

Building the Dutch Digital Heritage Network (NDE)

10 December 2019 – NDLI/KEDL2019 – New Delhi

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NDE Programme Manager
Usable Digital Heritage**



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ennomeijers



**dutch digital
heritage
network**

Thank you for inviting me!

Enno Meijers (age 55, wife & 3 children)

- Work as an advisor at the Research Department of the National Library of the Netherlands
- Programme manager at the Dutch Digital Heritage Network (NDE)
- Working in libraries & heritage institutions > 20 years
- Background in engineering and business informatics
- Special interests: Linked Data, Semantic Web and decentralized web technologies

Please share your ideas and questions:



enno.meijers at kb.nl



ennomeijers





Area

- Total 3,287,263^[6] km²
(1,269,219 sq mi)^[c]
(7th)
- Water (%) 9.6

Population

- 2018 estimate ▲ 1,352,642,280^{[13][14]}
(2nd)
- 2011 census 1,210,854,977^{[15][16]}
(2nd)
- Density 403.7/km²
(1,045.6/sq mi) (31st)

India

Area

- Total 41,543 km²
(16,040 sq mi) (131st)
- Water (%) 18.41

Population

- 2019 estimate 17,336,891 ▲^[6] (66th)
- Density 418/km² (1,082.6/sq mi)
(30th)

Netherlands

GDP (PPP)

- Total 2019 estimate ▲ \$11.326 trillion^[17]
(3rd)
- Per capita ▲ \$8,378^[17] (119th)

GDP (nominal)

- Total 2019 estimate ▲ \$2.936 trillion^[17]
(5th)
- Per capita ▲ \$2,172^[17] (142nd)

GDP (PPP)

- Total 2019 estimate \$1.004 trillion^[7] (28th)
- Per capita \$58,255^[7] (13th)

GDP (nominal)

- Total 2019 estimate \$914 billion^[7] (17th)
- Per capita \$53,016^[7] (13th)

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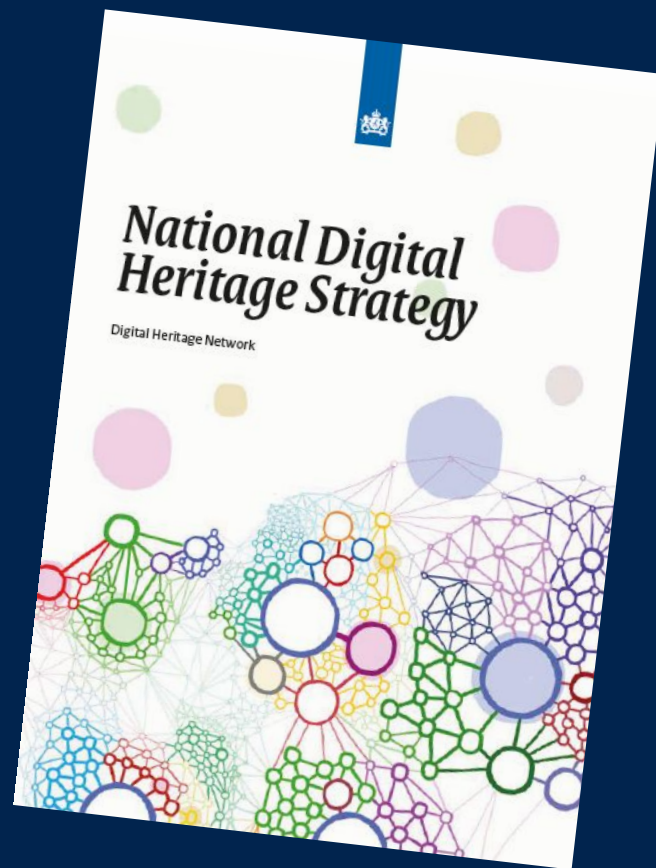


Contents

- Introduction NDE Programme
- Building the digital heritage network
- Our current work
- Lessons learned & next steps
- Questions



The Dutch Digital Heritage (NDE) Programme



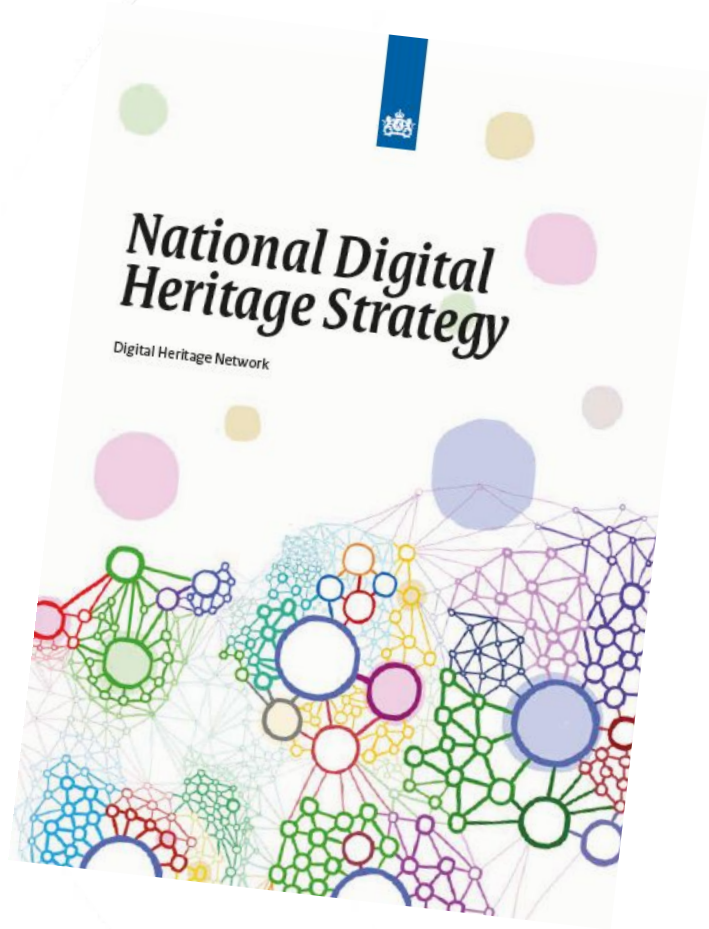
National Digital Heritage strategic plan (2015)

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

This strategy offers a perspective on developing a **national, cross-sector infrastructure** of digital heritage facilities.

