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Subject specific international services in Physics

Arguments are given for the need of subject-specific but international services. Criteria, and requirements are given. Tests are run using queries in Physics. The service PhysNet is presented in detail with an emphasis on the need for intelligent and field-knowledgeable search support. It results in the concept of OAD[5], Open Archives: Distributed services for physicists and graduate students

Specifically the necessary cooperation between OAI-service providers and OAI data providers, and society- or company-run document services is elucidated.

The resulting requirements for interdisciplinary services are discussed.

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[5] http://www.isn-oldenburg.de/projects/OAD/

Subject-specific international services in Physics

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**International Interdisciplinary Open Archives
and Subject specific services in Mathematics and Physics.**

Content of talk:

- I: Why subject-specific services?
- II: Open Archives Distributed in Physics
- III: International embedding and organization

Part I: Why subject-specific services?

Knowledge repository requirements

1. Restricted
2. Complete
3. Professional
4. Research-driven
5. Additional subject-specific services

1. Why restrict the knowledge basis?

- Higher ratio of relevant information retrieved
- Less ‚missunderstanding' [different meanings and content for same word in different fields]

Search for Ideal

Altavista: no relevant in first twenty

Google: no relevant in first twenty >Science>Math: one in five

PhysDoc (in title): third title relevant ; with metadata: all relev.

Mpress   (in title): only relevant documents

Use machine-readable metadata

Tool for authors in MathNet and Phys-Net
Webform for adding metadata MyMetaMaker

Subject-specific Additional Information

- Examination regulations
- Teaching plans
- Technical specifications for experiments

Problem of Interdisciplinarity

- Interest of documents only in border areas
- Border areas are often most active scientifically

Upgrade services in both fields

Additional functionality into used-to services

Use knowledge repository of both fields

A) **Intellectual Mapping of keywords failed [few usable docs, level mismatch]**

B) **Automated Mapping: 17.000 INSPEC with PACS AND MSC. Statistical analysis, ranking, grammar truncation.**

Workpackage 9 of CARMEN (BMBF)

J. Pluemer et al. (Osnabrueck), Th. Severiens (ISN).

- Keywords (Physics) ><PACS >>keywords'=joint repository=><MSC ><keywords (Math)
- Physicists use keywords, not PACS
- Mathematicians use MSC

2. Why complete repository?

Prime research needs

- instant (Web, no delay) information of all relevant new results
- complete information fom anywhere in the world
- One stop service despite a multitude of distributed heterogenous repositories.

Consequences for financing concepts

3. Why professional content repository

- Researchers need mostly information from their professional colleagues.
- Researchers can act only in their own subject-field as referees, quality filters for the wider public, comment and select.
- The Web allows for a multilevel professional quality management for all heterogenous purposes

4. Why research driven repository?

- Authors have the highest motivation to be read, to get their documents distributed and archived.
- Author communication communities are subject-specific.
- Scientists understand only their subject-colleagues
- Research is organized most often in subject-specific topical institutes

Part II: Realization bits

- Quality filter schemes
- PhysNet of EPS
- Open Archive Distributed OAD

A field specific professional service has to meet
the expectation of a quality service:

The service should not contain everything but
only material certified by physicists to be relevant
and good physics.

Thus we need certification levels.

PhysNet has but just one:

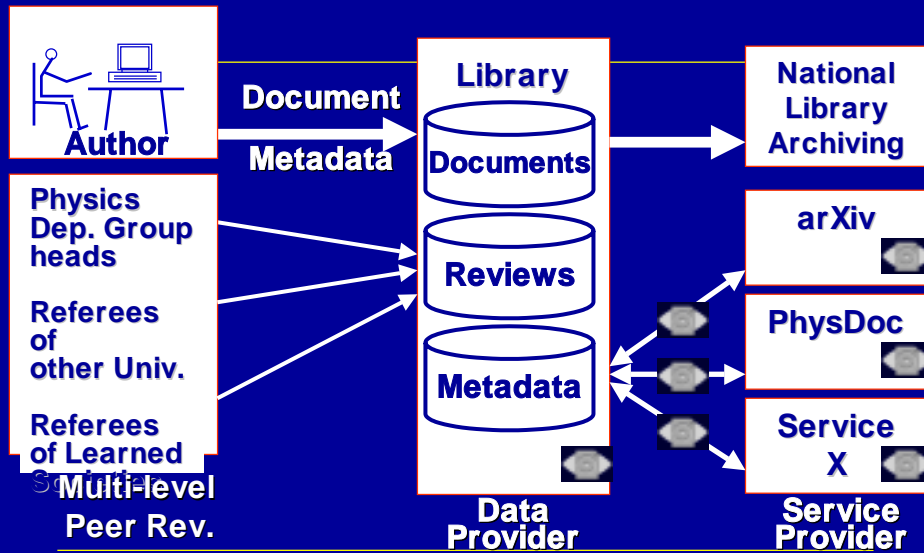**what is on Physics Department's webservers**

