EuDML

EuDML: well established prototype of a digital library

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Digital Presentation and Preservation of Cultural and Scientific Heritage
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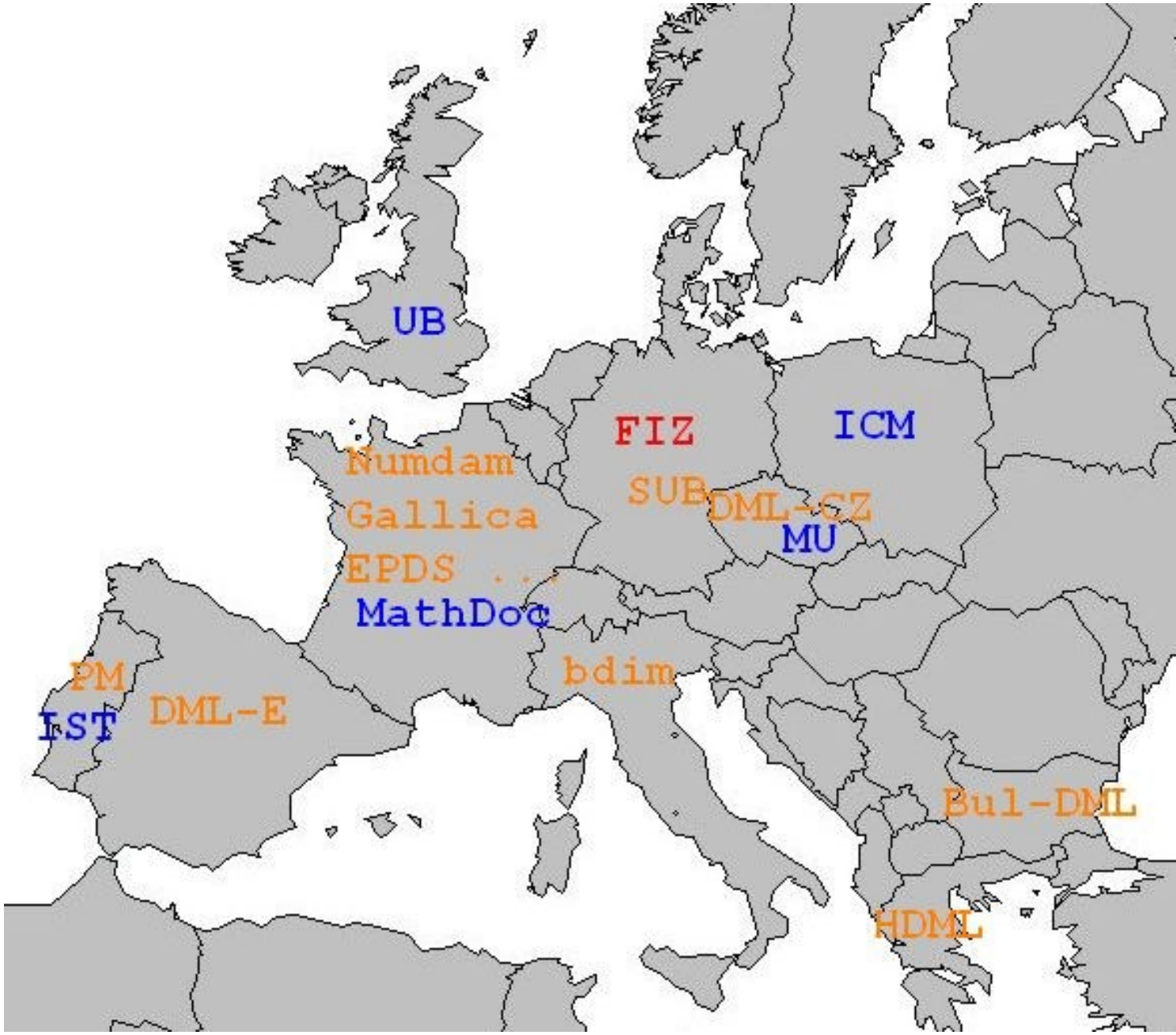
EuDML

