

OECD-PUMA

**Expert meeting on
Management of Large Public Sector IT Projects**

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The report seeks to describe the requirements of successful management of major IT projects in Sweden at central-government level. The structure of the report is partly influenced by the report “Managing Large Information Technology (IT) Projects in the Public Sector - Template for Country Reports” (<http://www.oecd.org/puma/Risk/template>).

1. General institutional framework

1.1. *Growing use and escalating costs of IT*

Sweden’s public administration has implemented a series of modernisation programmes, and there are more to come. Today it is, in fact, difficult to envisage developing new organisations, processes, and services that do not involve using applied information technology (IT) or, to be more exact, information and communication technology (ICT), on a large scale.

Public funds provided by taxpayers must be used efficiently and effectively. The use of IT is no exception, but is a “mystery” in the sense that public agencies’ IT investments are escalating in the absence of traditional productivity gains. This is no less true of the private sector. One major difference, however, is that public investments are openly scrutinised. In the public sector, the universal problems encountered in the management of large IT projects therefore become highly visible.

Growing, and increasingly sophisticated, use of IT has been a precondition for the government’s modernisation process. When the modernising process began, a broad platform of mainframe systems covered most of the large service functions, backed up by large databases and registers. These systems, often of the “stovepipe” type, yielded gains from mechanisation but also required significant groups of clerical employees to feed in information and perform other manual support functions.

The level of technical integration between central-government agencies and their external partners has gradually increased, first in the form of internal networks with links to other organisations for high-volume data exchange, and more recently with the gradual opening of Internet portals. This has been accompanied by means of aligning and standardising information content (identifiers, terminology, message structure) to improve inter-institutional collaboration. New information resources are being established in the form of databases, registers or other repositories, many of which are accessible to other public institutions as part of transaction or other routines.

A number of the databases linked to the major systems have also come to serve all sectors and segments of society with basic information about people, addresses, companies, property, etc. Exchange and joint use of information are facilitated by Sweden’s Freedom of the Press Act.

By 1995, 83% of state employees were already using computers in their daily work, mostly through terminals or PCs. By May 1998, the ratio of PCs or workstations to employees had passed 1:1.

By May 2000, 70% of the Swedish population aged from nine to 79 had Internet access either at home (57%), at work or at school. The percentage is steadily rising. As a result, the “digital divide” or “broadband backwater” is not seen by public agencies as a serious obstacle to the implementation of online self-services (also known as “Government Online”, “eGov” and “24/7 services”).

1.2. The government's "light touch" management model

The "light touch" is, to a high degree, a corollary of the overall picture of public administration. At national level, Sweden's 8.9 million inhabitants have at their disposal some 280 highly independent agencies (employing 225 000 people) and 11 small ministries (employing 3 000). Additional factors are that all Cabinet decisions are made collectively, and that there is a culture of compromise and consensus derived from decades of minority or coalition governments.

In terms of managing large public IT projects, the "light touch" approach is underscored by absence of IT as an item in the multi-year budget framework of the 27 expenditure areas (managed by the 11 ministers).

How the budgetary process works

Based partly on the agencies' annual reports, the multi-year budget framework is updated and critically reviewed in meetings between the Minister of Finance and the other ministries concerned. In the collective decision-making at the Cabinet's budget meeting, funding is then allocated to the 27 spending areas and, on 20 September, the Budget Bill is submitted to Parliament. By the end of December, Parliament has approved the final budget, voting on each of the 27 spending areas separately. The ministers thereafter act as their own "portfolio finance ministers" and allocate funding from the respective spending areas for individual appropriations, in accordance with the parliamentary resolution. Finally, the Minister of Finance and the Cabinet collectively review the end results.

In this process, IT-related appropriations are rarely specified. In its Budget Bill, the Government requests parliamentary approval for the maximum amount that the government may borrow on the capital market. The details are not known, but much of this borrowing is intended to fund the agencies' planned IT investments. The volume of these loans rose sharply between 1993, when the system was introduced, and 1996. The expected borrowing limit for 2001 is SEK 21 billion.

1.3. Flexibility in the agencies' IT expenditure

Extensive delegation of autonomy and administrative discretion by the government enables the agencies to decide on their own selection of premises, facilities and IT investments. Agencies are given global (framework) appropriations that they may then use for staff, premises or spending as they see fit. Even in projects involving more than one ministry, each agency must fund its own participation.

Part of the framework budget (up to 3%) may be carried over to the following year. It is also possible for an agency to "borrow" from the following year's framework appropriation. The frameworks are laid down for three-year periods. Agencies may also take out regular (five-year) loans to finance equipment. For each agency, the government specifies the upper limit for such loans. Interest payments and amortisation must be financed within this framework.

