CRM-EH and STELLAR

An archaeological extension to CIDOC-CRM and tools for creating Linked Data

ARCHAEOLOGY DATA SERVICE

EAA Maastricht
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UNIVERSITY of York

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A bit of history...

An archaeological ontology

- OWL became a W3C recommendation in 2004
- CIDOC-CRM became an ISO standard in 2006
- Around the same time the Centre for Archaeology (CfA) at English Heritage started Revelation, which began an assessment exercise to make the capture, analysis and dissemination of CfA's work more efficient, but became an ontological modeling project of CfA's existing systems.

A bit of history...

An archaeological ontology

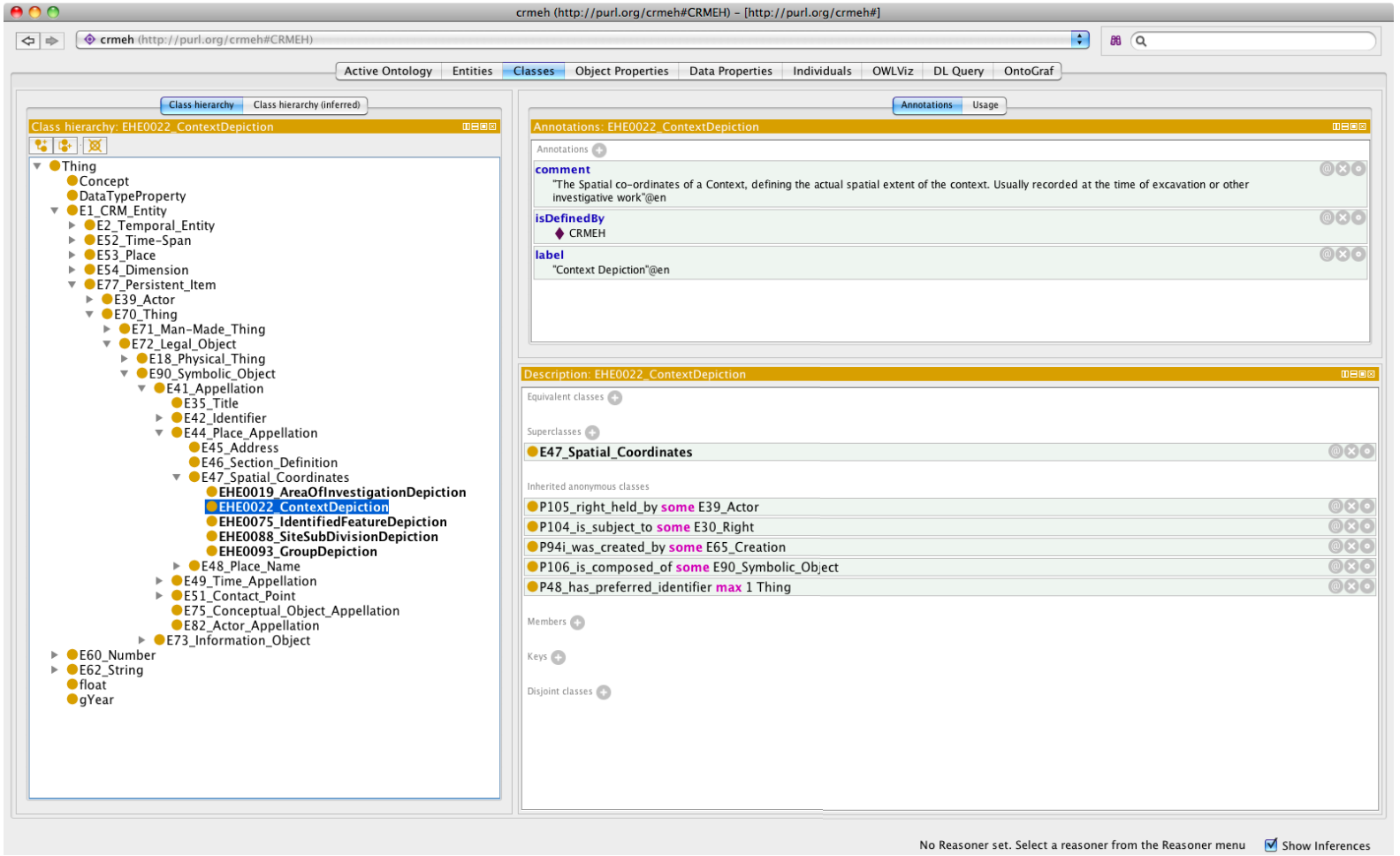
- The resulting ontological model was specific to the working practices of EH and single context recording, so was not created as a universal domain ontology, but was made freely available as it could be useful to other UK archaeologists
- With the implementation of CIDOC-CRM as an OWL ontology expressed in RDF, plans were made to create an archaeology domain extension using the EH modeling

