# Open Access Repositories & Interoperable Usage Statistics: Current Developments in Germany and Europe

**International Seminar on Standardization of IR Usage Statistics:
How we count the access to institutional repositories**

**National Institute of Informatics, Tokyo
January 11, 2011**

Initiated by:

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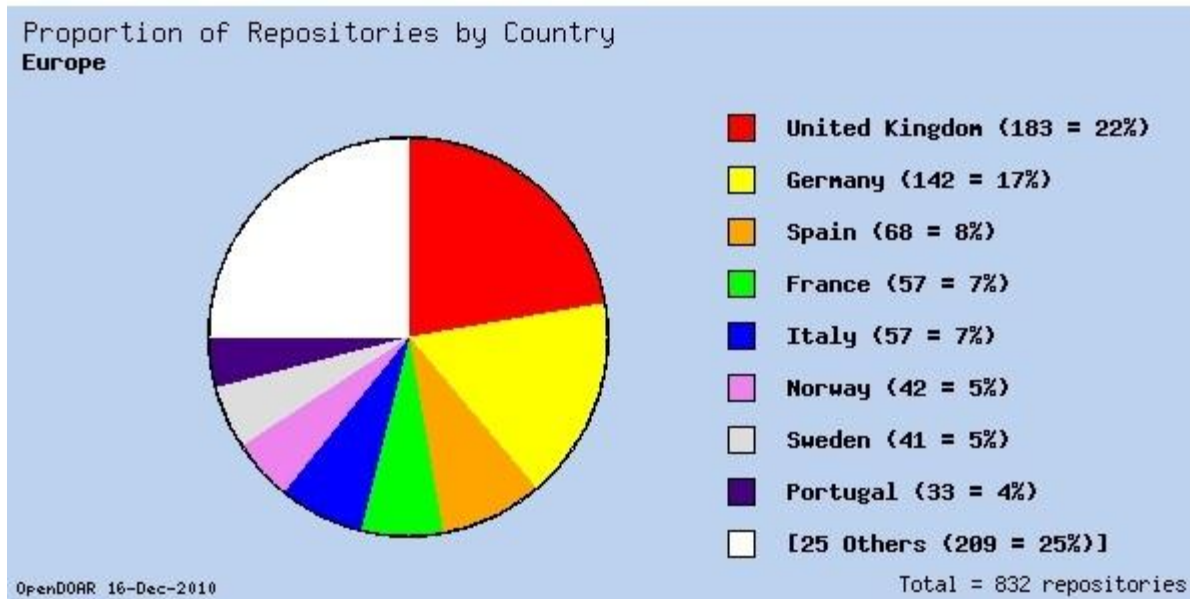u.herb@sulb.uni-Saarland.de

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# Overview

❑ IR development in Europe and Germany

❑ Impact measures
  - Citation vs. Usage

❑ Usage Metrics: Standards?

