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Poster abstract

Using the smart meter infrastructure to support home based patient monitoring

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Abstract

This paper describes investigation into the use of the recently announced smart meter infrastructure in the UK (soon Europe) as a means to provide home based patient monitoring. The smart meter is required to transmit frequent meter readings to the utility supplier over a digital backhaul network. Such a network will be ubiquitous in almost all homes; opened up it could provide value-added services that are robust and secure, although at low data rate. This infrastructure suits well many telehealth applications. This, coupled with the power industry choice to use Zigbee as the home wireless network, provides a readymade infrastructure in which telehealth can operate seamlessly.

The Hydra project establishes a demonstrator of the infrastructure. Medical devices (weighing scale, BP, attention pendants) operate anywhere in the home over the Zigbee network with the telehealth enabled smart meter, which forwards the data securely over the smart meter network to the designated health provider to manage the data. In the home, medical devices are based on the IEEE 11073-20601 data protocol and Zigbee Health profile, and are therefore Continua compliant. The backhaul network protocol is proprietary, but the payload can be the IHE-PCD message that is to become the WAN protocol for Continua, and this payload can be configured to be forwarded by the receiving data server using web services to the health provider, and thus can be end-to-end Continua compliant. It further demonstrates the flexibility of the Continua architecture. The advantages of the approach are that existing devices and components (e.g. back-end server and application) can used and that standards based devices accelerate design and implementation and ensure a safe and robust system.

Hydra is a UK funded R&D project with a combination of industry and academic partners and has the aim to establish a demonstrator of smart meter home based monitoring. Currently medical devices based on Zigbee exist and are to be tested for usability in the home by the patient. The smart meter system of Echelon (a partner) is being evaluated as a transport for the backhaul network. Existing backend data servers are being integrated. In our presentation we will report on latest progress and discuss merits of the standards based approach.

Keywords

standards, personal health devices, telehealth