Version 2 of the OAI-PMH & some other stuff

2nd Workshop on the OAI, CERN Geneva, October 17th 2002

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⇒ about OAI-PMH v.2.0

⇒ measures of success

⇒ future?

releasing OAI-PMH v.2.0

⇒ creation of OAI-tech

⇒ revision phase

⇒ alpha testing phase

⇒ beta phase

⇒ release of OAI-PMH v.2.0

creation of OAI-tech (06/01)

- charge:
  - review functionality and nature of OAI-PMH v.1.0
  - investigate extensions
  - release stable version of OAI-PMH by 05/02

US representatives

Thomas Krichel (Long Island U) - Jeff Young (OCLC) - Tim Cole - (U of Illinois at Urbana Champaign) - Hussein Suleman (Virginia Tech) - Simeon Warner (Cornell U) - Michael Nelson (NASA) - Caroline Arms (LoC) - Mohammad Zubair (Old Dominion U) - Steven Bird (U Penn.)

European representatives

Andy Powell (Bath U. & UKOLN) - Mogens Sandfaer (DTV) - Thomas Baron (CERN) - Les Carr (U of Southampton)

revision phase [09/01 – 02/02]

- review process by OAI-tech [09/01 – 01/02]
  - identification of issues
  - discussion of issues
  - proposals for resolution by OAI Exec
- drafting of revised protocol document [02/02]
  - Lagoze, Van de Sompel, Nelson, Warner

alpha testing phase [03/02 - 05/02]

- extension of OAI-tech with alpha testers
- continuous feedback from their implementations
- ongoing revision of protocol document

OAI-PMH 2.0 alpha testers

- The British Library
- Cornell U. -- NSDL project & e-print arXiv
- Ex Libris
- FS Consulting Inc -- harvester for my.OAI
- Humboldt-Universität zu Berlin
- InQuirion Pty Ltd, RMIT University
- Library of Congress
- NASA
- OCLC
- Old Dominion U. -- ARC , DP9
- U. of Illinois at Urbana-Champaign
- U. Of Southampton -- OAIA, CiteBase, eprints.org
- UCLA, John Hopkins U., Indiana U., NYU
- UKOLN, U. of Bath – RDN
- Virginia Tech -- repository explorer

beta phase [05/02-06/02]

- beta release on May 1st 2002 to:
  - registered data providers and service providers
  - interested parties
  - general public
- fine tuning of protocol document
- preparation for the release of 2.0 conformant tools by alpha testers

- release June 14th 2002

what's new in OAI-PMH v.2.0

⇒ quick recap

⇒ general changes to improve solidity of protocol

⇒ corrections

⇒ new functionality

overview of OAI Verbs

	Verb	Function
metadata about the repository	Identify	description of repository
	ListMetadataFormats	metadata formats supported by repository
	ListSets	sets defined by repository
harvesting verbs	ListIdentifiers	OAI unique ids contained in repository
	ListRecords	listing of N records
	GetRecord	listing of a single record

most verbs take arguments: datestamps, sets, ids, metadata formats and resumption token (for flow control)

general changes

protocol vs periphery

- clear distinction between protocol and periphery
  - fixed protocol document
  - extensible implementation guidelines:
    - e.g. sample metadata formats, *description* containers, *about* containers
    - allows for OAI guidelines and community guidelines

OAI-PMH vs HTTP

- clear separation of OAI-PMH and HTTP
  - OAI-PMH error handling
    - all OK at HTTP level? => 200 OK
    - something wrong at OAI-PMH level? => OAI-PMH error (e.g. badVerb)
  - http codes 302, 503, etc. still available to implementers, but no longer represent OAI-PMH events