A bit of history...

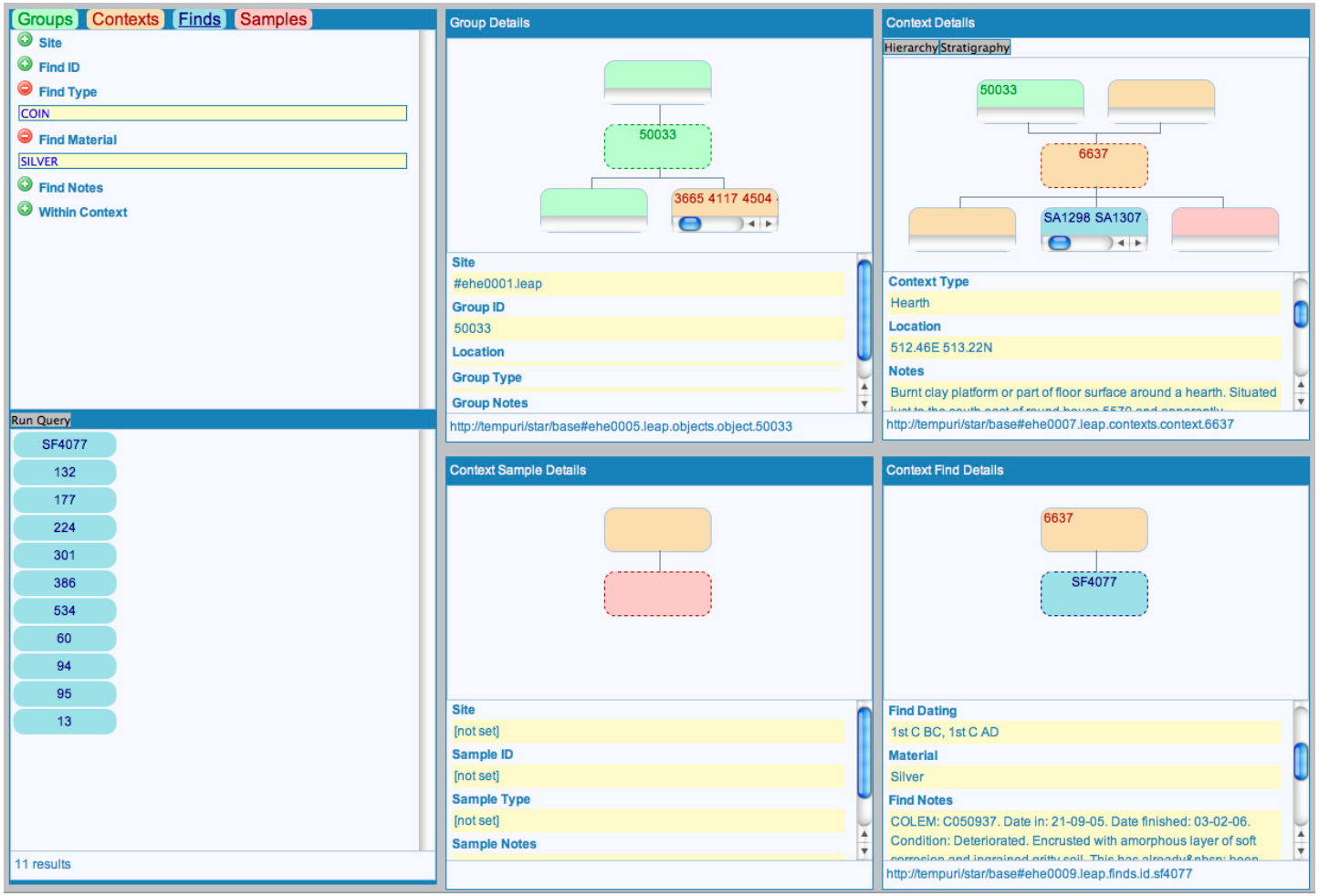
An archaeological ontology

- These plans were realised as one aspect of Semantic Technologies for Archaeological Resources (STAR: 2007-2010) where the EH modeling was used to create a domain extension to the CIDOC-CRM called the CRM-EH
- Carried out in partnership with U South Wales
- A interoperability demonstrator was created using field data from different sources successfully mapped to the CRM-EH

A bit of history...



A bit of history...



A bit of history...

Ontological mapping is hard!

- One of the lessons learned from STAR is that mapping data to an ontology requires specialist expertise beyond the skill (or interest level) of most archaeologists
