

**Following a guiding STAR?**  
**Latest EH work with, and plans for,**  
**Semantic Technologies**  
**Presented by Keith May**

**Based on research work of English Heritage staff  
especially Paul Cripps & Phil Carlisle (NMR DSU)**  
**and**  
**Doug Tudhope, Ceri Binding and Thanos Zafiriou**  
**at Glamorgan University**



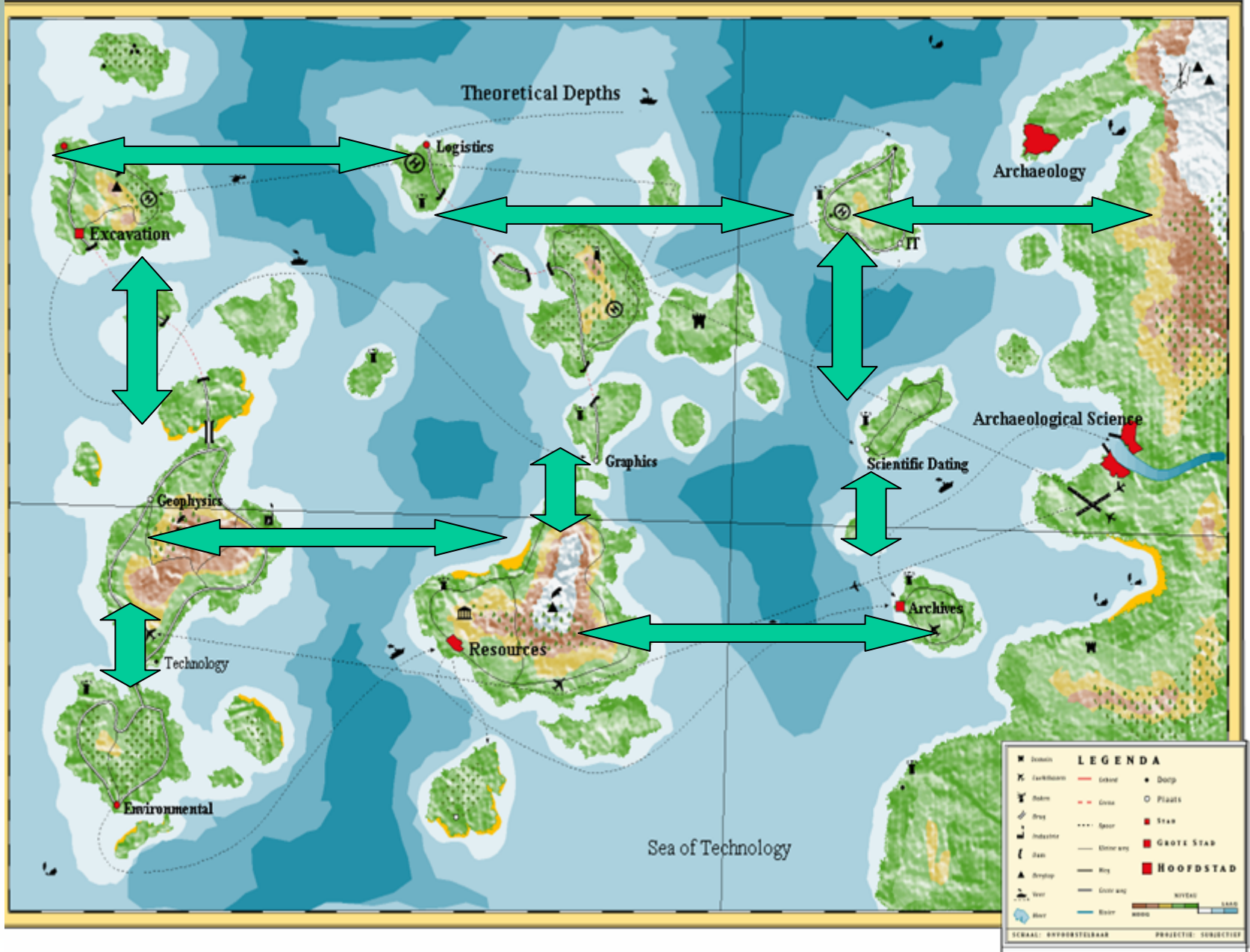
# In the beginning - Revelation?

**“Revelation is an English Heritage project to provide a coherent digital information system that will make the capture, analysis and dissemination of our research faster and more effective” *Cross et al 2003.***

