



NFDI4Objects

Research Data Infrastructure
for the Material Remains of
Human History



Baden-Württemberg
Regierungspräsidium
Stuttgart

Landesamt für
Denkmalpflege



ARCHÄOLOGISCHES MUSEUM
HAMBURG
STADTMUSEUM HARBURG
HELMs-MUSEUM



The Minimal Meta Data Set for Archaeological Fieldwork within the N40 Objects Ontology

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CAA International 2025, Athens, 08.05.25
Session 17: Comparing the Incomparable

DIGITAL HORIZONS: EMBRACING HERITAGE IN AN EVOLVING WORLD



5-9 MAY

UNIVERSITY
OF WEST ATTICA,
ATHENS, GREECE

FAIR in Archaeological Primary Documentation



Dr. Heidi Seibold, CC BY 4.0,
via 10.5281/zenodo.8070860

FINDABLE ACCESSIBLE INTEROPERABLE REUSABLE

Findable

What kind of primary documentation event happened where?

Accessible

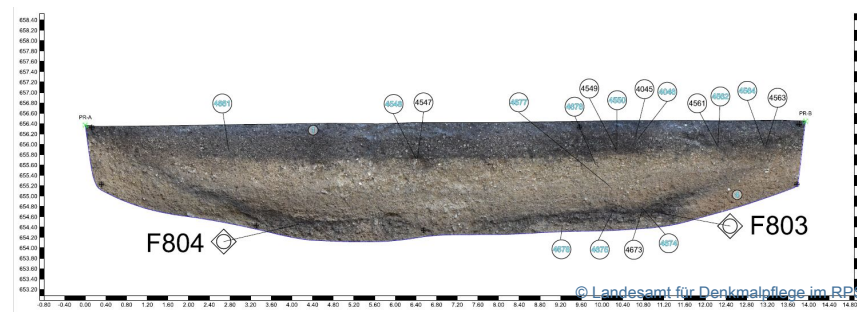
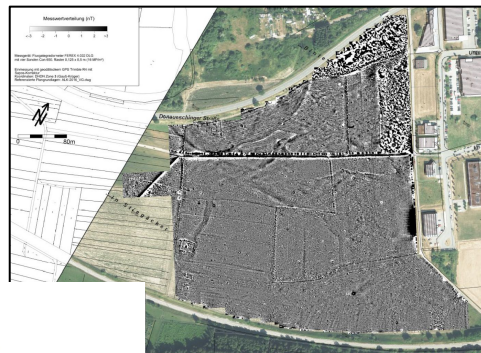
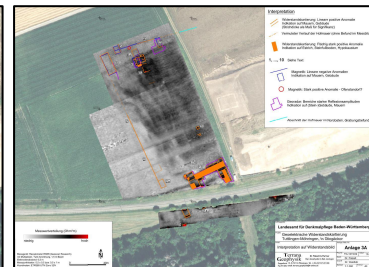
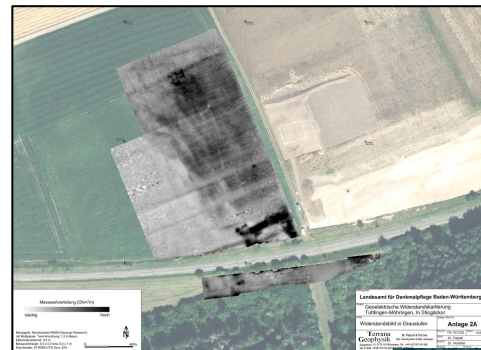
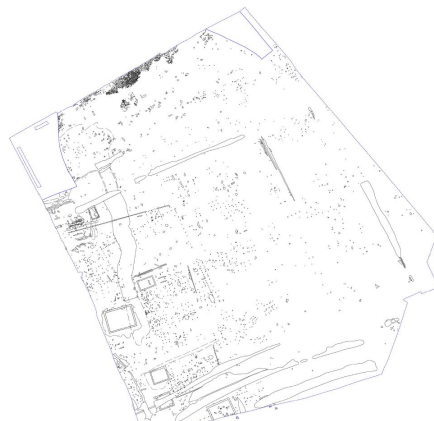
How can I get access to the data?

Interoperable

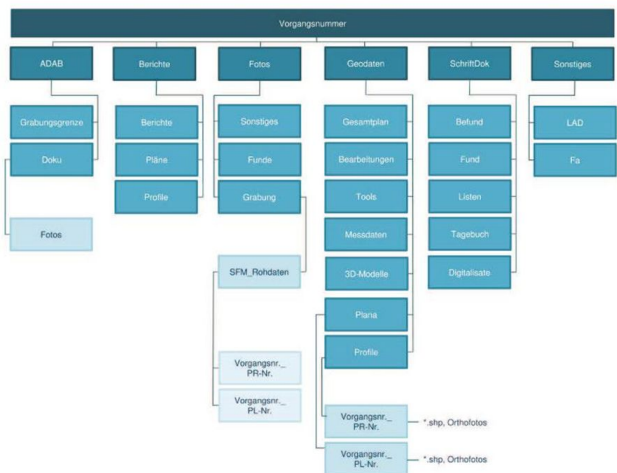
Is that data captured, formatted and archived according to established standards?

