eGovernment
Interoperability at Local and Regional Level

Good Practice Case

Civil Registration in German Regions

The example of Lower Saxony

Case Study

30 September 2005

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1. Civil Registration in German Regions – the example of Lower-Saxony

1.1 Case Summary

The civil registration in Germany is characterised by its federal structure. I.e. the State provides the guidelines for civil registration, the Federal States are the legislators that convert these framework conditions in federal acts, and the local registration offices are responsible for service provision. This has led to many differences in the proceedings and processes among the registration offices in the past. To overcome this structure, regional initiatives emerged using standardised formats to enable electronic data exchange among civil registration offices; first within the borders of the Federal States and then, under the influence of two meanwhile legalised standards for data-exchange and civil registration messages, across the regional borders. What started differently in the various Federal States due to different software systems, legislation and financial resources, turned into a rather coordinated project within Germany, called XMeld.
Basically, the content-related standards for messages and proceedings in the civil registration are defined by the standard called OSCI-XMeld. To securely exchange these messages among citizen, businesses and administrations, a special transport mechanism is needed. This mechanism is described and standardised by the OSCI-Transport protocol. In the following, both standards together will be referred to as "XMeld".
While the Federal States can internally still use their own system for the electronic exchange of messages in the civil registration domain, the exchange across the Federal States based only on XMeld has to take place by the beginning of 2007. The regional project MOIN! located in Lower Saxony will serve as one example in Germany already employing XMeld within the regional borders. Interfaces to different registry software systems have already been tested there and are in practical use and will be offered also to other authorities responsible for civil registration.

XMeld aims at implementing vendor and product independent solutions in order to execute the amended German law providing guidelines for the civil registration (MRRG: Melderechtsrahmengesetz). The basic principle of the XMeld-project is the bi-lateral exchange of registry data between citizens and the public administration and among public administrations via the OSCI-Transport protocol. To exchange digitally signed messages in accordance with the German Signature Act, this protocol has to be endued with cryptographic mechanisms. In addition the messages have to be structured so that subsequent processing of the messages is possible without any cross-media conversion. This is enabled by OSCI-XMeld standard, which is the basis for the integration of registry data in different systems.

The development of XMeld is subdivided into several steps resulting in ascending versions of the standard. Each version is a refinement of the previous one and extended by further proceedings. By end 2006, XMeld in the version 1.4, then covering all business processes within the civil registration, will be completed.

The standardisation approach of XMeld covers all Germany. However, due to the differing legal rules, strategies and used technologies within certain Federal States, only the common rules and processes in charge of the Federal Government will be implemented. I.e. Federal State specific rules and processes are not subject of the XMeld project, but the Federal States have to take care of the connectivity of their own civil registration system with the XMeld specifications.

Basically three category groups within the civil registration are concerned with the introduction of XMeld. Beside the registry information service online, this is the change of address (in case of relocation) via the internet and the automated exchange of data among the German registration offices.

What has started at regional level has finally led to a nation-wide standard. XMeld is seen as forerunner for the employment of standardised workflows for bi-and multi-lateral communication based on XML and OSCI in Germany. Extensions of the standards for other purposes like taxation features are already on the way. One of the biggest successes was the legalisation of OSCI-XMeld and OSCI-Transport as compulsory standards for data exchange in the civil registration. Other initiatives, combined under the umbrella of XÖV projects (XML in public administration), are already following this example. Besides, international registry information is also enabled via XMeld, since XMeld is a partner of the RISER project, a project of the European Commission enabling pan-European registry information by "connecting" national civil registration data.

1.2 Problem addressed

1.2.1 Specific Problem

In the area of civil registration, three basic tasks are of primary interest: providing facilities for the change of address of residents, for registration information about residents and for the data exchange among registration offices.

The German law stipulates that every German resident has to be officially registered at the locality of residence. I.e., in case of relocation, every citizen is obliged to register his new address at the local registration authority. In addition this authority has to de-register the citizen at the registration office of the former locality of residence. Thus each registration authority runs and maintains its own citizen register where the changes are entered. This means, the personal data of all German residents are kept in decentralised local databases. In order to enable changes across the different local registration offices bi-lateral communication has to take place.

With the amendment of the German law providing guidelines for the civil registration (MRRG: Melderechtsrahmengesetz) in 2002, the legislator provided the possibility for extensive and secure eGovernment in this basic and central part of public administration with various authorities on different levels involved.

Data security and privacy is of highest priority in this rather sensitive area of sovereign duties and public interest in Germany. In order to guarantee an economic implementation of this act, the IT components for the transmission of messages between the various registration offices had and still have to be coordinated.

Thus, the main challenges within the XMeld project are:

- to implement an organisational structure enabling the outreach of a local or regional solution towards a nation-wide standard.
- The creation of a directory containing the access parameters of all the local registration offices in order to exactly identify the receiving authority.
- The definition of contents to be exchanged, i.e. what are the proceedings in registration services. There is no common set of such proceedings so far which are used by all registration offices.
- The definition of a standard which enables the complete transmission of messages and its correct interpretation by the involved authorities. This standard has to be based on the data set which is already commonly used in Germany on paper-based proceedings (DSMeld).
- The message-receiving authority must be reachable by a defined transportation mode and be able to open the transmitted message.

Service:

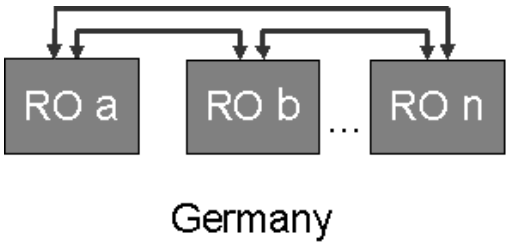
- *Three basic service areas are covered by the civil registration:*
- *Change of address*
- *Registry information service for citizen, business and public administrations*
- *Data exchange among registration offices in general*

Specific problems addressed:

- *Protection of sensible data in accordance with current law.*
- *Economic implementation of project aims*
- *Definition of commonly used business processes*
- *Correct data interpretation independent of technology used*
- *Definition of a transport standard that can be used by all involved authorities*
- *Authentication of addressee*
- *Warrantee that message content has not been accessed or changed by others during transmission*
- *Provide the ability to integrate incoming messages into own system and vice versa.*

- The message-receiving authority must be able to recognise the authentication of the sender and that the message hasn't been read and changed via the transmission by others.
- The registration offices must be able to generate and integrate the messages out of respectively in their individual registration software.

As the local authorities are responsible for the maintenance of up-to-date registration data, the specific requirement regarding interoperability was to achieve interoperability between same agencies in different geographical areas providing the same services.



RO: Registration Office

IOP requirement 1:
IOP between same agencies in different geographical areas providing the same service (between all local registration offices in Germany)

To meet this requirement, the OSCI-XMeld standard was introduced aiming at connecting each local registration authority by standardised workflows. Dependent on the strategies of the various Federal States in Germany (regions), the communication between the registration offices is realised by direct multi-lateral communication or by communication supported by a clearing house. I.e. all authorities involved can directly communicate with each other or via an intermediary clearing house. The exact communication mechanisms employed in the different Federal States will be decided by beginning of 2007 at the latest, when, by law, the communication among registration offices has to take place electronically.