**Integrating archaeological data & information**

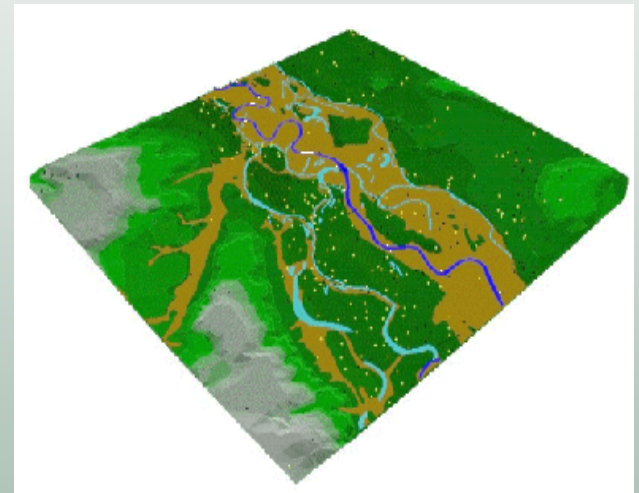


# The Archaeological Archipelagos

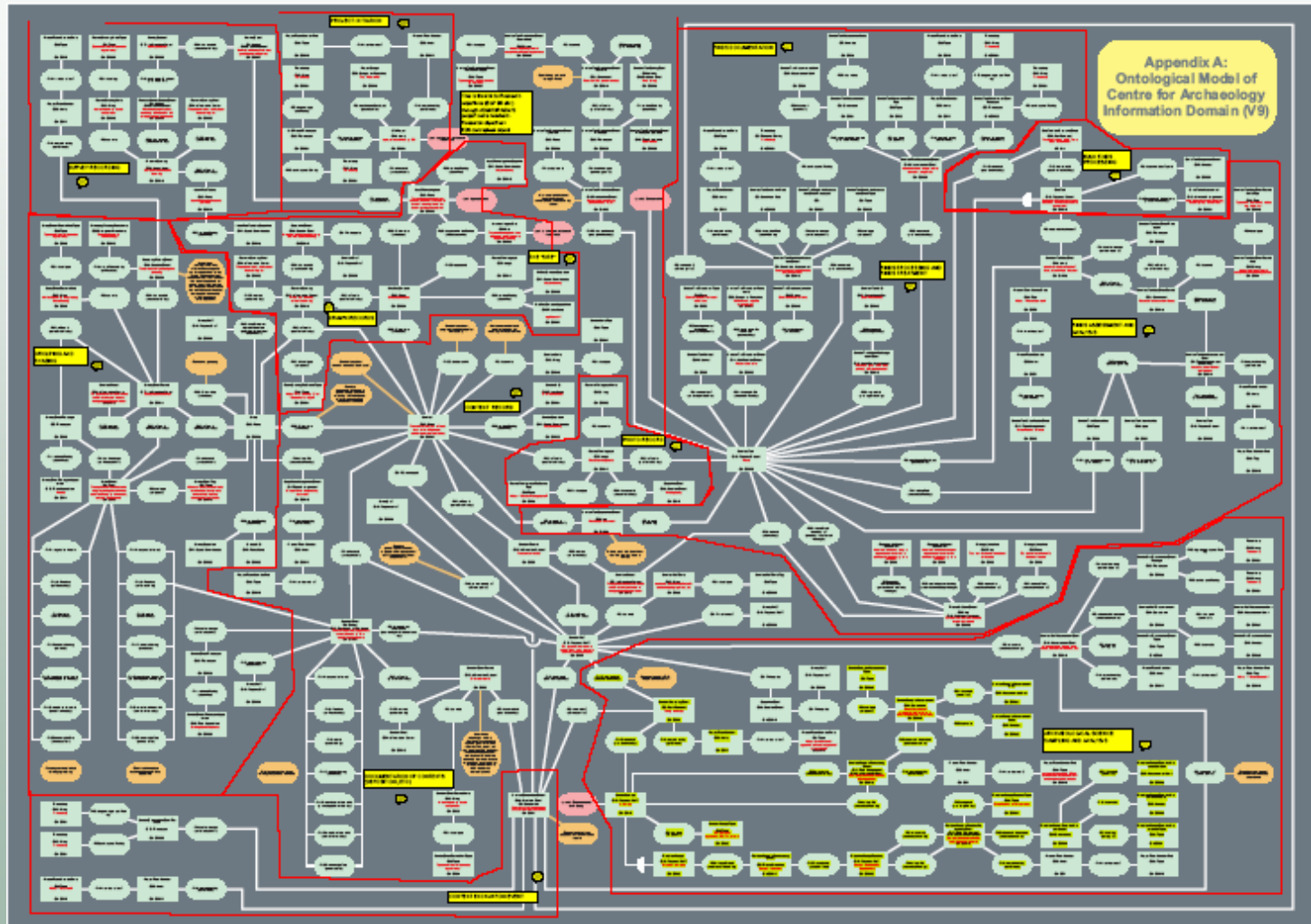


# 4. Modelling versus Mapping

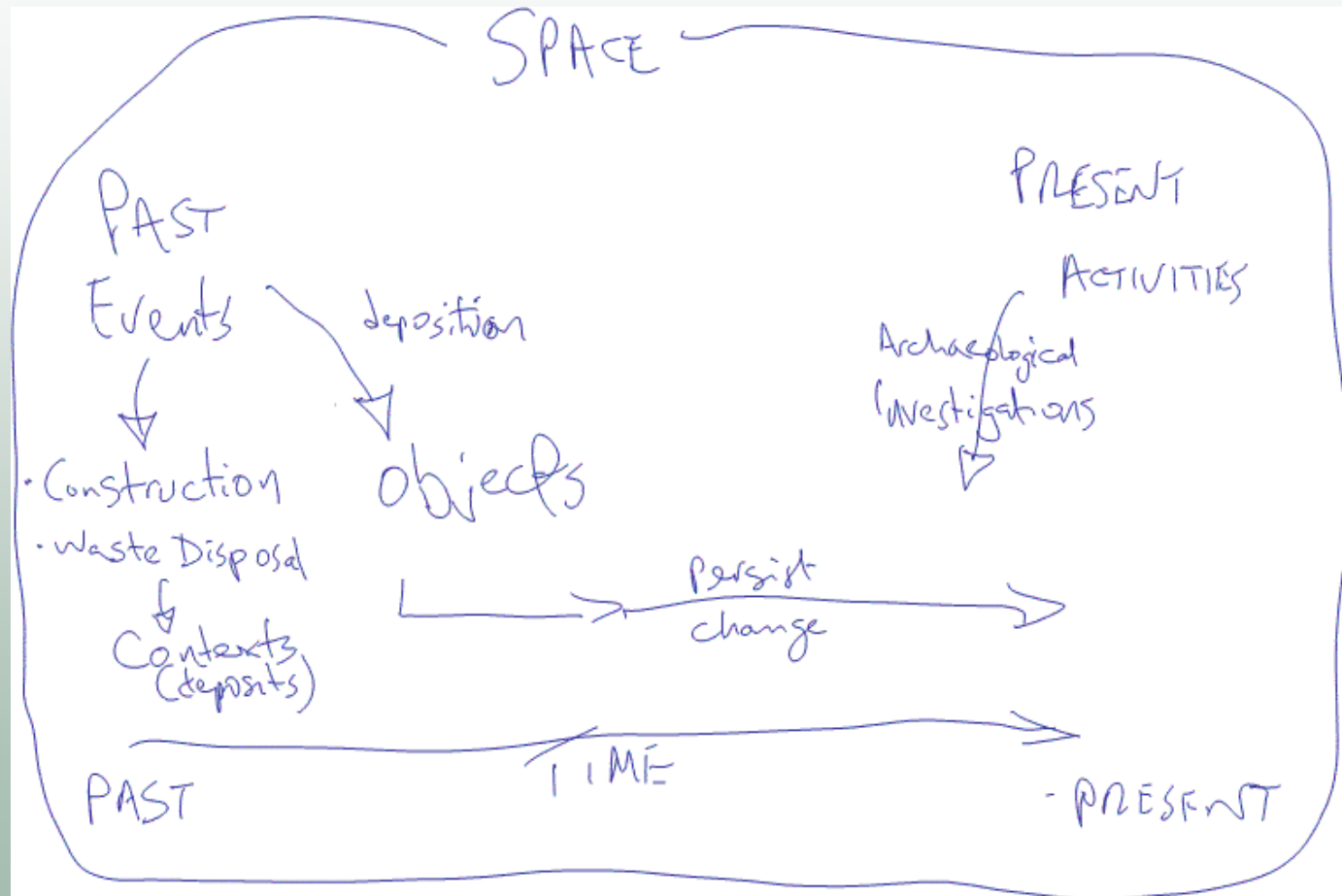
- *Model* new systems requirements
- *Map* to legacy or current data records
- *Mapping* to ‘virtual fields’ in Archaeological recording system
- *Representing* different degrees of Granularity (different levels of detail between conceptual info and actual data fields)



# CRM diagram of Archaeological Information Domain (ref: [http://cidoc.ics.forth.gr/technical\\_papers.html](http://cidoc.ics.forth.gr/technical_papers.html))



# Archaeological Processes







# Events in the present

Excavation // Drawing and Photography  
Survey // Sampling  
Treatments & Processing  
Classification // Grouping, & Phasing  
Measuring, including scientific dating  
Recording of observations  
Dissemination // Interpretation/Analysis



# Events in the past

- Context formation and depositional events (stratigraphy)
- Geochemical, geological, environmental and biological processes
- Object production, disposal or loss (finds deposition)
- Construction, deposition, modification and destruction events relating to layers, features, structures, buildings (taphonomy)
- Events occur at places; spatial operators for reasoning about spatial relationships
- Allen's Temporal Operators for reasoning about the sequence of events and building the site matrix





# Background to Archaeological model

- Limited degree of detail
- Context record sheet modelled as CRM Information Object (E73)
- Model still complex enough - most domain users (archaeologists) find it daunting



DEPOSIT AND CUT FORM Form 200

Site Name	02. Project Code	A1. Year	01. Context No
A2. Context type DEPOSIT CUT	05. Simple name		03. SSD
04. Co-ordinates E N		E N	
06. L m	07. W m	08. Diam m	09. H/d m
DEPOSIT 12. Compaction			
10. Colour : Munsell			
11. Texture			
13. Inclusions			
30. Contamination: Probable Possible Unlikely			
CUT A3. Shape in plan		29. Orientation	
A4. Profile			
16. Comments			

Initial Interpretation ▼ STRATIGRAPHIC RELATIONSHIPS ▼ Revised Interpretation

90. This context	91. This context
------------------	------------------

40. Same as

PHYSICAL RELATIONSHIPS

34. Filled by
35. Cut by
42. Fill of
43. Cuts

EXCAVATION DETAILS

31. Division of	32. Divided into
86. Method of excavation	A5. Weather
A6. Excavated by/date	68. Recorded by/date
61. Drawing Nos	A7. Checked by/date
63. Photo Nos	

Form 200



# Progress, Tools and Possible futures



# MIDAS mapping to CRM

Microsoft Excel - midas map with all fields.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Reply with Changes... Egd Review...

