Abstract Submission to attend the competition of Young Investigator Best Paper Award

*up*X73: Ubiquitous Platform for Personal Health Solutions based on End-to-End Standard Design

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INTRODUCTION. There is a need to develop open sensors and middleware components that allow transparent integration and plug-and-play interoperability of Medical Devices (MDs) and Computer Engines (CEs). The use of standards seems to be the internationally adopted way to solve these problems and allow implementing ubiquitous solutions, including wearable devices, focused on the new paradigm of Personal Health (p-Health). However, to the best of our knowledge there is no experience where the full chain from personal healthcare environment to Health Centre had been implemented using interoperability standards. Even though there have been some initiatives to combine different standards, the vision of an entire end-to-end standards-based system is not yet a fact end-to-end solution [1].

METHODS. ISO/IEEE11073 (X73) is the international family of standards for MD interoperability (firstly at the Point-Of-Care, X73-PoC, and recently over Personal Health Devices, X73-PHD) [2], and EN13606 is the European standard for exchange and store Electronic Health Records (EHRs). X73 has established the basic features needed to satisfy the specific requirements of MD communications, and has been improved through the PHD which might appear the best-positioned international norm to reach the challenge of standard-based design of p-Health solutions.

RESULTS. In this paper, the implementation of a ubiquitous X73-compliant platform (*up*X73) is proposed (see Fig. 1). The design consists of a X73-based p-Health environment, between MDs (X73PHD agents) and CEs (X73PHD manager) that redirect the information collected to the Health Centre through a End-to-End protocol (X73E2E, designed by our research group) between CEs (X73E2E clients) and EHR server (X73E2E server). Moreover, this EHR server can exchange patient record's extracts with any healthcare server according to the EN13606 standard.

DISCUSSION AND CONCLUSION. The work presented in this paper can be adapted to the implementation of a p-Health platform based on end-to-end standard design, having an important impact in this promising market. Standards-based solutions are critical for the p-Health sector, as they foster competitiveness between manufacturers and help service providers in their adoption.

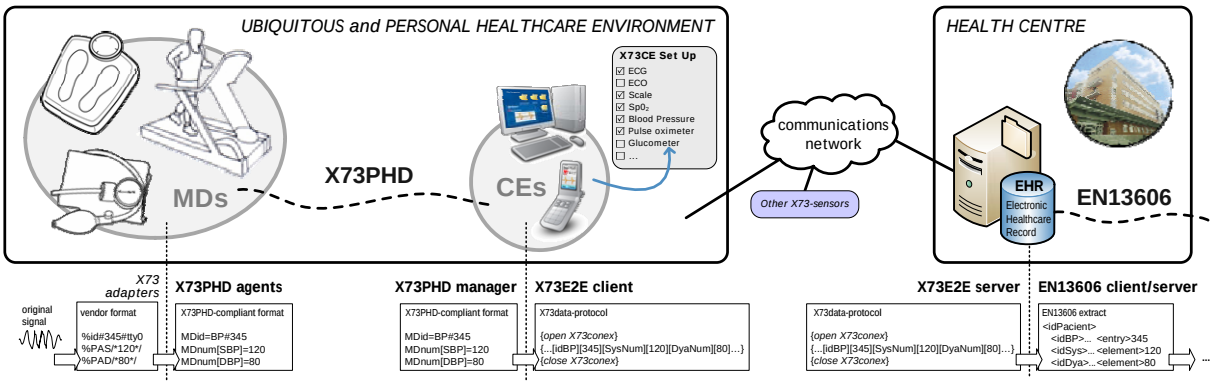

Fig. 1. End-to-end standard-based ubiquitous platform for p-Health solutions

[1] I.Martínez et *al*., "Implementation of an end-to-end standard-based patient monitoring solution," *IET Commun* 2(2):181-191, 2008.

[2] M. Martínez-Espronceda et *al*.,"Standard-based Digital Homecare Challenge: Advances of ISO/IEEE11073 for u-Health" *ICMCC Digital Homecare Book, Springer Eds.*, in press, 2009.