EuDML project

- Partly funded by the EC in the Competitiveness and Innovation Framework Programme, February 2010 to January 2013
- Two challenges:
  - setting up **technical infrastructure** for a unified access point for the digital math content hosted by a number of different organizations across various countries
  - defining a **cooperation model** with a variety of stakeholders for building a reliable global reference library, long term and eventually exhaustive
- Project partners: universities, research institutes, scientific service institution, commercial publisher, private digital media agency, large library, learned society

EuDML


UB
FIZ
ICM
Numdam
Gallica
EPDS ...
SUB
DML-CZ
MU
MathDoc
bdim
PM
DML-E
IST
Bul-DML
HDML

EuDML

Principles

- EuDML as a distributed system, each partner assumes full responsibility for the corresponding segment
- Unified seamless navigation through the distributed data
- Building on existent environment (zbMATH, MathSciNet, Mathematical Subject System distinguishing ~ 6,000 fields in maths)
- Policies
  - texts in EuDML must have been scientifically validated and formally published
  - EuDML items must be open access after a finite embargo period; once documents contributed to the library are made open access due to this policy, they cannot revert to close access later on
  - digital full text of each item contributed to EuDML must be archived physically at one of the EuDML member institutions

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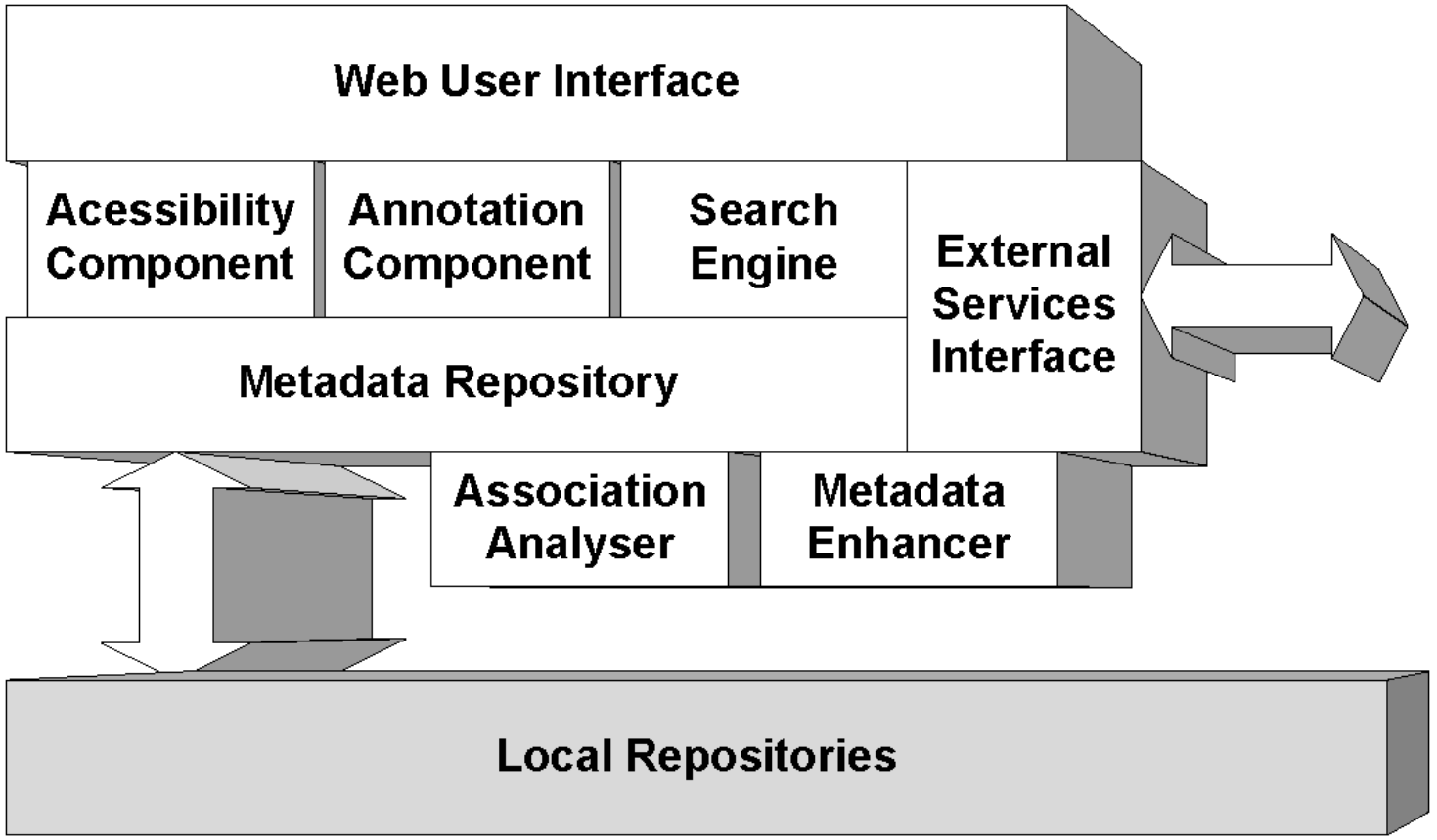
System architecture



