Cooperations that inspire libraries

Collaborations result in new library services

- case studies

János Pancza

QULTO

for culture and knowledge

Who are we?

A group of people with passion for cultural heritage

50+ professionals (system architects, programmers, librarians, museologists, project managers, etc.)

20+ years of professional experience in the CH sector

400+ institutional partners from 4 countries

Ecosystem

We believe in connected systems.

Our goal has always been to provide solutions for **cultural and research institutions**

- to share their knowledge,
- to build valuable data services.

We support institutions in each step **on their digitisation journey**.

MANAGE
DIGITAL
CONNECT

Sayısal Kitap

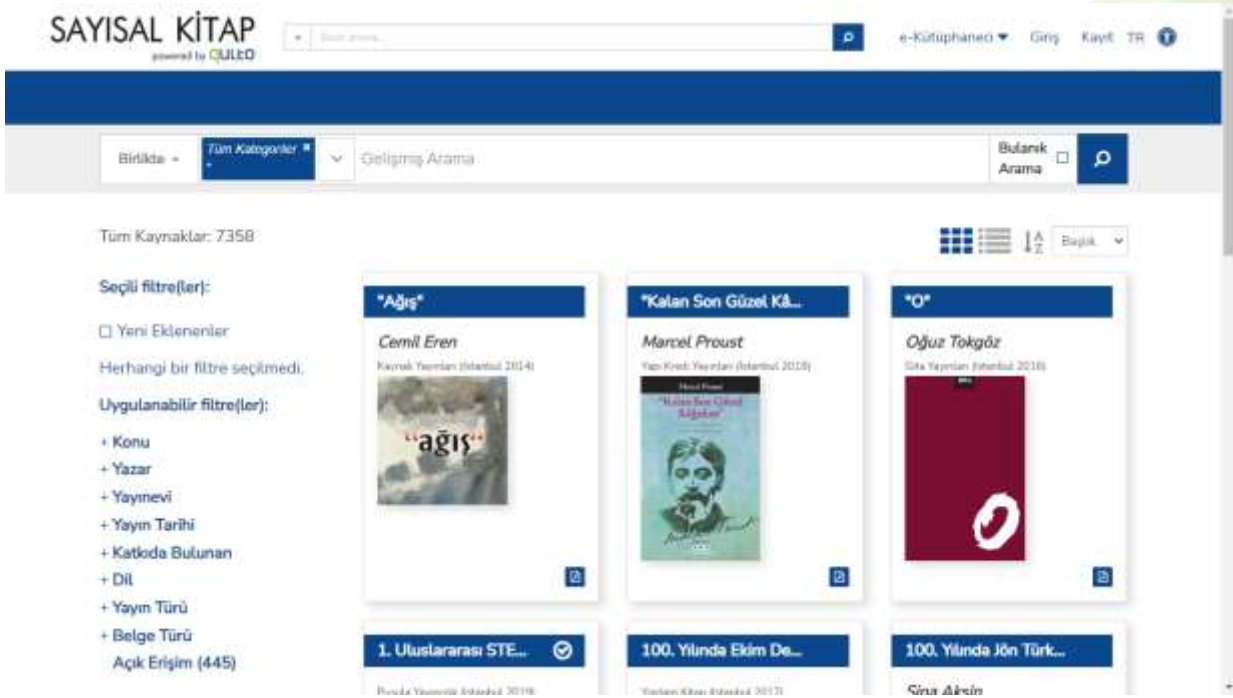
A rich and carefully selected database of e-resources

- e-books
- e-magazines
- audiobooks

in

- pdf
- epub
- mp3

format



The story behind Sayısal Kitap

SAYISAL GRAFİK™ 32 yıl years

qulto
for culture & knowledge

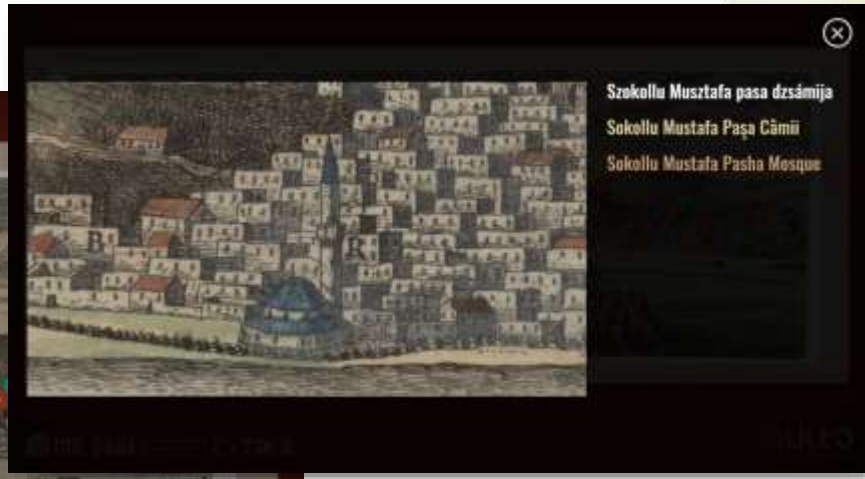
Gül Baba Türbesi

On 9th October, 2018, Gül Baba Türbesi was reopened in Budapest, Hungary with the participation of a Turkish and a Hungarian delegation. The project is an example of unique cultural cooperation between Hungarians and Turks.

Interactive map

At the entrance of the Museum, the first attraction visitors encounter is a touch screen kiosk, where they can see a historical map of Budapest at the time when it was a handful of Ottoman settlements.

Mosques, bridges, districts and towers are indicated with differently coloured icons showing the larger picture of a particular area. Visitors can zoom into the map to see the details of a particular area.



