1 Federation Working Group

1.1 Purpose and Scope

Formulate the minimum requirements for:

FAIMS seeks to explore the possibilities of data federation in archaeology. Federation is defined as automated data interoperability requiring a minimum of manual intervention as opposed to, e.g., loose-coupling, which according to Kansa and Bissel's (2010) definition relies on extensive human interpretation to reconcile datasets. The degree of federation depends on the level to which semantic and technical interoperability can be achieved.

We have extremely ambitious goals for our federation methods, providing a system which can not only federate disparate syntaxes, but perform limited epistemological translation as well. However, in order to do so, we must identify the most critical data warehouses and mobile data sources producing and containing this data.

This panel is about semantic interoperability and resources that should be made interoperable. We wish to focus on defining the problem of transforming semantically comparable data. What aspects of metadata must be recorded to translate various data source's syntax and meaning to another format? Which aspects should be recorded? Is there a common ground across, e.g., stratigraphic units, surface-survey units, ceramic or lithic records, of at least (say) 10 data points that can serve as the kernel of this federation? If so, how much common ground is more or less universal, and how much varies by region, chronological era, or sub-discipline? Is this common ground too abstract to contribute meaning to the items it stores?

The argument has been made that every project has its own research agenda, requiring a unique data storage "solution" customised to its goals. While much of this argument lies in questions of "solution" to the problem (which we must avoid like the plague), does the problem itself presume unique records? What aspects of commonality exist? What aspects are ontologically and epistemologically unique? Must they always be so? Why?

We have a secondary goal of making mobile data-collection applications. We wish the core, at least, of these applications to be as universally applicable as possible. The data they create, therefore, must be flexible but usefully self-described, without requiring human intervention to parse and interpret. What data and metadata must this mobile device collect or generate? Does this mobile device need a traditional OLTP database? Can the idea of a "fact table" from a data warehouse be applied profitably? Can any aspects of DARCS patch theory (see technical glossary) be applied to the collected observations of these devices?

1.2 Topics to Consider

a. Are shared recording standards, as well as technical data standards, necessary for the success of FAIMS project?

b. Is federation possible without shared recording protocols?

c. Is federation a worthwhile goal?

d. Can FAIMS stakeholders in this room agree on minimum recording protocols for the creation of new data?

e. Is the best achievable goal the loose coupling described by Kansa and Bissel (2010, 44)?

f. To what extent is it possible and desirable to separate quantifiable ("objective") and interpretive ("subjective") data (Ballsun-Stanton 2011)? For example, is there a fundamental difference between the length of a lithic artefact and the date of a lithic artefact?

g. How rigid should be the line between objective measurement versus subjective interpretation? Does this need encoding in metadata?

h. How can we ensure the capture of data that allows re-interpretation?

i. If we do have standards, are they regional, chronological, sub-disciplinary, or global? Should we create our own standard and/or support translation between competing standards?

j. Can there be a shared set of standards between cultural heritage and research, or archaeology and related disciplines, that does not discard all meaning of the relationships within the structure of the database?

k. What existing resources need to be supported? Prioritize these resources:

   a. Online repositories.

   b. Field Databases.

   c. Reference collections.

   d. Other tools or resources (specify).

l. How do we get these resources (such as state registries) on board?

1.3 Expected Outcomes

FAIMS asks this group to produce answers to all the questions above, and in particular to produce a definitive statement on:

a. What level of federation is desirable by FAIMS stakeholders?

b. What (if any) core, minimum data and metadata standards (attributes, vocabularies, ontologies, etc.) can most archaeologists agree upon, and how do these standards vary (e.g., are they universal, regional, sub-disciplinary, etc.)?

c. What type of semantic standards should FAIMS embrace or create?

d. What existing resources need to be supported by FAIMS, listed by type and priority.