resource – item - record

set-membership is item-level property

resource

item ~ identifier

all available metadata about *David*

item

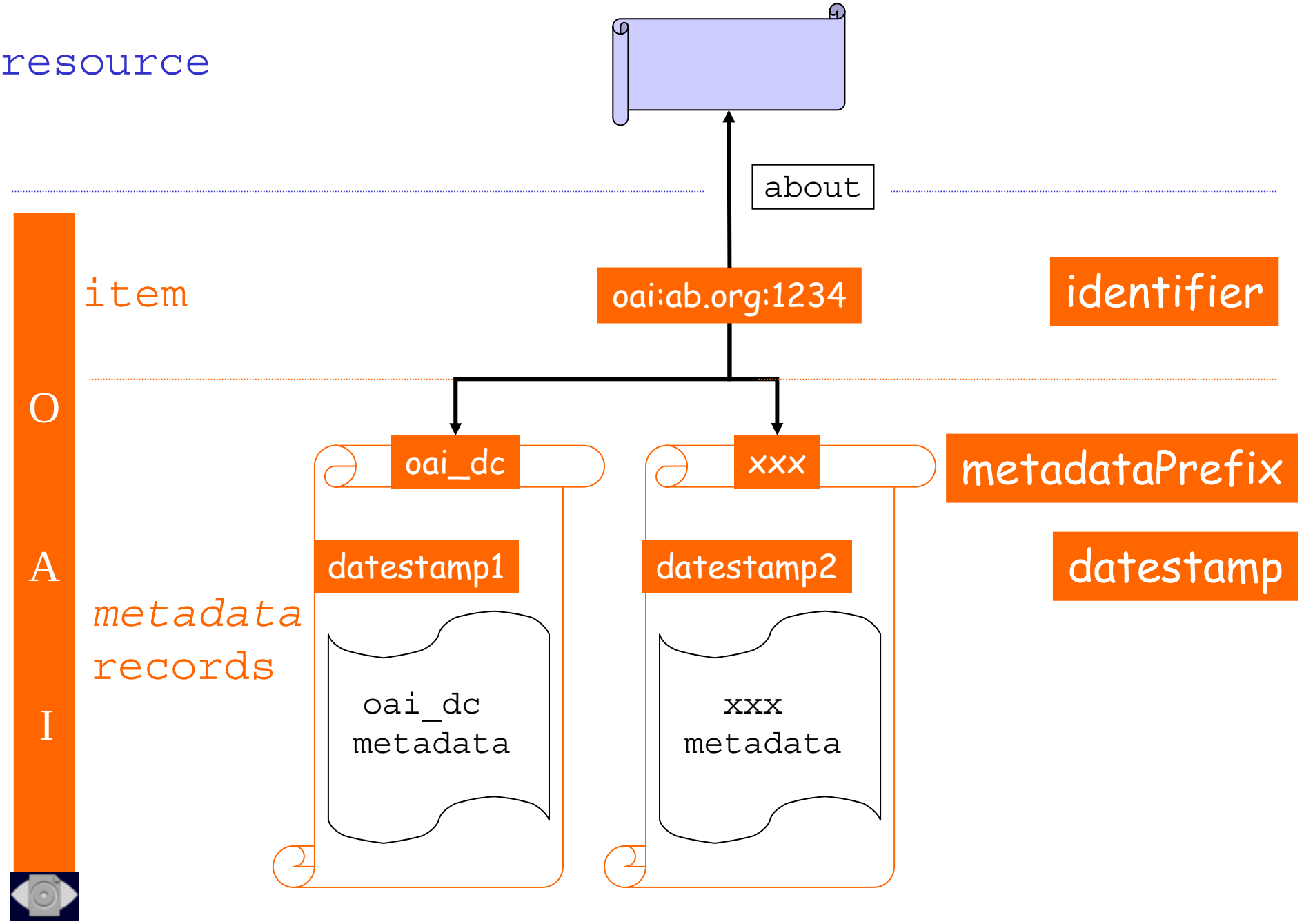
Dublin Core metadata

MARC metadata

SPECTRUM metadata

records

record ~ identifier + metadata format + datestamp


resource
about
item
oai:ab.org:1234
identifier
O
A
I
oai_dc
xxx
metadataPrefix
datestamp1
datestamp2
datestamp
metadata
records
oai_dc
metadata
xxx
metadata

other general changes

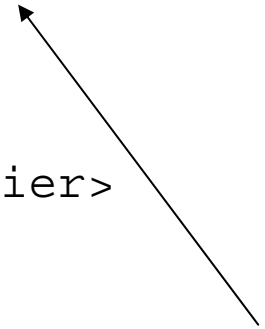
- better definitions of harvester, repository, item, unique identifier, record, set, selective harvesting
- oai_dc schema builds on DCMI XML Schema for unqualified Dublin Core
- usage of *must*, *must not* etc. as in RFC2119
- wording on response compression