It focuses on long term cooperation between the government and the institutions on **national, regional and local level**.

It is about organizing the **network of people and information!**



Bridging networks

Seeking cooperation between:

- about 1500 organizations
- libraries, archives, museums, other institutions
- national, regional, local networks
- using different IT environments
- many different goals and funding schemes

Aligning digital activities

- improving digital visibility
- publication and reuse of digital information
- exchanging knowledge and information



Overview of the NDE programme

Visible

Service providers



Usage profiles



Campaigne &
channel



Rights &
Usage

Usable

Infrastructure providers



Terminologie
Sources



Registries



Aggregators



Knowledge
Graph

Sustainable

Source providers



PID & LOD



Preservation Policy
& Certification



Cost model
Preservation



Index
Preservation
Services

OVERALL



Supporting Network



Training & Education



Body of Knowledge



Services Toolbox



Service
implementation &
management

For detailed information: www.netwerkdigitaalergoed.nl (also in English)



Overview of the NDE programme

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Terminologie Sources



Registries



Aggregators



Knowledge Graph

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Source providers



PID & LOD



Preservation Policy & Certification



Cost model Preservation



Index Preservation Services

OVERALL



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Body of Knowledge



Services Toolbox

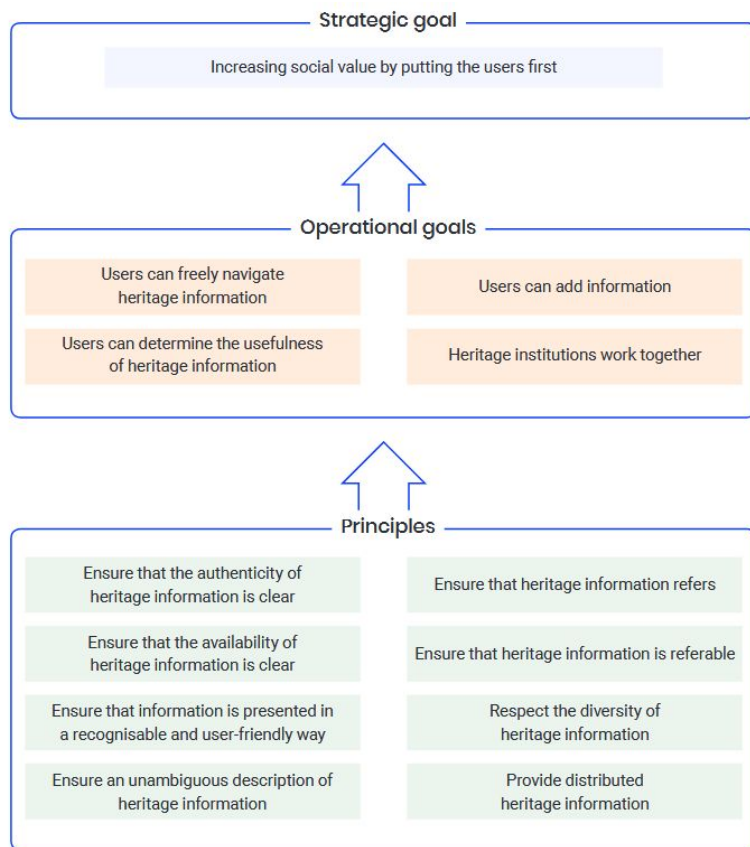


Service implementation & management

For detailed information: www.netwerkdigitaalergoed.nl (also in English)



Cross domain Reference Architecture



Manifesto



Manifest Netwerk Digitaal Erfgoed

Ja,

Wij willen onze digitale erfgoed informatie beter zichtbaar, bruikbaar en houdbaar maken. Zo kan iedereen maximaal de vruchten plukken van de digitalisering van de samenleving.

Wij geloven dat dit alleen lukt als archieven, bibliotheken, musea, heemkundige kringen, onderwijs- en cultuurinstellingen, kennisinstellingen, software-leveranciers, overheden en andere partners hierin samen optrekken. Daarom zijn wij onderdeel van het Netwerk Digitaal Erfgoed en werken wij volgens de uitgangspunten van de Nationale Strategie Digitaal Erfgoed:

• De gebruiker staat centraal

De wensen van de erfgoedgebruiker staan voorop. Daarom streven wij ernaar scheidslijnen tussen collecties te overbruggen en de gebruiker met behulp van digitale technieken grenzeloze toegang te bieden tot het erfgoed in Nederland.

• Delen vanuit de bron

Wij zijn er zelf verantwoordelijk voor dat onze erfgoed informatie op passende wijze beschikbaar is in het netwerk, zodat deze efficiënter en effectiever beheerd, verbonden, verrijkt en gebruikt kan worden.

• Netwerkprincipes

Wij maken gebruik van informatiearchitectuur, voorzieningen en standaarden die in het netwerk beschikbaar zijn om onze erfgoed informatie zo zichtbaar, bruikbaar en houdbaar mogelijk te maken.

• Iedereen draagt bij

Wij realiseren ons dat het succes van het netwerk een optelsom is van de bijdragen van de deelnemers. Onze voorzieningen, ontwikkelingen, kennis en ervaring delen wij dan ook zoveel mogelijk.

• Open, verbonden en innovatief

Wij zijn ambassadeur van het netwerk en dragen de kernwaarden 'open, verbonden en innovatief' uit. Samen met alle andere organisaties in het netwerk zorgen wij voor het digitale geheugen van Nederland; een geheugen waar we met elkaar blijvend aan bijdragen en uit kunnen putten.

Datum en plaats

Naam

Handtekening



Building the digital heritage network

Rethinking the current digital network



Focus on users

Users want to be able **to find and use all sources** available from archives, libraries, museums, and other collections, preferably **in as few searches as possible** and **at the lowest possible cost**. Right now, users cannot easily locate a coherent overview of relevant sources.

