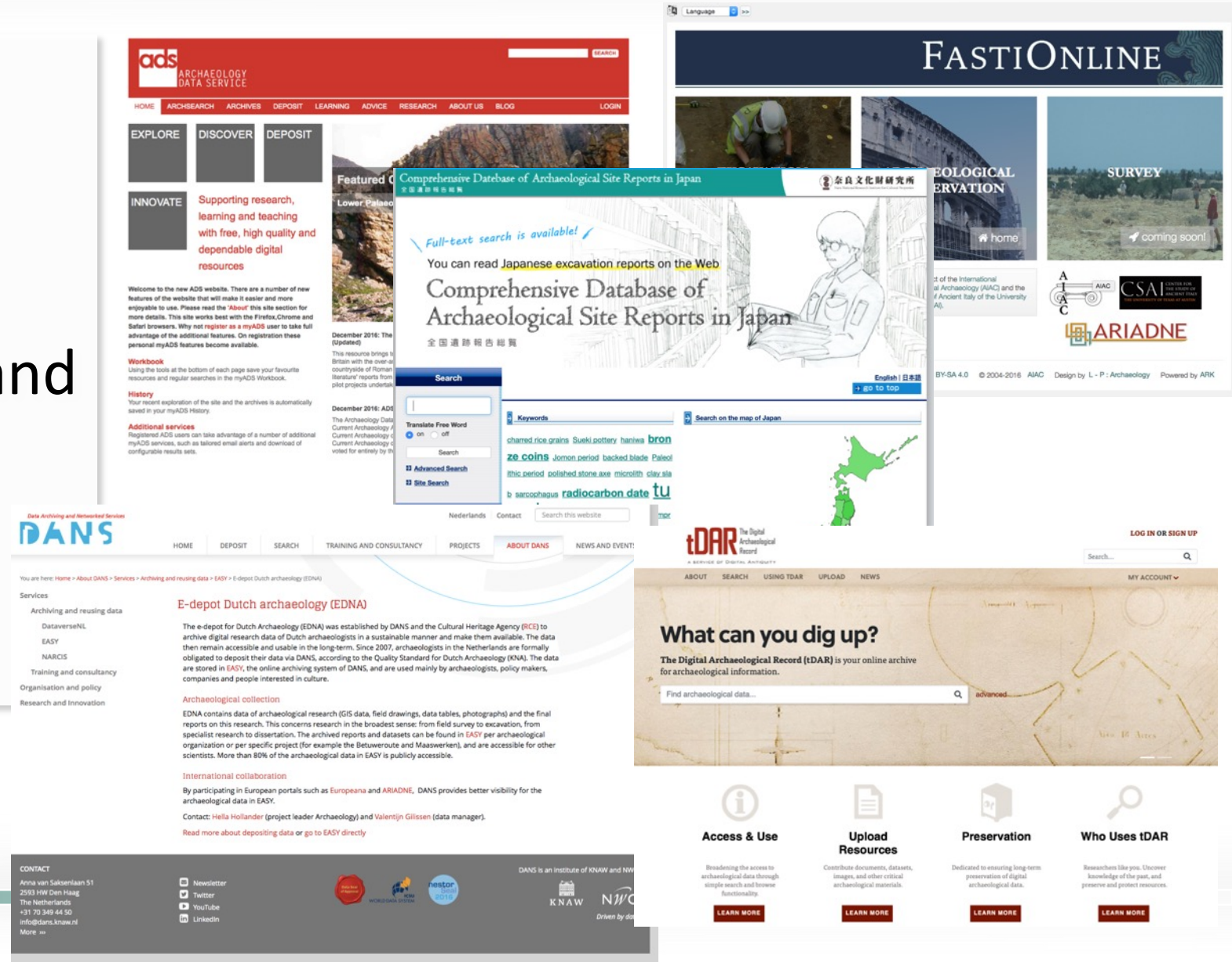
ARIADNE
Research Infrastructure AISBL

Large-scale Open Data integration in Archaeology: Challenges and Prospects

Julian Richards
Director ADS; ARIADNE Deputy Coordinator

The Challenges we face

- Multiple datasets
- Multiple repositories
- Multiple languages
- Multiple vocabularies and time periods
- Cross border searching

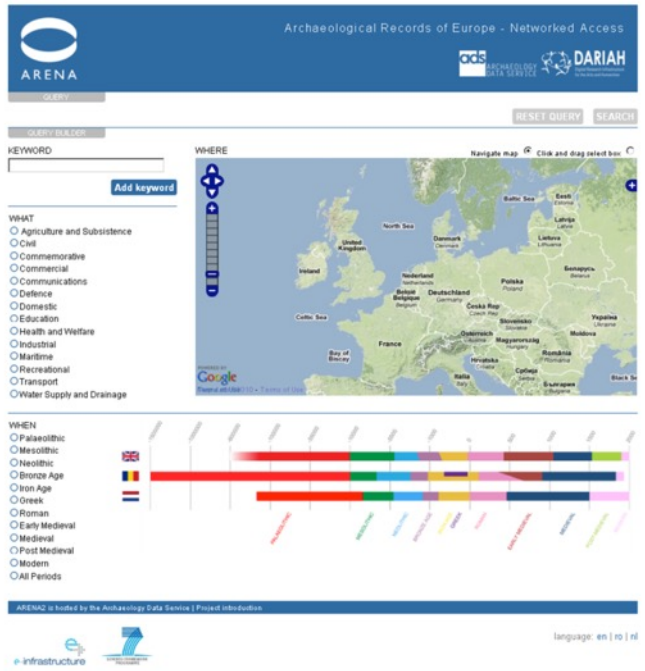


Some prehistory….

CAA 92, Aarhus: Henrik Jarl Hansen
"European archaeological databases: problems and prospects".

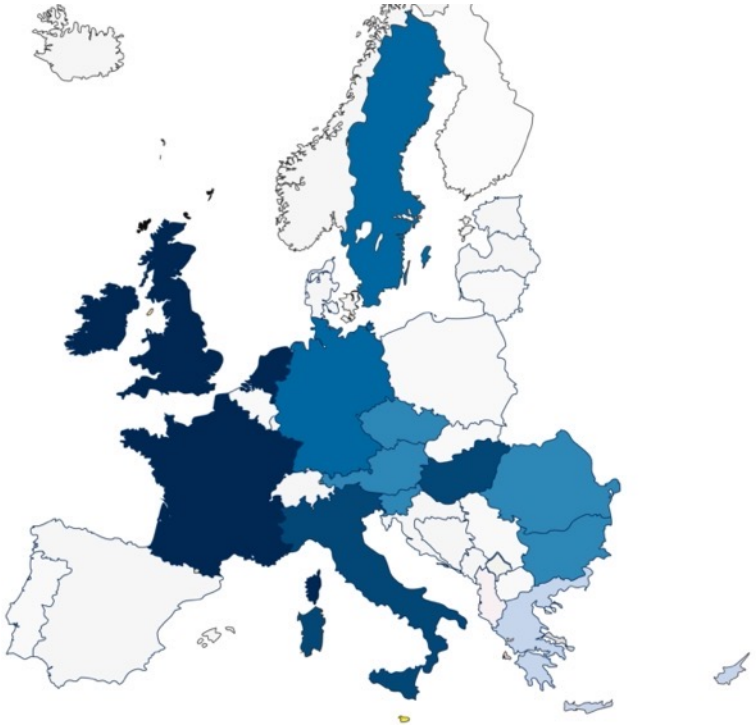
ARENA project, Culture 2000:
Internet Archaeology 18, 2005
Based on Z39.50 protocol and qualified Dublin Core

