With Thanks To:

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From a Recording Point of View:
Most observations contain the same core data mapped to different names and organized in different ways.

A Methodology of Federation
- Measurements need to be converted and mapped to the same standard.
- Observations need to be shared and standardized.
- Data needs to be linked and federated.
- The link is the virtualized data element.
- The virtualized data element needs to be shared.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Unique name for the attribute.</td>
</tr>
<tr>
<td>Value</td>
<td>The value of the attribute.</td>
</tr>
</tbody>
</table>

Archaeological Message Format Requirements:
- Items are Stand-Alone Observations
- Attributes have Synonyms
- No Imposed Technical Hierarchy

- Attribute Duplicates are allowed from a controlled list with synonyms.
- The list is virtually accessible, but cannot be changed dynamically.
- Observations are not pre-processed into datasets, they are able to stand alone.
- They carry their associations with them as aspects of the observations, not stored within a protocol.
- A protocol is designed for technical reasons or through a consensus.
- The archaeologist can choose which attributes to use and what they are called locally, but will be able to pass them to any participating systems.
- We are implementing these principles in the FAINS Archaeological Observation Format (with Mobile Tool) and its repositories.
- This format can serve as the basis of tightly coupled datasets in archaeological projects across the world.
The Federated Archaeological Information Management System

A tool to move archaeological data collection and dissemination into this century.

A repository and a mobile tool.
As a Repository...

An extension and mirror of tDAR building on the AHAD database.

A repository for (all) Australian Archaeological Data which needs well-formed data to be useful.
As a mobile tool...

It's a way of recording useful, well-formed, archaeological observations in the field.

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A repository for (all) Australian Archaeological Data which needs well-formed data to be useful.
Useful, well-formed, data...

In order for the data to be useful, it must suit your project. Deploying an "mega-ontology" like CIDOC doesn't fit anyone's needs.
A contradiction in terms?

We propose "a18n": archaeolocalization

"a18n" is an extension of i18n: the internationalization libraries programs use to translate between languages: we translate between the specialized jargon different archaeologists use.

As a mobile tool...

It's a way of recording useful, well-formed, archaeological observations in the field.

Useful, well-formed, data...

In order for the data to be useful, it must suit your project. Deploying an "mega-ontology" like CIDOC doesn't fit anyone's needs.
What is the atomic unit of Archaeological Data?

The Observation.

An indivisible set of attributes which, separately, cannot exist and which serve to identify an archaeological ... thing.
Archaeological Data is hobbled by poor data models!

Forced into tabular form!

When all you have is excel, everything looks like a spreadsheet!

A contradiction in terms?
We propose "s18n": archaeosocialization
"s18n" is an extension of 's18' the international standard libraries programs use to translate between languages we translate between the specialized jargons different archaeologists use.

What is the atomic unit of Archaeological Data?
The Observation.
An indivisible set of attributes which, separately, cannot exist and which serve to identify an archaeological ... thing.
Technology warps data!

Data must be a function of the archeaologist's skilled observation, not the collection methodology.

For people who cannot make data models bow to their whims, their data must conform to the model, not vice versa.

Confusion and poor models abound.
Humans warp data!
Humans have different understandings of the "reality" of data!

Modellers may be providing a model for something entirely different, but called by the same name: "Data"

Archaeological Data is hobbled by poor data models!
Forced into tabular form!
When all you have is Excel, everything looks like a spreadsheet!

Contradiction in terms?
What's the smallest unit of Archaeological Data?
The individual sandstone or jet stone tool, worked to the point where its shape and form is evident.inea

Technology warps data!
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For people who cannot make data models bow to their whims, their data must conform to the model, not vice versa.

Confusion and poor models abound.
3 Different "Realities" of Data:

Data as:
Subjective Observation
Objective Measurement
Human Communication

My research has shown 3 philosophies.

Models created by one philosophy may not "make sense" to others, as they seem to record unimportant or actively detrimental things.
An Archaeological Data Interchange Graph

A basis for federation

The format needs to impose granularity restrictions and constrained vocabularies. It needs to provide a common language that does not restrict research.

**Humans warp data!**
Humans have different understandings of the "reality" of data!
Modellers may be providing a model for something entirely different, but called by the same name: "Data."

**Technology warps data!**
How does it function in the archiving of a digital dossier and the collective archivology?

**3 Different "Realities" of Data:**
Data as:
- Subjective Observation
- Objective Measurement
- Human Communication

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The Observation is King

A method of passing observations is needed.

Observations are non-relational structured data.

An observation must be a thing-in-itself in order to provide for trivial observation passing.

Observations should expose no redundancies nor sparsely populated fields. Only things that matter should be passed.
A Methodology of Federation
ArchaeoML has it almost right

Right approach to item entities, wrong approach towards containers.

An Archaeological Data Interchange Graph
A basis for federation

The format needs to impose granularity restrictions and constrained vocabularies. It needs to provide a common language that does not restrict research.

Humans warp data!
Humans can interpret and exchange data but machines cannot.

3 Different “Realities” of Data:
- Humans
- Machines
- Observations

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ProtoBufs (or equivalent) as Observation Containers

Observations are Messages

Inspired by OCHRE/ArchaeoML

We need to implement it internally to pass observations between devices and between Field Collection and Repository Archiving

The anarchy of the competing thesarii masks a fundamental similarity.
From a Recording Point of View:
Most observations contain the same core data mapped to different names and organized in different ways.

Implementing a18n through iteratively built, but controlled vocabulary and synonyms dramatically reduces the "data mapping problem."

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Archaeological Message Format Requirements:

Items are Stand-Alone Observations
Attributes have Synonyms
No imposed Technical Hierarchy

- Attribute Domains are chosen from a controlled list with synonyms.
  - The list is trivially extensible, but curated to merge duplicates.
- Observations are not grouped within hierarchies, they are able to stand alone.
  - They carry their associations with them as aspects of the observation, not items within a parent set imposed for technical reasons or through a committee.
- The archaeologist can choose which attributes to use and what they are called locally, but will be able to pass them to any participating system.
- We are implementing these principles in the FAIMS Archaeological Observation Format in our Mobile Tool and in our Repository.
- This format can serve as the basis of tightly-coupled federation in archaeological projects across the world.
From a Recording Point of View:
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Archaeological Message Format Requirements:
- Items are Stand-Alone Observations
- Attributes have Synonyms
- No Imposed Technical Hierarchy
- Attributes Domains are chosen from a controlled list with synonyms.
- The list is globally accessible, but cannot be range duplicated.
- Observations are not grouped within hierarchies, they are able to stand alone.
- They carry their associations with them as aspects of the observation, not items within a parent set imposed for technical reasons or through a committee.
- The archaeologist can choose which attributes to use and what they are called locally, but will be able to pass them to any participating system.
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