other general changes

- all protocol responses can be validated with a single XML Schema
  - easier for data providers
  - no redundancy in type definitions
  - SOAP-ready
  - clean for error handling

response no errors

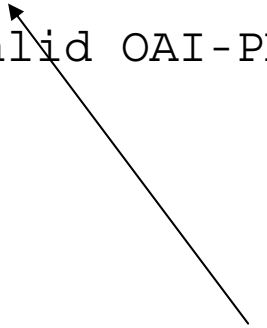
```
<?xml version="1.0" encoding="UTF-8"?>
<OAI-PMH>
<responseDate>2002-0208T08:55:46Z</responseDate>
<request verb="GetRecord"… …>http://arXiv.org/oai2</request>
 <GetRecord>
  <record>
   <header>
    <identifier>oai:arXiv:cs/0112017</identifier>
    <datestamp>2001-12-14</datestamp>
    <setSpec>cs</setSpec>
    <setSpec>math</setSpec>
   </header>
   <metadata>
    …..
   </metadata>
  </record>
 </GetRecord>
</OAI-PMH>
```



no URL encoding
of the OAI-PMH request

response with error

```
<?xml version="1.0" encoding="UTF-8"?>
<OAI-PMH>
<responseDate>2002-0208T08:55:46Z</responseDate>
<request>http://arXiv.org/oai2</request>
<error code="badVerb">ShowMe is not a valid OAI-PMH verb</error>
</OAI-PMH>
```