Reusable

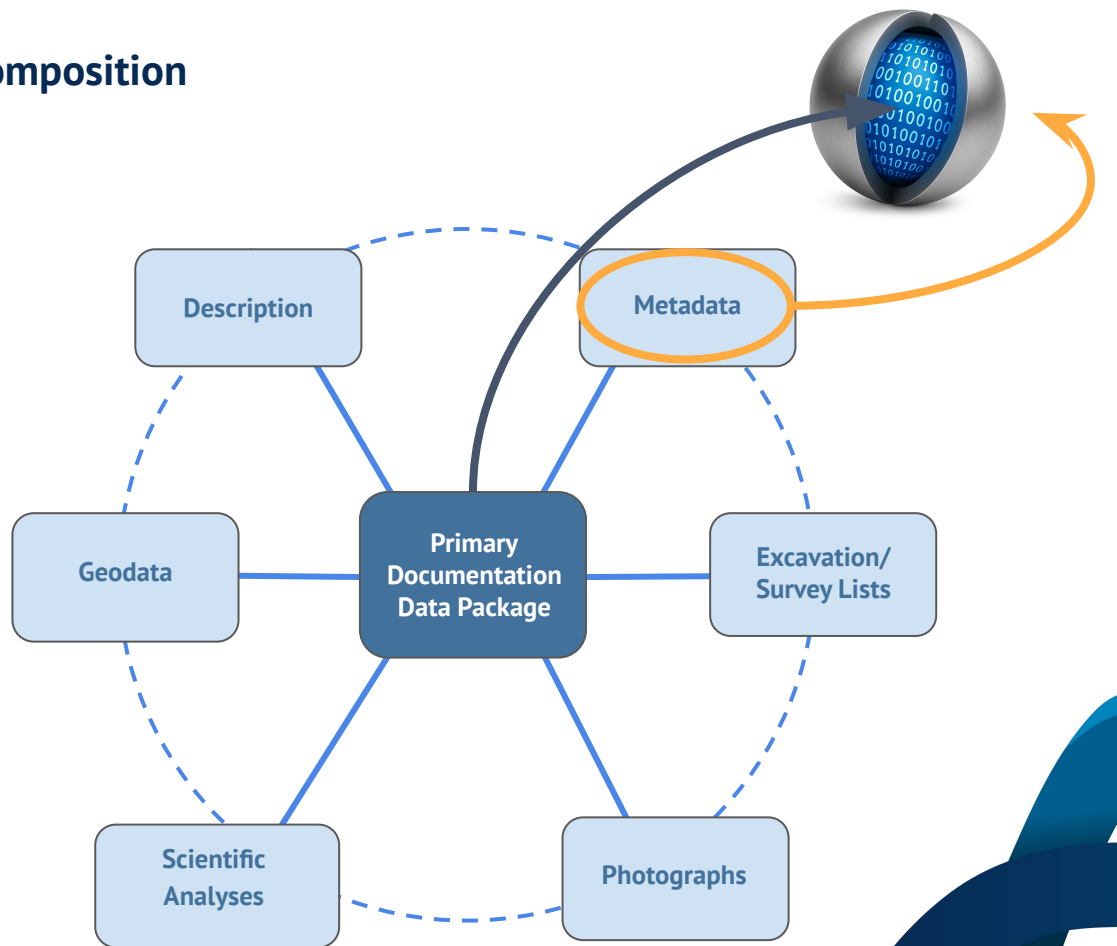
Can I use that data?