❑ Open Access Statistics (OAS)
  - Aims
  - Technical infrastructure
  - Results & outlook
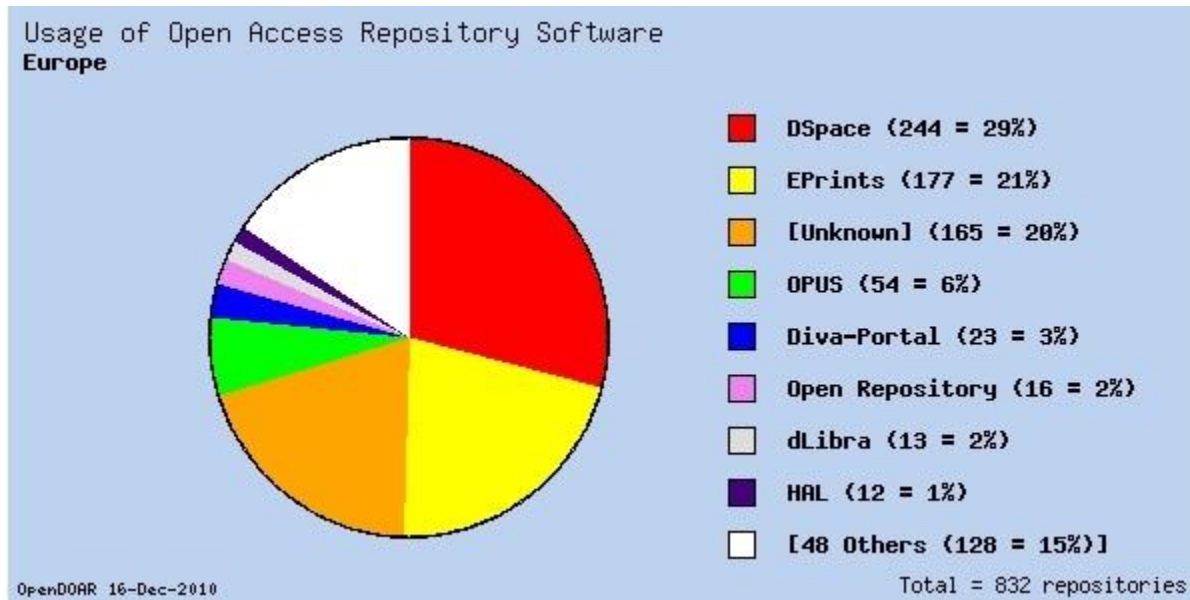  - Repository usage statistics: The European perspective

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# IR development in Europe and Germany

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# IR development in Europe and Germany

Proportion of Repositories by Country
**Europe**



| | |
|---|---|
| ■ (red) | United Kingdom (183 = 22%) |
| ■ (yellow) | Germany (142 = 17%) |
| ■ (orange) | Spain (68 = 8%) |
| ■ (green) | France (57 = 7%) |
| ■ (blue) | Italy (57 = 7%) |
| ■ (pink) | Norway (42 = 5%) |
| ■ (light) | Sweden (41 = 5%) |
| ■ (purple) | Portugal (33 = 4%) |
| □ | [25 Others (209 = 25%)] |

OpenDOAR 16-Dec-2010                          Total = 832 repositories

**taken from www.opendoar.org**

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# IR development in Europe and Germany

Usage of Open Access Repository Software
**Europe**

■ DSpace (244 = 29%)

□ EPrints (177 = 21%)

■ [Unknown] (165 = 20%)

■ OPUS (54 = 6%)

■ Diva-Portal (23 = 3%)

■ Open Repository (16 = 2%)

□ dLibra (13 = 2%)

■ HAL (12 = 1%)

□ [48 Others (128 = 15%)]

OpenDOAR 16-Dec-2010

Total = 832 repositories

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# IR development in Europe and Germany

## UK
| | |
|---|---|
| **EPprints** | **44%** |
| **DSpace** | **19%** |
| **proprietary tools** | **16%** |
| **Open Repository** | **5%** |

## France
| | |
|---|---|
| **proprietary tools** | **47%** |
| **HAL** | **19%** |
| **EPrints** | **18%** |
| **DSpace** | **11%** |

## Germany
| | |
|---|---|
| **OPUS** | **38%** |
| **proprietary tools** | **25%** |
| **EPrints** | **11%** |
| **DSpace** | **5%** |

## Italy
| | |
|---|---|
| **EPrints** | **51%** |
| **DSpace** | **32%** |
| **proprietary tools** | **12%** |

## Spain
| | |
|---|---|
| **DSpace** | **59%** |
| **proprietary tools** | **25%** |
| **DigiBib** | **10%** |
| **EPrints** | **6%** |

## Netherlands
| | |
|---|---|
| **proprietary tools** | **39%** |
| **DSpace** | **22%** |
| **EPrints** | **9%** |

**taken from www.opendoar.org**

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# IR development in Europe and Germany

- Heterogeneous software landscape with some "local heroes"

- Creating incentives (metrics, scientific capital)

- European repository community takes strong efforts in interlinking and integration of repositories

  ... both on the technical and the service layer (DRIVER, COAR) and at the level of funding agencies (Knowledge Exchange)

- Integration into
  … academic workflows (SWORD, SONEX)
  … academic and administrative information systems
  (current research information systems, project databases)
  … Social Networks (ResearchGate, Mendeley, …)

  … do repositories really need an user interface?

