NETHERLANDS

Dutch experiences with **ERP** systems

Sharing information regarding ERP implementations

The Dutch experience can be valuable to other SAIs that have plans to perform an audit on ERP systems or ERP implementations.

Other SAIs are warmly invited to contribute other (or similar) perspectives on the audit of ERP systems and SAP. Also, any other plans for audits on ERP-systems, work in progress, used frameworks and results are welcome.

The project team will analyse and aggregate the different sources of knowledge about ERP/SAP audit and draw up an overall report for the next meeting of the Working Group on IT Audit.

Characteristics of ERP systems

An ERP system (Enterprise Resource Planning system) is an organisation-wide software suite with integrated functionality covering all operational management areas of all organisational units. This enables an organisation to, for example, link information on financial resources directly to information on other management aspects within one system. The integration of various functional areas within one system can provide many benefits to an organisation. Some examples are improved connectivity with both other internal departments and external organisations due to standardisation, or improved opportunities to associate financial data with policy information.

Implementation of ERP systems

Generally speaking the implementation of information systems is a complex and risky business, with common and well-known pitfalls. These apply equally to ERP implementations, which can be even more risky due to their characteristics, especially if risks are underestimated. An example of a risk that is common to IT projects, but often underestimated in ERP implementations is data conversion. Data from a legacy system has to be converted to an ERP system with great care and the preparation for this should take quite some time. Redundancy or other threats to data integrity may cause the ERP system to shut down which can be disastrous to an organisation. Another example of a common and often neglected IT project risk which manifests itself even more often during an ERP implementation is insufficient training and education of future users. The ability to work with an ERP system

takes more than understanding how to "use the buttons". Users also need to become aware of their role as (just one) link in the chain of steps of encompassing workflow. Still, training facilities often focus on buttons and the work instructions while they should rather be aimed at explaining how to work with the ERP system given the specific role of the particular user. These kinds of shortcomings tend to cause serious problems to the operational management processes that are supported by the ERP system.

A useful primer on the characteristics and some of the common risks related to ERP implementations can be found at: http://www.cio.com/article/print/40323.[1]

Dutch experiences with ERP systems

ERP at the Dutch public administration

In the late 90's of the 20th century several Dutch ministries started to reconsider their current information systems. Important drivers for this reorientation were both the introduction of the Euro and emerging insights as a result of the government accounting reform programme 'From Policy Budgets to Policy Accountability'. This programme was aimed at accelerating the process of financial accounting and to improve its quality. When considering the replacement of the 'old' information systems, many ministries started orienting on ERP systems.

In the private sector, many organisations had made the switch to ERP systems in the early nineties or a little later, the government started some years later.

ERP in regularity audits

In the findings of our regularity audits at the Dutch ministries over the past years a number of issues related to ERP systems have emerged. There were some similarities in the shortcomings found at different ministries or at different points in time. For example:

- The Ministry of Foreign Affairs (in 2002) and the Ministry of Social Affairs and Employment (in 2006) experienced **data conversion problems**.

- The Ministry of Economic Affairs showed repeated **shortcomings on authorisation management** (in 1999 and later also in 2005).

- The Ministry of Foreign Affairs (in 2002-2003) and the Ministry of Transport, Public Works and Water Management (in 2006) had **insufficient training schemes** for future users.

- The Ministry of Defence (in 2004 and 2005), the Ministry of Social Affairs and Employment (in 2005 and 2006) and the Ministry of Foreign Affairs (in 2002) were **unable to ensure the reliability of data**.

Audits in comparable areas

The implementation of ERP-systems is comparable with other government-wide renewal programmes. One example is the renewal of financial information systems at the Dutch ministries in 1993. Following that programme the Netherlands Court of Audit concluded that most ministries made similar mistakes during development and implementation of the new systems. The nature of the projects at the different ministries didn't differ very much, nevertheless most ministries "reinvented the wheel" several times.

Audit on learning aspects of ERP implementations

ERP implementations are well known for the problems evolving during the course of the project. ICT projects in general struggle with a multitude of problems, but organisations implementing ERP systems face certain additional specific problems because of the very nature of ERP systems, as we know from experiences in the private sector.

Therefore the question rises whether ministries face the same problems as the organisations in the private sector and the way they cope with those problems. The issue here is whether or not the ministries have taken the lessons learned in the private sector to heart. Also relevant is the question whether ministries learn from mistakes made by other ministries.