D:\Documents\EH\_laptop\CONFERENCES\_Workshops\CRM-SIG\_Ju

F314

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Information Scheme	Names and References			Statement 1		Statement 2		Statement 3		Statement 4					
Unit of Information	Condition	Class	Dir	Property	Class	Dir	Property	Class	Dir	Property	Class	Dir	Property	Class	Dir
<b>Primary Reference Number</b>	If entity is a monument	E18 Physical Stuff (this monument)	R	P70 documents (is documented in)	E31 Document (this entry)	F	P1 is identified by (identifier)	E41 Appellation (Primary Reference Number)							
	This is the general case if entity is a monument	E18 Physical Stuff (this monument)	F	P1 identified by (identifier)	E41 Appellation (Primary Reference Number)	R	P106 is composed of (forms part of)	E31 Document (the inventory as a whole)	F	P1 is identified by (identifier)	E41 Appellation (the name of the whole inventory)				
	If man-made monument (i.e. building, cairn etc)	E22 Man-Made Object (this monument)	F	P47 is identified by (identifier)	E42 Object Identifier (Primary Reference Number)										
	If man-made monument (i.e. building, cairn etc) AND PRN is the preferred identifier	E22 Man-Made Object (this monument)	F	P48 has preferred identifier (is preferred identifier of)	E42 Object Identifier (Primary Reference Number)										
	If man-made feature (i.e. tunnels, canals etc)	E25 Man-Made Feature (this monument)	F	P1 identified by (identifier)	E41 Appellation (Primary Reference Number)										
	If sites (i.e. battlefields)	E27 Site (this monument)	F	P1 identified by (identifier)	E41 Appellation (Primary Reference Number)										
	If entity is an event	E5 Event (this event)	R	P70 documents (is documented in)	E31 Document (this entry)	F	P1 is identified by (identifier)	E41 Appellation (Primary Reference Number)							
	If entity is an event	E5 Event (this event)	F	P1 identified by (identifier)	E41 Appellation (Primary Reference Number)	R	P106 is composed of (forms part of)	E31 Document (the inventory as a whole)	F	P1 is identified by (identifier)	E41 Appellation (the name of the whole inventory)				
<b>Date of Compilation</b>	If Date of Last Update present AND entity is a monument	E18 Physical Stuff (this monument)	R	P70 documents (is documented in)	E31 Document (original version of this entry)	R	P94 has created (was created by)	E65 Creation Event (original entry creation)	F	P4 has time-span (is time-span of)	E52 Time-Span (time span of original entry creation)	F	P78 is identified by (identifier)	E50 Date (Date of Compilation)	E61 Time Primitive
												F	P82 at some time within		

Sheet1 / Sheet2 / Sheet3

Ready

start 06:54



# New Corporate Reference Data Module

The screenshot displays the EHKOS (English Heritage Knowledge Online System) interface. At the top, the 'ehkos' logo is on the left, and the English Heritage logo is on the right. Below the header, a navigation bar includes links for 'ADMINUSER', 'Logout', 'Preferences', 'User Language: English', a help icon, and 'Register New User'. A secondary navigation bar contains 'Audit Data', 'Browse KOS', 'Browse People', 'Manage KOS', 'Manage People', 'Organization', 'User Admin', and 'Maintain Help'. The main content area is titled 'MONUMENT TYPE' and includes a description: 'Classification of monument type records by function.' Below this, there are 'Edit', 'Cancel', and 'Add New Concept' buttons. The 'Concepts in Schema' section on the left shows a tree view of categories, with 'DEFENCE' expanded to show sub-categories like 'AIRFIELD DEFENCE SITE', 'ANTI AIRCRAFT DEFENCE SITE', etc. The 'Selected Concept Details' section on the right shows the 'Definition' of a pillbox, its 'Scope Note', and its 'Preferred Label' as 'PILLBOX'. A text box contains the label 'EHKOS', and there is an 'Add New Label To Concept' button. At the bottom, there are links for 'Test For Where else does this appear in this concept schema', 'Labels (1)', 'Other Concept Schemas (1)', and 'Non Hierarchical Related Concepts (4)'. The system is running on a 'Local intranet'.

ehkos

ENGLISH HERITAGE

ADMINUSER [Logout](#) [Preferences](#) User Language : English [?](#) [Register New User](#)

[Audit Data](#) [Browse KOS](#) [Browse People](#) [Manage KOS](#) [Manage People](#) [Organization](#) [User Admin](#) [Maintain Help](#)

## MONUMENT TYPE

Classification of monument type records by function.

**Concepts in Schema** [Edit](#) [Cancel](#) [Add New Concept](#)

Broad Term

- AGRICULTURE AND SUBSISTENCE
- CIVIL
- COMMEMORATIVE
- COMMERCIAL
- COMMUNICATIONS
- DEFENCE
  - AIRFIELD DEFENCE SITE
  - ANTI AIRCRAFT DEFENCE SITE
  - ANTI INVASION DEFENCE SITE
  - ARMoured VEHICLE
  - AUXILIARY HIDE
  - BATTERY
  - BATTLEFIELD
  - BOMBING RANGE MARKER

### Selected Concept Details

**Definition :** An often squat building with thick, loopholed walls and a flat roof, designed to accommodate a variety of weapons, usually strategically positioned to cover a vulnerable point in a defensive system. Many were built to standardized designs.

**Scope Note :**

**Preferred Label :** PILLBOX

[Add New Label To Concept](#)

- [Test For Where else does this appear in this concept schema](#)
- [Labels \(1\)](#)
- [Other Concept Schemas \(1\)](#)
- [Non Hierarchical Related Concepts \(4\)](#)

Local intranet





# Includes CIDOC-CRM

The screenshot shows a Microsoft Internet Explorer browser window displaying the EHKOS web application. The browser title is "Browse EHKOS - Microsoft Internet Explorer provided by English Heritage". The address bar shows the URL: <http://sw26/EHKOS/KOS/BrowseKOS.aspx?sel=1&sid=81381&cid=86306&valuepath=86306&lid=1>. The page header includes the "ehkos" logo and the English Heritage logo, with a "Last Updated: 14th March 2007" timestamp. The user is logged in as "ADMINUSER" and the language is set to "English". A navigation menu includes "Audit Data", "Browse KOS", "Browse People", "Manage KOS", "Manage People", "Organization", "User Admin", and "Maintain Help".

The main content area is titled "CIDOC CRM" and displays "The CIDOC conceptual reference model" with a dropdown menu for "Concept Schema Description". Below this, there are buttons for "Edit", "Cancel", and "Add New Concept".

