The OAI Object Reuse & Exchange Interoperability Framework

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Acknowledgments: Michael Kurtz, Astrophysics Data Service

OAI Object Reuse and Exchange: Support

- The Andrew W. Mellon Foundation
- The Coalition for Networked Information
- Joint Information Systems Committee
- Microsoft Corporation
- The National Science Foundation

OAI Object Reuse and Exchange: Technical Experts

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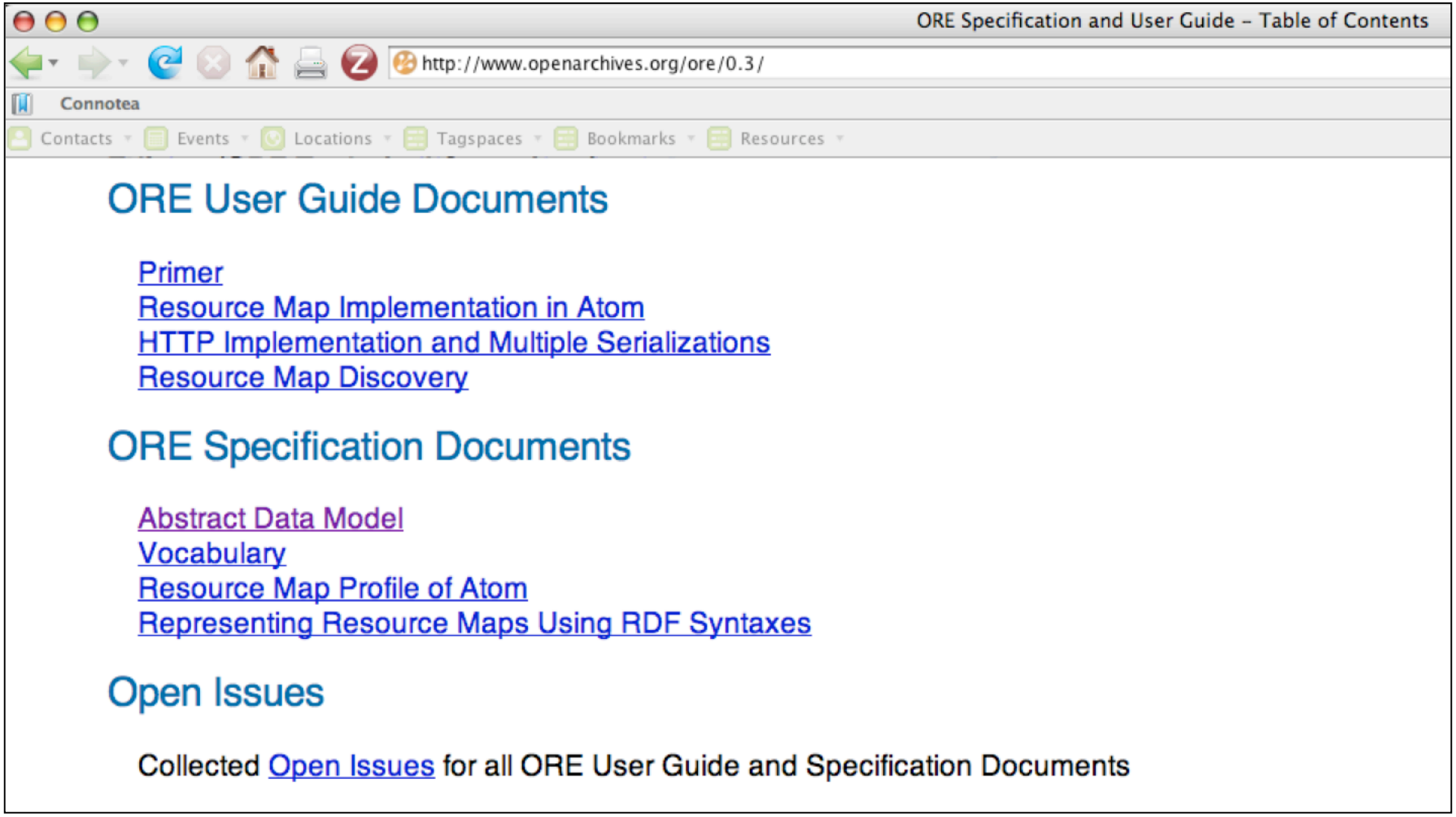
Object Reuse and Exchange: Timeline

- Deliverables: http://www.openarchives.org/ore/toc
  - ORE Specifications alpha 0.1 (12/2007)
  - ORE Specifications alpha 0.2 (03/2008)
  - ORE Specifications alpha 0.3 (04/2008; today)
  - ORE Specifications beta (mid 05/2008)
  - ORE Specification 1.0 (09/2008)

- Experiments to obtain feedback for specifications
  - 02/2008-08/2008

- Meetings:
  - March 3rd 2008, John Hopkins University: USA ORE Open Meeting
    - 130 participants
  - April 4th 2008, University of Southampton: European ORE Open Meeting
    - 200+ participants