Info screens

One of the screens presents the history of the Türbe from 1541 to 2018 with images, texts and videos. Visitors can slide the timeline ruler and choose the date they would like to get information about.

On another screen the visitors can dive into the architecture of the Türbe discovering old blueprints and read stories from the complex's architects.

New technologies

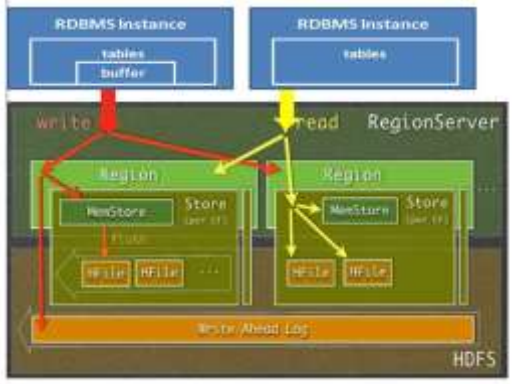
Metadata in libraries

1.0

card catalogue (XIX.sz.)

2.0

relational database (1970's), OPAC(1980s), xml (1990s)



3.0

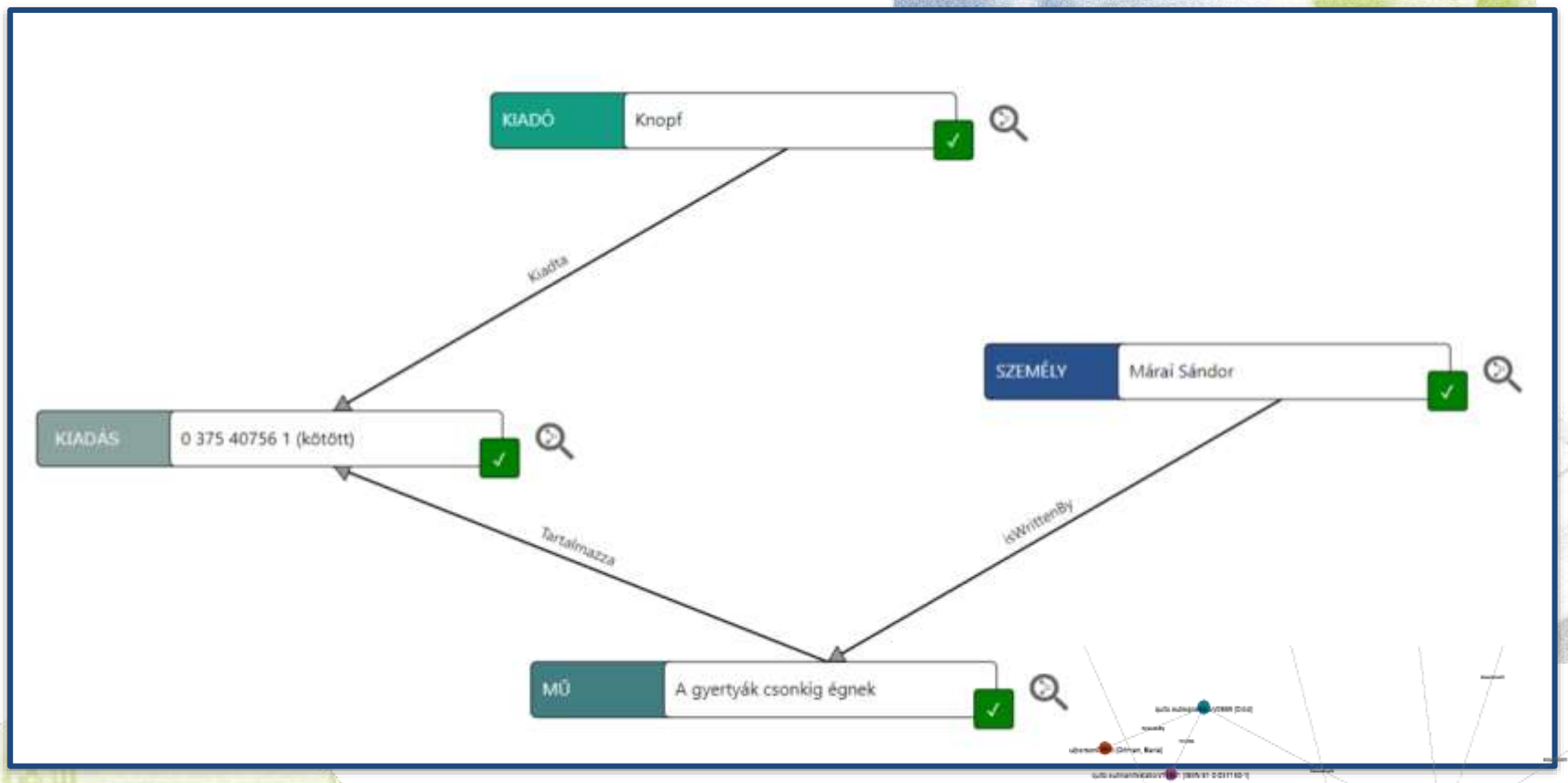
semantic web(1999), LOD (2006) semantic knowledge graph (2012)

