Mobile ICT solution for house calls health care support

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Home health care covers a wide range of activities for example, house calls, emergency medical assistance and medical home care. Although in Slovenia the number of house calls compared with visits in a clinic is constantly declining, we find that IT can best help doctors performing fieldwork, dealing with serious chronic illnesses, or helping the elderly, disabled or dying patients because they are usually almost completely cut off from the IT support otherwise available at their workplace, despite the fact that they carry a smart mobile device, while existing Slovenian IT solutions do not work on smart mobile devices.

The research investigates IT solution for support of home health care, working on mobile devices, which allows doctors to access patient medical data, while solving the problems of security of sensitive medical information.

The key assumptions for the solution were: high level of data security, support for different mobile phone and tablet OS, support for off-line usage, highly transparent display of medical data, simple and efficient interface. We used the latest frameworks for the design of mobile applications (ionicframework, AngularJS, Cordova, HTML5, JavaScript), data is encrypted with a random key and symmetric AES-256 algorithm, while RSA5 algorithm and a public key X.5096 of the digital certificate are used for encoding random key, the connection between the cloud and the mobile device is protected by the use of HTTPS protocol, the doctor decrypts the data on mobile device with the private key of the digital certificate.

The evaluation of the pilot application proved that the doctors are potentially better informed thus better health care treatment is expected. Doctors will also benefit by saving their time, spent on individually collecting the patient data in health care centres.

The first step after the successful production of the current solution is to extend the scope to support other work fields of HC professionals and from a technical point of view to establish integration with other vendors of HC IS (using SOA) and connectivity with national health care IS (interoperable backbone) using the openEHR standard.

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