# Assessment Report on the second Release of Mobile Application

FAIMS Deliverable #12A

prepared by: Adela Sobotkova

This report summarises the state of the FAIMS mobile application v0.2 released on 15 March 2013, after 8 weeks of development (sprints 4-7) from the v0.1 release. The v0.2 release is an internal alpha release that was developed with an eye to the FAIMS hands-on workshop at the Computer Applications in Archaeology (CAA) in Perth, Australia, 25-28 March 2013. The functionality outlined in the report will be presented to the workshop visitors at the CAA.

## Background:

The FAIMS project is assembling modular information systems for archaeology. Our principal activity is the development of Android mobile application to facilitate digital creation of archaeological data. This mobile application will have a number of unique features:

* Customisable data storage and user interfaces, including logic. Data schemas and UIs are created using XML definition files. Customisable logic includes defaults, validation, “repeat any record” (or a selected record), and other automation to speed data entry—another significant advantage over competing systems.
* Full versioning (the ability to review and, if necessary, reverse all changes made to a dataset) achieved through an append-only data store.
* Synchronisation and backup across multiple mobile devices and a local server (which can run on a moderately priced laptop).
* Mapping / lightweight GIS, including the display of vector and raster data, and the manual creation of vector shapes (including linking shapes to records in the database). Includes mathematically constrained creation of vector shapes (e.g., “build me a 5x5 grid of survey units measuring 20m by 20m and create associated records”).
* File management (storing photographs, scanned drawings, digital vector drawings, audio recordings, and other arbitrary files in designated folders on the server, and connecting them to records in the database).
* Dataset compatibility from the moment of creation. As part of project setup, users can alias core concepts in archaeological recording with their own terms. This initial process replaces resource-intensive manual column mapping at the time of ingest into a repository while still producing semantically compatible datasets for regional and comparative research (a process accomplished through a novel application of localisation / internationalisation).
* Full offline functionality (everything works offline and disconnected, including the GIS).

# Definitions

**Server** – the FAIMS project server, administered during the first round of testing by the Brian Ballsun-Stanton, the test manager. Server was accessible over a local network via an access point.

**The Application** – is the FAIMS application on a mobile device that communicates with the Server. The application is downloadable from Intersect webpage (only internally so far). The Application can have a number of stored projects cached and available to users.

**Digital recording module** – denotes the digital equivalent of a paper recording sheet on a mobile device in an enhanced and interactive form. It is in effect a dynamically designed set of associated fields and functions designed to capture a specific set of research outputs and methodology, including observations and inferences. It is created on the mobile device by the upload and rendering of a particular configuration packet. There are two kinds of projects: stored module and active module.

**Active module** – also referred to as the “digital recording module”. It is the currently rendered project on the device. Only one project can be rendered at a time.

# The Aims of the Second Release

The goal of the second release of the mobile application was to fix the identified problems of the first release. Happily no fixes were necessary, so normal feature development proceeded with emphasis the following capabilities:

* mapping and lightweight GIS support
* synchronisation of data and backup on the server and across multiple mobile devices
* support for specific archaeological language, which enables the mapping of core concepts and facilitates compatibility among different project vocabularies
* module personalization - user recognition, project metadata input and editing
* file management: records should support file attachments
* enhanced data input and manipulation: inclusion of picture gallery among the data input types together with annotation, timestamp, and certainty gauge; record editing, merging and manipulation

## 0.2 Release - New Features

The FAIMS mobile application 0.2 has been tested and reviewed with the help of external testers and FAIMS Steering Committee delegate on 13-14 March 2013. The following features have been successfully implemented, numbers in brackets refer to Intersect Story IDs :

* [FAIMS-18; FAIMS-153, 154; FAIMS-184; FAIMS-194] The digital recording module has been tested to accept the following data inputs:
  + Picture dictionary
  + Annotation button
  + Certainty button
  + GPS coordinates
* [FAIMS-194; FAIMS -37] Every record in the digital recording module supports file attachment. Any file on the mobile application can now be attached to a record within the FAIMS application.
* [FAIMS -19; FAIMS-191] Records can be searched [FAIMS -25] edited or merged [FAIMS-36] on the server
* [FAIMS-92, 93; FAIMS-161] Each recording module can be personalized with specific project metadata and users can associate themselves with individual records.
* [FAIMS - 102; FAIMS-3] The FAIMS mobile application supports the use of specific archaeological language and vocabulary in the User Interface through text file editing directly on the device
* [FAIMS-39; FAIMS - 160, FAIMS - 162; FAIMS-185] The active module has been tested to synchronize data with and backup on the server [FAIMS-94] and across multiple mobile devices when in the range of the local network.
* The active module now has a mapview and supports light GIS [FAIMS -113, FAIMS - 110, FAIMS- 106].
  + It is capable of displaying imported raster (Geotiffs) and vector data (our library supports common GIS formats) [FAIMS - 132, FAIMS-131, FAIMS- 113]
  + It has been tested to connect to an internal GPS device, to plot points from this sensor on the map and store them together with their attributes [FAIMS 134, FAIMS -35]. It has also been tested for connectivity to external Bluetooth GPS, but this functionality was not replicable on different types of mobile devices and is currently being fixed.
  + It supports the drawing of polygons and points on the map, the selection and moving of existing shapes [FAIMS-133; FAIMS-132; FAIMS- 147]

# Issues:

We found one critical bug after the sprint ended. The external GPS connectivity test, while working flawlessly on Developer’s tablet was not reproducible on different devices. Intersect has been charged to fix it. The external GPS story was rescheduled for additional testing during UAT#3.

