Digital Infrastructures for Archaeology: Past, Present and Future directions

CAA2019, Krakow

24 April 2019

@ARIADNEplus #KrakCAA #s22

ARIADNEplus is funded by the European Commission's Horizon 2020 Programme

Infrastructures: Past

ARENA

Archaeological Records of Europe - Networked Access

Welcome to the ARENA search portal.

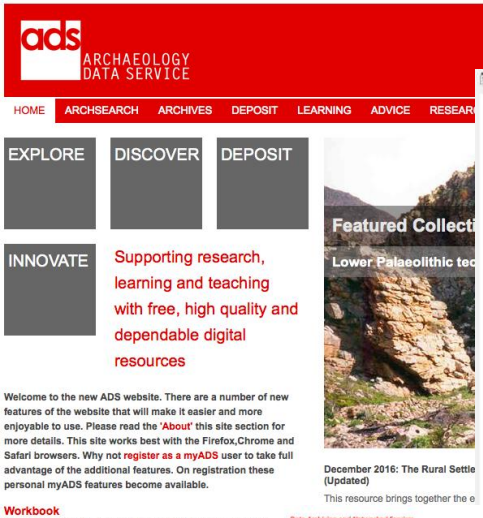
Please select a flag from the right to start searching in your language

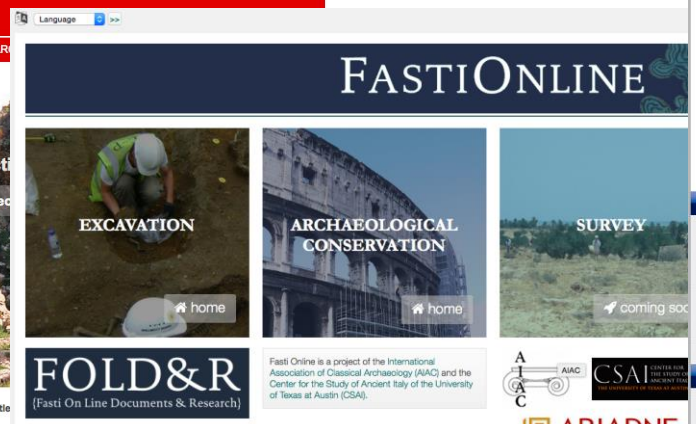
The ARENA search portal allows you to search for archaeological sites and monuments from six European countries: Demark, Great Britain, Norway, Iceland, Romania and Poland.

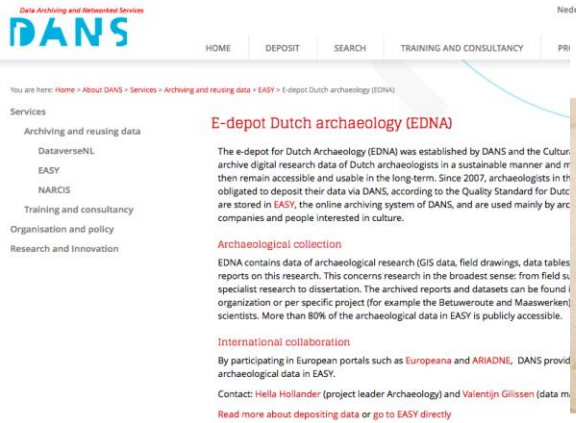
The content of this project does not necessarily reflect the position of the European Community, nor does it involve any responsibility on the part of the European Community.