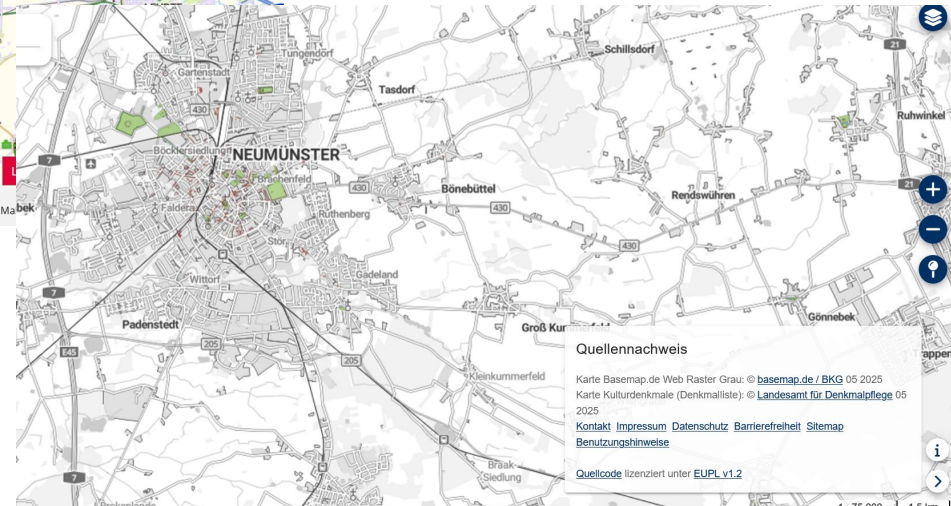
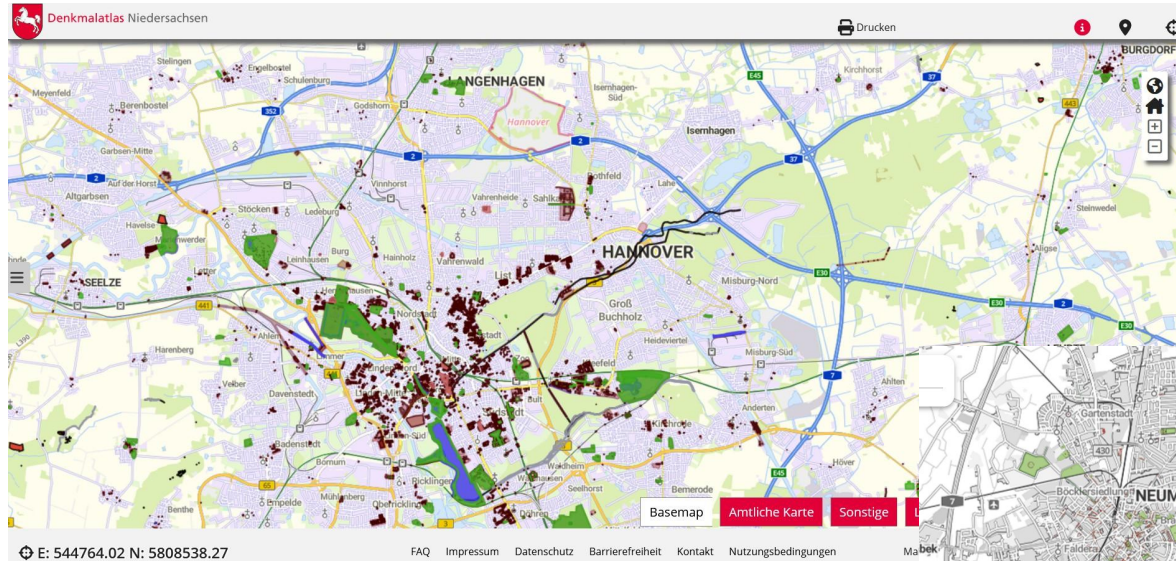
Primary Documentation - Data Set Composition



© Landesamt für Denkmalpflege im RPS



Open Heritage Data Sets



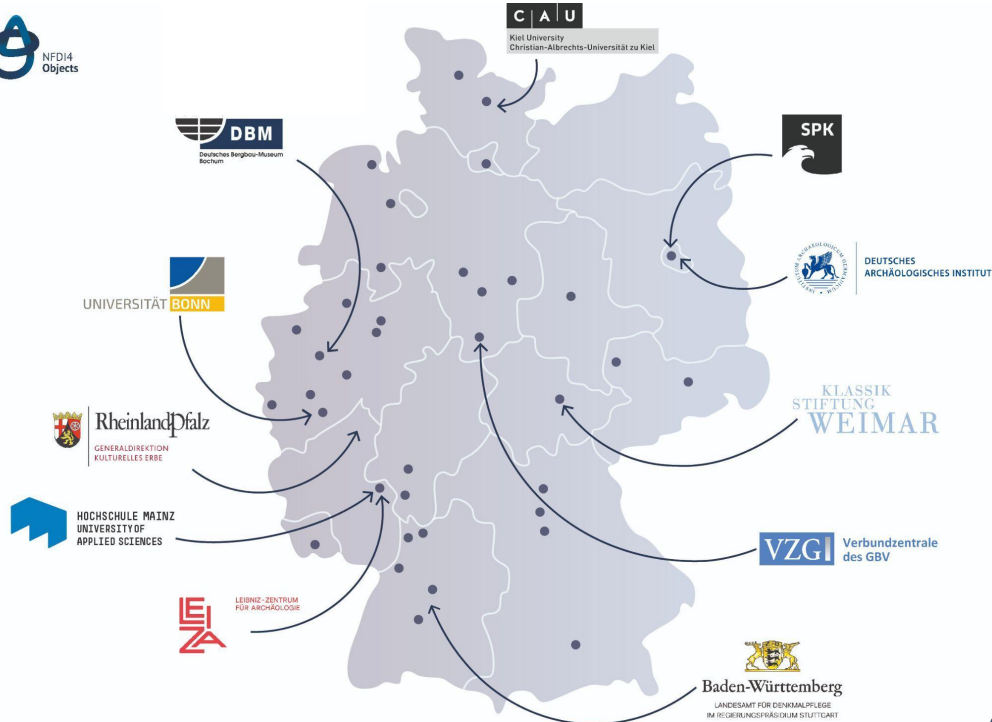
Quellennachweis

Karte Basemap.de Web Raster Grau: © [basemap.de](https://www.basemap.de/) / BKG 05 2025
Karte Kulturdenkmale (Denkmalliste): © Landesamt für Denkmalpflege 05 2025

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[Benutzungshinweise](#)

Quellecode lizenziert unter [EUPL v1.2](https://european-union.europa.eu/law-and-policy/eu-law-fundamentals/eu-licence-agreement)

NFDI4Objects within the NFDI (German National Research Data Infrastructure)



