

Towards Open Mathematics

The role of communication platforms, positioning of EuDML

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Shifting towards communication

- Published resources were always stored somewhere (on a shelf of a library), limited access

- Last years, a huge effort to make published results easily accessible :
 - e-publishing (digital libraries, repositories)
 - Open Publishing models

- Now : time to stimulate new integrated communication and collaboration environments

References: *Polymath* project

On 27 January 2009, Tim Gowers started an experiment :

- Not a complex platform – just a blog and wiki
- A huge interest
- Ability to collaborate
 - on complex problems
 - without a formal structure
- A real mathematical outcome
- Remote collaboration showed possible, even among strangers
- Valuable results achievable
- Even if merely an experiment, still with striking outcomes

EuDML: knowledge aggregation

EuDML:

- primary focus (and asset) is the content
- single entry point for a number of mathematical collections:
 - today: 13 collections, over 230 000 items (mostly national)
- Scalably open system for new content :
 - „European” dimension is just a formal limitation
 - Seamless extension into W_DML

EuDML: generic high-level architecture

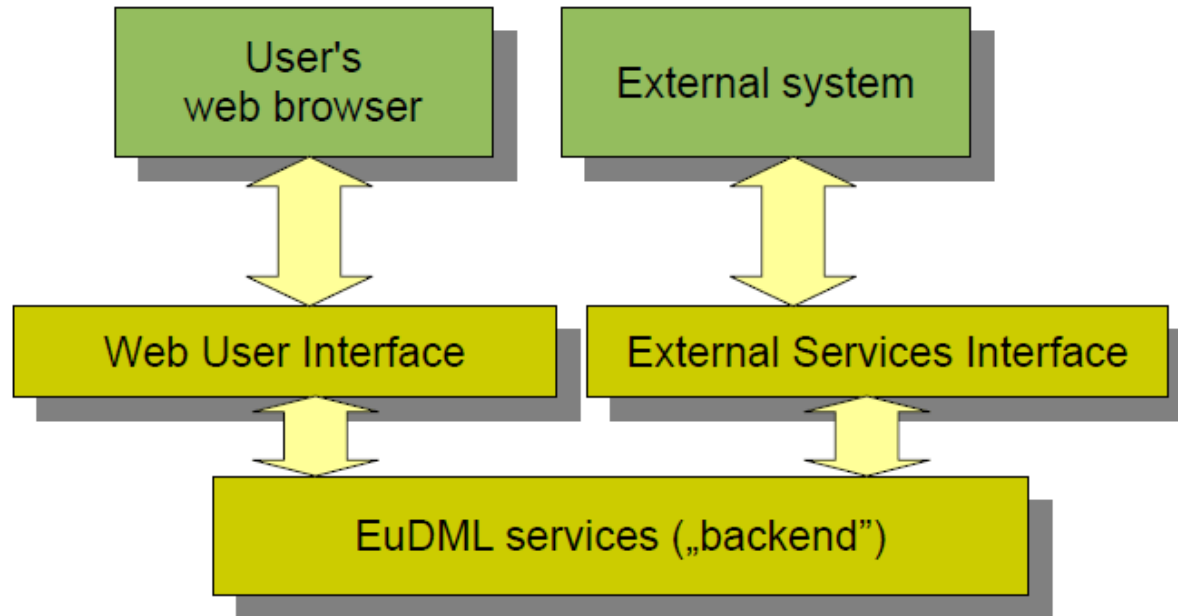