Object Reuse and Exchange: Documents

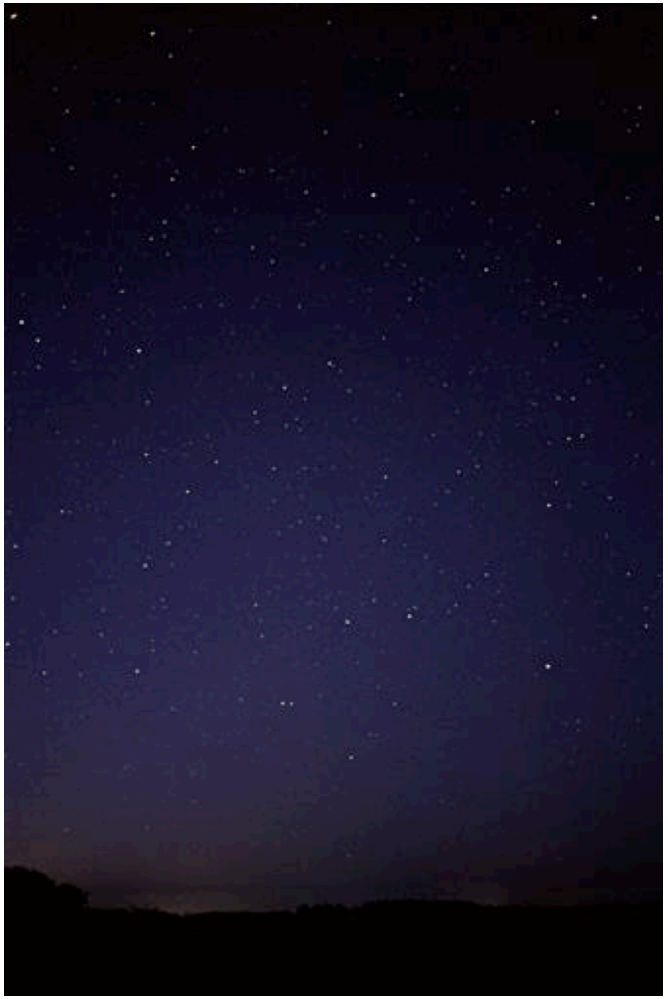


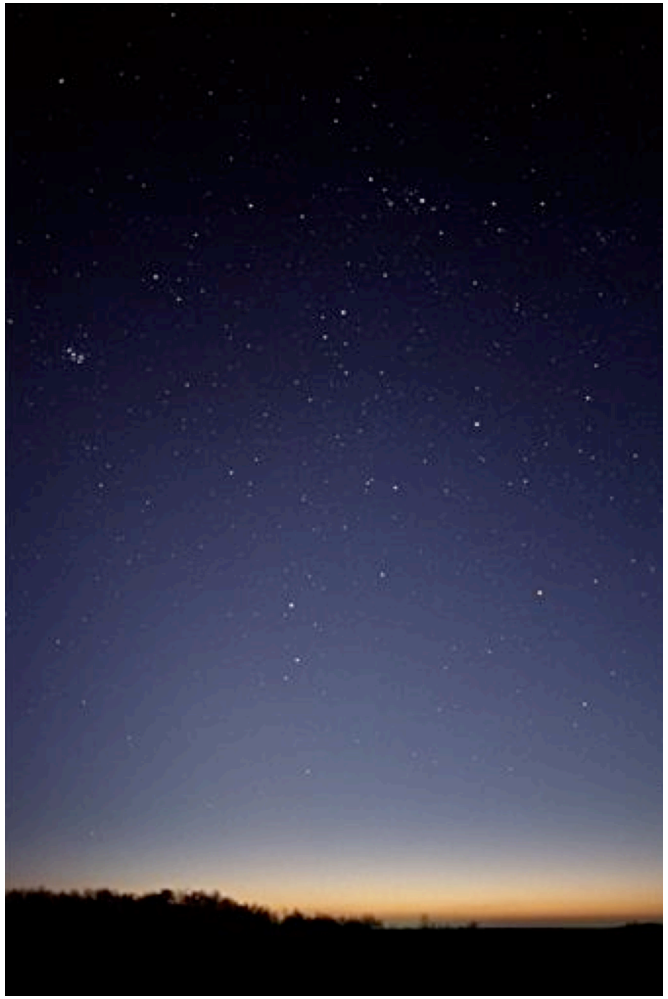
http://www.openarchives.org/ore/toc

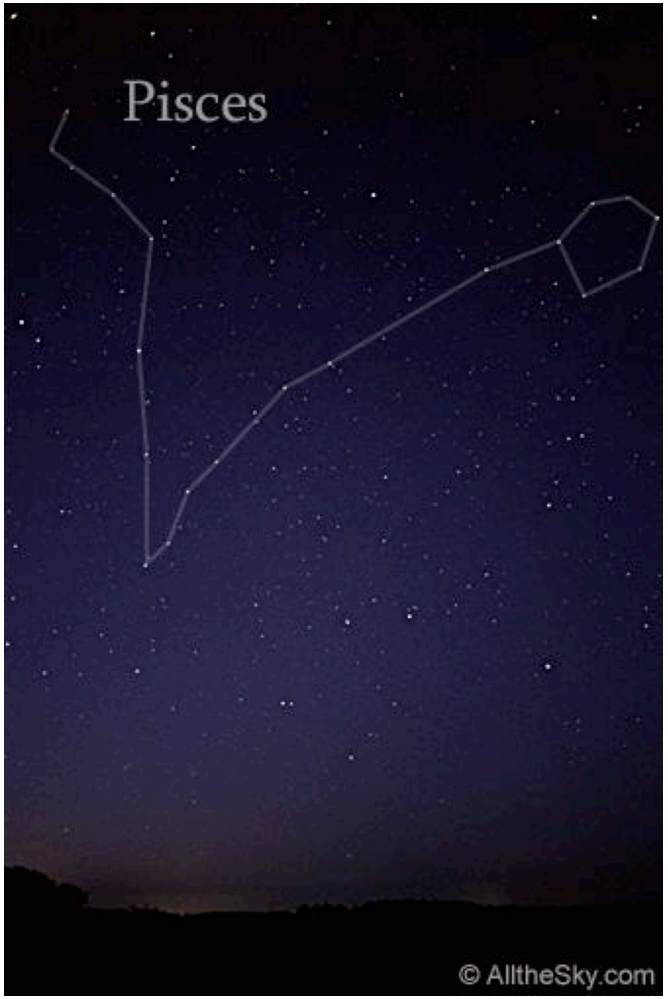
OAI Object Reuse and Exchange

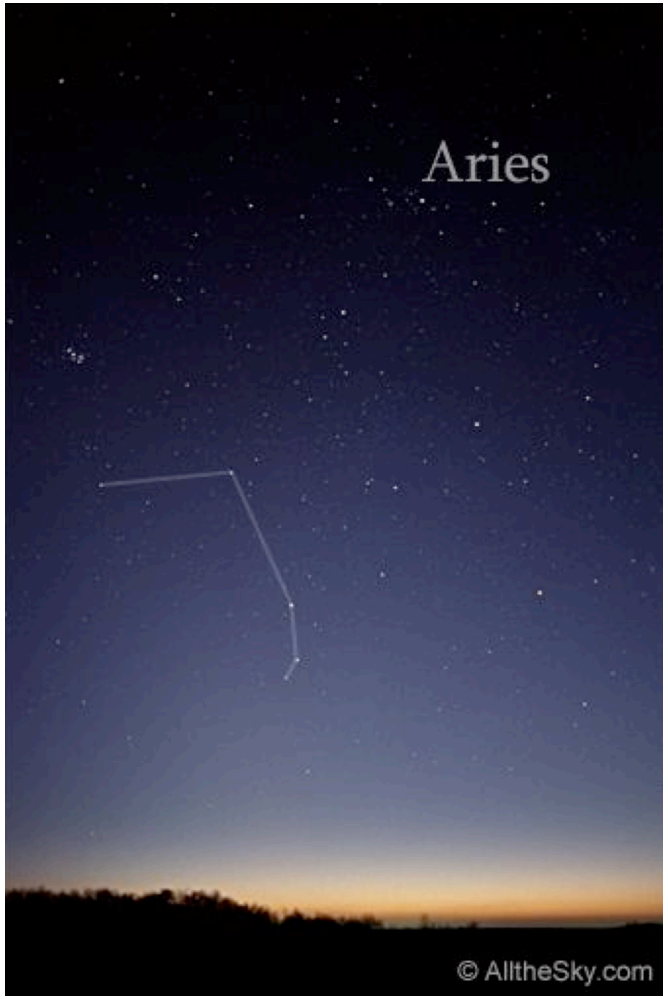
Subject: **Aggregations** of Web resources

Approach: Publish **Resource Maps** to the Web that Instantiate, Describe, and Identify Aggregations









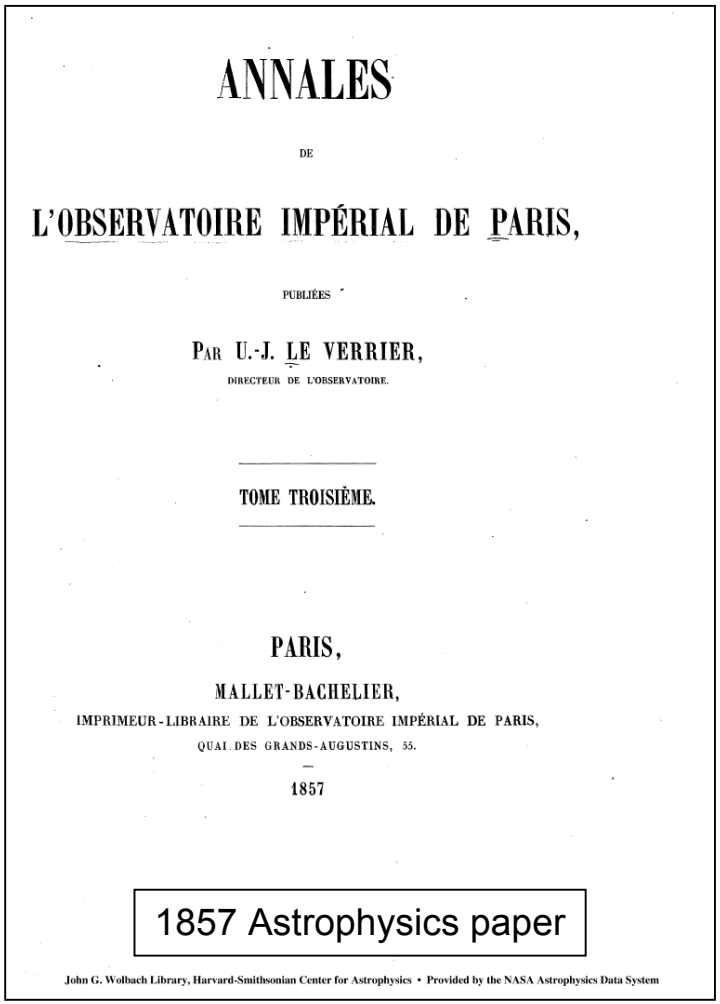
Instantiate, Describe, and Identify Aggregations

Aggregations

It used to be that all information that was to be conveyed could be provided in a single container.

Babylonian Astronomical Catalogue

Aggregations



ANNALES

DE

L'OBSERVATOIRE IMPÉRIAL DE PARIS,

PUBLIÉES

PAR U.-J. LE VERRIER,

DIRECTEUR DE L'OBSERVATOIRE.

TOME TROISIÈME.

PARIS,

MALLET-BACHELIER,

IMPRIMEUR-LIBRAIRE DE L'OBSERVATOIRE IMPÉRIAL DE PARIS,

QUAI DES GRANDS-AUGUSTINS, 55.