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# IR development in Germany

- 200+ institutional and disciplinary repositories
  - Various repository platforms operational
  - Large differences in design, size of collections, and coverage
  - Heterogenous types of content

- Enhancement of content visibility on a national and international level by various means
  - Widespread implementation of OAI-PMH, but still deficits in standardization and data harmonization
  - Prominent repository registries, repository collaborations, search engines

**Registry of Open Access Repositories (ROAR)**

OpenDOAR

C∞AR
Confederation of Open Access Repositories

DINI
Medienzentren Bibliotheken Rechenzentren Wissenschaft

oan
Netzwerk von
Open-Access-Repositorien

Google
scholar beta

BASE
Bielefeld Academic Search Engine

driver
Digital Repository Infrastructure Vision for European Research

OAIster
...find the pearls

oaS
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# IR development in Germany

❑ Open-Access-Network
German research institutions interlink their Open Access repositories and create an overarching collection of publications through the information infrastructure of OA Network
http://www.dini.de/projekte/oa-netzwerk/

❑ Standardization and stimulation of IR development
DINI Certificate for document and publication services
DINI = German Initiative for networked information
http://www.dini.de/english/dini-certificate/

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# Impact Measures

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# Impact measures: relevance

Individual level: *publish or perish*

> If you do not publish you do not have any scientific capital, reputation or impact

> Without any impact, you won't make your career

Organisational level: evaluation

> Evaluation results determine prospective resources of institutes *and* the future main research

> Criteria: number of doctoral candidates, amount of third party funds, publications

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# From publications to impact

- ☐ Scientific reputation (or scientific capital) is derived from publication impact

- ☐ Impact is calculated mostly by citation measures
  - ■ Journal impact factor (JIF)
  - ■ Hirsch-index (h-index)

  *Especially within the STM domain*

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# Citation impact: calculation

**JIF**

In year X, the impact factor of a journal Y is the average number of citations to articles that were published in Y during the two years preceding X

Garfield: „*We never predicted that people would turn this into an evaluation tool for giving out grants and funding.*" From: Richard Monastersky (2005), The Number That's Devouring Science *The Chronicle of Higher Education*

**H-index**

A scientist has index h if h of N papers have at least h citations each, and the other (N − h) papers have less than h citations each



http://de.wikipedia.org/wiki/H-Index

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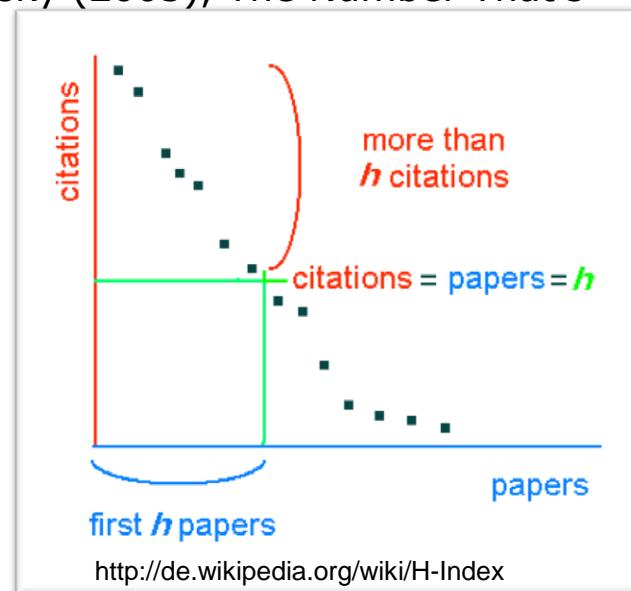
# Citation impact: some critique

- ☐ Restricted scope, exclusion of many publication types
- ☐ Based exclusively on journal citation report / web of science
- ☐ Language bias: items in English language are overrepresented within the database, so they reach higher citation scores
- ☐ JIF focuses on journals: few articles evoke most citations
- ☐ JIF discriminates disciplines with lifecycles of scientific information > 2 years