The de facto "meta-management" system employed by the Swedish Government and Parliament means that every government agency is responsible for its own activities, and also bears responsibility for monitoring and reviewing its own IT projects. There is, moreover, no overall reporting on the relevance of IT development to the efficiency of public administration. This is a neglected issue, and only a few agencies have principles and systems for dealing with it. The neglect may be seen as a result of an adherence to the historical traditions of Swedish public administration.

Several features distinguish Sweden's government and public administration from those of other countries. Back in the early 17th century, a principle of autonomous agencies was introduced, and the monarch's power was separated from that of the civil service. This 17th-century principle of central management is still being applied in the modern "cyber era".

In contrast to the "executive agencies" that have been created of late in many countries, Swedish central-government agencies' autonomy is protected by the Constitution. Autonomous agencies do not preclude government control, but it must be general and based on:

- legislative provisions and appropriations approved by Parliament;
- the government's interpretations of the law in its instructions, and specifications in its official appropriation documents;
- appointments — nowadays confined to Director-Generals, board members and judges;
- discussions with agency representatives concerning matters not relating to application of law or the exercise of authority.

To the trained eye, the agencies' freedom and independence with regard to development of large public IT systems are apparent in the use of *should* and *allow* rather than "shall" and "enforce" in the following excerpt from the government's latest Budget Bill:

The development of IT systems, including system components, makes up an appreciable share of expenditure under the government budget. Besides the above statements concerning the separate spending areas, the government particularly wishes to emphasise the importance of efficient planning and management of IT development in these areas. Project planning *should* be designed so as to *allow* monitoring to check that systems meet the schedule and content requirements laid down in the budget. All procurement and development of IT systems must yield clearly defined benefits to public administration and its customers, and must be cost-effective for the state. This means that consultation between agencies *should* take place in connection with system procurement and development so as to *allow* co-ordination benefits...

Swedish Budget Bill, 2000 (author's italics)

1.4. Enforced quality assurance

In the event that the government is not fully convinced of an agency's IT development thrust, the Swedish National Audit Office and the Swedish Agency for Public Management can be commissioned by individual ministries to carry out reviews or audit projects of particular importance. The Swedish Agency for Public Management has recently received several such commissions. These are not project reviews proper, but rather an aspect of enforced quality assurance (a second-opinion approach which is not always appreciated by the first-opinion agency).

The overall lesson is that major IT projects frequently miss their targets, are difficult to manage, and entail substantial unforeseen costs. This can be established through traditional post facto project reviews. The second-opinion approach is an attempt to get to grips with the problems before they become insoluble.

Three cases exemplify the meaning and results of enforced quality assurance, as carried out by the Swedish Agency for Public Management.

2. Cases

2.1. *The National Social Insurance Board*

In 1999 the costs of social insurance for the whole population amounted to 16.6% of Sweden's GNP. The National Social Insurance Board administers the system in co-operation with the 21 semi-autonomous regional social insurance offices (and some 300 field offices). Altogether, there are some 50 different benefit categories.

Managing all this is not an easy task, and for some years there have been complaints and criticisms in audit reports concerning efficiency, costs, and the legal rights of benefit recipients.

Time and again, attempts have been made to "tighten up" the systems, especially with regard to the use of IT. There is a widely recognised need for general modernisation, including effective and efficient IT support.

For the past couple of years, such a modernisation thrust has been under way. Known as the Development Programme, its aim is an IT-supported process of re-engineering along business lines. This is, in fact, the largest single IT project in the Swedish civil state sector.

The ministry to which the National Social Insurance Board is subordinate is, naturally, on its guard and has not issued a *carte blanche* for the Development Programme. As a precaution, the government has asked the Agency for Public Management to provide a running second opinion on the progress of the Programme.

The Agency's feedback to the Development Programme and the government has confirmed the impressions expressed by the ministry in charge. Among the problems highlighted are the two sides of the coin: over-ambitious aims and inadequate management. More importantly, the documentation on which the Development Programme was based lacked the stringency and quality needed for the government to make appropriation decisions concerning the huge investments that were planned.

In accordance with the suggestions put forward by the Agency for Public Management, the Development Programme in April 2000 started a restructuring process. This included the setting-up of brief, manageable projects and step-by-step implementation of results. Of the utmost importance is the fact that resources will be allowed to be channelled to the Development Programme only when the government is convinced that this does not interfere with the more basic task of implementing and running the new old-age pension system.