1857

1857 Astrophysics paper

It used to be that all information that was to be conveyed could be provided in a single container.

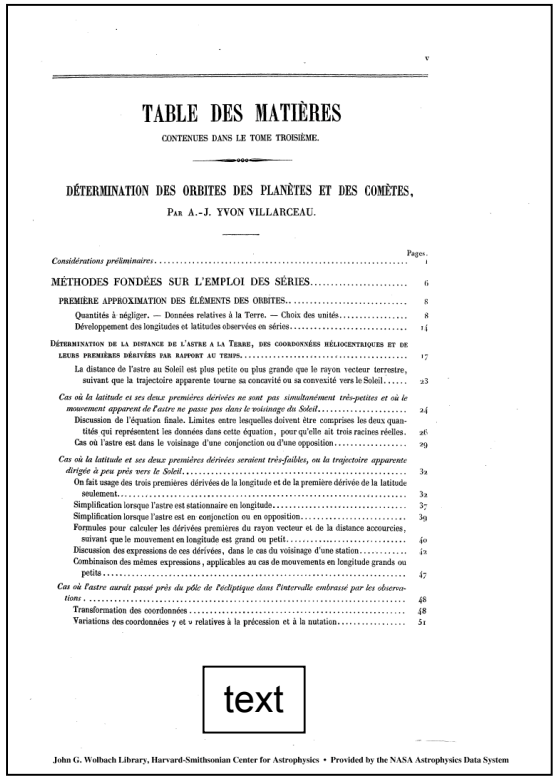


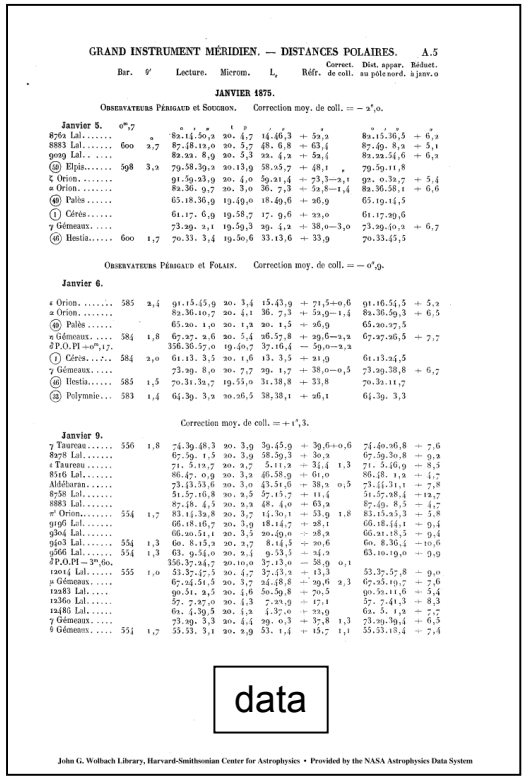
TABLE DES MATIÈRES

CONTENUES DANS LE TOME TROISIÈME.

DÉTERMINATION DES ORBITES DES PLANÈTES ET DES COMÈTES,

PAR A.-J. YVON VILLARCEAU.

text



GRAND INSTRUMENT MÉRIDIEN. — DISTANCES POLAIRES. A.5

JANVIER 1875.

Observateurs Périgaud et SoucHon. Correction moy. de coll. = − 2″,0.

Janvier 5.

	Bar.	0′	Lecture.	Microm.	L_0	Réfr.	Correct. de coll.	Dist. appar. au pôle nord.	Réduct. à janv. 0
8762 Lal.			82.14.50,2	20. 4,7	14.46,3	+ 52,2		82.15.36,5	+ 6,2
8883 Lal.	600	2,7	87.48.12,0	20. 5,7	48. 6,8	+ 63,4		87.49. 8,9	+ 5,1
9029 Lal.			82.22. 8,9	20. 5,3	22. 4,2	+ 59,4		82.22.54,6	+ 6,2
(16) Elpis	598	3,2	79.58.39,2	20.13,9	58.25,7	+ 48,1		79.59.11,8	
ζ Orion.			91.59.23,9	20. 4,0	59.21,4	+ 53,3	− 2,1	92. 0.32,7	+ 5,4
α Orion.			82.36. 9,7	20. 3,0	36. 7,3	+ 52,8	− 1,4	82.36.58,1	+ 6,6
(9) Palès			65.18.36,9	19.49,0	18.49,6	+ 26,9		65.19.14,5	
(1) Cérès			61.17. 6,9	19.58,7	17. 9,6	+ 22,0		61.17.29,6	
7 Gémeaux.			73.29. 2,1	19.59,3	29. 1,2	+ 38,0	− 3,0	73.29.40,3	+ 6,7
(46) Hestia	600	1,7	70.33. 3,4	19.50,6	33.13,6	+ 33,9		70.33.45,5	

Observateurs Périgaud et Folain. Correction moy. de coll. = − 0″,9.

Janvier 6.

ε Orion.	585	2,4	91.13.45,9	20. 3,4	13.43,9	+ 71,5	+0,6	91.16.54,3	+ 5,2
α Orion.			82.36.10,7	20. 4,1	36. 7,3	+ 52,9	− 1,4	82.36.59,3	+ 6,5
(9) Palès			65.20. 1,0	20. 1,2	20. 1,5	+ 26,9		65.20.27,5	
η Gémeaux.	584	1,8	67.27. 2,6	20. 5,4	26.57,8	+ 29,6	− 2,2	67.27.26,5	+ 7,7
∂ P.O.Pl +0°,17.			356.36.57,0	19.40,7	37.16,4	− 59,0	− 2,2		
(1) Cérès	584	2,0	61.13. 3,5	20. 1,6	13. 3,5	+ 21,9		61.13.24,5	
7 Gémeaux.			73.29. 8,0	20. 7,7	29. 1,7	+ 38,0	− 0,5	73.29.38,8	+ 6,7
(46) Hestia	585	1,5	70.31.29,7	19.55,0	31.38,8	+ 33,8		70.32.11,7	
(28) Polymnie	583	1,4	64.39. 3,2	20.26,5	38.38,1	+ 26,1		64.39. 3,3	

Correction moy. de coll. = + 1″,3.

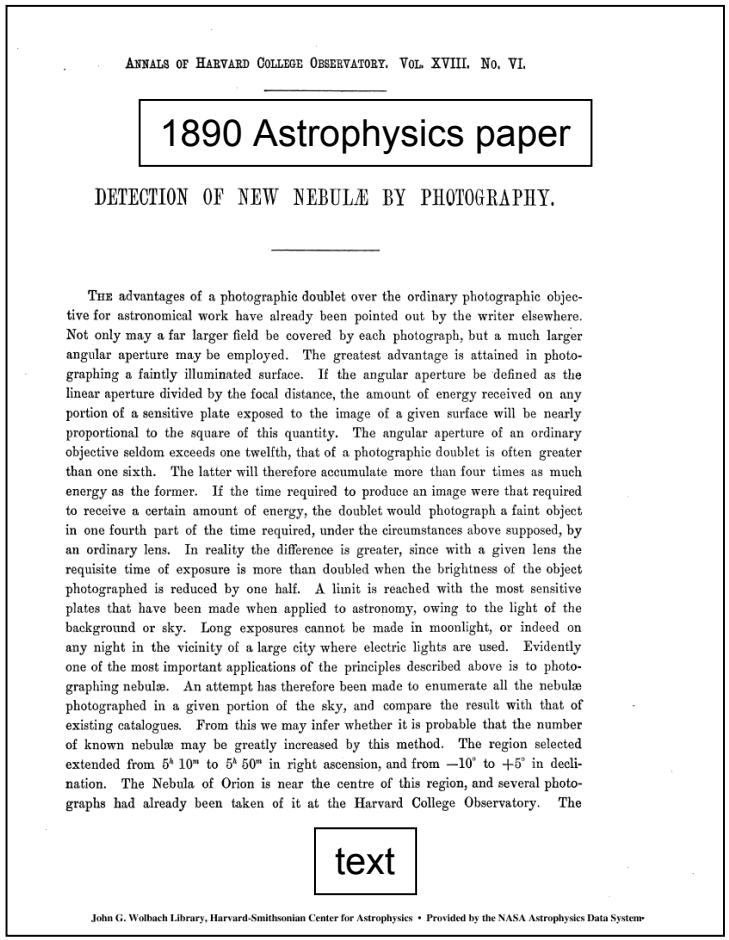
Janvier 9.