Basic organisational model employed:
Direct multi- lateral communication among all registration offices respectively via intermediate clearing houses

The re-organisation efforts in the registration area are twofold; on the one hand, data exchange among the registration offices and thus for the registry information service will be provided on the basis of standardised workflows among the involved authorities. I.e. the re-organisation of registry services capitalises on back-office to back-office processes. On the other hand, online access to the services is offered online to users providing convenient access to the registry information or to other services like the change of address; thus front-office to back-offices process re-organisation is also in the foreground.

Service delivery model:
IOP among back-offices and with regard to access by customers also between front-office and back-offices

1.2.2 General Background

The civil registration in Germany is regulated on three government levels: Firstly, the Federal Level, which provides the framework conditions for civil registration, secondly, the Federal States which are in charge of the Legislation for civil registration and thirdly the local registration offices responsible for the service provision and applying regionally differing software systems and proceedings.

This federal structure in the civil registration has led to many differences among the various registration offices concerning the implementation of rules and applications providing electronic data exchange and also concerning service workflows, service organisation and the technical equipment. For example, so far, there is no complete catalogue of duties and responsibilities in the civil registration. The number of proceedings differ among the various registration offices and the proceedings itself are not identical. The XMeld project will mediate and solve this problem.

A central element on which the development of XMeld is based, is the standard used nation-wide for data sets in civil registers called DSMeld. Though this data set is used by all registration offices in Germany, this standard is rather oriented to data storage than to data transmission. XMeld has to enhance this standard for transmission without changing it.

The development of XMeld is subdivided in five versions starting from the already approved XMeld 1.0 and followed by the also approved versions 1.1, and 1.2. Completed, because all proceedings within the civil registration are covered by the standard, XMeld will be in version 1.4 which is to be finalised by the end of project on 31 December 2006. Today, more than 100 different message types serving the proceedings are implemented. I.e. the most currently used but also the rather less important proceedings in the civil registration are already included in the standard and ready for use. This includes the registry information as well as the change of address service.

As a response of the federal structure, XMeld has been specified for the exchange of data concerning common rules and processes on the State level; especially regarding the German law providing guidelines for the civil registration (MRRG: Melderechtsrahmengesetz); but explicitly not for the subject of the Federal State specific laws. As mentioned above, the Federal States have to employ OSCI-XMeld for data exchange by law before 2007. All Federal States are currently working on the amendment of their regulations or have already finalised it. To benefit from the electronic civil registration before the Federal law will enter into force, some regional projects using XMeld in their daily business like MOIN!, LABO, ZEMA, DNRW (see "References") have meanwhile emerged.

Another important impact on the development of XMeld is to be seen in the MEDIA@Komm competition of the Federal Government in 1998. This competition aimed at gathering concepts concerned with the useful and efficient cooperation between "new media" and digital signatures in eGovernment on the local and regional level. In this competition, the Free Hanseatic City of Bremen was awarded a prize for a concept for transactions between citizens and the public administration based on a special transport protocol, called OSCI (Online Services Computer Interface).
Based on this award, Bremen was assigned to develop OSCI for the public administration in Germany in coordination with responsible representatives of the Federal States.
The assumption behind this is, that eGovernment targets can only be achieved when they are based on a strong IT network within the whole public administration. However, this IT network may not lead to dependencies to vendors or systems. Thus, a standard had to be developed that is to be defined and improved by the public administration and not by the IT-vendors. Today, on behalf of the public administration represented by the KoopA ADV (which is a special committee consisting of representatives of all three government levels in Germany concerned with IT in the public administration), the "OSCI-Leitstelle" (OSCI control centre) is in charge of the development and coordination of the interoperable data exchange formats. The OSCI – Leitstelle originated from a public private partnership solution and is now part of the eGovernment and New Media Unit of the Senator for Finances of the City-state Bremen. By the way, starting from this local initiative in the public administration of Bremen, OSCI has meanwhile been standardised by law for eGovernment transactions. Though the law stipulates, that OSCI-XMeld has to be used from 2007 on, various initiatives (as mentioned above) have already started using XMeld on the regional level by interfacing and adaption of their own registration system with other systems and XMeld.

Background aspects:
- *Division of powers due to federal legislation*
- *Competition of the Federal Government concerning concepts on the local and regional level for cooperation between "new media" and digital signatures (MEDIA@Komm)*

Based on these aspects, involved in the process of e-enabling registry information are:

- The Federal States providing the legal conditions for electronic data exchange
- All local registration offices acting as contact points for citizens to register their residence or to make changes in their records. There are 5,412 registration offices in Germany who are in charge of the registration records. Some forerunner projects on regional level provide interfaces and give feedback on practical use.
- The Working Group 1 (AK 1) concerned with constitutional law and administration of the Permanent Conference of Ministers of the Interior in Germany (IMK) as contracting body and also responsible for quality control. The AK 1

Types and level of agencies involved:
- *The Federal States as legislator*
- *All about 5,400 local registration offices*
- *Working group of the contracting body which assigns task forces (AK 1)*
- *Task force XMeld for development and improvement of standard*
- *Task force for citizen registration for legal and organisational aspects and for the implementation*

assigns task forces for the development and implementation of the XMeld standard;
- The XMeld task force responsible for the development and constant improvement of the standard in technical and professional respect, and
- the task force for civil registration (PG Meldewesen) responsible for legal and organisational pre-requisites and for the implementation;
- The entity responsible for quality control of the results of the two aforementioned task forces and for the implementation of these results. This entity consists of representatives from local and regional computing centres, from registration software vendors, head of registry services divisions, head of local and regional committees, data protection officers and speaker of the working group of the heads of registry offices. This entity has to agree with the results and reports them to the contracting body.
- In the MOIN! project also the central local and regional associations: Niedersächsischer Städte und Gemeindebund, Niedersächsischer Städtetag, Niedersächsischer Landkreistag; the public and private computing centres. Also participating are software vendors in the civil registry domain.

1.2.3 Policy context and strategy

Beside the aformentioned background conditions, two main framework projects have particular impact on the development and implementation of XMeld. One project emerged on the constitutional meeting of the AK 1 working group in 2003. Its aim is the reduction of red-tape in civil registration within eGovernment (eGovernment und Bürokratieabbau im Meldewesen). The basic principle of this project is to provide the legal and organisational as well as the technical and professional basis for the implementation of the amended MRRG; moreover, the coordination and monitoring of the implementation on federal, federal-state and municipal level.
The project ends at the end of 2005.
Furthermore, OSCI-XMeld is a project within the national eGovernment strategy which stands for integrated eGovernment services on and across all government levels and is called "Deutschland Online". This strategy is a response to the heterogeneous IT landscape and the decentralised structure in public service provision. With Deutschland Online, the most important cross-level administrative services will be made available online to citizens and business.
From a legal viewpoint, for enabling the electronic exchange of registry data, four legal regulations are of particular relevance.