ARENA2 (DARIAH) 2009
Migrated to RESTful technologies



Extending geographically

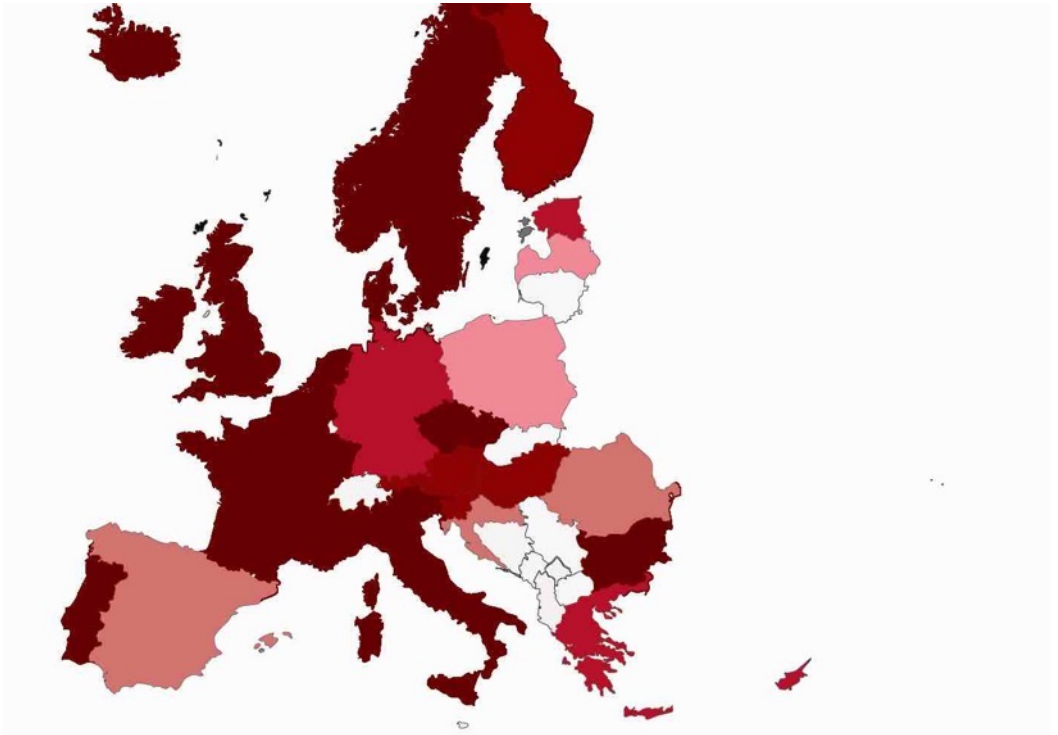
ARIADNE



2012-2016

- 24 partners; 18 countries

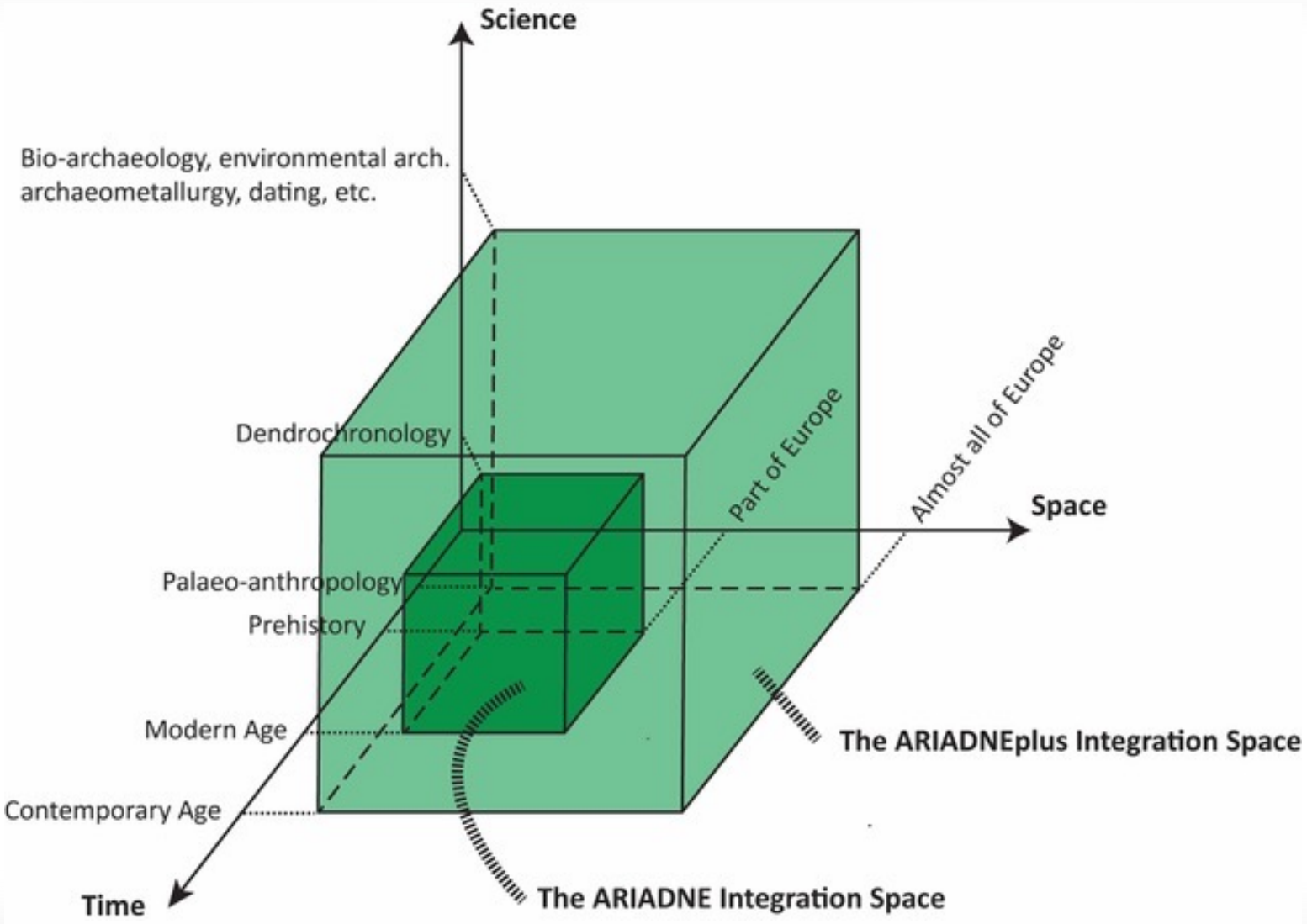
ARIADNE plus



2018-2022

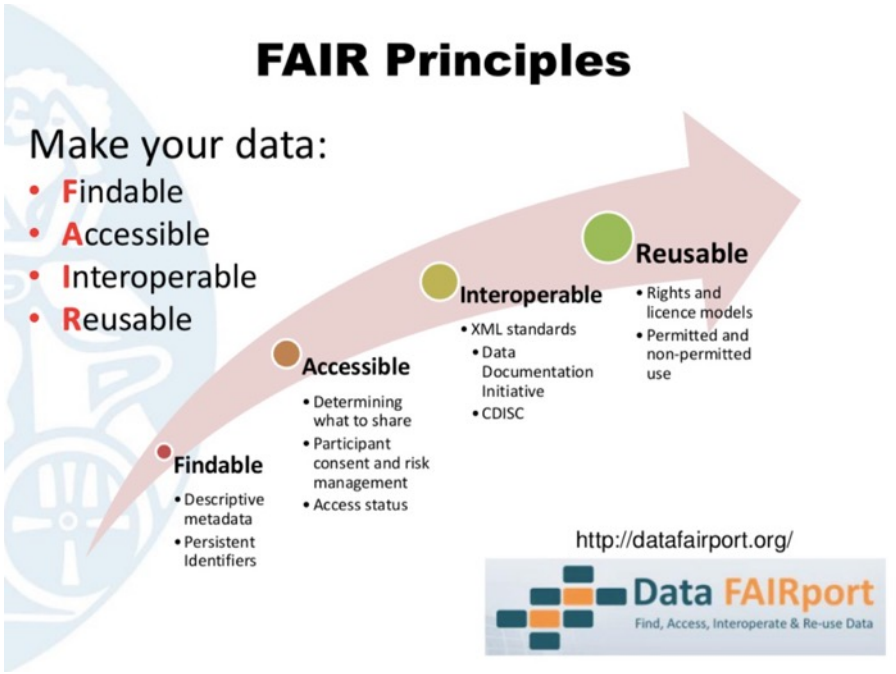
- 41 partners; 27 countries. Including Argentina, Japan, USA

Extending thematically



Our aims

- Enabling cross-border / cross-institution resource discovery i.e. finding data
- Enabling interoperability – across partners, countries, data types, data schemas i.e. enabling research
- Capacity and community building in the sector – working with SEADDA COST action



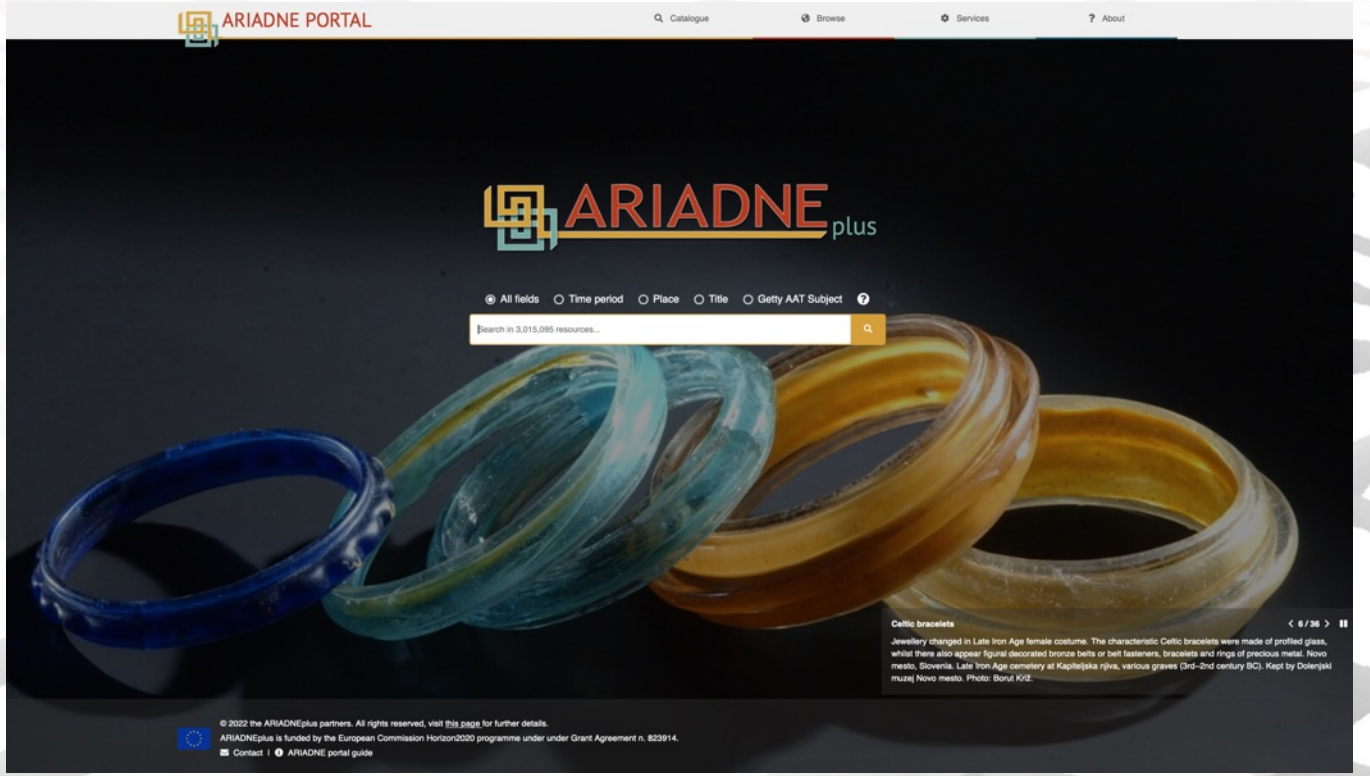
How do we measure success?

1. **Quantity**
   i. Number of records in the ARIADNE Catalogue / triplestore
   ii. Number of countries represented
2. **Quality**
   i. Good *meaningful* search results
   ii. Level of *granularity* – item level interoperability e.g. individual artefacts, not just sites; individual dates; individual graves, not just cemeteries
   iii. Integration of new data types
3. **Quantity and quality** of re-use i.e. new users; new research

Quantity of resources

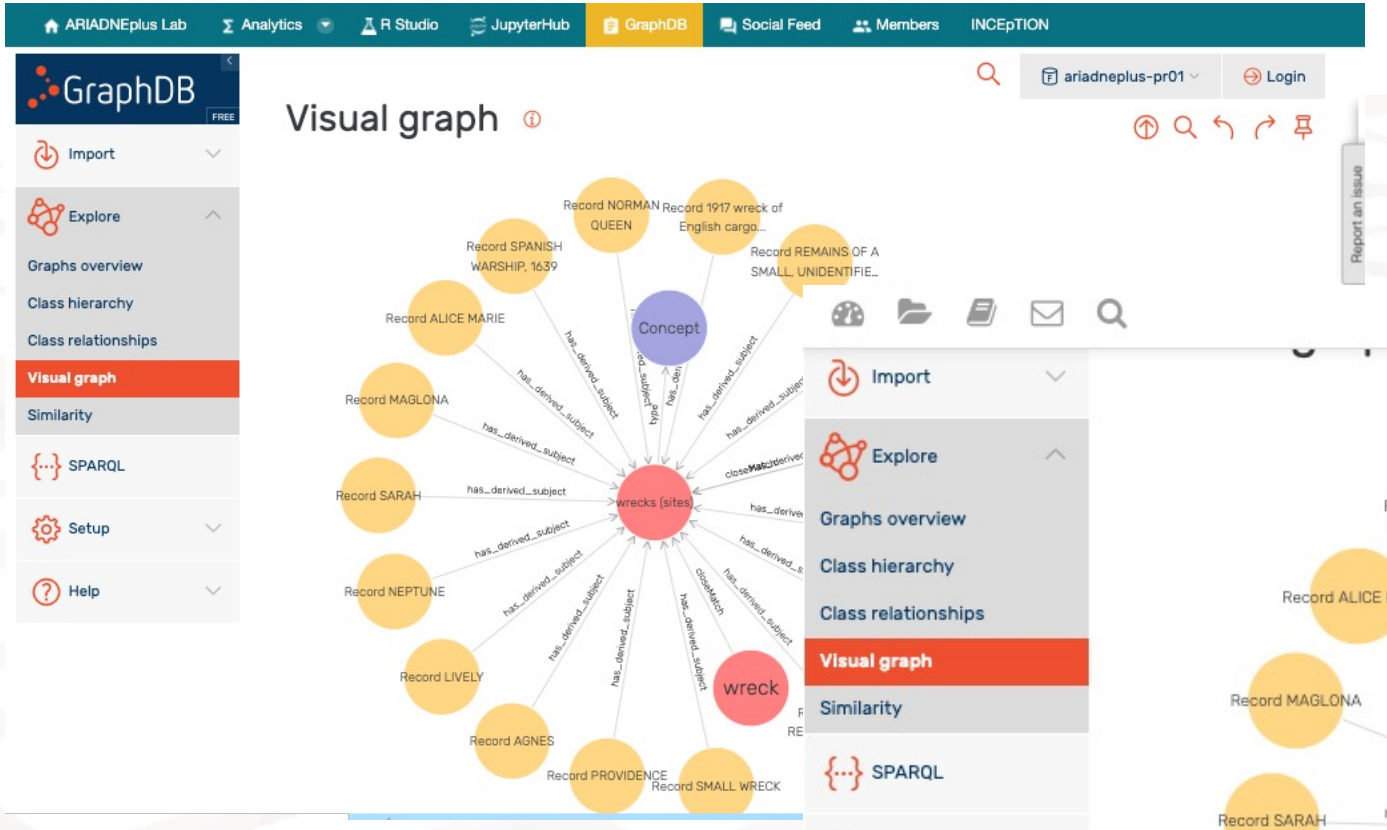
1. **Quantity**
   i. Number of records in the ARIADNE Catalogue

