The RISER Project
Population Register Inquiries across Borders

Jörg Staudemeyer
PSI AG, Dircksenstraße 42-44, D-10178 Berlin, Germany
Tel. +49-30-2801-1331, Fax. +49-30-2801-2981331
Email: jstaudemeyer@psi.de

Abstract: This paper describes a new, prototypic eGovernment service called Registry Information Service on European Residents (RISER). It shows some of the most important insights regarding trans-border interoperability issues, which were gained during design and construction as well as the first months of service operation. Allowing access to official address information the service concerns graspable every day matter, thus pointing out very clearly the various interoperability issues that come up when connecting different national eGovernment services.

1 Introduction

Registry Information Service on European Residents (RISER) is the name of a new trans-national service that provides access to registry information of citizens residing in various EU countries. Its main purpose is to enable citizens of one country to verify the official domicile of another citizen living in another European country.
This service is quite simple by nature, as it concerns everyday matter familiar to everybody, and consists substantially of one single action: Asking for the correctness of somebody's address and retrieving the answer. RISER just accepts such kind of requests and forwards them to the appropriate registry authorities. After receiving the information wanted, it collects the answers and makes them available to the original inquirer.
Despite this straightforward approach, various questions in different areas of interoperability have to be solved before such kind of service can be implemented. We assume these issues to be similar in most government related cross-border applications. So when analyzing such questions in general it may be helpful to look at an example that is comparatively simple in regard to content.

2 The RISER Project

2.1 Background

As a consequence of the process of European Unification, mobility of people between countries increases as well as relations between people (or organisations) residing in different countries. People apply for jobs, travel for recreations, order goods and services, and thereby pay less attention to the fact that they are crossing borders.
One of the many consequences of this development is an evolving demand for identifying people from other countries and their home addresses. The most important reason for this – beneath finding former classmates etc. – is the necessity to have an official address to enforce legal claims against individuals.

Within the borders of countries that maintain publicly available population registers, to retrieve for instance the domicile of a debtor from a public agency is a common practice. But obtaining such information can be quite complicated, particularly if different regional authorities are involved. In Germany for instance, municipalities maintain their own population registers under a common legal framework. But requesters have to identify the responsible institution and must adhere to varying administrative procedures to be able to place an inquiry. Moreover, since responsible institutions use different technologies, there are no uniform interfaces for automated inquiries. Current efforts to open, standardize, and simplify administration strive to ease the access to administrative data and processes, but implementing new standards needs time and many questions still remain unanswered.
When crossing borders, things become downright complicated. Legal conditions are completely different and organizational procedures or structures as well, not to mention language related and cultural barriers. Even if all European countries offered open access to residential information over the internet, retrieving a Greek or Hungarian address would continue to be quite demanding for somebody living for instance in Spain.
Given a trend to open government procedures to electronical access (eGovernment) substantial differences between countries will remain to be present in the foreseeable future. For this reason, a common service, allowing citizens and businesses to retrieve address information from different countries in a simple and uniform way and in the language of the user, seems to be a promising idea.

2.2 Objectives

Objective of the RISER project is the prototypical implementation and initial operation of a service that offers automated access to basic information from population registers in various European countries for private customers.
The service to be installed is prototypical by nature. It shall prove feasibility and usefulness of a common registration inquiry system for a limited number of registered customers and a few European countries. But it lays the foundation for a freely accessible service covering population data from as many European Member States as possible. Initially it covers population registers from Germany, Austria, and Ireland.
The RISER service is designed to identify natural persons living in those countries and discover their officially registered domiciles. Data are obtained by accessing electronical interfaces provided by official authorities, rather than using data collected by private institutions like telephone companies or mail services. Moreover, RISER does not intend to build up any address database of its own, but routes each request to the responsible authority. Thus the answer to a request to RISER is always information obtained from the responsible civil registration authority.
Information handled by RISER is confidential to a certain degree, so corresponding regulations for data security and privacy protection will be observed properly.

2.3 Project Details

The RISER Project Consortium consists of seven private and public partners. These are:

- PSI AG (Germany) as Project Coordinator
- ARAM Sp.z o.o. (Poland)
- Fraunhofer-Institut / FOKUS (Germany)
- Landesamt für Bürger- und Ordnungsangelegenheiten, Berlin / Civil Registration Authority Berlin (Germany)
- Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein / Independent Centre for Privacy Protection Schleswig-Holstein (Germany)
- Waterford Institute of Technology (Ireland)

- KDZ-Zentrum für Verwaltungsforschung KDZ e.V. / KDZ-Centre for Administration Research (Austria).

The Project was started in March, 2004, and will last for 18 month. Overall project volume is about 2M EUR, co-funded by the European eTEN Programme.