with errors, only the correct attributes are echoed in <request>

corrections

dates/times

- all dates/times are UTC, encoded in ISO8601, Z-notation

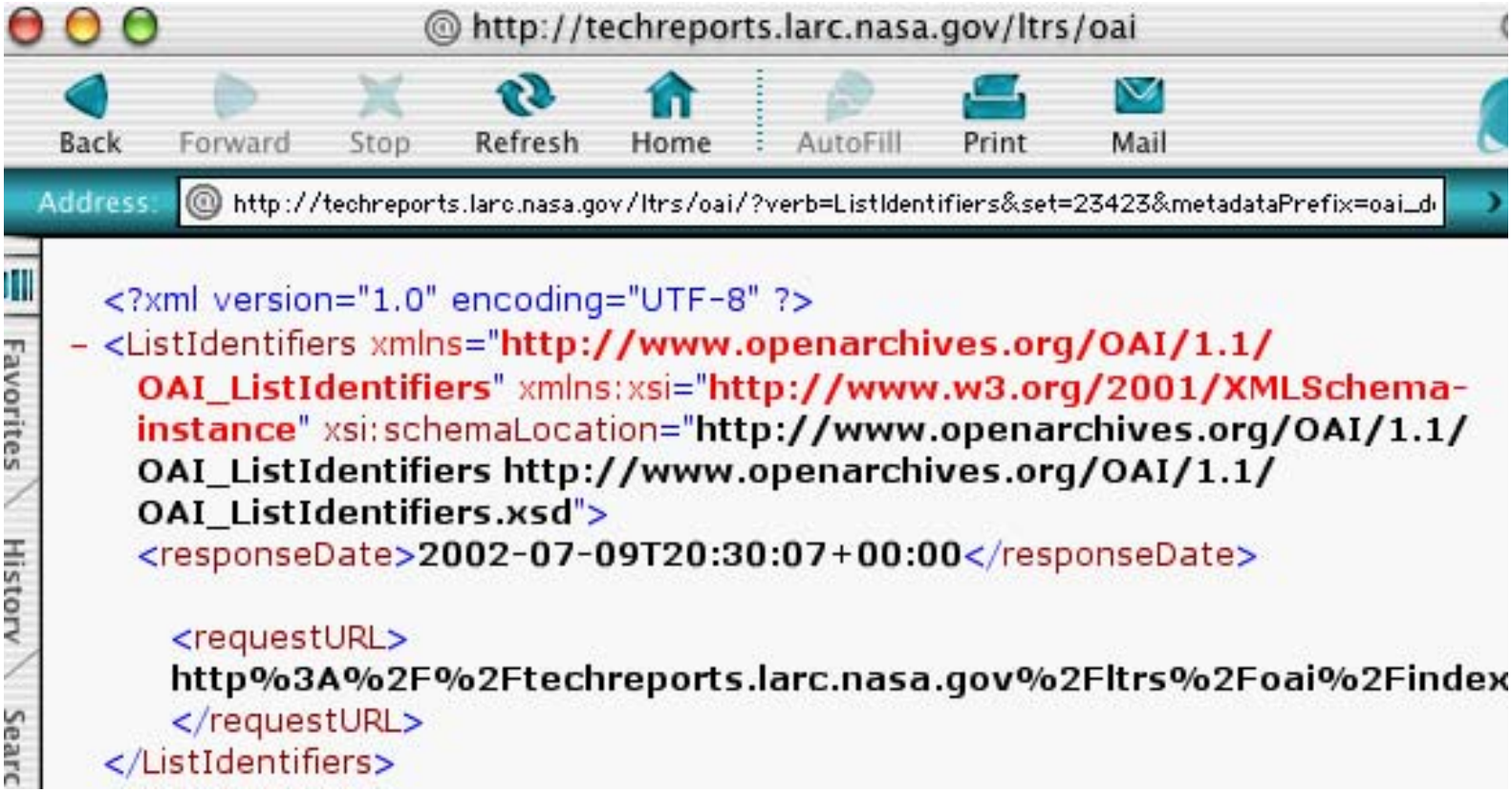
```
1957-03-20T20:30:00Z
```

resumptionToken

- idempotency of `resumptionToken`: return same incomplete list when `rT` is reissued
  - while no changes occur in the repo: strict
  - while changes occur in the repo: all items with unchanged `datestamp`
  - new, optional attributes for the resumptionToken:
    - `expirationDate`
    - `completeListSize`
    - `cursor`

noRecordsMatch

- 1.x - if no records match, an empty list was returned



noRecordsMatch

- 2.0 - if no records match, the exception condition **noRecordsMatch** is returned -- not an empty list

new functionality

harvesting granularity

- harvesting granularity
  - mandatory support of `YYYY-MM-DD`
  - optional support of `YYYY-MM-DDThh:mm:ssZ`
  - granularity of `from` and `until` must be the same

Identify

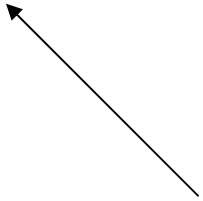
- Identify more expressive

```
<Identify>
    <repositoryName>Library of Congress 1</repositoryName>
    <baseURL>http://memory.loc.gov/cgi-bin/oai</baseURL>
    <protocolVersion>2.0</protocolVersion>
    <adminEmail>joe@here.org</adminEmail>
    <adminEmail>jane@there.edu</adminEmail>
    <deletedRecord>transient</deletedRecord>
    <earliestDatestamp>1990-02-01T00:00:00Z</earliestDatestamp>
    <granularity>YYYY-MM-DDThh:mm:ssZ</granularity>
    <compression>deflate</compression>
```

header

- `header` contains set membership of item

```
<record>
  <header>
   <identifier>oai:arXiv:cs/0112017</identifier>
   <datestamp>2001-12-14</datestamp>
   <setSpec>cs</setSpec>
   <setSpec>math</setSpec>
  </header>
  <metadata>
   …..
  </metadata>
 </record>
```



eliminates the need for the "double harvest" 1.x required to get all records and all set information

ListIdentifiers

- ListIdentifiers **returns** headers

```
<?xml version="1.0" encoding="UTF-8"?>
<OAI-PMH>
<responseDate>2002-0208T08:55:46Z</responseDate>
<request verb="…" …>http://arXiv.org/oai2</request>
<ListIdentifiers>
   <header>
    <identifier>oai:arXiv:hep-th/9801001</identifier>
    <datestamp>1999-02-23</datestamp>
    <setSpec>physic:hep</setSpec>
   </header>
   <header>
    <identifier>oai:arXiv:hep-th/9801002</identifier>
    <datestamp>1999-03-20</datestamp>
    <setSpec>physic:hep</setSpec>
    <setSpec>physic:exp</setSpec>
   </header>
    ……
```

ListIdentifiers

- `ListIdentifiers` mandates `metadataPrefix` as argument

```
http://www.perseus.tufts.edu/cgi-bin/pdataprov?
    verb=ListIdentifiers
    &metadataPrefix=olac
    &from=2001-01-01
    &until=2001-01-01
    &set=Perseus:collection:PersInfo
```

