

Annex C3 – Case Study Finland

Annex to: Does e-government pay off?

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1 TYVI and VAHTI Finland

TYVI and VAHTI, enviromental compliance and monitoring system

1.1 Background information

Objectives

TYVI (flow of information from customers to authorities) is a one-stop-system for business to government communication. Customers can send information (for example taxdeclarations) to the authorities and other organisations that collect statutory data. It is Finland's most widely used e-government service.

In short, objectives of TYVI were¹:

- Providing electronic data transfer with standard interfaces
- Offering one joint operational platform for all authorities
- Elimination of manual work by simplifying the exchange of information
- Facilitating better use of information
- Reduction of costs for customers (applicants)
- Convince customers to provide data electronically

The Ministry of the Environment is one of the using authorities. A custom-made service has been added for this ministry: VAHTI.² VAHTI stores all relevant environmental information filled in by customers (polluters) and authorities in a databse. The objective of using TYVI and VAHTI was to make reporting easier for customers. Furthermore, the objective was to help regional centres (which are the executing bodies of the ministry) with decision making and control, and create an integrated tool for all participating backoffices.

Motives for TYVI and VAHTI

The demand for the TYVI-service came gradually. The main problem was the administrative burden (gathering of information) for companies. Companies used many different systems which often did not fit the standards of authorities. The demand for TYVI was increased by the costs suppliers were facing.

In Finland polluters are obligated to report information concerning their emissions. The Regional Environment Centres (REC) check the information and act if necessary. This was a time consuming process for the polluters as well as for the ministry, since it was done manually using paper forms. Furthermore, regulation is expanding (because of EU-regulations for example) which means more and more information will have to be reported in the future. Electronic reporting makes it easier for customers to

¹ Backoffice re-organisation. Danish Technological Institute and Institut für Informationsmanagement Bremen. 2004.

² VAHTI should not be confused with the security co-ordinating group of the Ministry of Finance: VATI. VATI is an organisations for cross government ICT and management information co-ordination.

report (which is obligated by law) and monitor the history. For the REC's inspectors it is easier to monitor the environmental status, and paper forms no longer have to be typed over. Large companies have to report every month concerning the level of compliance, and instantly in case something goes wrong, and limits have been exceeded. The State Environment Administration used its own electronic data collection system before joining TYVI. The main reason for joining was the increasing costs for the ministry to develop and maintain the system itself.

Organisations involved

The Ministry of Finance was the initiator and has a co-ordinating responsibility for TYVI. The first authority to join was the Tax Administration. Since then several other public authorities have joined TYVI, for example Statistics Finland, the Customs Agency and the Ministry of the Environment. The number of authorities joining is still rising, meaning the services offered via TYVI will also rise. There are four private TYVI operators. Users can choose their own operator, since they all use the same standards. For VAHTI, however, there is only one operator involved, Elma. The REC's and the Finnish Environmental Institute (both related to the Ministry of the Environment) are responsible for the VAHTI-datasystem. Customers in this example are farmers, SME's but especially larger companies.

National e-government context

The success of TYVI and VAHTI is not an exception in Finland. Overall, the e-government strategy and electronic public services are well developed. The vision for the development of e-Government in Finland is to provide secure and user-friendly online services for public administration, in order to save trouble and expense for its customers; to empower the citizen, and support the competitiveness of Finnish firms.³ A number of activities are proposed within four action lines:

1. Reforming administrative activities and processes;
2. Encouraging the supply of and demand for online services;
3. Improving access, usability and end user competence;
4. Co-ordination.

1.2 Process description

Actual situation

In this case we study environmental permits which are issued by The Permitting Offices and RECs and stored in the case management system and linked into the VAHTI-datasystem. Customers may be farmers, SME's or larger companies. VAHTI contains environmental information (e.g. permits, pollution reports, decision documents).

The clearinghouse-concept of TYVI fits like a module to many different systems. TYVI is a concept for electronic data interchange between customers and public au-

³ eGovernment Factsheet Finland at <http://europa.eu.int/ISPO/ida>

thorities. Technical changes are unnecessary, the conversion is carried out by service operators. TYVI is free of charge for the suppliers of information, however, suppliers have internal costs (mainly in the beginning) for producing information in the format needed in the TYVI service. The receivers pay the TYVI operators for the cost of the service. Users log in and fill in the forms they need. The user can also view the previous information (for re-use or control, only in TYVI-VAHTI system). After filling in the form and saving it, the service automatically checks before sending a message to the backoffice (which is the inspector in charge of the customer). The model is summarised below.

