



An aggregation workflow based on linked data for the common European data space for cultural heritage

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Netherlands Institute for Sound & Vision

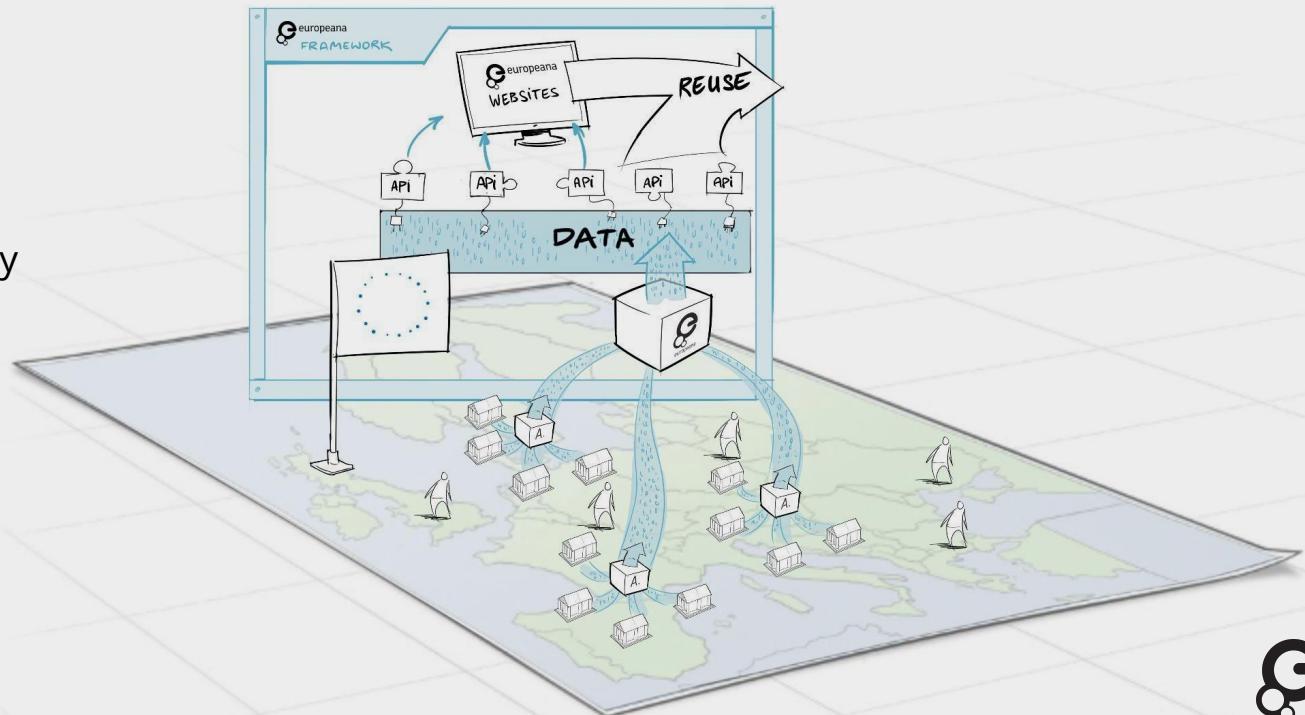




Introduction

Europeana's present metadata aggregation flow

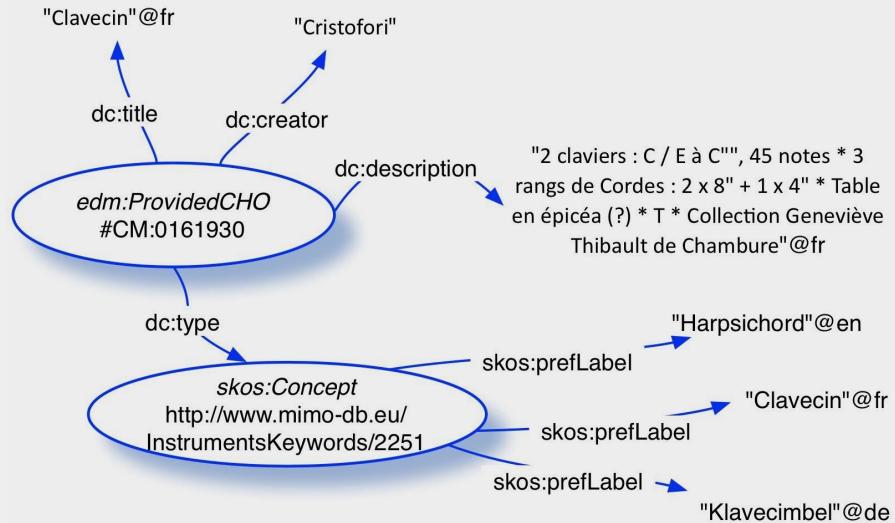
A centralized repository
of metadata harvested
using the OAI-PMH
protocol