ListIdentifiers

- the changes to ListIdentifiers are subtle, and reflect a change in the OAI-PMH data model
- Could have been named "ListHeaders" or reduced to an option for ListRecords
  - "ListIdentifiers" kept for lexigraphical consistency

metadataPrefix

- character set for `metadataPrefix` and `setSpec` extended to URL-safe characters

A-Z a-z 0-9 _ ! ` $ ( ) + - . *

in the periphery

provenance

- introduction of `provenance` container to facilitate tracing of harvesting history

```
<about>
 <provenance>
  <originDescription>
   <baseURL>http://an.oa.org</baseURL>
   <identifier>oai:r1:plog/9801001</identifier>
   <datestamp>2001-08-13T13:00:02Z</datestamp>
   <metadataPrefix>oai_dc</metadataPrefix>
   <harvestDate>2001-08-15T12:01:30Z</harvestDate>
  </originDescription>
 </provenance>
</about>
```

please use it

friends

- introduction of `friends` container to facilitate *web-style* discovery of repositories

```
<description>
 <friends>
  <baseURL>http://cav2001.library.caltech.edu/perl/oai</baseURL>
  <baseURL>http://formations2.ulst.ac.uk/perl/oai</baseURL>
  <baseURL>http://cogprints.soton.ac.uk/perl/oai</baseURL>
  <baseURL>http://wave.ldc.upenn.edu/OLAC/dp/aps.php4</baseURL>
 </friends>
</description>
```

please please please please please please use it

branding

- introduction of `branding` container for DPs to suggest rendering & association hints

```
<branding xmlns="http://www.openarchives.org/OAI/2.0/branding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/branding/
                      http://www.openarchives.org/OAI/2.0/branding.xsd">
  <collectionIcon>
    <url>http://my.site/icon.png</url>
    <link>http://my.site/homepage.html</link>
    <title>MySite(tm)</title>
    <width>88</width>
    <height>31</height>
  </collectionIcon>
  <metadataRendering
    metadataNamespace="http://www.openarchives.org/OAI/2.0/oai_dc/"
    mimeType="text/xsl">http://some.where/DCrender.xsl</metadataRendering>
  <metadataRendering
    metadataNamespace="http://another.place/MARC"
    mimeType="text/css">http://another.place/MARCrender.css</metadataRendering>
</branding>
```

oai-identifier

- revision of `oai-identifier`

```
<description>
  <oai-identifier xmlns="http://www.openarchives.org/OAI/2.0/oai-
identifier"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai-
identifier
      http://www.openarchives.org/OAI/2.0/oai-identifier.xsd">
    <scheme>oai</scheme>
    <repositoryIdentifier>oai-stuff.foo.org</repositoryIdentifier>
    <delimiter>:</delimiter>
    <sampleIdentifier>oai:oai-stuff.foo.org:5324</sampleIdentifier>
  </oai-identifier>
</description>
```

domain based repository names

oai_dc

- OAI 1.x: oai_dc Schema defined by OAI
- OAI 2.0: oai_dc Schema imports from DCMI Schema for unqualified DC elements