→ Mixture of quality and popularity

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# Impact measures: a categorization

☐ Citation based measures

- Author-centred
- Delayed measurement: at first in the following generation of publications
- Impact of a separate object is mostly not described

☐ Usage based measures

- Reader-centred
- Measuring: on-the-fly and consecutive
- Impact of a separate object can be described
- Automated measurement is possible

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# Impact measures: a categorisation, pt. II
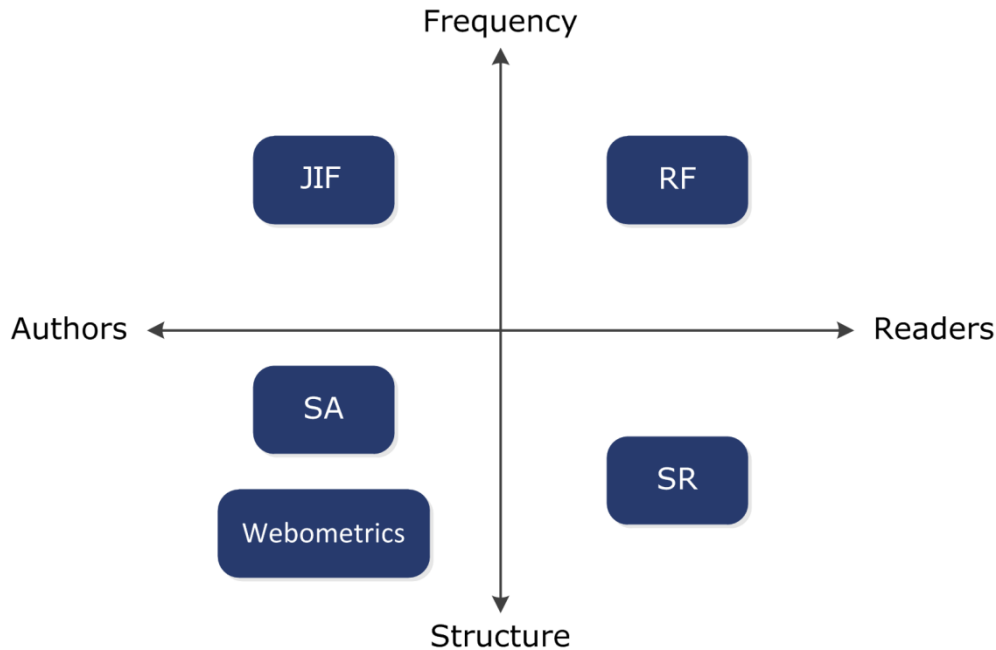
**JIF = Journal Impact Factor**

**RF = Reading Factor**

**SA = Structure Author**

• **based on networks built by authors and their activities, e.g. Google PageRank, citation graphs, webometrics**

**SR = Structure Reader**

• **based on document usage and its contextual information, e.g. recommenders, download graphs**

Bollen, J. et al. (2005): *Toward alternative metrics of journal impact: A comparison of download and citation data*. In: Information Processing and Management 41(6): S. 1419-1440.
Preprint Online: http://arxiv.org/abs/cs.DL/0503007

# Usage Metrics: Standards?

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# Usage based impact: standardisation?

- COUNTER
  **Counting Online Usage of NeTworked Electronic Resources**

  http://www.projectcounter.org

- *LogEc*

  http://logec.repec.org/

- IF ABC

  http://www.ifabc.org/

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# Usage based impact: standardisation?