2.4 Business Model

During project term, RISER will as a funded project deliver its services free of charge to a limited number of customers. Nevertheless, requestors have to pay for fees charged by registry authorities, which will be forwarded to them. After initial deployment RISER will try to widen its service to cover more European countries and open it to a broader clientele. Then it will invoice a small amount to its customers additionally to the fees brought to account by registry authorities.

This model of a privately operated business is expected to work, because the service delivers a substantial value to its private customers, compared to the present situation where such inquiries are complicated, time consuming and costly (and where potential requestors often prefer to do without). Moreover, demand will increase as a result of proceeding European integration and expansion, and also as a result of a cheap and comfortable access.

The business model conforms to the requirement of subsidiarity, because RISER simply leverages existing services offered by national authorities in the Member States, not questioning their local responsibility and not creating any centralized super-structure. It is competitive, because nothing prevents other enterprises to build up a similar service. Furthermore, it can perfectly integrate within a federative overall organization, using and being used by other similar services responsible for certain regions or areas. Once RISER is integrated in a common structure of interacting registry authorities, government service portals, and other similar relay service, it will be able to deliver the highest value for suppliers and demanders of information.

2.5 The RISER pilot application

The initial piloting phase, covering address information in Austria and Germany, went into service in September 2004 and operates successfully. In the beginning of 2005 an Irish pilot site has been added. After being officially announced, RISER found considerable public attention, and a number of prospective customers – even from the public sector – showed their interest in becoming pilot users of the service. The service can be publicly accessed through the internet at *http://www.riser.eu.com*, but only registered customers are allowed to post inquiries. Potential users are invited to apply for registration at the same site.

The internet service provides an interface that allows users to upload batch inquiries in the form of a comma separated text file (which can be easily generated by a spreadsheet program like Microsoft Excel®), or to enter single inquiries through an interactive dialogue. Upon reception of these orders, RISER's routing engine divides them into single requests and forwards each to the data centres of the respective authority in charge. Responses from the data centres are returned to the routing engine, which recollects the reply information, assigns it to the original orders and makes the combined results available to the requesters for download or online viewing.

An additional customer interface providing machine-to-machine communication will be added shortly.

Auxiliary services available to customers allow maintenance of user data, retrieving accounting information, applying for participation as a pilot customer, or obtaining general information about the project.

3 Exemplary Interoperability Issues

RISER is a rare example of a pan-European application that has cross-border exchange of governmental information in its main focus. So interoperability is naturally an important topic, and issues in that area become very evident because of the straightforwardness of the matter it deals with.

Recent interoperability considerations in the EU context usually adhere to the terms defined by the IDA Interoperability Framework, so this paper will do. The following sections about technical, semantical, and organizational interoperability address issues that came up in the process of designing and implementing the RISER service.

3.1 Technical Level Interoperability

Technical interoperability concerns technologies, standards and policies used for connecting to computer systems of data suppliers and customers, regardless of the actual content. Generally supplier systems are the bigger challenge, because a wide range of technologies can be found, many of them legacy, which will not be replaced in near future, while customers can rather be expected to adapt technologies defined by RISER. But on the other hand, standards and technologies for loose coupling of otherwise disparate computer platforms are highly developed, so connecting to other systems has become a resolvable albeit often laborious task.

3.1.1 Data transfer techniques

IDA eLink as a common middleware standard for secure and reliable data communication between administrations is of course the best choice for data transfers to other systems. Once it has become operable and adopted by European public authorities, it will be used also by RISER. But since this will not be the case in the foreseeable future, other available technologies must be applied.

In Germany, OSCI-Transport, one of the basic standards used for the development of IDA eLink, is already mandatory for data exchange between authorities of different federal states. But even here adoption of the standard takes its time, so we must meanwhile fall back to some other, more basic technologies and proprietary protocols.

RISER uses currently the following interfacing standards:

- TCP/IP as widespread networking standard for basic connections over the internet.
- SSL for data encryption and server authentication.
- SOAP, SCP, or basic HTTP-POST/GET as data exchange protocols.

Connections to data suppliers are partly synchronous and partly asynchronous. Some data suppliers, even though providing synchronous access, react so slowly that customers can hardly be expected to wait. But since RISER itself works in an asynchronous mode, the actual latency of a single reaction is of minor importance.

All asynchronous connections to data suppliers work in push-push mode, i.e. RISER sends requests to the supplier and provides an interface for receiving answers sent by the supplier.

3.1.2 Data formats

Ubiquitous XML is also used by RISER for formatting of data transfers from to most data providers. The XMeld standard (cf. below, Semantic InteroperabilityIntroduction) provides at least a good starting point for the concrete document structure, even if OSCI as its technological basis is still in process of being adopted. But this standard is naturally limited to intra-national usage and not appropriate for inquiries to other countries.