Vanessa Liebler / i3mainz, CC BY-SA 4.0



via nfdi.de

nfdi Nationale Forschungsdaten Infrastruktur

FAIR graph data is created using Linked Open Data

Findable

Federated Knowledge Graphs as data hubs

Accessible

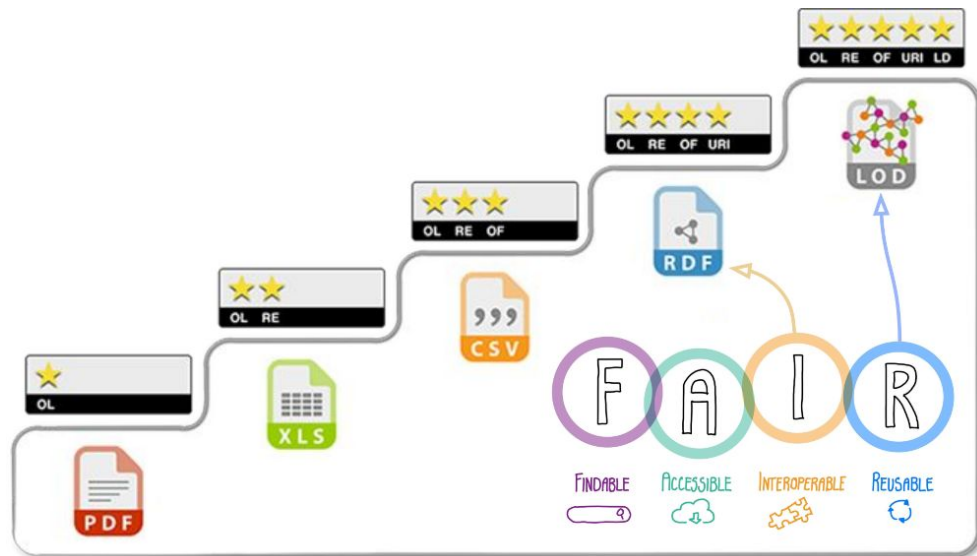
SPARQL Endpoint for integration in applications

Interoperable

W3C standardised RDF-based data

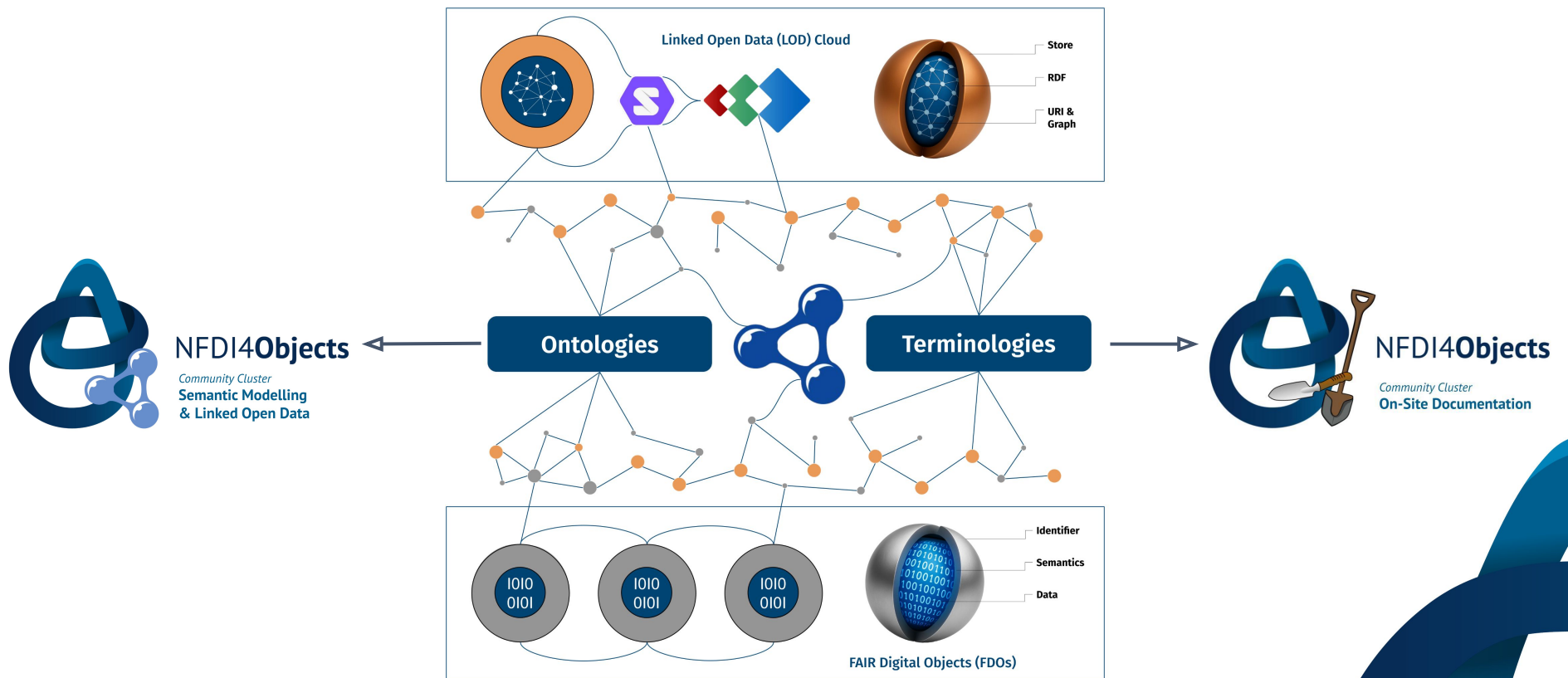
Reusable

Open License and interlinked RDF data



with images from Dr. Heidi Seibold, CC BY 4.0, via 10.5281/zenodo.8070860 (FAIR) and via <https://5stardata.info>