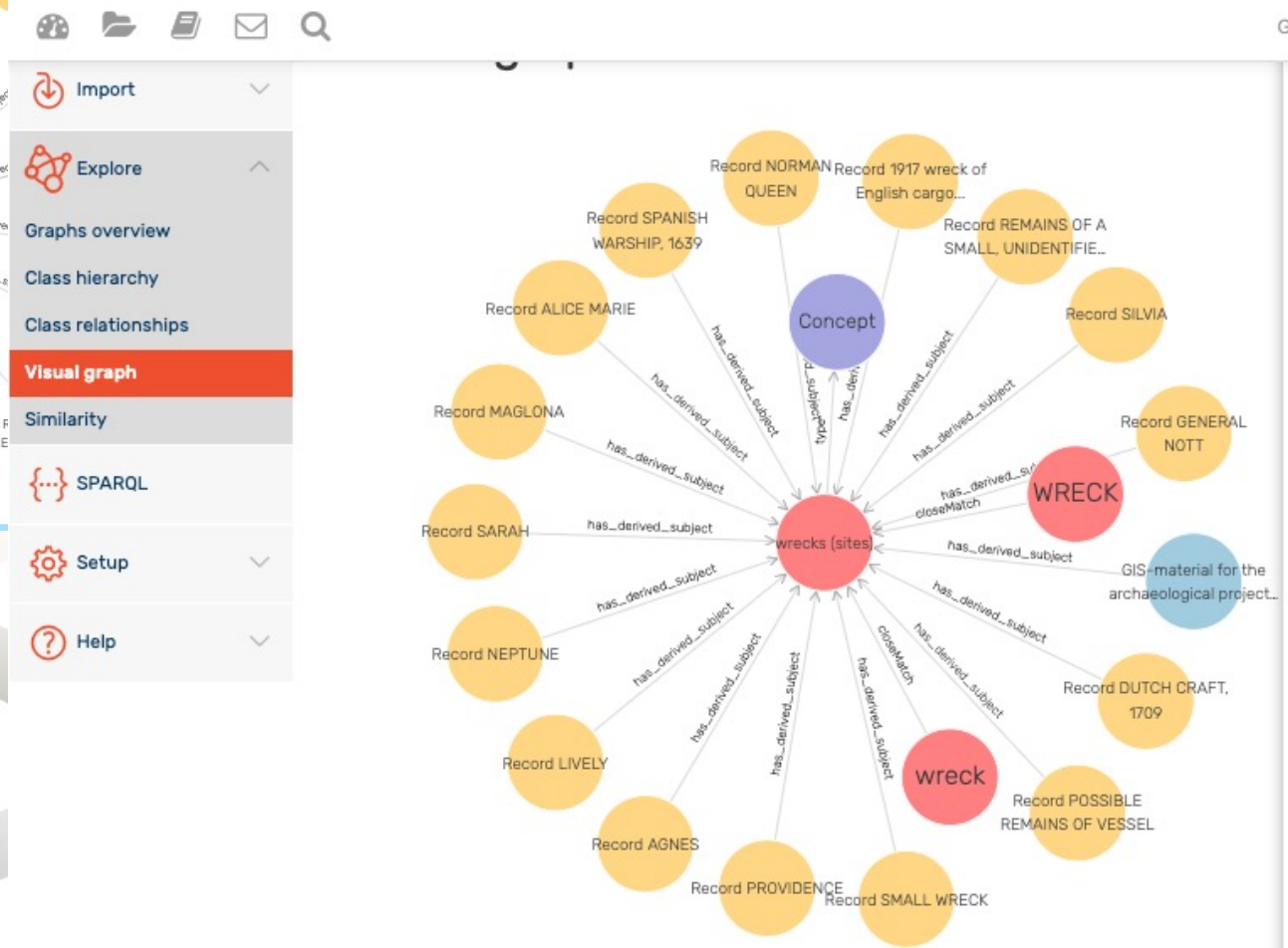
   3.5m resources;
   aiming for 4m



- The largest research infrastructure for Archaeology & heritage - anywhere in the world

Machine interface - The RDF triplestore: 180m triples



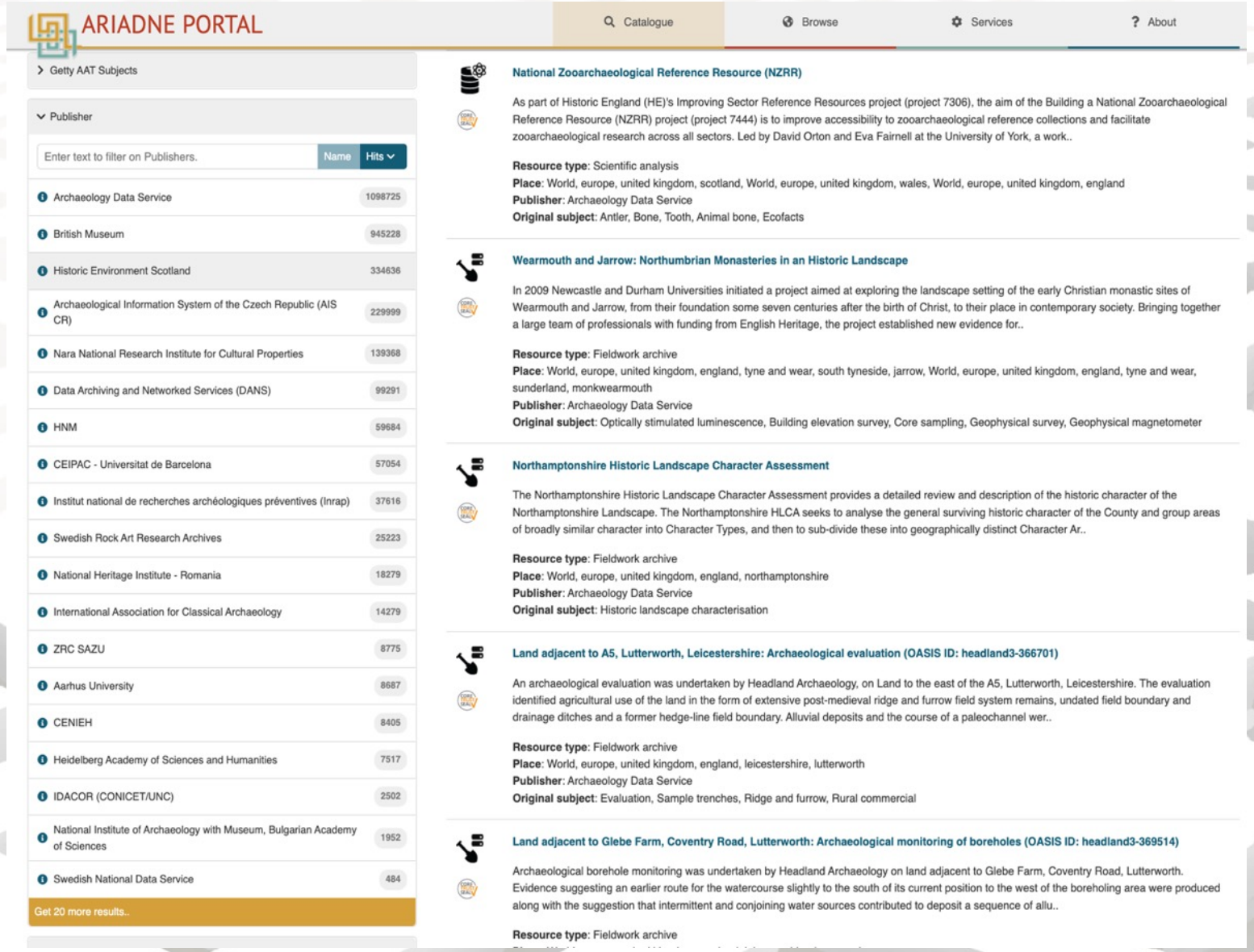


SPARQL endpoints
Getty AAT & Perio.Do URIs

Number of countries represented

1. Quantity

ii. Number of countries represented: 50+



Just a few examples.....

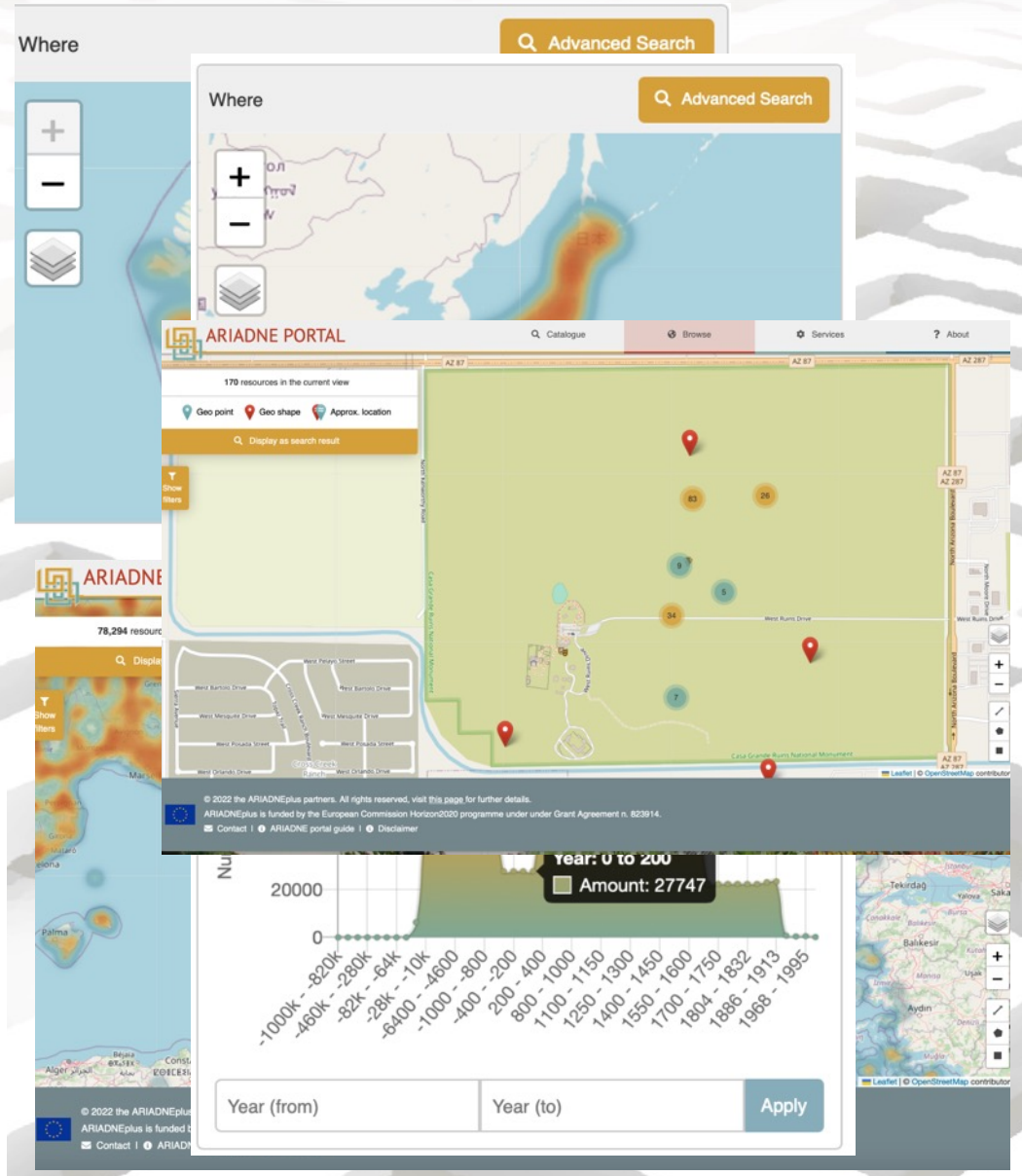
- France: 37616 fieldwork reports from Inrap
- Netherlands: 99291 records from DANS
- Iceland: 10344 sites and monuments from FSI
- FASTI: 14279 fieldwork records

Extending into southern and eastern Europe:

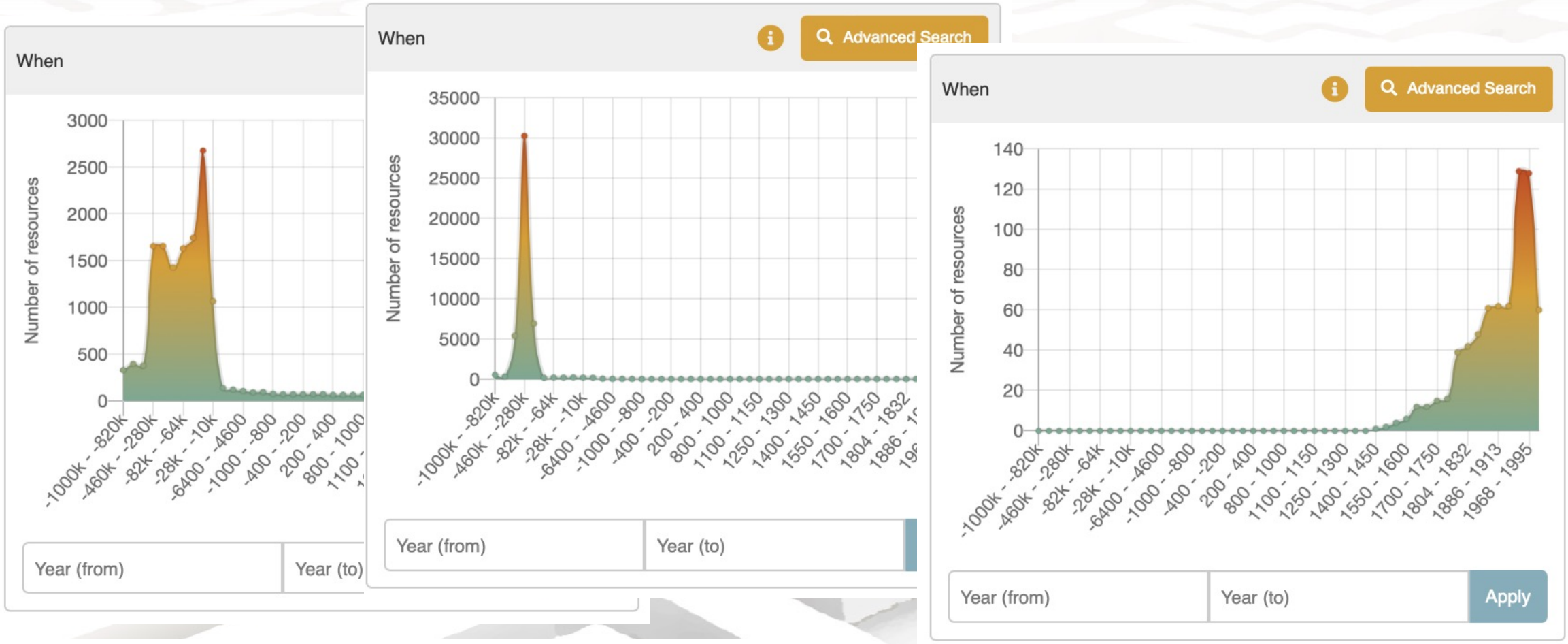
- Hungary: 62401 fieldwork records from HNM
- Romania: 18279 sites & monuments from INP
- Bulgaria: 1952 sites & monuments from NIM-BAS
- Czech Republic: 229999 records from AIS CR
- Slovenia: 8775 records from ZRC-SAZU

Extending beyond Europe:

- Japan: 139368 fieldwork reports from Nara
- United States: Casa Grande fieldwork archive from Digital Antiquity, ASU
- Argentina: 2502 records from CONICET



Extending in time….



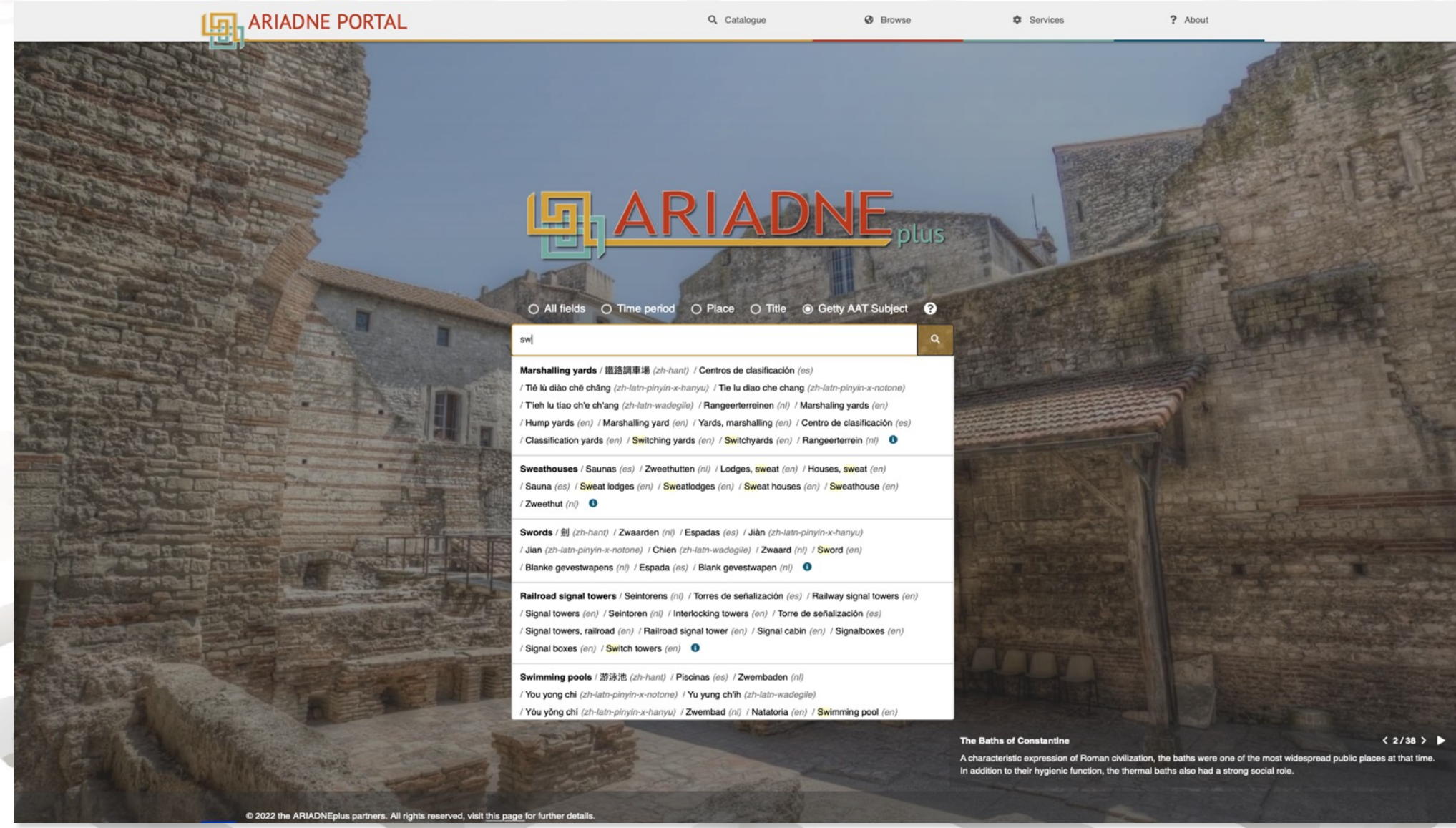
8405 records from CENIEH and 7417 from ROCEEH for early prehistory and hominid origins

Ottoman mosques and Communist farms in Dobruja, Romania, from IAVP

Meaningful search results

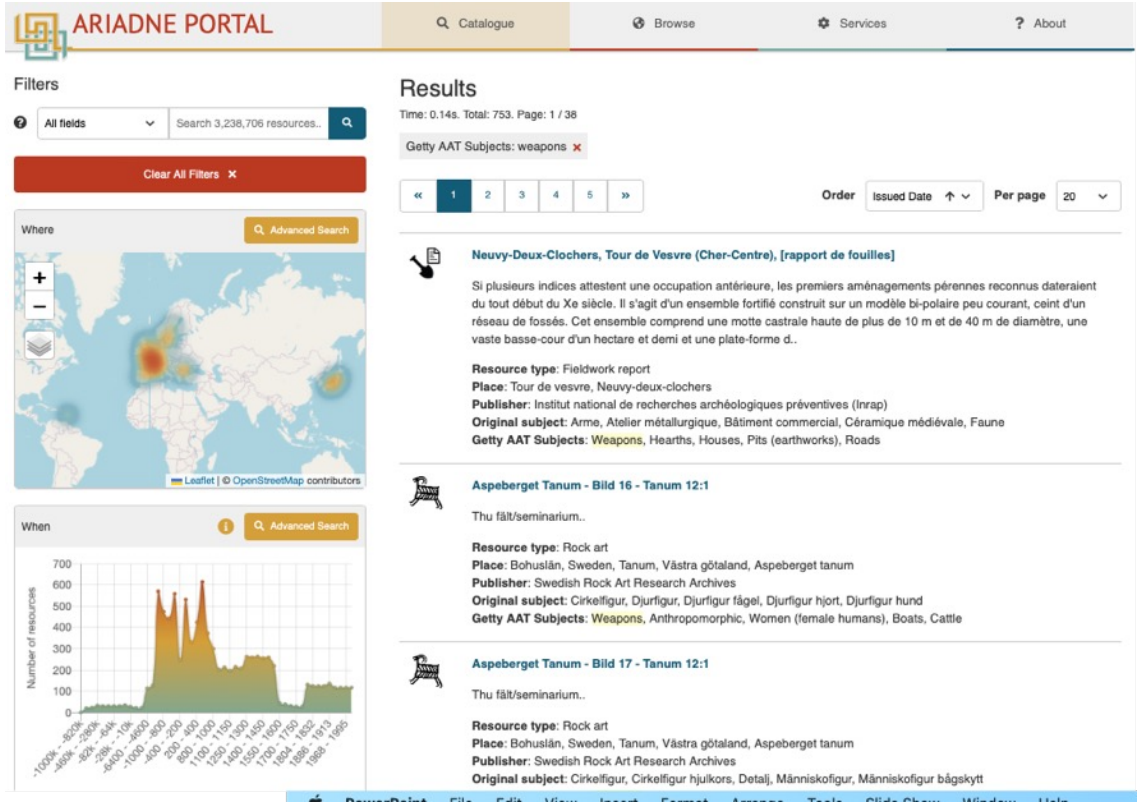
2. Quality

i. Good *meaningful* search results

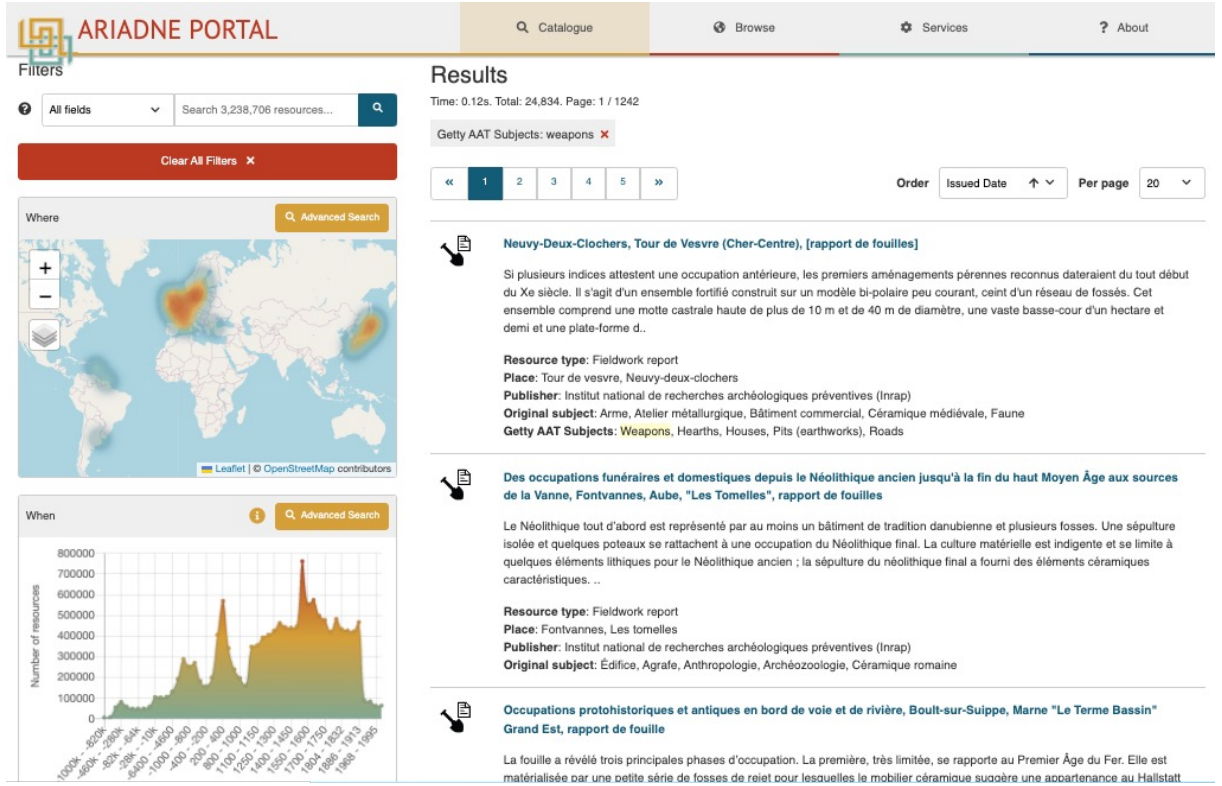


The power of the AAT hierarchy

Searching on “weapons” only: 753 resources



Searching on “weapons” and narrower terms: 24,834 resources



Filters

All fields | Search 3,238,706 resources...