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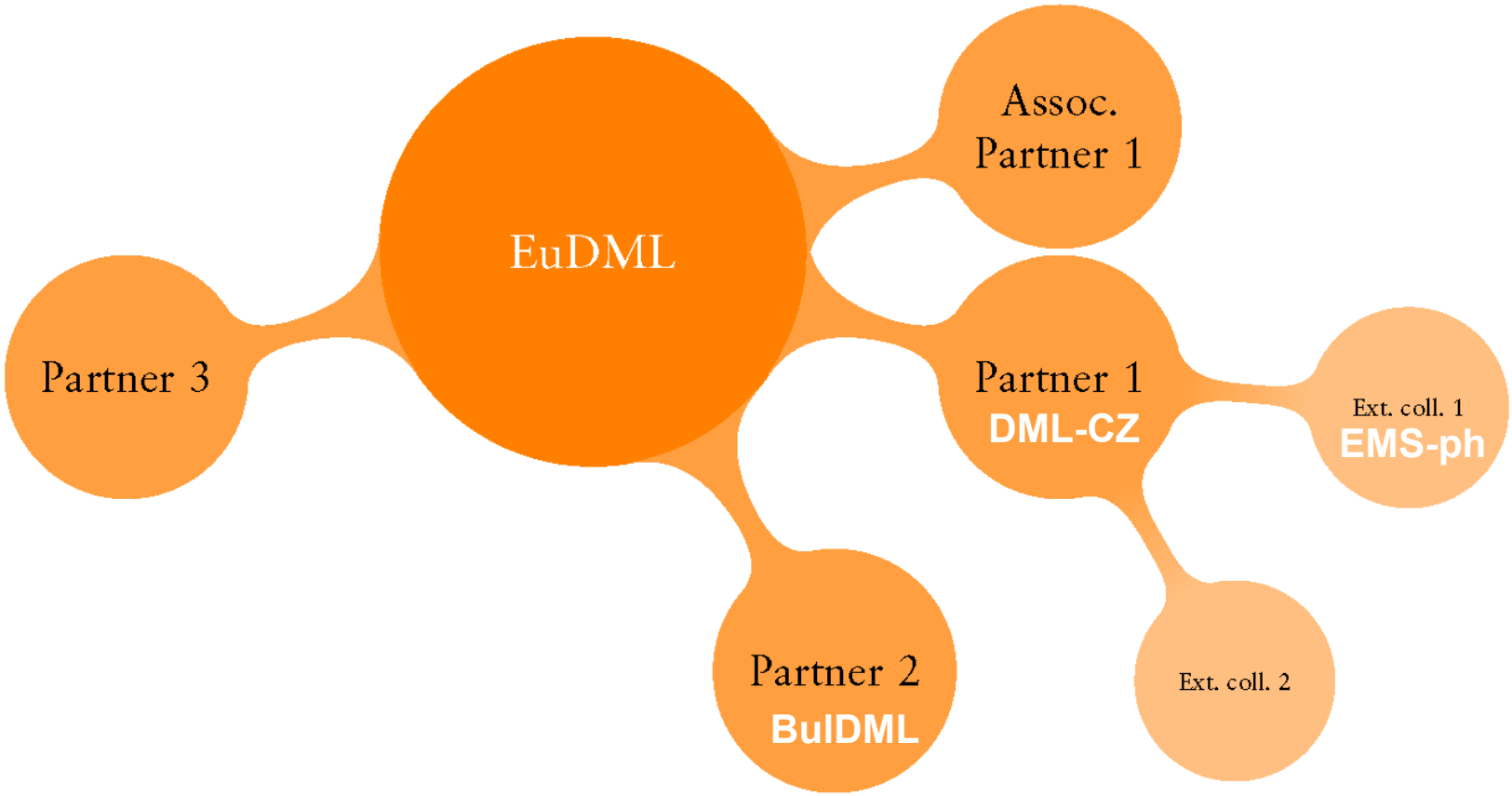
Distributed digital library