- Converting a mapping to Linked Data was not trivial – tools available at the time had steep technical learning curves
- Plans were made to create tools to bridge this gap, both for mapping and conversion to LD

A bit of history...

STELLAR

- Tools were created through the Semantic Technologies Enhancing Links and Linked data for Archaeological Resources (STELLAR: 2010-11) project
- The STELLAR tools:
- Allowed mapping of field data to the CRM-EH: using a simple speadsheet format and terminology recognisable to archaeologists mapped to a group of templates

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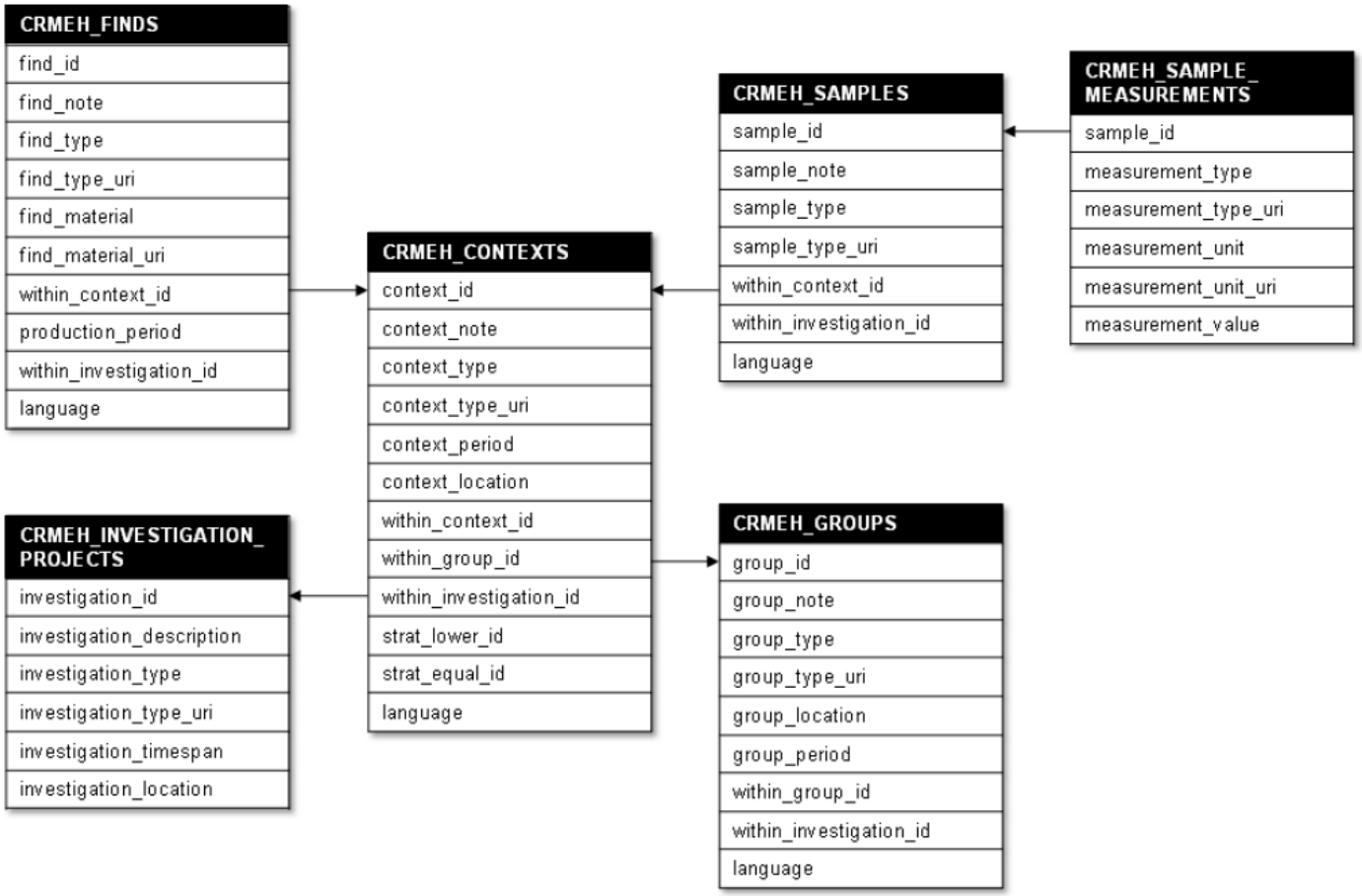