Framework:
- *Framework project in order to reduce red tape in civil registration in eGovernment*
- *German eGovernment strategy "Deutschland Online" in order to enable cross government level eGovernment services*

- Firstly, this is the "Melderechtsrahmengesetz (MRRG)" already mentioned, i.e. the law providing guidelines for the civil registration in Germany. Due to the federal structure in legislation in Germany, this is an act which is binding for authorities responsible for civil registration (the Federal States). This law has been amended in 2002 and stipulates that data exchange among registration offices in Germany, but also across national borders, may be transmitted electronically. In this case, the authentication of the communicating partners has to be guaranteed unambiguously and the exchanged messages have to be transmitted without the possibility to access or change the content.
- The various registration acts in the Federal States. The Federal States are obliged to convert the Federal regulations into law. It is expected that all Federal States will have amended their law by end of 2005. Some of them already provide the possibility of electronic data exchange.
- Two further relevant decrees, which complement the MRRG, are the two German regulations for data exchange either among registration offices within the Federal States (BMeldDÜV 1) or to federal authorities or agencies (BMeldDÜV 2). Of particular interest is the first one which stipulates that the data exchange has to take place using OSCI-transport and for data description the OSCI-XMeld standard. The communication among the registration offices has to take place in electronic format only from 2007 on. I.e. from that date on, no data exchange on paper concerning this subject is allowed.
- The Data Protection Act and the Signature Law are relevant and have to be considered when data exchange, particularly in the area of personal respectively residence data, is concerned.
- Another regulation is the adherence to the Document "Standards and Architectures for e-Government Applications" (SAGA) of the KBSt. KBST is an inter-ministerial agency of the Federal Government intended to ensure that the federal administration optimises its use of information technology for specific fields and in organisational, economic and technical terms. For all Federal eGovernment services, SAGA is compulsory; for all other levels, migration is recommended. Though the registry services are not on federal level, in order to provide extensions and interfaces with other services with national outreach, the adherence to SAGA is a pre-condition for XMeld.

Legal framework

- *Melderechtsrahmen-gesetz (MRRG) - law providing guidelines for the civil registration in Germany: enables electronic data exchange*
- *Registration Acts on Federal State level*
- *Two German regulations for data exchange among registration offices within the Federal States and to federal agencies: stipulating the use of OSCI and XMeld*
- *Data Protection Act*
- *Signature Law*
- *Adherence to "Standards and Architectures for e-Government Applications" (SAGA)*

1.3 Solution

1.3.1 Specific Objectives

The specific case of the MOIN! project and more generally of the exchange of registry data within and across German regions is part of the XMeld project framework which aims at the formulation of basic principles in order to provide standards for the communication between citizen and public administration as well as among public administrations in a long-term and stable manner. Thus, the concerned processes in the public administration concerned with citizens have to be considered in an integral way, to be prepared for external communication, and the content and security requirements have to be roughly defined. The fundamental objectives in relation to this are:

- Creating proceedings and implementing standards has to be carried out independent of vendors and products.
- To enable secure and correct data exchange via internet in the civil registration area that maintains the "core" data of every local authoritiy.
- To define a transport standard for messages that can also be used by other authorities and services independent of the involvement of civil registration data (OSCI-transport).
- To define a content-related data standard that is open for extensions (OSCI-XMeld), e.g. for the inclusion of further features that could be necessary or beneficial in the future, like identification features for taxation.
- To create an exemplary model for the definition of standards and its implementation as well as the overall proceeding, that can be used by other authorities that are concerned with XML-Schemes standardisation between their administration and customers. These are procedures with professional standards based on XML (XÖV: procedures and methods based on XML in the various department of the public administration).

From the perspective of the local civil registration services in Germany, the combined goal of the three related framework conditions – MEDIA@Komm competition, reduction of red tape in civil registration in eGovernment and the eGovernment strategy "Deutschland Online" – was to e-enable the access to registry data independent of its locality.

In relation to this overall goal, the specific objectives are the

- connection of all the more than 5,400 registration offices in Germany independent of their administrative and geographical affiliation via standardised workflows based on XML,

Objectives to be achieved in general:

- *Implementation of vendor and product independent procedures and standards*
- *Secure and correct data exchange*
- *Definition of a transport standard that can also be used by other authorities*
- *Definition of a content related data standard that is open for extensions*
- *Creation of an exemplary model for definition and implementation of standards that can be re-used by other authorities concerned with XML-Schemes standardisation*

Objectives to be achieved:

- *Connection of all local registers based on XMeld independent of their local technical solutions*
- *Identification, harmonisation and modelling of all business processes in civil registration*
- *Economic implementation with a view to further service integration*
- *Change of address for citizen online*
- *Respect of the sovereignty of the Federal States by providing interoperable standard that can be interfaced to own system*

- compatibility of OSCI-XMeld with more than 20 different civil registration software systems used in the various registration offices,
- identification, harmonisation and modelling of the various proceedings in civil registration
- release the administrative officers from rather extensive manual work particularly concerning the processing of registration information,
- provision of convenient access facilities for power-users of the registration information service which have to be different to those for single enquiries,
- economic implementation of the overall project due to compatibility to other XÖV services (see above)
- providing the citizen with the possibility for "change of address" - service via internet,
- providing administrations with pre-filled forms if registration data from other registration offices are involved in the proceeding particularly in the change of address proceeding.

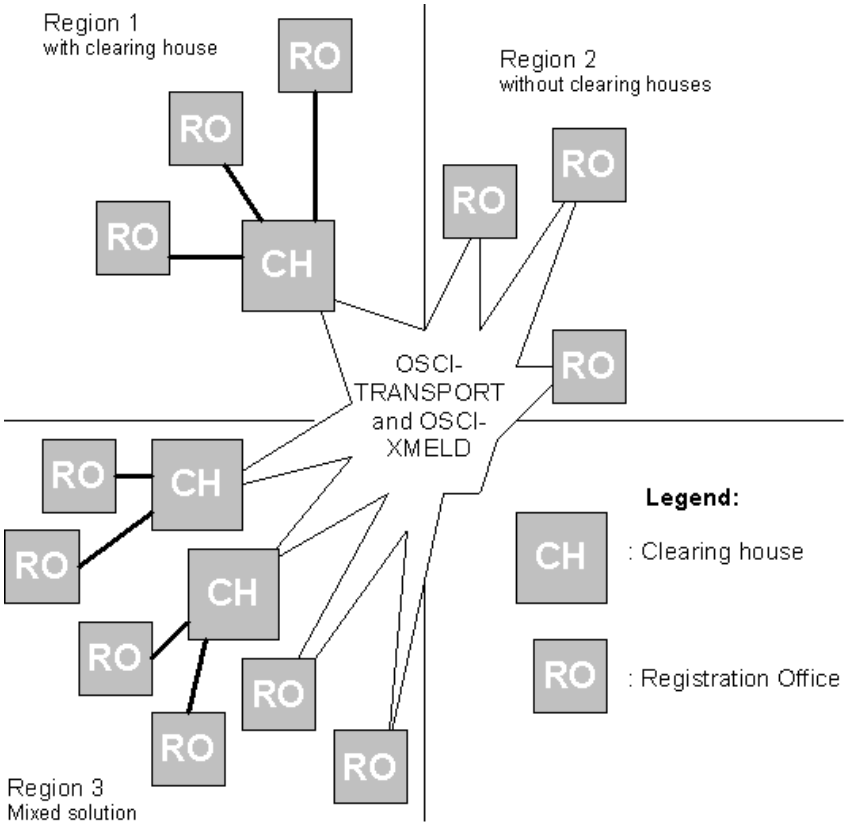
Again, it is explicitly not the objective of the OSCI-XMeld project to change the internal workflows within the registration authorities.