The Europeana Data Model (EDM)



[Clavecin](#), Bartolomeo Cristofori
Cite de la Musique,
MIMO - Musical Instruments Museums Online | CC BY-NC-SA



<http://pro.europeana.eu/edm-documentation>

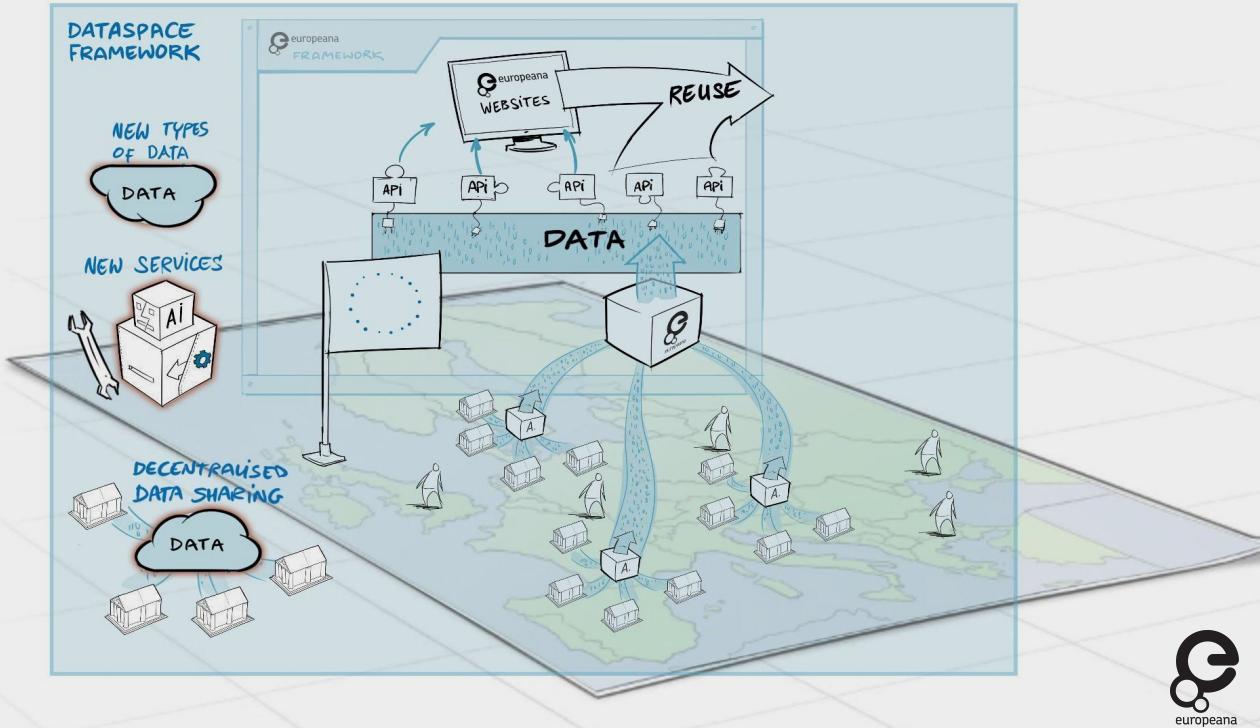
Becoming a data space

COMMON EUROPEAN DATA SPACE FOR CULTURAL HERITAGE

Changing how we respond to the needs of data providers and data recipients

Diversifying data sharing pipelines to address:

- the varied needs of CH Institutions
- the diversification of data products



Innovate the aggregation model and technology

Cf work of the Europeana Aggregators' Forum's task force on Decentralised Aggregation:

- Extension and refinement of aggregation use cases
 - *E.g. As an aggregator, I want to always provide access to the latest version of the data available at the source*
- Collect examples and develop scenarios for new types of data
- Develop solutions
 - Using IIIF and Linked Data

Short introduction to NDE

The Dutch Digital Heritage Network (NDE) aims at increasing the social value of the cultural heritage information maintained by libraries, archives, museums and other cultural institutions.