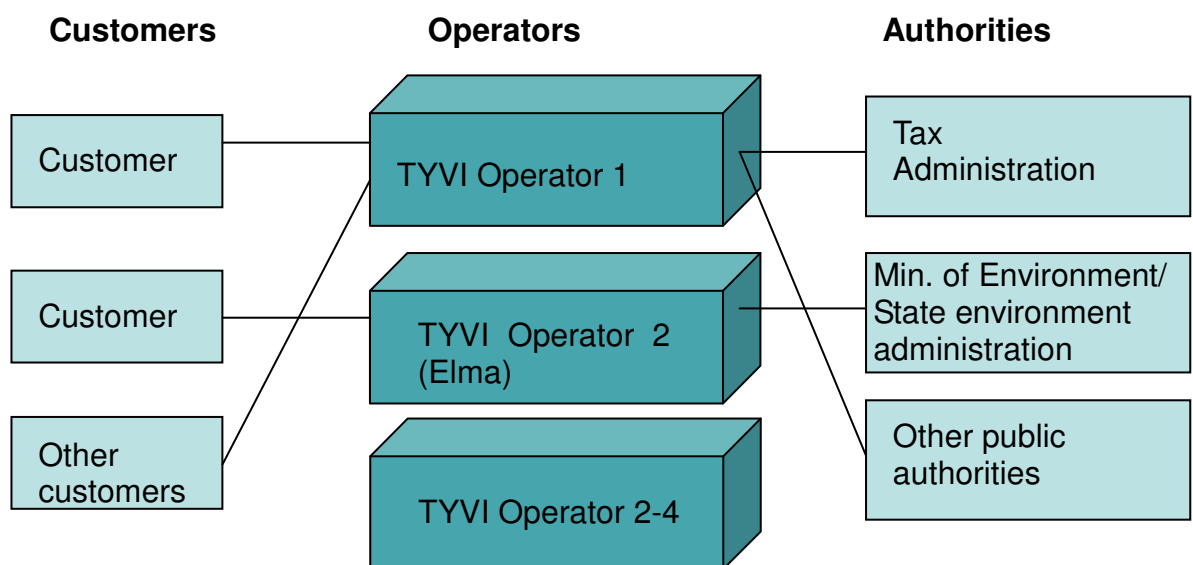


Figure 1: The TYVI-concept

VAHTI is a customer data system and a case management system. When customers report by means of TYVI, inspectors receive an automatic notification and can check the data, before data are stored in the VAHTI-datasystem. The process or business-model of TYVI and VAHTI is summarised in the figure below.

Regarding VAHTI, forms may be filed using TYVI: periodical environmental reports (production, fuels used, emission into air and into water, and waste generated). Customers have access to the forms using TYVI. The customer only fills in the necessary information and sends it to TYVI. After validation by an REC inspector, the information is sent to, and stored in VAHTI. Therefore, it is also possible to make a specific analysis by combining information, for example about pollution by one company in different areas or about pollution in a certain region. The information can also be used by the applicants, in order to monitor their own situation.

VAHTI covers information for regional centers, the Finnish Environmental Institute and the ministry of the environment. Some municipalities (on a voluntary basis) and

other partners are connected as well. Organisations such as Statistics Finland can also use the information to make specific reports.