Figure 1: High-level system architecture view

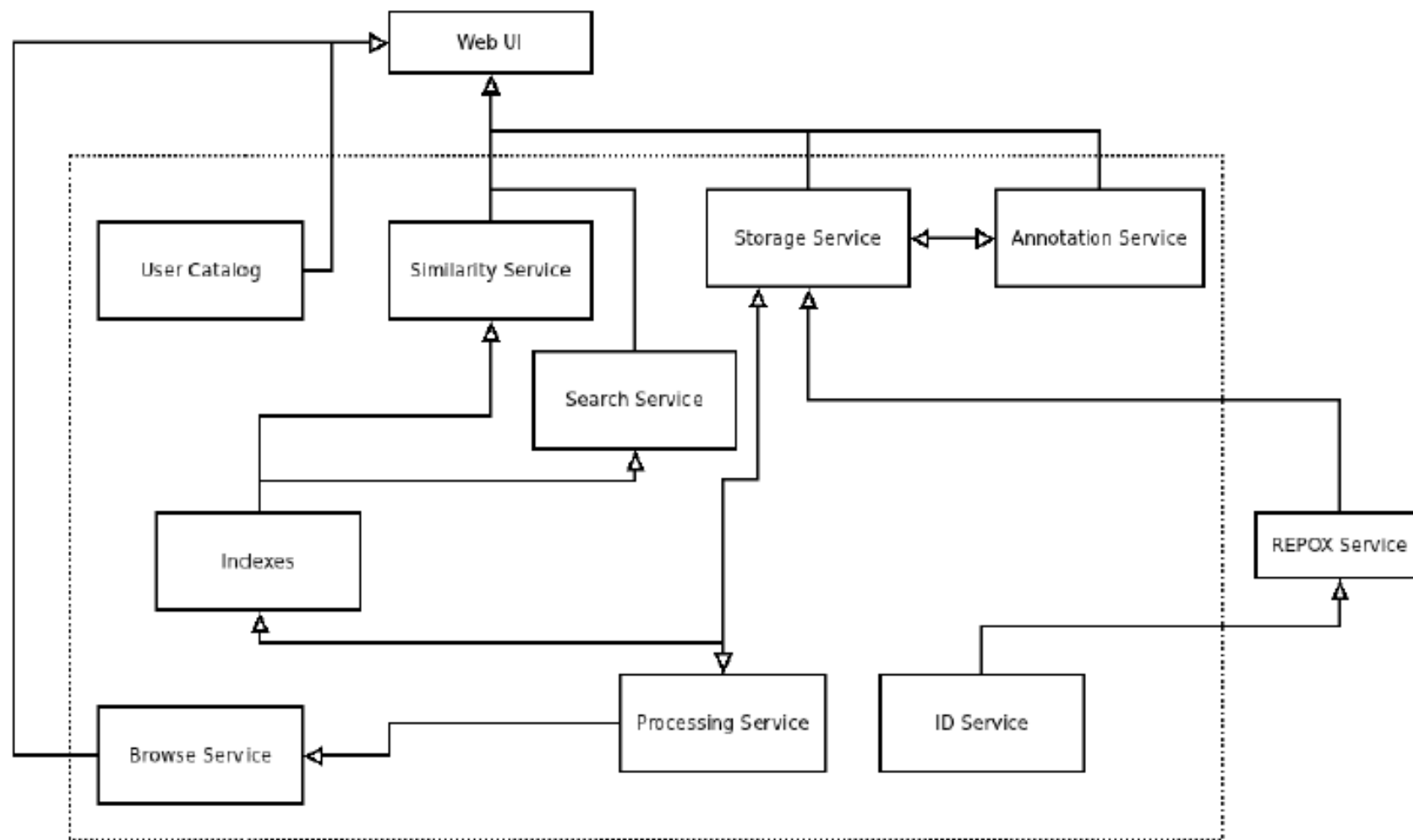


Figure 2: EuDML services interdependencies diagram.

EuDML: functionalities

- An annotation service to enable communication
- It is possible to comment, discuss share etc.
- Mechanism to enrich the content
 - suggest topics, keywords,
 - refer to other publications, data sources
- Personal and shared reading lists for managing personal items collection

EuDML: enhancing metadata

EuDML:

- relies on the providers –substantially raised quality resulting
- builds on automatical enhancements and extraction patterns to improve quality and results:
 - OCR, fulltext indexing ,etc.
 - Accessible equations (math readable for screen readers)
 - Linking to bibliographic databases

EuDML: repository front-end functionalities

YW2 (YaddaWeb2): modular system enabling easy implementation of common repository frontend functionalities:

1. Search for publications
2. Page lists retrieved from different sources
3. Displaying details of particular publications in convenient way
4. Filter and enrich text entities from the publication metadata to be displayed on the web page
5. Consistently handle system errors, access violations and trials to access non-existing content
6. Display AJAX tree with hierarchy of publications