The Agency for Public Management was given the task of continuing to provide second opinions, thereby helping to ensure that the revised Development Programme works smoothly. This further work has led the National Insurance Board to concentrate on the setting up of pilot implementations, and of a new IT strategy unit.

2.2. *The "premium pension" system*

Domiciled Swedish residents are covered by the system of "guaranteed pension", which provides basic cover for people who have earned little or no lifetime income. The "income pension" system is based on individuals' lifetime income.

Each month, an amount equivalent to 18.5% of the individual's pensionable income is charged in the form of a pension contribution. Of this contribution, 16% goes towards paying for pensions for present-day pensioners. In return, taxpayers' pensions are eventually disbursed in the form of PAYE pension from the day they retire. The remaining 2.5% is deposited in personal "premium pension" accounts that can be managed by the account-holders (*i.e.* future pensioners) individually, if they so wish.

Some 65% of all domiciled residents of Sweden are covered by the Premium Pension system. From July 2001, individual account-holders will be able to change their portfolio composition (holding up to five of the 456 funds available) online, using their self-service PIN code.

To guide account-holders, each fund is described in terms of risk category (see the diagram below) and the performance, value, manager and annual management charge of the fund concerned.



The brand-new premium-pension system is a grand design, operated by the brand-new Premium Pension Authority (PPM). The initial phase of introducing the premium-pension system was completed in the autumn of 2000.

PPM's very extensive IT system, as envisaged, was not only very large and sophisticated. It also had to be created from scratch within a very short period of time. At the same time, PPM itself and the legal premium-pension framework had to be established.

Development of the first IT system never came to fruition. One reason was the underdeveloped system design specifications. Another was that the whole of PPM was in flux, and this affected the contracted system designer to some extent. As a result, the development work was cancelled.

Two years were lost and concerns were raised with regard to citizens' lost opportunity of managing their own premium-pension accounts. In this situation, the Agency for Public Management suggested that an interim system should be implemented, this being the early prototype developed jointly with PPM.

Since the prototype held up well during the roll-out of premium-pension accounts, the decision has been taken to upgrade the former "IT prototype" to a fully-fledged business system for PPM. The Agency for Public Management has been commissioned to monitor the work until its completion at year-end 2003, and report quarterly to the government.

2.3. *Civil Rescue and Emergency Planning*

The Swedish Rescue Services Agency (SRV in Swedish) is the central supervisory government authority for the rescue services. This agency promotes practice that improves accident prevention and response, and limits injury and damage in the event of accidents. It also develops methods and equipment for use by the rescue services, and is responsible for the training of all personnel in the municipal rescue service brigades.

The Swedish Agency for Civil Emergency Planning (ÖCB in Swedish) is the central authority responsible for overall co-ordination of activities aimed at strengthening society's capacity to cope with emergencies. One of ÖCB's main tasks is to guide and support civil-defence agencies in developing and implementing various civil emergency-planning measures. Civil defence in Sweden consists of planning and preparations by a number of agencies representing sectors considered essential for the continued functioning of society in times of war or in severe peacetime emergencies. An effective management and command system is obviously crucial to ÖCB.

The above two agencies report to the Ministry of Defence. However, owing to the Swedish Government's "light touch", very little co-ordination had taken place in the development of the IT-based management and command tools critical to their respective operations. It was gradually realised that the money spent on the two separate agency systems could be used more efficiently. One trigger was that SEK 100 million had already been spent on the two years' development work for the ÖCB management and command system, and that another SEK 140m was needed.

The Agency for Public Management was therefore asked to examine the possible overlap in work carried out by ÖCB and SRV. It was found that the systems do, indeed, have some look-alike features and modules. The systems will, however, be used for different purposes (and have different target groups) and could well be developed separately, without any major detriment. Thus co-ordination is not essential in this case.

More important is the implementation of the two systems, and especially of ÖCB's more far-reaching system. A fair number of public authorities will be users of, and integrated into, the ÖCB and SRV systems. In this connection, there was a deeply-felt need for co-ordination between the primary agency users and the many secondary system users (other state agencies, regional governments, municipalities, hospitals, police stations, etc). The Agency for Public Management's recommendation was that the development work at ÖCB should be put on hold pending successful pilot implementation at one of the 21 regional government authorities.

3. Lessons learned

3.1. Government dissatisfaction with roll-out of major IT projects

Reviewing some 215 large IT projects in the Swedish central government in 1998–99, the National Audit Office found that:

- of the projects that had been in progress for at least seven months, 75% had overrun their time schedule and/or budget;
- of the projects that had been obliged to change their time schedule and/or budget, 75% still had problems. Projects that had previously encountered problems continued to experience difficulties of some kind.
- projects in the area of IT infrastructure had fewer problems than projects relating to business support;
- very large projects that had undergone external audit or review also had fewer problems, or not so many problems with severe consequences.

