How to achieve rational data integration on the European level

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We live in an era where data is available on a large scale, and in a plethora of different formats. The major question that arises is no longer if we have the data, or how to find the data, but how to find useful information within the available data and how to decide if the information we find is correct and complete.

This is not different on the European level in the domain of freedom, security and justice. Of course, there is always data that is not available in a database. But much worse is the fact that data is available more than once in several databases, spread all over Europe, and in multiple formats. How can one be sure that the data one is using are correct and complete, and that different databases don't store different versions (or erroneous versions) of the same data.

And what about the Member States? Are they in the possibility to get the necessary data at the right moment in time to take the best possible decisions with regards to the domain of freedom, security and justice. What information are they allowed to get out of the European databases, what information can they technically get out of these databases, and what is the cost for doing so? Let's not forget that the European budgets are also paid for by the Member States and hence by all of us.

New wine in old wineskins?

In order not to confuse different problems in the field of data storage and utilisation, it's important to differentiate systems that still are to be developed and systems that are in production.

The existing systems, such as the *Schengen Information System (SIS)*, the *Visa Information System (VIS)* and *Eurodac* were all developed in a period when one still could afford to pay for Legislative quirks such as the obligation to develop SIS and VIS as two physical independent systems, such as letting each EU Agency develop its own large databases (Europol, Interpol, Frontex, …) and such as interdicting the integrated use of the data from different databases. It was the age of European innocence where one could afford to say that privacy was an absolute given and that everything else, including security, had to comply with that absolute privacy. Unfortunately, those days are no more. But the heritage of the political decisions (translated in legislation) of those days are still very tangible, real, all over the place and expensive.

And then, a *European Agency for the operational management of large-scale IT systems in the area of freedom, security and justice (eu-LISA)* was born. Its goal was to keep SIS, VIS and Eurodac operational in a cost-effective manner. Again, the same kind of mistakes were made: not looking at future cost, change and expansion. On the legislative level, strict restrictions were put on paper that even forbid to have, for instance, an active-active configuration in two redundant computer rooms. It goes without saying that such legal foibles have major consequences on the availability of the managed systems. The Managing Director is almost obliged to swim with his hands tied on his back. Not to mention the time it takes to change such questionable rules. And even worse, one simply did not foresee the fact that other major IT systems would be needed, and that the economic reality dictates that the same agency manages all large IT systems whether they are new or existing.

So, the major problem on the one side is now that we need access to multiple divergent databases and infrastructures, managed by different agencies in different places, not connected to the same client-base, in different data formats, on different networks, etc. On the other side, we need to make an urgent decision what to do with systems that are to be developed, in order not to pour new wine in old wineskins.

For instance: what about *Passenger Name Records (PNR)*. Member States are already in full phase of development, each in their own corner, and in one case as a taskforce of different Member States. On the European level, this ship has, like so many before it, already left the harbour. Does one never learn? Does one keeps pouring new wine in old wineskins? Again, a major consolidation exercise is to be foreseen and to be paid for. But here, the taskforce could be a last hope. If they bring forward a solution that can be used by the other Member States, and that is substantially cheaper and more flexible for the carriers than connecting themselves to 28 different systems, the chances are that other Member States take over this system, and that a bottom-up consolidation takes place.

New systems – Who dares to take rational decisions instead of political compromises

Not a single IT responsible in his right mind would advise to spread new systems all over the place, without a means to obtain synergies and without a possibility to consolidate the infrastructure beneath these new systems. Neither would it be advisable to create new monoliths without first looking if there is a possibility to construct new systems on top of already existing infrastructure and by reusing already developed software.

One should welcome the fact that since some time, within the EU Directorate-general Home, the strategy is to consolidate and to obtain synergies by asking eu-LISA to take up more responsibilities with regards to the development and future management of new systems as there are *The Entry-Exit System (EES)* and *The European Travel Information and Authorisation System (ETIAS)*. The best way to implement EES is as a kind of VIS++. For ETIAS, part of the development should be to consider possible consolidations with existing systems.