Audit approach

The audit of the renewal of the financial information systems we performed in the year 1993 gave us the insight into what the conditions are for successful cooperation and for effective learning from each other. The conditions, stated below, were the basis for this audit. During this audit we focussed on conditions 1 and 4:

1. Willingness by all involved parties to emphasise the common rather than the specific aspects of the different ministries.
2. Synchronisation of developments between the ministries (cooperation works best when organisations align their plans and actions and reach milestones at approximately the same point in time).
3. Sufficient staff capacity and involvement to enable effective coordination.
4. Ministries can learn from experiences to prevent repeating inefficient system development.

To see whether conditions 1 and 4 were met when the ERP systems were being introduced we interviewed staff who were involved in the implementation and studied project documents. We audited nine of the thirteen Dutch ministries, the ones that had implemented an ERP system or were about to do so.

The following questions were to be answered via interviews:

1. Which forms of trans-ministerial cooperation exist on managing IT?
2. What are the goals for trans-ministerial cooperation?
3. Do ministries synchronise their plans for ERP-acquisitions and ERP-implementations?
4. Is there a formally appointed director on ERP-acquisition and implementation of ERP systems?
5. Does a platform exist where knowledge and experiences on ERP system implementations can be shared?
6. What is the point of view of the ministry in question on cooperation with and learning from other ministries?
7. What are the three most important advantages of an ERP system?
8. What are the three most important disadvantages of an ERP system?
9. Is there any advice you would like to give to another ministry which is about to implement an ERP system?

A number of documents were studied to collect additional information. The questions we used for that study can be found in Appendix A.

Findings

Most people we interviewed during this audit emphasised that the willingness to cooperate with and learn from other ministries is increasing (see below). Still, we found many examples of problems that occurred at more than one ministry.

One example of a common problem area is the conversion of data from the old system to the new ERP system. Another one is training, necessary to enable future users to work with the new ERP system.

Data conversion

While problems with data conversion are widespread in IT implementations in general, they are particularly prominent during an ERP implementation. The reason is that the switch from a tailor-made legacy system to a standardised and integrated ERP system considerably increases the complexity of the conversion process. While most interviewees assured us that they had started the conversion being aware of the risks involved, serious problems still occurred during the conversion. These problems proved that the challenge of data conversion was recognised, but still underestimated by most of the organisations.

Another interesting finding was that most conversions were badly planned, namely during the ending and closing of the book year. It seemed an obvious choice to start a new year with a new system. But the year ending is also a high risk period of time because the closing of a book year always comes with high time pressure. This means that a conversion at the end of year is far more risky then during the rest of the year.

User training

Problems with training of future users of the ERP system also often occurred. In many cases the required level of quality, which should enable the future users to work with the ERP system properly, could not be reached. In some cases the format of the training did not match future users' needs, and in other cases the contents of the training did not convey the information necessary to enable the future users to work with the system. These problems often resulted in reduced reliability of data.

Cooperation and learning

Respondents indicated that the level of cooperation between ministries is increasing. They emphasised that ministries 'find' each other more often then they used to do. They do so mainly using existing, informal, bilateral relations.

Also, a 'sleeping' SAP user group has been re-activated by the Ministry of Transport, Public works and Water management, as a platform for discussion between government SAP users. Our respondents, however, interpreted cooperation as sharing and copying technical designs rather than sharing good or bad implementation practices. Also, the trans-ministerial SAP platform excludes ministries that use an ERP system from another vendor, such as ORACLE or Peoplesoft, even though these ministries face similar problems. There is also some debate about whether this platform is the best way to share experiences about implementing and exploiting an ERP system. Some respondents agree, but other respondents think that matters on ERP should be discussed at a financial platform, rather than a technical platform. This discussion derives from the question whether ERP (or SAP) is a technical issue, or an organisation or operational management one.

Conclusions

We concluded from the audit that most ministries suffered serious problems, mainly in the areas of data conversion and user training.

We also concluded that many ministries suffered problems that were similar. We therefore believe that at least some of these problems could have been avoided or mitigated by cooperation between ministries and by learning from each other.

Regarding cooperation we concluded that the willingness to cooperate between ministries is increasing. Platforms where knowledge about ERP systems can be shared have been created – or have been brought back to life. Although these are promising initiatives, the platforms often have a technical perspective instead of a business perspective, which is not surprising because often the IT departments of ministries are involved with these ERP platforms.

