The Telematics Infrastructure: The Backbone of the German e-Health Card

Manuel Zwicker, RMIT University, Melbourne, VIC, Australia
Juergen Seitz, DHBW Heidenheim, Heidenheim, Germany
Nilmini Wickramasinghe, RMIT University, Melbourne, VIC, Australia, & Epworth Healthcare, Richmond, VIC, Australia

ABSTRACT

Today all OECD (Organization for Economic Cooperation and Development) countries are faced with the challenge of escalating healthcare costs. Most are agreed that e-health appears to offer a solution and thus we are witnessing the design, development and implementation of various e-health solutions. This is also true in Germany where the current focus is on the new e-health card concept. It is anticipated that the introduction of this e-health card will totally change the current healthcare system within Germany, primarily because it offers several new functions. Some of these functions are mandatory, while other functions are optional. Such an initiative however, brings with it several advantages and disadvantages. A particularly sensitive aspect here concerns data protection and data security. To address this consideration, the development of a new telematics infrastructure is critical and in some respects the backbone for the e-health card. Thus, the following provides an assessment of the telematics infrastructure behind the German e-health card.

Keywords: Electronic Health Card, Electronic Health Professional Card, Electronic Health Record, Electronic Kiosk, Electronic Prescription, Emergency Data, Telematics Infrastructure

INTRODUCTION

There is great expectation that the implementation of the German e-health card (eHC) will totally change the current healthcare system in Germany. Most especially because new functions, such as electronic prescription and e-pharmacy as well as electronic patient record and emergency data of the individual, will be introduced, which in turn will move the focus to a more electronic-based view. It is of course natural that such a radical change will bring both advantages and disadvantages to – as well as some controversial issues to the forefront for – all the healthcare actors.

In particular, one of the most controversial aspects with the eHC is concerned with the aggregation of enrollee’s data. Since it is widely recognized that such data aggregation will bring advantages with respect to improved efficiencies and even quality of care there is also the very real threat regarding data security and access authorization. This then necessitates the development of strict policies, regulations and laws as well as the design of an appropriate telematics infrastructure. This is indeed a
tremendous challenges and must be developed taking into account all healthcare actors including enrollees, service providers (e.g., medical doctors and pharmacists) and cost units (i.e., health insurance companies).

This paper then serves to give an overview of these challenges as follows: First the German healthcare sector will be described. Then the concept of the German eHC will be described as well as the proposed new functionalities. Next, the advantages and disadvantages of this eHC will be mentioned. Following this, a discussion of data protection and data security will be presented, before a presentation of a possible solution for the German eHC telematics infrastructure will be provided. Finally, conclusions will be drawn.

**HEALTHCARE IN GERMANY**

Without a doubt healthcare is a very important industry that touches us all. However, over the last 40 years healthcare expenditures have increased at an alarming rate. Between 1970 and 1997 the percentage of Gross Domestic Product (GDP) spent on healthcare by members of the Organization for Economic Cooperation and Development (OECD) rose from about 5% to approximately 8% (Huber, 1999). Moreover, since 2000, the situation has only worsened with total spending on healthcare rising faster than economic growth, which results in an average ratio of health spending to GDP of 9% in 2008 (OECD, 2010a). Current challenges faced by healthcare such as technological change, longer life expectancy and population ageing will only serve to exacerbate these problems further in the future. Clearly, the growing health spending creates a cost pressure for several countries and Germany is no exception (OECD, 2010a).

Reducing these expenditures as well as offering effective and efficient high quality patient-centric healthcare treatment is becoming a priority globally. It is generally agreed that technology and automation have the potential to reduce these costs (Abd Ghani et al., 2010). In particular, e-health has been identified as a possible panacea and all OECD countries are trying to develop appropriate e-health solutions (Abd Ghani et al., 2010; Huang et al., 2010).

Taking a closer look at Germany, it can be seen that in 2008, Germany had a total expenditure on health (% GDP) of 11%, which was approximately 2% higher than the average ratio of the OECD countries (OECD, 2010a; OECD, 2010b). Concurrently, Germany’s total expenditure on health per capita (US$) was $3,737, whereas the OECD countries spent on average $3,060 per capita (OECD, 2010a; OECD, 2010b). Thus, while Germany is not the country experiencing the worst scenarios with regard to increases in cost expenditure it certainly is facing very real challenges in terms of trying to stem the flow of increasing costs and yet provide quality healthcare to all its citizens.

Germany has decided that a possible solution lies in the development and implementation of the German eHC. This initiative is not only large scale but will have far reaching implications for all the healthcare actors. The healthcare actors in Germany are divided into enrollees, service providers (medical doctors, pharmacists, hospitals) and cost units (health insurance companies). Germany has around 82.140 million inhabitants, where approximately 70.234 million people have public health insurance and approximately 8.62 million people use a private health insurance. Furthermore, Germany has 319,697 medical doctors, 2,087 hospitals and 21,602 pharmacies, where 48,030 pharmacists work (BMG, 2009).

To be truly successful the eHC must connect all these actors effectively and efficiently. It is envisaged that this can only be done in a safe and secure fashion through an appropriate telematics infrastructure; and hence the telematics infrastructure is the backbone of the eHC. To fully understand the architecture of the telematics infrastructure it is first necessary to understand the underlying concept of the German eHC.
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