1.3.2 Implementation

Basically two different but complementary projects contribute to the XMeld project:

- The development of OSCI-XMeld, which is the standard for the description of the content-related data within the civil registration, and
- the development, respectively the refinement of OSCI-Transport which is the standard for the secure exchange of messages between public authorities in general.

As already stated above, the XMeld project only concerns the exchange of messages across the Federal States and not among registration offices within the Federal States. The Federal States are free to either provide access to the registries directly between requesting and receiving authorities, via a clearing house, or via both variations mixed. In cases where registration offices aren't able to process XMeld messages since they are not connected to a Virtual Government Private Network or since internet access is restricted, a clearing house solution is indispensable. Almost every Federal State has taken the decision to provide at least one central clearing house as binding or voluntary mediation point among the registration offices. Thus, the conceptual design and installation of networking clearing houses and registration offices in case of cross-regional message exchange is a further project connected to XMeld.



Workflow description

The use of OSCI-Transport is by law the standard for eGovernment transactions. Beside the connectivity among registration offices, OSCI-Transport must also provide the connectivity among other public authorities (e.g. taxation, social security) and their different software systems.
Independent of whether a citizen address is to be changed or registry information has to be looked for, the workflow based on OSCI-Transport and OSCI-XMeld is as follows:

The user (this could be both, the customer or the administrative officer) chooses the respective online form, e.g. form for change of address. This form is a signed Java-Applet, provided on a form and applet server on an intermediary server.

The intermediary servers are the technical pre-condition for sending and receiving OSCI-Transport messages; they enable the transmission of the messages. The authorities responsible for civil registration in Germany have to be equipped with such server. Currently 11 out of the 16 Federal States in Germany already use an intermediary server.

The signature of the applet guarantees the user that the form is actually from the consigning authority. It will be transmitted to the user via a SSL-secured connection. The user fills in the form and sends it digitally signed to the addressee. This serves for the identification of the sender by the receiving authority.

Basically, each message consists of two parts: the reference data (Nutzungsdaten) and the content-related data (Inhaltsdaten); e.g. the XMeld data set. This is possible, since XML documents are being used for OSCI messages.

The content-related data will be encrypted before the transport and can only be decrypted by the addressee. Thus, nobody can get access to the message. Also the intermediary server, that will receive the message first, can't access the content-related data. It only has access to the enclosed reference data. A routing slip, which is added to the message, contains the necessary reference data which are required for the transport. The intermediary server checks who the addressee of the message is and if certain limitations for the addressee are included in the message, e.g. an information ban. In addition, a time stamp will be added to the message.

Trust centres, responsible for checking the digital certificates of the communication partners, are connected to intermediary server, which indicates the checking results on the routing slip.

Warranty of security and privacy:
According to the German Data Protection Act and the Signature Law, messages will be transmitted encrypted and digitally signed by OSCI-Transport standard.

If everything is correct, the message will be delivered to the addressee. This is done on the basis of X.509 certificates by the intermediary. Therefore, OSCI does not need its own user administration.

The message will then be received by the addressee who is the one and only for decryption of the message. In addition he may check if the document was actually sent by the person who is named as sender.

For general track and trace issues or in case of lost or corrupted messages, a copy of the routing slip will be archived at the intermediary.

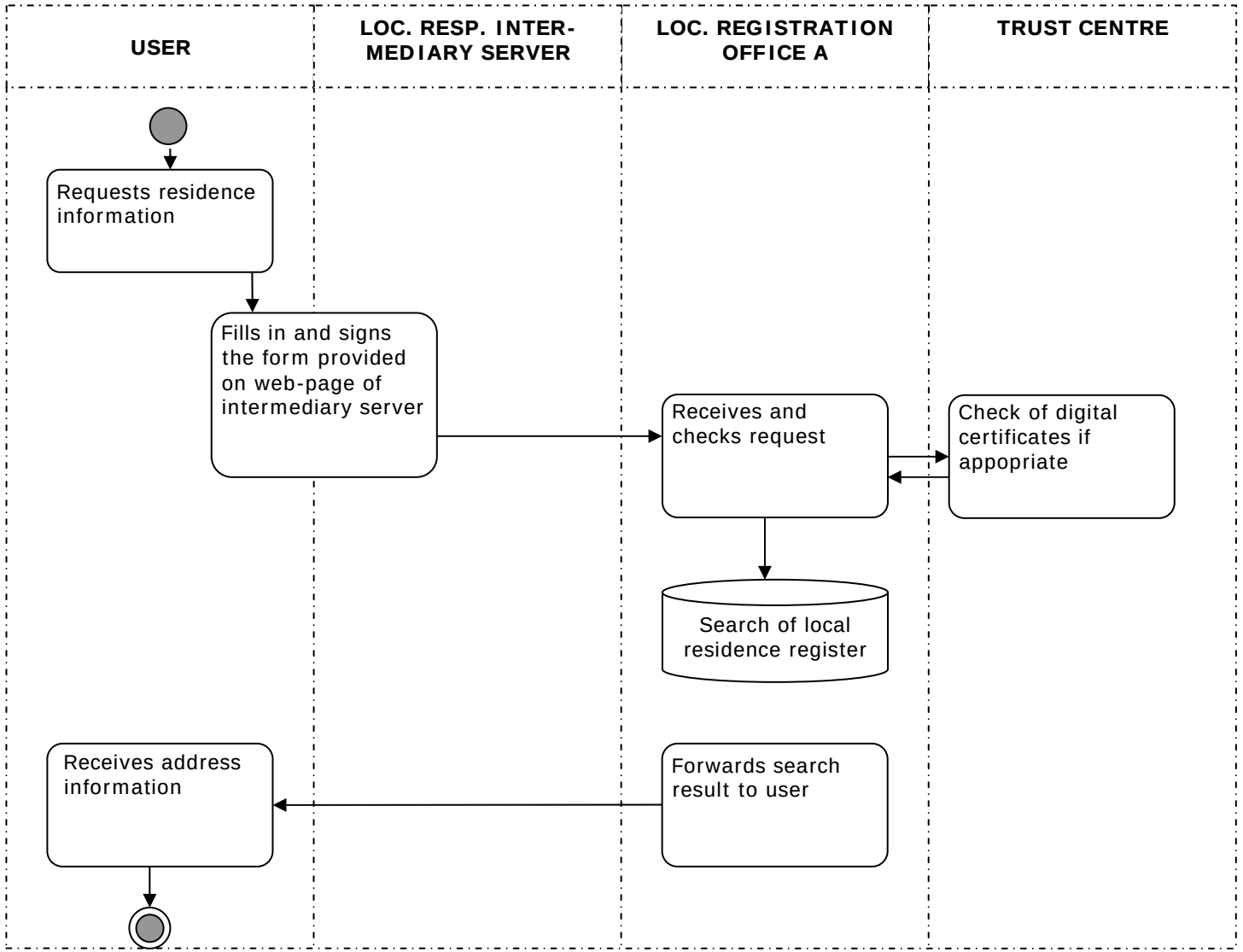
In case of registry information exchange between different registration offices, the requesting authority has to know the exact address, i.e. the access parameters of the receiving registration office like server certificates, internet address (presumably coded in DNS). Since there are 5,412 registration offices in Germany, not every registration office can possess the up-to-date access parameters of all of them.
The regional projects mentioned above as well as some Federal States already provide their regional directories. The overall objective, however, is to provide the exchange of XMeld messages in all of Germany. Therefore a central directory containing the access parameters of all German registration offices is needed. This repository, called "Deutsches Verwaltungsdienste-Verzeichnis (DVDV)" will contain all this data, and is currently under development. The DVDV will be accessed by the sending authority when the access parameters are not known yet.
To release the administrative officers, only the official community key (AGS: Amtlicher Gemeindeschlüssel) and the service type (XMeld message) have to be entered in the address request, and the DVDV will respond with the URL, the address of the respective intermediary and the public key of the receiving officer.