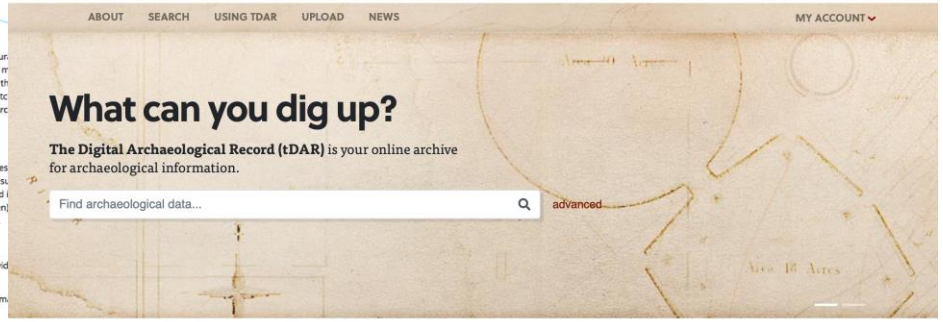
Education and Culture **Culture 2000**

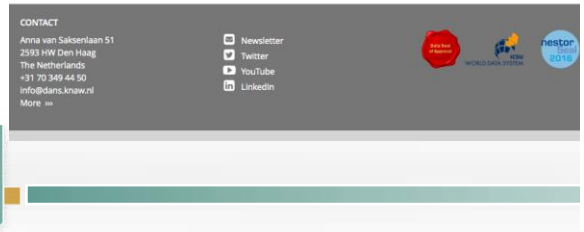
Life before ARIADNE…

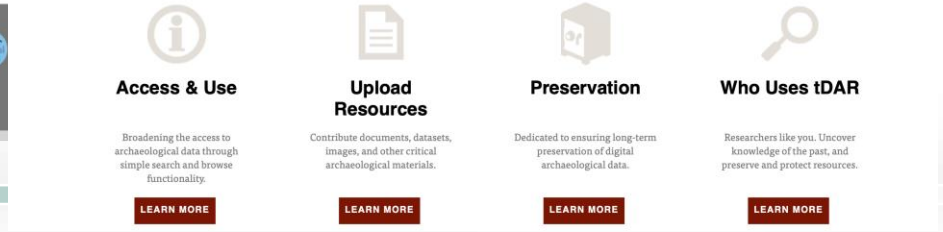












Project basics

- ARIADNE:
  - 4 year project
  - 02/2013 - 02/2017
  - 6.5m euros
  - 23 partners; 18 countries
- ARIADNEplus:
  - 4 year project
  - 02/2019 – 02/2023
  - 6.6m euros
  - 41 partners; 27 countries

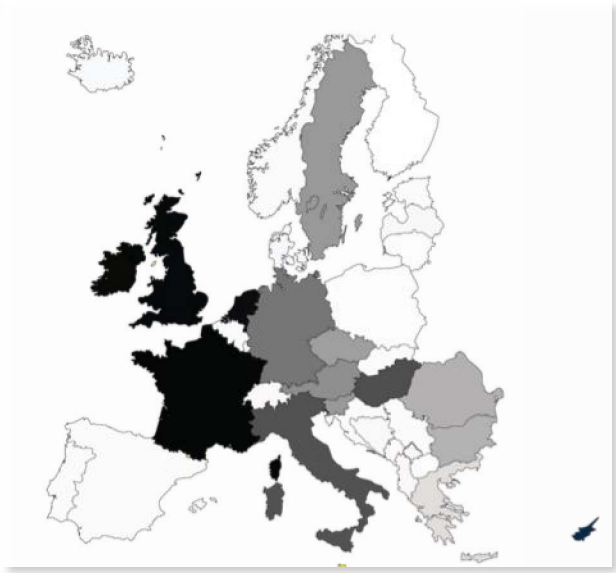
Extending geographically

ARIADNE:

23 partners**; 18** countries

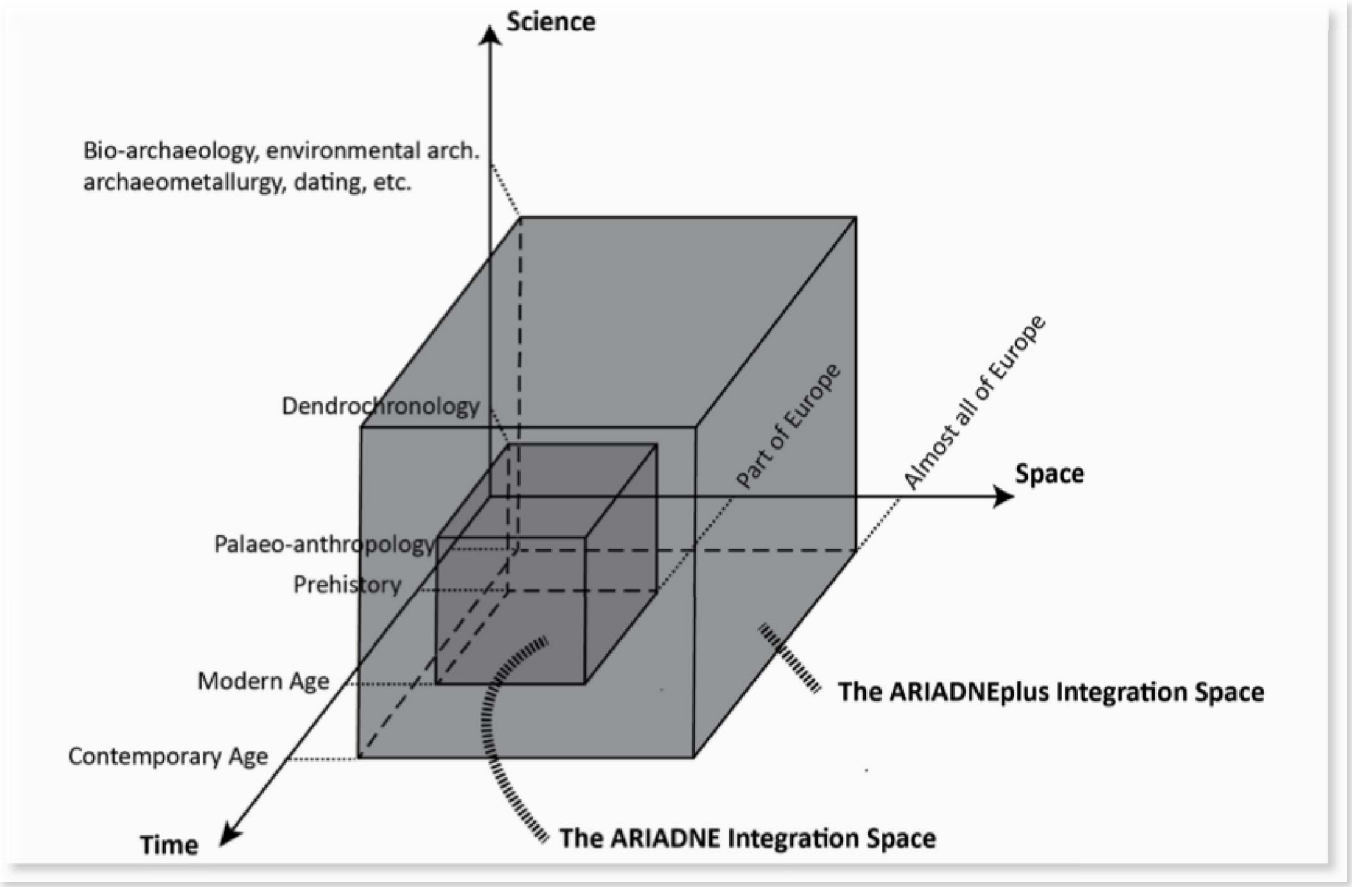
ARIADNEplus:

41 partners**; 27** countries



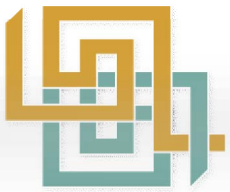
Plus: Argentina, Japan & USA

Extending thematically



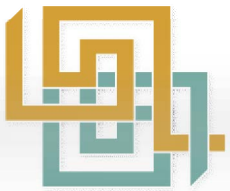
ARIADNEplus special interest groups

Sites and monuments record and event records	*Remote Sensing*
Paleo-anthropology	*Standing Structures*
Bio-archaeology and Ancient DNA	*Spatio-temporal data*
Archaeological finds made by general public	*Maritime and underwater archaeology*
Environmental Archaeology	*Archaeological fieldwork*
Inorganic Materials Study	*Inscriptions*
Field Survey	*Dating*

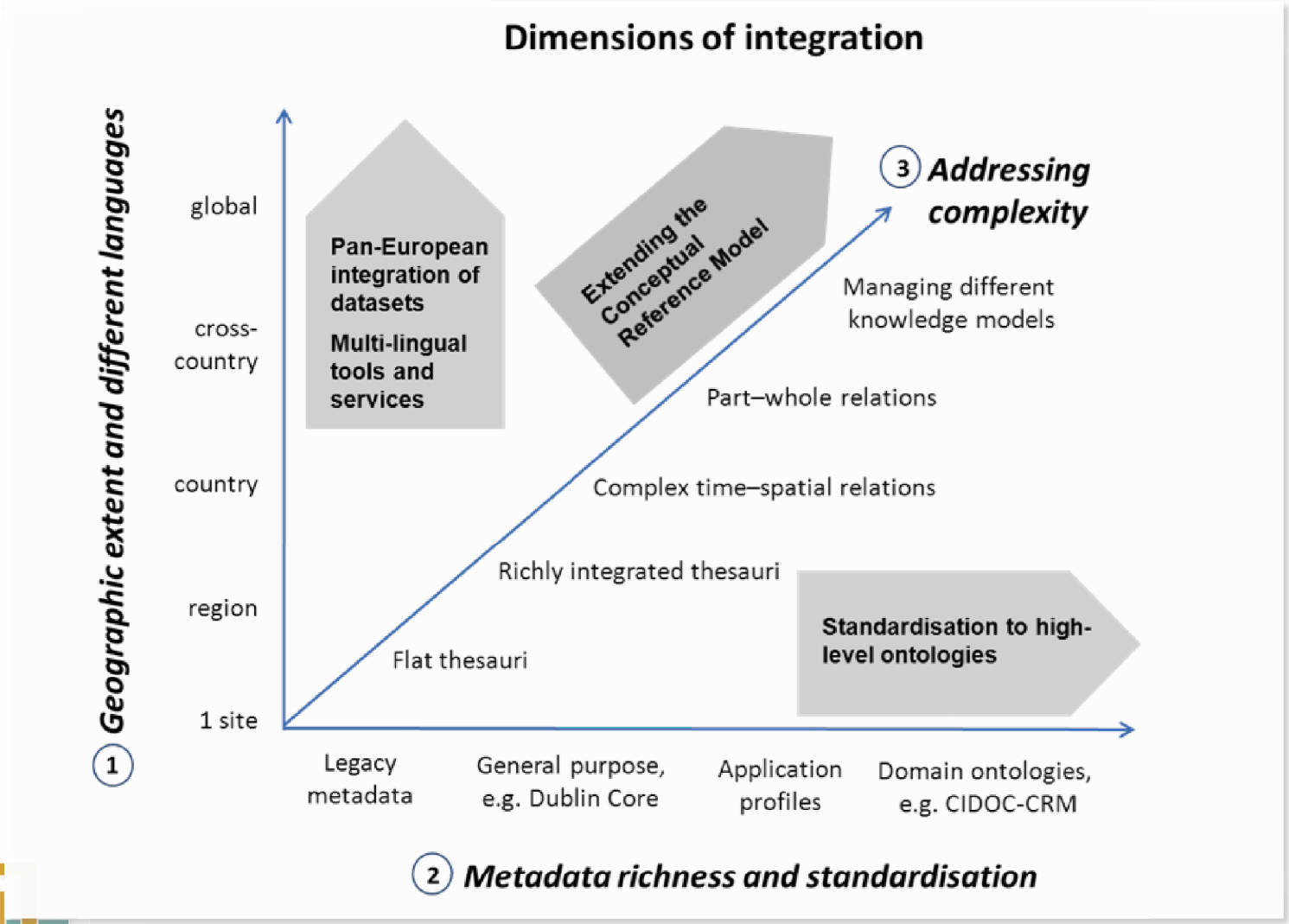


User Needs Research

- 94% of researchers agreed that it is important that datasets are available online in an uncomplicated way.
- 87% of researchers agreed that they often do not know what research data is available because it is stored in so many different places and databases.
- 74% of researchers consider it important to have easy access to international datasets.
- The perceived lack of professional recognition and reward for sharing data is a barrier to data sharing for 72% of researchers.
- A lack of institutional or international repositories for archaeological data sets was a barrier to data sharing for 60% of researchers.

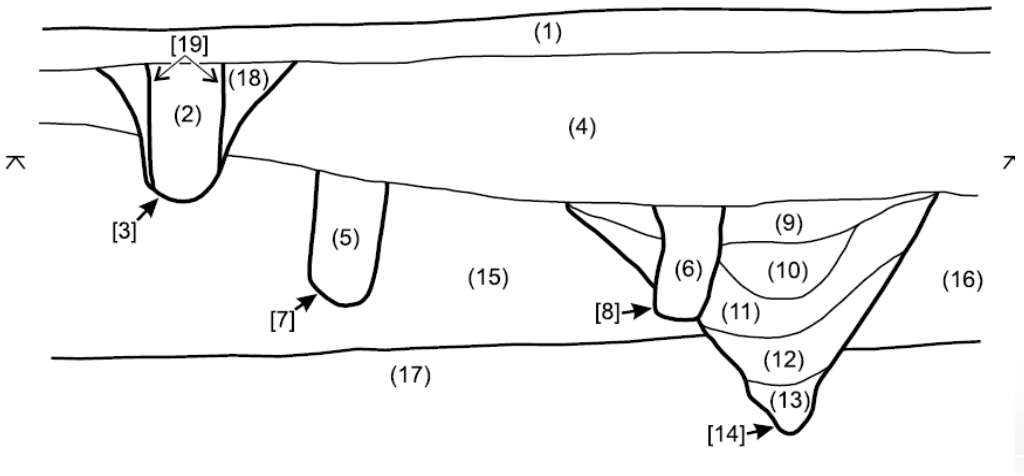


The ARIADNE roadmap



Achieving interoperability

- We have datasets in many languages and complying with many different standards
- ARIADNE uses the CIDOC CRM with extensions for archaeology to achieve integration
  - Existing datasets are mapped to the ARIADNE data model
  - Subject concepts are mapped to the Getty A&AT
  - Periods are defined in Perio.Do