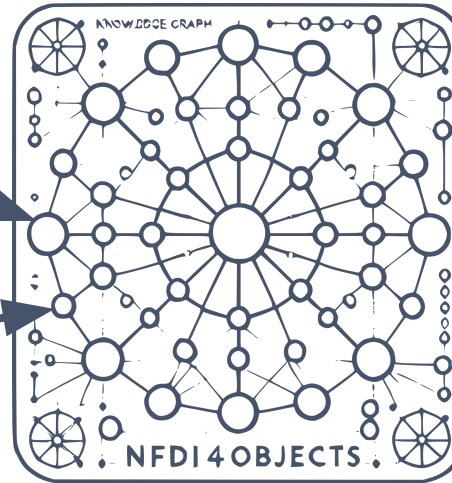
Data Packages as LOD in the NFDI Knowledge Graph Ecosystem - The NFDI4Objects Developing Bodies



How to Import Research- and Meta-Data in the NFDI Knowledge Graph Infrastructure

Format A

Ontology X



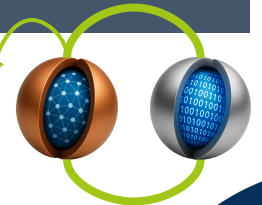
F. Thiery, CC BY 4.0

KGI4.nfdi

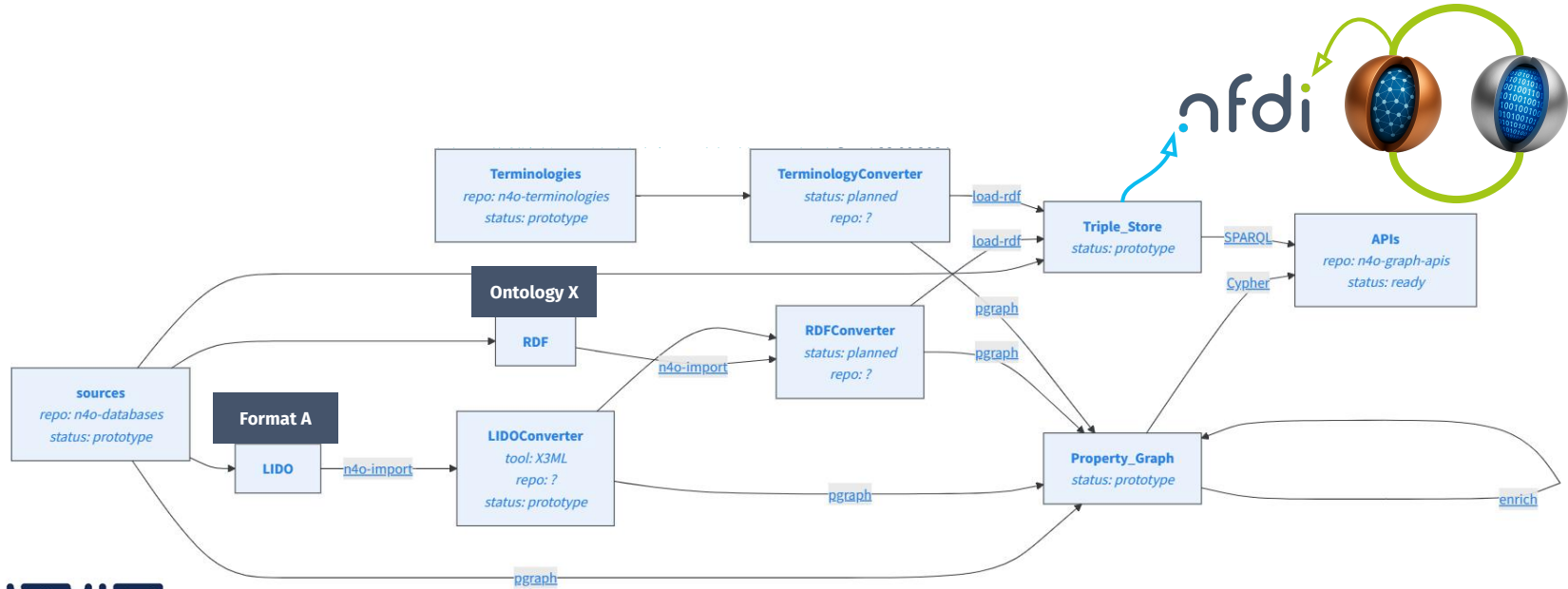
Knowledge Graph Infrastructure
for the German National Research
Data Infrastructure



