

The Role of Electronic Signatures in the Austrian Federal E-Government-Strategy with Special Focus on the Educational Sector

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Identity Management within the Austrian E-Government-Strategy

Background:

Austria was the first EU-Memberstate, who implemented 1999 a Signature Act² conform to the Signature Directive of the EU. This act is not only covering civil-law, but is also applicable for G2C, G2G and G2B communication. To amend this early regulation in 2003 a draft for an E-Government-Act³ was developed, which is in force since March 2004. Parallel to the legal development the necessary IT-components were developed by working group of Federal Chancellery, Institute of Applied Information Processing and Communications, Technical University Graz and Secure Information Technology Center-Austria.

Concept: Citizen Card⁴

In this paper I will concentrate on the “Concept: Citizen Card”, which is the main element for the Austrian solution concerning secure electronic identification in E-Government. The concept for a Citizen Card, prepared by the above mentioned consortium, does not designate expressly a certain card or explicitly a type of card. Only minimum requirements are defined. All kind of cards which fulfil these minimum requirements can be used as a type of Citizen Card in accordance with the concept. These minimum requirements are based on legal presuppositions ruled in the Signature Act and E-Government-Act, in the area of the data security and the integration of the ZMR number⁵ for an accurate identifier. Whereby Signature Act and Order determine here on the one hand procedures and components, which are regarded as suitably for secure electronic signatures, and on the other hand confirmation bodies (A-SIT) evaluate the commercial products in this sector taking care of the fulfilment of all legal safety requirements. Citizen Cards must meet exactly the same criteria as all other cards, which are used in the framework of secure electronic signatures.

¹ The author was formerly in charge of the „Concept Citizen Card” in Austria’s Federal Chancellery and is now responsible for E-Government-Strategy in the Federal Ministry for Education, Science and Culture.

² Bundesgesetz über elektronische Signaturen, BGBl I 1999/190, english version: http://www.ris.bka.gv.at/erv/erv_1999_1_190.pdf.

³ Bundesgesetz über Regelungen zur Erleichterung des elektronischen Verkehrs mit öffentlichen Stellen (E-Government-Gesetz), BGBl I 2004/10, english version: http://www.ris.bka.gv.at/erv/erv_2004_1_10.pdf.

⁴ Official project-homepage: http://www.buergerkarte.at/index_en.html.

⁵ Number used in the Central Registration Register, a unique number for each citizen living in Austria

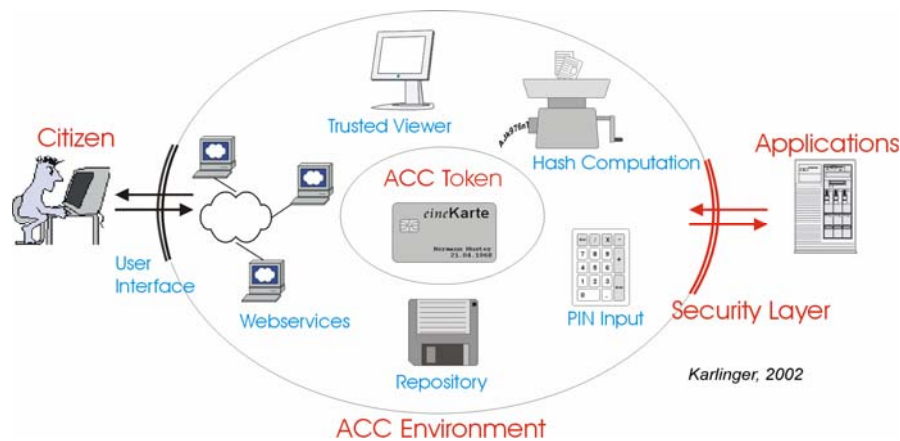


Figure 1: Components for a Secure Signature Environment⁶

Further the concept considers items, which are not obligatory requirements, but are recommended however, since they facilitate the use of the card substantially. For example info-boxes are recommended on the card with the function to store user data, which is needed very often in connection with an e-Government session. The limitation on a concept and the avoidance of the definition of a certain card should lead to a rapid and far spreading of Citizen Cards, since a significant increase of chip cards with signature function, e.g. bank cards, is to be expected in the next years. All these cards should be usable also in e-Government and therefore following the Concept Citizen Card.⁷