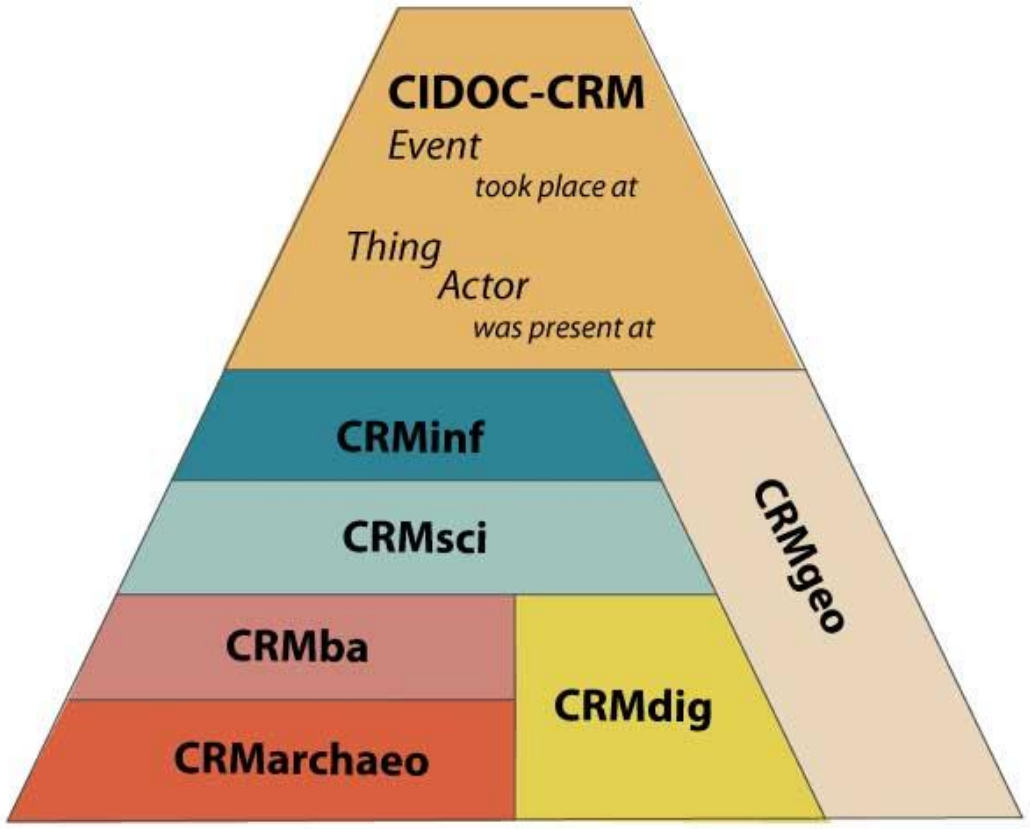


ARIADNE Reference Model

ARIADNE
REFERENCE MODEL

Few concepts, high recall

Special concepts, high precision



Interoperability Framework

ARIADNE Users Framework

ARIADNE e-Infrastructure and Integrated Services

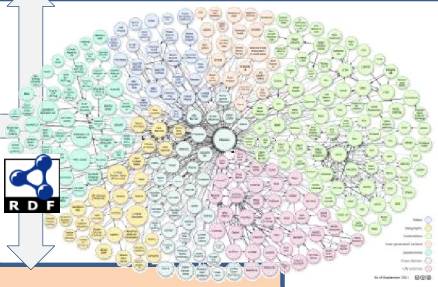
Other e-Infra & Services

L4: e-infra & integrated services

ARIADNE Portal
Cross-search and other applications

Search, browse, …

ARIADNE Registry
Datasets, metadata schema, KOSs, mappings,…, CRM



LOD cloud diagram, by R. Cyganiak & A. Jentzsch, http://lod-cloud.net

accData

Meta/data records => collect/transform2/RDF

collM collM collM

L3: Higher-level data managers

Data Centers
(nat./int., archaeology or general)

Subject/Domain-based Repositories & Portals
(nat./international)

Subject/Domain-based Referatories & Portals
(nat./international)

collM

ADS
eDNA
SND
…

ARACHNE
Fasti Online
…

ARIADNE aggregators (nat./thematic)?