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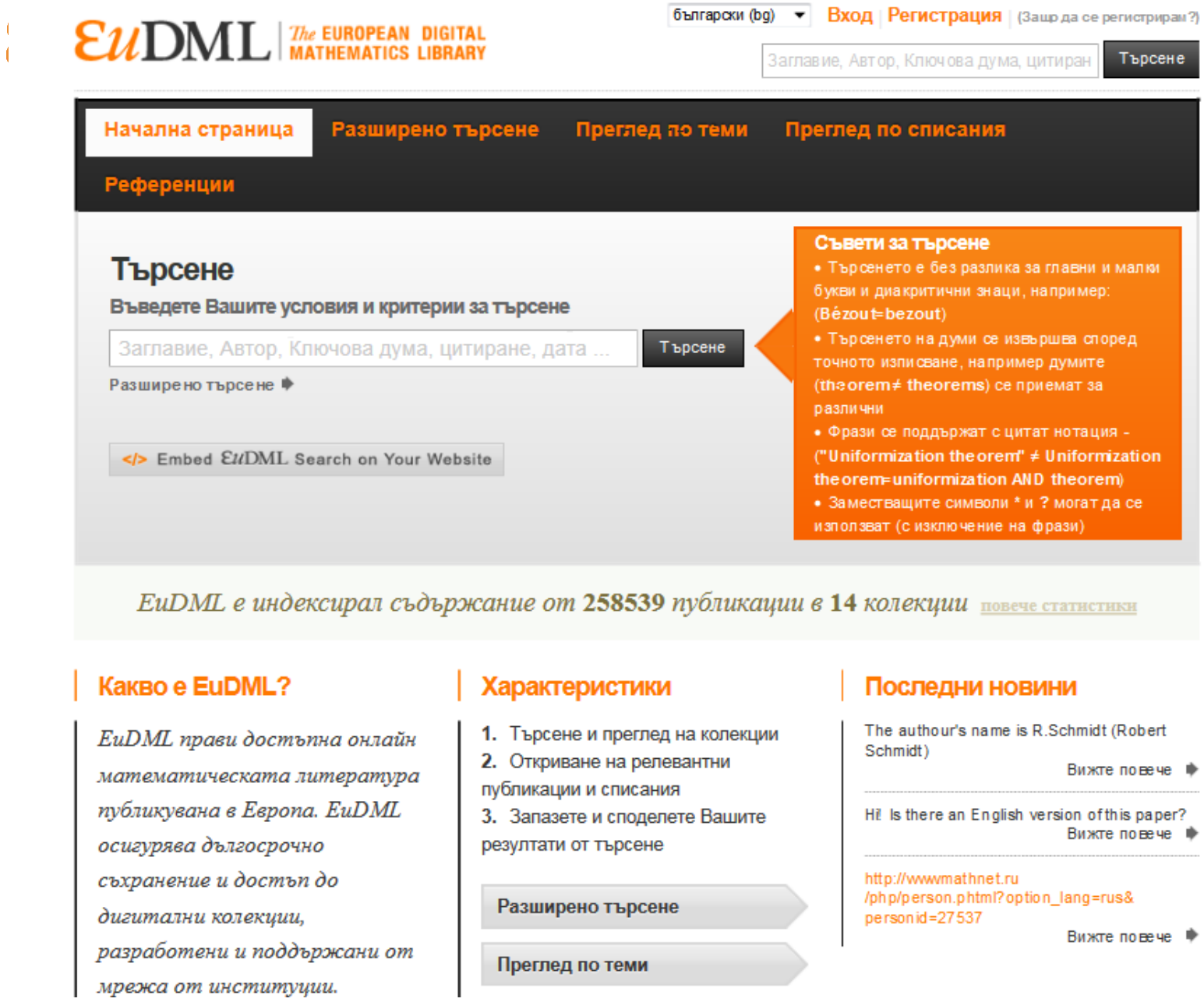
Interoperability model

