

2. The Project

2.1. Goals

The MEDIA@Komm-project in Bremen is carried out by "Bremen Online Services." The goal of the project is to modernize Bremen's public administration with a focus on customer service, and to link this effort with a boost for the local ICT industry. This is to be achieved by developing a new delivery channel for public and private services: the integrated electronic single-window service.

This requires a common online platform with private partners, which is able to process secure transactions including authentication, identification, encryption and payment between citizens/customers and administrations/private service providers. As important as the platform are the applications in administrations and in the private sector which allow fully integrated electronic transactions and the means to achieve the widest possible access to these services. Together, platform/infrastructure, access, and applications comprise the key-components (cf. Fig. 1) and will be described in more detail in the next sections.

Fig. 1: Three components of the Bremen Online Services project

2.2. Access

In generalized terms, access to electronic services requires the distribution of three technological means: Internet access, security (signature/encryption) technology, and payment technology. Internet access so far is not widely available in the home and in the workplace. In Germany in 2000, about one-third of the population was believed to be online (in the US, this figure was believed to be twice as high). This leaves the majority of the population unconnected. Many governments want to address this gap with kiosks. These are self-service machines like ATMs. In Bremen, experience with information-only kiosks has been very disappointing. Usage is low, while the cost for maintenance and for the hard shells needed to prevent vandalism is expensive. In addition, public services require explanations which can better be provided by humans. For these reasons Bremen is applying the concept of assisted access points, where regular PC-units are made available at public places, such as city offices, community centers, or schools. While saving costs, this approach has the additional advantage of providing in-person assistance.

An important element at the technological center of electronic government is electronic signatures. In essence, electronic signatures, according to German law rest on an asymmetric cryptographic procedure. In order for them to be secure, one component, the private key, has to be issued to its holder in a smart-card, where it can not be manipulated. The other part, the public key, has to be held in a public directory maintained by a so-called trust-center. Software can then be used to encrypt and decrypt as well as to prove identity and integrity of messages. For the user, this means he has to acquire a signature card and a card-reader. Bremen Online Services tries to foster distribution of electronic signatures by trying to integrate them on German banking cards, which are held by most Germans.

This seems to be advisable because most transactions requiring signatures also involve payments, either as a price for a service or a fee for its delivery. Consequently, online services have to provide for online payment methods. Bremen Online Services will offer payment by debit notes and remittance, as well as prepaid smart cards. A fourth option, credit card payments, is not being accepted by German public administrations because of the comparatively high fees. This might change in the future. Also, since private service providers are more open to accept this form of payment, Bremen Online Services will offer this feature as well.

2.3. Infrastructure

To process electronic transactions, an infrastructure of value-added services is needed in addition to the telecommunications and Internet-communication protocols. In this regard at the center of the Bremen Online Services effort is the development of a data exchange format encapsulating both content data and security and routing functions. This data standard is XML-based and labelled "Online Services Computer Interface" (OSCI). In some important respects, it is modelled after the German banking industry's standard "Homebanking Computer Interface" (HBCI), which has helped to reduce development effort and time. Most notably, OSCI allows the integration of electronic signatures issued according to the respective EU-directive and the German electronic signature law. It also allows for encapsulation and easy conversion of many different data formats. It is structured to allow an intermediary to process the transaction, while at the same time preserving end-to-end-security between the users.

Bremen Online Services developed the necessary software and an online platform, labelled "OSCAR," which allows transactions between citizens/customers and the backend-systems within the public administration and private service providers. It handles all communications necessary to process payments and signatures, including the administrations's pay-office and the privately run trust-centers in Germany. It also performs necessary cross-functions such as logging, storing, and billing, as well as time-controlled delivery.

2.4. Applications

The third component of the electronic government concept is made up of a number of computer-based services such as older legacy systems. For the most part, this means opening existing applications and systems within the administrations and at private service providers, such as public utility, phone and post services, ticket-sellers and insurance companies, so that they can process online-transactions automatically, guarded by the intermediary and signatures.

This, of course, is not at all easy and requires large-scale "re-engineering" efforts in the respective agencies. Bremen Online Services selected several administration areas and provides funding in order to support these efforts. The highest priority is on those applications which are used by intermediary agents such as lawyers or tax consultants, because here both parties are likely to realize cost-effective gains through electronic transactions. The same applies for general business applications in the area of procurement. To increase usage of electronic services, several services are offered for the general public in the areas of moving and housing as well as leisure activities (mostly ticketing). Additional applications are implemented for students (college/university processes), car dealerships (car registration) and others (see Fig. 2).

Intermediary agents	Business	Citizens
- Tax filings and information (for tax consultants) - Legal procedures with courts (for lawyers) - Building applications (for architects) - Car registration (for registration services)	- Procurement- Car registrations (for car dealerships and manufacturer)	- Moving - Leisure activities (ticketing for movie theaters, theaters and sport events) - College/University processes (for students)

Fig. 2: Application areas of Bremen Online Services

The public services are complemented by private services. In all, more than 70 processes conducted by almost 30 service providers are scheduled for implementation during the time that federal funding is available. Providing such a broad spectrum of services in a single-window fashion is important because if citizens or customers will conduct all necessary transactions in a given life-situation, such as moving, dealing with unemployment or starting a business, it will be beneficial to use electronic services. Single processes by themselves do not add value because each one would have its own technology costs such as the need to purchase or acquire an electronic signature or electronic cash purse. By contrast single-window services avoid data and technology duplication.