7 Taureau	556	1,8	74.39.48,3	20. 3,9	39.45,9	+ 39,6	+0,6	74.40.26,8	+ 7,6
8278 Lal.			67.59. 1,5	20. 3,9	58.59,3	+ 30,2		67.59.30,8	+ 9,2
ε Taureau			71. 5.19,7	20. 2,7	5.11,3	+ 31,4	1,3	71. 5.36,9	+ 8,5
8516 Lal.			86.47. 0,9	20. 3,3	46.58,9	+ 61,0		86.48. 1,2	+ 4,7
Aldébaran.			73.43.53,6	20. 3,0	43.51,6	+ 38,2	0,5	73.44.31,1	+ 7,8
8758 Lal.			51.57.16,8	20. 2,5	57.15,7	+ 11,4		51.57.58,4	+ 12,7
8883 Lal.			87.48. 4,5	20. 2,3	48. 4,0	+ 63,2		87.49. 8,5	+ 4,7
π′ Orion.	554	1,7	83.14.32,8	20. 3,7	14.30,1	+ 53,9	1,8	83.15.25,3	+ 5,8
9196 Lal.			66.18.16,7	20. 3,9	18.14,7	+ 28,1		66.18.14,1	+ 9,4
9304 Lal.			66.20.51,1	20. 3,3	20.49,0	+ 28,2		66.21.18,5	+ 9,4
9303 Lal.	554	1,3	60. 8.15,3	20. 2,7	8.14,5	+ 20,6		60. 8.36,4	+ 10,6
9566 Lal.	554	1,3	63. 9.54,0	20. 2,1	9.53,5	+ 24,2		63.10.19,0	+ 9,9
∂ P.O.Pl − 3°,60.			356.37.24,7	20.10,0	37.13,0	− 58,9	0,1		
12014 Lal.	555	1,0	51.37.47,5	20. 4,7	37.43,2	+ 13,3		51.37.57,8	+ 9,0
μ Gémeaux.			67.24.51,5	20. 3,7	24.48,8	+ 29,6	2,3	67.25.19,7	+ 7,6
12283 Lal.			90.51. 2,5	20. 5,6	50.59,8	+ 70,5		90.51.11,6	+ 5,4
12360 Lal.			57. 7.47,0	20. 4,3	7.29,9	+ 17,1		57. 7.41,3	+ 8,3
12486 Lal.			62. 4.39,5	20. 4,3	4.37,0	+ 22,9		62. 5. 1,3	+ 7,5
7 Gémeaux.			73.29. 3,3	20. 4,4	29. 0,3	+ 37,8	1,3	73.29.39,4	+ 6,5
9 Gémeaux.	554	1,7	55.53. 3,1	20. 2,9	53. 1,4	+ 15,7	1,1	55.53.19,4	+ 7,4

data

Aggregations

In scholarly communication that didn't last very long.



ANNALS OF HARVARD COLLEGE OBSERVATORY. VOL. XVIII. NO. VI.

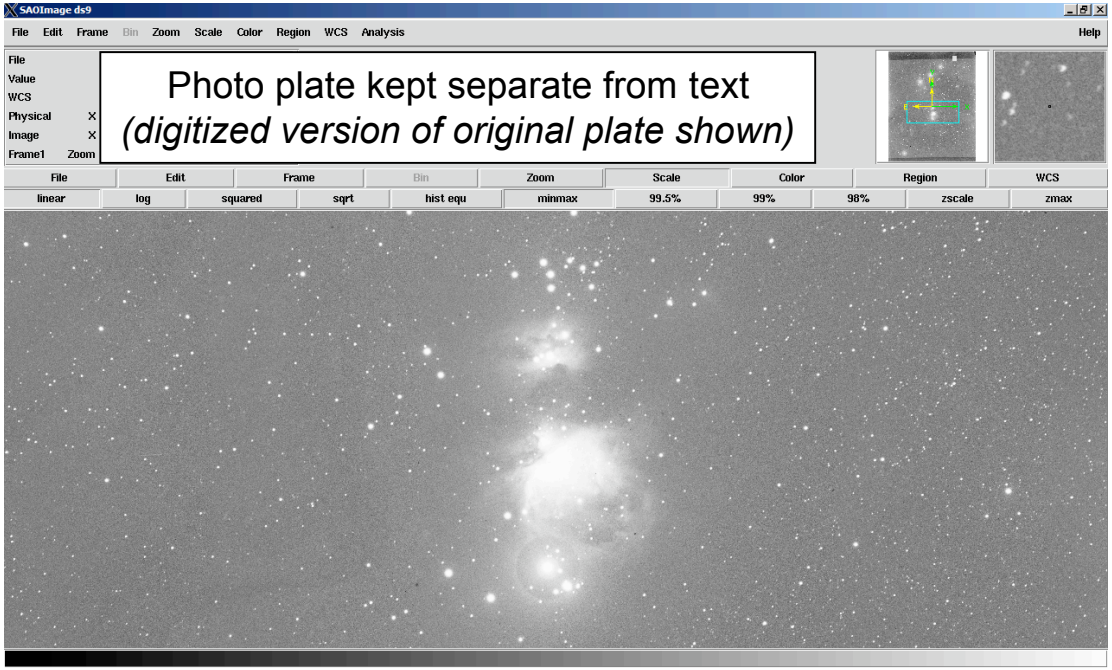
1890 Astrophysics paper

DETECTION OF NEW NEBULÆ BY PHOTOGRAPHY.

THE advantages of a photographic doublet over the ordinary photographic objective for astronomical work have already been pointed out by the writer elsewhere. Not only may a far larger field be covered by each photograph, but a much larger angular aperture may be employed. The greatest advantage is attained in photographing a faintly illuminated surface. If the angular aperture be defined as the linear aperture divided by the focal distance, the amount of energy received on any portion of a sensitive plate exposed to the image of a given surface will be nearly proportional to the square of this quantity. The angular aperture of an ordinary objective seldom exceeds one twelfth, that of a photographic doublet is often greater than one sixth. The latter will therefore accumulate more than four times as much energy as the former. If the time required to produce an image were that required to receive a certain amount of energy, the doublet would photograph a faint object in one fourth part of the time required, under the circumstances above supposed, by an ordinary lens. In reality the difference is greater, since with a given lens the requisite time of exposure is more than doubled when the brightness of the object photographed is reduced by one half. A limit is reached with the most sensitive plates that have been made when applied to astronomy, owing to the light of the background or sky. Long exposures cannot be made in moonlight, or indeed on any night in the vicinity of a large city where electric lights are used. Evidently one of the most important applications of the principles described above is to photographing nebulæ. An attempt has therefore been made to enumerate all the nebulæ photographed in a given portion of the sky, and compare the result with that of existing catalogues. From this we may infer whether it is probable that the number of known nebulæ may be greatly increased by this method. The region selected extended from $5^h\ 10^m$ to $5^h\ 50^m$ in right ascension, and from $-10°$ to $+5°$ in declination. The Nebula of Orion is near the centre of this region, and several photographs had already been taken of it at the Harvard College Observatory. The

text

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System



Aggregations

2006 Astrophysics paper

ENTROPY PROFILES IN THE CORES OF COOLING FLOW CLUSTERS OF GALAXIES

MEGAN DONAHUE,[1] DONALD J. HORNER,[2] KENNETH W. CAVAGNOLO,[1] AND G. MARK VOIT[1]

Received 2005 July 13; accepted 2006 February 6

ABSTRACT

The X-ray properties of a relaxed cluster of galaxies are determined primarily by its gravitational potential well and the entropy distribution of its intracluster gas. That entropy distribution reflects both the accretion history of the cluster and the feedback processes that limit the condensation of intracluster gas. Here we present *Chandra* observations of the core entropy profiles of nine classic "cooling flow" clusters that appear relatively relaxed (at least outside the central 10–20 kpc) and contain intracluster gas with a cooling time less than a Hubble time. We show that those entropy profiles are remarkably similar, despite the fact that the clusters range over a factor of 3 in temperature. They typically have an entropy level of $\approx$130 keV cm^2 at 100 kpc that declines to a plateau $\sim$10 keV cm^2 at $\lesssim$10 kpc. Between these radii, the entropy profiles are $\propto r^{\alpha}$ with $\alpha \approx 1.0$–1.3. The nonzero central entropy levels in these clusters correspond to a cooling time $\sim 10^8$ yr, suggesting that episodic heating on this timescale maintains the central entropy profile in a quasi–steady state. We show in an appendix that although disturbances and bubbles are visible in the central regions of these clusters, these phenomena do not strongly bias our entropy estimates.