The total cost of the projects reviewed was SEK 4.6 billion, and the average cost per project was SEK 22.4 million. Nonetheless, nearly 20% of the projects involved no organised quality reviews. These projects had more time-schedule and budget problems than the others. Systems based on software purchased on the open market also had more severe problems than others.

How does the performance of the Swedish public sector compare with that of other countries and sectors? The literature tells us that we are in good (that is, bad) company. For example, The Standish Group (<http://standishgroup.com/visitor/chaos.htm>) has, year after year, concluded (roughly speaking) that, irrespective of the soundness of project goals, international statistics for major public IT projects show that:

- 25% are not too far off target (in terms of time, budget, features and functions);
- 45% are severely crippled (in terms of time, budget, features and functions);
- 30% are complete failures (*i.e.* terminated, never delivered, never completed).

3.2. *Are we learning from failure?*

History does, indeed, tell us that we make the same mistakes over and over again. The findings from the National Audit Office and the Agency for Public Management also tells us that the risks would be reduced by such approaches as:

- short, manageable projects;
- implementing results step-by-step;
- basing development on a sound vision, not on troubleshooting;
- avoiding automatic, knee-jerk responses;
- purchasing turn-key systems;
- refraining from extensive customisation of systems purchased;
- a “slow trigger, fast bullet” approach;
- rejecting spurious or makeshift quality assurance.

At the IT project management level of Swedish central government, nodes would most likely be the response to the following table of success criteria condensed by the Standish Group from the comments of North American IT project managers (see the above website reference). The table lists the criteria in order of importance, with their respective success points.

SUCCESS CRITERIA	POINTS
1 User involvement	19
2 Executive management support	16
3 Clear statement of requirements	15
4 Proper planning	11
5 Realistic expectations	10
6 Smaller project milestones	9
7 Competent staff	8
8 Ownership	6
9 Clear vision & objectives	3
10 Hard-working, focused staff	3
TOTAL	100

3.3. *The way ahead*

The overall task of making all the central-government agencies' IT systems Y2K-compliant was seen as a matter of urgency. The government therefore temporarily dropped its "light touch" and established fairly firm and coherent Y2K process control at the agency level. The outcome was encouraging.

The outcomes of the enforced quality assurance reported in Section 2, *i.e.* the second-opinion reviews of major IT projects that were commissioned by wary or apprehensive ministries, have been appreciated by the government (but less so by the "health-checked" agencies). The lingering vibrations and subdued signals may be read as showing that the government leans more towards the establishment of more regimented and professional management procedures.

If the government decides to retain its "light touch", the tool of enforced quality assurance needs to be elaborated, refined and institutionalised. The issues requiring to be dealt with include the following:

- *IT* is not synonymous with *results*, but it is increasingly used to obtain *results*. What, then, is the crucial difference between managing business development and managing IT-based systems development?
- Is it an anachronism to budget for the *efficacy* of business development, while demanding interim reports on the *efficiency* of IT-systems development?
- What are the respective strengths and weaknesses of *auditing*, *enforced quality assurance* and *coaching*.

In the name of 24/7 services, a system of nationally networked agencies and cross-agency services is envisaged and encouraged by the government. There is, obviously, a limit to how far this encouragement can go in a "light touch" environment.

In 1994, in the early years of eGovernment, the Ministry of Finance initiated the Top Managers Forum to bring about more coherent development. The initiative was, however, weakened when in 1998 the Minister of Finance stepped down from chairing this group of agency heads. But the need for joint and enforced policy work is keenly felt by the agencies. So, in June 2000, a bottom-up approach resulted in the formation of the "State Agency E-Forum", in which agency managers identify and discuss strategic issues.

Rapid and widespread development of networked eGovernment services is unattainable unless the extensive delegation of autonomy and administrative discretion is matched by firm central management. One particularly troublesome fact is that the government has yet to devise a model for the financing of multi-agency development work.

Moore's and Metcalfe's laws regarding ever accelerating hardware performance and network usability, respectively, underscore the untenable situation of building new systems and at the same time altering development platforms and infrastructure. Moving and at the same time aiming at an independently moving target is not an easy task. Project complexity is growing, as is the vulnerability of built systems. This is clearly a risk scenario of substantial magnitude, and a scenario of Government IT management in which the 'light touch' model may have to be retired.