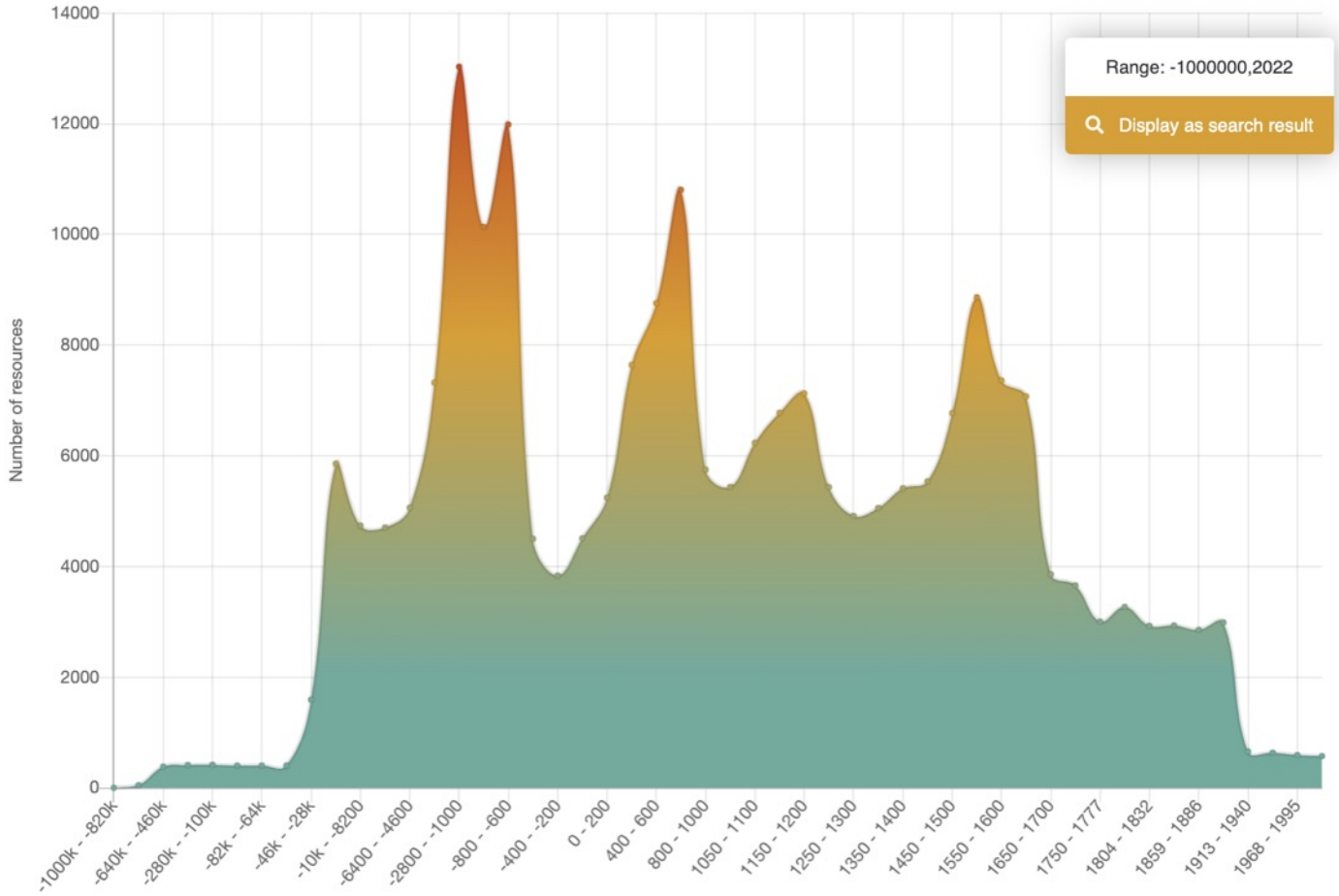
Filter By Year | Filter By Time Periods

Year (from) | Year (to) | Apply

- Resource type
- Getty AAT Subjects
- Publisher
- Contributor

Browse when

Scroll on the timeline to zoom. Drag to pan. Hold shift and drag a selection to apply a time range. Click "Display as search result" to search the time range in the catalogue.



PeriodO

A gazetteer of period definitions for linking and visualizing data.

Download the period definitions as JSON. Use the PeriodO period browser.

What is this?

PeriodO is a gazetteer of scholarly definitions of historical, art-historical, and archaeological periods. It eases the task of linking among datasets that define periods differently. It also helps scholars and students see where period definitions overlap or diverge.

Who are you?

The PeriodO project is led by Adam Rabinowitz (University of Texas at Austin), Ryan Shaw (University of North Carolina at Chapel Hill), and Eric Kansa (OpenContext). Patrick Golden developed the PeriodO software and Sarah Buchanan helped curate the initial dataset. Our work is funded by a Digital Humanities Start-Up Grant from the Office of Digital Humanities at the National Endowment for the Humanities.

Tell me more.

Start by looking at the guide to using PeriodO.

You may also be interested in reading about the motivation for the project or getting a technical overview. Further information can be found in our publications. To keep up with PeriodO developments, follow us on Twitter: @perio_do. Or contact us and ask whatever you want!

National Endowment for the Humanities

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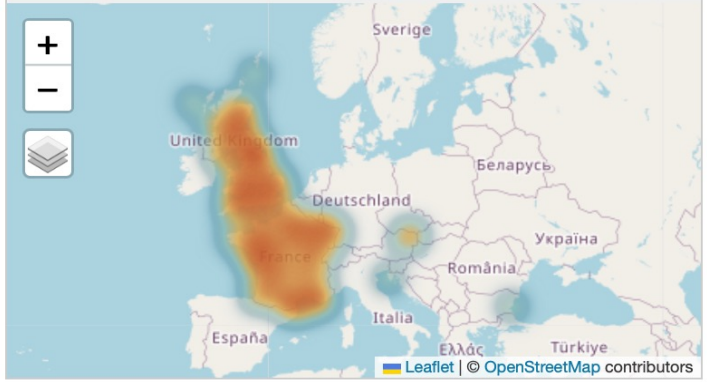
ARIADNEplus is funded by the European Commission Horizon2020 programme under under Grant Agreement n. 823914.

Filters

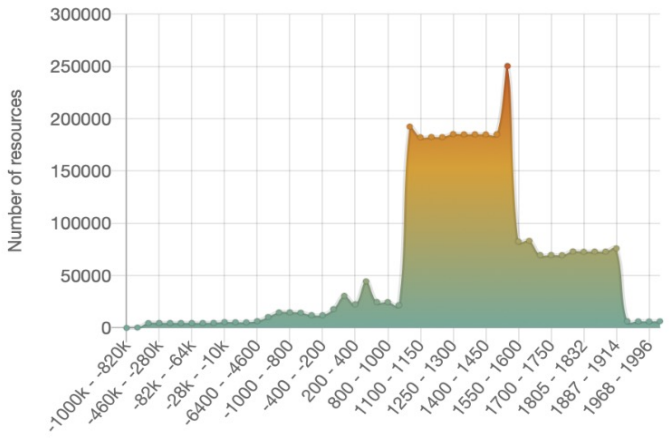
All fields | Search 3,472,844 resources...

Clear All Filters ×

Where — Advanced Search



When — Advanced Search



Filter By Year | Filter By Time Periods

Results

Time: 0.23s. Total: 180,204. Page: 1 / 9011

Cultural periods: Medieval (aut) × | Cultural periods: Medieval (fra) × | Cultural periods: Medieval period (fra) × | Cultural periods: Medieval (bgr) ×

Cultural periods: Medieval (svn) × | Cultural periods: Medieval islamic period (prt) × | Cultural periods: Medieval (isl) ×

Cultural periods: Medieval (gbr) × | Cultural periods: Medieval (scotland) × | Cultural periods: Medieval christian period (prt) ×

« 1 2 3 4 5 » | Order: Relevance | Per page: 20

Valence (Drôme), Plateau de Lautagne, Réservoir ville de Valence, rapport de fouilles

Le projet de construction par la ville de Valence d'un réservoir d'eau sur le plateau de Lautagne, dont le riche passé antique et médiéval n'est plus à démontrer, induit la réalisation d'une opération de diagnostic en février 2017 (Ronco, 2017), laquelle s'est avérée positive avec la découverte de fosses et de fours médiévaux. Une opération de fouille d'une durée de six semaines a donc été menée e..

Resource type: Fieldwork report
Place: Plateau de lautagne, Valence
Publisher: Institut national de recherches archéologiques préventives (Inrap)
Original subject: Acquisition de ressource naturelle, Artisanat, Céramique médiévale, Exploitation, Faune domestiquée

Le Hameau de Haut, Digosville, (Manche), rapport de diagnostic

Le diagnostic archéologique réalisé à Digosville sur 4790 m² voués à laréalisation d'un lotissement a uniquement révélé la présence de fosséscorrespondant à différents états du parcellaire. Trois d'entre eux sesuccèdent, adoptant les mêmes orientations, depuis la fi n du Moyen âgejusqu'à nos jours en passant par la période moderne. Trois segmentsde fossés, semblent indiquer la présence d'une trame..