Afterwards, the message with the included access parameters in the reference data set will be sent via OSCI-Transport to the receiving authority. Then, following the same procedure as mentioned above, the intermediary server cares for validation of the digital certificates of the communication partners by approaching the relevant Trust Centres. The results of the verification will be added to reference data and the XMeld message will be delivered to the receiving authority. Due to the encryption rules, only the addressed authority can open and process the message.

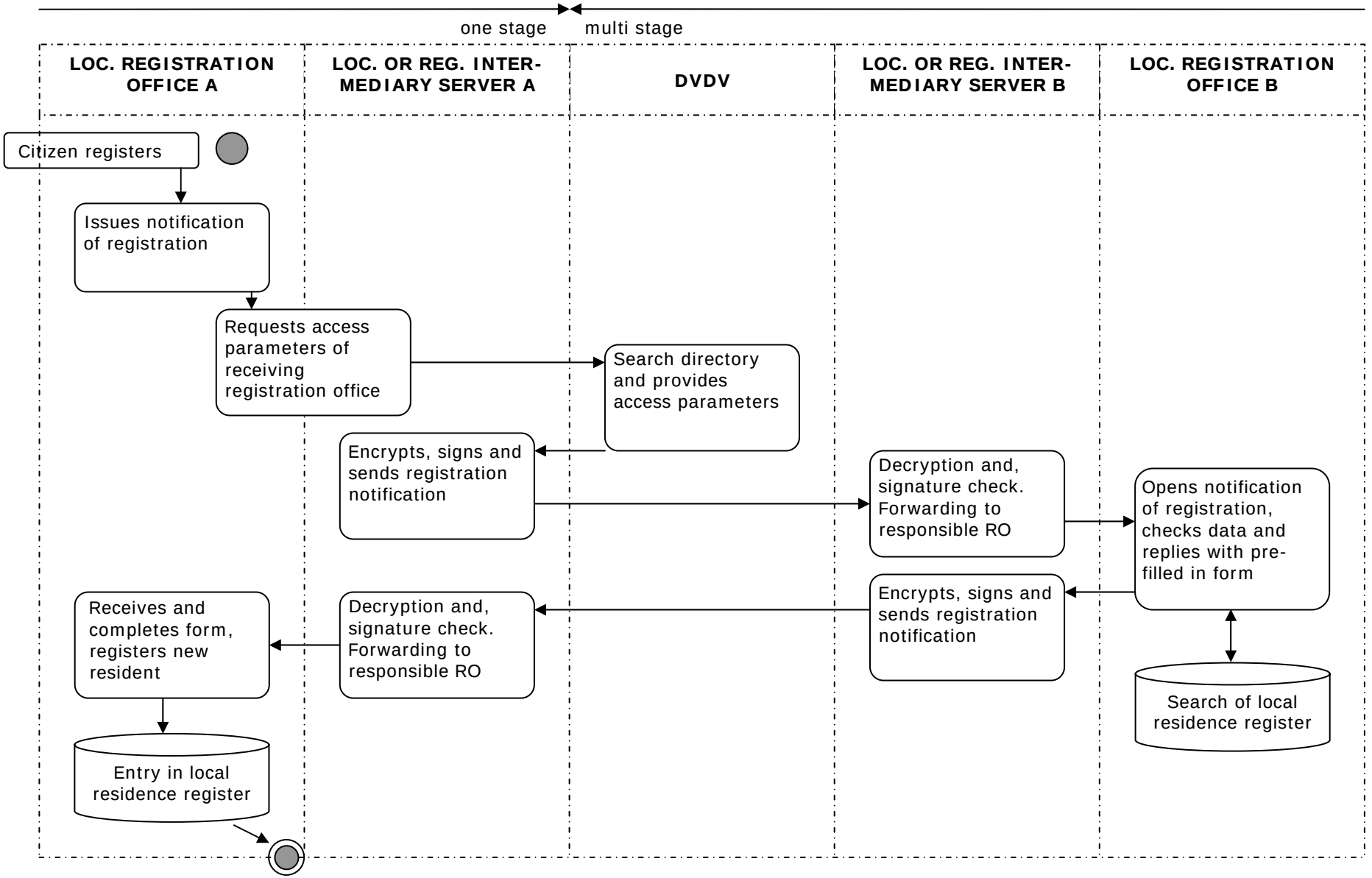
Case capitalises mainly on following layers of IOP:

- *Technical (Government VPN, internet)*
- *Syntactic (SOAP, XML Schemes, XML)*
- *Semantic (XMeld library, library with organisations attributes)*
- *Organisational: (Legalisation of standard and time-frame, introduction of clearing houses if required)*

Workflow of Address Information



Workflow of Change of Address – Citizen De-Registration



Resources

The main resources enabling the exchange of registry information concerning the technical infrastructure and based on standardised workflows are:

- the intermediary server enabling OSCI-Transport,
- the directory of public service providers DVDV
- the clearing houses enabling cross-regional communication if direct bi-lateral communication is not possible
- XMeld enabling integration and processing of registry data generated in another software system of another authority.