One can only wonder if the same kind of consolidations and synergies wouldn't economise even more if they were applied to the entire EU level. There is work to be done…

Existing systems – How to make right what's wrong and straight what's crooked

In the case of the EU Commission, the mill grinds slow due to several legitimate and other reasons. But at least, one can observe that the will is there to start straightening up what was made crooked by political design. A first effort was made in the document *Stronger and Smarter Information Systems for Borders and Security COM(2016) 205 final*. The added value of this document is that it gives a clear overview of the crookedness of the actual situation, and that it has the courage to forward a rational solution. Of course, there are changes to apply to this first proposition, and of course specialists of the Member States and the European Commission have to consider a solution that is also feasible on the national level, but the idea of a first step to consolidate some of the existing systems is put on the table.

The document proposes, in the wrong order of execution, and with high-level designs that are amendable to optimization, 4 projects that can ameliorate the situation, and bring some of the systems closer together and closer to the end-user. A similar, updated document, drafted by *The Expert Group on Information Systems and Interoperability*, lists up the four project as follows:

- a *single-search interface* to query several information systems simultaneously and to produce combined results on one single screen;
- the *interconnectivity of information systems* where data registered in one system will automatically be consulted by another system;
- the establishment of a *shared biometric matching service* in support of various information systems; and
- a *common repository of data* for different information systems.

Single search interface

The idea behind this project is that searching multiple centralised systems is easier to achieve than searching decentralised systems. The European Commission and eu-LISA will explore if a Single Search Interface can also be used to perform one-stop-shop simultaneous searches on decentralised systems such as Prum and ECRIS. The European Commission and eu-LISA will conduct this analysis together with The Expert Group on Information Systems and Interoperability, without modifying existing access rights.

Interconnectivity of information systems

It is already permitted for the Member States to have a single end-user application that is connected to different information systems, as there are SIS and VIS. In the future, EES and probably ETIAS can also be used for this same kind of applications.

Of course, it would be more cost-effective to have an interconnection between these central systems, so that data is stored once, but so that even if the real data is not stored in a system, it can be virtually seen as containing that data. When a query is launched to e.g. System A, all the virtual data fields will be resolved in System A by querying other systems (System B, System C, …) that are interconnected to it. System A will reply to the user upon reception of the real data from System B, System C, etc.

Another advantage of this way of working is that data is only stored in one system, and that errors due to multiple storage of data will be avoided.

Shared biometric matching service

Different systems have to store or will have to store different kinds of biometric data. Some potential examples are fingerprints, photos, iris scan, etc. Implementing a biometric matching module in each system is a very expensive and time consuming approach. Hence the idea to bring all biometric data and all biometric functionality together in one biometric service, that serves the systems previously called System A, System B, System C, …

This way of proceeding is not only less expensive, but it has major advantages in the security domain. It's a lot easier to protect biometric data in one system than to protect divergent biometric data in different systems.

Common repository of data

This project is ambitious, long-term, and surely expensive. The common repository would constitute a core module that contains the basic data (alphanumeric and biometric data in a biometric matching service layer beneath it), while other data elements and specific features of the different information systems (e.g. visa data) would be stored in specific modules. The core module and the specific modules would be connected with each other to link the respective data sets. This would create a modular and integrated identity management system for borders and security.

It's clear that this project is the long-term evolution of the interconnectivity project described above. It would be the final solution for the historic mistake of splitting up the different EU systems in their own monolithic infrastructure and software. It goes without saying that certain legislative initiatives must be taken before this project can be implemented. One can only hope that the political and legal representatives that will be responsible for this new legislation will not make the same mistakes again. Resolving historic mistakes is one thing, but replacing them by even bigger mistakes seems not the best way forward.

Conclusion

Lately, people on all levels start realising that choices were made on political and legal level with regards to the rules of implementation of existing EU systems that were not the most adequate ones. There are several initiatives to mitigate the problems that we are confronted with due to these technically questionable choices. Some initiatives lead to mid-term projects, some to long-term projects. Each project brings risks and costs with it, and one can only hope that for the systems that still have to be implemented, nobody will pour new wine in old wineskins again and again and again…