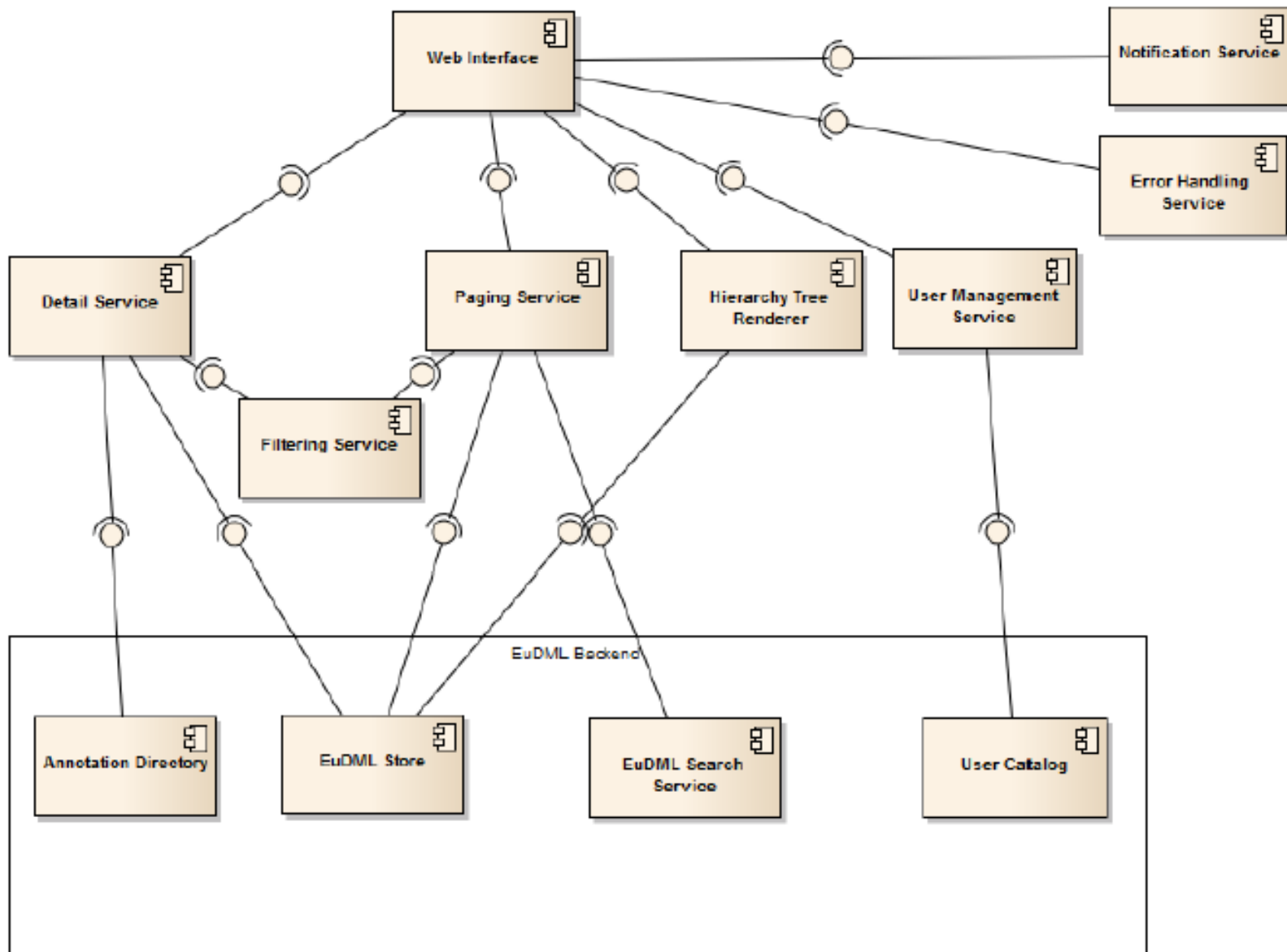


Figure 6: YaddaWebLite with EuDML Backend Services

EuDML: interoperability

- EuDML is a reference library:
 - Manages persistent, reliable set of identifiers
 - Services to exploit this – matching citations, locating items, etc.
- Exploring citation network
- Interface to access diverse classes of data
- Machine access to the annotations

EuDML: towards communication infrastructure

- Communication between the users
- Enabling resources for other systems
- Linking the resources to the world and backwards

- Lightweight IT platform, distributed content resources:
 - Sustainable operational model
 - Scalability and interoperability ensured

Two-way linking to EuDML

- Joining Open Linked Data:
 - Stable identifiers and URLs
 - Machine and human accessible content

- Other collections will use reference resolution to link to EuDML
- Generation of citations lists for the users

EuDML: Current status, 07/2012

- Collections management and web interface: operational, stable
- URLs/ids stable and operational
- 3 months after premiere – 8 more months until project completion

- Current work in progress:
 - Service API – citations resolution
 - Improving the annotations
 - Ready for further content inclusion

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a truly open,
sustainable
and innovative
framework
for access and
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Europe's rich
heritage of
mathematics.