Subject headings: catalogs — cosmology: observations — galaxies: clusters: general — methods: data analysis — X-rays: galaxies: clusters

Online material: color figures

1. INTRODUCTION

The global properties of a cluster of galaxies, such as its bolometric X-ray luminosity L_X and its mean temperature T_X, are determined primarily by the mass M_{vir} within a suitably chosen virial radius. A cluster's temperature depends on mass because mass determines the depth of the cluster's potential well. Its X-ray luminosity depends on mass because mass determines both the total number of baryons in the cluster and the potential well confining those baryons. However, several secondary factors combine to produce a dispersion in both L_X and T_X at a fixed M_{vir}, and understanding the nature of that dispersion is crucial to doing precision cosmology with clusters. One of those factors is merger shocks, which can temporarily raise both the luminosity and best-fitting temperature of a cluster (e.g., Randall et al. 2002). A second is the shape of the potential well, because clusters whose potentials are more centrally concentrated tend to have higher central temperatures (e.g., Voit et al. 2002). A third factor is the amount of intracluster gas with a cooling time less than the age of the universe. The presence of such gas leads to both a large peak in the central surface brightness of a cluster and a central temperature gradient that rises with radius. Consequently, clusters having larger amounts of gas with a short cooling time tend to have higher L_X and lower T_X at a given value of M_{vir} (Allen & Fabian 1998; Fabian et al. 1994; Markevitch 1998).

Such clusters have often been called "cooling flow clusters" because the central gas was thought to condense and flow toward the center of the cluster as it radiated away its thermal energy (for a recent review see Donahue & Voit 2004). Observations from *Chandra* and *XMM-Newton* now show that the central gas is not simply cooling to low temperatures and condens

manner originally envisioned (e.g., Peterson et al. 2001, 2003). Some form of feedback apparently prevents the central gas from condensing and forming stars, thereby truncating the high end of the galaxy luminosity function. The nature of that feedback is currently an active topic of both observational and theoretical research, focusing largely on the role of outflows from active galactic nuclei (AGNs) in cluster cores.

This paper analyzes archival *Chandra* data on nine cooling flow clusters seeking clues to what keeps that gas from condensing and why clusters of a given mass have different amounts of gas with a short central cooling time. The tactic we take in our analysis is to focus on the entropy profiles of these clusters. We concentrate on entropy because it is a more fundamental property of the intracluster medium (ICM) itself than either temperature or density alone. For example, the temperature of a cluster's gas primarily reflects the cluster's potential well depth; heating or cooling of the gas merely causes it to expand or contract in the potential well with only a modest change in temperature. The density of that gas depends on how much gravity can compress it in the cluster's potential well, and it is the specific entropy of the gas that determines its density at a given pressure. Thus, the observable X-ray properties of a relaxed cluster of galaxies depend almost entirely on two physical attributes: (1) the shape and depth of the cluster's dark matter halo and (2) the entropy distribution of the intracluster gas (e.g., Voit et al. 2002).

Intracluster entropy is also intimately related to the cooling and feedback processes that govern galaxy evolution and that may also play a role in limiting condensation in cluster cores. Theories and simulations of cluster formation that ignore these processes fail to reproduce the observable properties of present-day clusters. ty alone were responsible for shaping the appearances of s and groups, then we would expect their properties to be self-similar, with a luminosity-temperature relation like . Furthermore, we would expect groups and clusters similar surface brightness profiles, when scaled to the virial radius of the system. However, observations indicate that

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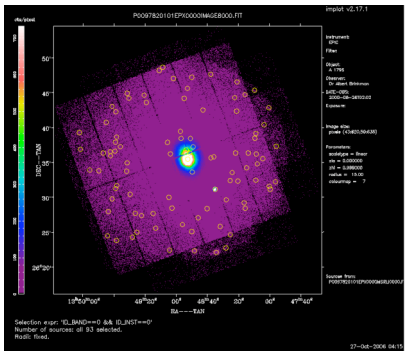
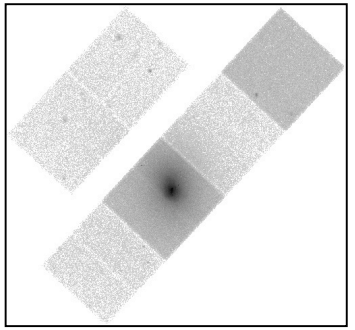
text

And in digital scholarly communication, the single container concept is obsolete.





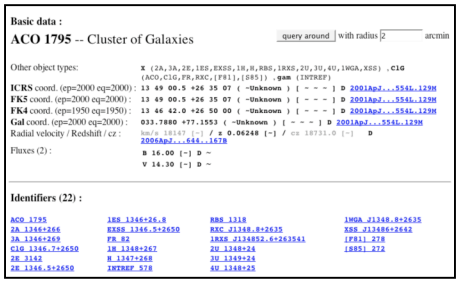
X-MM-Newton X-ray observation
Vilspa, Spain

A1795

Chandra X-ray observation
Cambridge, MA

Basic object information
Strasbourg, France

Hubble optical observation
Baltimore, MD



Basic data :

ACO 1795 -- Cluster of Galaxies

query around with radius 2 arcmin

Other object types: X (2A,3A,2E,1ES,EXSS,1H,H,RBS,1RXS,2U,3U,4U,1WGA,XSS) , CIG (ACO,C1G,PN,RXC,[FR1],[685]) , gam (INTREF)

ICRS coord. (ep=2000 eq=2000) : 13 49 00.5 +26 35 07 (~Unknown) [~ ~ ~] D 2001ApJ...554L.129M

FK5 coord. (ep=2000 eq=2000) : 13 49 00.5 +26 35 07 (~Unknown) [~ ~ ~] D 2001ApJ...554L.129M

FK4 coord. (ep=1950 eq=1950) : 13 46 42.0 +26 50 00 (~Unknown) [~ ~ ~] D 2001ApJ...554L.129M

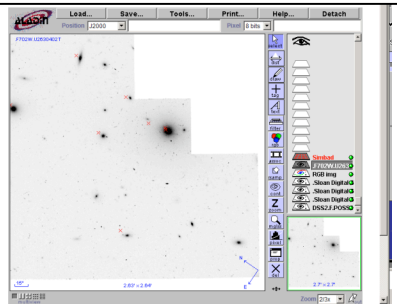
Gal coord. (ep=2000 eq=2000) : 033.7880 +77.1553 (~Unknown) [~ ~ ~] D 2001ApJ...554L.129M

Radial velocity / Redshift / cz : ba/a 18147 [~] / z 0.06248 [~] / cz 18731.0 [~] D 2006ApJ...644..167B