What refereeing do we need ?

- Instant publishing   before refereeing
- Time stamp for prime research   before refereeing
- Archiving of relevant information
- Competitive parallel) refereeing
- Multilevel refereeing
- Full information published to be fair to referees
- Open refereeing [signed Annotation instead of advice]
- Voluntary refereeing to be a pleasure for referees

Scenario for Tomorrow: OAi Data and Service Providers including Vetting to Peer Reviewing

Author

Document
Metadata

Physics Dep. Group heads

Referees of other Univ.

Referees of Learned Societies

Multi-level Peer Rev.

Library

Documents

Reviews

Metadata

Data Provider

National Library Archiving

arXiv

PhysDoc

Service X

Service Provider

The role of University Libraries

• Be Oai-Database Provider of complete local Information

• Assure free full text access of all research material

• Assure correct metadata usage (by training or adding)

• Do handshake with National Archives

• Be Oai-Service Provider of specific fields at your university

• Vetting system with the local department scientists

• Train users to pick from the multitude of competing Oai-service Providers

Vetting
at German Universities

- **University Publishing Network (Project)**
  - Local vetting with department scientists and library
  - Peer reviewing *between* different universities
  - Shared   functions (work flow system, marketing ...)
  - Separate functions (business model, financing ...   )

PhysNet,
an international subject- specific
service

www.eps.org/PhysNet

European Physical Society EPS

**controlled by its Action Commmittee
on Publication and Scientific Communication**

The Concept of PhysNet

- Crawl across all worldwide distributed Physics Departments
- Same Metadata as Math-Net   [IMU, EPS]
- Distributed Gatherers   [locally allow/deny !!]
- Distributed Brokers   [no nation to dominate]
- Agreements for an unbiased distributed system [Charter]
- Distributed manpower   [at present: 1 Mill. $/a]
- Aims at all types of information

Status by 2001

- About 40 local, regional, national gatherers
- Brokers at US, DE, Russia, Hungary, France, UK, DK, India, Japan, Australia, .., EPS [DFN-Project]
- 40.000 documents and document lists
- MyMetaMaker author tool to add DC:metadata [with Mathematics (IMU) and Physics (EPS).]
- 20.000 page impressions per month .

Distributed Open Archive for Physics OAD

Vision of the ultimate subject-specific Open Archive

- All departments/Universities worldwide as prime, complete, open free repositories
- Secondary virtual add-on services use these:
1. Quality filters
2. Collections
3. topical archives

Present incomplete realization

Phys Net

- All worldwide departments
- Few cooperate by local quality filters yet
- Few comply with metadata (1000 of 40000 documents)

Towards completeness of heterogenous document-bases

- Free locally posted documents: PhysDoc
- Free archived theses [Depts, Univs., DDB,..]
- Free preprint repositories: ArXiv
- Free fulltext journals
- Free research lab docs: CERN, ANL, ..
- University Publishers
- Journals of Natl. Societies: APS, IoPP
- Commercial journals

OAD Physics Project 2001

Oai compliant service provider for

S h o w

- PhysDoc [1.000 out of 40.000]
- ArXiv
- IoPP
- [APS]
- PhysDiss [European]
- NDLDT [2001]
- Cornell, CERN, MIT [Oai-compliant Document providers] (by 2001

Joint project VT-ISN

- Funded under a new scheme jointly by NSF and DFG (German Science Foundation)
- One application, one refereeing body, one funding scheme
- Thus one team, one final intelligent Online service suited to be adapted to any language and any field.
- Started: 1.March 2001