- Contributing content to EuDML
  - digitization standards (600 DPI)
  - OAI-PMH server
  - EuDML XML metadata schema based on NLM Journal Archiving and Interchange Tag Suite and created after a detailed study of existing repositories
  - metadata validation tool
  - some other ways also possible (basic OAI-DC, FTP) → additional work!
  - content providers may be external – second tier of the EuDML network (MathDoc for GDZ and DML-E, DML-CZ for EMS-PH)
  - content providers can use the enhanced data back in their collections
- External interoperability devices
  - number of tools for third parties to enrich their services thanks to the availability of collections in the EuDML system

EuDML

Services and tools

- Metadata enhancements
- On-the-fly conversion from TEX encoding of formulae to the Presentation MathML
- EuDML reference matching, zbMATH matching
- Experimental search for formulae
- Experimental similarity computation
- Experimental production of accessible formats of mathematical texts
- Web 2.0 features and annotation module
- etc.


EuDML The EUROPEAN DIGITAL MATHEMATICS LIBRARY
български (bg)
Вход
Регистрация
(Защо да се регистрирам?)
Заглавие, Автор, Ключова дума, цитиран
Търсене
Начална страница
Разширено търсене
Преглед по теми
Преглед по списания
Референции
Търсене
Въведете Вашите условия и критерии за търсене
Заглавие, Автор, Ключова дума, цитиране, дата ...
Търсене
Разширено търсене
Embed EuDML Search on Your Website
Съвети за търсене
• Търсенето е без разлика за главни и малки букви и диакритични знаци, например: (Bézout=bezout)
• Търсенето на думи се извършва според точното изписване, например думите (theorem≠ theorems) се приемат за различни
• Фрази се поддържат с цитат нотация - ("Uniformization theorem" ≠ Uniformization theorem=uniformization AND theorem)
• Заместващите символи * и ? могат да се използват (с изключение на фрази)
EuDML е индексирал съдържание от 258539 публикации в 14 колекции
повече статистики
Какво е EuDML?
EuDML прави достъпна онлайн математическата литература публикувана в Европа. EuDML осигурява дългосрочно съхранение и достъп до дигитални колекции, разработени и поддържани от мрежа от институции.
Характеристики
1. Търсене и преглед на колекции
2. Откриване на релевантни публикации и списания
3. Запазете и споделете Вашите резултати от търсене
Разширено търсене
Преглед по теми
Последни новини
The authour's name is R.Schmidt (Robert Schmidt)
Вижте повече
Hi! Is there an English version of this paper?
Вижте повече
http://www.mathnet.ru/php/person.phtml?option_lang=rus&personid=27537
Вижте повече

EuDML The EUROPEAN DIGITAL MATHEMATICS LIBRARY
ελληνικά (el)
Σύνδεση | Εγγραφή | (Γιατί να εγγραφώ;)
Τίτλος, Συγγραφέας, Λέξη κλειδί, αναφορά,
Αναζήτηση
Αρχική
Σύνθετη αναζήτηση
Αναζήτηση θέματος
Αναζήτηση περιοδικού
Ανεύρεση αναφορών
Αναζήτηση
Εισάγετε τους όρους αναζήτησής σας για να ξεκινήσετε
Τίτλος, Συγγραφέας, Λέξη κλειδί, αναφορά, ημερομηνία
Αναζήτηση
Σύνθετη αναζήτηση
Embed EuDML Search on Your Website
Συμβουλές αναζήτησης
• έρευνα αδιακρίτως πεζών ή κεφαλαίων ή διακριτικών (Ευκλείδης = ευκλειδης)
• έρευνα στις ακριβείς λέξεις όπως καταχωρίθηκαν (Θεώρημα ≠ Θεωρήματα)
• πλήρεις φράσεις με χρήση σημειογραφίας " ("Πυθαγόρειο θεώρημα" ≠ Πυθαγόρειο θεώρημα = Πυθαγόρειο AND θεώρημα)
• χαρακτήρες μπαλαντέρ * και ? επιτρέπεται να χρησιμοποιηθούν (εκτός της περίπτωσης εντός φράσεων)
Η EuDML, τη στιγμή αυτή, περιέχει κατάλογο 258539 αντικειμένων σε 14 συλλογές περισσότερα
στατιστικά
Τι είναι η EUDML?
Η EUDML διαθέτει στο διαδίκτυο μαθηματική βιβλιογραφία που δημοσιεύτηκε στην Ευρώπη, με τη μορφή μιας μόνιμης ψηφιακής συλλογής, που αναπτύχθηκε και συντηρείται από ένα δίκτυο ιδρυμάτων.
Χαρακτηριστικά
1. Αναζήτηση και φυλλομέτρηση της συλλογής
2. Αναζήτηση συσχετισμένων αντικειμένων και περιοδικών
3. Αποθήκευση και διαμοιρασμός των αποτελεσμάτων αναζήτησης
Σύνθετη αναζήτηση
Αναζήτηση θέματος
Τελευταίες σημειώσεις
The authour's name is R.Schmidt (Robert Schmidt)
Περισσότερα
Hi! Is there an English version of this paper?
Περισσότερα
http://wwwmathnet.ru/php/person.phtml?option_lang=rus&personid=27537
Περισσότερα