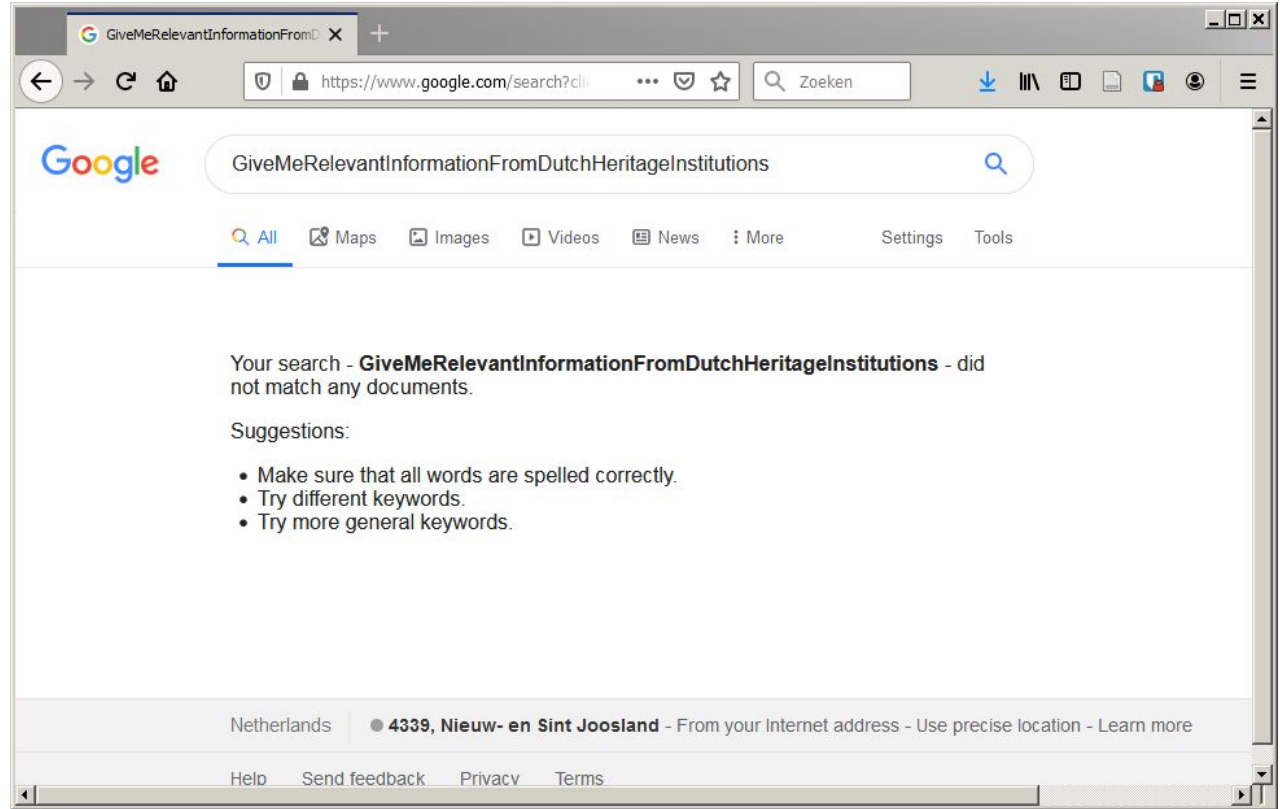
Thinking from the user's perspective also means seeking out the **digital platforms and work environments where potential users can already be found**. Having a social media presence or being findable through search engines can be more effective methods of reaching the public than simply maintaining a website.

From: [National Digital Heritage Strategy](#)



Users start at Google...

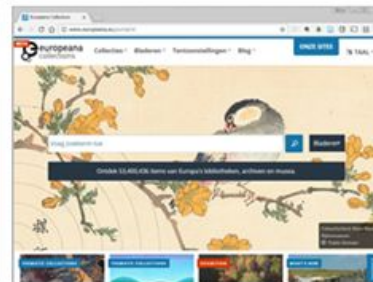
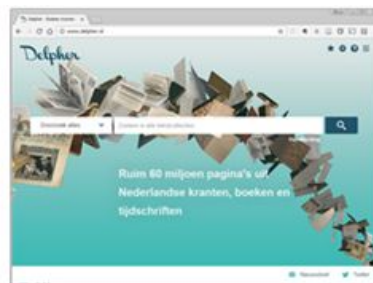
**but many
(long tail)
information
doesn't show
up...**