Resource type: Fieldwork report
Place: Digosville, Le hameau de haut
Publisher: Institut national de recherches archéologiques préventives (Inrap)
Original subject: Structure agraire

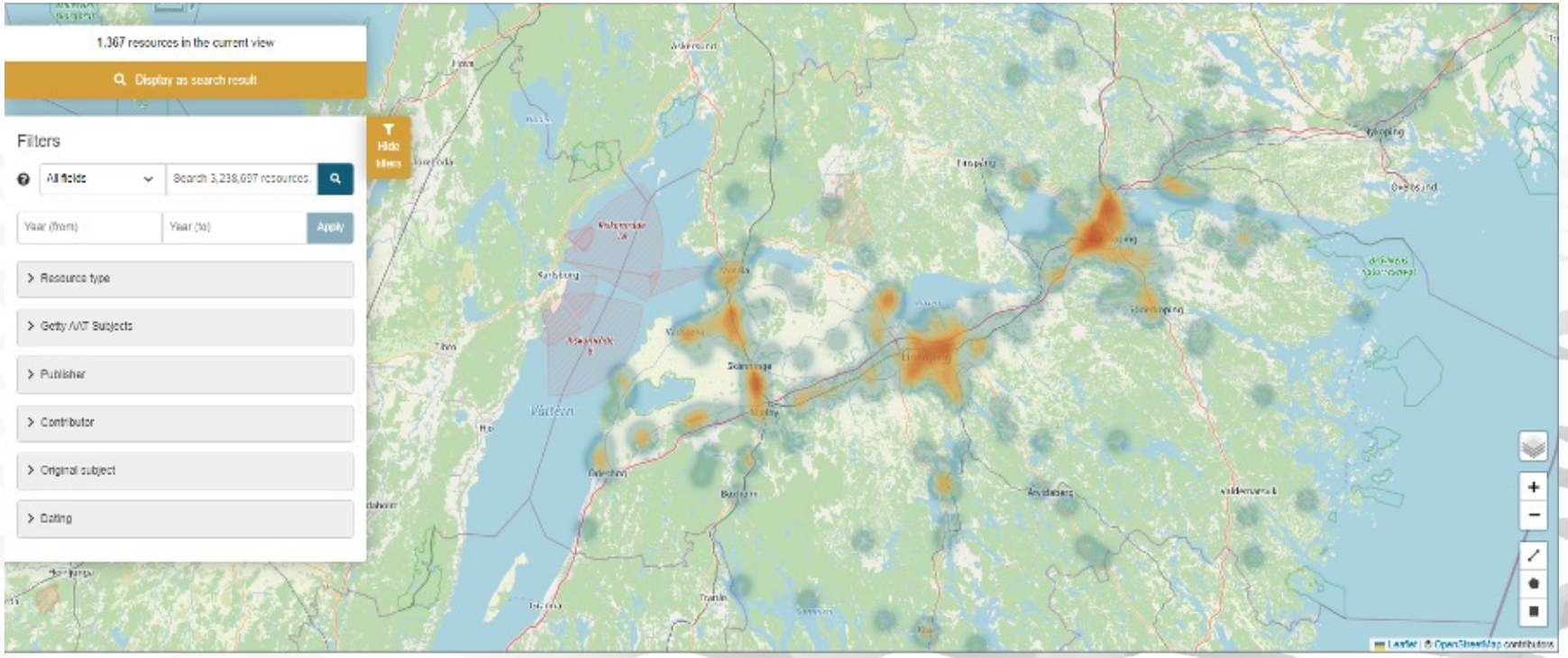
Poitiers (86), Rue de l'Université, rue des Vieilles-Boucheries, entre la rue de l'Université et la rue Savatier - Suivi de travaux en contexte urbain 2015-2016, rapport de diagnostic

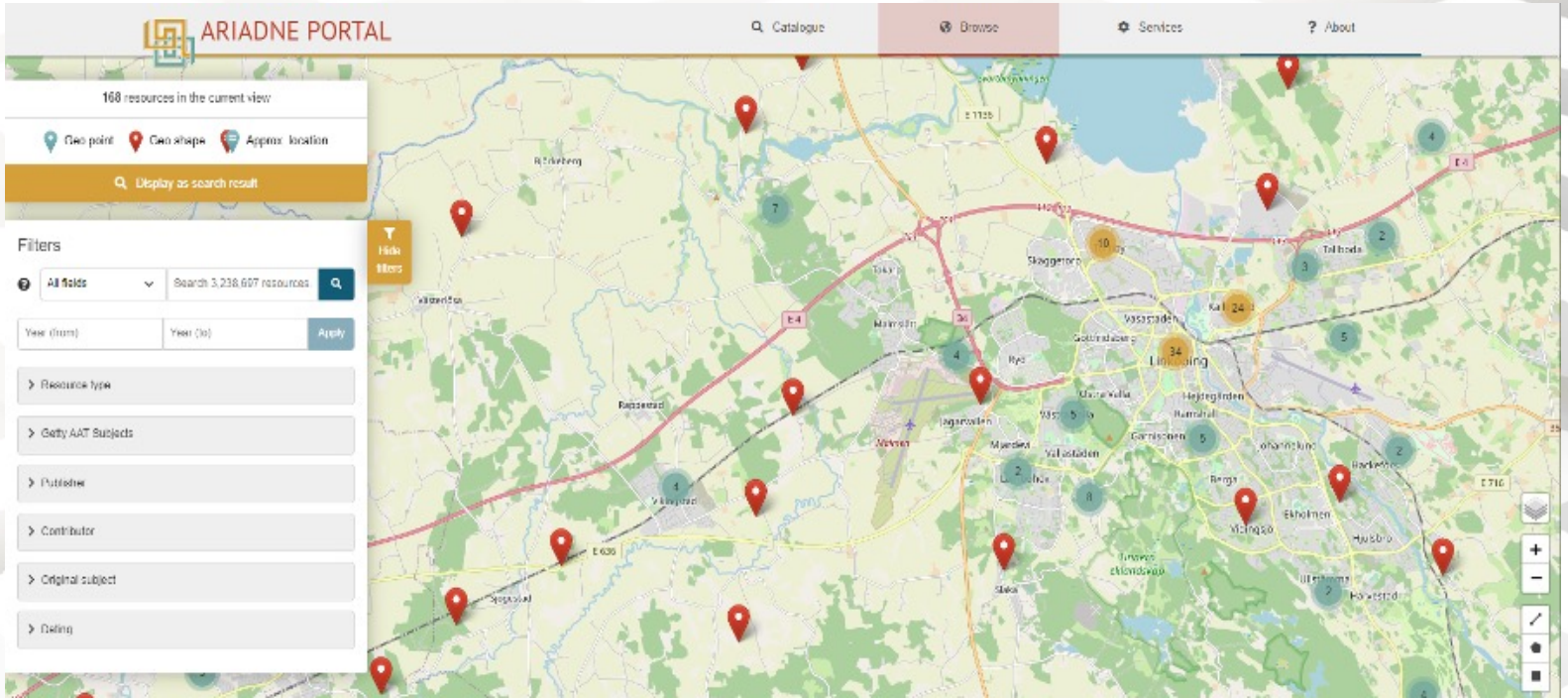
Une série de surveillances de travaux, prescrites sous la forme de diagnostic archéologique, a débuté en 2015, dans le secteur de la rue de l'Université à Poitiers. Ces travaux de réfection, déviation et enfouissement profond des réseaux (eau, gaz, électricité, téléphone) sont réalisés en prévision du projet de Modernisation du réseau de transport public, lancé par la communauté d'agglomération Gr..

Resource type: Fieldwork report
Place: Poitiers, Rue de l'université, rue des vieilles-boucheries, entre la rue de l'université et la rue savatier
Publisher: Institut national de recherches archéologiques préventives (Inrap)
Original subject: Céramique gallo-romaine, Céramique médiévale, Céramique moderne, Céramique protohistorique, Céramologie