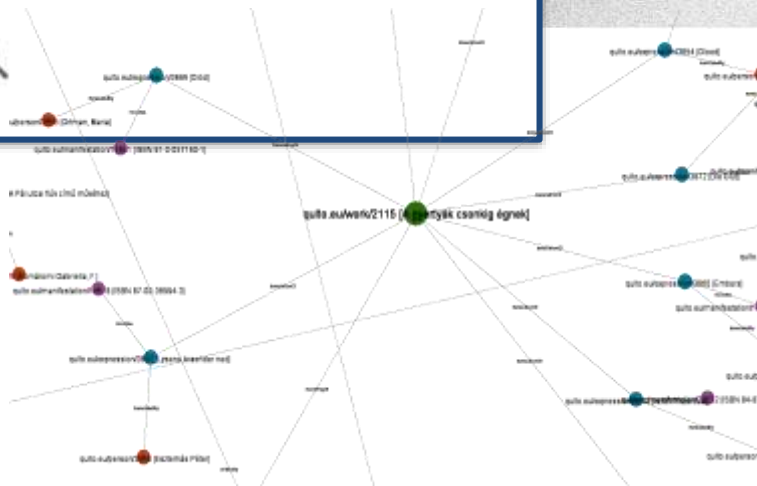
4.0

AI : automatic indexing, automatic cataloguing

Research Infrastructure in Digital Humanities

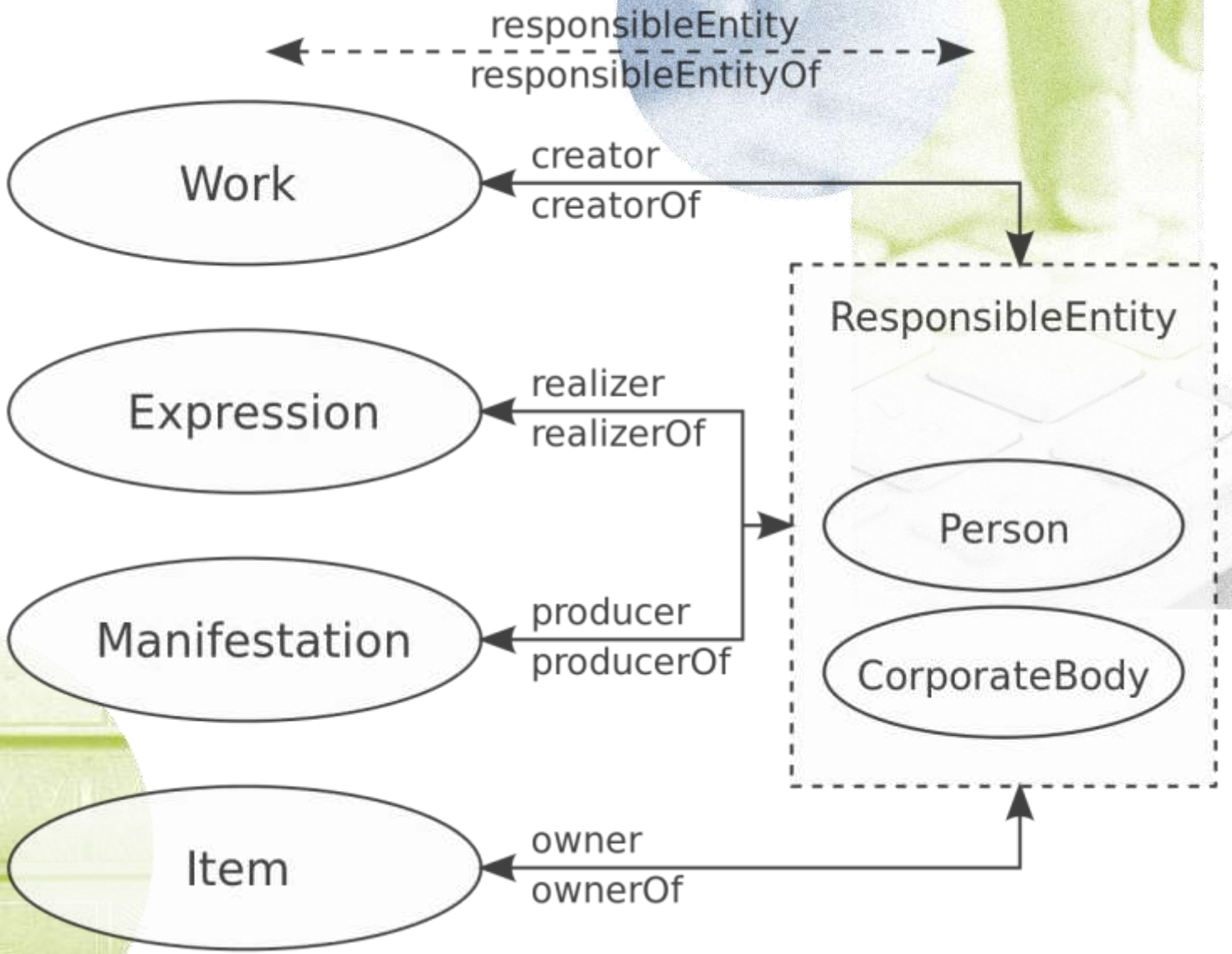
Semantic knowledge graph





Digital Public Utility Service for cultural heritage resources in the smart city
ARCHIVE
LIBRARY
MUSEUM
DISADVANTAGES
Limited services.
No high-end solutions.
Necessary linked
data model is missing.
Migration of data into
a shared database is costly
and time-consuming.
Risk of data loss.

FRBR?


responsibleEntity
responsibleEntityOf
Work
creator
creatorOf
ResponsibleEntity
Expression
realizer
realizerOf
Person
Manifestation
producer
producerOf
CorporateBody
Item
owner
ownerOf

FRBR OPAC - Work level

Level
- work (22)
- edition (61)

Work type
- literary translation (13)
- literary work (9)

Genre
- novel (22)

Document Type
- book (61)

Language
- Hungarian (58)
- Cseh (8)
- English (4)
- French (3)
- Esperanto (2)
- Gypsy (2)
- Romanian (2)
- Slovenian (2)
- Vietnamese (2)

Person
- Kertész Imre (1929-2016) (83)
- Gálová, Dana (1925-2002) (4)
- Pošová, Kateřina (1930-) (4)
- Ertl István (1965-) (2)
- Giáp Văn Chung (2)
- Hafner Zoltán (1965-) (2)
- Hajdu, Georgeta (2)
- Hradil, Jože (2)

1.

openlibrary.org

literary work
Kertész Imre (1929-2016)
SORSTALANSÁG
regény, Hungarian
firstPublisher: 1975, Budapest
30 manifestation, 7 language (esperanto, romanian, cseh, gypsy, english, french, hungarian), 1 type (book)

Full screen

2.
librarything.com

literary work
Kertész Imre (1929-2016)
A KUDARC
regény, Hungarian
firstPublisher: 1988, Budapest
8 manifestation, 2 language (hungarian, cseh), 1 type (book)

Full screen

3.