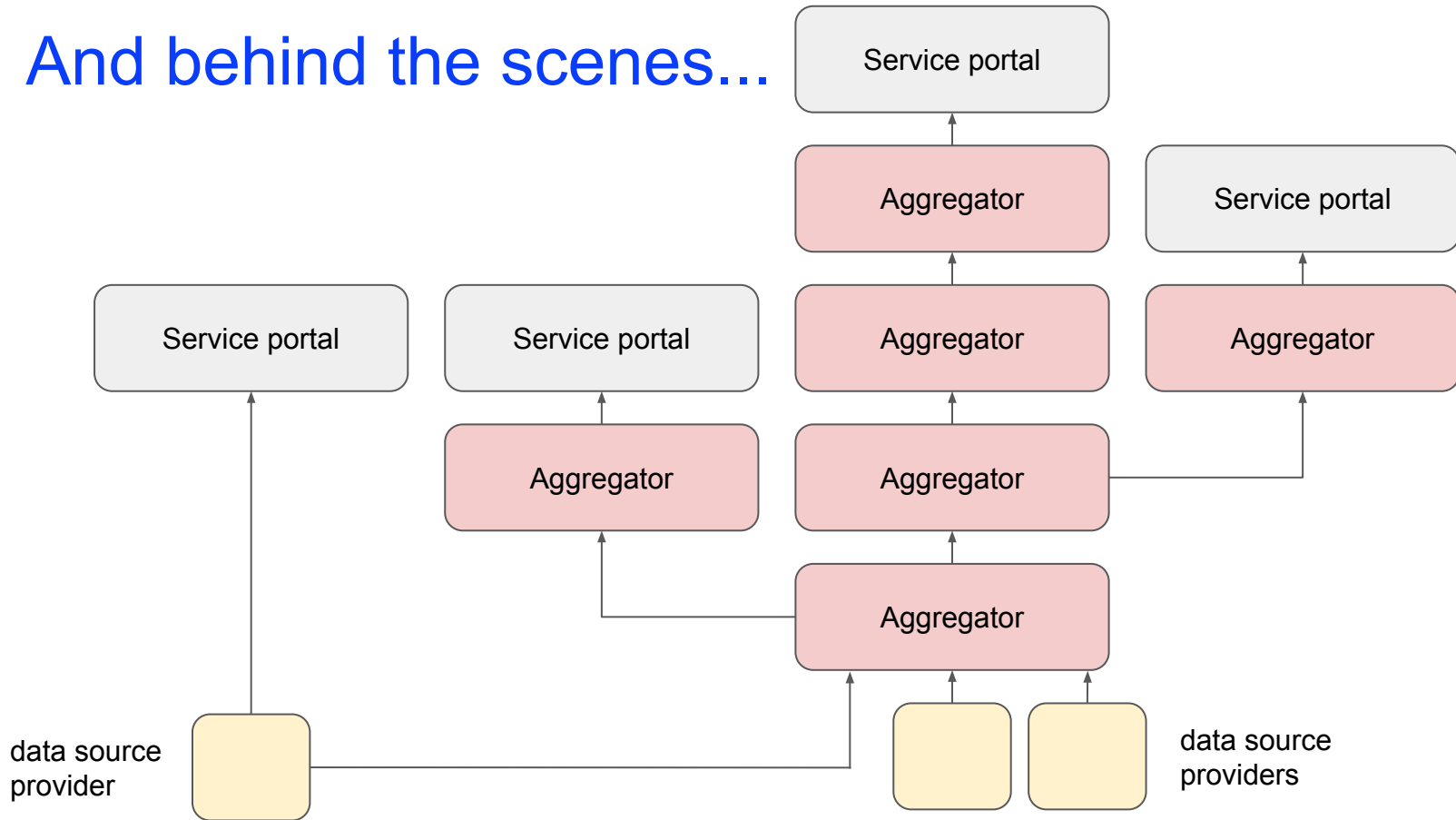
So we have nice portals!

but:

- which one to choose?
- can I browse from one portal to another?



And behind the scenes...



Design principles for the discovery infrastructure

Rethink the network:

- maximize the usability of data at the source
- refer to data instead of copying
- build service portals as views based on a common, interconnected data layer
- minimize the intermediate layers

In general:

- open and sustainable network based on Linked Data (and FAIR) principles
- build on 'web-centric' technologies (HTTP, RDF, Web API's)
- apply decentralized/distributed technologies where possible

Inspired by the work of Ruben Verborgh, Herbert Van de Sompel and colleagues:

See for example: Miel Vander Sande et al. , Towards sustainable publishing and querying of distributed Linked Data archives - (JoD 2017)



Implementing Linked Data principles (1)

"You can only be free if you follow rules..."¹

At the data source level:

- use sustainable URIs to identify the organizations, collections and resources
- use formal definitions for persons, places, concepts, events
- add support for cross-domain discovery (Schema.org, Europeana Data Model)
- use domain data models for collaboration
- publish the information about the organization, collections and resources as Linked Data

=> IT vendors are strategic partners for the implementation!

1: <http://slides.verborgh.org/ELAG-2018/#>



Implementing Linked Data principles (2)

At the network level:

- provide access to a 'network of terms' for shared terminology
- provide overview organizations and datasets (registry)
- implement standards for provenance and rights
- support infrastructure for navigating through the linked network
- support tools for alignment and linking
- promote reuse of tools and data
- optimize the usability of current infrastructure



Our current work...

Building the distributed network of digital heritage information



Roadmap for NDE's distributed network

1. *improve the usability of the data source:*
2. *facilitate a service for shared terminology for Dutch digital heritage*
3. *create a transparent, machine readable view of the network*
4. *improve the current aggregation infrastructure*
5. *investigate new discovery technologies:*



Linked Data at the source

- Collection management systems publishing linked data
- Strategy: work with IT suppliers to implement Linked Data technology
- Working with the “big 5” IT suppliers (>90% of the market)
- Step by step implementation strategy:
 - short term hacks - “wrappers”, stylesheets, other intermediate solutions
 - start with real use cases together with institutions
 - roadmap to full support for the NDE functionality



Linked Data at the source...



BROKKEN, CORRY

1956

Lente

1956-04-24 1956-05-15 3284
muziek: E. van Epen-de Groc
Paige Alexander Pola Corry E
Instrumentaal met vocale soli
Metropole Orkest Nationaal s
titel: 't is lente. - Voor zang, 2
basklarinet, 3 trompetten, 3 tr
srijkers, gitaar en piano PAIC
Songfestival [muziekschatten](#).
vara-tv; Songfestival;
Bron: [Muziekschatten](#)

<http://data.bibliotheken.nl/>

adamlink.nl/data

Adamlink Referentiedata

Straten

Wijken en buurten

Gebouwen



Rijksdienst voor het Cultureel Erfgoed
Ministerie van Onderwijs, Cultuur en
Wetenschap

Linked Data

Datamodel

API

Meer informatie

SPARQL viewer

TROOPEEN
MUSEUM
AMSTERDAM

AFFRIKA
MUSEUM
BERG EN DAL

MUSEUM
VOOLKEENKUNDE
LEIDEN







WERELD
MUSEUM
ROTTERDAM



(Linked) Data Stories

Data Stories HackaLOD 2019

Deze Data Stories zijn gemaakt als ingang op de beschikbare datasets tijdens de HackaLOD 2019