For the interactive transfer of requests and answers in form of files between RISER and its users, Excel style comma separated value (CSV) files are used rather than XML files, because

they are much easier to handle by current pilot customers. This will doubtlessly change when machine-to-machine communication to customers is implemented, where XML formatting is more appropriate.

3.1.3 Lessons learnt

Generally spoken, interoperability on the technical level may be complicated in detail, but is generally feasible by given means. Connecting to a multitude of different computer systems is surely too intricate for a single requester, but can be easily afforded by RISER as a service supposed to do exactly that.
RISER's system architecture, using exchangeable adapters for connections to external systems, allows flexible configuration of transfer methods and formats and is designed to deal with all expected interfacing problems.
The European standardization process is promising. The upcoming IDA eLink as communication standard will simplify transferring data between users and providers of information across borders substantially and thus ease the job of RISER (but will not render it dispensable, since provision of semantical and organizational interoperability will always be necessary to a certain degree).

3.2 Semantic Interoperability

Semantic interoperability ignores all technical aspects and focuses on the contents of transferred information. At first view this seems to be simply a question of content translation and of matching correspondent data fields. But on closer examination things get pretty complicated, and differences between similar data entities (like an Austrian and an Irish address for instance) can be surprisingly complex in detail.
RISER intends to provide a unique user experience sparing as much as possible bothering about country related peculiarities. But on the other hand, population registry information of different countries *does* vary substantially (even in cases where legal systems are quite similar), and these differences must partly be preserved so user can make valid inquiries and get meaningful answers. As a consequence, striving for semantic interoperability will always lead to some kind of compromise.
Even in Germany, where XMeld as a sophisticated data transfer standard allows uniform formatting of inquiry and result data, various detail questions regarding content and function remain unresolved.

3.2.1 Meaning and Structure of Information

Although the notion of a person's name and address can be considered as similar within the European regions, many incompatibilities exist in detail. So information to be included in queries and answers differs between countries. Sometimes information elements are similar but have different meanings. In many cases users will have problems to understand information elements needed for inquiries to other countries.
RISER currently copes with this problem providing slightly varied user interfaces for inquiries to different countries. But this is not considered to be an optimal solution, and some unification seems to be indispensable. In any case, excessive information for the users must be provided to enable them to successfully make cross-border requests.

3.2.2 Relevance of Request Parameters

Some countries require for legal or technical reasons a minimum of identifying information about the requested person, and reject requests not containing this minimal information. In Germany for instance, name, date of birth and address, or alternatively name, date of birth and gender of the requested person must be given. In Austria, next to the name one additional

search criteria is required, while requests to Ireland must contain name, county, and part of a street name.
Moreover, requirements in respect of certain search criteria are not always clear. In Germany for instance, exactly one first name must be given and is sufficient, while registers in other countries possibly cannot identify persons if parts of the names are missing. The same problem occurs with parts of city names, street number extensions, and other information elements.

3.2.3 Spelling Problems

Generally spoken, search parameters provided by users should use proper spelling in order to be processed correctly. Problems occur when correct spelling of an item is not clearly defined or when the exact rules of spelling are not known to the user. Using address improvement services provided by certain vendors does not always help, or in some situations even worsens the results of an inquiry, because an "improved" address may not necessarily match the expected notation of a particular register.
Generally RISER has to be very cautious when applying "intelligence" to data being processed. Since delivered address information may be subject to legal action, the authoritative character of information entrusted by official services must be preserved. So any inappropriate manipulation of data provided by requesters or suppliers of information should be avoided.

3.2.4 Meaning of Services

Not only transferred data but also the services as such can differ considerably between countries. This is at first a question of organisational interoperability, but affects also to the semantic level.
In a country that obliges its citizens to register their residences, results of registry inquires are far more significant than inquiries to other countries, where rules are not that strict. If given search criteria are correct, a negative result from a population register in Austria or Germany means that the requested person definitely never lived (officially) at that place. In Ireland for instance, where real population registers do not exist and RISER resorts to "Registers of Electors", a negative answer just means that the requested person did not register to participate in some elections (or was just too young), obviously an information of much lesser significance.
But even in a country like Germany, having strict registration regulations, identifying a person just means, that a person bearing the given name and meeting some other search criteria is found. In most cases this is strong evidence, but not a real prove of the identity of a person. Other countries assign their citizens unique IDs that allow proving the identity of a person. Hence the result of a request for a person in Austria, where citizen IDs are applied, is even more significant.

3.2.5 Lessons learnt

Previous explanations show clearly, that some problems of semantic interoperability are quite complicated and subtle, and providing a uniform service, equally understandable to all users from different countries, may not be feasible for the time being. Nevertheless, a service like RISER is useful because it creates a single point of access to population registries of various countries, and eases processing of inquiries substantially.
In the long term, some semantical standardization might be useful albeit difficult to achieve. One could think of a common dictionary of population register related information including translation rules between different systems, as well as centrally maintained catalogues of available services.