depD+M

L2: Institutions, institutional repositories/DBs

Institutional Repositories / DBs

collM

Several ARIADNE partners

Other…

depD+M

L1: Projects, research groups

Research Projects …

Legend:
dep=deposit, coll=collect, acc=access;
D= Data, M=Metadata

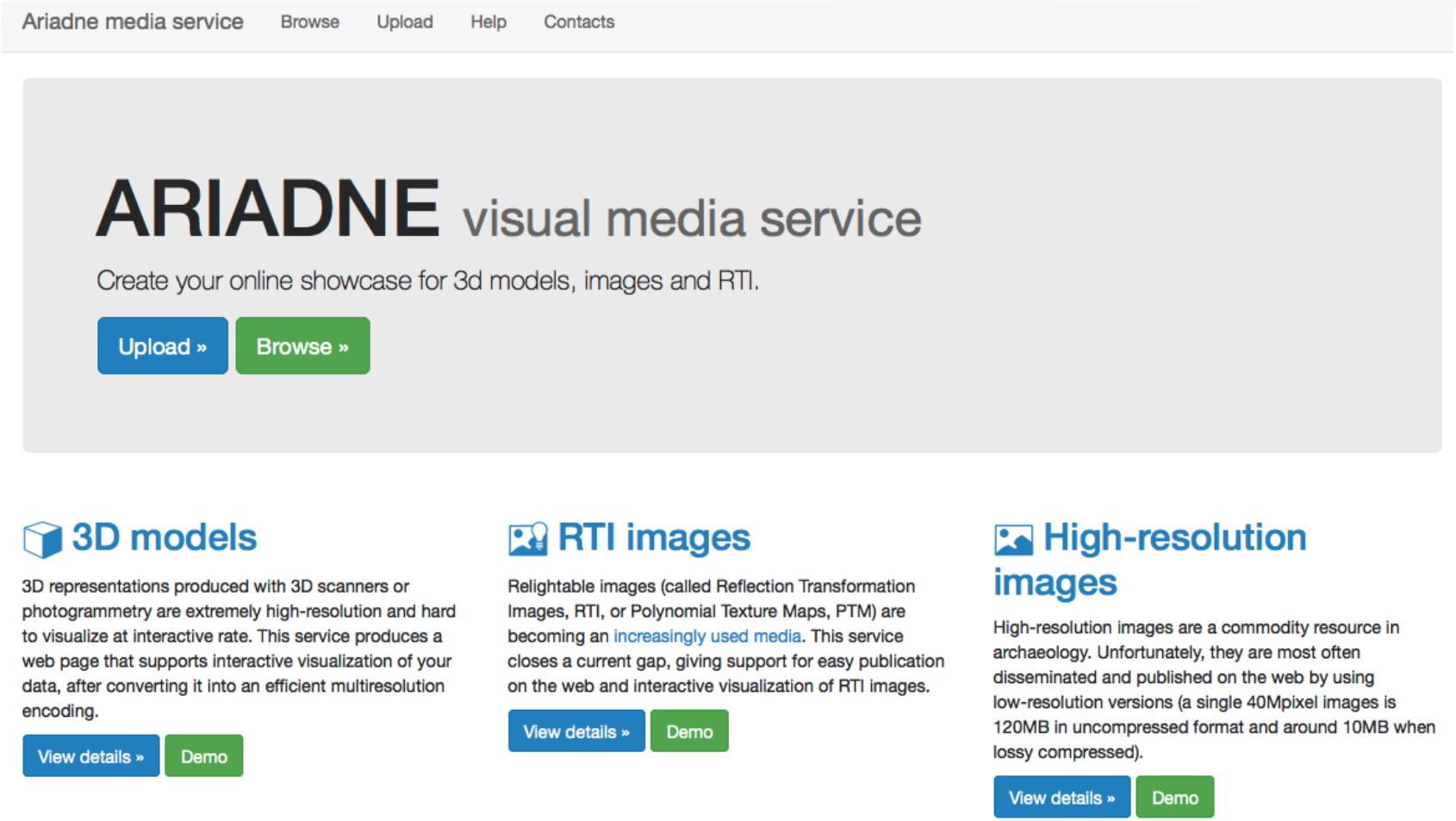
The ARIADNE Portal

Transnational Activity

Training events

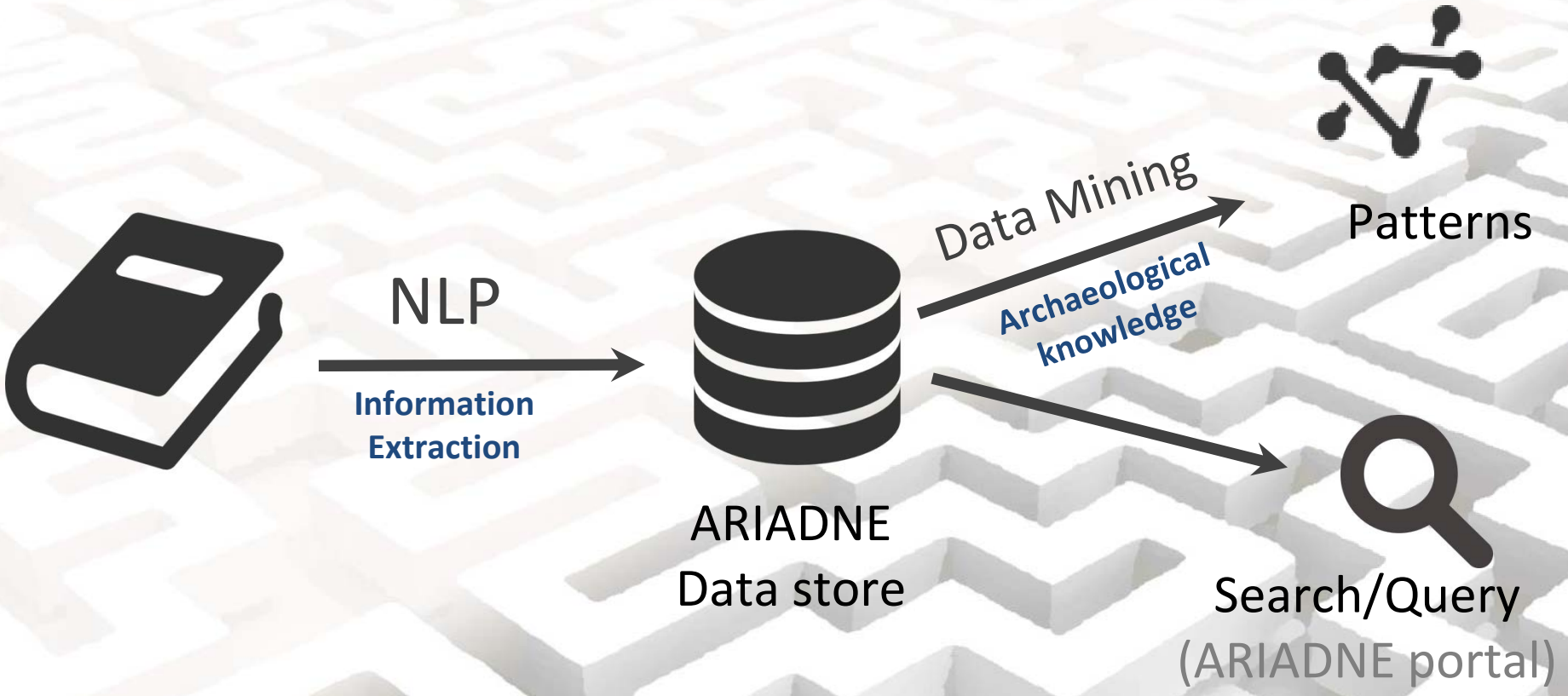
- 2D/3D documentation for archaeology
- Legacy data and dataset design
- Mapping existing datasets to CIDOC CRM
- Data curation