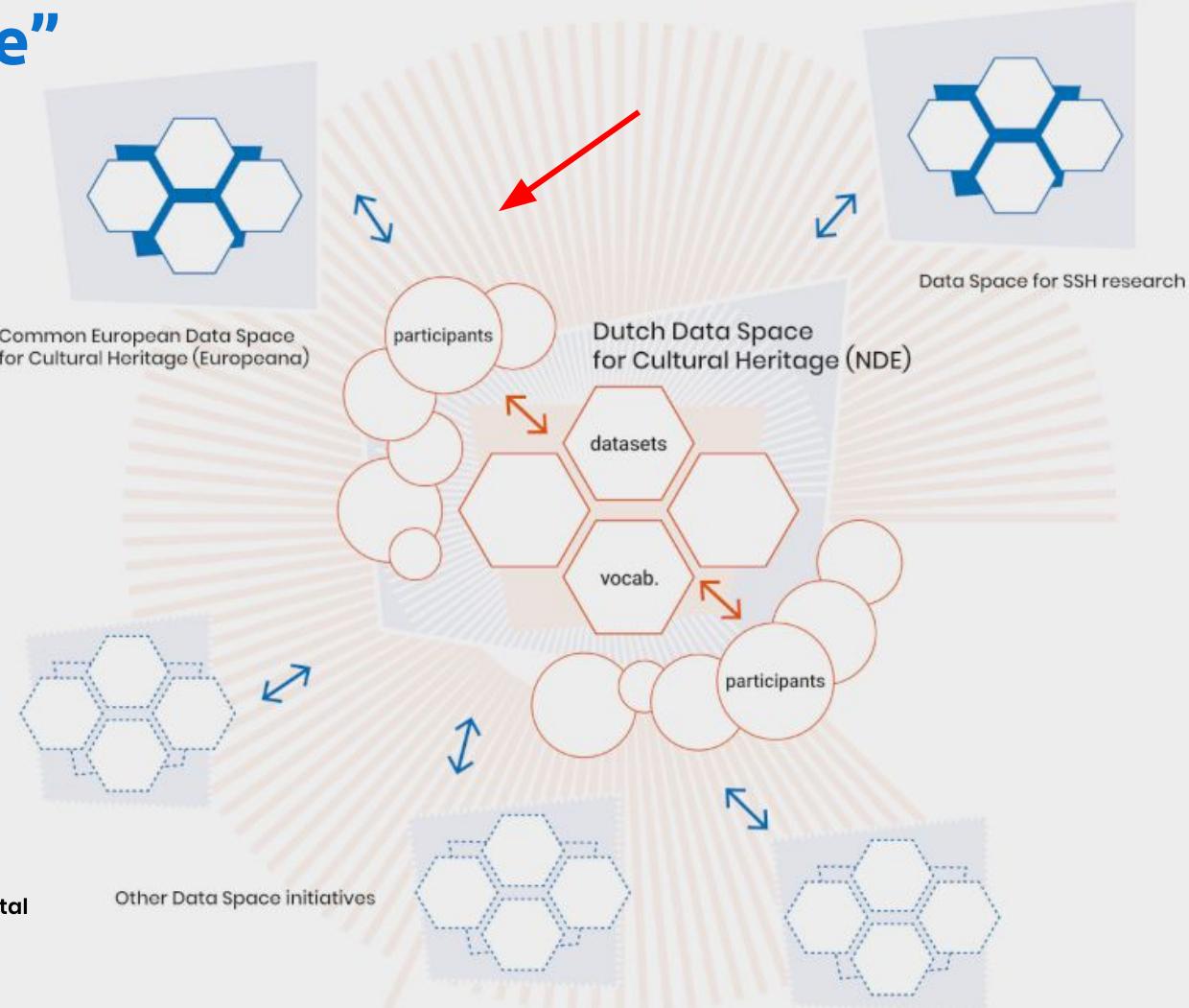
The National Digital Heritage Strategy starts from the end user perspective and encourages institutions to provide digital heritage information that is more visible, usable and sustainable.

Linked Data is regarded as one of the enabling technologies.

28-11-2024: launch of the 3rd version of the National Strategy



"Big picture"



Interoperability and standards

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2.5	Serving images through IIIF

Conformance

References

- Normative References
- Informative References

Requirements for Collection Management Systems

Living Standard, 7 October 2024

This version:

<https://netwerk-digitaal-erfgoed.github.io/requirements-collection-management-systems/>

Issue Tracking:

GitHub

Editors:

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Abstract

This document describes requirements for collection management systems. By following these requirements, software developers can make their systems NDE-compatible.