The "Concepts in Schema" section features a "Broad Term" dropdown menu, "Filter" and "Reset" buttons, and a tree view of concepts. The tree view shows "E1 CRM ENTITY" expanded, with sub-items: "E2 Temporal Entity", "E3 Condition State", "E4 Period", "E5 Event", "E7 Activity", "E77 Persistent Item", "E41 Appellation", and "E70 Stuff".

The "Selected Concept Details" section provides information for the selected concept:

- Definition :** This class comprises all things in the universe of discourse of the CIDOC Conceptual Reference Model
- Scope Note :** It is an abstract concept providing for 3 general properties. 1. Identification by name or appellation. 2. Classification by type, allowing further refinement.
- Preferred Label :** E1 CRM Entity

Below the details, there is an "Add New Label To Concept" button and a list of links: "Test For Where else does this appear in this concept schema" and "Labels (1)".

The bottom of the browser window shows the taskbar with the Start button, several open applications (EHKOS Build release, Browse EHKOS - Mic..., Microsoft Outlook), and the system tray showing the time as 16:37 and the network as "Local intranet".



# Concept relations – CRM Properties

The screenshot shows a Microsoft Internet Explorer browser window displaying the 'Manage Possible Concept Relationships' page. The page header includes the 'ehkos' logo, the English Heritage logo, and the text 'Last Updated: 14th March 2007'. Below the header, there are navigation links for 'ADMINUSER', 'Logout', 'Preferences', 'User Language: English', and 'Register New User'. A secondary navigation bar contains links for 'Audit Data', 'Browse KOS', 'Browse People', 'Manage KOS', 'Manage People', 'Organization', 'User Admin', and 'Maintain Help'. The main content area is titled 'Manage Possible Concept Relationships' and features a table with the following data:

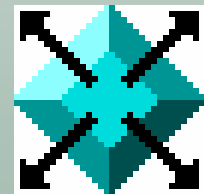
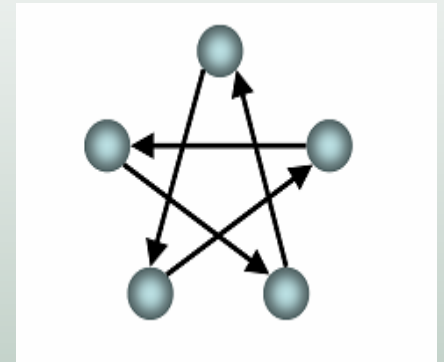
Description	Reverse Description	Hierarchical Relationship	
Broad Term	Narrow Term	<input checked="" type="checkbox"/>	
Related Term	Related Term	<input type="checkbox"/>	
Preferred Term	Non-Preferred Term	<input type="checkbox"/>	
P1 is identified by	identifies	<input type="checkbox"/>	
P47 is identified by	identifies	<input type="checkbox"/>	
P1 is identified by	P47 is identified by	<input checked="" type="checkbox"/>	
P48 has preferred identifier	is preferred identifier of	<input type="checkbox"/>	
P47 is identified by	P48 has preferred identifier	<input checked="" type="checkbox"/>	
P78 is identified by	identifies	<input checked="" type="checkbox"/>	

The browser's taskbar at the bottom shows several open applications: 'start', 'Inbox - Microsoft Out...', 'Manage EHKOS - Pos...', 'EHKOS Build release ...', and 'Microsoft PowerPoint ...'. The system clock indicates the time is 16:40.



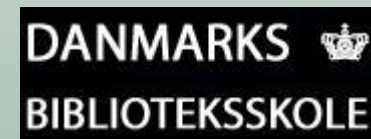
# STAR - Semantic Technologies for Archaeological Resources

- Building upon EH Ontological Modelling work and...
- FACET *a collaborative project investigating the potential of faceted thesauri for retrieval from multimedia collections*
  - **Faceted Access to Cultural hEritage Terminology**
  - D. Tudhope & Ceri Binding  
Glamorgan University  
Faculty of Advanced Technology



# Project Outline

- 3 year AHRC funded project
- Started January 2007, finish December 2010
- Collaborators
  - University of Glamorgan
  - English Heritage
  - RSLIS Denmark
- Aim – *“To investigate the potential of semantic terminology tools for widening access to digital archaeological resources, including disparate datasets and associated grey literature”*