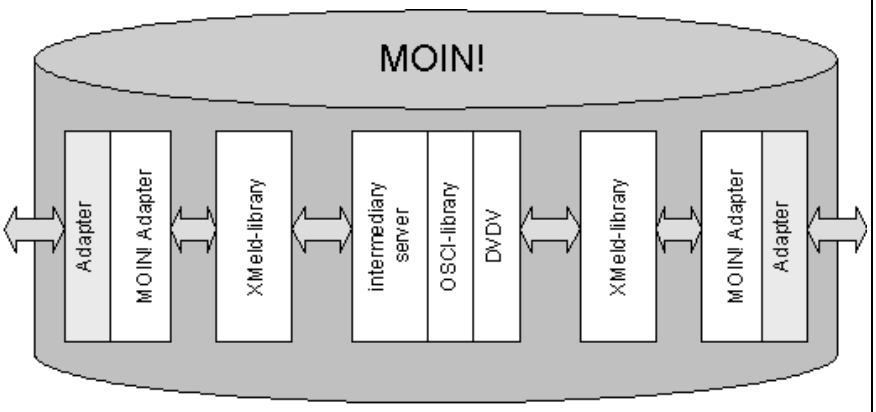
The resources are already described in the workflow description above. Besides a short note to the clearing houses, the functioning of the XMeld-project as employed within the regional imitative MOIN, will be explained more clearly:

Clearing houses

Registration offices who are not able to connect their local civil registration software system to the OSCI-XMeld standard due to lack of technical possibilities, can delegate parts or all concerned tasks to a clearing house. This concerns the warranty of the technical accessibility of the registration office in form of the clearing house as well as the functions required for the processing of OSCI-XMeld messages; e.g. cryptography, addressing functionalities. Thus, a clearing house is an additional technical feature which can optionally be authorised for the warranty of OSCI-conform communication across regional borders (Federal State) by the registration offices. Clearing houses are only support units without any mandate for arbitrations or further sovereign functions independent of the registration offices.

MOIN!

MOIN! as well as LABO are regional initiatives already using XMeld in their daily business. Beside the possibility for cross-regional exchange, they use it in particular for data exchange *inside* their network.



Supporting infrastructure employed:

- *OSCI-Transport standard for secure online transactions provided by an intermediary server*
- *Central directory providing access parameters of all registration authorities*
- *XMeld standard including directories, enabling integration and processing of external data*
- *Clearinghouses as intermediate in case bi-lateral communication among registration offices is not possible or envisaged*

Since there are more than twenty different civil registration software systems in use in the various registration offices in Germany, the conversion of the incoming data into the data format of the software of the receiving registration office has to be enabled. To do so, an interface and a special directory, matching the different data structures and formats is needed to allow data reception and exchange. Within MOIN! a special MOIN! adapter has been developed which converts data and data structures of some of the most commonly used registry software systems (MESO, OK-EWO). In order to access and edit the data coming from these software systems, these have to be extracted and converted first by a special adapter. Based on this converted data the MOIN!-XMeld Bibliothek (XMeld library) generates the XMeld message. Beside data conversion, the library also validates the messages und allows quality control of data. Then the message will be integrated and processed by the local registry system and the reply (XMeld message) generated.

The OSCI-library as part of the intermediary server generates messages which are conform to the OSCI-transport standard and which include the XMeld message. Besides, this library serves for the validation of the syntactic correctness, for encryption and decryption of messages, as well as for generating and validation of signatures.

Integrated in the workflow is the request to the DVDV for the access parameters of the receiving authority (see above). This is done automatically and the results will be included in the OSCI-message. Via the XMeld-adapter, the message will again be converted into the original XMeld-message format in which the request previously was received and sent out.

1.4 Features making it a candidate for good practice exchange

1.4.1 Impact

The electronic exchange of registry information related messages via OSCI-Transport and OSCI-XMeld across regional boundaries is compulsory from 2007 on. From the same date on, XMeld, presumably in the version 1.4 will then be available, covering all possible procedures in civil registration. Currently, XMeld 1.2 already enabling the most relevant services / procedures from registration offices is available.

The enabling of electronic data exchange among the registry authorities is dependent on the regional legislation, in particular the amendment of the Citizen Registration Act and the regulations for data exchange of the Federal State. It is only a question of time until all Federal States have amended their regulations. According to the latest report of the registry information task force end of April 2005, some Federal States already amended the Registration Act and the others will follow by end of 2005 at the latest. The respective Regulations for data exchange are to be amended near or at the same date. One Federal State (Rhineland-Palatinate) already allowed data exchange in 2000, others like Schleswig-Holstein or Saxony-Anhalt and Hamburg in 2004. However, Lower Saxony, the Federal State where MOIN! is located hasn't yet amended the law. I.e. MOIN! had to request a certificate of exemption enabling the employment of XMeld.

Several regional projects emerged in the last years already enabling the electronic exchange of civil registration data, across borders or within. Some employed XMeld for regional data exchange, some use their own solution. So far, with regard to the report mentioned above, at least nine Federal States (incl. Lower Saxony with MOIN!) already provide registry information based on electronic data sets. City-states like Berlin or Hamburg or the Federal State Rhineland-Palatinate provide all citizen information electronically, others like Bavaria or Thuringia provide the data of more than half of their inhabitants in electronic format. The necessary intermediary server enabling OSCI-Transport is already implemented in 11 out of the 16 Federal States.

At the end of 2004, Germany has 82,501,000 inhabitants, each having a registration record. According to a market analysis executed by the RISER consortium in 2004, about 27,400,400 inquiries for address validation from private customers into official registers will be carried out in Germany annually (RISER D9: 37). With regard to Deutschland-Online, about 3.8 million re-locations (without considering re-locations within municipalities) had taken place in 2003. Considering the results already achieved in terms of amendment of the Federal and Regional legislation as well as the adoption of XMeld and the creation of electronic data sets, high savings in registry data traffic are already realised with its maximum

Performance:

- *82,501,000 inhabitants*
- *27,400,400 inquiries annually*
- *3.8 mio re-locations across municipalities annually*
- *Several regional projects emerged using the standard and developing interfaces*
- *11 out of 16 Federal States already implemented an intermediary server, enabling OSCI-Transport*
- *XMeld 1.2 covers most relevant business processes*
- *XMeld 1.4 (31.12.2006) will cover all business processes in civil registration*

Outreach:

- *More than ¼ of all German registration records are already in electronic format.*
- *Several Federal States and regional initiatives are already using XMeld respectively are able to exchange citizen registration data electronically*
- *By 2007 all 5,412 registration offices in Germany are committed to exchange registry records electronically bases on OSCI-XMeld*

outreach to be achieved by beginning of 2007. For example, in the MOIN! project, the traditional processing costs of the message to be sent from the registration office of the new residence to the registration office of the old residence are 3,29 Euro. The same message sent by MOIN!-XMeld costs 72 Cents. I.e. high savings have already been achieved by XMeld, which will show its full potential by 2007 when all registration offices are accessible online.

1.4.2 Relevance of the case for other administrations that could learn from the experience

The XMeld project is the first example in Germany providing a standard for the exchange of electronic data covering the whole country by 2007. By standardisation of workflows based on XML schemes it was possible to find an answer to the decentralised responsibilities in civil registration as a result of Germany's federal structure. Moreover, the organisation of the project and the solutions developed are designed for transfer to other proceedings as well, since various important services are by law in charge of the Federal States and connectivity on a national level is lacking so far. The inclusion of a taxation number into the civil registry data set by the next update of XMeld (vs. 1.3) providing connectivity to revenue services is a first feature in this regard.