# Discussion:

The development undertaken on the v0.2 FAIMS Mobile Application was conducted in compliance with the schedule determined during the project Elaboration Phase (and comprised within Intersect development sprints 4-7). All tested stories passed User Acceptance Testing via user acclaim. One story, external GPS connectivity, was removed from the UAT Criteria before the test due to a discovered bug. This story were rescheduled for UAT#3. Fixing this bug comprised most of the revision done after the sprint period.

# Steering Committee Delegate Feedback

*Dear Adela, Brian and FAIMS team,*

*This email comprises the report of the FAIMS Steering Committee delegate required for completion of second round of user acceptance testing UAT2, relating to the Mobile Application and the first release of the FAIMS Repository.*

*I received the 5 tester reports and the project report (FAIMS UAT#2 Report) concerning the UAT2 results and have now read through and cross-checked them.*

*The reports demonstrate that, barring a few minor technical glitches – helpfully elaborated on in the UAT2 report – both the Mobile Application and the Repository Pilot (RP) worked. Users succeeded in all of the tasks, in a couple of cases requiring some level of assistance. The freeform comments were particularly helpful, especially for the Mobile Application, and I could get a much better sense of the user response and experience. From those comments it is clear that both products worked well and were received well by the testers. In fact the very positive feedback comments concerning the Mobile Application showed that the team has produced a successful, useful and engaging product, even for non-expert users. There was less free-form feedback on the RP, which was a shame for me and meant that I could less easily evaluate the reports and comments. There are clearly a few minor formatting issues with the appearance of the interface, but again, technically it worked. Given this is the pilot the team should be extremely pleased with the result. Among the more interesting comments was the success of the “report a bug” function, which demonstrates the FAIMS products contain a good user-feedback system. It was also of interest to me that tablet quality affected results. It may be worth evaluating the products over a number of tablets to give accurate advice to users on what will work and what will not.*

*Several problems were identified by the testers and have been elaborated by the FAIMS team in the report. The minor technical issues were dealt with during the test phase and the FAIMS team used the experience, as is appropriate, to provide solutions to those few problems. Several comments related to the format of the screens and these can easily be responded to. The main concerns of the testers were with the clarity of instructions for both the Manual App and the RP, which has been recognized by the team as a priority for future work and improvement. Some improvement is required in converting the instructions into plain English, though I note that the current instructions still allowed the testers to complete their work. The FAIMS team is very involved in their work and I know from my experience with IT professionals and project groups that it is easy to use language that others may find obtuse. The most important critical outcome from UAT2 is the recognition of the need for the team to more successfully translate the project language into that understood by the wider community. However, I urge the team not to overreact to this problem. Some testers found the instructions quite understandable! Perhaps one solution is to employ a non-IT team member, with little other exposure to the project development, to specifically work on creating plain English documents for the products. This is an easy fix!*

*From my viewpoint as a reviewer, I found the documents and report easy to navigate. The scans of written test reports can be hard to read but give a great feel for what the testers thought. As noted above I would request that free-form comments of the type provided by the Mobile Application testers are solicited from all testers in future. I know that testers scribbled on the pages through the test but a coherent paragraph or two of thoughts at the end is extremely valuable. The report document itself was clearly structured and addressed the comments and test results concisely and effectively.*

*I did note that few of the testers have any obvious archaeological background and I wonder whether such testers would be available in the future, given the ultimate purpose of the products.*

*In conclusion, the tests for both the Manual Application and RP were successful and usefully pointed out some minor problems with the releases. Those problems l have been fully and satisfactorily dealt with by the FAIMS team or have prompted actions which will improve future tests and final product releases. When feedback includes phrases like “I really liked using this application”, “overall experience is good” and “I really like the app” it is clear that the team is delivering a quality product well in line with project expectations. That critical comment is restricted largely to the written instructions is a great outcome!*

*So, I can verify that the second round of User Acceptance Testing for the FAIMS project has been a success! I recommend proceeding with the release in time for the CAA.*

*Once again, congratulations to the team and I look forward to the future progress and successes with FAIMS.*

*Yours sincerely,*

*Dr Andrew Fairbairn. FAIMS Steering Committee delegate*

# Leadership Team Response

Dear Andrew,

You stated: “I did note that few of the testers have any obvious archaeological background and I wonder whether such testers would be available in the future, given the ultimate purpose of the products.”

Yes. While we have used students trained in Archaeology for internal QA and student testers for UAT 1 and 2, we are quickly moving to larger scoped tests. These tests will be conducted in the field by professional practitioners, satisfying questions of utility by professionals.

-Brian

# Summary

The second prototype of the FAIMS Mobile Application (v0.2) offers the following new functionality: synchronization among the tablets and the server, light mapping and GIS capability, expanded choices of data inputs, including picture galleries, timestamps, annotation and certainty gauges, and the support for specific archaeological language and vocabularies.

This new functionality of the v0.2 FAIMS Mobile Application was subject to external testing and has been validated to the satisfaction of the Steering Committee.

The development of the Mobile Application remains on schedule and will continue in accordance with the schedule determined during the project Elaboration Phase.