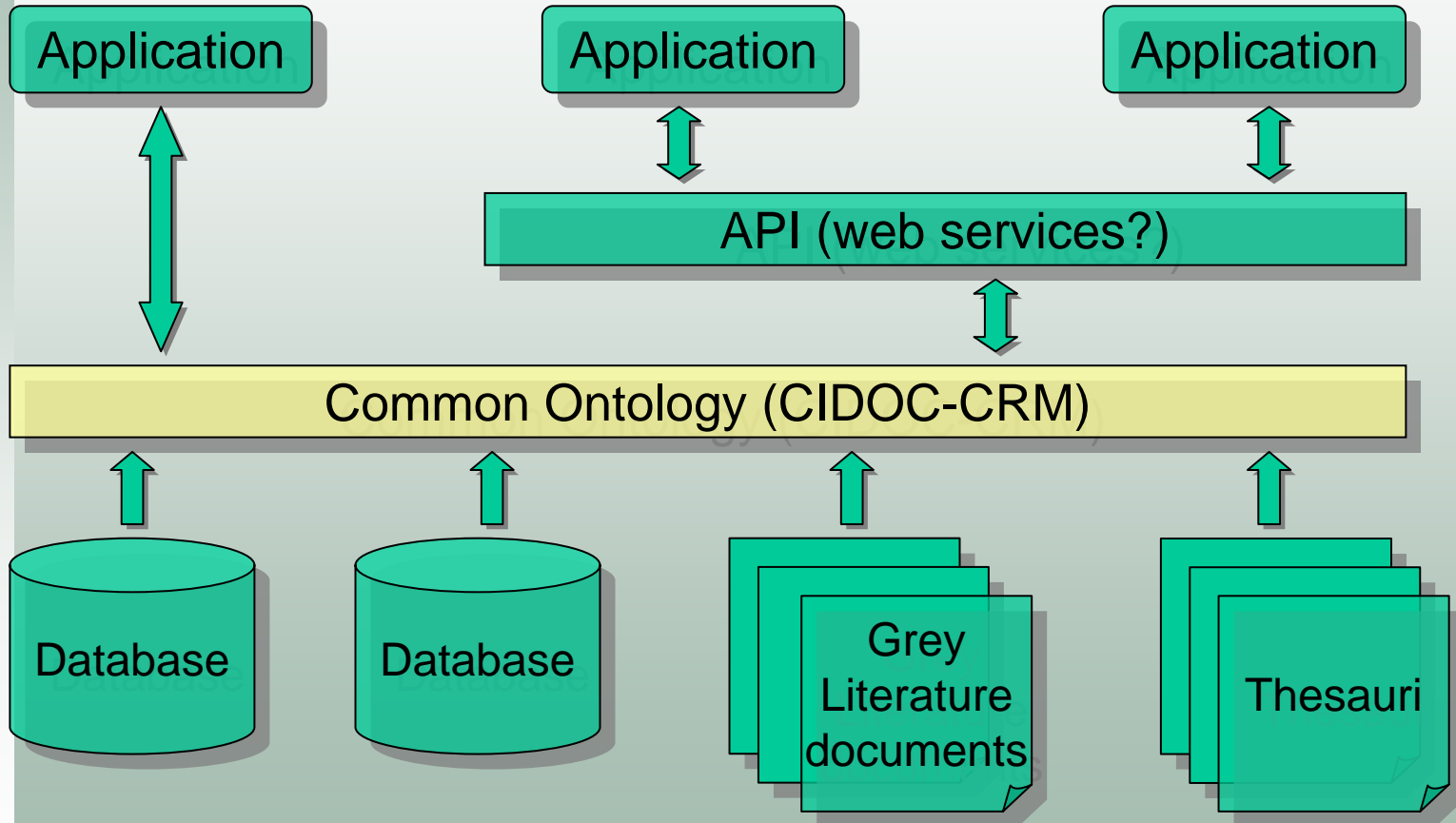


## Archaeological Resources - to explore

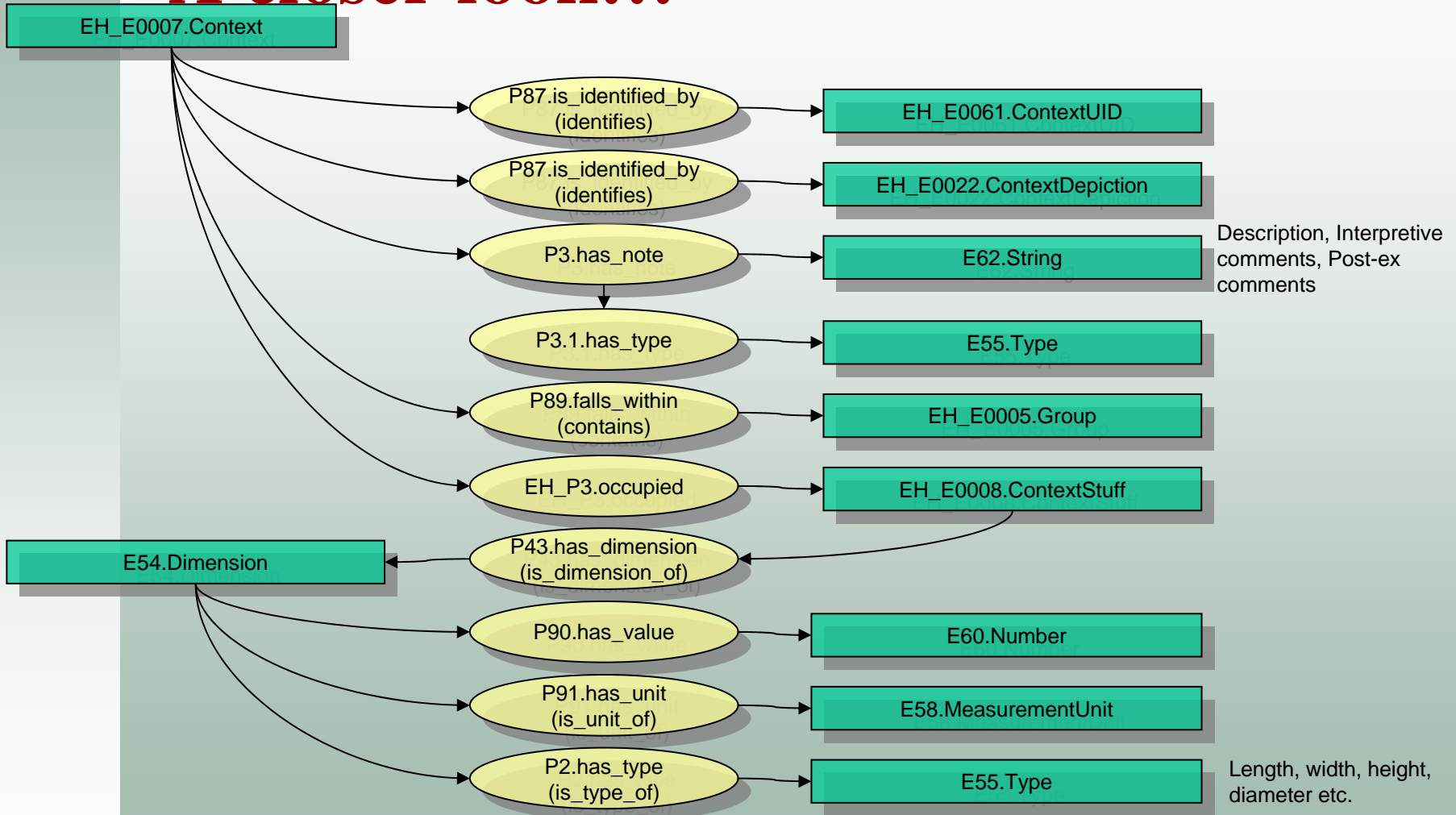
- Raunds Data & Grey Literature reports
- Online Access to the Index of archaeological excavations (OASIS)  
[<http://ads.ahds.ac.uk/project/oasis/>]
  - Library of unpublished fieldwork reports
- Keyword Extraction Algorithm (KEA)  
[<http://www.nzdl.org/Kea/>]



# General architecture

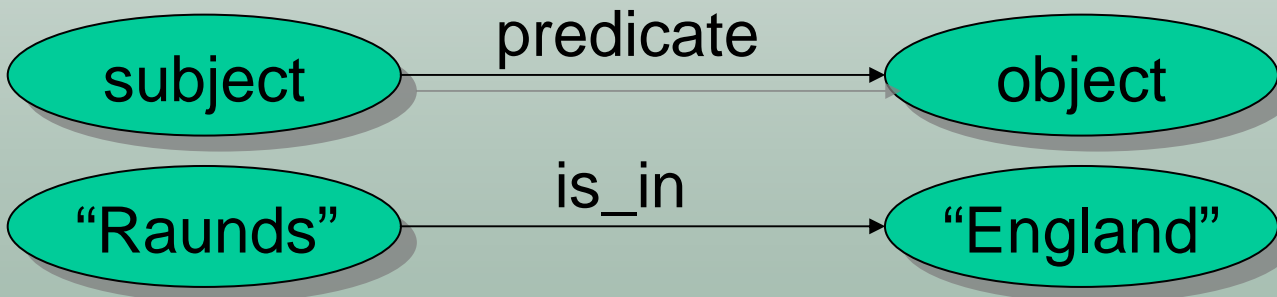


# A closer look...



# Resource Description Framework (RDF)

- <http://www.w3.org/RDF/>
- XML / URI based format
- RDF triples:



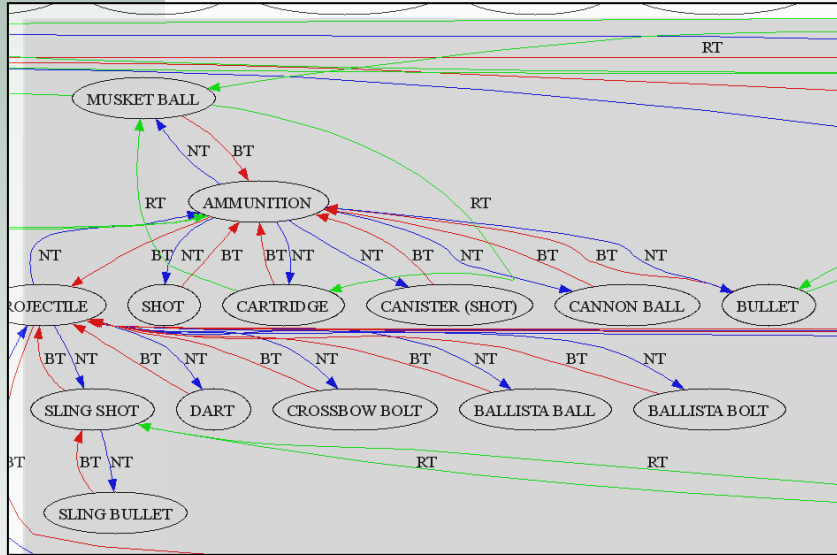


# Simple Knowledge Organisation Systems (SKOS)

- <http://www.w3.org/2004/02/skos/>
- Representation of thesauri, taxonomies, classification schemes etc. in RDF
- Looser semantics than e.g. OWL