-  **RKDartists&**
Data Stories over de RKDartists thesaurus van het RKD beschikbaar via het [NDE LOD Platform](#)
-  **Collectie informatie Rijksmuseum**
Data Stories over de collectie van het Rijksmuseum in LOD vorm, beschikbaar gemaakt op het [NDE LOD Platform](#)
-  **Rijksdienst voor het Cultureel Erfgoed**
Data Stories over datasets beschikbaar op het [RCE LOD Platform](#)
-  **Muziekschatten - collectie Omroep Muziek**
Data Stories over collectie van Muziekschatten beschikbaar in de [Muziekschatten DataSpace](#)
-  **Internationaal Instituut voor Sociale Geschiedenis (IISG) Collectie** [↗](#)
Data Stories met voorbeelden uit de IISG Knowledge Graph beschikbaar op het [IISG LOD Platform](#)
-  **Nationaal Museum van Wereldculturen**

<http://demo.netwerkdigitaalergoed.nl/stories/hackalod2019/>



Interactive “SPARQLing”

demo.netwerkdigitaalergoed.nl/stories/hackalod2019/rijksmuseum/index.html

het formaat 'edm:dc' en is aangeleverd door de collega's van het Rijksmuseum. De dataset bevat de gegevens uit de set 'EntirePublicDomainSet' en omvat beschrijvingen. Deze bevat onder andere alle objecten waarvan een ook een afbeelding beschikbaar is.


De data is tijdelijk beschikbaar gemaakt in het [NDE LOD Platform](#) voor experimentele doeleinden. Zie voor meer informatie over deze objecten ook [de Rijkstudio](#).

De volgende query laat zien hoe schilderijen gevonden kunnen worden via de naam van de maker en op hoe de bijbehorende details en afbeelding te vinden zijn.

```
https://api.data.netwerkdigitaalergoed.nl/datasets/hackalod/RM-PublicDomainImages/services/R
```

```
5 PREFIX rdfa: <http://www.w3.org/2000/01/rdf-schema#>
6 PREFIX edm: <http://www.europeana.eu/schemas/edm/>
7
8 SELECT distinct ?widget (sample(?naam) as ?naam_ enkel) ?titel ?date ?omschrijving ?cho ?image WHERE {
9   ?agg edm:aggregatedCHO ?cho .
10  ?cho dc:creator/skos:prefLabel ?naam .
11  ?agg edm:object ?image .
12  ?cho dc:type <http://vocab.getty.edu/aat/300177435> .
13  ?cho dc:description ?omschrijving .
14  ?cho dc:title ?titel .
15  ?cho dc:created ?date .
16  filter(contains(?naam,"Bueckelaer"))
17  FILTER(langMatches(lang(?titel), "nl"))
18  FILTER(langMatches(lang(?date), "nl"))
```

Table Response Gallery Chart Geo Geo-3D Pivot Timeline 3 results in 0.448 seconds



Network of terms

Goal: A network service for shared terminology for Dutch digital heritage

- “use things, not strings” [1]
- select relevant terminology sources for the context:
 - search in general available definitions (Wikidata, geonames, Getty thesauri)
 - search in shared definitions in the (Dutch) heritage domain
- use real time (federated) queries
- harmonize results in a generic API (skos based)
- pick your favorite URI and store it

1: [Introducing the Knowledge Graph: things. not strings](#)



Network of terms – PoC

Termennetwerk | Netwerk Digitaal Erfgoed

demo.netwerkdigitaal erfgoed.nl/termennetwerk/n?q=Gandhi%2C+mahatma

Zoeken

Beta

Termennetwerk

Zoeken in gemeenschappelijke thesauri, classificatiesystemen en referentielijsten

Gandhi, mahatma

GTAA Personen (B&G), Nederlandse Thesaurus van Auteursnamen (KB)

Zoek

GTAA Personen

Gandhi, Mahatma

politicus India

Kopieer URI

Nederlandse Thesaurus van Auteursnamen (KB)

Gandhi, M.K. (1869-1948)

Mohandas Karamchand Gandhi (2 October 1869 - 30 January 1948) was the pre-eminent political and ideological leader of India during the Indian independence movement. He pioneered Satyagraha, this is defined as resistance to tyranny through mass civil disobedience, a philosophy firmly founded upon ahimsa, or total nonviolence. This concept helped India to gain

Art & Architecture Thesaurus (Getty)

Brinkman Thesaurus (KB)

Cultuurhistorische Thesaurus (RCE)

GTAA (B&G)

GTAA Classificaties (B&G)

GTAA Genres (B&G)

GTAA Namen (B&G)

GTAA Onderwerpen (B&G)

GTAA Personen (B&G) ✓

GTAA Plaatsen (B&G)

ISO 639-3 taalcodes (CLAVAS)

Nederlandse Thesaurus van Auteursnamen (KB) ✓

Plaatsen in de Nederlandse topografie door de tijd - (ErfGeo via proxy)

Referentiedata voor Amsterdamse collecties (AdamLink)

Stichting Omroep Muziekbibliotheek (SOM)

Straten in de Nederlandse topografie door de tijd (ErfGeo via proxy)

Visuele Thesaurus voor Mode en Kostuums (ModeMuze)

Volkenkundige Thesaurus (SVCN)