A bit of history...

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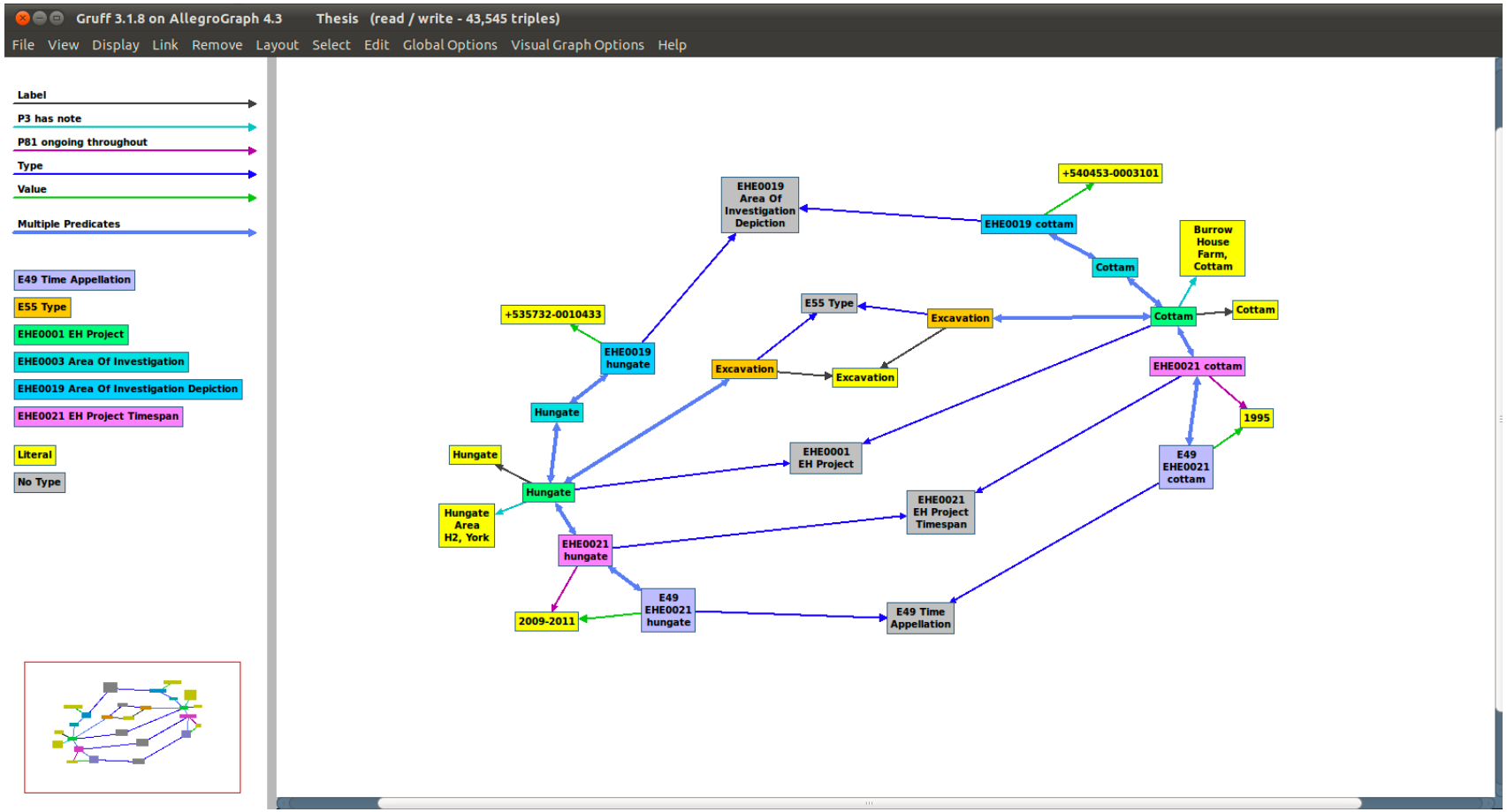