# Representing Thesauri in SKOS RDF



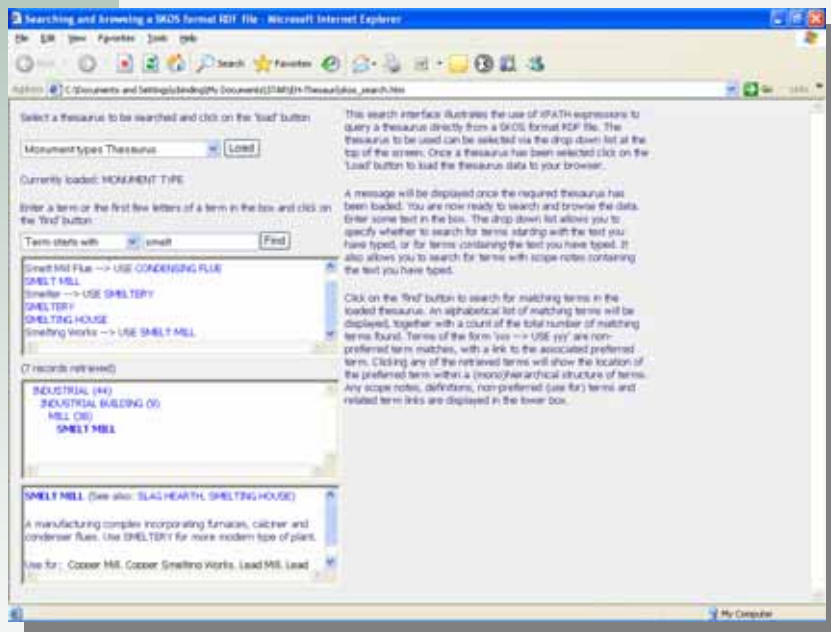
```

<skos:Concept rdf:about="#100062">
  <skos:inScheme rdf:resource="#EH128"/>
  <skos:prefLabel>MISERICORD (DAGGER)</skos:prefLabel>
  <skos:broader rdf:resource="#95138"/>
  <skos:scopeNote>A form of dagger.</skos:scopeNote>
</skos:Concept>
<skos:Concept rdf:about="#100063">
  <skos:inScheme rdf:resource="#EH128"/>
  <skos:prefLabel>HANGER</skos:prefLabel>
  <skos:broader rdf:resource="#95221"/>
  <skos:scopeNote>A type of sword often used by infantry.</skos:scopeNote>
</skos:Concept>
<skos:Concept rdf:about="#100064">
  <skos:inScheme rdf:resource="#EH128"/>
  <skos:prefLabel>SABRE</skos:prefLabel>
  <skos:broader rdf:resource="#95221"/>
  <skos:scopeNote>A curved sword designed to cut with used by cavalry.</skos:scopeNote>
</skos:Concept>
<skos:Concept rdf:about="#97098">
  <skos:inScheme rdf:resource="#EH128"/>
  <skos:prefLabel>AMMUNITION</skos:prefLabel>
  <skos:broader rdf:resource="#100011"/>
  <skos:narrower rdf:resource="#95135"/>
  <skos:narrower rdf:resource="#97673"/>
  <skos:narrower rdf:resource="#95173"/>
  <skos:narrower rdf:resource="#95174"/>
  <skos:narrower rdf:resource="#95200"/>
  <skos:narrower rdf:resource="#95144"/>
  <skos:related rdf:resource="#97232"/>
  <skos:scopeNote>Articles used in charging guns and ordnance.</skos:scopeNote>
</skos:Concept>

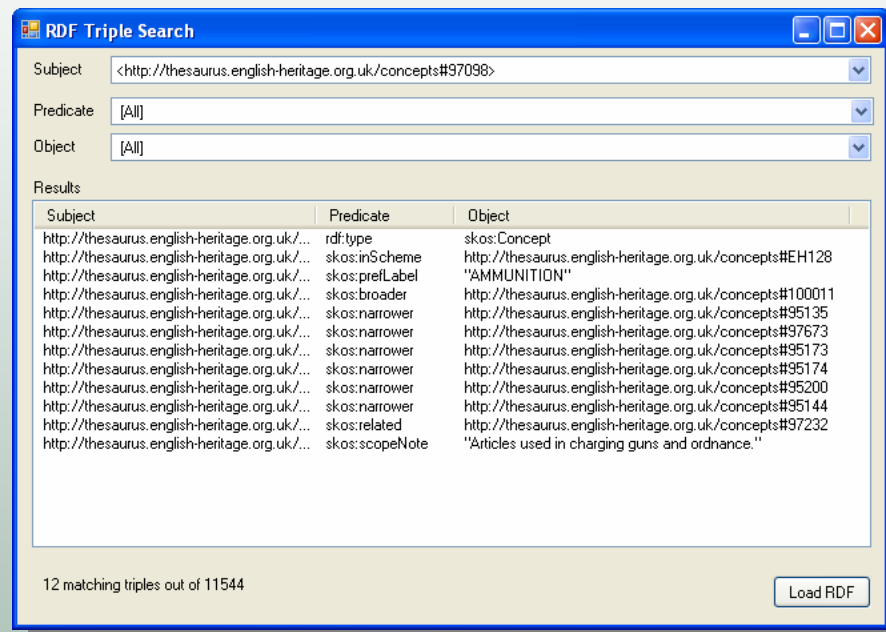
```



# Applications using the RDF data



SKOS thesaurus browser



RDF triple search



# OASIS – Archaeology Data Service Grey Literature online library

ads ArchSearch

Information

Search

Project Archives

Special Collections

Library

ahds

Unpublished Fieldwork Reports

Library: Series | Bibliographies | Journals | Theses | Grey Literature | Other | Help

Grey literature reports: Introduction | Browse by contractor | Search the Reports

Results

Click on the title to view more details about the document and project or click on the PDF/DOC/HTML link to download the report.