WGS84

- Latitude
- Longitude

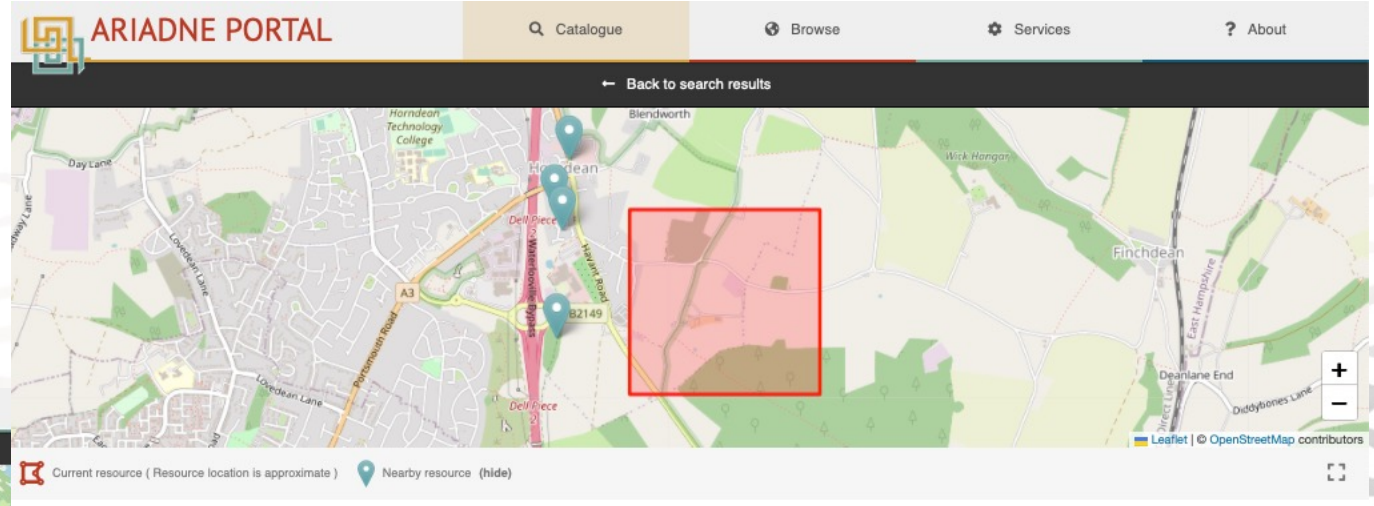


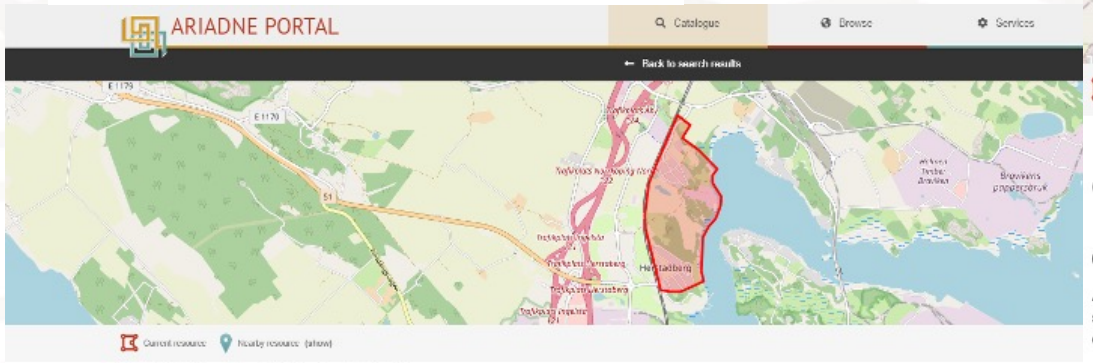


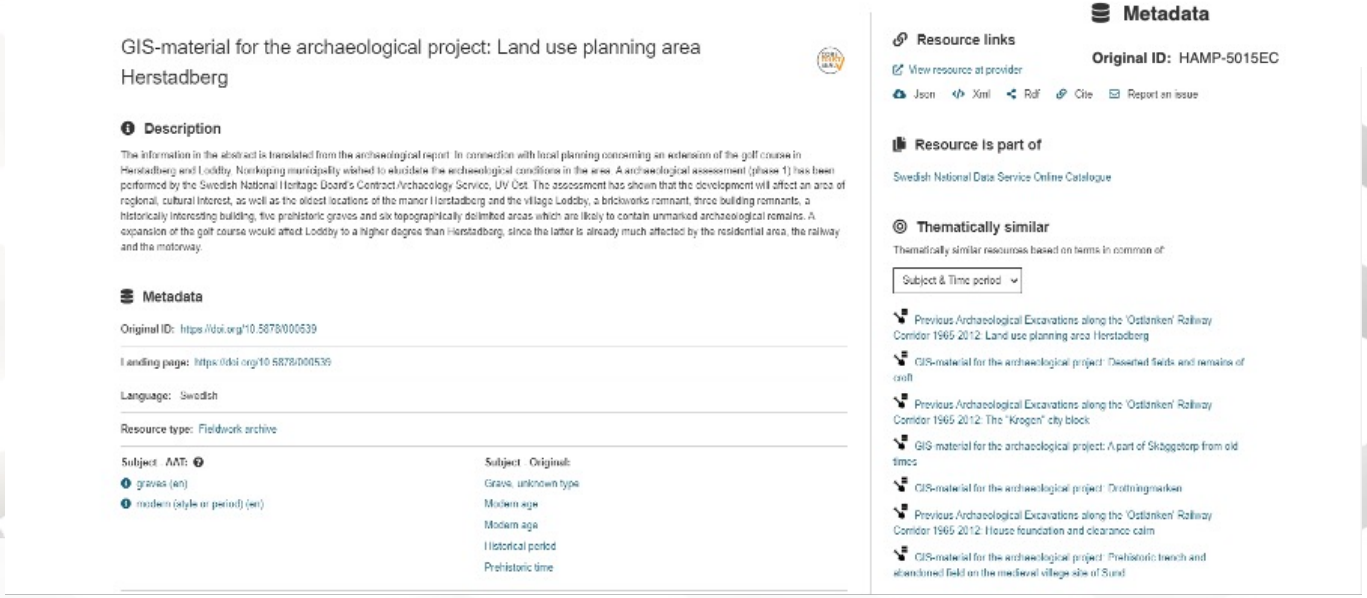
Heat maps

Cluster points

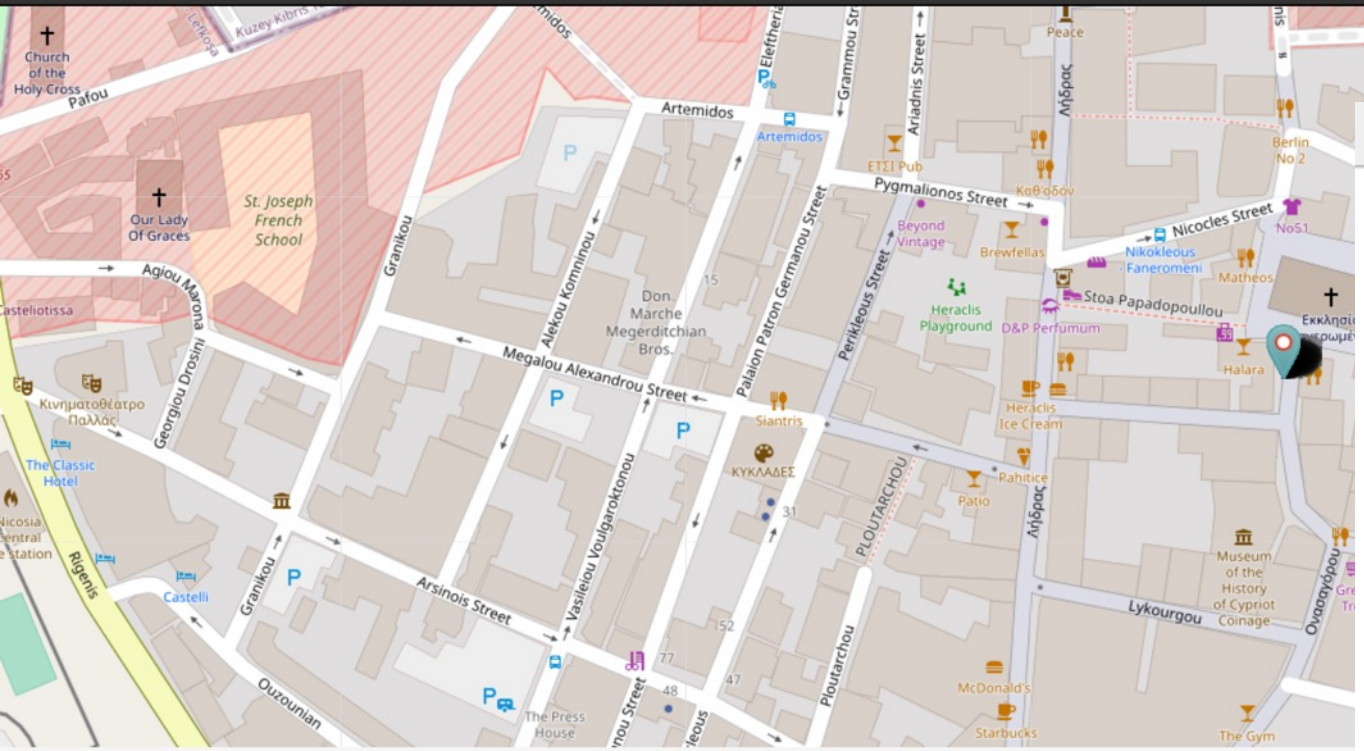
Polygon support







Bounding boxes to mask precise location



AR Gros. Peter I, 1359-1369

Description

Coin Gros, Frankish Period, issued by Peter I. Weight: 4.41 gm, diameter: 25 mm, axis: 11:00. From Nicosia. Inscription: obverse 'PIERE PAR L reverse 'DE IERVSALEM E DE ChIPRE

Metadata

Original ID: 1998-04-08

Landing page: https://numismatics-medieval.dioptra.cyi.ac.cy/?q=node/132

Language: English

Resource type: Coin

ARIADNE PORTAL
Catalogue | Browse

Publisher: The Cyprus Institute https://www.cyi.ac.cy

Created: 2020-01-13

Issued: 2020-01-23

Last updated: 2020-01-23

Responsible person and organisations

Creator: The Cyprus Institute https://www.cyi.ac.cy

Contributor: The Cyprus Institute https://www.cyi.ac.cy

Owner: Bank of Cyprus Cultural Foundation (BOCCF) https://www.boccf.org

Responsible: Avgoustinos Avgousti https://www.cyi.ac.cy/index.php/cyi/general-information/administration-people/author/156-avgoustinos-avgousti.html

Licence information

Access Policy: http://creativecommons.org/licenses/by-nc/4.0/

Images

Thematically similar resources based on terms in common of:

Subject & Time period

AR Gros. Hugh IV, 1324-1359

Quality of data

2. Quality

ii. Level of *granularity* – item level interoperability e.g. individual artefacts, not just sites; individual dates; individual graves, not just cemeteries:

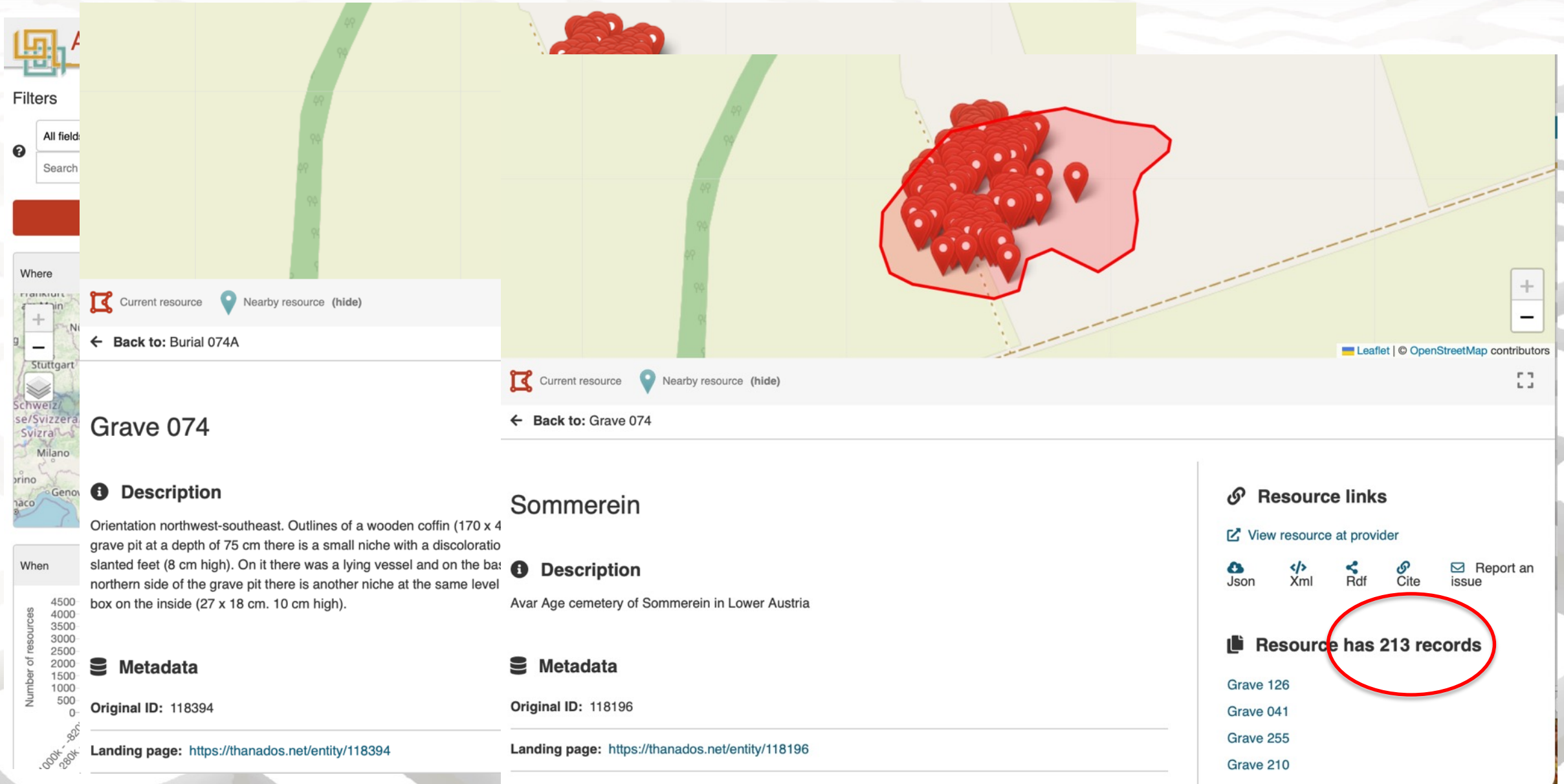
>550,000 artefacts – from PAS, FindSampo, DIME, PAN

>500,000 coins – from RGK, BM, CY, AU

>20,000 dates – from ADS, INFN, DANS DCCD

>11,000 burials – from THANADOS

Granularity: THANADOS example



Granularity: Artefacts research

Public finds databases:

- 474,552 artefacts from the PAS, British Museum
- 48,884 artefacts from PAN, the Netherlands
- 13,641 artefacts from DIME, Aarhus University
- 2410 artefacts from FindSampo, Finnish Heritage agency

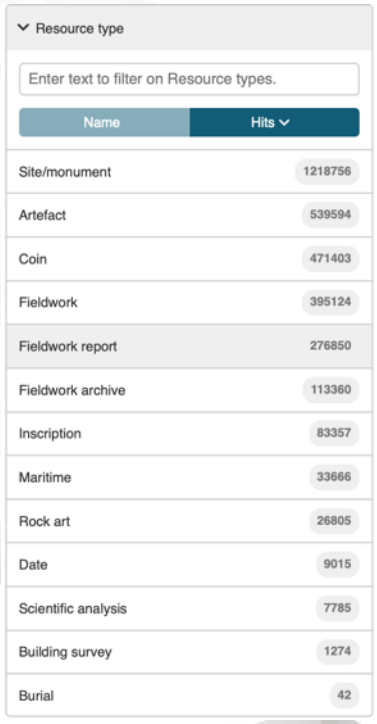
Range of data types

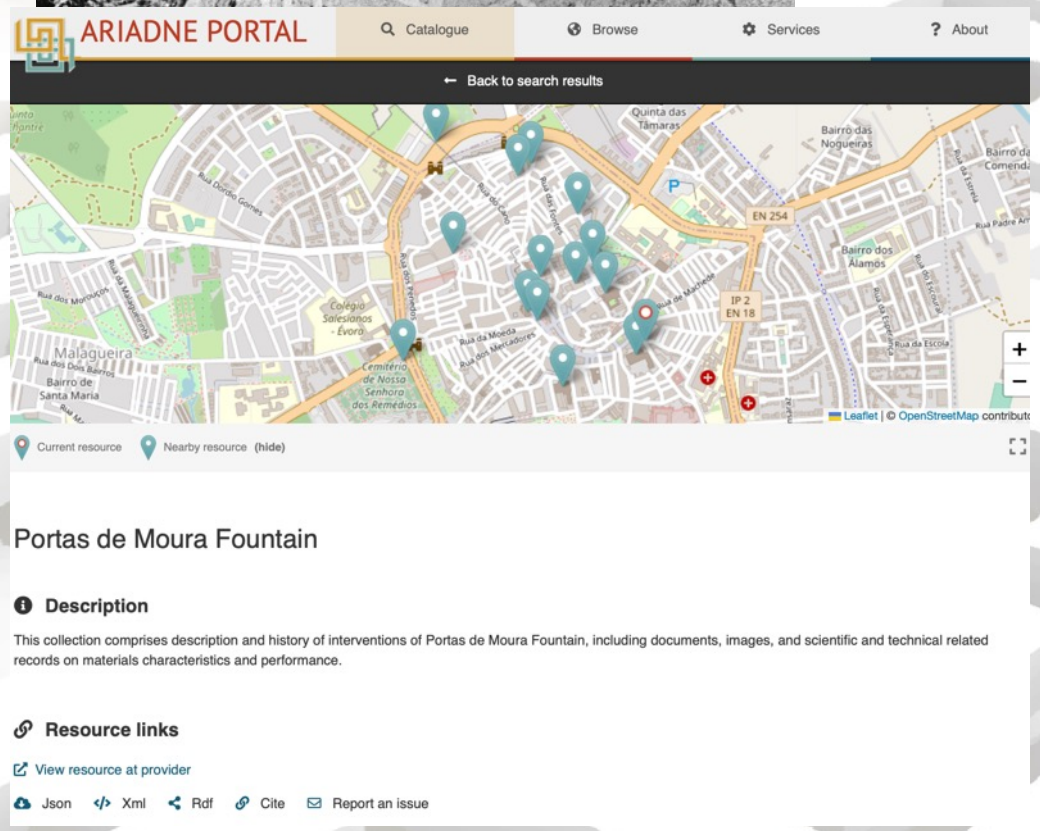
2. Quality

iii. Integration of new data types

Fourteen ARIADNE resource types:

- 25523 Rock Art records from Sweden
- 57054 Inscriptions from CEIPAC
- 1061 Buildings surveys from LNEC
- Scientific analyses – SEAD, INFN
- 60,000+ Maritime records from ADS



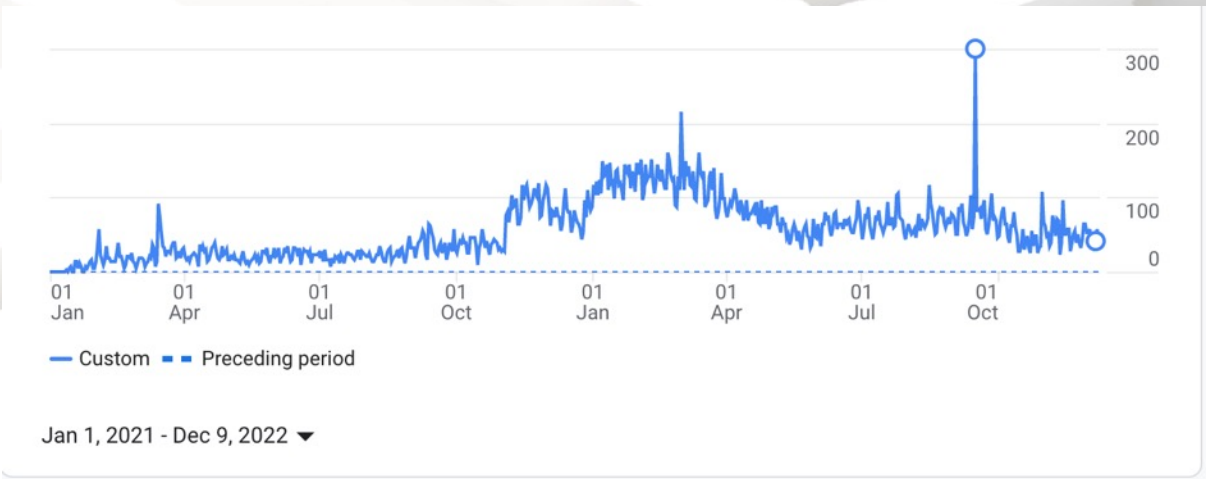


Re-Use: Portal usage statistics

Jan 22- Dec 22: 32,000 new users

Users ▾ by Country

COUNTRY	USERS	
United Kingdom	16K	↑ 177.9%
United States	1.3K	↑ 160.0%
France	772	↑ 16.1%
Bulgaria	406	↑ 18.7%
Italy	330	↑ 18.7%
Germany	369	↑ 64.0%
Netherlands	352	↑ 50.4%



3. Quantity and quality of re-use

i.e. new users; new research – the elusive R of FAIR!

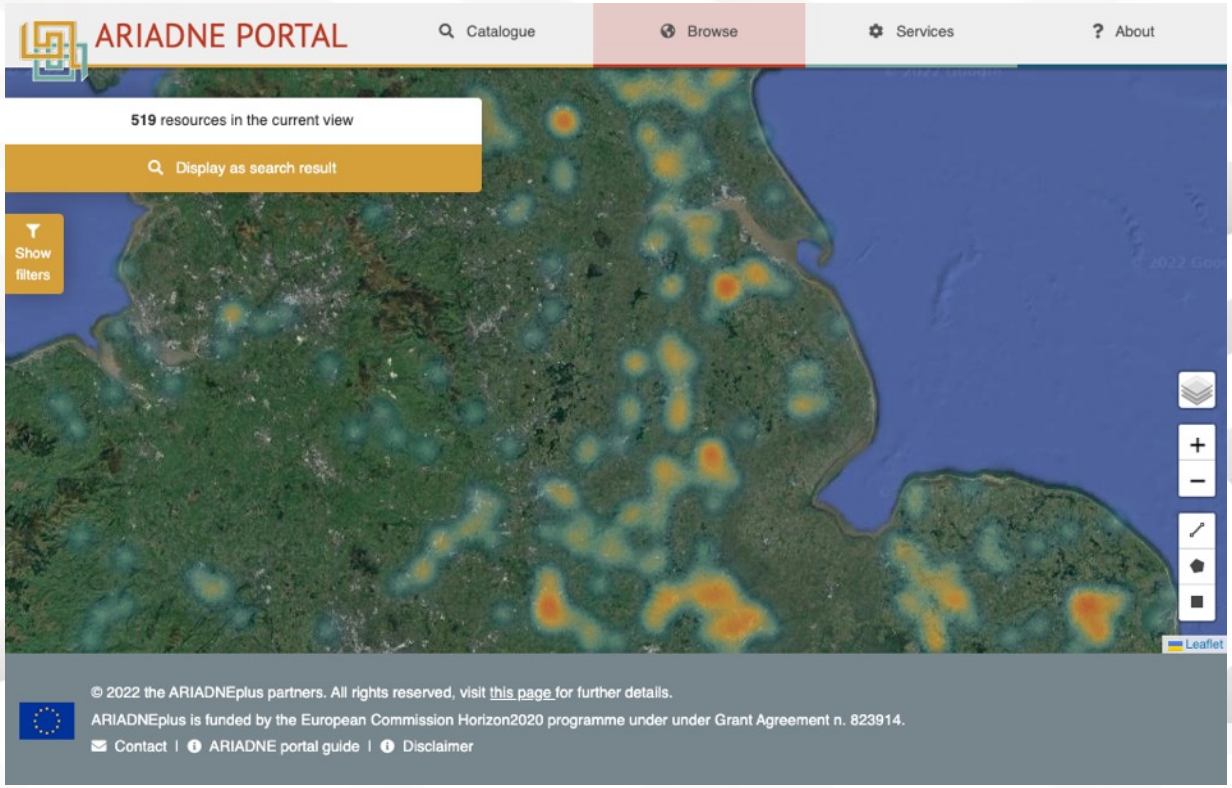
Views by Page title and screen class

PAGE TITLE AND SCREEN…	VIEWS	
Browse / Where...Ariadne portal	111K	-
Ariadne portal	60K	-
Search - Ariadne portal	28K	-
Welcome - Ariadne portal	12K	-
404 - Ariadne portal	4.5K	-
Browse / When - Ariadne portal	2.5K	-
Services - Ariadne portal	1.7K	-

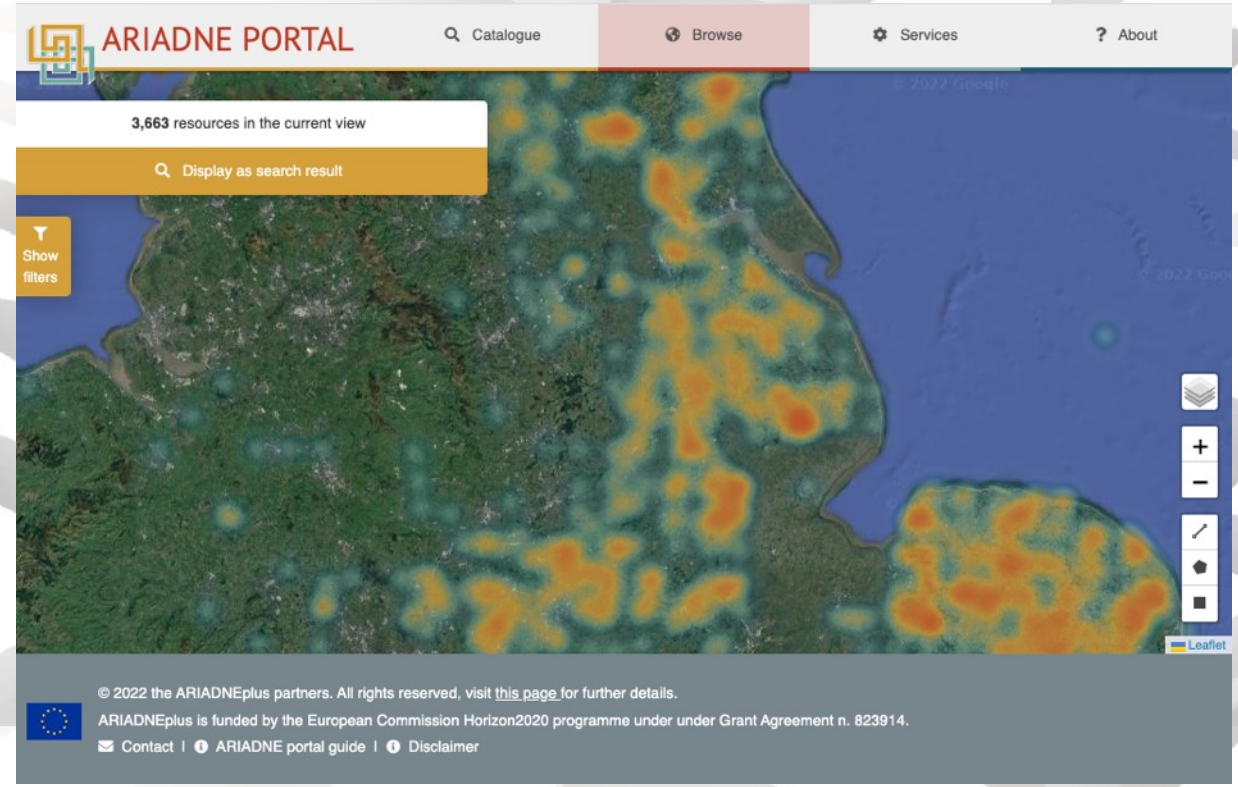
Enabling new forms of research

Public and professional finds together in one web search for the first time

Known early medieval brooches (from PAS) : 519



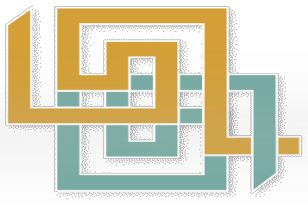
Known early medieval cemeteries (from SMRs): 3663



Lessons learned

- **Consistent use of an ontology is essential**
  - CIDOC-CRM was broad enough to cover all domains involved – but it is important to map to it consistently
- **Vocabulary control is also essential**
  - Getty AAT – very powerful – but needs oversight to ensure consistency in partner mappings
- **Can't make everything interoperable**
  - Focus on key themes
  - What, When, Where; maybe Who?
- **Requirement for archaeologists to work closely with IT specialists**
  - Always think about how the data will be used
- **Granularity and scale are important**
  - Collection level vs item level
  - Be driven by research questions

THANK YOU!

ARIADNEplus is a project funded by the European Commission under the H2020 Programme, contract no. H2020-INFRAIA-2018-1-823914

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