1. Introduction

This document helps vendors of collection management systems to make their systems NDE compliant and ready for use in the Dutch heritage sector. Vendors only offering linked data publication services must meet the requirements for publishing Linked Open Data (see § 2.2 Publication of Linked Open Data) and registration with the NDE Dataset Register (see § 2.4 Registration with the NDE Dataset Register). In this case the other requirements must be fulfilled by the system providing the information to the publication service.

National Infrastructure

network of terms

Frequently asked questions ▾ Taal ▾

List of terminology sources

This is the list of terminology sources that you can consult through the Network of Terms.

Select one or more subjects: 44 matching sources [Search in these sources](#)

[Abstracte begrippen](#)

[Activiteiten](#)

[Actoren en organismen](#)

[Fysieke kenmerken](#)

[Gebeurtenissen](#)

[Gebouwen](#)

[Genres](#)

[Locaties](#)

[Materialen](#)

[Objecten](#)

[Periodes](#)

[Unknown](#)

[Stijlen](#)

[Technieken](#)

Adamlink: historische adressen in Amsterdam ATM
Historische adressen in Amsterdam [View at source](#)

Locaties

Adamlink: straten in Amsterdam ATM
Straten in Amsterdam [View at source](#)

Locaties

Archeologisch Basisregister RCE
Onderwerpen voor het beschrijven van onderzoeken, vondsten en sporen [View at source](#)

[Abstracte begrippen](#) [Materialen](#) [Objecten](#) [Periodes](#) [Technieken](#)

Art & Architecture Thesaurus Getty
Onderwerpen voor het beschrijven van architectuur-, kunst- en cultuurhistorische collecties [View at source](#)

[Abstracte begrippen](#) [Activiteiten](#) [Actoren en organismen](#) [Fysieke kenmerken](#) [Materialen](#) [Objecten](#)
[Periodes](#) [Stijlen](#)

Art & Architecture Thesaurus - materialen Getty [View at source](#)

<https://termennetwerk.netwerkdigitaalerfgoed.nl/>

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network of terms

Frequently asked questions ▾ Taal ▾

List of terminology sources

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- Abstracte begrippen
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- Gebeurtenissen
- Gebouwen
- Genres
- Locaties
- Materialen
- Objecten
- Periodes
- Unknown
- Stijlen
- Tekniken

datasetregister

Create Validate Submit Search FAQ NL • EN

Dataset Register
For all heritage datasets!

The dataset register provides insight into the availability of datasets in the heritage field and thus encourages the use of these datasets.

For heritage institutions with datasets: → add a dataset description

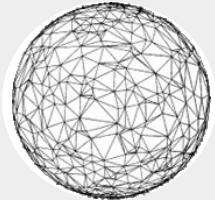
For users of heritage data: search **9870** dataset descriptions →

<https://datasetregister.netwerkdigitaalerfgoed.nl/>



Linked Data metadata aggregation

Aggregation process



Dataset
Register
(NDE)

Machine-actionable dataset metadata
in DCAT-AP:

- Metadata about the dataset distributions include necessary technical details for automatic processing
- States the compliance with EDM