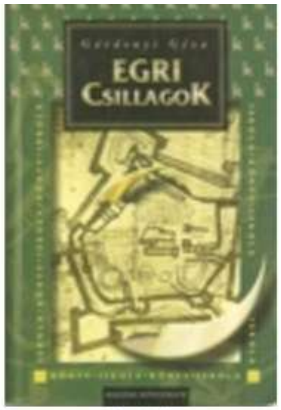
librarything.com

literary work
Kertész Imre (1929-2016)
KADDIS A MEG NEM SZÜLETETT GYERMEKÉRT
regény, Hungarian
firstPublisher: 1990, Budapest
6 manifestation, 4 language (hungarian, cseh, vietnamese, slovenian), 1 type (book)

Full screen

FRBR OPAC - Expression level

Title:	**Egri csillagok**
Opus Type:	work / literaryWork / regény
Language:	Hungarian
First publish:	Budapest, 1926
Persons:	Bornemissza Gergely (?-155?)
Subjects:	Runes Hungarian fiction, 20th century, Zakarpatska oblast , Ukraine Történelmi regény, magyar, 19. század Rúnák Young adult fiction, Hungarian Magyar irodalom, 19. század Historical fiction, Hungarian Ifjúsági regény, magyar Magyar irodalom, 20. század Hungarian fiction, Stories, plots, etc Magyar regény, 20. század, Kárpátalja , Ukrajna Magyar regény, történetek, cselekmények stb
Title variants:	Eclipse of the crescent moon (English), Stelle di Eger (Italian), Sterne von Eger (German)



moly.hu

- **Editions** *(Original text)* 65 edition(s) — 120 items
- **Recordings** *(Original text)* 1 reader(s), 1 edition(s) — 1 items
- **Translations** 3 language(s), 3 litrary translation(s), 21 edition(s) — 25 items
- **Retellings** 1 language(s), 1 adaptation(s), 3 edition(s) — 4 items
- **Illustrations** 5 illustration(s), 10 edition(s) — 13 items
- **Prefaces** 2 language(s), 2 author(s), 14 edition(s) — 17 items

Holdings *(Use the checkboxes above!)* total: 150 items selected: 120 items

TYPE	LANGUAGE	ISBN	PUBLISHER	YEAR	VOLUME	LOCATION	CALL NUMBER	STATUS
book	hungarian		Móra K.	1954		D8/T1	2-2211	available
book	hungarian	963 684 163 2				D1	A/K 1.159.907	available

FRBR OPAC - Expression level

- **Editions** *(Original text)* 65 edition(s) — 120 items
- **Recordings** *(Original text)* 1 reader(s), 1 edition(s) — 1 items
- **Translations** 3 language(s), 3 litrary translation(s), 21 edition(s) — 25 items
- **Retellings** 1 language(s), 1 adaptation(s), 3 edition(s) — 4 items
- **Illustrations** 5 illustration(s), 10 edition(s) — 13 items

  - illustrated by: Csernus Tibor details for the illustration
    - Budapest Szépirodalmi Könyvkiadó 1963 (3 items)
  - illustrated by: Győrfi András details for the illustration
    - 963-9380-48-2 [Budapest] Palatinus 2001 (1 items)
    - 963 9578 80 0 [Budapest] Palatinus 2005 (1 items)
  - illustrated by: Falcione Sarolta details for the illustration
    - 963-9492-61-2 Szeged Könyvmolyképző K 2005 (1 items)
  - illustrated by: Vida Győző details for the illustration
    - 963 13 5482 2 Budapest Corvina 2005 (1 items)
    - 978 963 13 5806 3 Budapest Corvina 2009 (1 items)
    - 978-963-13-6154-4 [Budapest] Corvina [2013] (1 items)
    - 978-963-13-6187-2 [Budapest] Corvina [2014] (2 items)
    - [Budapest] Corvina [2016] (1 items)
  - illustrated by: Biczó András details for the illustration
    - 963-227-0 likon 2006 (1 items)