MARC21

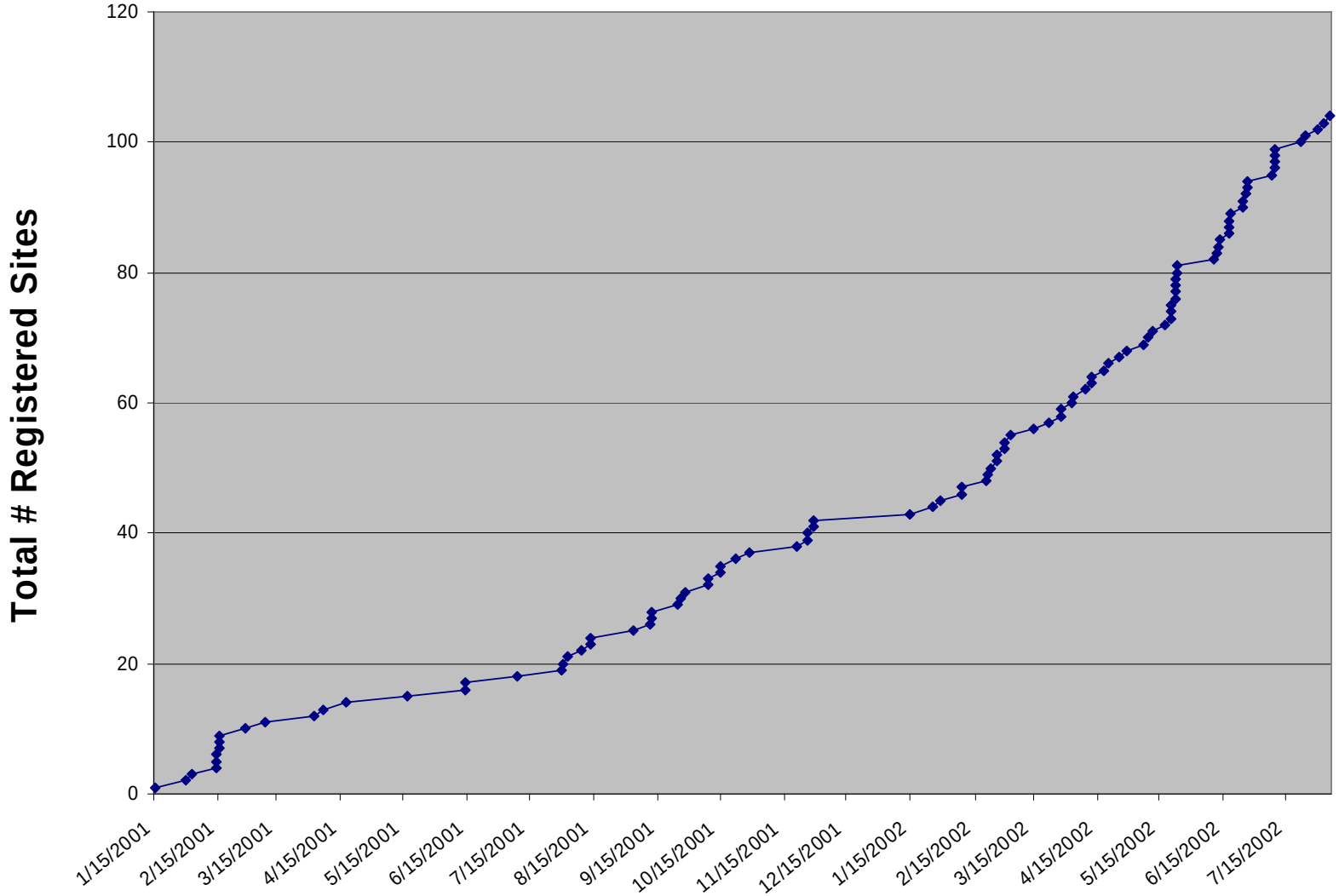
- OAI 1.x: oai_marc
- OAI 2.0: **LoC marxml**, oai_marc
  - http://www.loc.gov/standards/marcxml/

measures of success

⇒ registered data providers

⇒ acceptance as fundamental infrastructure for research and implementation

registered data providers



data providers highlights

- OCLC XtCat ~ thesis and dissertation
- Institute of Physics Publishing

acceptance as fundamental infrastructure

- NSDL
- Open Language Archives Community
- The European Library
- Belgian Union Catalogue
- Illinois State Union Catalogue
- CIMI
- JISC FAIR awards
- Mellon OAI-PMH service provider projects
- LOCKSS
- SPARC "institutional repository" paper
- Budapest Open Access Initiative
- JCDL & ECDL sessions on OAI-PMH
- DCMI 2002

future?