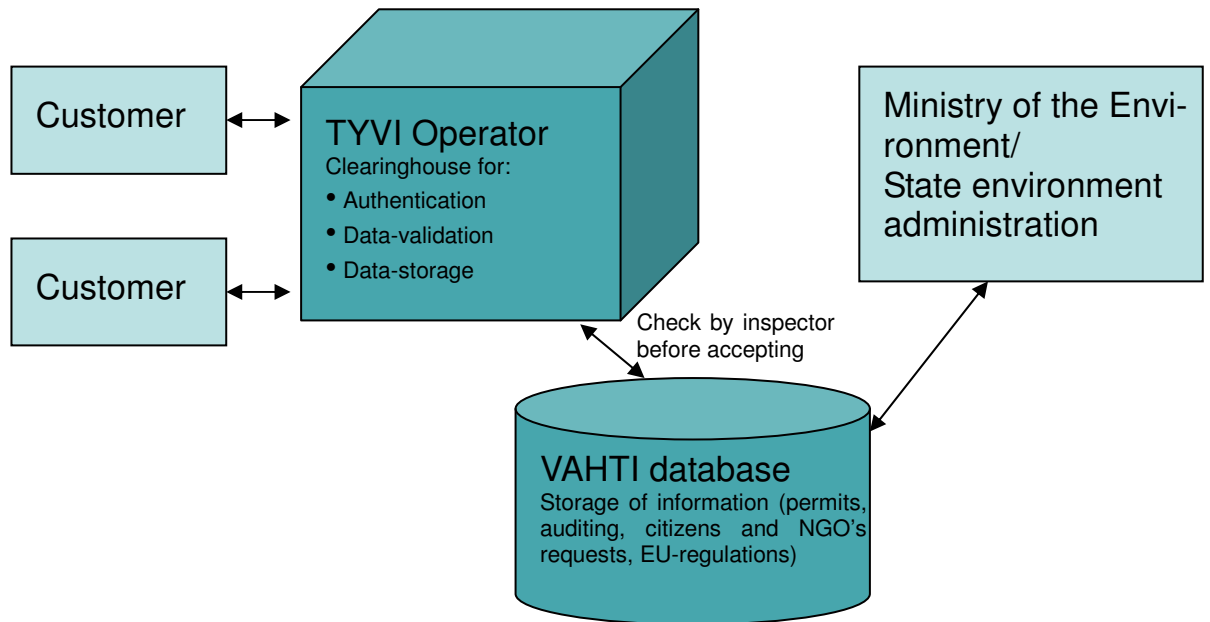


Figure 2: The TYVI and VAHTI service

Main differences

Regarding TYVI, every public organisation used to have its own ICT-department and systems for communicating with customers. There were many points of contact between customers and public authorities, data were collected using different forms (including paper forms), and different communication standards. Although the information collected was partly similar, public authorities did not share information.

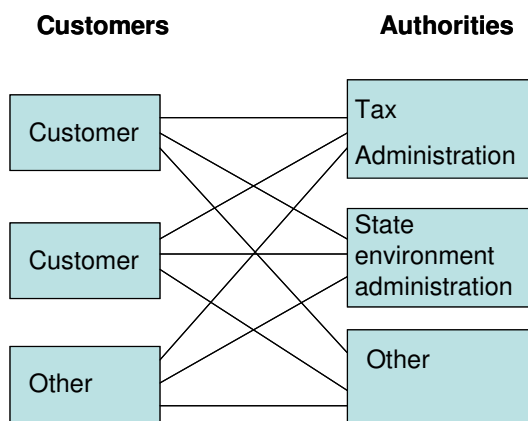


Figure 3: Former situation (without TYVI)

With respect to VAHTI, the state environment administration used its own system and electronic forms. Maintenance was time consuming, and became too difficult. For

companies, the introduction of VAHTI brought along a different way of reporting. Before, information was manually processed. Now, information can be filed using the electronic form which is sent through TYVI. Since it is necessary to collect information from several databases, some companies have adapted their own systems to VAHTI. Especially larger companies have made some modifications to their own systems in order to be able to easily provide the necessary data.

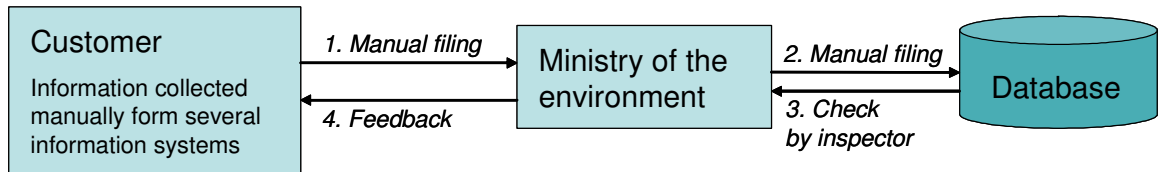


Figure 4: Former situation monthly filing (without TYVI and VAHTI)

1.3 Improvements

An important driver for developing TYVI was the will to alleviate communication with the government for customers. By introducing the TYVI model, authorities can focus on core tasks, and use operators for data interchange issues, ICT-developments and maintenance. The model is simple but highly effective.

In the TYVI model there is more co-operation between public authorities with respect to the use of shared services on the one hand and the interchange of information on the other. The Ministry of Finance is the co-ordinating organisation. All other public authorities, but also trade unions and employment and pensions organisations, can choose to use TYVI as well. This means that individual organisations do not have to newly invent services and invest in them. Government money is spent more efficiently.