Regarding learning however, we concluded that the extent to which ministries learn from each other's mistakes – or from problems that have occurred elsewhere – is limited. Ministries do learn to a certain extent from the mistakes they have made themselves, in that particular case, but the learning is limited to that.[2] O

2   This is called first order (or first loop) learning, which results in doing things right. While it may result in a project that closes successfully, first order learning is no guarantee that insights from one project will be transferred to other, similar projects. This calls for transfer of insights gained in solving one problem to other similar problems, which is called second order (or second loop) learning.

Appendix A: Dutch questionnaire ERP implementations

Actual situation

As a first step the actual situation was explored. The central question then was which ERP systems were being used by which ministry and since when. The following questions provide that necessary insight:

1. Does the ministry use an ERP system? (for each ministry) (if Yes, proceed to question no. 2; if No, proceed to question no. 5).

2. Which ERP system does the ministry use?

3. How long has the ministry been using an ERP system?

4. Which functional areas of the ministry are supported by the ERP system?

5. Does the ministry have plans to eventually implement an ERP system?

6. If Yes, which ERP system?

ICT Vision

To use, or not to use an ERP system is a strategic choice. Such a choice should therefore be a part of the ICT Vision of a ministry, underpinned by reasons for this choice.

7. What were the reasons for the introduction of an ERP system?

8. Were initiatives by other ministries considered during the decision-making phase?

9. Were other ministries consulted during the exploration phase?

Information analysis

The environment, considering all relevant aspects, has to be explored in order to determine which transformations have to take place. These changes can be organisational or process changes. Also, a system requires a minimal set of conditions to be met.

10. Were information analyses from other ministries used during the phase of information analysis?

11. Were evaluations from other ministries used during the phase of information analysis?

12. What were the reasons for doing or not doing this?

Package selection

After the decision to introduce an ERP system to support operational management has been made the phase of package selection starts. During this phase the choice of a specific ERP system is made.

13. What were the reasons to choose a particular ERP system?

14. Were considerations from other ministries taken into account when the choice of an ERP system was made?

15. Has there been contact with other ministries during the package selection phase?

16. Were initiatives taken during the phase of package selection to select and acquire an ERP system cooperatively with other ministries?

17. What were the reasons for doing or not doing this?

Realisation phase

An ERP system doesn't have to be 'built' because a working system can be bought 'off the shelf'. An ERP system, however, does need to be customised to meet the specific requirements of an organisation by setting the parameters. Modifying the source code is possible, but also risky and therefore not desirable, but by setting parameters an ERP system can be customised to organisational requirements to a large extent.

18. Were system designs from other ministries taken into account, or even copied, during the realisation phase?

19. What were the reasons for doing or not doing this?

Implementation phase

When, in the implementation phase, the ERP system goes live and is presented to the users, aspects such as data conversion, user authorisation and training play an important role.

20. Which strategy underlay the ERP system implementation?

21. What went well during the implementation of the ERP system?

22. What went wrong during the implementation of the ERP system?

23. Were other ministries' approaches to the implementation of ERP systems taken into account?

24. Were other ministries' evaluation material used during the implementation of the ERP system?

25. What were the reasons for doing or not doing this?

Matthijs Kerkvliet MSc MPIM
Matthijs Kerkvliet is an auditor with the Netherlands Court of Audit, currently working on an audit of records management / sustainable information management. He is interested in the area of information management and its relation to government policy and public organisations, and has a special interest in ERP-implementation issues. Before joining the Court he was involved in a number of ICT and information management projects in the public sector. He obtained a masters degree in Public Information Management at TiasNimbas Business School in Tilburg (2007) and a Master of Science in ICT in Business at the University of Leiden (2005).

Thomas Wijsman
Thomas Wijsman MA is a project manager with the Netherlands Court of Audit, coordinating IT audits. An auditor since 1986, his focus since the mid-nineties is mainly on IT deployed by Dutch ministries and public bodies. He has a masters degree in psychology/educational science, a higher educational degree in IT, and a post-graduate degree in IT auditing. He received his certification as a qualified IT auditor from NOREA, the professional association for IT-auditors in the Netherlands. He is a member of NOREA's editorial staff and Technical Committee, as well as the coordinator of a working group of government IT auditors.