1
*Here's the link to our collection
(in RDF/EDM!)*



National
Archives



Photocollection
dataset description

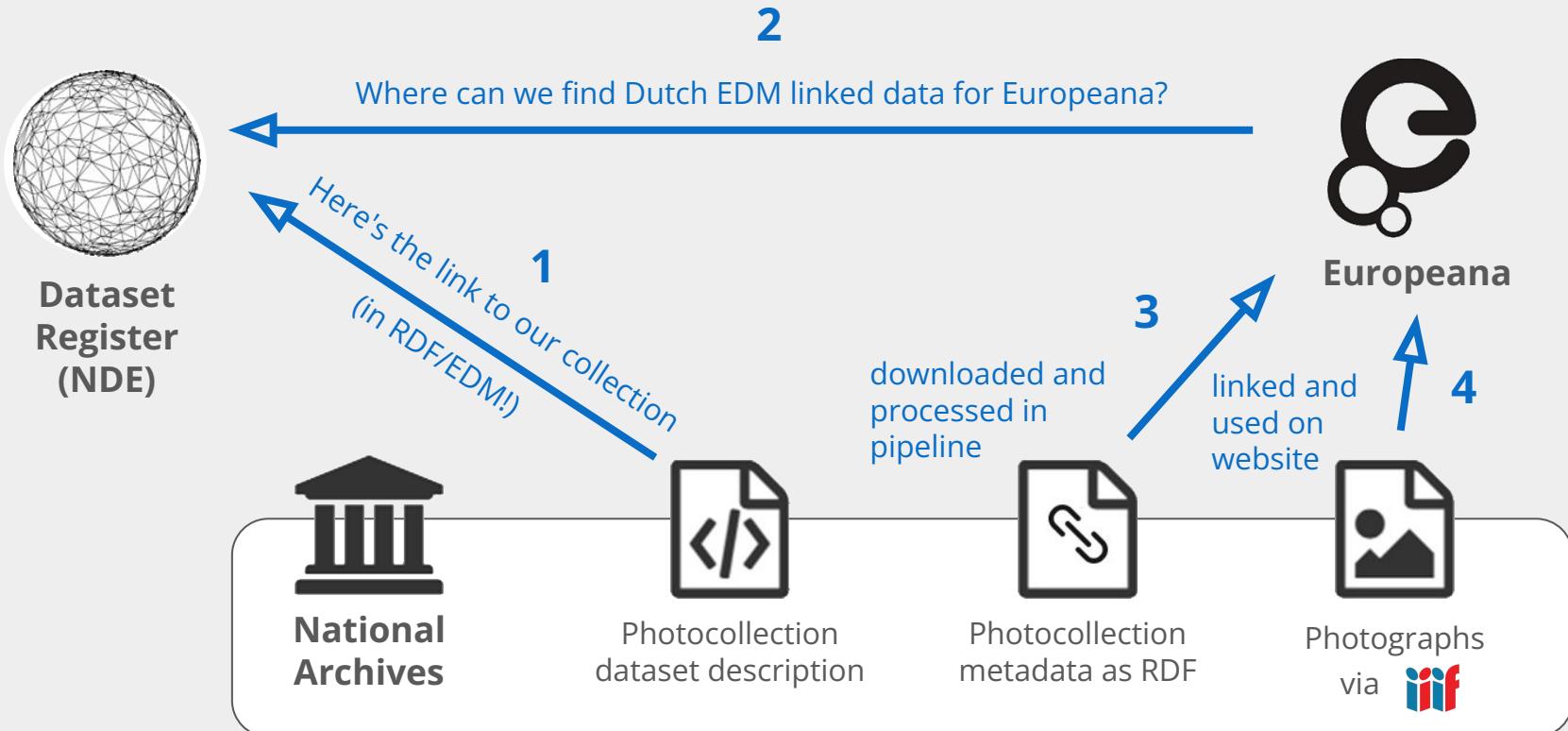


Photocollection
metadata as RDF



Photographs
via


Aggregation process



Publishing EDM distributions

Dataset description

<https://archief.nl/id/dataset/foto/2-10-62ntfoto>

URI <https://archief.nl/id/dataset/foto/2-10-62ntfoto>

Identifier 2-10-62ntfoto

Title Foto's NEFIS en CMI

License <http://creativecommons.org/publicdomain/zero/1.0/>

Creator <https://www.nationaalarchief.nl>

Name Nationaal Archief

Distribution genid-012be778301547048ed16dd0d47b1398208171-bc_0_df_101193835_2

AccessURL [https://service.archief.nl/gaf/oai/open_oai.OAIHandler?
verb=ListRecords&set=2-10-62ntfoto&metadataPrefix=oai_dc](https://service.archief.nl/gaf/oai/open_oai.OAIHandler?verb=ListRecords&set=2-10-62ntfoto&metadataPrefix=oai_dc)

Format application/xml

Distribution genid-012be778301547048ed16dd0d47b1398208171-bc_0_df_101193835_3

AccessURL <https://service.archief.nl/sparql>

Format application/sparql-query

Created 2022-01-31

Modified 2024-11-04

Language nl

Issued 2024-11-04

Publisher <https://www.nationaalarchief.nl>

Name Nationaal Archief

IsPartOf <https://archief.nl/id/databatalog/foto>

[View the datasets of this databatalog](#)

Publishing EDM distributions

	subject	predicate	object
1	https://archief.nl/id/dataset/foto/2-10-62ntfoto	dcat:distribution	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie
2	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	rdf:type	dcat:Distribution
3	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:description	"File 2-10-62ntfoto.ntriples converted via LODA-pipeline based on https://github.com/netwerk-digitaal-erfgoed/lod-aggregator/blob/master/queries/nafotos2edm.rq mapping"
4	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:license	http://creativecommons.org/publicdomain/zero/1.0/
5	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:accessURL	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-10-62ntfoto.rdf
6	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:format	"application/rdf+xml"
7	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:created	"2023-11-22T14:58:00Z"^^xsd:dateTime
8	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:byteSize	"83620"^^xsd:nonNegativeInteger
9	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:mediaType	iana:assignments/media-types/application/rdf+xml
10	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:conformsTo	http://www.europeana.eu/schemas/edm/
11	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:downloadURL	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-10-62ntfoto.rdf