EuDML

Specifics of mathematical literature

- Never becomes obsolete
- Ever-growing edifice, every stone is important and remains forever
  - currently approx. 120,000 new scientific publications a year
- Particularly rich metadata
  - catalogue of 6,000 different mathematical fields
  - interlinking
- Considerably structured text
- Mathematical formulae

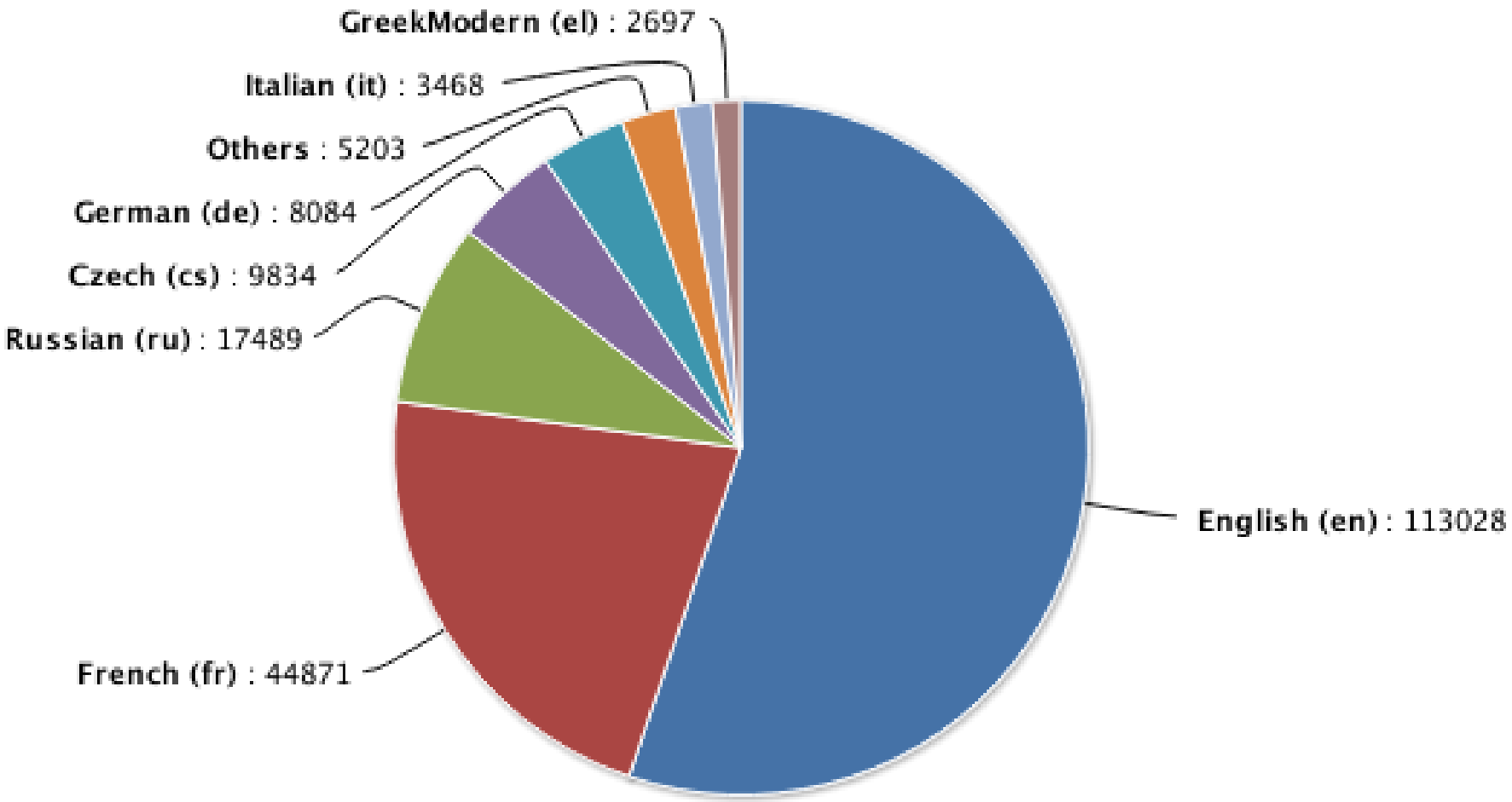
EuDML

EuDML content

- Items
  - 258,539 articles from 323 journals
  - 2,249 individual contributions from 71 edited books
  - 3,523 monographs
  - 747 volumes from 295 multi-volume works
- Collections
  - Numdam, Cedram, EDPS, GDZ/Mathematica, eLibM, DML-CZ, DML-PL, DML-E, HDML, Gallica-Math, Portugaliæ Math., BulDML, bdim