Regarding VAHTI, the outsourcing of data interchange and maintenance of ICT-systems is also a major improvement. Furthermore, delivered data show a better fit with the data needed and used by the state environment administration. Transparency of compliance and quality of information is much better, both for companies and public authorities. Filing and processing is done electronically, which means process time is much shorter. Above that, customers and authorities have almost direct access to the filed information.

1.4 Returns on investment

For customers

All data have to be reported only once to a single operator, rather than to all authorities that require the same data. This limits time of contact, and customers do not have to adapt their data to the different reporting standards, file structure and data network interface. However, many organisations have had to develop their environmental data

collection and reporting systems (or manual processes), before being able to work more efficiently. This can be a time consuming and expensive investment.

Direct costs of data transfer have been reduced, both for the users (especially large organisations), and the administration. TYVI and VAHTI have also increased transparency of the environmental administration (compared to the existing three level structure). The reporting is a quite heavy routine. Now in many large companies the environmental data production system has been optimised. Data used for internal purposes and data needed by the state environment administration, are similar for the larger part the (especially for larger companies). This means reporting is now relatively easy.

Because of the use of electronic forms, the ministry has thoroughly scanned the process and forms used before digitising processes. Now, only information which the state environment administration really uses is being collected. Customers no longer have to provide information which is not relevant. Knowing that compliance reports have to be filed every month, this is considered a major improvement.

TYVI is webbased, customers can choose their own operator, and use different technical solutions, which gives them high flexibility. However, in order to really benefit from VAHTI, large companies should adapt their internal systems to VAHTI. If not, data have to be entered in the internal systems as well as in TYVI (to be stored in VAHTI).

TYVI and VAHTI are fast, secure and easy to use. Customers can file and also look up submitted filings later on. It is a one stop shop service for reporting and reduces manual work. Especially the time consuming yearly reporting is now much easier, paperwork has decreased dramatically, and reporting has become more uniform or standardised.

For organisations involved

Some results mentioned here result from a larger number of changes within the organisations. Public authorities can concentrate on their core processes and do not have to worry about maintenance and ICT related issues with respect to data interchange with customers. The authorities do not have to invest in software development. There now is a single standardised data collection system. The organisations involved do not have to maintain the system (this is done by the TYVI operators) or adapt their data communication system to those of the firms. The need for separate contact with the firms is reduced. TYVI requires minimum investments for authorities, since the operators invest in the development. Authorities pay for each file transferred.

Many paper forms used to come in every month at REC's. The checking and typing over of these data was very time consuming. Now data are available almost immediately after they have been sent. Since the data are checked before storage in the database, the quality of the database is high.

There is a reduction of costs for the organisations involved. The application eliminates paperwork. At first profitability was low. Since the number of companies report-

ing and the volume of services offered has risen, the revenues from TYVI are increasing too.

VAHTI makes it possible to connect information stored at different levels more easily. Handling paper forms is more time consuming and more expensive. Public authorities do not need the forms, they need the information. VAHTI concentrates on the information needed. When data do not have to be typed over, the number of mistakes will be reduced. The changing forms (which is necessary regularly) consumes less effort since forms are available electronically, and can be changed easily.

VAHTI improves transparency of the internal processes. Inspectors can do their work more efficiently, and their performance can be better monitored.

VAHTI is also editing information for national statistics and other systems. This, of course, can be improved if information is available electronically, and of high quality. The service makes it easier to adapt to a much more complicated future situation. For example VAHTI can more quickly respond to the growing need for information following the European directives.

1.5 Changes in the backoffice

Organisation

The organisational changes for authorities using TYVI are limited to the outsourcing of ICT-development (only with respect to data interchange with customers). The business model of TYVI, for example the co-operation with operators and banks (see below), is entirely new. The business model is explained in paragraph 1.2.

No real changes were required because any administrative organisation supports the model. Better control of processes is possible now, regardless of the organisational structure. For example integrated case management is more easy now.

Savings in personnel costs have been made because of the automation of some information processes. For example, manual work regarding the transfer between different parts of the backoffice has decreased.

Finances

The use of the TYVI-concept has facilitated a huge change without large investments. Therefore, the organisation could concentrate on organisational and content issues instead of data transfer technology and applications for customers. Public funding has been used to develop and start the pilot phase and for marketing. As a result of a fairly good leverage effect the organisation is almost financially independent now.

The initial investment in TYVI was € 50.000 in 1996. The Ministry of Finance continues to run the project and has spent € 200.000 for establishing and promoting TYVI since the beginning.⁴ Future investments are made by the operators.