Wikidata

Wikidata/GTAA: wikidata entities that are linked to the GTAA

live demo

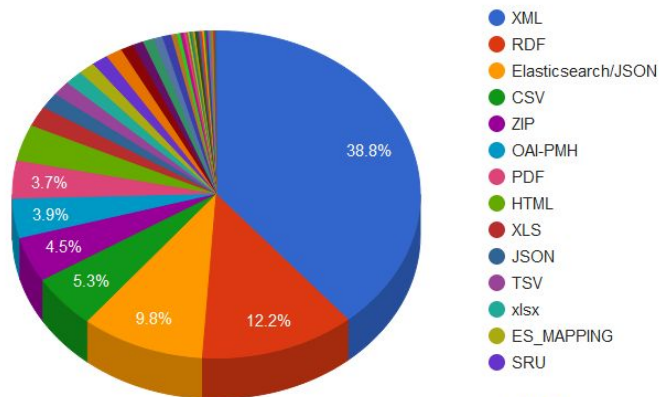
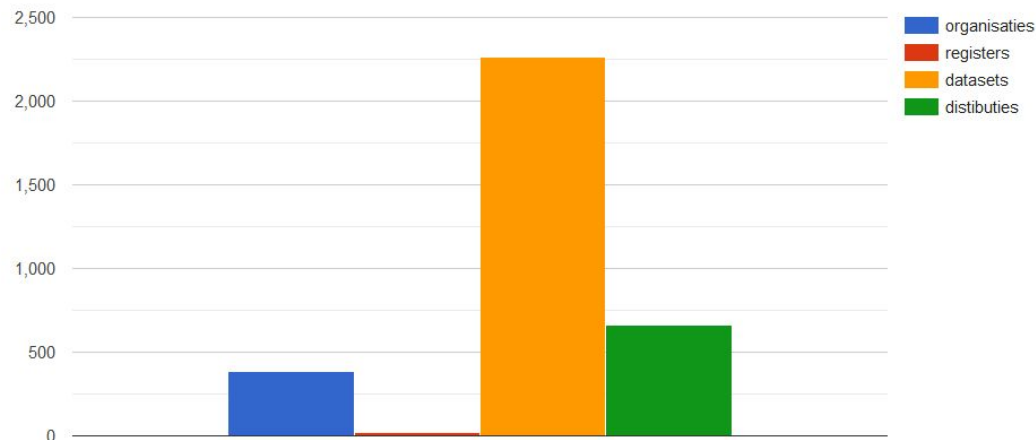


Register organizations and datasets

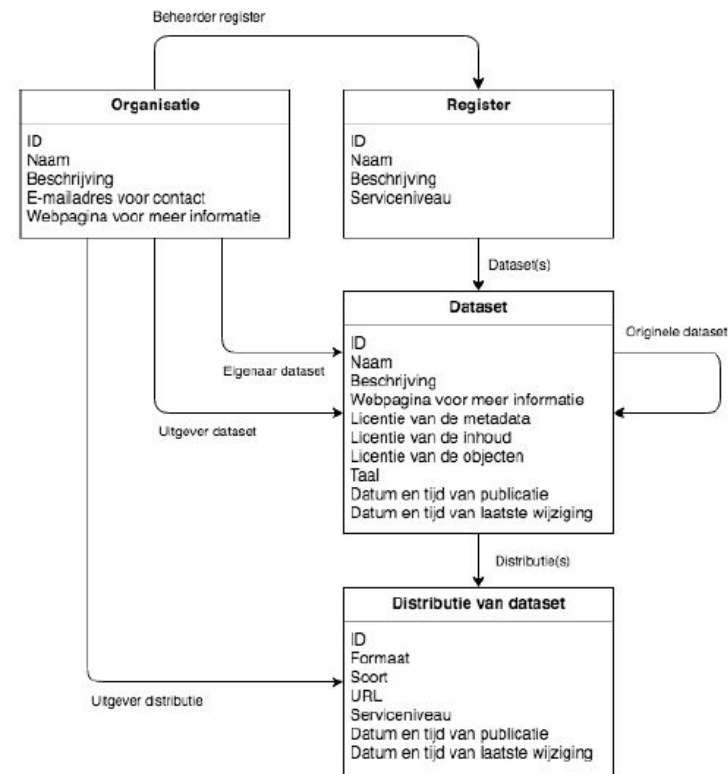
- Create an overview of the NDE network
- Create an overview of the available data in the network
- Promote the use of unique, stable and machine readable definitions of organizations and datasets
- Define a common data model for the different domains
- Align with community standards like DCAT and VOID
- Design a distributed model to integrate the data in the various platforms