ARIADNE services



http://visual.ariadne-infrastructure.eu/

NLP and Data Mining



ARIADNEplus and FAIR data

"One of the grand challenges of data-intensive science is to facilitate knowledge discovery by assisting humans and machines in their discovery of, access to, integration and analysis of scientific data."

- **Findable**
  - Data are described with good metadata
  - Metadata are indexed in a searchable resource
  - Data are assigned a Permanent identifier
- **Accessible**
  - Data should be open and online
- **Interoperable**
  - Use a formal, open, shared language for knowledge representation
- **Re-usable**
  - Data should have clear data licenses
  - Metadata should meet domain-relevant standards

Standards: Guides to Good Practice

Archaeology Data Service / Digital Antiquity
Guides to Good Practice

Log in

Dendrochronological Data in Archaeology: A Guide to Good Practice

Peter Brewer, Laboratory of Tree-Ring Research, University of Arizona, USA

Esther Jansma, Cultural Heritage Agency and Utrecht University, The Netherlands

VERSION 1.1 - JUNE 2016

Section 1. Aims and Objectives
- 1.1 Background to the Guide
- 1.2 Scope of the Guide
- 1.3 Data and Metadata

Section 2. Creating Dendrochronological Data
- 2.1 Project Planning and Requirements
- 2.2 Sources of Data
- 2.3 File Types (whilst creating, working with, and processing data)
- 2.4 File Naming Convention
- 2.5 Documenting Data Creation and Processing

Section 3. Archiving Dendrochronological Data
- 3.1 Deciding What to Archive
- 3.2 Deciding How to Archive
- 3.3 Archiving File Types
- 3.4 Converting Data Formats
- 3.5 Archiving Strategies
- 3.6 Metadata and Documentation

Section 4. Copyright
- 4.1 Copyright for Dendrochronology

Data Archiving and Networked Services DANS

ARIADNE

DC 3D Digital Collaboratory for Cultural Dendrochronology

Cultural Heritage Agency Ministry of Education, Culture and Scien

THE UNIVERSITY OF ARIZONA

Universiteit Utrecht

New Guides:
- Dendrochronology
- 3D Models in Archaeology

3D Models in Archaeology: A Guide to Good Practice

Martina Trognitz, IANUS, Deutsches Archäologisches Institut (DAI).
Kieron Niven, Archaeology Data Service.
Valentijn Gilissen, Data Archiving and Networked Services (DANS).

With additional contributions from Ruth Beusing (DAI), Bruno Fanini (CNR), Kate Fernie (2Culture Associates), Roberto Scopigno (CNR), Seta Stuhec (OEAW), and Benjamin Štular (ZRC-SAZU)

2016

Section 1. Aims and Objectives
- 1.1 3D Models in Archaeology
- 1.2 Scope of this Guide
- 1.3 Issues and Concerns

Section 2. Creating 3D Data
- 2.1 Project Planning and Requirements
- 2.2 Sources and Types of 3D Data
- 2.3 File Formats

Section 3. Archiving 3D data
- 3.1 Significant Properties
- 3.2 File types for Archiving and Dissemination
- 3.3 Documentation and Metadata