Publishing EDM distributions

	subject	predicate	object
1	https://archief.nl/id/dataset/foto/2-10-62ntfoto	dcat:distribution	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie
2	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	rdf:type	dcat:Distribution
3	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:description	"File 2-10-62ntfoto.ntriples converted via LODA-pipeline based mapping"
4	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:mediaType	iana:assignments/media-types/application/rdf+xml
5	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:conformsTo	http://www.europeana.eu/schemas/edm/
6	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:downloadURL	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-10-62ntfoto.rdf
9	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:mediaType	iana:assignments/media-types/application/rdf+xml
10	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dct:conformsTo	http://www.europeana.eu/schemas/edm/
11	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	dcat:downloadURL	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-10-62ntfoto.rdf

SPARQL construct for RDF conversion

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX dcterms: <http://purl.org/dc/terms/>
PREFIX edm: <http://www.europeana.eu/schemas/edm/>
PREFIX ore: <http://www.openarchives.org/ore/terms/>
PREFIX nao: <https://archief.nl/def/ontologie/>
PREFIX doap: <http://usefulinc.com/ns/doap#>
PREFIX svcs: <http://rdfs.org/sioc/services#>

CONSTRUCT {
    ?uri_cho a edm:ProvidedCHO ;
        edm:type ?edm_type ; dc:creator ?creator ; dc:description ?description; dc:type ?genre ; dc:subject ?subject ; dcterms:sp
        dterms:temporal ?temporal ; dcterms:medium ?material ; dc:rights ?license ; dc:identifier ?identifier ; dc:date ?date ;
        dcterms:isPartOf ?is_part_of ; dc:publisher ?publisher .

    ?uri_ore a ore:Aggregation ;
        edm:aggregatedCHO ?uri_cho ; edm:provider ?provider ; edm:dataProvider ?dataProvider ; edm:rights ?rights ; edm:isShownBy
        edm:isShownAt ?isShownAt .

    ?isShownBy a edm:WebResource ;
        svcs:has_service ?uri_iif .

    ?uri_iif a svcs:Service ;
        dcterms:conformsTo <http://iiif.io/api/image> ;
        doap:implements <http://iiif.io/api/image/2/level1.json> .

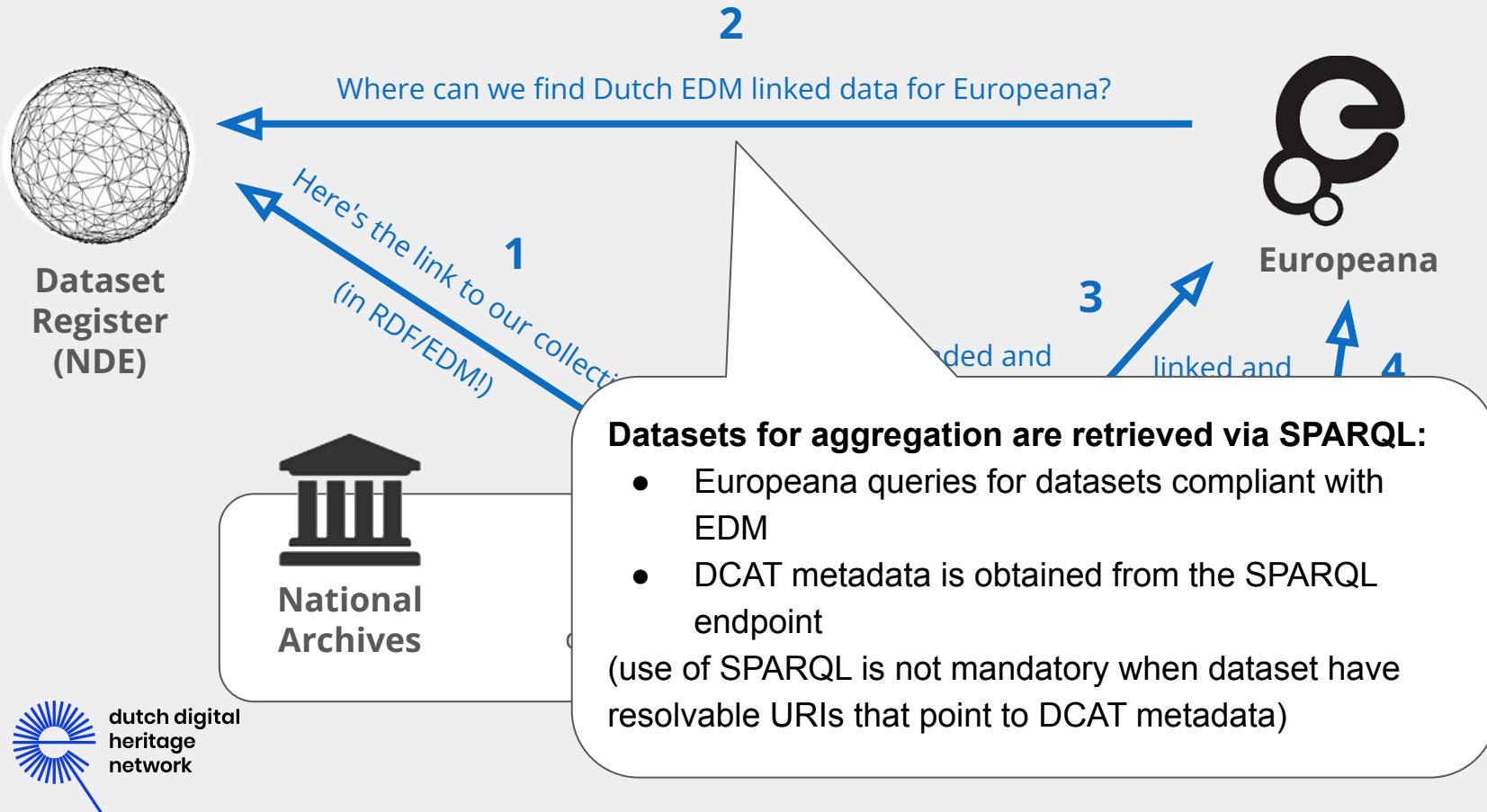
} WHERE {
    ?uri_cho a nao:Archiefeenheid .
    ?uri_cho nao:isArchiefeenheidtype <https://archief.nl/def/Foto>