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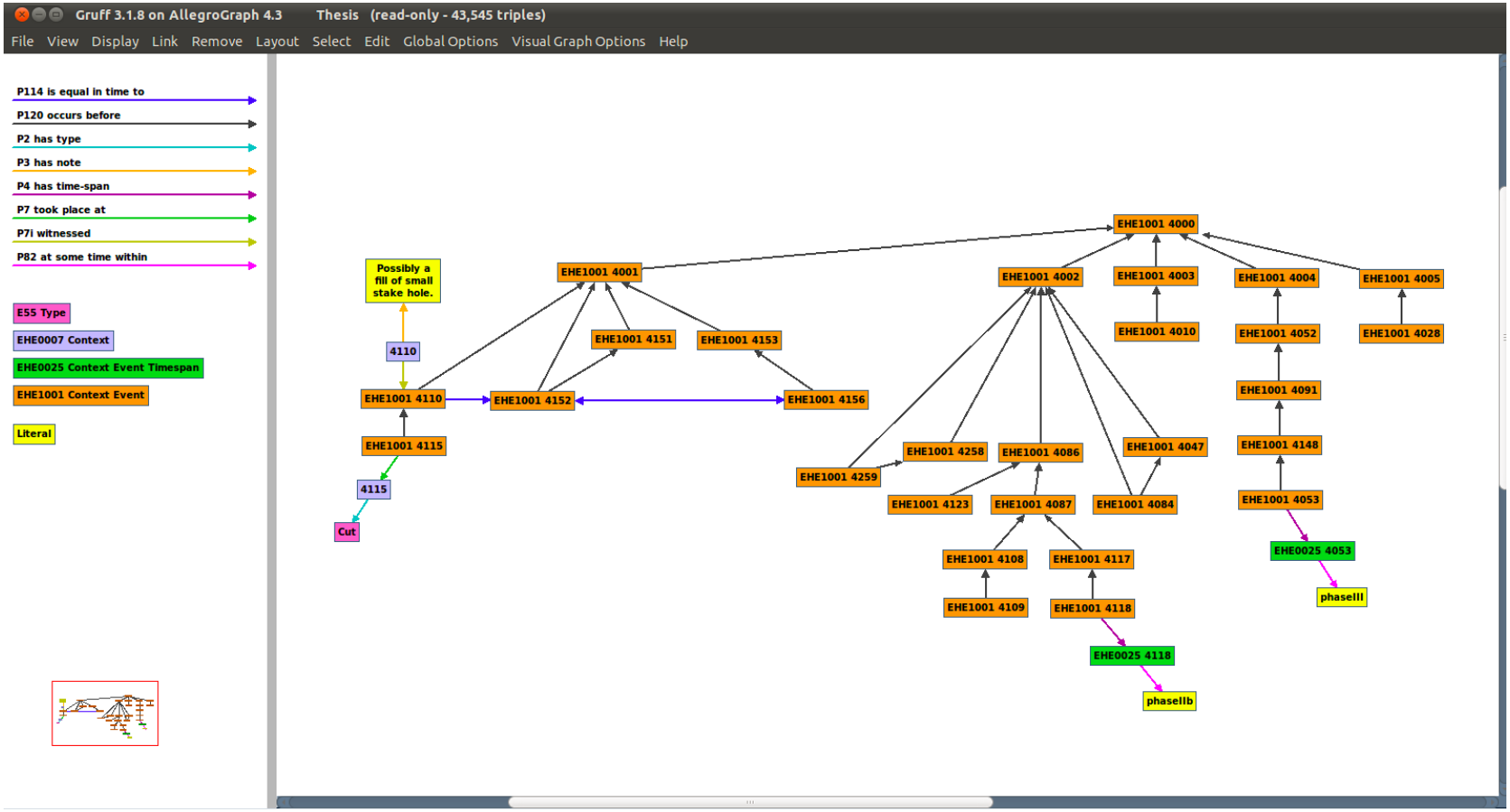