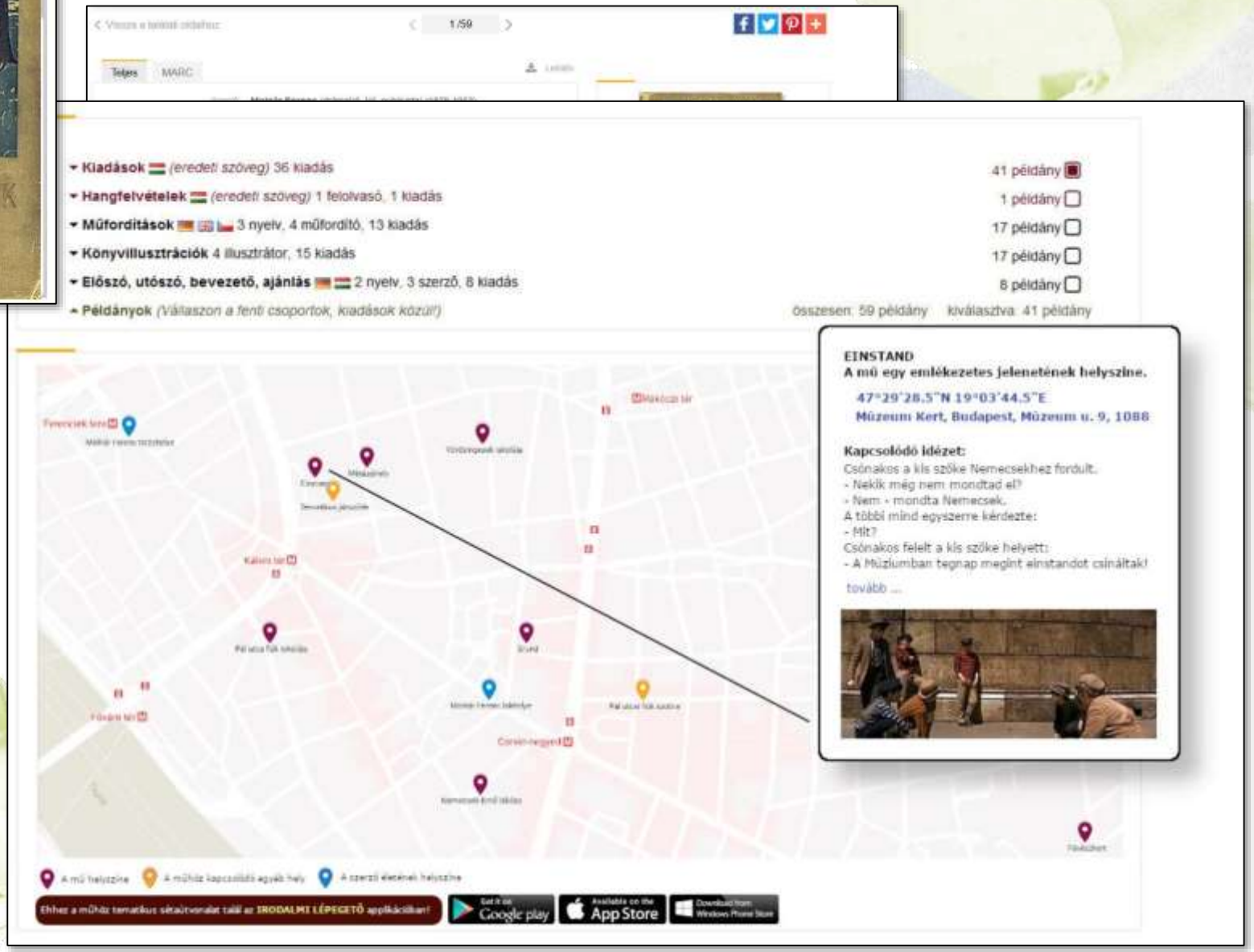
- **Prefaces** 2 languag , 14 edition(s) — 17 items

- **Holdings** *(Use the checkt*

total: 150 items selected: 13 items

TYPE	LANGUAGE	PUBLISHER	YEAR	VOLUME	LOCATION	CALL NUMBER	STATUS
book	hungarian	Szépirodalmi Könyvkiadó	1963		D1	K 358.587	available
book	hungarian	Szépirodalmi Könyvkiadó	1963		D1	A 358.587	available

Geographic locations



LiteraTour

Literary sites recommended by a mobile application

- **Qulto Semantic Knowledge Graph**
  - spots related to works and authors
    - location where the work takes place
    - location where the statue of author is
- **Functionalities for users**
  - literary spots nearby
  - searching by keyword
  - recommendations
  - planning route
- **Extras**
  - spots already visited
  - favourite novels and authors
  - push notifications

Linking to museum artefacts

Teljes | MARC

Szerző: Gárdonyi Géza (író) (1863-1922)
Cím: Egri csillagok
Műtípus: work / literaryWork / regény
Nyelv: magyar
Első megjelenés: Budapest, 1926
Személy(ek): Bornemissza Gergely (?-1557)
Tárgyszavak: Runes
Hungarian fiction, 20th century, Zakarpatska oblast , Ukraine
Történelmi regény, magyar, 19. század
Rúnák
Young adult fiction, Hungarian
Magyar irodalom, 19. század
Historical fiction, Hungarian
Ifjúsági regény, magyar
Magyar irodalom, 20. század
Hungarian fiction, Stories, plots, etc.
Magyar regény, 20. század, Kárpátalja , Ukrajna
Magyar regény, történetek, cselekmények stb

Ma már csak múzeumban látható tárgyak a müből:

Jatagán
Jakus Lajos Múzeum
Penc

Dzsida
Iparművészeti Múzeum
Budapest

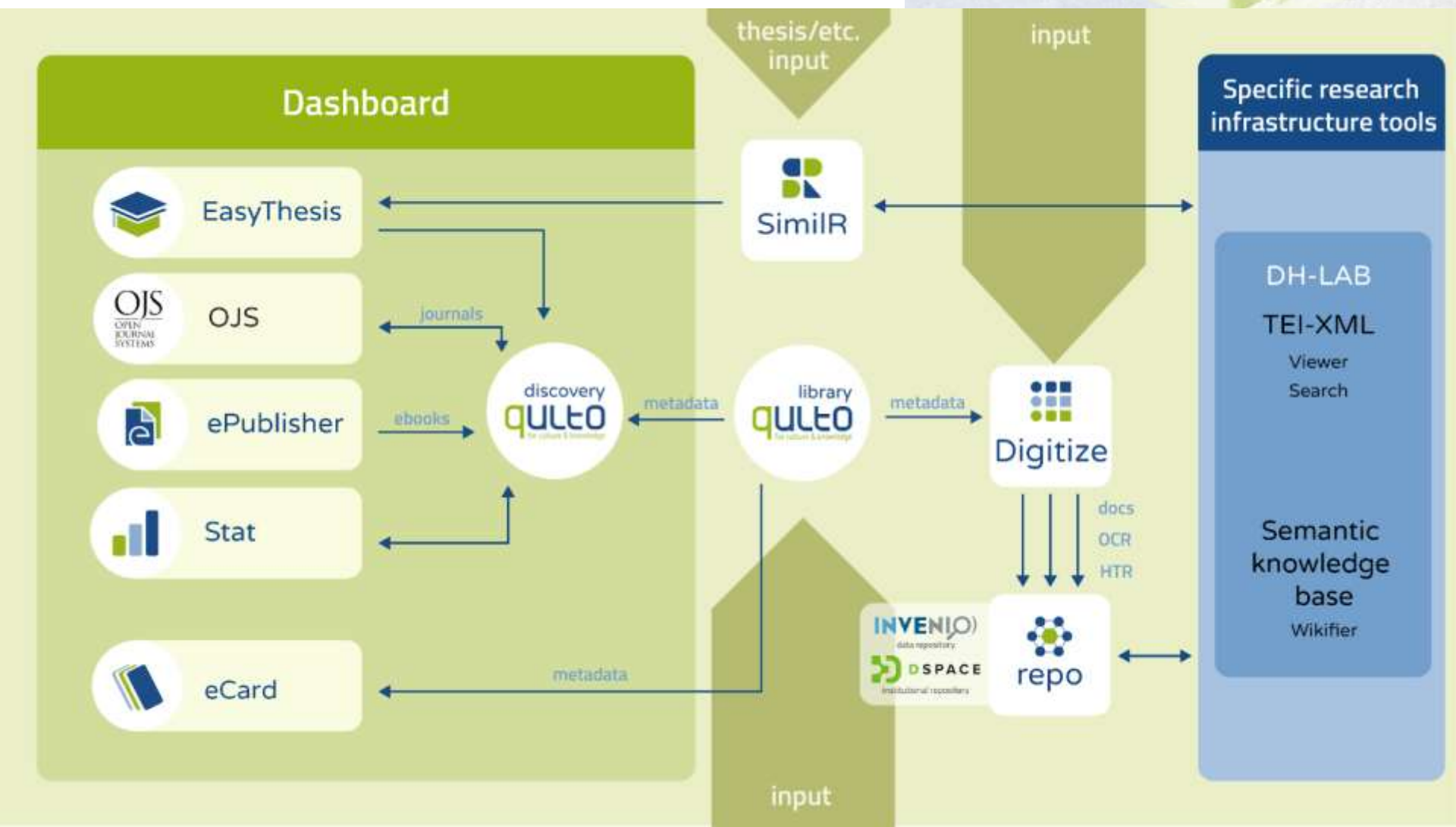
Handzsár
Erkel Ferenc Múzeum
Gyula

Kaftán
Magyar Nemzeti Múzeum
Budapest

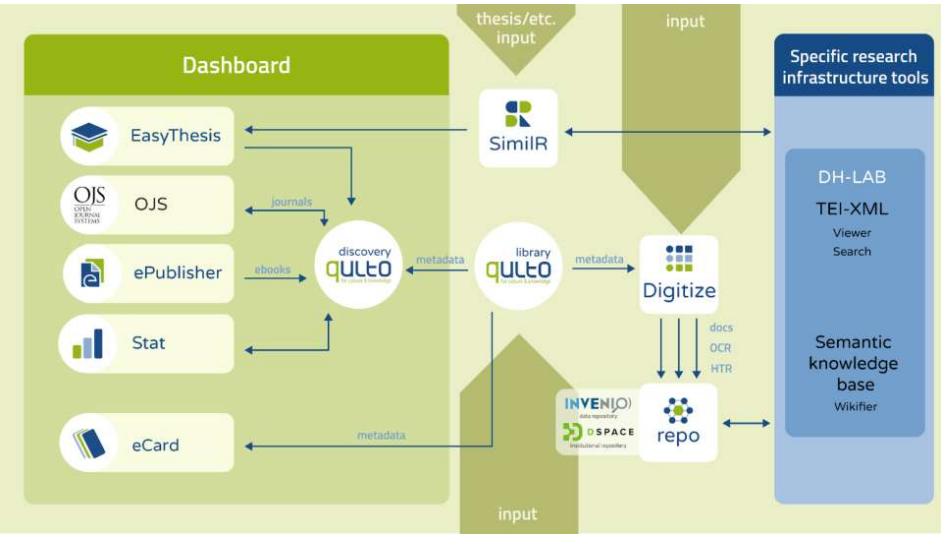
Násfa
Iparművészeti Múzeum
Budapest

Jakus Lajos Múzeum Penc | Iparművészeti Múzeum Budapest | Erkel Ferenc Múzeum Gyula | Magyar Nemzeti Múzeum Budapest | Iparművészeti Múzeum Budapest

Qulto RI components



Qulto RI components



Research specific components

Workflow tools

- metadata management - Qulto **Library**
- digitization framework (OCR, proofreading, DRM) - Qulto **Digitize**
- optional digital file manager, repository and data repository (InvenioRDM, DSpace 7, EPrints, OMEKA, etc.) - Qulto **Repo**
- text source and plagiarism finder - Qulto **SimilR**
- discovery/search and dashboard - Qulto **Discovery**

Publishing tools

- thesis manager - Qulto **EasyThesis**
- e-learning, e-publishing - Qulto **ePublisher**
- editorial system - **OJS**

Data management tools

- data and content aggregator visualization - Qulto **Stat**

Qulto RI and DH-LAB

DH-LAB (Eötvös Lóránt University , ELTE Digital Heritage research group), together with Qulto software developers, has created a research infrastructure network that enables the

- digitisation,
- storage,
- organisation,
- retrieval,
- AI-based processing
- and re-use

of scientific content and national cultural heritage through **language processing applications** optimised for Hungarian and **supporting complex research workflows**.