Essential in the project framework was the aim of vendor and product independent developments according to the regulations in the "law providing guidelines for the civil registration": Interoperability is to be achieved by standardisation of the data exchange; the results of the project will be provided to all levels of the public administration in an open process.

This procedure respects regional peculiarities. I.e. besides the regional legislation also the technologies and software systems used in the Federal States will be considered. This contributes to the protection of investments in technologies, which only have to be interfaced to the new standard.

An important impact on the overall success of the project has the legalisation of the standard by the amendment of the respective laws including the setting of an overall time-frame for implementation. Since OSCI-Transport and OSCI-XMeld are compulsory in the near future, various activities on regional level emerged to become a forerunner in this field. Sub-developments for adaptations and interfaces will be produced and offered to others. Beside opening new business areas the region will be known for its activities in eGovernment in a wider context.

Those registration offices, which do not have the possibilities and requirements to take part in the electronic exchange via XMeld due to e.g. lack of access to Virtual Government Private Network, lacking technologies, or restricted internet access at this early stage, will be supported in technical and organisational respect. This support is to

Innovativeness:

- *Standard for electronic data exchange in civil registry based on XML*
- *Standard as a response to the decentralised structure which therefore enables nation wide outreach*
- *Expandable by further items also for different authorities or services*
- *Reproducibility for other services guaranteed by open processes*
- *Considering regional sovereignty by vendor and product independent development*
- *Reduce visions into practice i.e. in legal acts*
- *Inclusion of all authorities even if not all have the technical or organisational pre-conditions for participation*
- *Conversion and integration of civil registration messages generated from different systems*
- *Provision of a directory, containing the access parameters of all registration offices and which will be expanded for other authorities serving other services as well*

be provided by the Federal States, as the responsible authorities for civil registration.

Independent of whether data exchange takes place bi-laterally between registration offices or via clearing houses, inside or across the region, technical features for the conversion of data and formats have been developed and shown already their functionality. Messages, generated and coming from various registry software systems can be integrated in the own civil registration system without manual intervention.

In order to identify the responsible registration office and their access parameters from the more than 5,400 registration offices, a central institution has to be implemented, containing all these data. This organisation must maintain this directory and provide the possibility to update data in case of changes of the access parameters. Moreover, this central directory will be expanded to access parameters, required by other services. In the end, a complete directory of access parameters of all German authorities will be provided. However, this directory is currently only available in a different format within the regions which already provide electronic data exchange. The complete directory (DVDV) will be provided by beginning 2007 at the latest with the Germany-wide introduction of XMeld.

Supporting infrastructure employed:

- *Harmonised business processes respectively data and format conversion enabling data integration*
- *Clearing houses in case direct bi- or multi-lateral data exchange is not possible or envisaged*
- *Directory with access parameters of involved authorities*

1.4.3 Transferability

In services where the centralisation of tasks or data is not possible or envisaged for different reasons like legislation or technical equipment, the standardisation of data exchange processes is the alternative. To enable connectivity among different registration offices, message types have been standardised on the semantic level and the respective interfaces to the civil registry system developed. Doing so, there is no dependency on special vendors or products, providing the "one and only" technology. Data models based on SOAP, XML DTDs and XML Schemes serve for the structured representation of the communicating objects and the automated subsequent processing. The process models (activity and status diagrams) enable standardised sequential message transfer, i.e. after the necessary steps for the (complex) transaction have been identified, they can be modelled as XML-message type. In terms of transferability this means that every authority or its affiliated clearing house can participate in the data exchange, when the respective interface has been developed or implemented.

The extension of XMeld with further features serving for purposes from different authorities is envisaged. Moreover, with the inclusion of the tax number in XMeld 1.3 this extension is already in progress.

Since XMeld is the pilot for the organisation, development and implementation of further service areas in the public domain, the warrantee of the transfer is part of the XMeld concept. In this sense,

Transferability:

- *In countries or services where no central data processing is possible or envisaged, the XMeld project could be exemplary*
- *Enabling transferability to other services is part of the XMeld project development*
- *Further services will be provided based on the experience in the development and use of standardised workflows in XMeld*
- *Connectivity and interoperability already proven within the eTen project RISER about Registry Information in Europe*

XMeld is the forerunner for services based on the implementation of standardised workflows; further projects already started within the XÖV-initiative (XML in public administration) are e.g. XBau (e.g. building permission) and XJustiz (business registry information).

With the DVDV, the directory containing the access parameters of all registration offices will be provided, aiming at finally including not only the registration offices but all public authorities. The division of the DVDV in a "production master" via which the data base can be accessed and changed and several mirrored "replication masters" for the processing of enquiries.

The XMeld project is one partner of the e-Ten project RISER which enables the online request of official address information across borders in a simple, safe and cost-effective way.
The service offers maximum coverage of the civil registries that are accessible online, thus establishing one of the first trans-European eGovernment services for companies and citizens. Currently official registers from Austria, Germany and Ireland are included. According to RISER (D9: 40) "The interfaces for exchanging resident's data (which make up the payload of all RISER messaging) will be based on OSCI-XMeld." The interfaces defined by XMeld were already extended to accommodate country-specific name and address data. The service will be expanded to further European Member States.

Transferability:

- ***Technical IOP****: Use of Government VPN or internet for inter agency traffic*
- *XMeld formats and interfaces using SOAP and associated XML Schemes and standards are key enabler of* ***semantic IOP*** *allows integration of XMeld messages in other civil registry systems inside and across the regions*
- ***Semantic IOP****: Development of software directory for data and format conversion and of a directory with organisation attributes for message routing*
- ***Organisational IOP****: Value proved organisational collaboration network; Standardised Workflows; Amendment of legalisation for electronic data exchange*

1.5 Results

Today, XMeld in the version 1.2 is available, covering most business processes including the change of address and the registry information. Accordingly, the general regulations of OSCI-X-projects, the project results OSCI-XMeld Scheme (XML data) and OSCI-XMeld Specification (documentation in pdf), will be available for the public after approval of the contracting authority (permanent conference of the Federal Ministers of the Interior (regional level)) without costs. Actually, the standard XMeld which enables processing and integration of the messages has already been finished with version 1.0. Further versions only include additional proceedings and refined features. The whole XMeld project covering all proceedings and improved functionalities will be finished by end 2006. XMeld as standard is already nation-wide accepted, not only due to its compulsory use by end 2006. From this date on, XMeld will provide its full benefits in terms of electronic data exchange which will be possible among all registration offices in Germany and its economical

Benefits:

- *More timely receipt of better quality registration data (up to 20 % better data quality)*
- *Faster processing of registration services*
- *Reduced red-tape on both sides e.g. by pre filled-in forms*

effects and improved service provision for authorities, businesses and citizens. Due to a presentation of the data protection organisation of Schleswig-Holstein (northern region of German), the data quality is about 20 per cent higher, compared to previous paper entries due to minimisation of slurry or false entries. Practical features like pre-filled in registry information forms, that are required by the civil registries in case of re-location reduce red-tape at the administration as well as for the citizens.