Records 1 - 3 of 3

- (144KB) Anon. (1990) **Northumberland Bottom (ARC WNB 90), Archaeological Excavation Interim Report**  
Museum of London Archaeology Service
- (149KB) Anon. (1999) **North Of Salkwood Tunnel, Kent: ARC SLT 90C Detailed Archaeological Works, Interim Report**  
Canterbury Archaeological Trust
- (57KB) Anon. (2000) **North Of Salkwood Tunnel, Kent: ARC SLT 99 Southern Section, Detailed Archaeological Works, Interim Report**  
Canterbury Archaeological Trust

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Cite only /!http://ads.ahds.ac.uk/catalogue/library/greylit-query.ods for this page  
ADS hosts AHDS Archaeology

ads ArchSearch

Information

Search

Project Archives

Special Collections

Library

ahds

Unpublished Fieldwork Reports

Library: Series | Bibliographies | Journals | Theses | Grey Literature | Other | Help

Grey literature reports: Introduction | Browse by contractor | Search the Reports

Details of Document

Bibliographic Reference

Click on the title to display document (PDF 144KB)

Anon. (1990) **Northumberland Bottom (ARC WNB 90), Archaeological Excavation Interim Report**  
Museum of London Archaeology Service; London (Isle of Dogs Railways (South) LM)

<< display document details >>

Site details

Location	
Site name	Northumberland Bottom, Area 300
District	GRAVESHAM
County	KENT
Country	ENGLAND

Monuments and Finds	
ANIMAL BURIAL	IRON AGE
BOUNDARY DITCH	BRONZE AGE
CIRCULAR ENCLOSURE	MEDIEVAL
CORN DRYING OVEN	MEDIEVAL
CREMATION	IRON AGE

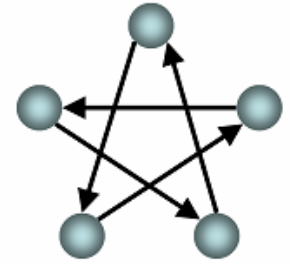
• <http://ads.ahds.ac.uk/catalogue/>

Some controlled  
vocabulary indexing





# Summary



CIDOC-CRM as overarching logical structure

- Thesauri
  - English Heritage Thesauri (SKOS)
- Grey Literature
  - Raunds grey literature reports
  - OASIS / ADS ArchSearch
  - Indexing using KEA
- Datasets
  - Raunds RRAD MS-Access database
  - Other EH archaeological projects – legacy data
  - Silchester Roman town – IADB MySQL database



# Protégé – Dynamic CRM-EH

The screenshot displays the Protégé 3.2 beta interface. The main window is titled "CombineOntologies Protégé 3.2 beta (file: D:\Documents\EH\_laptop\PROJECTS\STAR%20-%20Doug%20Tudhope\RFs\_Ceri\CombineOntologies\C...". The interface is divided into several panes:

- SUBCLASS EXPLORER:** Shows the asserted hierarchy for the project "CombineOntologies". The hierarchy is: owl:Thing > rdfs:Literal > crm:E1.CRM\_Entity > crm:E2.Temporal\_Entity > crm:E3.Condition\_State > crm:E4.Period > crm:E5.Event > crm:E7.Activity. Other classes under crm:E5.Event include ecrm:EHE1001.ContextEvent, ecrm:EHE1003.GroupEvent, crm:E63.Beginning\_of\_Existence, crm:E64.End\_of\_Existence, ecrm:EHE2007.SurveyEvent, ecrm:EHE2005.ContextFindDatin, ecrm:EHE2014.ContextFindUseA, ecrm:EHE1005.ContextFindUseE, ecrm:EHE0001.EHPProject, ecrm:EHE2008.ProcessSurveyD, crm:E10.Transfer\_of\_Custody, crm:E11.Modification, crm:E13.Attribute\_Assignment, crm:E65.Creation, crm:E66.Formation, crm:E8.Acquisition, crm:E9.Move, and crm:E52.Time-Span.
- CLASS EDITOR:** Shows the editor for the class "crm:E7.Activity" (instance of rdfs:Class). It includes an "Inferred View" checkbox and an "Annotations" table.
- Annotations Table:**

Property	Value	Lang
rdfs:comment	hiérarchie des classes au-dessus de Événement.  This class comprises actions intentionally carried out by instances of E39 Actor that result in changes of state in the cultural, social, or physical systems documented.  This notion includes complex, composite and long-lasting actions such as the building of a settlement or a war, as well as simple, short-lived actions such as the opening of a door.	en
rdfs:label	Activité	fr
rdfs:label	Δράση	el
rdfs:label	Activity	en
- Properties Table:**

Property	Cardinality	Type
crm:P138B.has_represent...	Multiple	crm:E36.Visual_Item
crm:P140B.was_attribute...	Multiple	crm:E13.Attribute_Assign...
crm:P141B.was_assigne...	Multiple	crm:E13.Attribute_Assign...
crm:P15B.influenced	Multiple	crm:E7.Activity
crm:P17B.motivated	Multiple	crm:E7.Activity
crm:P1F.is_identified_by	Multiple	crm:E41.Appellation
crm:P2F.has_type	Multiple	crm:E55.Type
crm:P3F.has_note	Multiple	rdfs:Literal
crm:P41B.was_classified...	Multiple	crm:E17.Type_Assignment
crm:P4F.has_time-span	Multiple	crm:E52.Time-Span
crm:P62B.is_depicted_by	Multiple	crm:E24.Physical_Man-Me...
crm:P67B.is_referred_to...	Multiple	crm:E73.Information_Object
crm:P70B.is_documented...	Multiple	crm:E31.Document
crm:P7F.took_place_at	Multiple	crm:E53.Place
crm:P8F.took_place_on_o...	Multiple	crm:E19.Physical_Object
crm:P9B.forms_part_of	Multiple	crm:E4.Period
crm:P9F.consists_of	Multiple	crm:E4.Period

The Windows taskbar at the bottom shows the "start" button and various application icons. The system clock in the bottom right corner displays "13:37".



# Protégé modelling – pros and cons

- + Pros: modelling much more updateable – dynamic
- + easy to disseminate in RDF formats for developers
- + Protégé is open source
- Cons: Not good dissemination tool for EH domain users
- Not much use to the wider Archaeological or Heritage community for agreeing a standard ontology?
- Protégé graphing tools are unwieldy for complex modelling
- Protégé is open source – difficult to maintain as a standard tool for dissemination?
- Protégé networking – a whole further project at EH



# CRM-EH extensions in RDF

- “CRM-EH” – need a ‘published’ version (Where? – EH, CIDOC, currently Glamorgan)
- First need to complete RDF descriptions (90+)
- CRM-EH RDFs online
  - – currently on Glamorgan server
  - May need agreed protocols for how these are used?
- Standards evolve - What mechanisms for updating & keeping current on different servers?
- E.g. How best to incorporate MIDAS changes?



# Semantic Web - interface examples

1. Oracle Technology Network
  - Beta test site
  - <http://otnsemanticweb.oracle.com/>
2. iGoogle
3. IkeWiki



# Results showing Faceted Navigation interface



Service Oriented

- Home
- Headlines
- Downloads
- Forums
- Articles
- Podcasts
- Blogs
- More Sources

Collapse all | Expand all

**NAVIGATE BY**

**DATABASE**

- Oracle Database 10g (24)
- Database Options (19)
- Zend Core for Oracle (7)
- Embedded Database (5)
- Warehouse Builder (3)
- Secure Backup (1)
- Rdb (1)
- Gateways (1)

**MIDDLEWARE**

- Oracle Developer Tools (32)
- Oracle Fusion Middleware (10)
- SOA Suite (10)

**APPLICATIONS**

- On Demand (3)
- Oracle E-Business Suite (4)
- PeopleSoft Enterprise (14)
- Siebel (1)

**TECHNOLOGIES**

- Business Integration (15)
- Business Intelligence (13)
- Database (27)

## Welcome to OTN Semantic Web (Beta)



Get a *Semantic Web* view of OTN content.

[Read the FAQ](#) | [Provide Feedback](#) | [Visit "classic" OTN](#)

**Filter**

All Fields   
**service oriented**

See All Results in an Integrated View

**RECENTLY POSTED**

[Generate Functional JSF-ADF Applications using Oracle JHeadstart](#)  
 posted 2007-05-25

[Guide to Advanced Linux Command Mastery, Part 2](#)  
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# iGoogle web service interface?

