Open Specification for Synchronisation of Electronic Healthcare Records used by P&O Services in Lower- and Middle Income Countries

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BACKGROUND

Conventional, paper-based and electronic healthcare record systems (EHCRs) for prosthetics and orthotics patients in lower- and middle income countries (LMICs), specifically Cambodia, have shortcomings related to data storage, aggregation and synchronisation [1]. We conducted a requirements analysis for synchronisation methods specific to users in this environment. We focused on connectivity issues in rural areas, secure data transfer and storage of sensitive data, and hard- and software limitations of legacy systems.

AIM

We aim to design an open specification to facilitate data synchronisation for EHCR systems. Other than conventional synchronisation, we optimise our methodology for the special use-cases in LMICs.

METHOD

We set out to gather low-level requirements of an EHCR synchronisation system, directly from ground staff including IT administrators, receptionists and community visitors, to get a picture of how healthcare records, appointments and centre management systems are actually used, as opposed to how they are supposed to be used. This extended initial software requirements research [1], based on higher-level views of senior individuals, which encompassed issues like consent for compliance with the General Data Protection Regulation (GDPR) and asynchronous, more granular data-transfer. We used shadowing and the example mapping technique from the test-driven development methodology to collect these requirements.

RESULTS

One of the most important findings was that the use of ECHR systems is subject to interests of the Royal Government of Cambodia. While there are multiple different systems in use by various non-government organisations, the government aims to harmonise all patient data and eventually use just one system. However, it is yet undecided which system that will be. Furthermore, synchronisation can happen on a smaller scale than just between different clinic sites. Different mobile devices require data access to eliminate paper records and enable better communication of clinicians in case management and recording keeping. These devices would be used by different actors, e.g. receptionist, prosthetist or community worker, all of whom have different needs in accessing data for the enhancement of care and intervention of clients either through community- or clinic-based service.

DISCUSSION AND CONCLUSION

As we do not know the direction in which the Cambodian Government may go, we had to adapt our architecture to operate independently of the political environment, database, schema or EHCR system, by developing an open specification for a database synchronisation layer that is potentially useful for a wide variety of applications. Our implementation serves as a proof-of-concept prototype and open-sourcing our work should encourage uptake by a wider audience.

REFERENCES

1. Wiegand et al., 2018, Asian Prosthetic and Orthotic Scientific Meeting (APOSM)

ACKNOWLEDGEMENT

Advisors: Exceed Worldwide. Funders EPSRC/ NIHR (EP/R014213/1) and RAEng (RF/130). ERGO/FPSE/46271.