Organisaties, Registers, Datasets en Distributies

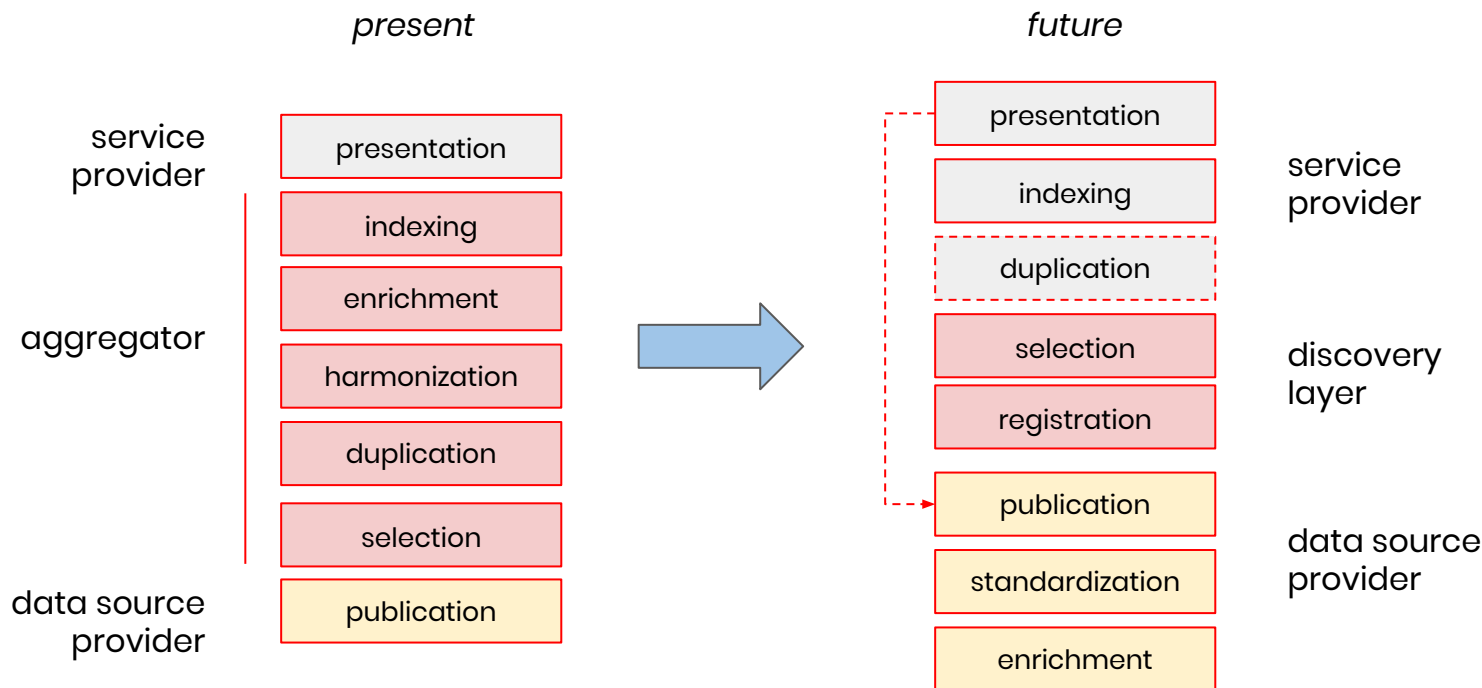


▲ 1/3 ▼

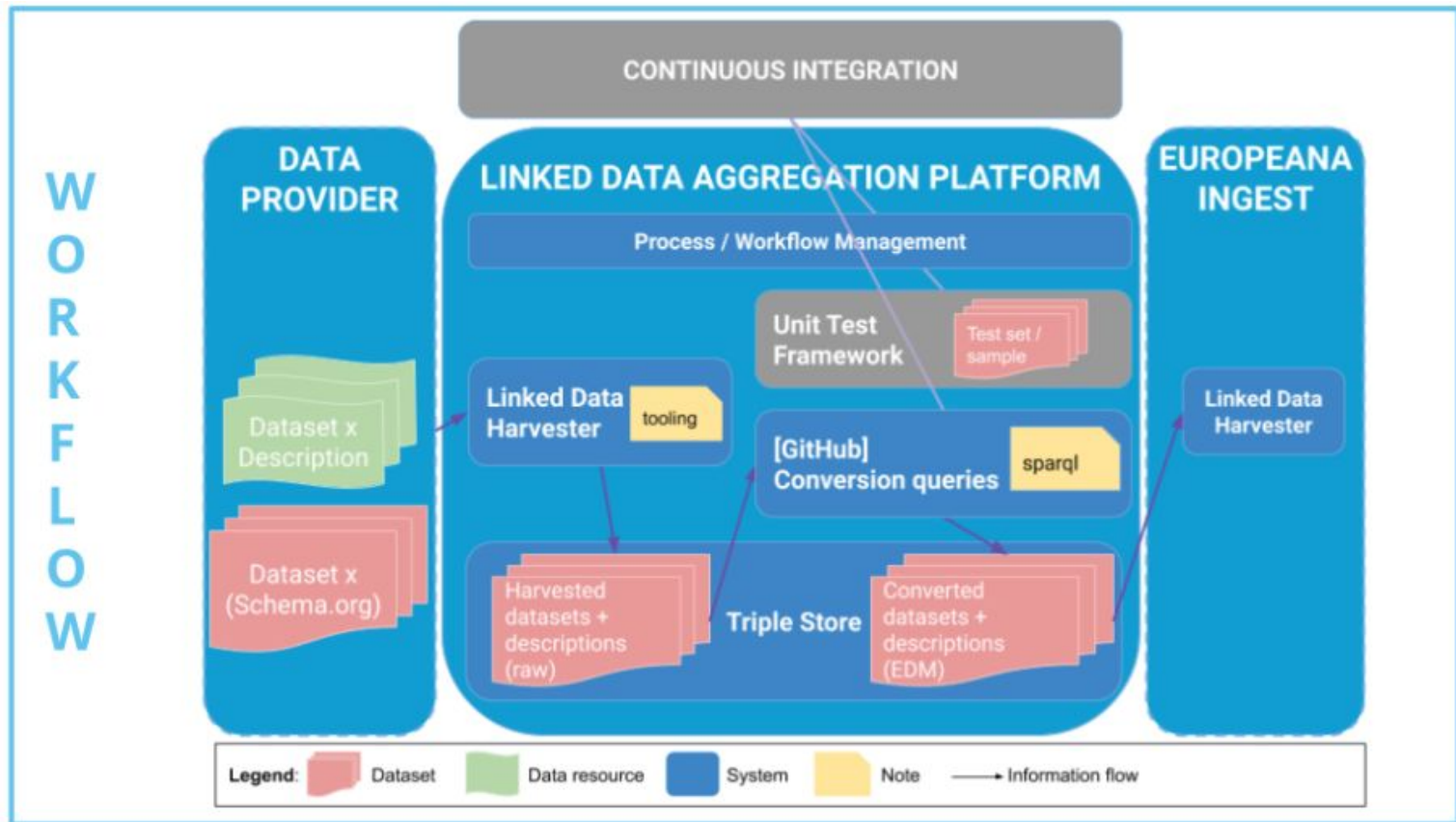


Rethinking the aggregation landscape

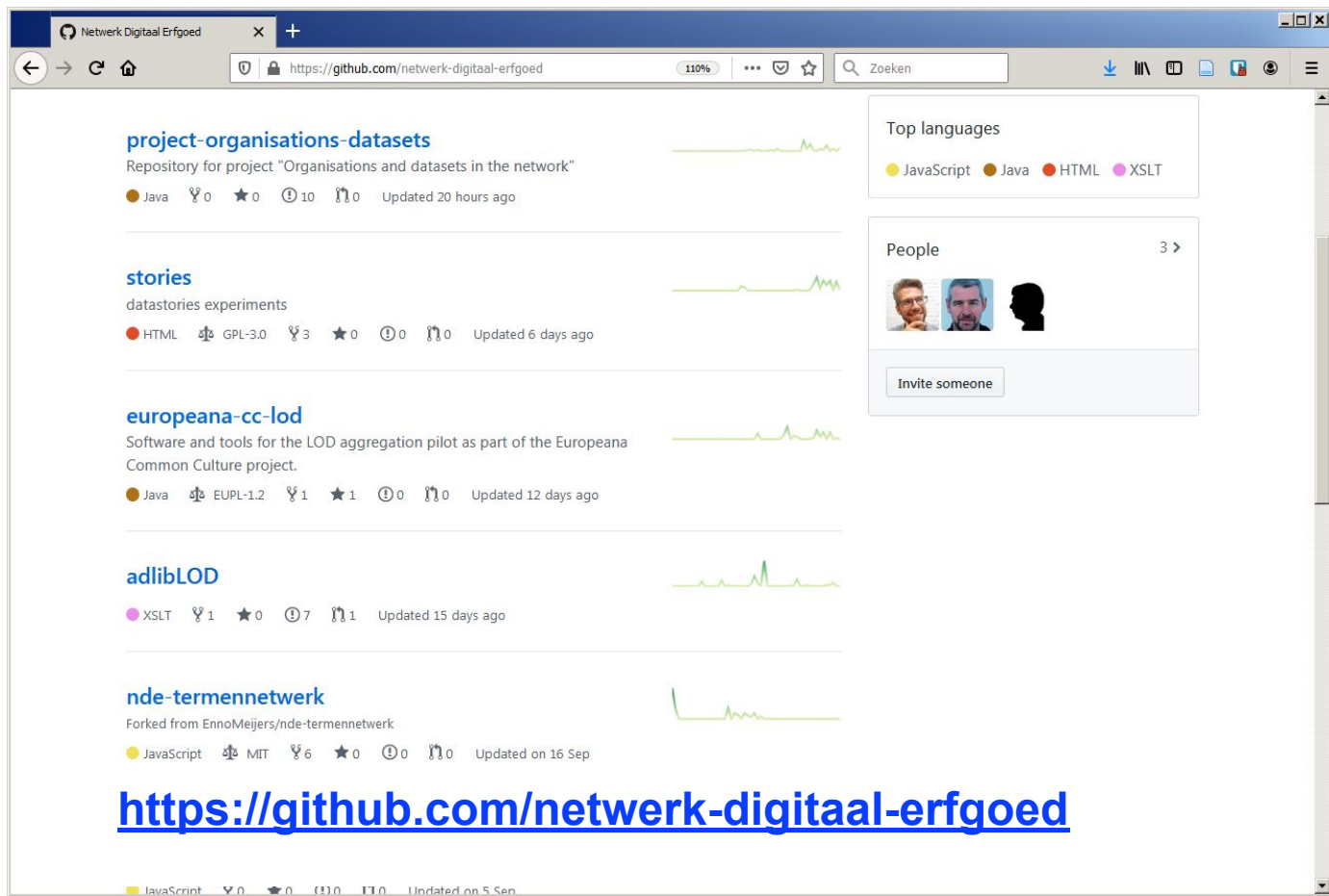
Focus on roles and responsibilities: domain, regional and thematic platforms



Europeana – NDE Pilot on LOD aggregation



Have a look at our github...



The screenshot shows a web browser window displaying the GitHub repository page for 'network-digitaal-erfgoed'. The browser's address bar shows the URL 'https://github.com/network-digitaal-erfgoed'. The page features a list of repositories with their names, descriptions, languages, and statistics. On the right side, there are sections for 'Top languages' and 'People'. At the bottom of the page, the URL 'https://github.com/network-digitaal-erfgoed' is displayed in large blue text.

project-organisations-datasets
Repository for project "Organisations and datasets in the network"
Java 0 0 10 0 Updated 20 hours ago

stories
datastories experiments
HTML GPL-3.0 3 0 0 0 Updated 6 days ago

europena-cc-lod
Software and tools for the LOD aggregation pilot as part of the Europeana Common Culture project.
Java EUPL-1.2 1 1 0 0 Updated 12 days ago

adlibLOD
XSLT 1 0 7 1 Updated 15 days ago

nde-termennetwerk
Forked from EnnoMeijers/nde-termennetwerk
JavaScript MIT 6 0 0 0 Updated on 16 Sep

Top languages
JavaScript Java HTML XSLT

People
3 >
Invite someone

<https://github.com/network-digitaal-erfgoed>



Lessons learned & next steps

Governments		
Principle 1 Ensure everyone can connect to the internet	Principle 2 Keep all of the internet available, all of the time	Principle 3 Respect and protect people's fundamental online privacy and data rights
Companies		