The Ministry of the Environment could connect to TYVI and was only responsible for the costs for VAHTI and the custom-made services. About 31,000 organisations

⁴ One stop shop for companies reporting to authorities (TYVI), e-Government in Finland, OECD, 2003.

must have an integrated environment permit. For waste management, 6,000 organisations are involved. Especially with respect to periodical reports major savings can be made. The process of filing and monitoring is now more efficient. However, since legislation is growing, it is not clear how much savings have been made by using TYVI and VAHTI. To be able to benefit significantly from VAHTI, customers will have to make some investments.

Policy and legislation

The TYVI and VAHTI service fits the national policy (see 1.1). Legislation has not been changed but privacy has been an issue. The Finnish legislation makes it possible to publish all documents (including detailed information in the permits), but customers can ask to keep certain information secret. By using combined databases which enable access to different users (still one source), this issue has been resolved.

Contracts have been drawn up for the services of operators to the authorities. The users (companies) signed contracts with the operators.

New regulations should make it possible to charge businesses when they choose to file paper tax declarations. This, of course, to encourage the use of TYVI.

Personnel

A lot of administrative work has been eliminated. Inspectors can focus more on their core task since they have a better insight in information. Inspectors and customers require some training to be able to work with VAHTI. Since legislation is growing, it is not clear if real savings in personnel cost can be identified.

Information flow

TYVI is web-based (open system) and can be compared with electronic data interchange models (EDI). TYVI-operators are certified by the Ministry of Finance. Authentication is a responsibility of the operators. The percentage of customers using internet banking is very high in Finland. This means all these users already have a unique code. With respect to authentication, TYVI uses this unique bankcode, instead of developing a new authentication process. Government has made an agreement with the banks: they receive a compensation for every transaction using the code.

Technology

Future developments have been taken into account in building the system. Therefore, TYVI is constantly evolving, new services will be added regularly. VAHTI uses intranet technology, data are stored in SQL-server. Forms or XML-files can be sent through TYVI, and are automatically stored (after validation) in VAHTI.

The Ministry of the Environment used to have its own communication standards. According to the ministry it was a miracle this system worked. Now, the operators have responsibility for the systems.

Communication

The marketing of TYVI to companies needs to be improved. At the moment 47% of the SME's know what TYVI is and 56% of this group is using TYVI. However, since the start the use of TYVI has grown quite fast. Many authorities have joined, and also the number of customers reporting through TYVI has increased. It is not mandatory to use the electronic forms. Some customers still use the paper forms. An effort will have to be made to convince customers to use the system. One way to increase the use is by approaching intermediaries. For TYVI there are about 5,000 accounting offices that deal with applications for customers, for VAHTI this number is about 200 consultants

In case of VAHTI, the Ministry of the Environment wants to choose an assertive approach. The monthly reports have to be submitted electronically in the near future. For the evidence based reporting (reporting after an incident) fax and phone are used as communication channels because it takes one night before electronically submitted reports reach the inspector. According to the compliance monitoring guidelines, inspectors must react on reports on the day of reception. If these technical problems can be solved, in the future electronic filing will be the preferred channel. Regarding VAHTI, at the start there was a group of 10 users, this has grown to about 2,000. The system has about 800 users a day.

1.6 Change approach

TYVI and VAHTI are a successful example of the use of ICT to improve efficiency and effectiveness of government processes. The Ministry of Finance had the initiative to start with TYVI, and a co-ordinating role. The idea was not to involve as many authorities as possible, but rather to develop a business model that would be beneficiary for as many authorities as possible. As the number of authorities grows, the number of services grows and more customers will communicate through TYVI.

TYVI is running since 1997. An evaluation has been carried out in 2000 and based on the result, changes have been made.

For VAHTI the Ministry of the Environment decided to connect to TYVI after the maintenance of their own systems grew out of proportion. In developing the concept, they have co-operated well with the customers. Although the industry is rather conservative, ambitions were quite innovative.

