

Firecard: A Medical Cloud Calendar based on MIDATA and FHIR, with Right to Privacy

Degree programme : BSc in Medical Informatics | Specialisation : Advanced Data Processing
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Today, there is no privacy-friendly way to manage medical appointments in Switzerland. The developed Firecard application responds to this problem by combining the power of FHIR and the security of the MIDATA cloud. It demonstrates the feasibility of such a concept and lays the technical foundations at a very early stage.

Introduction

Nowadays, medical appointments dates and hours are written on small cards and useful information is transmitted orally. However, cards can be lost and this information forgotten. If patients choose to write it all down in their electronic agenda, the issue of privacy arises. Indeed, these calendars are synchronized on servers abroad and often shared. So, the patients are no longer controlling their data. Therefore, a privacy preserving medical appointment system is important. This project shows the necessary technical basis and demonstrates the feasibility of doing so.

Methodology

A literature search was carried to determine whether such projects have been done before. This was followed by research into the semantics of FHIR and the study of possible data flows. This then allows the classification of data according to their sensitivity from a confidentiality perspective. A discussion with a member of MIDATA, as well as with application developers from the BFH's I4MI Institute, also provided useful information for the orientation of the project. From this body of knowledge, the architecture of the project has been made, as well as the choices in terms of confidentiality.

Results

No literature about projects using FHIR as an appointment manager was found. Sensitive data for a medical appointment are: title, reasons, location, descriptions, instructions, participants. All these data are stored securely and encrypted on MIDATA, and can be read on Firecard, the developed mobile application. The appointments can be exported to a usual calendar, but without the sensitive data, thus just the date and time.

Discussion

The developed Firecard application demonstrates that it is possible to create a secure and privacy-friendly medical appointment system, based on a secure FHIR cloud. And this, without sacrificing the convenience of a usual calendar. FHIR shows its flexibility and power to be used in such applications, even if some shortcomings (e.g. missing owner field) exist due to the youth of the standard. I am confident that the project will be taken up and used in practice because it addresses an issue that will arise in the years to come.



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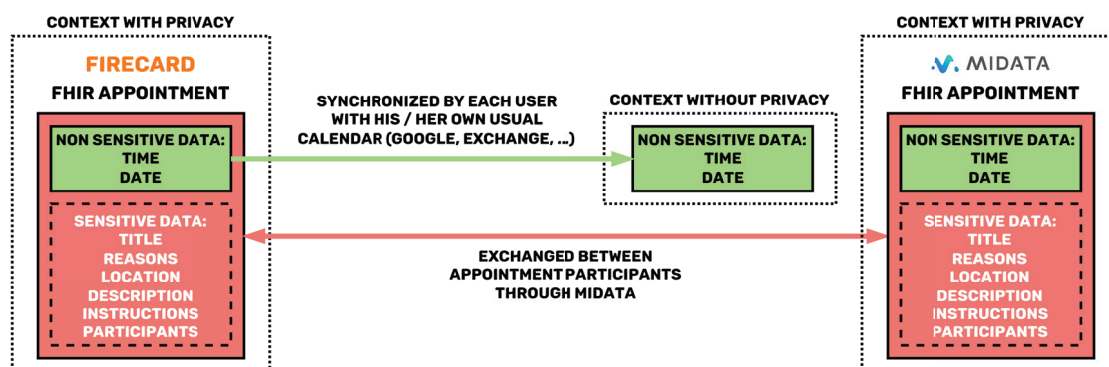


Diagram showing which data are shared in which context.