Up to now, XMeld is already in use in various regional projects in all parts of Germany, some of which are well known to the public, they are listed above. Within these regional projects and across those regions, XMeld is used for the registry information service; the use of the change of address service and the inter-office exchange of registration data is currently a bit behind. The latter two are realised on the basis of regional office-directories with limited outreach (regional or within cross-regional cooperations); for leveraging the full service use in Germany, the implementation of the DVDV is needed.

In this regard, the legalisation of the use of OSCI-XMeld and OSCI-Transport is to be seen as one of the key factors, enabling electronic data exchange inside and across the regions. Most federal acts are already amended or are about to be so before end 2005. As seen in MOIN!, even if the regional law does not allow for electronic data exchange yet, exemptions can be granted. This can be seen also with regard to other service areas, where exemptions are needed in order to develop or implement good or innovative concepts before the official act will be enacted.
XMeld is the most advanced and sophisticated standard within the range of standards in the public administration to be developed on the basis of XML in Germany (XÖV). The lessons learned in this process will be adopted and influence the development and implementation of the various XÖV projects.

Performance:
- *Main business processes are already possible via XMeld 1.2; all business processes by end 2006*
- *Various regional projects are already using XMeld and refine and adjust their own system to earn full benefits of the standard*

Impact:
The development of XMeld is a kind of pilot for other services in the public administration realised on basis of standardised workflows with XML and provides the foundation for more extensive data exchange among different authorities by the development of the directory of authorities and services (DVDV)

1.6 Learning points and conclusions

Critical success factors for IOP:

Clear organisation structure with professional project management

Where cross-regional projects are being set up, there must be a common vision across all involved parties and the roles and responsibilities of all parties should be set and agreed at the outset and a structure put in place to resolve issues and difficulties. To do so, three task-forces have been established to ensure that developments progress in a co-ordinated fashion. Under this hierarchy, the roles and responsibilities of all parties were defined.

- *Set up of issue specific teams ensuring co-ordinated progress*
- *Set up of a structure to resolve cross-departmental issues*
- *Common agreement about developments*

Clear leadership

With the nomination of project leaders of each task-force, an organisation structure has been created that ensures a clear leadership for the overall development and implementation. Moreover, a definite contact point in case of enquiries or problems is given to the authorities responsible for civil registration.-

- *Set up of clear responsibilities so that every partner knows what to do and where to contact in case of problems*

Don't halloo until the project is finalised

The project has to be seen as an incremental process on the way to achieve the overall objective of full national roll-out. Even if milestones have successfully been reached or some regions can exchange electronic data, it is the finished and implemented system that has to proof its functionality.

- *Even if milestones are achieved successfully, it is the overall objective that has to be reached.*

Willingness for change at all partners

There must be the explicit will of all actors to change the system and procedures even if the own organisation has to accept some disadvantages on the way to the overall objective. The adherence to commonly decided plans is a pre-condition for the success.

- *Willingness for change*
- *Adherence to commonly decided plans*

Project sponsorship by all partners who benefit from system

To avoid the risks early adopters of projects like XMeld generally have to shoulder - particularly concerning the financing –(though the project is to the benefit of all those who are interested in registry data,) the budget will be provided by all Federal States.

- *Project sponsorship by all partners*

Organisation before technology

The main interest has to be set on well functioning proceedings rather than on sophisticated technology. The professional processes inside the offices have to be modelled first. Certainly, it is useful to implement improved and efficient technology in order to streamline work, however, technology instead of organisation is and has been applied too often. The principle should be: technology is only a tool for implementing processes.

- *Organisation before technology*

Orientation by acknowledged architectures for technology and organisation

Interoperability within the system and with other systems can better, if not only, be achieved by adhering to standards or procedures which are already acknowledged in the "community" and proved their functionality. Moreover, the use of public key cryptography with smartcards and international open standards for the communication between administrations and citizens entails commonalities across countries with the development of eGovernment in Europe.

Technical connectivity

In order to protect investments made in the technical and organisational infrastructure of the local registration offices that now have to co-exist with new technologies or are faced with new requirements, interfaces enabling the required data conversions can bridge this lack of connectivity without changing the old system.

Legalisation of the standard

With the legalisation of the standard in the German "Melderechtsrahmengesetz" and then the subsequent amendment of the regional laws, the basic principles of service development and processing within a certain time-frame are statued. With legal acts clear guidelines are given to the project partners, in this case, the Federal States respectively the registration offices are bound to provide their input in order to entail electronic data exchange.

Standardised workflows for decentralised responsibilities

Standardised workflows provide the possibility for data exchange across sovereign regions without touching their regional independence concerning e.g. legal regulations or technical resources. Especially with federally organised countries or within European Member States or if central registers are not envisaged due to various reasons, this could be an efficient alternative.

Critical success factors for IOP:

- *Orientation on acknowledged architectures for technology and organisation helps achieving interoperability particular concerning extensions of the system to others*
- *Standardised workflows and/or clearing houses bridge the lack of technical connectivity due to different IT systems used among involved parties and due to old technology that has to co-exist with new technology*
- *Legalise the standard incl. time frame for implementation and all partners are bound to defined rules*
- *Standardised workflows as solution to meet requirements of decentralised responsibilities without touching their sovereignty*

1.7 References and links

Regional project: MOIN!: http://www.moin.ag
Regional Project: LABO: http://www.berlin.de/labo/index.html
ZEMA: http://www.zemaonline.de
DNRW: http://www.d-nrw.de
Unabhängiges Landeszentrum für Datenschutz Schleswig Holstein:
http://www.datenschutzzentrum.de
DVV BW: http://www.dzbw.de/servlet/PB/menu/-1/index.html
All Reports of the XMeld Project are available at: http://www.osci.de under XMeld – Downloads as well as the reports to OSCI-Transport and XÖV under the respective menu.
RISER D9, Version 1.0: RISER Public Relation Tools
Registry Information Service on European Residents – RISER. Project in the framework of the eTEN programme of the European Commission, DG Information Society: http://www.riser.eu.com.

Annex 1: Assessment Questionnaire for the MODINIS Case Descriptions

In order to ensure the case descriptions meet the information needs of stakeholders in interoperability at the local and regional level, we ask you to complete this short assessment questionnaire. Your feedback will be used to improve the next version of the present case and will also be taken into consideration when writing up more cases to be described in the course of the project.

Case being reviewed:……

1.) Information content

a) Completeness of description

1				5
only few relevant aspects				all relevant aspects

b) Detail of description

1	3	5	3	1
too general		right level		too many details

2.) Length of description

1	3	5	3	1
too short		right length		too long

3.) Structure / headings

1				5
unclear				clear

4.) Margins

1 **3** **5**
|----------|---------- --|
misleading not necessary good orientation

5.) Learning potential

1 **5**
|----------|----------|----------|----------|
none at all many new insights

6.) Usefulness for your own work

1 **5**
|----------|----------|----------|----------|
not at all very much

7.) Transferability of case to your country

1 **5**
|----------|----------|----------|----------|
not at all very high

8.) Will you get into contact with the contact person?

1 **5**
|----------|----------|----------|----------|
certainly not for sure

Comments

_____

_____

Your affiliation

☐ local/regional government ☐ national government ☐ IT business ☐ academia

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