The big breakthrough of the concept held place in the beginning of 2005, with the enrolments of new bank-cards and eCards for Social-Security⁸. Because both of this cards are prepared for the use as Citizen Card, we have now all over the country for every inhabitant a Citizen Card rolled out. The necessary client-software is available in form of freeware⁹. The cardreader is subsidised by the government, so the cost for the citizens to get a card are extremely low compared to market prices. According to the technology neutrality of the concept citizencard, there is also a form conform to the Concept: Citizencard, which does not need a signature card either. The signature is calculated at an high-secure IT-Center, as token in the hand of the signature holder only a mobile phone (every Austrian provider is possible) is necessary.

Identity Management in the Educational Sector

Background

The Federal Ministry for Education, Science and Culture established with the initiative: eFit¹⁰ a 5 year running project (2001 – 2006) with a budget of over 75 million € for innovative IT-

⁶ Karlinger, G, Anforderungen Bürgerkarten-Umgebung, <http://www.buergerkarte.at/konzept/spezifikation/aktuell/Anforderungen%20Buergerkarten-Umgebung.20020412.pdf>, 2002.

⁷ An elaborate description is available at: Menzel, T, Reichstädter P, The Role of Citizen Cards in e-Government, in: Traunmüller R, Lenk K, Electronic Government, Proceedings to the First International Conference, EGOV 2002, Springer, 2002.

⁸ Mikus J, SV-Chipkarte – Auf dem Weg zur elektronischen Verwaltung, in: Schweighofer E, Menzel, T, Kreuzbauer G, Auf dem Weg zur ePerson – Aktuelle Fragestellungen der Rechtsinformatik 2001, Verlag Österreich, Wien, 2001.

⁹ Download and documentation <http://demo.a-sit.at/selan/>.

¹⁰ BMBWK, eFit Austria: The New Quality in Education, download of german and english documentation at: <http://www.efit.at>.

projects in the educational sector. The establishment of E-Learning and the access of E-Content for educational purposes is a mayor goal in the initiative. Because of the federal structure of Austrian's educational legal framework, there is a competence-mix between Federal Ministry, provinces and Towns. This is mirrored in the development of the E-learning-structure and the necessary IT-infrastructure of content servers throughout Austria. Content Servers for about 1.5 million of teachers, students and scholars are operated by far more than 50 public and private institutions. With the project "e-Learning Bildungspool Austria"^{11, 12} the Federal Ministry erected an institutional framework in the form of an Internet-Portal and a federal repository to make the content of all the servers in the educational sector available in an one-stop-shop process. The following slide shows the general structure:

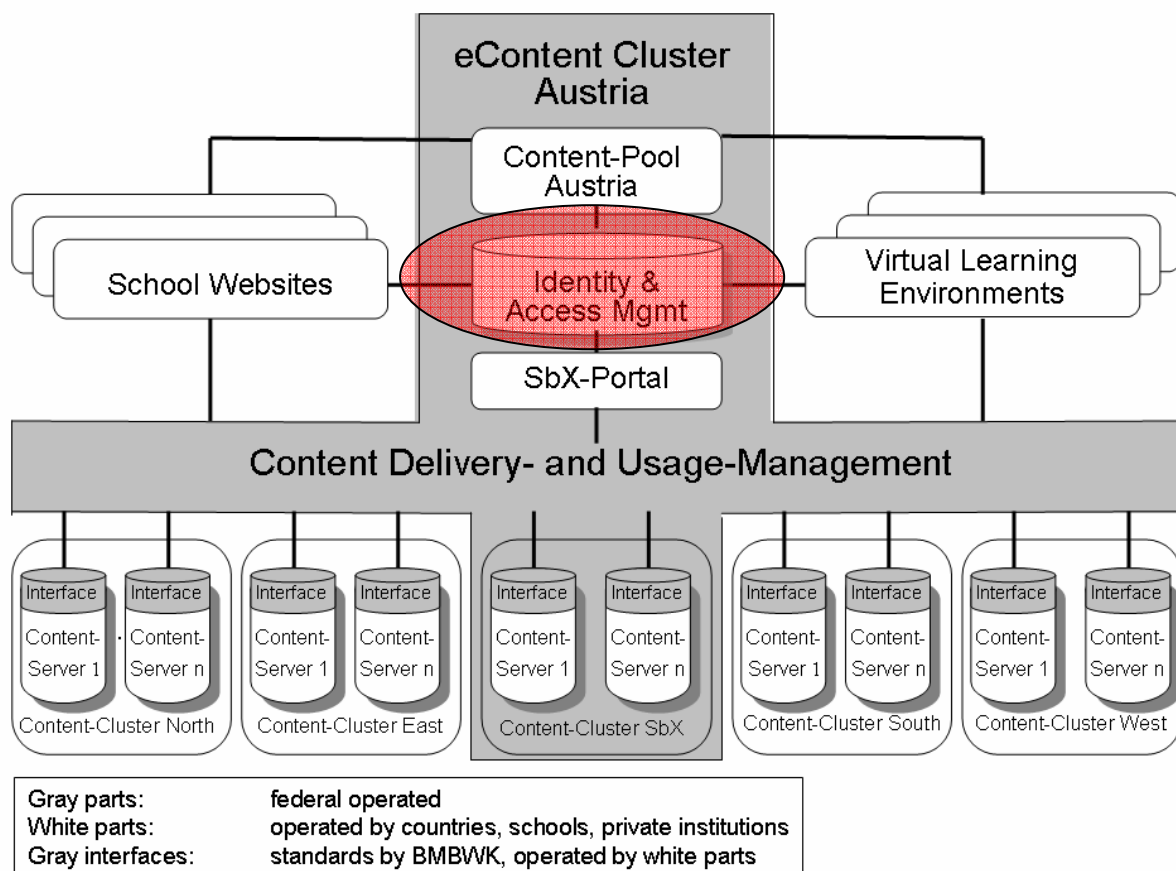


Figure 2: Architecture of a nationwide, distributed E-Learning-Infrastructure in Austria

According to the guiding principle, that all the content shall be stored locally, but accessible nation-wide for all participants in the Austrian Educational System, the conservative method of securing identification with UserId/Password, which are administrated locally at the content-servers is not applicable. Using this method each participant of the system (scholar, teacher, student) needs an individual UserId for each content-server. The operators of the content-server have to administrate a lot more users than only these, which are using their regional Content-Server as entrance point.

¹¹ See: <http://www.bildung.at>, <http://info.bildung.at> and for the repository: <http://bildungspool.bildung.at/ubp>.

¹² Kristöfl R, Menzel T, e-Learning Bildungspool Austria, in: Schweighofer E, Liebwald D, Kreuzbauer G, Menzel T, Informationstechnik in der juristischen Realität – Aktuelle Fragen der Rechtsinformatik 2004, Verlag Österreich, Wien, 2004.

Therefore an nation-wide but distributed Identity- and Access Management System will be established for the educational sector. It contains two key-concepts:

Edu.Card & StudentServiceCard

To substitute the traditional, paper based scholar and student ID-Cards electronic signature cards have been rolled out at almost 18 universities.¹³. At the moment a pilot-project using similar signature-cards for scholars and teachers concerning 6 schools in Austria is ending. Beginning with autumn 2005 the cards can be regularly rolled out for all schools. The cards are technical compliant with the Concept: Citizen Card and can be used also as a citizen card in every E-Government-Process. Because of the lower security-demands for identification in the Educational System a second (cheaper) version of the card, containing electronic signatures, but not the full functionality (ZMR-number), is also specified. Schools – like universities – decide in their autonomy, if they want to use the card or the conventional system. To avoid diversification and a wide spectrum of technically different card-types and operating software technical, organisational and legal minimum specifications¹⁴ are worked out in the moment by a working group of the ministry, province-representatives, teachers and representatives of the business-sector.