  - new: e-Library of the Mathematical Institute SANU, EMS-PH

EuDML

Number of documents by language



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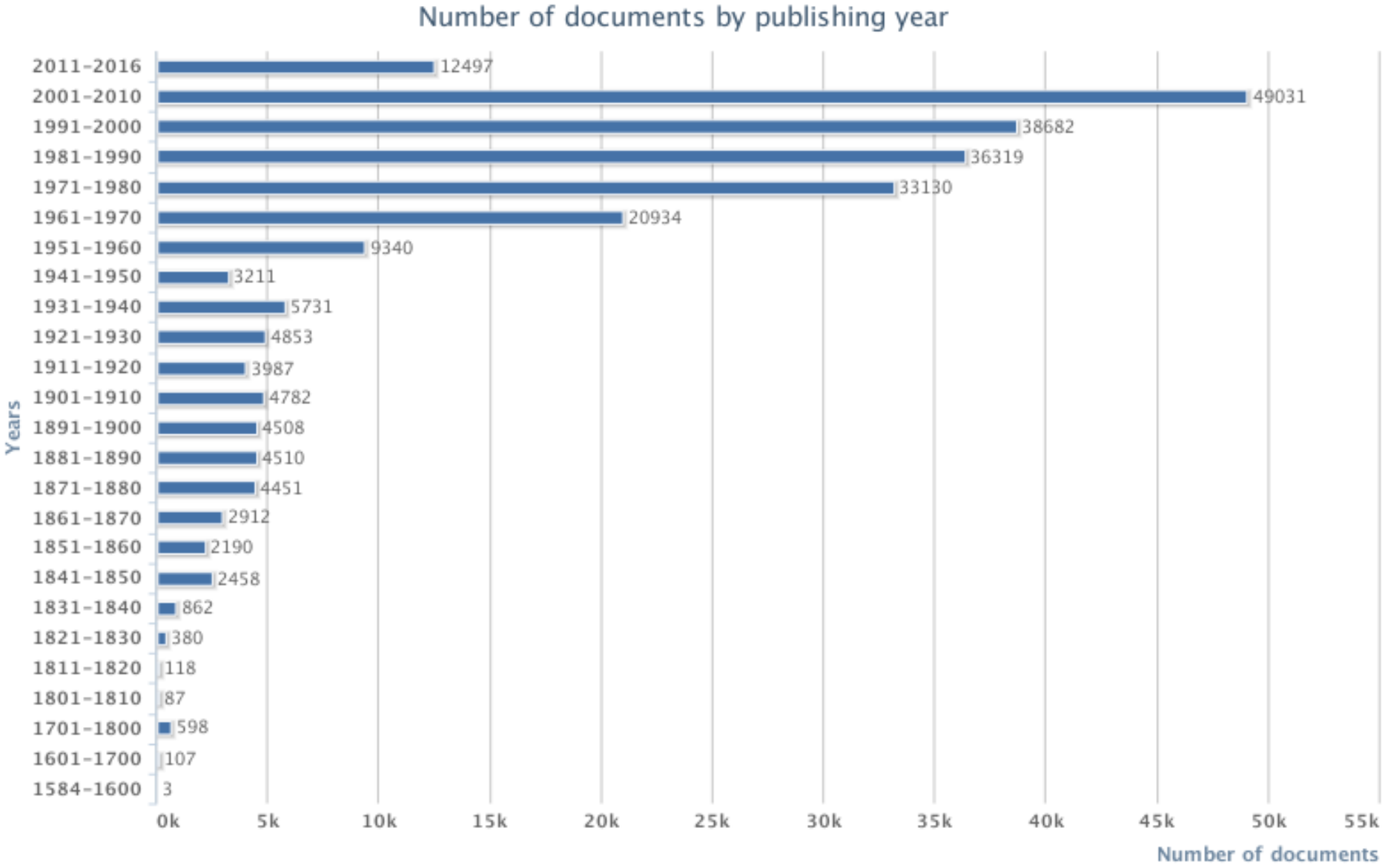
Number of documents by publishing year
2011-2016 12497
2001-2010 49031
1991-2000 38682
1981-1990 36319
1971-1980 33130
1961-1970 20934
1951-1960 9340
1941-1950 3211
1931-1940 5731
1921-1930 4853
1911-1920 3987
1901-1910 4782
1891-1900 4508
1881-1890 4510
1871-1880 4451
1861-1870 2912
1851-1860 2190
1841-1850 2458
1831-1840 862
1821-1830 380
1811-1820 118
1801-1810 87
1701-1800 598
1601-1700 107
1584-1600 3
Years
0k 5k 10k 15k 20k 25k 30k 35k 40k 45k 50k 55k
Number of documents