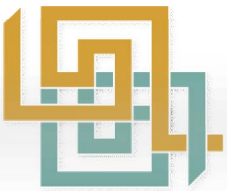
ARIADNE

Data Archiving and Networked Services DANS

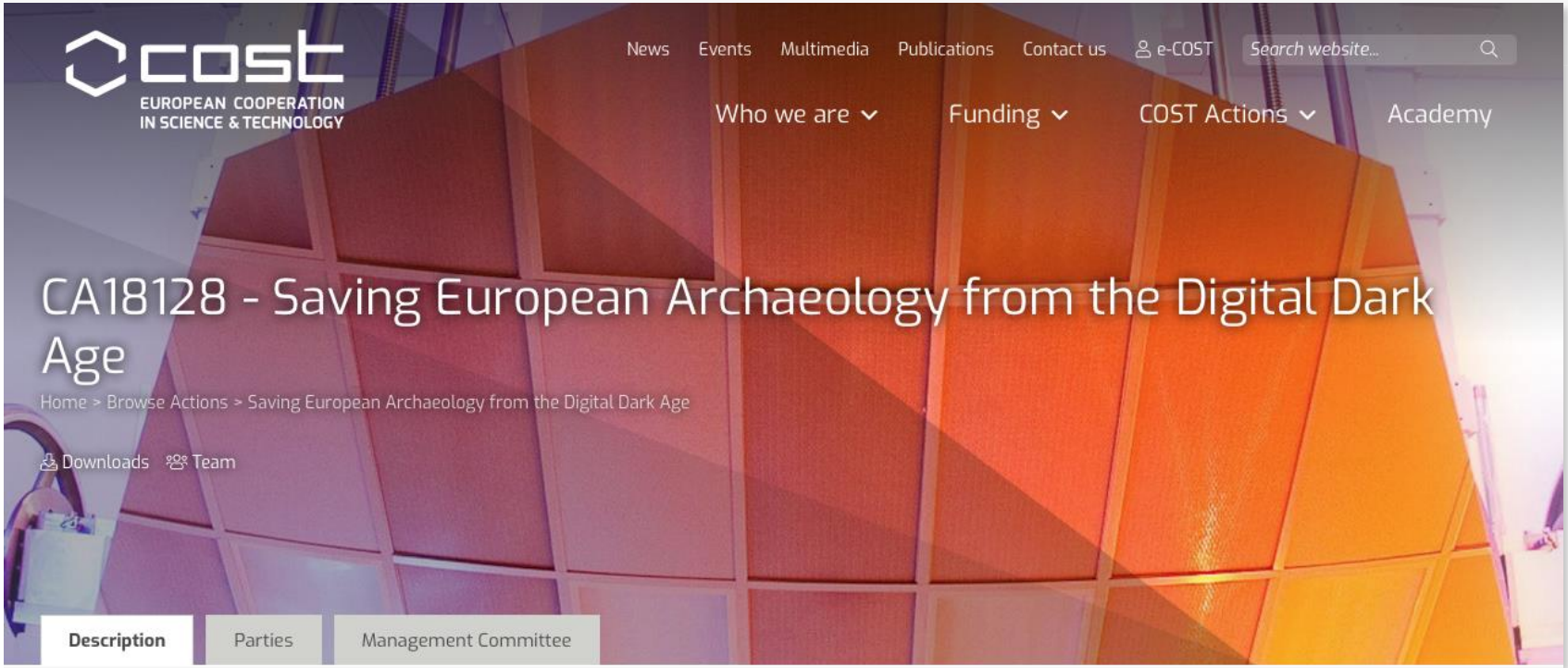
IANUS

DEUTSCHES ARCHÄOLOGISCHES INSTITUT

Links to other e-infrastructures



Links to COST Actions: SEADDA



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10.20 – 10.40
Introduction

10.40 – 11.00
Where is the data?
Ulf Jakobsson

11.00 – 11.20
My data manager is a robot!
Valentijn Gilissen, Hella Hollander

11.20 – 11.40
The ARIADNE project at INRAP: inception, implementation and future,
Kai Salas Rossenbach, Amala Marx,

11.40 – 12.00
OpenArchaeo: an application to query archaeological data via CIDOC CRM,
Olivier Marlet, Xavier Rodier, Thomas Francart, Béatrice Markhoff

12.00 – 12.20
Czech archaeology in the Digital Environment – Digitizing Archaeological Agenda in Theory and Practice,
Jan Hasil, David Novák

12.20 – 12.40
ZBIVA web application,
Benjamin Stular

LUNCH BREAK

14.00 – 14.20
Archaeological Map of Bulgaria in ARIADNE and ARIADNEplus,
Georgi Nekhrizov, Nadezhda Kecheva

14.20 – 14.40
'A puzzle in 4D': using semantic technologies for the integration of resources from a long-term excavation project,
Edeltraud Aspoeck, Gerald Hiebel

14.40 – 15.00
The Swedish Digital Archaeological Workflow in Action,
Marcus J. Smith

15.00 – 15.20
The ADED project - a Norwegian infrastructure for excavation data,
Christian Emil Smith Ore, Espen Uleberg, Jakob Kile-Vesik

15.20 – 15. 40
Ísleif: a network-based approach to site survey,
Adolf Fridriksson, Gisli Palsson

COFFEE BREAK

16.00 – 16.20
ARIADNEplus for public/community archaeology,
Andres Dobat

16.20 – 16.40
CENIEH: A relevant source of digital paleoanthropological datasets for ARIADNEplus,
Mohamed Sahnouni, Maria Isabel Sarro Moreno, Cecilia Calvo Simal

16.40 – 17.00
Prospects and Potential for the National Digital Repository of Archaeological Site Reports,
Yuichi Takata, Akihiro Kaneda, Miyu Konuma, Sadakatsu Kunitake

THANK YOU!

ARIADNEplus is a project funded by the European Commission under the H2020 Programme, contract no. H2020-INFRAIA-2018-1-823914. The views and opinions expressed in this presentation are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.