A bit of history...

STELLAR

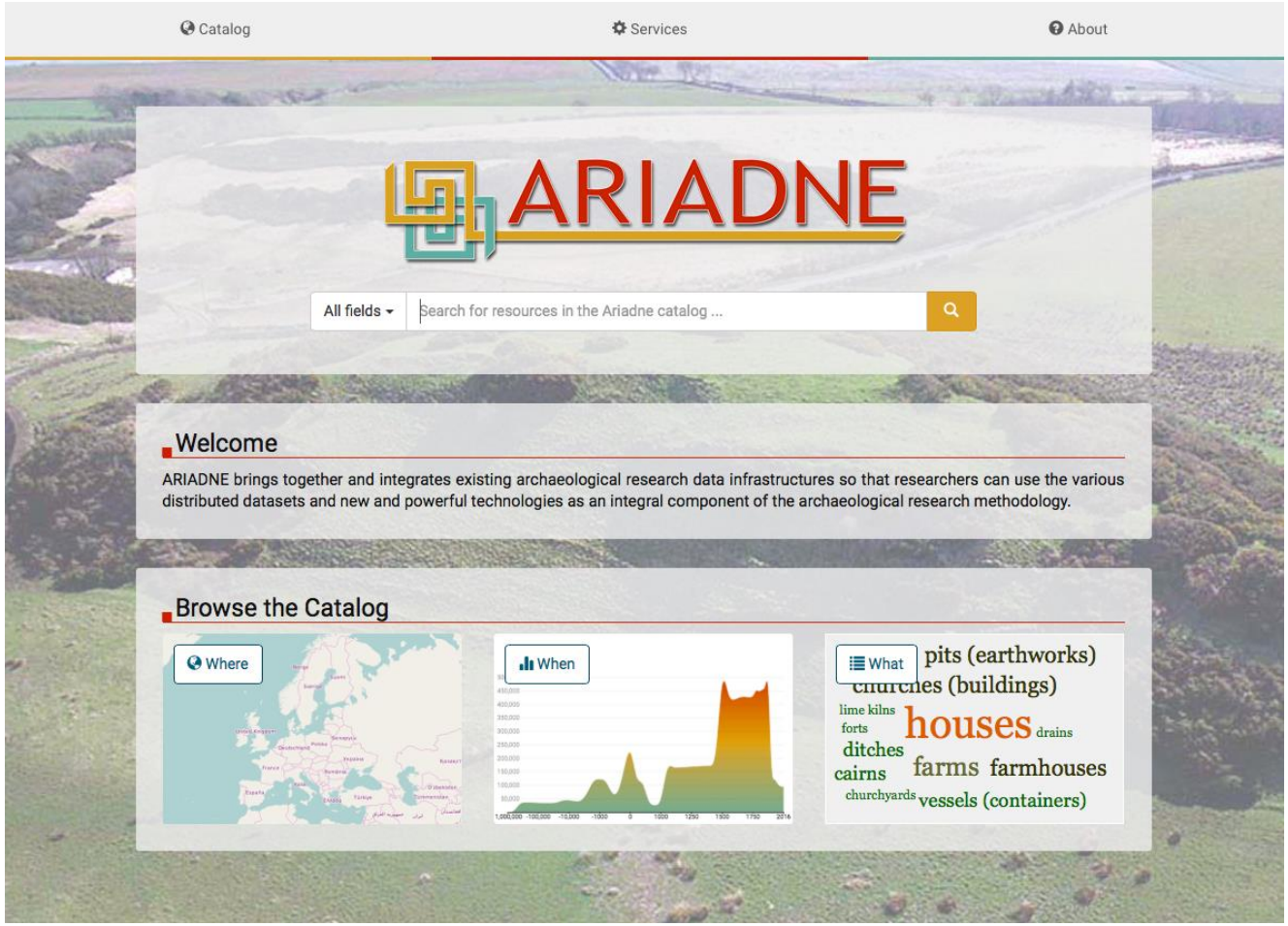
- A range of exemplar datasets taken from ADS archives were mapped to the CRM-EH and converted using the STELLAR tools and published as Linked Data from our SPARQL endpoint
- We used CRM-EH, but STELLAR.Console is customisable for use with other ontologies, thesauri, SKOS vocabularies, etc.

