Lessons learned from using a remote study-management platform: use in an mHealth diabetes study

Norwegian Centre for E-health Research

THE ARCTIC UNIVERSITY OF NORWAY · UIT

M. Bradway[1,2], P. Randine[1,3], E. Årsand[1,3]

[1]Norwegian Centre for E-health Research, University Hospital of North Norway, Tromsø, Norway
[2]UiT The Arctic University of Norway, Department of Clinical Medicine, Tromsø, Norway
[3]UiT The Arctic University of Norway, Department of Computer Science, Tromsø, Norway

Introduction

The use of an online study-management system can help to ease the burden of both participation in, and administration of, mHealth interventions. We describe the benefits and challenges of using such a platform to manage an intervention (Full Flow Project) involving both patients and their providers in the testing of an mHealth data-sharing system.

Methods

Our remote study-management platform consists of: a website used to monitor status and message the participants, a local server for automatic data-collection and analysis (Piwik, now Matomo), server for gathering user-collected data through the app, and an open source survey tool (LimeSurvey). While it is possible to use the system to recruit and randomize patients, it was more advantageous to initiate patient recruitment through the health providers, to ensure that both parties were engaged and invested in the study. Similarly, randomization was not required for a feasibility study. Figure 1 below illustrates the system's functions that were used for this study.

Results

The benefits of this platform included security and efficiency in distributing study-information and messages, as well as supporting participants from a single platform, based on open-source systems. For example, if a participant was not actively engaged in the intervention, we could then send messages specific to their situation. In the platforms' current implementation, we have experienced three main challenges: 1-Participant follow-up requires manual tracking and initiation of messaging; 2-Data-collection requires manual review of data and interaction logs, from separate sources; and 3-Data-analysis requires specific programming to combine the differently structured output from each data source. See Figure 2 for an illustration of how data was collected and managed during the study.

