

***Why IT-projects fail: the inter-organisational and international dimension.***

*Paul Mantelaers<sup>1</sup>; The Netherlands Court of Audit*

***INTRODUCTION***

Both the private and the public sector have an increasing need for information systems that transcend national boundaries (Transnational Information System, or TIS for short). Economic and political developments create this need, while information and communication technology now offers solutions that enable processes and tasks across organisational and national boundaries. The European Market for persons, goods, capital and services poses a good example.

Development and management of a TIS is far from straightforward, though. The inter-organisational and international nature of these systems introduces various difficulties. One major explanation for this could be that the parties involved are partners of an equal standing, without formal powers over each other, and with full autonomy with regard to their own proprietary information systems and work procedures. Another area of potential difficulties is the international context, which introduces cultural, legal and language difficulties among participants.

Four cases were studied to identify problems that occurred during the development and management of TISs. This paper presents the conclusions drawn from this analysis. The final paragraph discusses the relevance of this knowledge, for both the individual SAI's and the INTOSAI IT Committee.

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<sup>1</sup> The research covered by the paper was done while the author was associate professor in Information Management at Delft University of Technology.

## *ISSUES ADDRESSED IN THE EMPIRICAL STUDY*

There is substantial practical experience with TIS. In 1997 about 30 TIS were operational or under development within the public sector in the European Union alone. The resulting experience and knowledge tend to remain with the organisations involved unless an attempt is made to collect, analyse and generalise the lessons learnt by individual organisations. For this reason it was decided to conduct an empirical study of a selection of TIS projects.

One way of studying TIS issues is to follow a layered approach, distinguishing issues in the informational, organisational and institutional domains. This conceptual framework will be used in this paper to present difficulties that surfaced and their possible solutions as devised during the process of development and management of TIS.

The '*informational domain*' concerns data, procedures and people as well as the technical aspects of hardware, software and communications.

*Organisational issues* refer to the way in which individual organisations need to adapt organisational structures, processes, regulations, skills, standards and ways of working to conform to the TIS.

*Institutional issues* concern policy identification, political or competitive power issues, as well as the development and implementation of decision making arrangements among participating organisations in order to ensure that the new order is accepted, adhered to and is made to operate effectively and continuously.

A second dimension in this paper concerns the various phases of the systems development process: from identification of the need for a TIS through to the management of an operational TIS. These distinct phases will be used to categorise difficulties according to stages of TIS development.

A third way of looking at the TIS area is to determine whether TIS issues lie in the interorganisational domain or in the international one.

### *MAIN TIS ISSUES*

#### *Informational, organisational and institutional issues*

During development and management of TIS difficulties in all three categories arise. Some problems are clearly created by and because of the TIS; other problems exist regardless of the TIS.

Important *informational problems* are: technological limitations to development, insufficient local sophistication in terms of IT-infrastructure, applications or ability to collect data, the technical complexity of an integrated system, and the diversity of systems to be connected.

*Organisational problems* are: unequal distribution of costs and benefits, and the lack of a transnational organisation that can take charge of TIS management.

Important institutional problems that occurred are: low priority given by (all or some of the) individual participants to the problem to be addressed by TIS, disagreement among various local organisations about the responsibility for information (local power issue), lack of consensus about the degree of centralisation, fear of losing autonomy, legal procedures concerning data and privacy in various countries, and cultural/language differences between countries.

Informational issues need not be persistent bottlenecks. Although technical problems occurred in reality, they are not necessarily long-term difficulties. Shortcomings such as insufficient sophistication in data collection abilities or inadequate IT infrastructures for instance, tend to fade over time as individual organisations or

countries develop their systems. Similarly, technological limitations tend to be overcome as time passes and new developments become commercially available. Incompatibilities between systems of the various partners also diminish as a result of increasing standardisation of products.

