

## LEVELS OF DESIGN CRITERIA FOR EUROPEAN ALL CITIZEN PERSONAL HEALTH RECORDS

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**Background:** Two of the authors have directly contributed to designing the basic architecture of Austria's and Germany's future national health-IT infrastructure. This allows for a hands-on judgement of technical and organizational feasibility of general and not yet practically tested concepts aiming at establishing an all citizen personal health record (AC-PHR) as well as a reasonable evaluation of its risks and benefits.

At the end of 2005 every Austrian citizen will hold a smart card which is in principle capable of providing secure and private access to personal health information. Though this token is (more or less) only a key-card the effect and outcome of the underlying infrastructure project can in principle form the basis of a nation wide PHR-system, which will allow qualified and restricted handling of private health data.

The key-card can contain and provide some personal health data and will allow already for certain protected services in health administration, e.g. evidence of insurance. As health care professionals will be equipped with a key card, too, electronic prescribing could be implemented quickly based on that infrastructure.

Along with 8 million cards for the citizens every doctor/medical practice (in Austria more than 15000) will be equipped with a "connector" and one (or several) smart card-terminals, providing a trusted computing platform within a volatile IT environment in the practices. The "connector" is a security-certified trusted system that defines the outer edge of the health-IT infrastructure. It serves as a connecting box which supports a save and reliable data exchange between

- the existing IT-system installed in the doctors' medical practice and
- a central data center operated by the joint organisation of social insurances (this is specific in Austria (in other countries there will be several providers and institutional users of services)

Moreover this box is the entry point or network appliance to connect professional health information partners (doctors, pharmacies, hospitals, mobile clients). That type of safe national-wide IT-infrastructure represents quite a suitable technical basis for an AC-PHR. The bottleneck usually lies in the difficult process of organizational and political cooperation and integration of health institutions in charge. Health care organisation includes fragile bonds. Trust and cooperation has to be maintained through any phase of establishing new technology within the health administration system.

Though e.g. the Austrian "connectors" (different administrative backgrounds will need different architectures. Therefore e.g. the Austrian connector is quite useless in the German environment) will be installed in every medical practice by the end of 2005, pharmacies and hospitals are not yet part of the system in Austria! Speed has been there in the beginning. But the lack of project integration of hospitals, pharmacies, or federal structures will create a serious slow down, when integration towards a total national infrastructure proceeds.

**The German approach:** Privacy and Security have played a major to dominant role in Germany's architecture for its health-telematic-infrastructure. Though the project has not touched the practical field by now, its concepts and plans go much further than the Austrian approach. The level of planning definitely is deeper and heading much more towards completeness. Though from a project management point of view the task is much more complex in Germany (several independent institutions, highly federal structure in health administration, heterogeneous interests on various structural levels) the final outcome will most probably hit the patients' need of „save health data mobility“ much earlier on a relevant nation-wide level than it will do in Austria.

### Design-Criteria for the nation-wide health record

The following four levels of criteria have been extracted from European stake-holders and from observing the prime risks and bottlenecks in establishing an AC-PHR within a typical central European health institution environment.

- 1) **Primary technical criteria** (PT, concerning technical infrastructure and system architecture) e.g. security, usability, scalability, connectability, robustness, reliability.
- 2) **Secondary technical criteria** (ST, concerning establishment, integration and daily operation of the total system) e.g. project management, rollout scenarios, technical integration, integration of independent projects, maintenance, location and ownership concepts, operating changes and new services, framework quality.
- 3) **Organisational and institutional criteria** (OI, integrating stakeholders) e.g. serving patients and doctors while manageable and acceptable for hospitals, pharmacies and insurances.
- 4) **Public and cultural criteria** (PC, managing mindsets) e.g. view and need of a PHR in pub-

lic opinion, maintaining trust in the system,  
preparing a step by step growth on the basis of  
serious field tests, planning an architecture  
“above” mid-term political use or miss-use.

Any nation-wide public health IT project has to obey an  
unwritten rule of criteria priority: PC > OI > ST > PT.