- ☐ The models mentioned differ in many aspects
  - ■ Detection and elimination of non-human access (robots, automatic harvesting)
  - ■ Definition of double click intervals
  - ■ …

- ☐ General problems
  - ■ Ignorance of context information
  - ■ Detection of duplicate users
  - ■ Detection of duplicate information items
  - ■ Ignorance of philosophical questions like: "What degree of similarity makes two files the same document?"
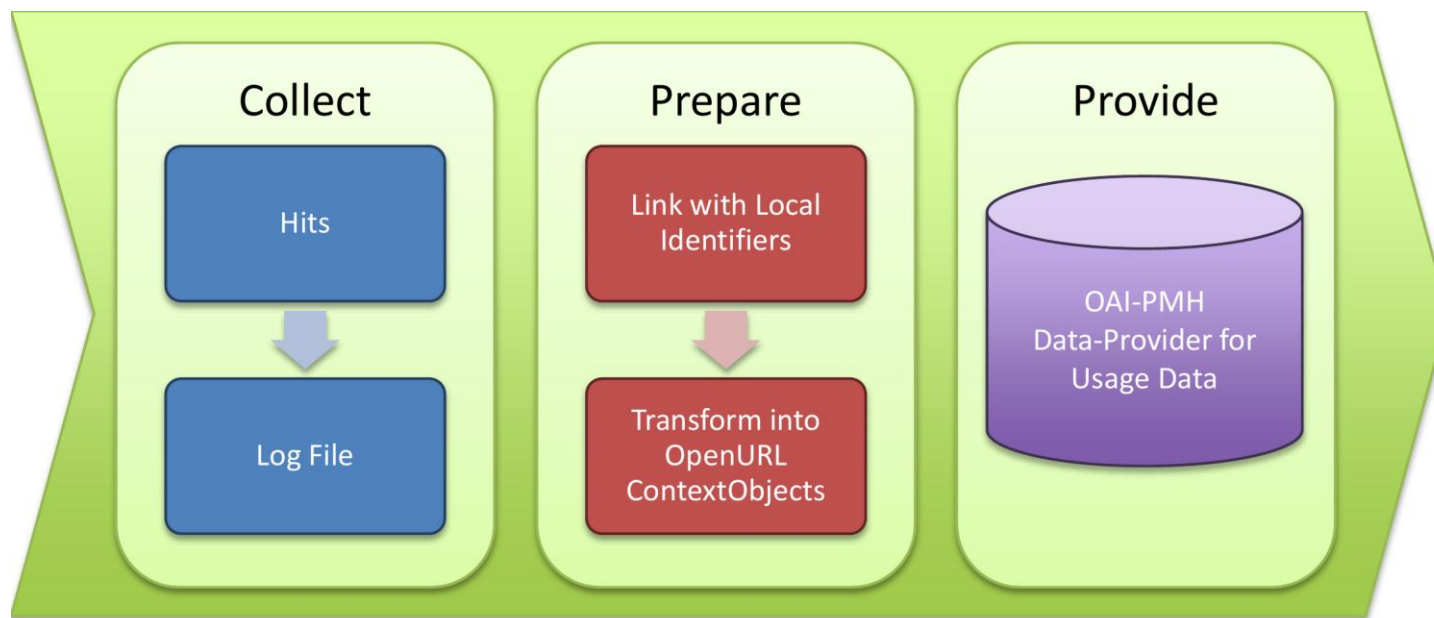
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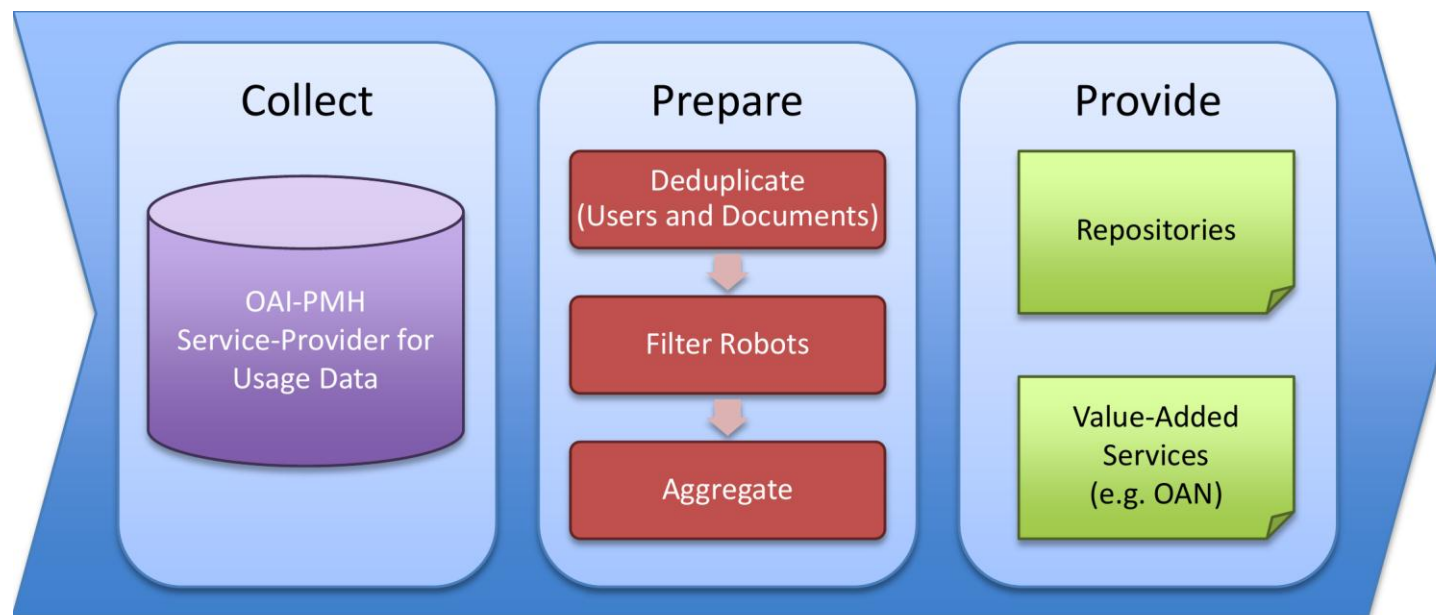National Institute of Informatics, Tokyo. January 11, 2011**