ARIADNE

- EU FP7 project under the 'Infrastructures' theme, including 23 European partners across 16 countries
- Four-year project: ended January 2017
- 17 Workpackages – primary deliverable: collection level metadata aggregation portal
- Coordinator: PIN Scri - Polo Universitario "Città di Prato" at the University of Florence
- Deputy Coordinator: ADS

ariadne-infrastructure.eu

ARIADNE


Catalog
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Welcome
ARIADNE brings together and integrates existing archaeological research data infrastructures so that researchers can use the various distributed datasets and new and powerful technologies as an integral component of the archaeological research methodology.
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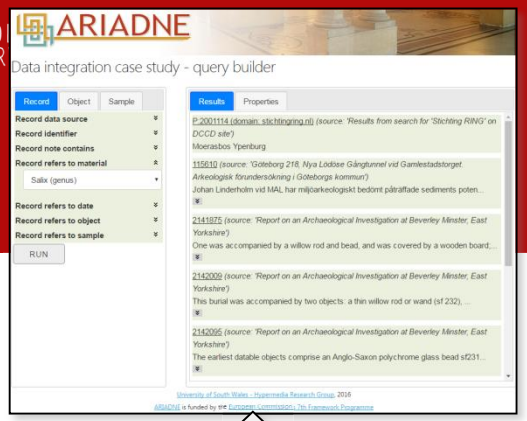
churches (buildings)
lime kilns
forts
houses
drains
ditches
cairns
farms
farmhouses
churchyards
vessels (containers)

STELLAR in ARIADNE

STELETO

- Data conversion application
- Created for a data integration case study
- Simpler, cross-platform version of STELLAR.Console
- Performs bulk transformations of tabular data via user-defined templates
- Data integration via CIDOC-CRM and Getty AAT
- Demonstration query builder for easier cross-search and browse of the integrated data

ARIADNE



RDF triple store

Transformation (STELETO)

tabular records

Transformation (XSLT)

XML

NLP

ADS, DANS, SND

Grey literature

Direct import

Getty AAT (RDF)

Transformation (STELETO)

tabular records

Cleansing + Normalisation (OpenRefine)