Part III: Organizing international distributed repositories

The concept of the Open Archive Initiative OAi

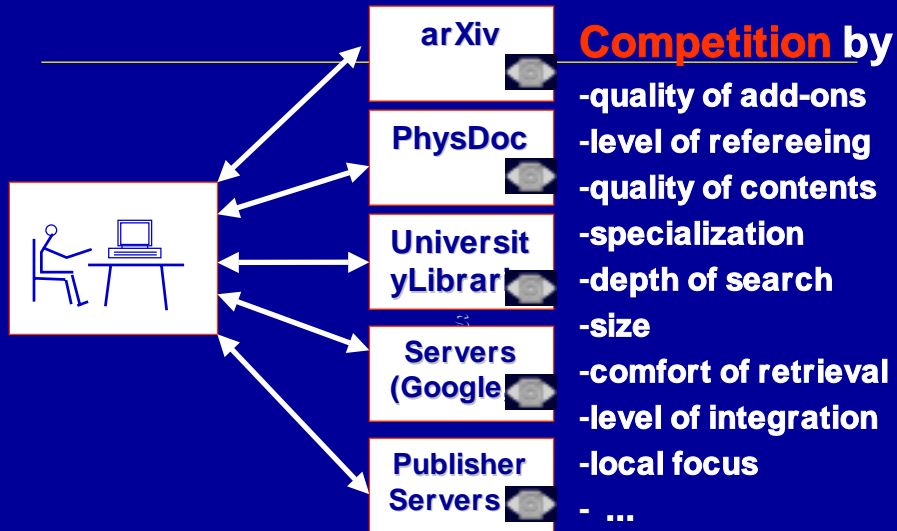- Three layers:

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  1. Discussion (workshops, meetings, ..)
  2. Concept   (free access, a multitude of data providers and service providers but one internationally to be accepted standard)
  3. Software and workforce sharing.

DataProvider Implementation
8. March 2001

Skim through

Service Provider Implementation
13. April 2001, 11.30 am VT-time

Scenario of Tomorrow:
Types of Searching – Retrieving offers

arXiv

PhysDoc

University Library

Servers (Google

Publisher Servers

Competition by
- -quality of add-ons
- -level of refereeing
- -quality of contents
- -specialization
- -depth of search
- -size
- -comfort of retrieval
- -level of integration
- -local focus
- - ...

National activities to support the OAi

- DINI German Initiative for Networked Information
  - similar to CNI
  - Cooperation between
    - **Research Libraries (DBV),**
    - **Computer Centres (ZKI),**
    - **Media Centres (AMH),**
    - **Initiative of Learned Societies IuK**
  - DINI´s Appeal to join the OAi (2000)
  - Training camps for German Oai-Implementation (2001)

Oai: Cooperation of repositories

Oai lists

- Data providers comply with Oai
- Yes,   if they are not service providers [Departments]
- Yes,   if they are free access providers [ArXiv]
- Subtle, if national society publishers [APS, IoPP]
- No,   if commercial publishers [Elsevier,..]

scirus

Cut throat competition of service providers with best service for same documents

Commercial publ. collect free access documents

Political and Funding Policy

Effective services for research
- Money to libraries per No of accessible documents
- Multiple access ways [TibOrder vs others]
- Regulations for hiring scientists to Universities
- Funding selforganization of research communities
- University publishers as regular prime research outlet
- Fund IuK research to professionalize content search

Subject-specific
National Port of Entry

German Physical Society DPG plan

- Cooperative project of partners [FIZ, TIB, ISN; KFP]

Rescue boat syndrom?

International Networking

- No bias policy: no single society allowed to dominate
- Funding policy: each society finds ist own funds
- Broker policy: democratic' network of brokers [DFN-Project]
- Department cooperation:
  1. Operator
  2. Quality filters [select what to enter PhysNet]
  3. Metadata for documents
  4. Home page for document lists
- University publishers (vetting and archiving)
- National entry points for Oai.

PhysNet Charter

For the Acceptance of a services :

1. Bottom up: just do it and spread the rumour
2. Top down : Charter of IMU, EPS
3. Engagement by registration: Institutions, Departments, Graduate Schools, Universities
4. Joint international standards and cooperation
5. Distributed work sharing („infinite workforce')
6. Professionalism:
- Scientists provide content and quality filtering
- Departments with University Library distributes and retrieves
- Universities set up research-oriented suitable infrastructure
- Funding and politics to enable competition and effectiveness.

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35