nfdi



NFDI4Objects Knowledge Graph Import via LIDO and CIDOC-CRM



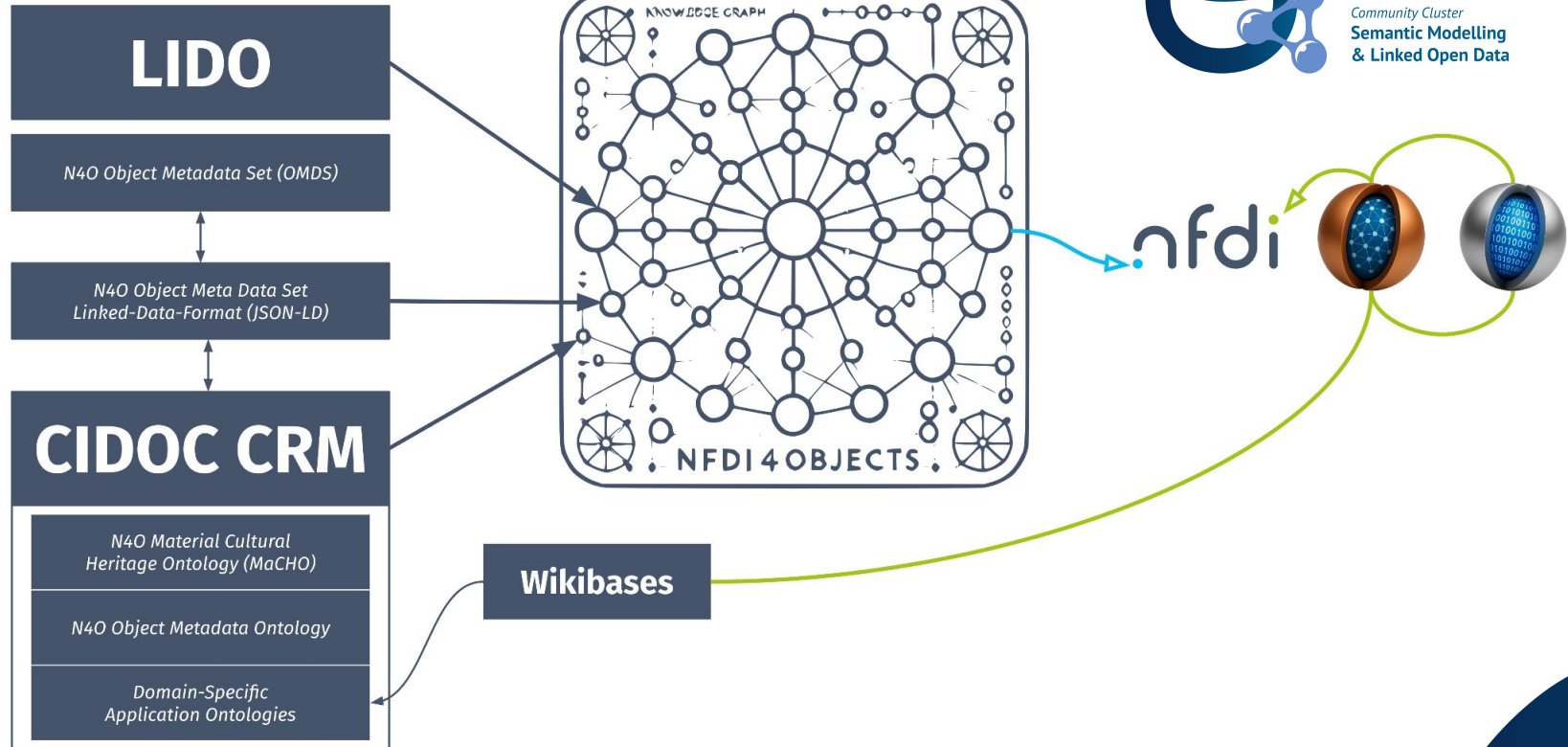
MontyBitto, CC BY 4.0, via <https://nfdi4objects.github.io/n4o-graph/architecture.html>



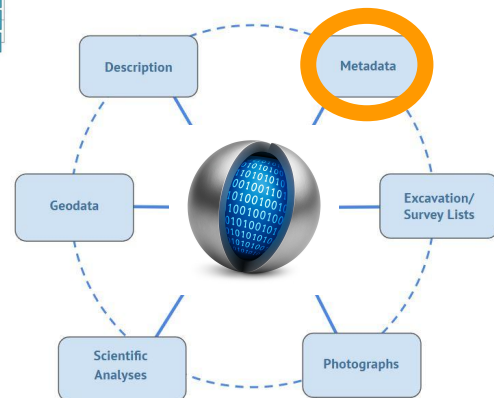
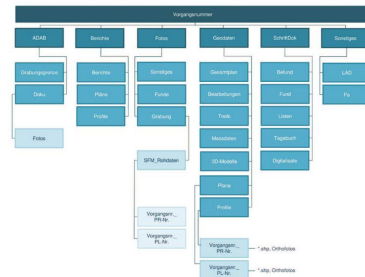
NFDI4Objects
Community Cluster
Semantic Modelling
& Linked Open Data



LIDO and CIDOC-CRM referenced RDF as Basis for KG Import



Archaeological Fieldwork Meta-Data-Set - Mandatory Data



Identifier (Free Text)

Unique Identifier

Feature (Controlled Vocabulary)

Description of Key Observed Features

Dating (Controlled Vocabulary)

Dating of Key Observed Features

Location (Controlled Vocabulary)

Location of Activity

Type (Controlled Vocabulary)

Type of Activity (e.g. Survey, Single Find, etc.)