Some agencies have been reluctant to adopt new standards and principles. Another barrier is the lack of co-ordination between brokers and authorities. Since electronic data exchange is not obligatory, operators have no real reason to co-operate yet. This can affect the quality and effectiveness of the service. Competitive behaviour of the brokers can also negatively affect the service. (Brokers are paid according to the volume of data they handle. A regulatory framework should promote co-operation between brokers). The development of software that can transfer data without the need

for intermediaries is a possible threat. A rethinking of functions and roles would be in order.⁵

Because of this lack of co-ordination, in case of VATHI, the Ministry of the Environment has chosen to work with a single operator. However, one disadvantage is that customers cannot choose their own operator for communicating with the Ministry of the Environment and the operator. Furthermore, the idea of having more operators in order to increase competitiveness and to ensure future innovations has been abandoned. However, before making decisions about the TYVI-operator the Ministry of the Environment invited all TYVI operators to supply systems, based on this one operator was chosen. The TYVI-VAHTI system is much more than the basic TYVI-system, and, therefore, it would become extremely costly to develop the same system by all TYVI-operators.

Although few errors have been made in the process, one critical error in judgment was the architecture of VAHTI. Instead of analyzing the desired functionalities in advance, first a technical solution had been developed. This solution did not fit the daily practice. First, a business model should be developed.

1.7 Main findings

The following table summarises the most important improvements, returns on investments and changes in the backoffice, as described above.

Improvements	<ul style="list-style-type: none"> • Business model including operators as intermediaries for data interchange • Forms online • Sharing data • Shared services • More co-operation between public authorities, and between government and private organisations (banks and operators)
Returns on investments	<p>For customers:</p> <ul style="list-style-type: none"> • Reduced process time • Cost reduction of data transfer and the filing process • Higher transparency with respect to environmental administration and stored information (re-use, control) • Tracking and tracing <p>For organisations involved:</p> <ul style="list-style-type: none"> • Less points of contact • Higher quality of data (less mistakes) • Reduced paperwork • Cost reduction • Customer satisfaction • Easier to adapt to future complexity

⁵ One stop shop for companies reporting to authorities (TYVI), e-Government in Finland, OECD, 2003.

<p>Changes in the backoffice</p>	<ul style="list-style-type: none"> • Organisation of TYVI (clearing house) and VAHTI (content) • Businessmodel including co-operation between authorities and between authorities and the operators • Communication with customers • Cost reduction
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Main successfactors for this case

Looking back, the following aspects are typical for the TYVI and VAHTI-case, and have contributed to its success.

Take the initiative and get started

TYVI now represents the needs and objectives of Finnish government as a whole. Many authorities use the TYVI-service. Since it is difficult to unite the different interests of the various organisations involved the ministry took the initiative to get started, take some risks and invest.

Flexibility

TYVI is innovative because it integrates a flexible ‘clearinghouse’-solution for a large number of users, still offering great flexibility to authorities. Finnish experience supports the development of a common platform or clearinghouse more or less similar to TYVI. The TYVI service has reached the main objectives by providing a low cost and simple solution easy to implement, and easy to adapt to future changes.

In VAHTI, information is integrated in a central database. VAHTI is transferable since it is based on common technology, international classifications and European legislation. In a fast changing and complex technical environment the use of an external electronic data transfer service with standard interfaces is a critical successfactor. One of the best features of TYVI is that it works with the necessary high number of technical and organisational combinations.

Co-operation

In the TYVI and VAHTI case co-operation at different levels is a critical characteristic of its success. First of all, the co-operation between the using authorities regarding TYVI (public authorities and other agencies) is important. Although the Ministry of Finance acts as the co-ordinating ministry, many other organisations are involved and share services and data. Secondly, there is co-operation between authorities the operators with respect to the development of the TYVI-concept and custom made services. Thirdly, co-operation with banks regarding the use of an already available authentication method is an important condition and successfactor.

To complement, VAHTI covers information for more organisations: regional centres, the Finnish Environmental Institute, the Ministry of the Environment and some other partners. The co-operation with customers is less intensive, since this was mainly set up in the development phase of TYVI and VAHTI.

I Appendix I: list of literature and sources of information

Finland

List of Literature

Backoffice reorganization. Danish Technological Institute and Institut für Informationsmanagement Bremen. 2004.

One stop shop for companies reporting to authorities (TYVI), e-Government in Finland, OECD, 2003.

Websites

www.tyvi.org

www.vm.fi

www.ymparisto.fi

www.elma.net

europa.eu.int/ISPO/ida

Interview partners

Ministry of Finance

Mr. S. Kurkinen, counsellor

Ministry of the Environment

Mr. M. Hietamäki, environmental counsellor

Elma Oyj Electronic Trading

Mr. T. Björklund

Mr. Mika Eerola

Stora-Enso Ltd. (user)

Ms. T. Suur-Hamari

Vice President Environmental Affairs