The screenshot shows the iGoogle web service interface within a Mozilla Firefox browser window. The browser's address bar displays the URL `http://www.google.co.uk/ig?hl=en`. The page header includes the user's email address `keith.may@english-heritage.org.uk` and navigation links for [Classic Home](#), [Web History](#), [My Account](#), and [Sign out](#). The main content area features the iGoogle logo, a search bar with "Google Search" and "I'm Feeling Lucky" buttons, and a search scope selector set to "the web". Below the search bar are navigation tabs for Home, Technology, Sport, Images, Fun, Video, WebCams, Travel, and an "Add a tab" button. The interface is divided into several widget sections: 

- BBC News | World | UK Edition**: Contains headlines such as "Chavez issues trade bloc deadline", "Yemen bomb victims flown home", and "Warming 'made lake vanish'".
- Google News**: Lists news items like "Road to independence was perilous, long - Norwich Bulletin", "Torres sees 'unique opportunity' - ITV.com", and "Adu takes charge as US takes off - Globe and Mail".
- Top Stories**: Features stories such as "Freed BBC man speaks out", "Pakistani militants defy surrender deadline", "Yard sends terror detective to Australia", and "Tragic Bismarck found dead after 'drugs overdose'".
- Weather**: Provides forecasts for Southsea, England (16°C, Mostly Cloudy) and London (18°C, Cloudy), including temperature ranges for Today, Thursday, and Friday.
- Wikipedia**: Includes a search bar with "Go" and "Search" buttons.
- Google Map Search**: Displays a map of the Portsmouth area with search results for "Hotels in New Yo" and a "Search" button.
- Date & Time**: Shows a digital clock and the date "Wed JUL 4".
- Google Calendar**: Displays a calendar for July 2007.

The Windows taskbar at the bottom shows the "start" button, various application icons, and the system clock indicating 12:10.



# IkeWiki – Semantic Wiki

IkeWiki - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ikewiki.salzburgresearch.at/

Google

IkeWiki

**Ike Wiki**

User

- Login
- Create Account

Navigation

- Main Page
- Recent Changes
- Help

Search

Go Search

History

- FrontPage

Article Metadata Context History

## FrontPage

Types: `cc:Work` - `wordnet:Document` - `rdfs:Resource`

### Contents

- 1Welcome to IkeWiki - the Semantic Wiki for Knowledge Engineers
- 2A Tool for Knowledge Engineers
- 3Try it out!
- 4Publications
- 5Availability
- 6Compatibility
- 7Support
- 8Contact
- 9Acknowledgements

### Welcome to IkeWiki - the Semantic Wiki for Knowledge Engineers

IkeWiki is a new kind of Wiki (a [Semantic Wiki](#)) developed by [SalzburgResearch](#) that allows users to annotate pages and links between pages with semantic annotations. Such annotations are useful because they give machines a certain amount of "understanding" of the content that goes beyond merely displaying the page. This information can then e.g. be used for context-specific presentation of pages, advanced querying, consistency verification or drawing conclusions.

Currently, IkeWiki can make use of some of the knowledge represented in RDFS and OWL schemas to display enhanced navigation tools. Furthermore, we implemented a sample "biology ontology" that automatically displays a taxonomy box for biological objects.

Although IkeWiki looks and behaves like Wikipedia/MediaWiki in many aspects, it is a complete rewrite, and the system design significantly differs from other Wikis. IkeWiki makes full use of Semantic Web technologies like RDF(S) and OWL using the Jena RDF store.

### References

outgoing

- untyped (5)
- DevelopedAt (1)
- cc:license (1)
- help:hasTableOfContents (1)
- ikewiki:hasAuthor (2)
- rdf:type (3)
- dc:rights (1)
- dcterms:license (1)

incoming

- help:isTableOfContentsFor

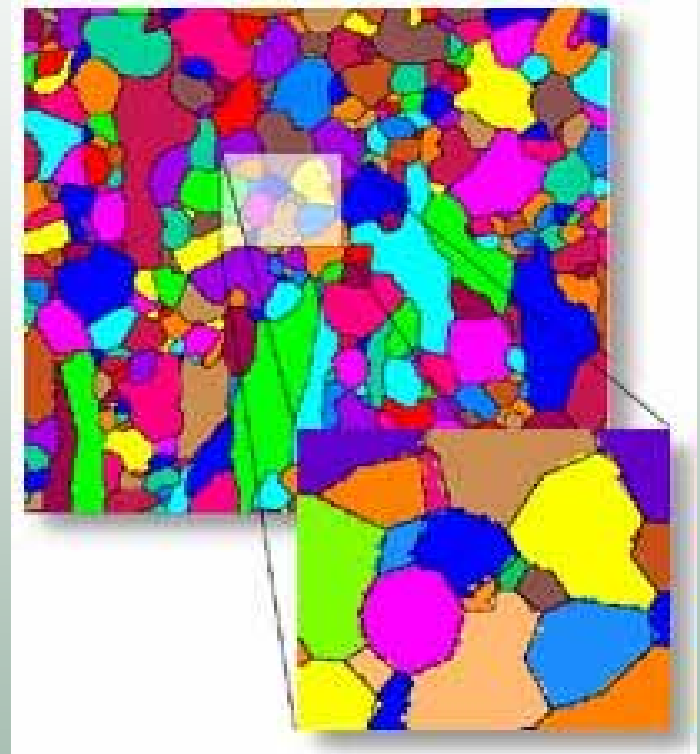


# 6. Conclusions and considerations for further work



# Need to be semantically explicit about the scope of your information domain

- Identifying Boundaries & how best to work with them & between them
- Important to define differences of Scale or Granularity of info.  
E.g. ?
  - Local
  - Regional
  - National
  - International
- Geo-political Cross-cutting could conflict with some Cultural heritage requirements



# Granularity issues

- Being explicit about the levels of entities within a model or mapping
- Is there a measure to explicitly express the current granularity of the model
  - How? – A Faceted user interface?
- Can/should we define the ‘granularity’ of the dataset as part of the contextual metadata? CRM-Core?



# Version control on CRM extensions?

- Can we cope with interoperable systems using slightly different versions of a standard?
- How well will EH extensions still work with CRM “Vanilla”?
- May need explicit ‘rules of engagement’ for interoperable data sets (web services)





# Dissemination tools to better enable user endorsement of CIDOC-CRM

- Need for wider Heritage engagement with CRM
- EH need other UK archaeologists to adopt
- Need to identify “cost-benefits” for sector
- Dissemination issues with size of model
  - and further mapping is considerably more
- Need better graphical modelling outputs
- Protégé helps – but not for archaeologists
  - (Domain end-users still need convincing)



# Verification & Dissemination

- Dissemination Review at end of project
- Verification by CRM-SIG & FISH, etc?
- Publish updated model & RDFs online
  - CRM-SIG and/or EH websites?
- Other publication & dissemination routes ?
  - Interpreting Stratigraphy conference May 2008
  - Internet Archaeology?
  - Semantic Wiki
    - on CIDOC-CRM website depending upon existing Wiki tools?  
<http://139.91.183.17:81/tiki/tiki-index.php>



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- FACET Project  
[http://www.glam.ac.uk/soc/research/hypermedia/facet\\_proj/select\\_public.php](http://www.glam.ac.uk/soc/research/hypermedia/facet_proj/select_public.php)
- Oracle Semantic network <http://otnsemanticweb.oracle.com/>
- IkeWiki - <http://ikewiki.salzburgresearch.at/>
- **Keith.may@english-heritage.org.uk**