Principle 4 Make the internet affordable and accessible to everyone	Principle 5 Respect and protect people's privacy and personal data to build online trust	Principle 6 Develop technologies that support the best in humanity and challenge the worst
Citizens		
Principle 7 Be creators and collaborators on the Web	Principle 8 Build strong communities that respect civil discourse and human dignity	Principle 9 Fight for the Web



Lessons learned so far

- New technologies take a long time to implement
- Strategic choices for improving the legacy systems (evolution) or building the new ones (disruption)
- Showcases and example implementations are import to broaden the uptake
- Moving in the right direction is more important than doing everything right
- In the end its about connecting people and organizations



Next steps

- Mature design and functionality based on the current infrastructure
- Work on more implementations in local contexts
- Implement solutions in a decentralized and sustainable way, close to the core processes
- Intensify the cooperation with IT suppliers and other stakeholders in the network
- Implement a design, build, deploy and maintain cycle for network services
- Support research on decentralized linked data discovery and publication



Invest in Open Infrastructure

An effort to enable durable, scalable, and long lasting open scientific and scholarly infrastructure to emerge, thrive, and deliver its benefits on a global scale.

public...
...spaces

internet for the common good



Align with the bigger picture...

contractfortheweb.org

Governments

Principle 1

Ensure everyone can connect to the internet

Principle 2

Keep all of the internet available, all of the time

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Respect and protect people's fundamental online privacy and data rights

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Fight for the Web



Thank you for your attention!



Foto: Jacqueline van der Kort | KB