Meanwhile trans-border services like RISER will have to bridge the differences the best they can. Doing this requires excessive, costly exploration of local peculiarities, but frees citizens from doing the same thing many times.

3.3 Organisational Interoperability

Organisational interoperability concerns the operational and organisational structures of public administrations involved in processing a registry inquiry. Since such an inquiry is quite simple in its structure, only small interfaces are needed. Thus the internal organization inside the "black box" of the local organisation is of minor interest.
Much more important are differences of the legal systems in two aspects. One of them is the obligation for citizens to register their domicile; the other is privacy protection for the register content.
The following details are based on the results of a preparatory investigation of European populations registers carried out by the RISER project consortium.

3.3.1 Availability of populations registers

Citizen registration policies in Europe vary extremely between countries. While only few countries do not operate any population registers at all, all others are mainly focused on national requirements and differ severely in respect of regional organisation, stored data, rules of registration and rules of public access.

Country	Register exists	Availability for access		Remarks
		technical	legal	
Austria	YES	YES	YES	
Belgium	YES	YES	NO	
Czech Republic	YES	YES	NO	
Denmark	YES	YES	YES	
Estonia	YES	YES	YES	
Finland	YES	YES	YES	
France	NO	NO	NO	No appropriate register available
Germany	YES	YES	YES	
Greece	NO	NO	NO	Registry not yet operable
Hungary	YES	NO	YES	
Ireland	NO	NO	NO	Electors Register used instead
Italy	YES	YES	YES	
Luxembourg	YES	NO	NO	
Netherlands	YES	YES	NO	
Poland	YES	YES	YES	
Portugal	YES	NO	NO	
Slovak Republic	YES	?	?	Registry will be established
Spain	YES	NO	NO	
Sweden	YES	YES	YES	
United Kingdom	NO	NO	NO	Registry will be established

Table 1 – Population registers in European countries and their availability

Most existing national registers provide facilities for accessing them from outside, but impose more or less severe obstacles for access by private persons or institutions. Often access is limited to one or more of the following groups:

- Official authorities.
- Recorded persons only to their own information.
- Citizens and private legal entities located in the same country.

- Citizens registered previously as inquirers.
- Citizens that can provide some evidence for requesting the register.

Table 1 lists the actual possibilities of accessing population registries of most EU countries.

3.3.2 Local Distribution

Countries utilising population registries can be divided into three groups regarding local distribution of the registers.

1. Decentralised, operated by or on behalf of local or regional authorities.
2. Decentralised, but with an integrated backup register on national level.
3. Centralized, operated by authorities on the central governmental level.

Accessing Type 1 (and type 2 if only local registers are accessible) registers is complicated, because a multitude of different interfaces (as well as fee schemes and other regulations) have to be observed and maintained. In Germany for instance, more than 12.000 individual municipalities are responsible for their respective registry data. Although operation of local registers is often carried out by common regional data centres, the diversity can hardly be handled. Therefore RISER prefers to have one (or only a few) national access points provided by national or regional broker services (that do essentially the same as the RISER service, but focus on a smaller geographic area).

3.3.3 Lessons learnt

If populations registers are not existent in some countries or are technically or legally not accessible, this situation can hardly be overcome and imposes a serious limitation to regional coverage, thus restricting overall value to the end user. On the other hand, the number of countries that can potentially be connected (in terms of covered population) seems to be sufficient to justify the creation of the RISER service. And in the long run attitudes regarding population registries may change to more openness, as the British example suggests.

4 Conclusion

Previous considerations of interoperability issues in the RISER case show clearly, that technical issues are the least significant. Solutions may be often laborious, can be achieved by using given technologies and developing standards. In contrast, solving problems of semantical interoperability is much more demanding, requiring substantial effort and a thorough understanding of all the relevant differences in the meaning of information and services. In many cases, semantical differences cannot be resolved at all and must be handled by the user. This affects the uniformity of the service but not its overall value.

Problems stemming from organizational differences (especially in the legal system) are much more intractable, limit the number of coverable countries and thus limit the value of the RISER service to some degree.

In general we see an increasing demand for more harmonisation of national regulations on governmental data access. But this will take time, and certain differences of governmental organization between countries will persist, particularly because of their historical and cultural roots, and equalizing them is not always desired. For this reason, services that bridge technical, semantical, and organizational differences will also be needed in future. Apart from this, data exchange facilities like RISER demand for some common high level infrastructure to ease trans-national connections to governmental services, e.g. facilities for locating responsible authorities, for retrieving technical addresses and interface information, and for content mapping of transferred data.