In the last year, the pharmaceutical and financial sectors (e.g. Richter. Gedeon Nyrt, OTP Bank) have started to use AI for business purposes.

Digital Heritage National Laboratory (DH-LAB) and Qulto Research Infrastructure (Qulto RI)

Qulto RI

- supporting research data processing
- data aggregation, indexing and content delivery

DH-LAB

- supporting AI assisted research in Digital Humanities
- supporting the publication of digital heritage using language processing applications (NLP)

The DH-LAB-Qulto RI software infrastructure was awarded the National Agency for Research, Development and Innovation's *Emerging RI* certification in 2021.

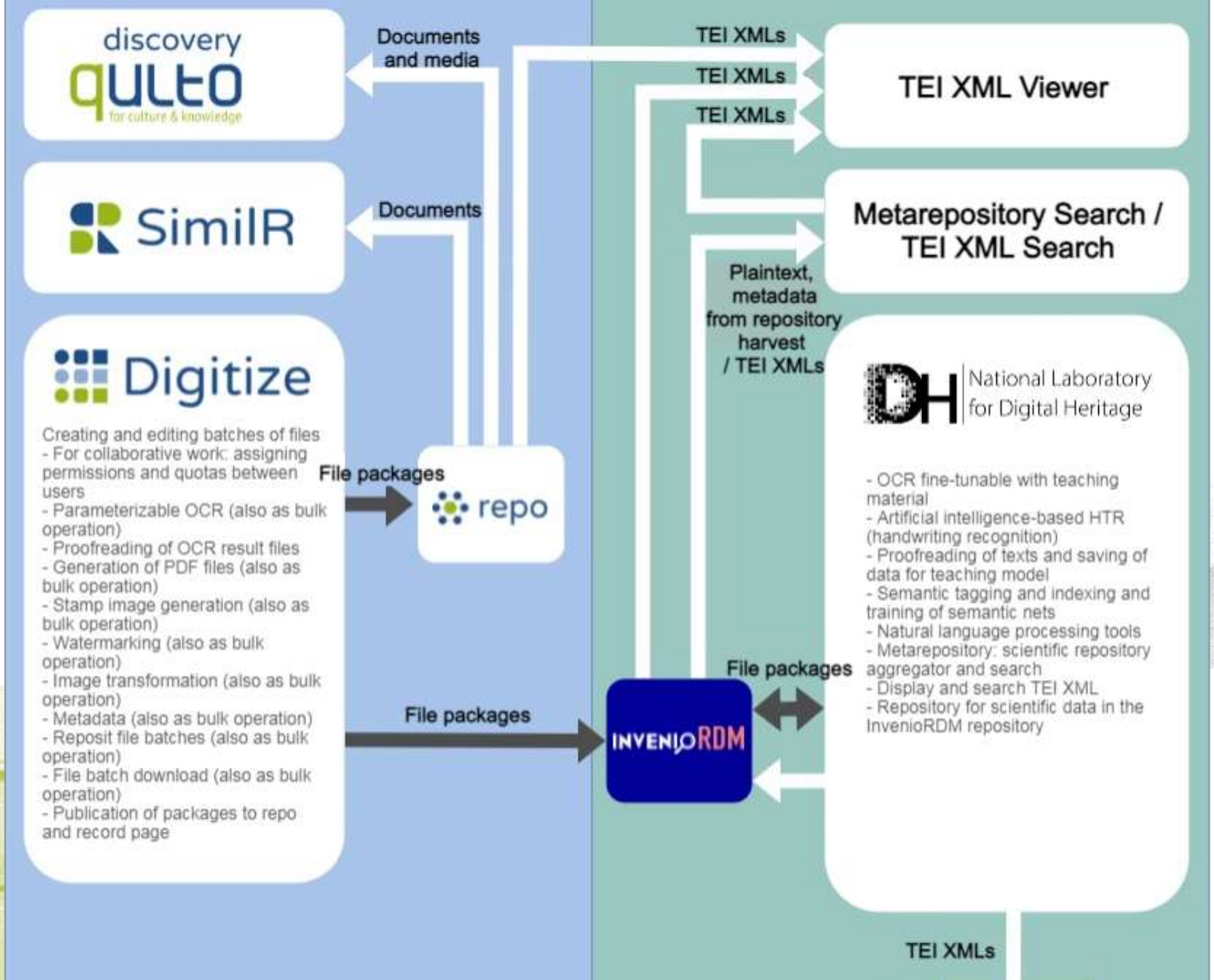
Components of DH-LAB and Qulto RI integrated systems

Qulto RI (QRI):

- **Digitize**: mass digitisation and object management framework for collaborative work
- **Discovery**: multi-layer semantic data and content repository with search functions
- **SimilR**: text similarity analysis software
- **Repo**: Enhanced DSpace 7 repository

National Laboratory for Digital Heritage (DH-LAB):