Date of Activity (Date)

Date of Activity

Responsible Person/Institution (Free Text)

e.g. Excavator, Reporting Person/Institution

Curator (Free Text)

e.g. Archiving Institution

Licence Metadata (Controlled Vocabulary)

Licence for Use and Re-use of Meta-Data



https://commons.wikimedia.org/wiki/File:Bo%C3%AEtes_archives_avant_traitement.jpg

Archaeological Fieldwork

Meta Data Set - Additional Data (optional)



Name (Free Text)

Broader Feature (Controlled Vocabulary)

Coordinates (Coordinates)

Linked Activities (Free Text)

Data Set Type (Controlled Vocabulary)

Link Data Set (URL)

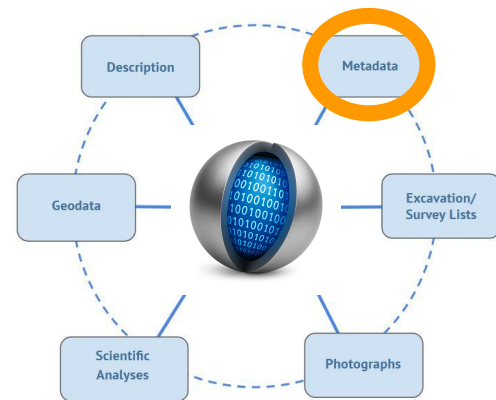
Data Set Licence (Controlled Vocabulary)

Bibliography (Bibtex)

Findings/Features/Samples (Checkboxes)

Area (m²) (Number)

Number of Plans/Profiles (Number)



Archaeological Fieldwork

Meta Data Set - Mapping to Meta Data Standards

	ARA-ID	ARA-label	Title	N4O OMS	Dublin-Core	NFDI Core ontolog	schema.org	CIDOC-CRM
Identifier	ARA:0000001	identifier	Identifier	tmpOMDS_0000001	identifier	NFDI:0000015	identifier	E42
	ARA:0000002	name	Name	tmpOMDS_0000002	title	IAO:0000590	name	E41
Classification	ARA:0000003	feature	Feature	tmpOMDS_0000004	subject	IAO:0000420	genre	E55
	ARA:0000004	feature_broad	Broader Feature		subject	IAO:0000420	genre	E55
	ARA:0000005	dating	Dating	tmpOMDS_0000005	subject	BFO:0000202	temporalCoverage	E55
Location	ARA:0000006	location	Location	tmpOMDS_0000006	coverage	BFO:0000006	Place	E53
	ARA:0000007	geometry	Coordinates		coverage		GeoCoordinates	E94
Organisational Information	ARA:0000008	type	Type of Arch. Activity		description	IAO:0000420	genre	E55
	ARA:0000009	activities_linked	Linked Activities		description	NFDI:0001018	description	E41
	ARA:0000010	activity_date	Date of Activity		date		Date	E55
	ARA:0000011	person_responsible	Responsibility (Person)		creator	NFDI:0000004	Person	
	ARA:0000012	institution_responsible	Responsibility (Institution)		rightsHolder	NFDI:0000003	Organiz	
	ARA:0000013	curator	Curator		publisher	NFDI:0000003	Organiz	
Technical Information	ARA:0000014	dataset_digital	Data Set Type		type	IAO:0000420	genre	
	ARA:0000015	dataset_link	Link Data Set		relation	NFDI:0000009		
	ARA:0000016	dataset_license	Data Set Licence		rights	NFDI:0000141	license	
	ARA:0000017	bibliography	Bibliography		relation	NFDI:0000022		
	ARA:0000018	findings_features_samples	Findings/Features/Samples		description			
	ARA:0000019	area_covered	Area (m²)		description	BFO:0000006	spatialC	
License	ARA:0000020	plana_profiles	Number of Plana/Profiles		description			
	ARA:0000021	metadata_license	Licence Metadata	tmpOMDS_0000003	rights	NFDI:0000141	license	

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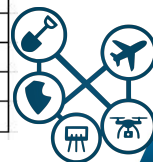