Organisational issues are of a different kind and are substantially more difficult to tackle. Unequal distribution of costs and benefits of TIS and the lack of transnational bodies to develop and manage TIS can come to stand in the way of smooth co-ordination and co-operation issues. Co-operation on the level of the board of individual organisations is a prerequisite for the concept of a meaningful TIS to evolve and co-ordination of activities is necessary for the development and management of the actual TIS itself. In order to gain co-operation of individual organisations it is important to ensure that benefits are shared or, at least, that costs are borne primarily by those who are to gain most of the TIS. The absence of transnational organisations inhibits fast or easy TIS development; a transnational body is particularly valuable for co-ordinating day-to-day TIS affairs.

Institutional problems may have been latent prior to TIS development and manifest themselves during the discussions about development and management of the TIS. Such problems are not necessarily directly concerned with the TIS, but may affect TIS indirectly. Clearly, existing problems have to be addressed if the TIS is to be a success. An example of an existing problem that affects TIS indirectly is disagreement among various local organisations. (Potential) participants of the TIS can have disagreements about data, technical matters or policy with parties outside the TIS and such disagreements can affect the ability of the participants to participate

in a constructive way. The ability to reduce political tug of war or business competition between TIS participants or with outsiders are crucial factors for the success of the TIS. A system that is sound from a technical point of view may consequently turn out to be not feasible due to institutional obstacles.

#### *Issues in connection with the various phases of system development*

Every system moves through a number of recognisable phases during the development process; each of the phases may cause and may have to address different problems.

*System identification.* Difficulties in the identification phase appear to be inversely related to the perceived urgency of the issue that is to be addressed by the TIS. When the issue is considered important and urgent, identification of and agreement about the concept of a TIS is relatively easily reached. However, when the problem that the TIS addresses is not considered a high priority, difficulties seem to mount up and the TIS does not get beyond the 'nice idea' phase.

*Designing and building the TIS.* The difficulties at this phase of development are primarily technical in nature. The technical issues are complicated because of the great number of participants and their different requirements. The difficulties are addressed by finding a technical solution or by improved organisation of the development process. Although the problems in this development phase might seem difficult, finding solutions to the problems did not seem a major issue in any of the studied cases.

*Implementation.* When the TIS has been properly identified and has been agreed upon by participants, implementation and effective use of the developed system is feasible. The large diversity among the participants when it comes to informational

and technical sophistication and facilities, clearly hampers implementation of the full TIS.

*Management and on-going maintenance.* Management issues include ensuring that participants see to it that their local systems interface correctly with the TIS.

Furthermore they should enforce standards, promote the continuing use of the TIS, develop new functionality and increase the scope of the TIS.

#### *Inter-organisational or international issues*

Difficulties encountered during TIS development or management can be caused by the inter-organisational nature of the TIS or by its international component.

*The inter-organisational context.* Some of the problems are technical and systems issues, which might be overcome fairly easily. Other issues concern autonomy and responsibility of organisations and equality among organisations. Inter-organisational information exchange requires common decisions, consensus and commitment.

Individual organisations that feel that their autonomy is threatened or that they will not be gaining benefits on a par with other organisations, may withdraw participation or may become a difficult partner in the TIS. In each of the studied cases difficulties of this kind were found and each of these problems proved to be difficult to address.

*The international context.* The usual difficulties of operating across national boundaries were evident in all cases. Although there are international differences and potential difficulties when collaborating internationally, many organisations and the people within them accept the differences and are willing to contribute to overcoming such barriers. In several of the studied cases there was no transnational organisation, but the need for and importance of such an organisation was recognised and established. All in all, the international context presents obstacles for TIS

developments and management, but those difficulties are recognised, can usually be overcome and are addressed directly.

#### OTHER LESSONS LEARNED

Apart from the issues that had been anticipated and specifically looked for, there were other issues that emerged during the course of the study.

A major issue that emerged, was the level of aspiration of the TIS. Under rational norms we would expect organisations to aim at maximising the opportunity offered by a TIS, building a system to optimise efficiency and shared benefits. In practice, though, successful TIS organisation shows satisfying behaviour - adopting a TIS which is acceptable or 'good enough'. TIS participants cope with inherent difficulties during the development stages by lowering the level of aspiration of the TIS, be it in terms of time constraints, functionality, or the cost/benefit ratio.