Bildungsportalverbundprotokoll (BPVP)¹⁵

Neither UserID/Password nor signatures techniques solves the problem how Users are administrated easily in an distributed portal- and server infrastructure. In the traditional setup each user nationwide must be administrated within each content-server he is allowed to access. Assuming, that each scholar is allowed to access ten or more content servers, the administrative amounts explode. Therefore we introduce in BPVP, following the Austrian E-Government-Strategy¹⁶ the concept of home-portals, where the local scholars (eg scholars of a province) will login and their access-rights are administrated there to access all content-servers nation-wide. The content-servers are referred as application-portals. Each application-portal trusts all or a set of home-portals. If there is for example a relation of trust between the home-portal A and the application-portals C, D, E & F established once, the administrators of C, D, E & F do not have to give rights to each individual scholar using home-portal A. Instead this will be managed by the administrator of home-portal A for all his students for the access of all content-server nation-wide, which are participating in BPVP.

This concept defines the roles of home-portals and application portals. Home-Portals administrate userdata and –rights and are in charge for secure authentication of their users. Application-Portals only providing content, their administrators do not have to care about user administration. Additionally BPVP defines a central LDAP-Directory providing all home- and application-portals, who are allowed to take part in BPVP. This LDAP-Directory – called Bildungsdirectory – has a root-function for all the servers within BPVP and is operated by the Ministry.

The technical details were developed and specified during the first mid-year 2005¹⁷. A prototype for home- and application-portal will be available end of the year.

The following graphic shows a rough concept of the architecture:

¹³ Reichstädter P, Der elektronische Studentenausweis, in: Schweighofer E, Menzel, T, Kreuzbauer G, Auf dem Weg zur ePerson – Aktuelle Fragestellungen der Rechtsinformatik 2001, Verlag Österreich, Wien, 2001.

¹⁴ For details about those specifications contact: thomas.menzel@bmbwk.gv.at.

¹⁵ Proper name; best translated as: protocoll for a Network of Educational Portals (and Content-Servers).

¹⁶ http://reference.e-government.gv.at/Veroeffentlichte_Entwuerfe.236.0.html

¹⁷ BMBWK, BPVP Bildungsportal-Verbund Protokoll, Version 0.5, Stand: 10.03.2005, For details about this specification contact: thomas.menzel@bmbwk.gv.at

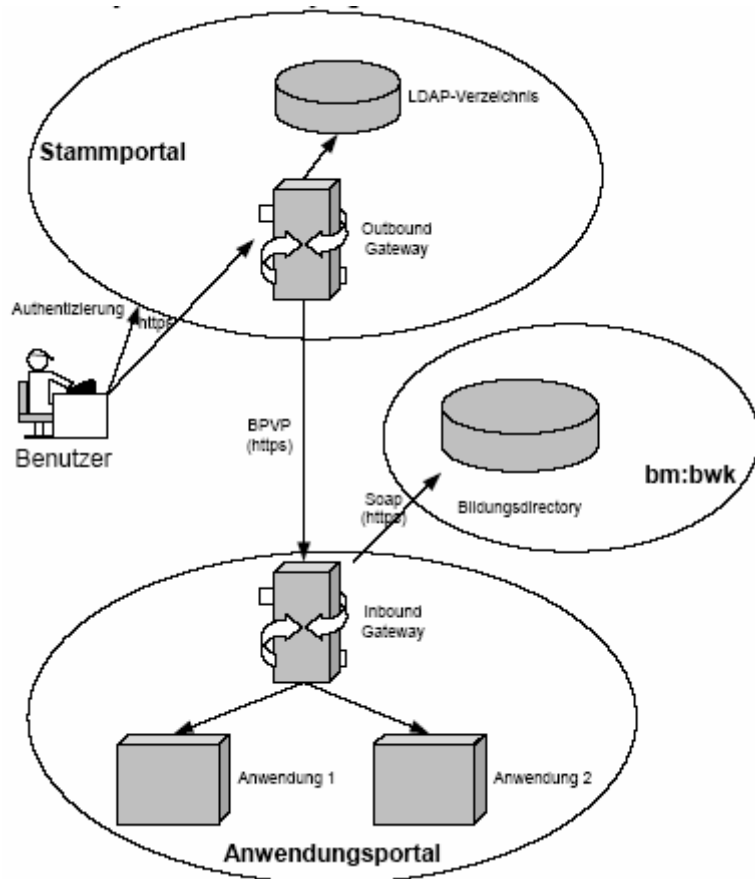


Figure 3: Architecture of BPVP (descriptions in German: home-portal = Stammportal, Application-portal = Anwendungportal)