ARao as ARcheological Activity Ontology

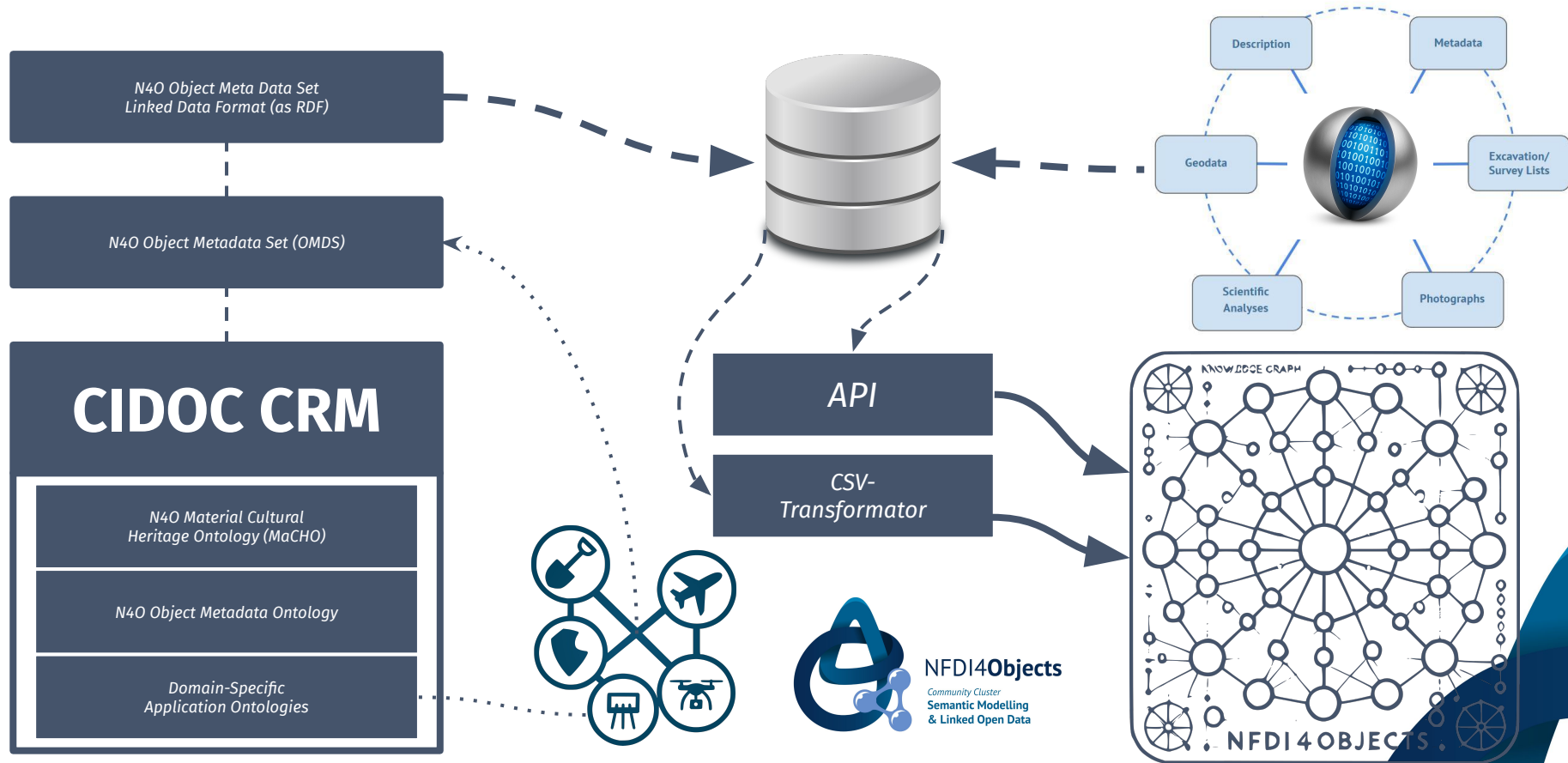


	ARA-ID	ARA-label	N4O OMDS	Dublin-Core	NFDI Core ontology	schema.org	CIDOC-CRM
Identifier	ARA:0000001	identifier	tmpOMDS_0000001	identifier	NFDI:0000015	identifier	E42
	ARA:0000002	name	tmpOMDS_0000002	title	IAO:0000590	name	E41
Classification	ARA:0000003	feature	tmpOMDS_0000004	subject	IAO:0000420	genre	E55
	ARA:0000004	feature_broad		subject	IAO:0000420	genre	E55
	ARA:0000005	dating	tmpOMDS_0000005	subject	BFO:0000202	temporalCoverage	E55
Location	ARA:0000006	location	tmpOMDS_0000006	coverage	BFO:0000006	Place	E53
	ARA:0000007	geometry		coverage		GeoCoordinates	E94
Organisational Information	ARA:0000008	type		description	IAO:0000420	genre	E55
	ARA:0000009	activities_linked		description	NFDI:0001018	description	E41
	ARA:0000010	activity_date		date		Date	E52
	ARA:0000011	person_responsible		creator	NFDI:0000004	Person	E21
	ARA:0000012	institution_responsible		rightsHolder	NFDI:0000003	Organization	E78
	ARA:0000013	curator		publisher	NFDI:0000003	Organization	E78
Technical Information	ARA:0000014	dataset_digital		type	IAO:0000420	genre	E55
	ARA:0000015	dataset_link		relation	NFDI:0000009		E42
	ARA:0000016	dataset_license		rights	NFDI:0000141	license	E30
	ARA:0000017	bibliography		relation	NFDI:0000022		E77
	ARA:0000018	findings_features_samples		description			E55
	ARA:0000019	area_covered		description	BFO:0000006	spatialCoverage	E60
License	ARA:0000021	metadata_license	tmpOMDS_0000003	rights	NFDI:0000141	license	E30

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From metadata to the N40 Knowledge Graph



Thanks!
Ευχαριστώ :-)

Questions?



NFDI4Objects

Community Cluster
**Semantic Modelling
& Linked Open Data**



NFDI4Objects

Community Cluster
On-Site Documentation

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