⇒ unanswered questions

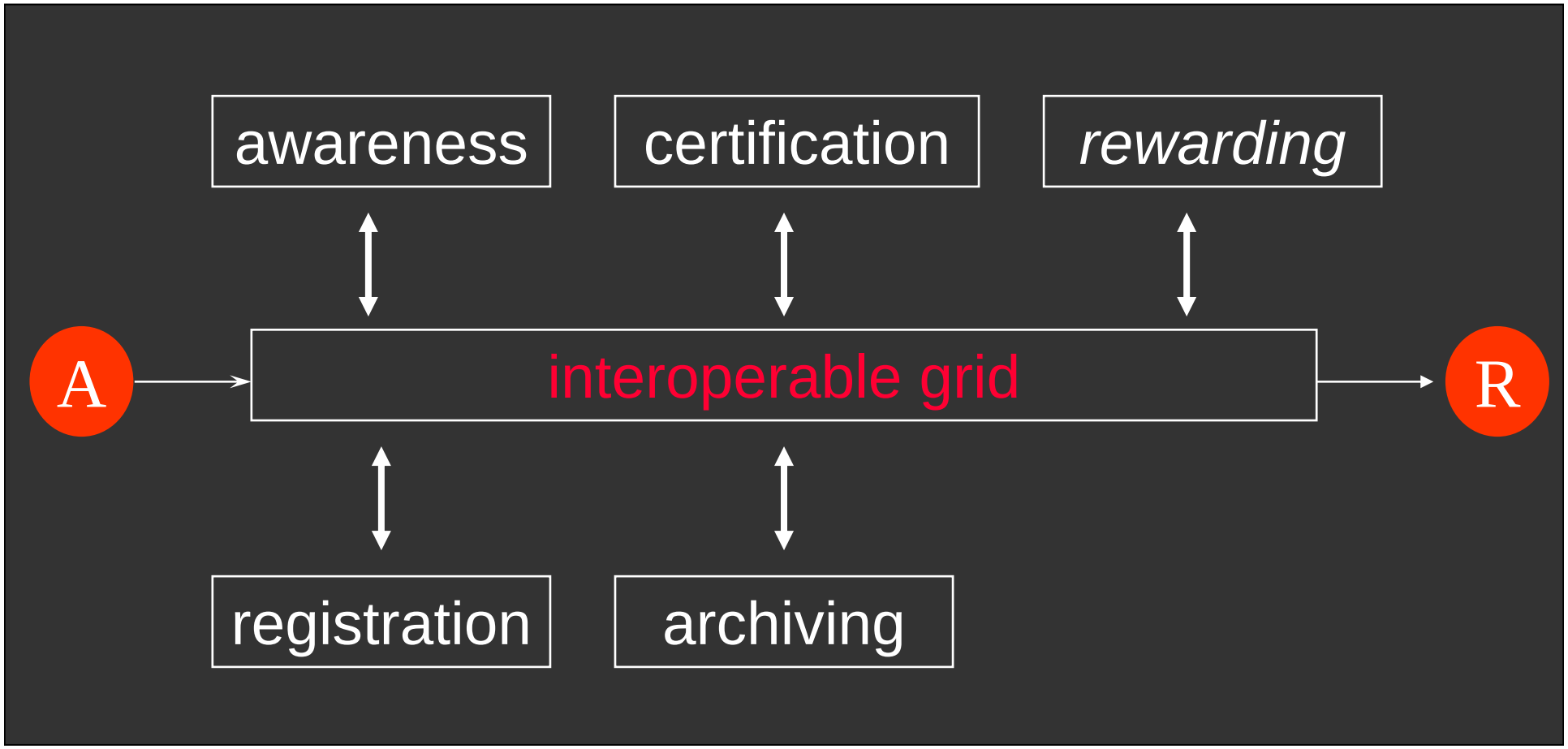
⇒ OAI plans

unanswered questions

- Is OAI-PMH really low-barrier infrastructure?
  - NSDL experience indicates that significant barriers remain
  - OAI work on low-entry specs and tools
- Utility of core metadata (unqualified DC)
  - NSDL and other experience raises doubts
- Utility beyond resource discovery
  - certification, usage logs, citation data, etc.

OAI plans

return to eprints mission : work on OAI-PMH eprints profile



OAI plans

return to eprints mission : work on OAI-PMH eprints profile

- e.g.
  - Specification for the exchange of references
  - Exploration of problem domain of exchange of usage log data
  - Exchange of certification metadata
  - Rights metadata
  - Others? => come to our discussion group

OAI plans

return to eprints mission : work on OAI-PMH eprints profile

- Interest from DLF and Mellon to fund the OAI to pursue this path
- Interest from NSF in the exploration of research problems related to general interoperability between eprint repositories
- Creation of OAI eprints core group: Lagoze, Van de Sompel, Nelson, Warner
  - Compile list of priorities
  - Invite relevant partners to collaborate on specific selected topics
  - Keep close contact with parties working on eprint interoperability issues related to OAI-PMH (e.g. RomEO)

questions

http://www.openarchives.org

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