. http://www.dep.no/nhd/norsk/p10001865/p10001876/024031-990036/index-dok000-b-n-a.html See also http://enorge.dep.no/
8. Erfaringer fra store statlige IT-prosjekter (Experiences from large government IT projects). Report 1998:6, Statskonsult, Directorate of Public Management, Oslo.
9. Innst.S.nr.190 (1995/96) Innstilling fra kontroll- og konstitusjonskomiteen om Riksrevisjonens konstitusjonelle antegnelser til statsregnskapet for 1994, Tress-90. Sluttoppgjør mellom Rikstrygdeverket og Norsk Informasjonsteknologi (Recommendation from the Control and Constitution Committee on the remarks from the Office of the Auditor General to the National Account 1994, Tress-90 Final agreement between the National Insurance Administration and the supplier: Norsk Informasjonsteknologi AS)
10. Intervjuer om IT og IT-kompetanse: Hvordan IT-medarbeidere og ledere mener at statlige IT-virksomheter skal få dekket sitt behov de neste 5–7

årene (Interviews on IT and IT-competence: how the IT-workforce and managers think government agencies can meet their needs in the next 5–7 years). Note 1999:6, Statskonsult, Directorate of Public Management, Oslo.
11. IT i staten 1999. (Government's use of IT, 1999.) Report 2000:08, Statskonsult, Directorate of Public Management, Oslo.
12. IT-kompetanse hos toppledere i staten: en kartlegging (IT competence among top managers in government: a survey). Note 2000:1, Statskonsult, Directorate of Public Management, Oslo.
13. IT-personell, behov og tilgang: Hvordan skal statlige virksomheter kunne dekke sitt behov de neste 5–7 årene? (IT-personnel, need and supply). Report 1999:11, Statskonsult, Directorate of Public Management, Oslo.
14. The Maintenance Agreement. Report 1998:11, Statskonsult, Directorate of Public Management, Oslo. See http://www.statskonsult.no/publik/publikasjoner/avtaler/index.htm
15. NOSIP 3, datakommunikasjonsstandarder for offentlig forvaltning. (Norwegian OSI Profile 3, data communications standards for public administration). Statskonsult, Directorate of Public Management, Oslo, 2000.
16. Tron Øgrim. Staten og nerdene: Hvordan kan statens behov for IT-arbeidskraft dekkes de neste 5–7 årene? (The government and the nerds: how can the government's need for IT workforce be met in the next 5–7 years?). Note 1999:5, Statskonsult, Directorate of Public Management, Oslo.
17. Effy Oz, When Professional Standards are Lax: The CONFIRM Failure and its Lessons. *Communications of the ACM,* 37(10):29–36, October 1994.
18. Programutviklingsavtalen (Standard agreement for program development). Standard agreement, Statskonsult, Directorate of Public Management, Oslo, 1999.
19. The Purchase Agreement. Report 1998:10, Statskonsult, Directorate of Public Management, Oslo. See http://www.statskonsult.no/publik/publikasjoner/avtaler/index.htm
20. Pål Sørgaard, IT Co-Ordination and Public Management Reform: A comparison of Finland and Norway. Research report 4/2000, Ministry of Finance, Public Management Department, Helsinki, 2000. See http://www.vn.fi/vm/julkaisut/tutkimuksetjaselvitykset/pdf/rr42000.pdf
21. Store statlige IT-prosjekter: Styring, organisering og ansvarsfordeling (Large government IT projects: management, organisation and division of responsibilities). Guidelines, Statskonsult, Directorate of Public Management, Oslo, 1997.
22. St. prp. nr. 88 (1990/91) EDB og omstilling i skatteetaten (Electonic Data Handling and reorganisation in the tax administration)
23. Leslie Willcocks, Informatization in public administration and services in the United Kingdom: toward a management era? *Informatization and the Public Sector,* 1(3):189–211, 1991.

REFERENCES

Tittel:	Country Report from Norway prepared to OECD expert meeting on management of large public IT projects October 2000
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Appendix

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