From a systems development perspective, an 'optimum' TIS requires high levels of co-operation among partners and involves consensus on many aspects of the system. In the context of co-operation among independent partners it is not always feasible or desirable to achieve high levels of consensus and commitment. There are many potential kinds of disagreements and mismatches which may have the effect that the 'optimum' TIS is never built and that a TIS at a lower level of aspiration is developed and implemented instead.

A sound systems engineering approach in the development stages implies dividing a large system into more manageable sub-systems (mostly on a national scale) with well-defined interfaces between them. Sub-systems may have different architectures and/or realisations, for which the overall system acts as unifying "linking pin". Over

time, system extensions whether serial or parallel, tend to yield a complicated overall structure and eventually a major architectural redesign becomes a good solution.

Practical barriers to a TIS with a high level of aspiration include the number of participants, diversity among participants, and disagreement among them. Such difficulties and problems are intrinsic to the development and management of systems that cross organisational and national boundaries. Evidence from the four cases showed that such difficulties are avoided by lowering the level of aspiration of the TIS. It appears that for many organisations it may be more important to get a TIS of some kind implemented than to build the best possible TIS.

The level of aspiration can be adjusted in two ways: by reducing the need for consensus (for instance, by involving fewer participants or allowing participation at different levels of functionality) or by reducing the potential for conflict (for instance, by selecting enthusiastic participants only or by agreeing to a lower level of functionality). Each of the cases studied during this project showed evidence of one or more of these adjustments.

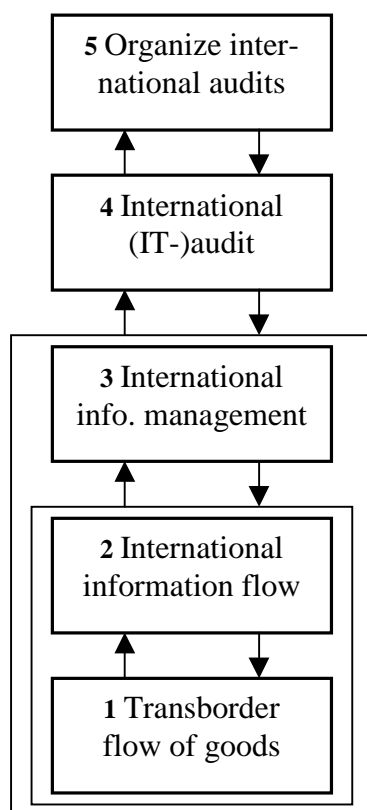
In an earlier section of the paper we described the main TIS issues and highlighted the difficulties in various domains and in different phases of development. Many of these difficulties are initially addressed by lowering the level of aspiration of the TIS thus circumventing or avoiding the problems. This is clearly a successful strategy to help get a TIS beyond its early development stages. However, in the long run the difficulties of working together with many different partners of varying ability and background must be addressed head-on. In this respect development and management of a TIS is hardly different from co-operating with partners in any other

sphere, and specifically from development and management of a non-cross-border information system.

Two more issues emerged. The first is the observation that the introduction of a TIS also involves the adaptation of national systems and organisations. The second is that development and management of TIS requires the wisdom to make the right trade-off between desirability and feasibility of solutions. This means that the right balance has to be found between issues such as technical possibilities, costs, organisational competencies, power etc.

#### *CONCLUDING REMARK*

Within the European Union, but also world-wide, the transborder flow of goods,



persons, services etc. (depicted as level 1 in the figure below) is increasing. This requires an increase of the international flow of information (level 2). In the literature, these developments are labelled with concepts like globalisation, internationalisation and virtualisation. The transborder flow of information requires international information management (level 3), which includes the planning, development, implementation and maintenance of computerised (and other) information systems. The auditing of the international processes at all three levels

requires international co-operation between SAI's. These international audits could

benefit from guidelines as to the various aspects of their organisation. The INTOSAI IT Committee can consider to take the initiative to investigate the feasibility of such guidelines.