FAIMS Mobile 3.0: A next-generation field data collection platform

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The Field Acquired Information Management Systems Project (FAIMS), based at Macquarie University (Sydney, Australia) has been developing and deploying open-source software designed for offline data capture during field research since 2012. The current platform (v2.5), designed over five years ago, needs to be rebuilt using modern components and technologies that exploit recent advances in mobile software. The proposed platform (v3.0), would retain key features from v2.5, such as deep customisability of data schemas and user interfaces, management of various data types, external sensor and device support, offline operation, opportunistic bidirectional synchronisation of data with a local or online server, mobile GIS, device and server-side validation, full data revision history, and customisable export.

Updating the technology of the FAIMS platform will provide an array of improvements. Instead of being interpreted at runtime, customisations of the mobile client will be pre-compiled to native code and deployed as an HTML5 application. The current relational DBMS will be replaced by a document-oriented NoSQL database (like CouchDB). The mapping engine will move to a modern Javascript tiler with local cache for offline viewing (e.g., Leaflet). The server software will add a RESTful API for data interactions and analyses, automated SSL certificates for security, and other improvements. These changes will allow cross-platform support (the current system is Android-only), provide a 'data editing round-trip' between devices and desktop / online editing software (the current system is capture-and-export only), better data collection and synchronisation performance, a more modern UI, greater scalability, and better security. These improvements address requirements expressed by researchers now using the system and will enhance support for citizen science projects.