# Alternative impact measures: conclusion

- ☐ Alternative impact measures are possible

- ☐ But: very little standardisation

- ☐ Promising, but complex examples/models like MESUR
  http://www.mesur.org

- ☐ Requirement: sophisticated infrastructure to generate and exchange interoperable usage information within a network of several different servers

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# Project:
# Open Access Statistics

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# Open Access Statistics (OAS)

□ 07/2008 – 02/2010

□ Project partners
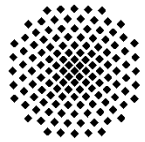
Universität Stuttgart

HUMBOLDT-UNIVERSITÄT ZU BERLIN

NIEDERSÄCHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

SAARLÄNDISCHE UNIVERSITÄTS-UND LANDESBIBLIOTHEK

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http://www.dini.de/projekte/oa-statistik/english/

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# OAS: Aims

- ☐ A common standard to exchange usage date between different services

- ☐ An infrastructure to collect, process and exchange usage information between different services

- ☐ Usage information should be processed according to the standards of COUNTER, LogEc and IFABC

- ☐ Additional service for repositories

- ☐ Implementation guidelines

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# OAS: Associated projects

☐ Open Access Statistics

☐ DOARC
(Distributed Open Access Reference and Citation Services)

☐ Open Access Network

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# Technical Infrastructure

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# OAS: Background

- ❑ Data pools at partner institutions

- ❑ Aggregation of usage events in a central service provider

- ❑ Services provided by the central service provider

- ❑ Usage data will be retransferred

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# OAS: Data provider

# OAS: Service provider

# OAS: Repository integration

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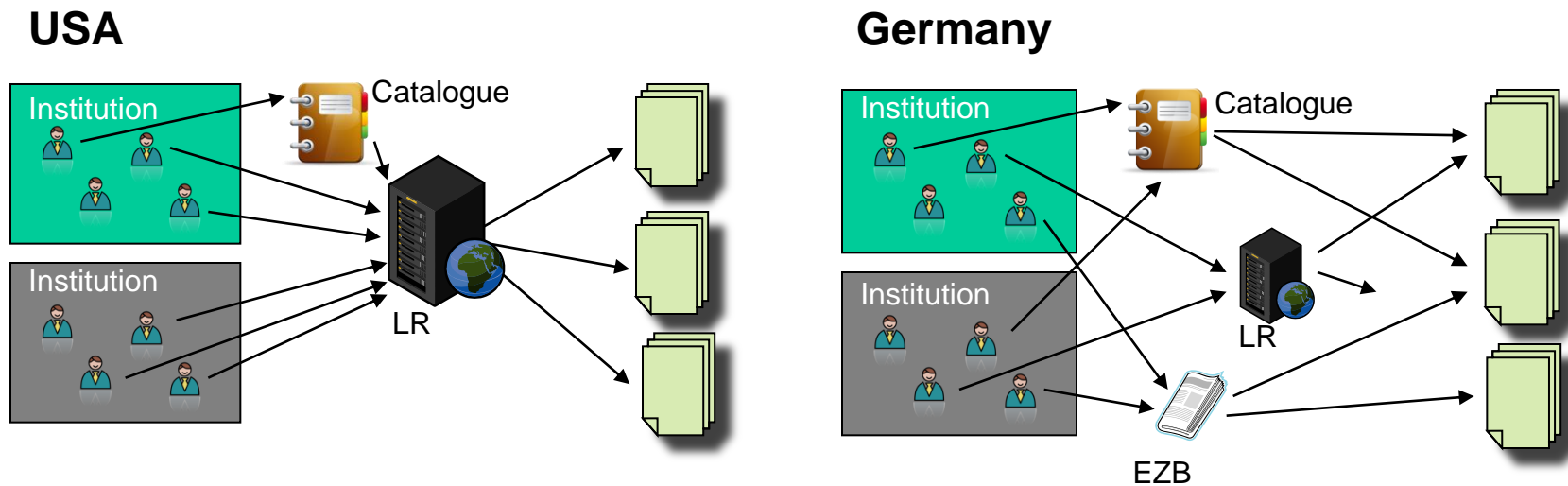
# Results and Outlook

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# OAS: Lessons Learned

The requirement for a central clearing house

A lot of unnecessary data (OpenURL CO)
→ increase of the data size by factor ~10

Different situation with Linkresolver data



**USA**

Institution

Institution

Catalogue

LR

**Germany**

Institution

Institution

Catalogue

LR

EZB

# OAS: Results

Infrastructure for exchange usage statistics

Modules for OPUS- and DSpace-based repositories, other
products can be configured easily
(http://www.dini.de/projekte/oa-statistik/english/software/)

Specification of the data format and exchange
(http://www.dini.de/fileadmin/oa-statistik/projektergebnisse/Specification_V5.pdf)

Online demo
(http://oa-statistik.sub.uni-goettingen.de/statsdemo)

Website with further information
(http://www.dini.de/projekte/oa-statistik/english/)

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# OAS: Further plans → OAS 2

Aims for a possible second funding:

- ☐ Clarification of privacy issues

- ☐ Opening the OAS infrastructure to offer standardized usage statistics

- ☐ Evaluation of metrics
  a) based on the pure frequency of usage
  b) more sophisticated approaches

- ☐ Cooperation for international comparable usage statistics

- ☐ Offer a suitable service infrastructure

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# OAS: International cooperations

- ❑ SURFSure Statistics on Usage of Repositories, NL

- ❑ PIRUS Publisher and Institutional Repository Statistics, UK

- ❑ Knowledge Exchange Usage Statistics Group

  Denmark's Electronic Research Library  (DEFF)
  German Research Foundation (DFG)
  Joint Information Systems Committee (JISC) UK
  SURFfoundation, Netherlands

- ❑ Common sense!
  Exchange format: OpenUrl ContextObjects
  Transfer via OAI-PMH
  Infrastructure based on a data provider – service provider system
  Normalization: Robots-Detection

- ❑ COUNTER, NEEO, PEER, OAPEN …

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# Thanks for your attention!

## ... and thanks to my colleagues Maxi Kindling, Daniel Beucke & Stefan Buddenbohm for their support!

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