

Introduction

An important trend throughout Europe is a move towards more involvement of patients or citizens in informed decision making of any choice and responsibility for their own health. The vision behind this work is comprised of two components: new innovative services to the citizens and networking services and care across organisational boundaries.

The term “Regional Health Economies”, as used in this book, is an umbrella term that refers to both formal and informal structures that may exist within any European healthcare region and involves patients, providers, and payers. Although each medical centre is autonomous and devoted to the delivery of a particular set of services, the desirable continuity of care requires that different medical centres, offering complementary services or different levels of expertise, exchange relevant patient data and operate in a co-operative working environment.

The development of integrated healthcare information systems must be based on the definition and implementation of an open architecture where the individual modules:

- Are responsible for autonomous and self-consistent functional areas,
- Inter-work through public and stable interfaces,
- Are configurable, able to operate in a distributed environment, and can evolve according to the specific requirements and characteristics of the individual organisation.

The needed integration and interoperability of systems will not be achieved, unless the health care domain invests into standardisation and makes a co-ordinated effort to utilise existing and emerging de facto and de jure standards on IT infrastructures and enterprise-wide integration platforms. The way IST is developing, however, means that there is no need for the creation of a fully harmonised European healthcare model (which is an impossible task anyway) for industries to have markets across Europe and globally. Differentiation and creation of new actors in IST markets means that value can be added to generic products by specialising (localising) these to meet different customer needs. However, this does not diminish the need to reduce the variation across Europe in the ways regional care is delivered and supported by IST based products and solutions.

A further dimension to this comes from the Open Source initiative. The success of Linux and the Open Source Web-servers and browsers is well known. This has revitalised OS activities also in the health care domain. A large number of health care specific OS projects are underway in the world. Through Open Source the activities of various volunteer standards creating organisations have gained more credibility. Especially in the area of large-scale enterprise systems the fact that OMG’s CORBA-based specifications can fully interact with the Internet based Java/ J2EE environment has created a real competitor to Microsoft in enterprise systems.

PICNIC stands for “Professionals and Citizens Network for Integrated Care”. Acknowledging that there is no uniform European agreement on how healthcare services should be organised, and that culture and value systems across Europe are different, means that there cannot be a single regional healthcare network product that would fit all needs. Instead there will be a PICNIC architectural description and specific PICNIC components and services that can be used to populate that architecture. These components and services will

have to be localised and fitted to the needs of individual regions and at the same time introduce the new ways of working (i.e. trigger changes locally). This means that industries must specialise and network to provide the required services comprising component and content providers and ending with systems integration in the implementation phase and maintenance support and even operating services in the deployment phase. This vision is fully in line with the general trends in IST and its deployment.

The aim of the book is to present and discuss the PICNIC project (IST-1999-10345) and its results in a context. Therefore the book begins with the “The PICNIC Story”, where the project is presented and discussed. The value that PICNIC adds is critically important, in order to have a European perspective in the reconfiguration of healthcare processes that are proceeding worldwide, for several reasons:

- It creates an environment for the users (i.e. regions) to define what regional services are needed and where the commonalities in these exist.
- It creates an environment where industries can take part into this and inject their expertise in IST development and deployment to this.
- It produces prototypes of such services and IST based tools to support and enable these.
- It provides inputs to European harmonisation and standardisation bodies.
- It assesses and evaluates the results and potential impact that these activities has on the creation of next generation regional solutions for professionals and citizens to support a network for integrated care.

The next chapter, “PICNIC Architecture” focuses on inter-enterprise integration and the facilitation of collaboration between healthcare organisations rather than on intra-enterprise integration and is presented through a number of views. The first view describes the architecture from the viewpoint of national and regional health authorities and policy makers, i.e. how the architecture enables the implementation of national and regional health policies, strategies and organisational structures. The second presents the service viewpoint relevant for the care providers, health professionals, patients and citizens, i.e. how the architecture supports and enables regional care delivery and process management, including continuity of care (shared care) and citizen-centred health services. The third is the engineering view of how the regional healthcare network is built, which is presented using four sub views: software engineering, IT services engineering, security and data.

A key objective of the PICNIC project has been to provide products for a European and potentially worldwide software market. The approach followed was through the delivery of a number of Open Source components, to be integrated into applications that deliver similar services across the participating regions, aiming at their exploitation by other regions and the industry. The chapter on “PICNIC Technology” describes the technology developed during the lifecycle of the PICNIC project, focusing on the three core services of Clinical Messaging, Access to Patient Data, and Collaboration. The use of such components across different regions, which can be integrated into applications, in order to deliver similar services across participating regions can be exploited by other regions and industry as well to provide products for a European and potentially worldwide market.

In order to be in a position to apply the results of PICNIC, and realise the PICNIC Architecture in a particular regional setting, a series of steps must be taken to determine the work that needs to be done. The seven main steps comprise:

- Initial project definition
- Planning for implementation of the Architecture
- Procurement of technical support and/or implementation resources
- Design of the Technical Architecture and federated schema of RHCN data

- Development of the middleware platform and integration of PICNIC components and legacy applications
- Testing & verification of all elements of the RHCN
- Deployment.

Each of these steps is explained in the chapter “How to Use PICNIC Results”.

Subsequently, the PICNIC context is provided by a number of other initiatives and projects (both competing and complementary within Europe and internationally).

“Canada Health Infoway – Towards a National Interoperable Electronic Health Record (EHR) Solution” presents a high-level view of Infoway’s seven-year plan to have the basic elements of interoperable EHRs in place across 50 percent of Canada by 2010. In particular, the chapter discusses the business and technical approaches that have been developed to pursue aggressively Infoway’s goal. These approaches allow individual jurisdictions to deliver local and regional solutions cost-effectively while contributing to a larger, interoperable national system. Furthermore, because technology is constantly improving, the chapter describes mechanisms for accommodating future developments. Finally, it outlines progress made to date and discusses future directions.

The chapter after that describes “The Story of MedCom”, the rather long development history of the electronic communication in Denmark followed by the nation-wide health portal and the background behind the Danish project organisation.

“The openEHR Foundation” chapter summarises the antecedents that led to the formation of openEHR, including the research and demonstrator activities and the general health informatics context in which specifications and standards for the EHR are being developed. It outlines the formation of openEHR, and the steps that have been taken to establish it as a community and as a Foundation. The key features of the architectural approach to representing, storing and communicating EHR data are described. It outlines the present plans for software development, and the roles openEHR members are playing in international standards.

“The National Programme for IT in England” describes the architecture for the core component of the NHS Care Record Service including the application, information and security architectures and the requirements for supporting standards and technologies.

Finally “Implementing Interoperable Secure Health Information Systems” proposes a generic model for streamlining the security implementation process on any level -local, regional, national or cross-border, while at the same time it addresses the future prospects and requirements for advancing secure delivery of healthcare services across European borders.

Finally, a concluding chapter relates PICNIC to the context.

This book has gathered significant experience in developing IT services for Regional Health Economies and builds on several years of worldwide experience. Its aim is to make the European market for telematic health care services more cohesive and less fragmented, by developing a model for the preparation of the regional health care providers to implement the next generation of secure, user-friendly health care networks. As such it paves the way towards the development of regional healthcare networks, assisted by interoperable IT services, in order to support effectively continuity of care across enterprises and establish a Professionals and Citizens Network for Integrated Care.