Conclusion

Future improvements to the system can include automation of tasks and additional software that can facilitate the organization of these data for analysis. For example, automatic merging of data-sources and generation of simple reports would make the system more efficient, which is especially important for mHealth interventions.
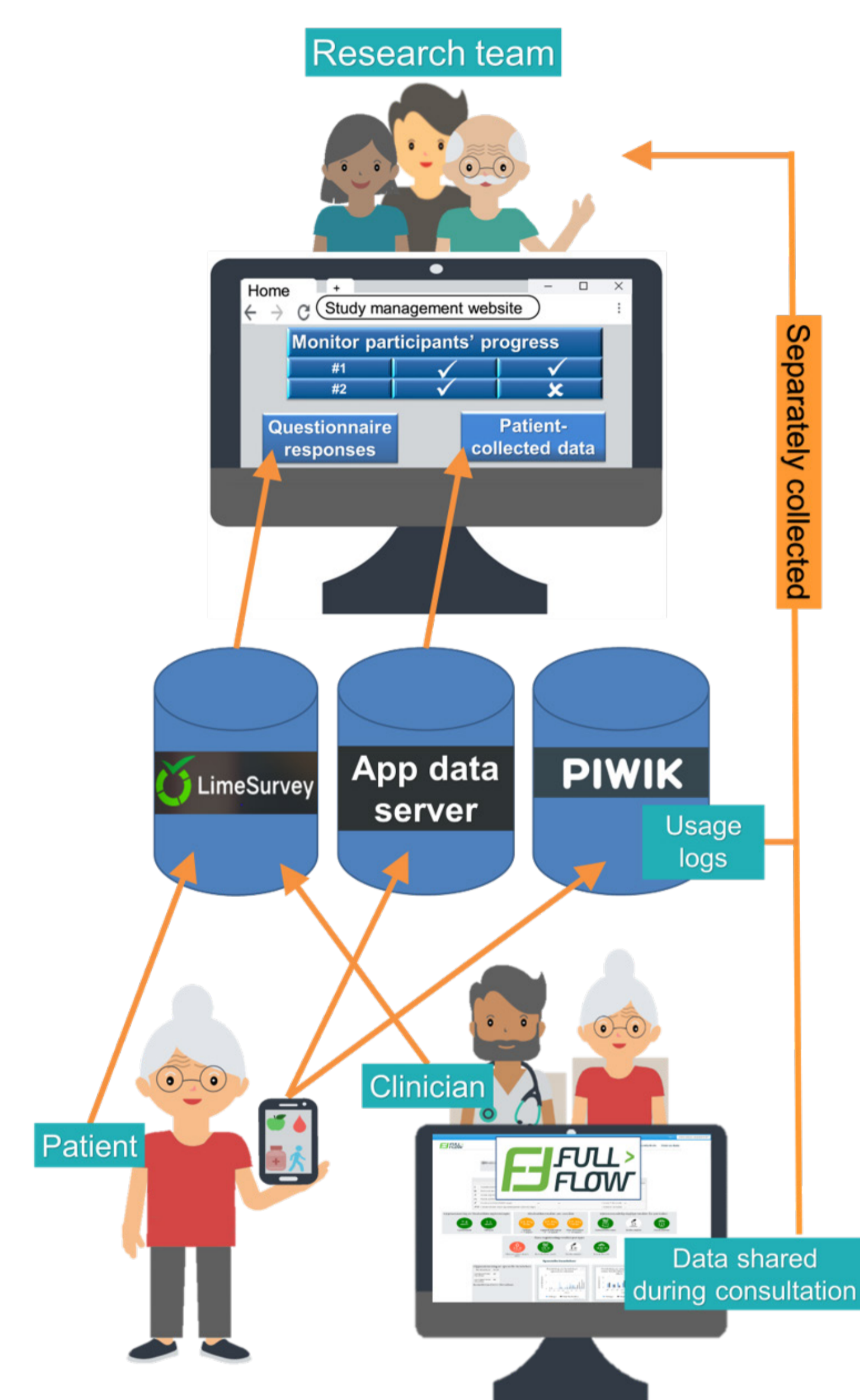
Figure 2. Illustration of the flow of data from the participants to the research team using the study management platform in the Full Flow study.
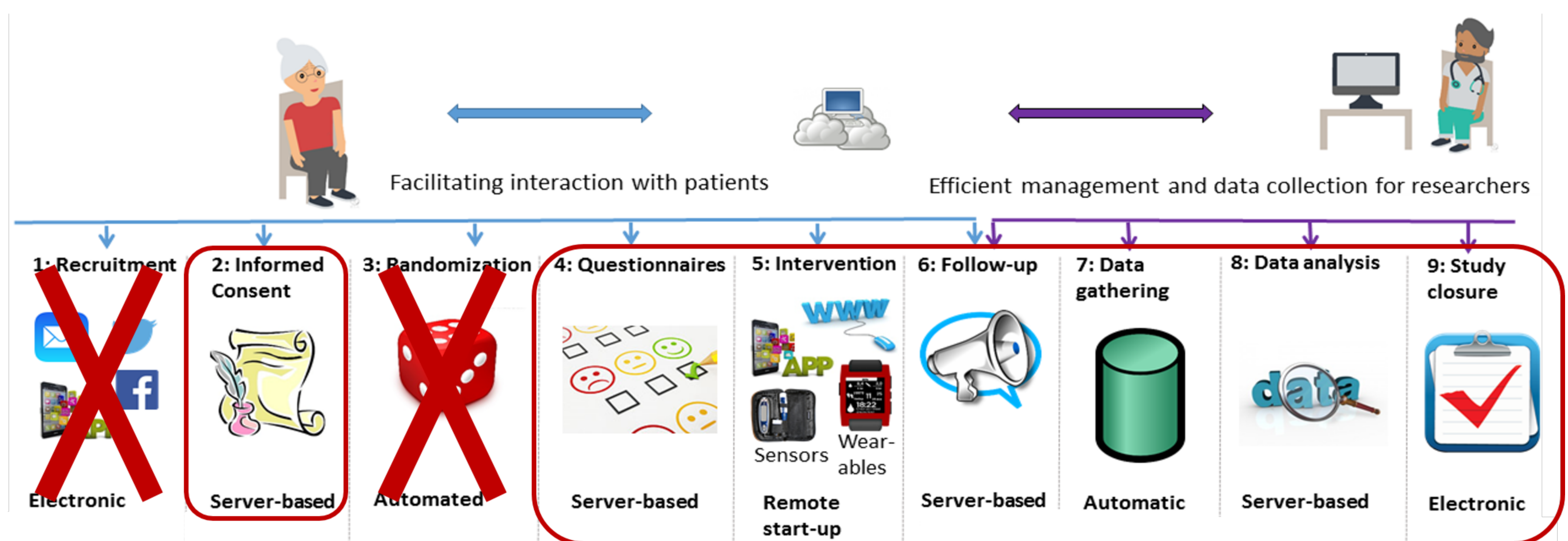
Figure 1. Functionalities of the online study-management system that were used for the Full Flow study. Red "X's" indicate those functionalities that are available in the study administration system but were not used for this trial.