Fluxes (2) : B 16.00 [~] D ~ V 14.30 [~] D ~

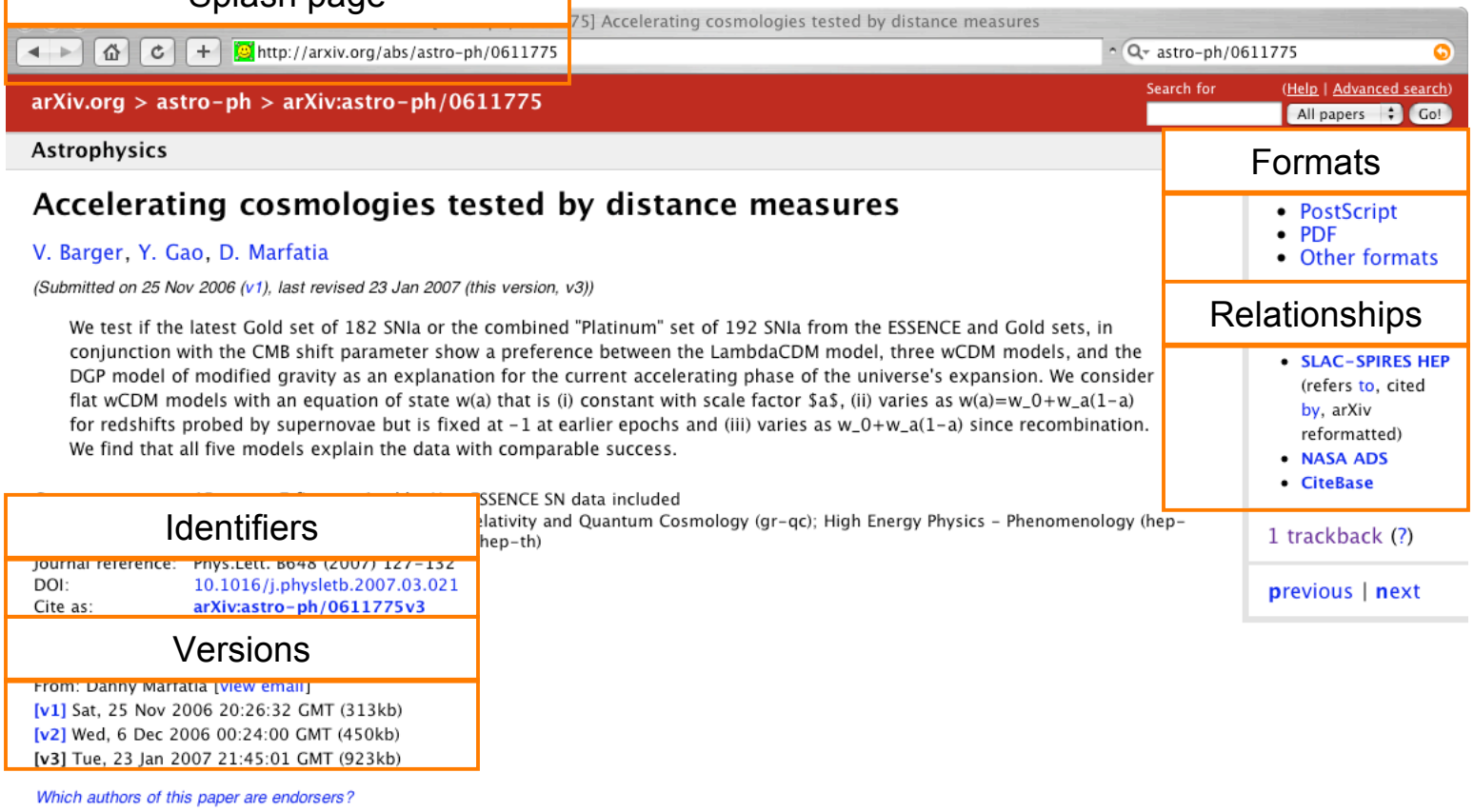
Identifiers (22) :

ACO 1795	1ES 1346+26.8	RBS 1318	1WGA J1348.8+2635
2A 1346+266	EXSS 1346.5+2650	RXC J1348.8+2635	XSS J1348+2642
3A 1346+269	FR 82	1RXS J134852.6+263541	[FR1] 278
C1G 1346.7+2650	1H 1348+267	2U 1348+24	[685] 272
2E 3142	N 1347+268	3U 1349+24	
2E 1346.5+2650	INTREF 578	4U 1348+25	



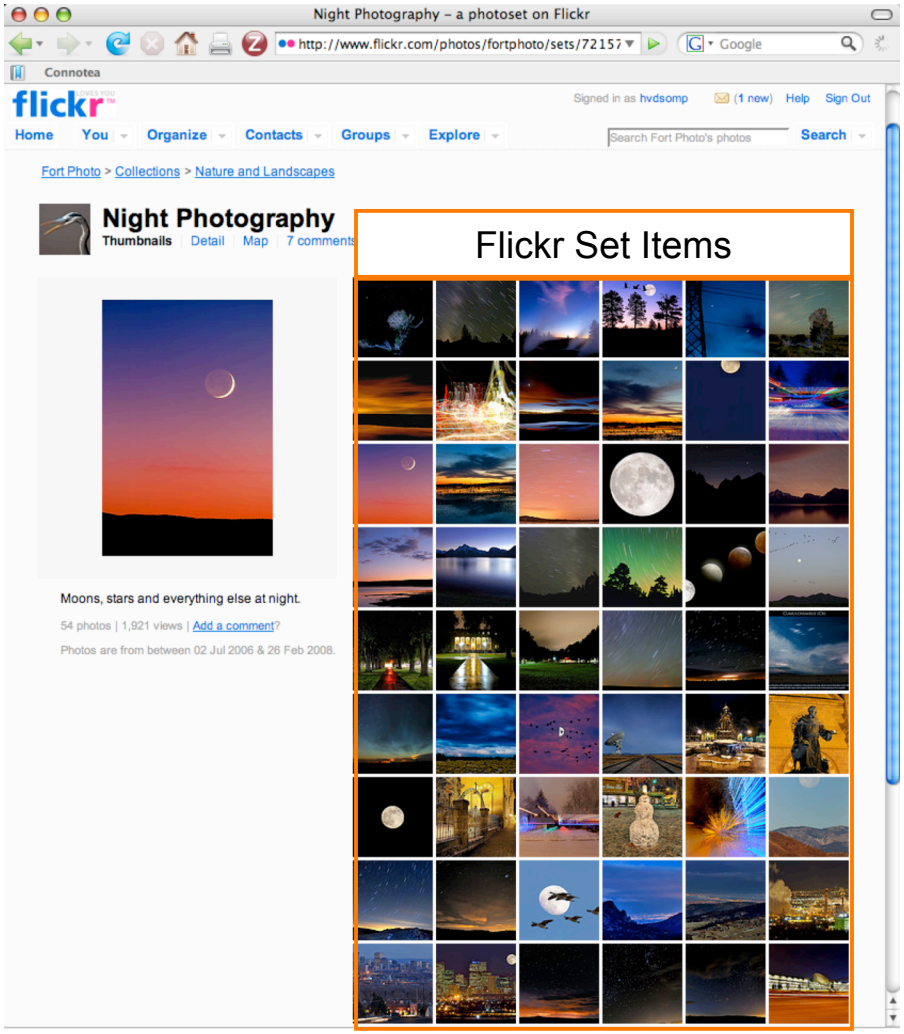
OPEN ARCHIVES

Aggregations!