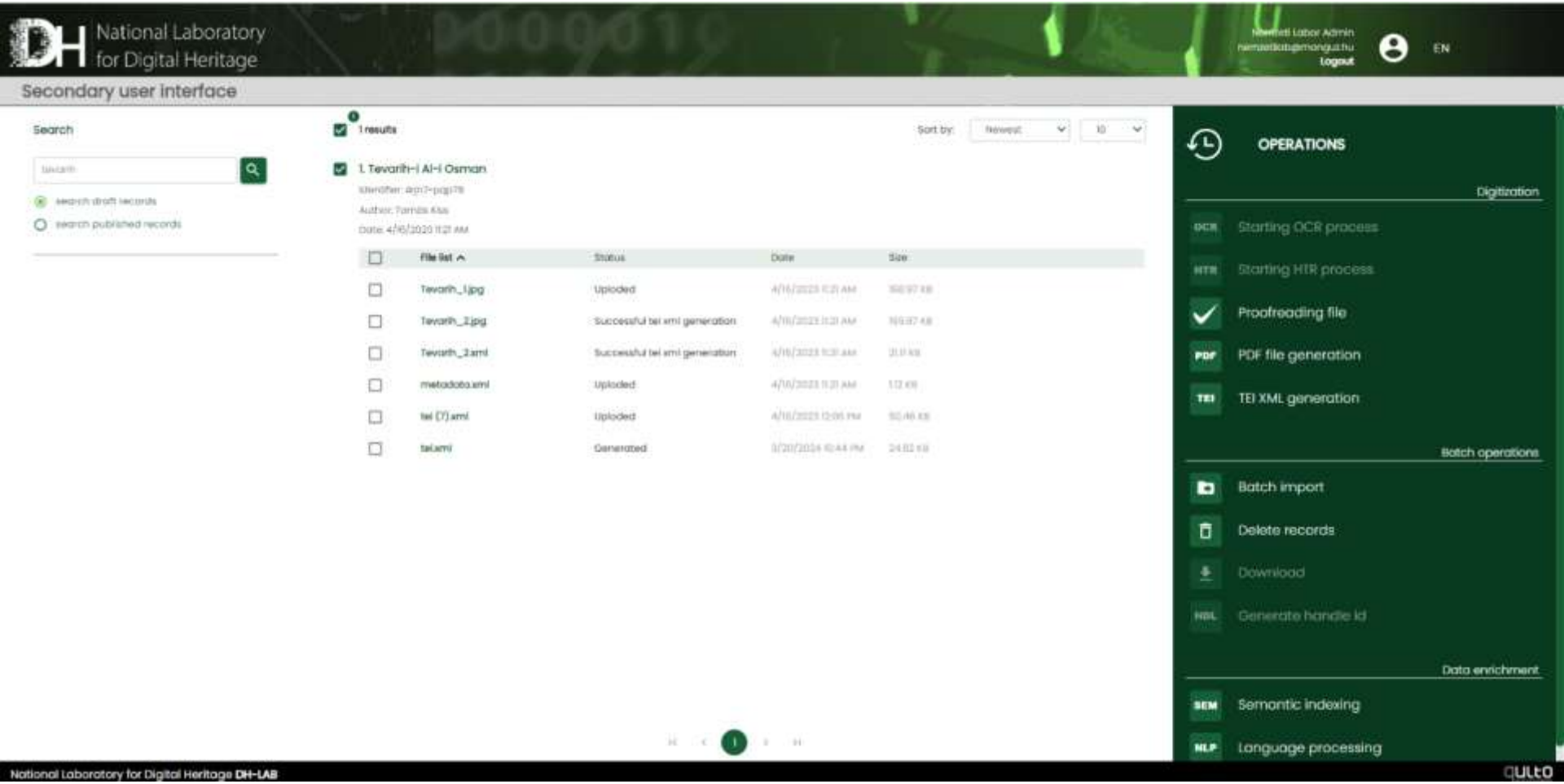
- Secondary GUI:
  - OCR, AI-based HTR
  - semantic tagging and indexing,
  - NLP (Natural language processing) tools,
  - Handle ID generation
- Repositories for research data aggregation and search using InvenioRDM
- TEI XML Search
  (searching and displaying TEI XMLs)


discovery
qulto
for culture & knowledge
Documents and media
TEI XMLs
TEI XMLs
TEI XMLs
TEI XML Viewer
SimilR
Documents
Metarepository Search / TEI XML Search
Plaintext, metadata from repository harvest / TEI XMLs
Digitize
Creating and editing batches of files
- For collaborative work: assigning permissions and quotas between users
- Parameterizable OCR (also as bulk operation)
- Proofreading of OCR result files
- Generation of PDF files (also as bulk operation)
- Stamp image generation (also as bulk operation)
- Watermarking (also as bulk operation)
- Image transformation (also as bulk operation)
- Metadata (also as bulk operation)
- Reposit file batches (also as bulk operation)
- File batch download (also as bulk operation)
- Publication of packages to repo and record page
File packages
repo
DH National Laboratory for Digital Heritage
- OCR fine-tunable with teaching material
- Artificial intelligence-based HTR (handwriting recognition)
- Proofreading of texts and saving of data for teaching model
- Semantic tagging and indexing and training of semantic nets
- Natural language processing tools
- Metarepository: scientific repository aggregator and search
- Display and search TEI XML
- Repository for scientific data in the InvenioRDM repository
File packages
File packages
INVENIORDM
TEI XMLs

Research specific developments

- Secondary User Interface (GUI) - workflow management
- Machine learning for fine tuning OCR
- Handwritten Text Recognition (HTR) optimised for Hungarian handwriting in 19th century - using proprietary models and supercomputer
- Semantic indexing and meshing of metadata
- NLP services (Natural Language Processing) for tagging of documents (finding word roots, word order, word type, morphology, etc.)
- TEI XML generation management for visualization of variations in textual materials
- Intelligent, structured text extraction from PDF documents
- Automated subtitling and semantic indexing of audio and video material
- Persistant ID (Handle) generation at community, document and sub-

InvenioRDM - Secondary GUI



DH-LAB at work

qulto
for culture & knowledge

Thank you!

Visit our stand for more information!

Stand no. 11 in Hall 1 (F3-Hakkı Tarık Us Hall)