EuDML

Visibility

Approx. 1000 visitors/day

Country	Sessions	% of total 1,149,842
USA	**159,078**	13.8
France	**117,176**	10.2
Germany	**84,378**	7.4
China	**67,794**	5.9
Italy	**44,800**	3.9
India	**41,014**	3.6
Japan	**39,281**	3.4
Russia	**38,650**	3.4
UK	**38,557**	3.3
Canada	**26,545**	2.3

EuDML

EuDML Initiative

- Association established in 2014
- 12 partners (universities, research institutes, scientific service institution, large library, learned societies)
- Executive Board
- Technical Committee
- Scientific Advisory Board
- General Assembly

EuDML

Challenges

- Resources for sustainability and development
  - dependence on individuals and their institutions ➔ infrastructure?
- Majority of maths literature is in hands of private for-profit entities
  - how to get it in EuDML?
- Should we insist on all policy principles?
  - *digital full text of each item contributed to EuDML must be archived physically at one of the EuDML member institutions*
- Extension
  - new collections
  - new type of items (software, videos, scientific data sets)
- New developments in publishing and communication, interoperability with other systems, semantic web, …

EuDML

Conclusions

- EuDML is
  - (the only one) functional verified prototype of a full-fledged DML with a critical mass of documents
  - stable and ever growing
  - capable of essential extensions (if the content provider follows the metadata scheme system)
  - fit for including new types of data
  - open to further partners and collaborators
- There is a need of
  - resources for substantial further development
  - wide support by the community
- **EuDML provides a solid base for the future GDML**

EuDML

References

- EuDML metadata schema specification (v2.0 final), 2013, https://project.eudml.org/eudml-metadata-schema-specification-v20-final.
- T. Bouche: *Reviving the free public scientific library in the digital age? The EuDML project*. Klaus Kaiser, Steven G. Krantz, Bernd Wegner. Topics and Issues in Electronic Publishing JMM/AMS Special Session, San Diego, 9-10 January 2013, FIZ Karlsruhe, pp. 57–80, 2013, The Electronic Library of Mathematics: Mathematical Conference Proceedings. <hal-00793875v2>
- T. Bouche, J. Rákosník: *Report on the EuDML external cooperation model*. Ibid., 99–108.
- T. Bouche: *3rd EuDML General Assembly*. Report for the 3rd EuDML GA, Berlin, 23 July 2016.
- A. Nowiński: *EuDML developments after project end*. Report for the 3rd EuDML GA, Berlin 23 July 2016.