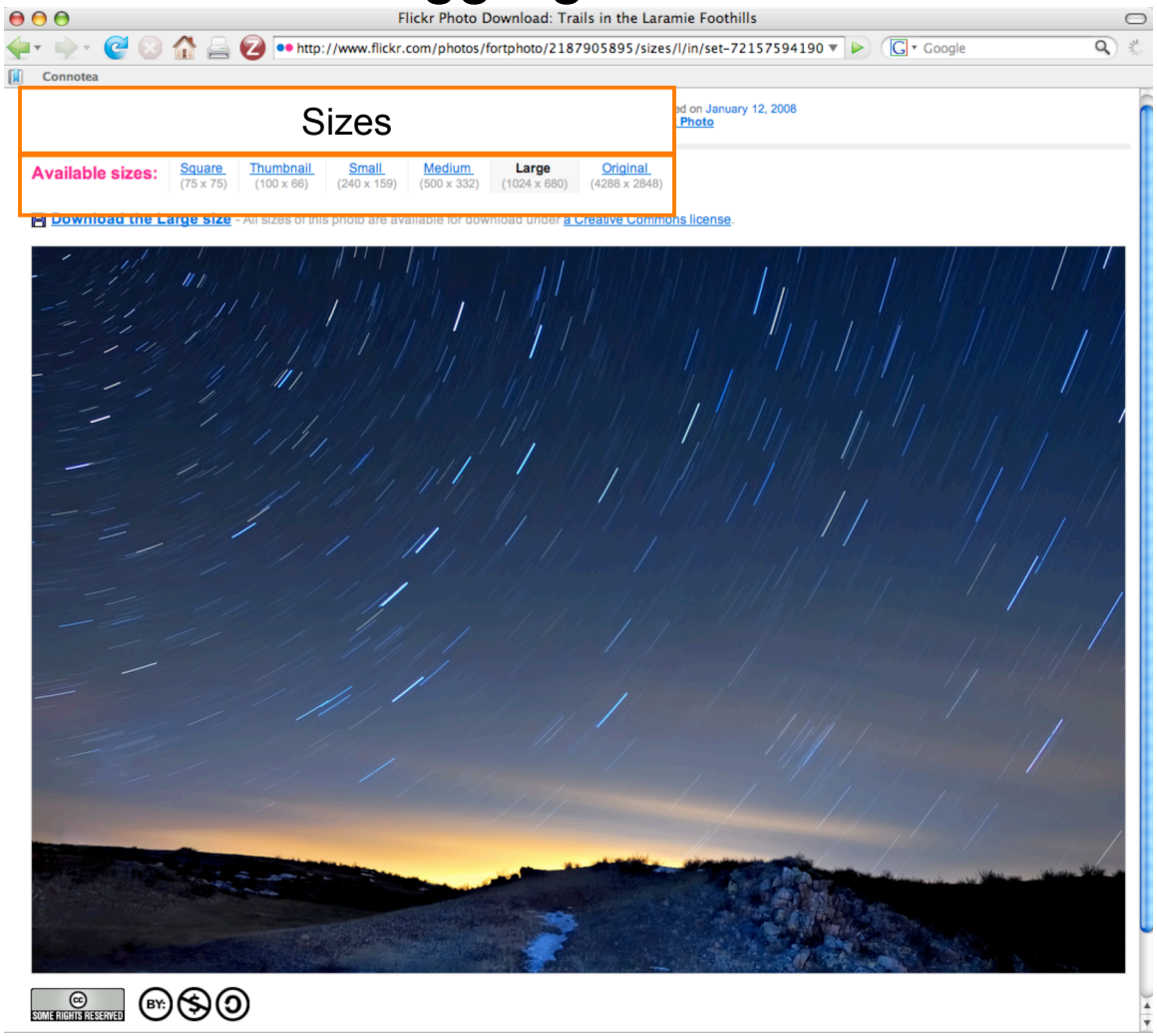
http://arxiv.org/abs/astro-ph/0611775

Aggregations!!



http://www.flickr.com/photos/fortphoto/sets/72157594190371016/

Aggregations!!!



http://www.flickr.com/photos/fortphoto/sets/72157594190371016/

OAI Object Reuse and Exchange: Original Vision

- Scholarly communication as a global, cross-repository workflow.
  - Leverage the intrinsic value of the materials that become available in distributed repositories.
  - Value chains across repositories and applications with repository materials as their subject.
  - Make repositories **active nodes in a global environment**, not passive local nodes.
  - Life for those materials **starts** in repositories; it does not end there.
  - Materials from repositories must be **reusable in different contexts**.

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September 2004

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Rethinking Scholarly Communication

Building the System that Scholars Deserve

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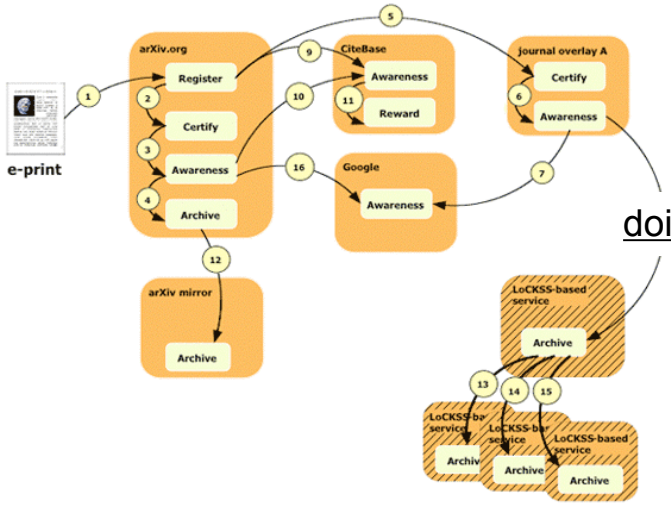


doi:10.1045/september2004-vandesompel

OAI Object Reuse and Exchange: The Reality

Subject: **Aggregations** of Web resources

Approach: Publish **Resource Maps** to the Web that Instantiate, Describe, and Identify Aggregations

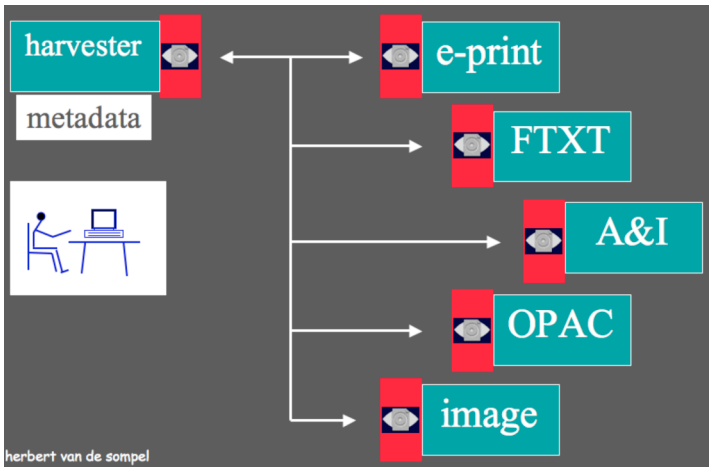
Reuse: URI of Aggregation as handle; Resource Map as the ore for value chains

Examples of what could be achieved (in interoperable ways)

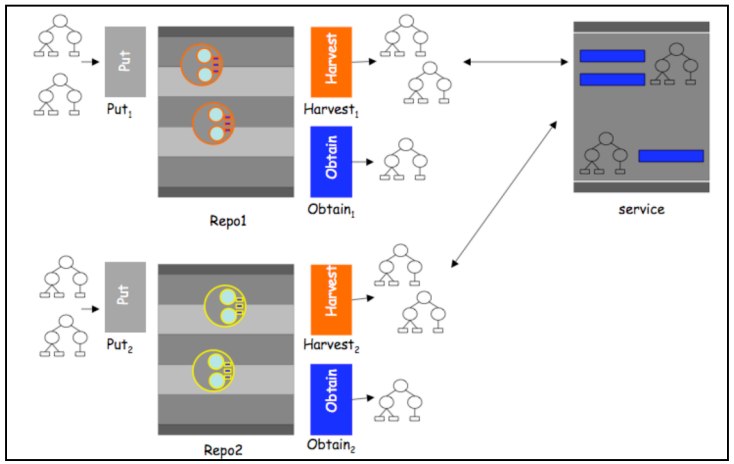
- Grouping of search engine results according to Aggregation boundaries instead of or in addition to listing ungrouped results.
- Grouping all citations to a paper, instead of having different citation counts, e.g. a count for the PDF version, a count for the PS version, a count for the splash page.
- Print all components of an Aggregation in one go.
- Provide navigation map of all components of an Aggregation .
- Group a resource and annotations pertaining to the resource.
- Submit an Aggregation to a repository (cf. SWORD).
- Preservation of an Aggregation by leveraging existing Internet infrastructure.

OAI Object Reuse and Exchange: A Resource-Centric Approach

- Prior efforts had the repository as the center of the interoperability thinking:
  - Including OAI-PMH
  - Including initial OAI-ORE thinking cf. “Augmenting Interoperability across Scholarly Repositories”
- This approach does not vibe well with the Web:
  - The Web Architecture knows resources and URIs, not repositories
  - Requires special treatment by applications that dominate the Web.

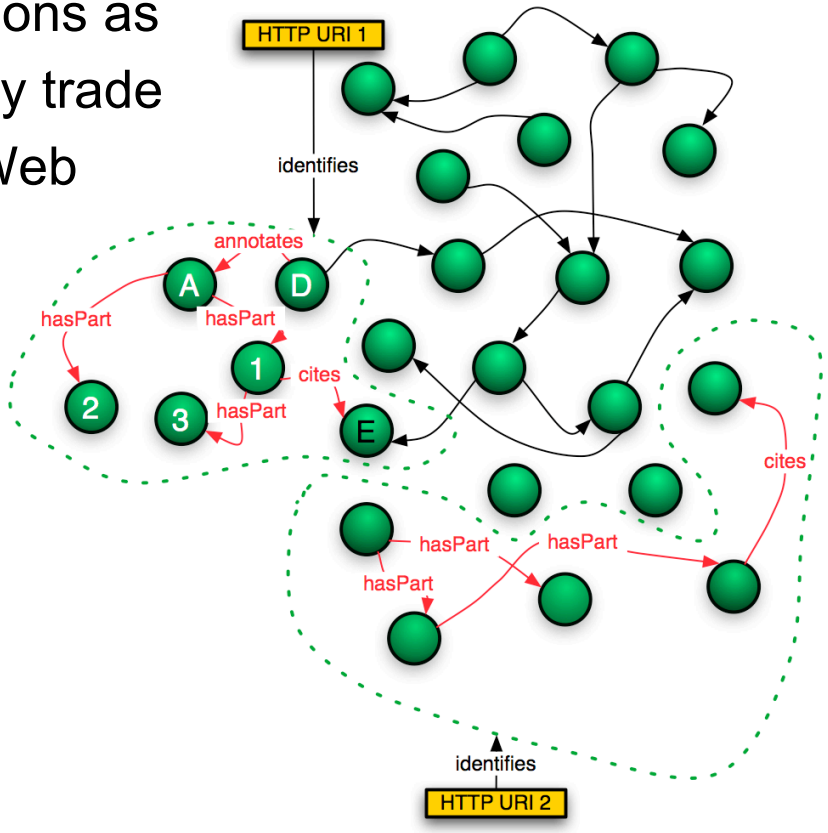


Keep dreaming!