    OPTIONAL { ?uri_cho nao:isMateriaaltype ? material . BIND(STRLANG(?_material, "nl") AS ?material) }
    OPTIONAL { ?uri_cho dc:identifier ?identifier }

    ?uri_ore foaf:primaryTopic ?uri_cho .

    OPTIONAL { ?uri_ore dc:description ?_description . BIND(STRLANG(?_description, "nl") AS ?description) }
    OPTIONAL { ?uri_ore nao:toelichting ?_description . BIND(STRLANG(?_description, "nl") AS ?description) }
```

Aggregation process



Find EDM distributions in triplestore.netwerkdigitaalerfgoed.nl

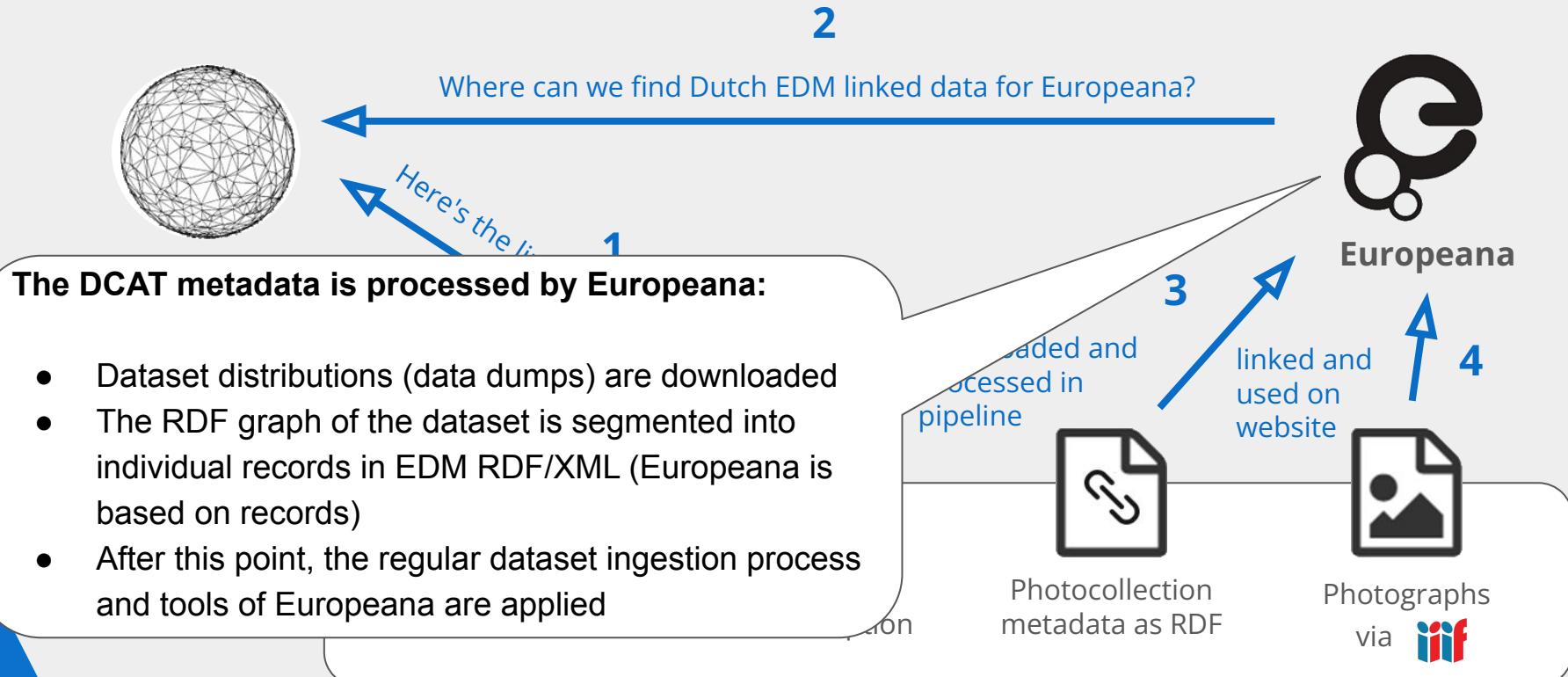
```
PREFIX dcat: <http://www.w3.org/ns/dcat#>
```