VAG cruck

VAG dendro

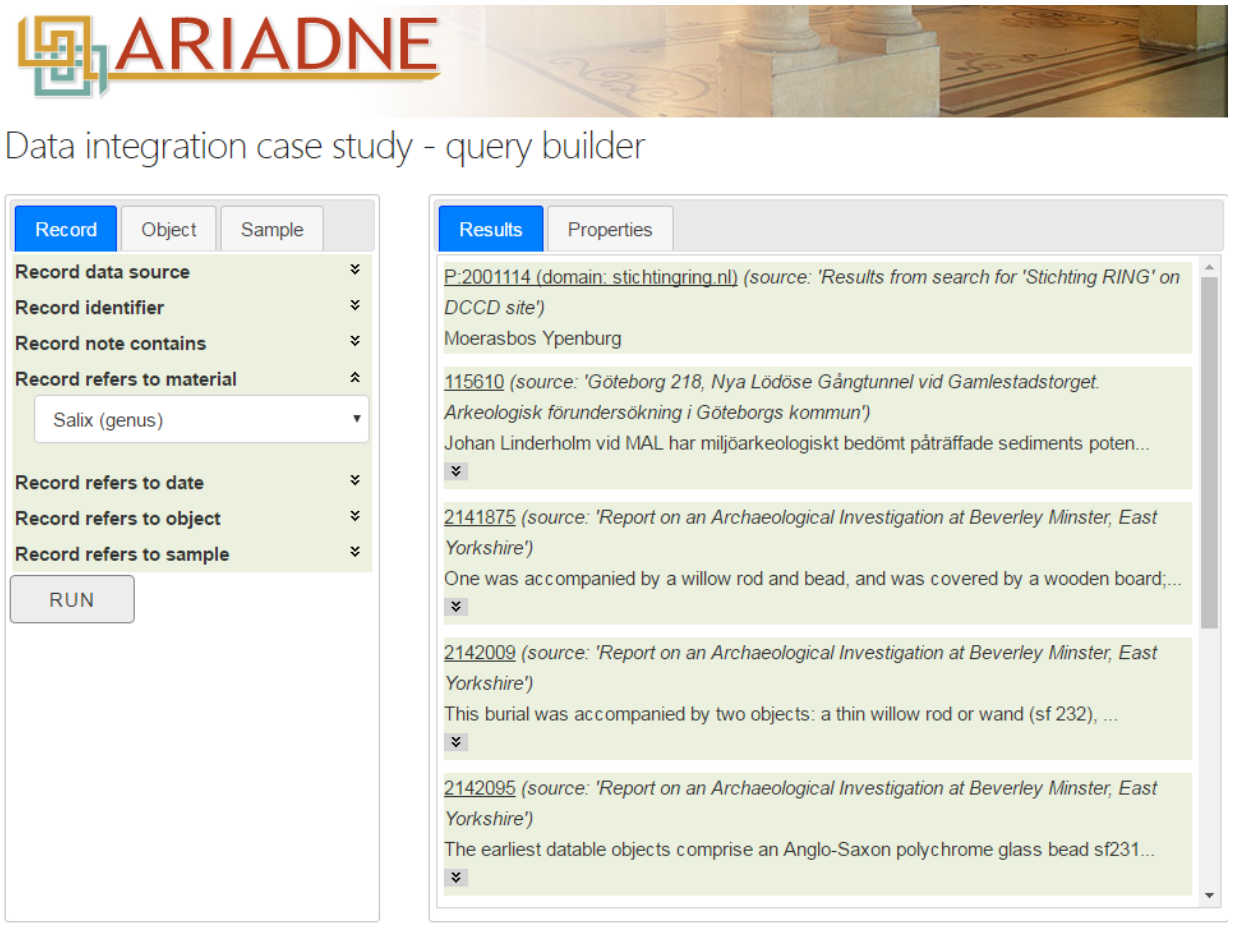
NMS

DCCD

UNID

Archaeological datasets

ARIADNE


ARIADNE
Data integration case study - query builder
Record
Object
Sample
Record data source
Record identifier
Record note contains
Record refers to material
Salix (genus)
Record refers to date
Record refers to object
Record refers to sample
RUN
Results
Properties
P:2001114 (domain: stichtingring.nl) (source: 'Results from search for 'Stichting RING' on DCCD site')
Moerasbos Ypenburg
115610 (source: 'Göteborg 218, Nya Lödöse Gångtunnel vid Gamlestadstorget. Arkeologisk förundersökning i Göteborgs kommun')
Johan Linderholm vid MAL har miljöarkeologiskt bedömt påträffade sediments poten...
2141875 (source: 'Report on an Archaeological Investigation at Beverley Minster, East Yorkshire')
One was accompanied by a willow rod and bead, and was covered by a wooden board;...
2142009 (source: 'Report on an Archaeological Investigation at Beverley Minster, East Yorkshire')
This burial was accompanied by two objects: a thin willow rod or wand (sf 232), ...
2142095 (source: 'Report on an Archaeological Investigation at Beverley Minster, East Yorkshire')
The earliest datable objects comprise an Anglo-Saxon polychrome glass bead sf231...
University of South Wales - Hypermedia Research Group, 2016
ARIADNE is funded by the European Commission's 7th Framework Programme

STELLAR in ARIADNE

STELETO

- https://github.com/cbinding/steleto

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Further Information

http://archaeologydataservice.ac.uk

Follow us on Twitter:
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http://www.facebook.com/archaeology.data.service