```
PREFIX dct: <http://purl.org/dc/terms/>
```

```
SELECT * WHERE {
  ?distribution dct:conformsTo <http://www.europeana.eu/schemas/edm/> ;
    dct:license <http://creativecommons.org/publicdomain/zero/1.0/> ;
    dcat:accessURL ?url
}
```

	distribution	url
1	https://archief.nl/id/dataset/foto/2-10-62ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-10-62ntfoto.rdf
2	https://archief.nl/id/dataset/foto/2-20-46ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-20-46ntfoto.rdf
3	https://archief.nl/id/dataset/foto/2-21-008-01ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-21-008-01ntfoto.
4	https://archief.nl/id/dataset/foto/2-21-284ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-21-284ntfoto.
5	https://archief.nl/id/dataset/foto/2-24-01-01ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-24-01-01ntfoto.
6	https://archief.nl/id/dataset/foto/2-24-01-02ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-24-01-02ntfoto.
7	https://archief.nl/id/dataset/foto/2-24-01-03ntfoto-loda-edm-distributie	https://nde-europeana.ams3.cdn.digitaloceanspaces.com/2-24-01-03ntfoto.

Aggregation process



7.067 RESULTATEN VOOR [edm_datasetName:1189_*](#)[HOME](#) [COLLECTIES](#) [VERHALEN](#) [DEEL UW COLLECTIES](#) [INLOGGEN / AANMELDEN](#)[< WEERGEVEN GEAVANCEERD ZOEKEN](#)[Zoekfilters \(2\)](#)[X FILTERS WISSEN](#)[THEMA](#)

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Dutch Collections for Europe

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National Archives of the Netherlands

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Oranjezaal. Schildering

Hofmeester, Bart / RVD

National Archives of the Netherlands



Exterieur

Hofmeester, Bart / RVD

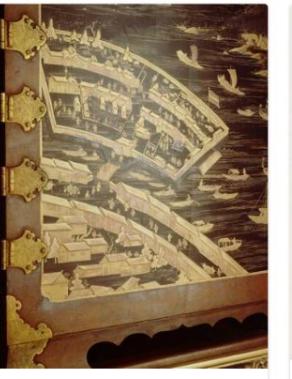
National Archives of the Netherlands



Plafond Witte Eetzaal

Hofmeester, Bart / RVD

National Archives of the Netherlands



Japanse kast

Hofmeester, Bart / RVD

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De Japanse zaal, detail wandbekleding

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De Japanse zaal

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Interieur

Hofmeester, Bart / RVD

Vestibule met deuren van de
Oranjezaal. Aan weerszijdedutch digital
heritage
network

europeana

Thank you!

**Questions? Don't
hesitate to mail us**

nuno.freire@europeana.eu
bob.coret@kb.nl