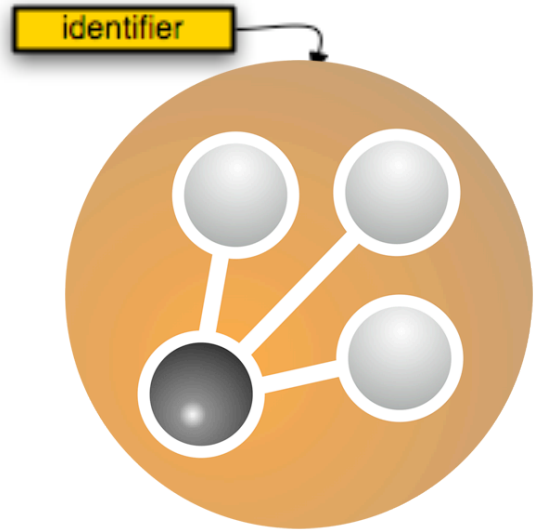


OAI Object Reuse and Exchange: A Resource-Centric Approach

- Fundamental shift in the chosen approach towards interoperability
- The Web Architecture as the platform for interoperability
- Resources, URIs, and representations as the tools of the ORE interoperability trade
- De-facto integration with existing Web applications
- Potential of adoption by other communities
- Potential of tools created by other communities
- ….



From Compound Information Objects to Aggregations

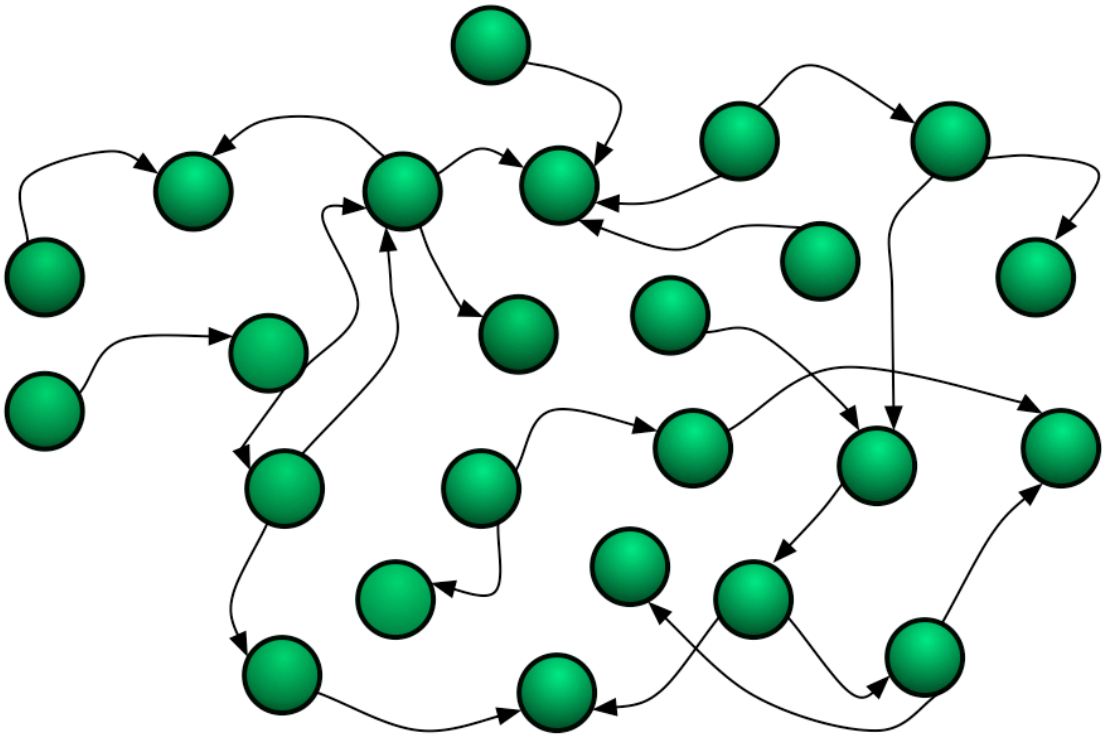


Identified, bounded aggregations of related information units that form a logical whole.

Components of a compound object may vary according to:

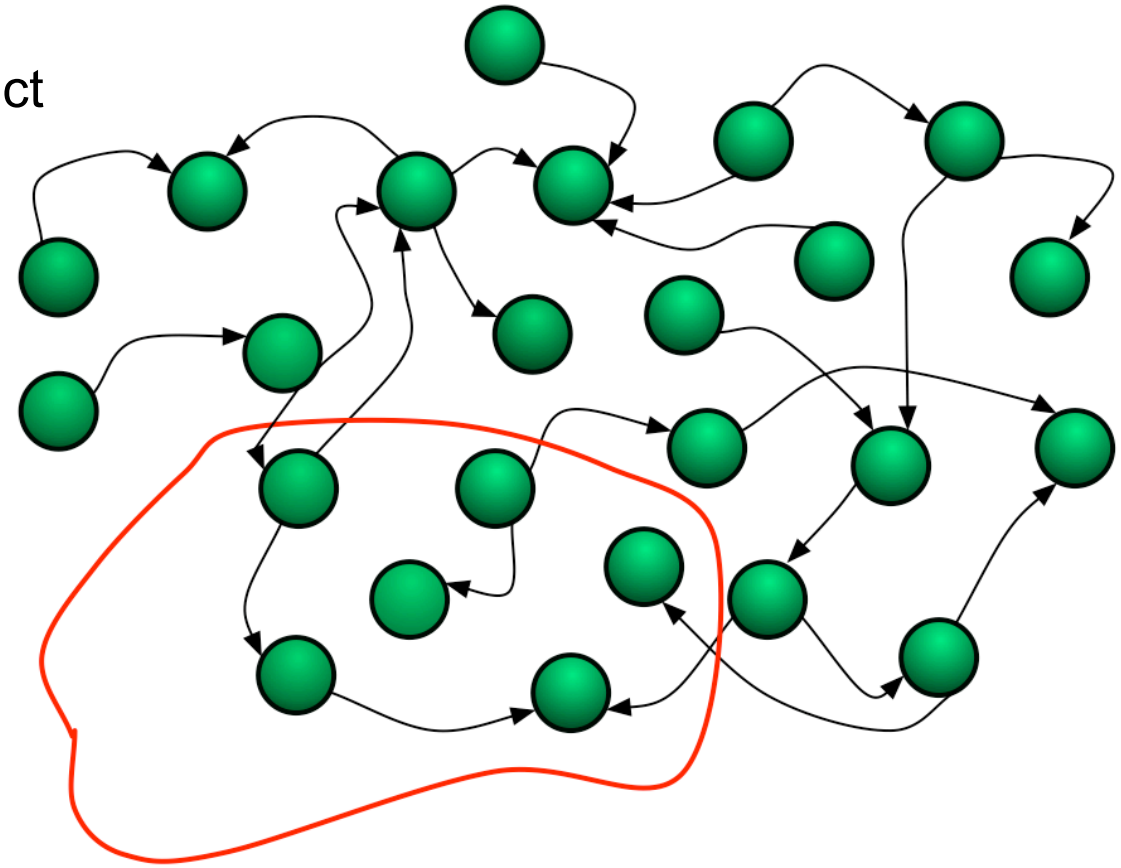
- Semantic type: book, article, software, dataset, simulation, …
- Media type: text, image, audio, video, mixed
- Media format: PDF, HTML, JPEG, MP3, …
- Network location
- Relationships: internal, external

The Web



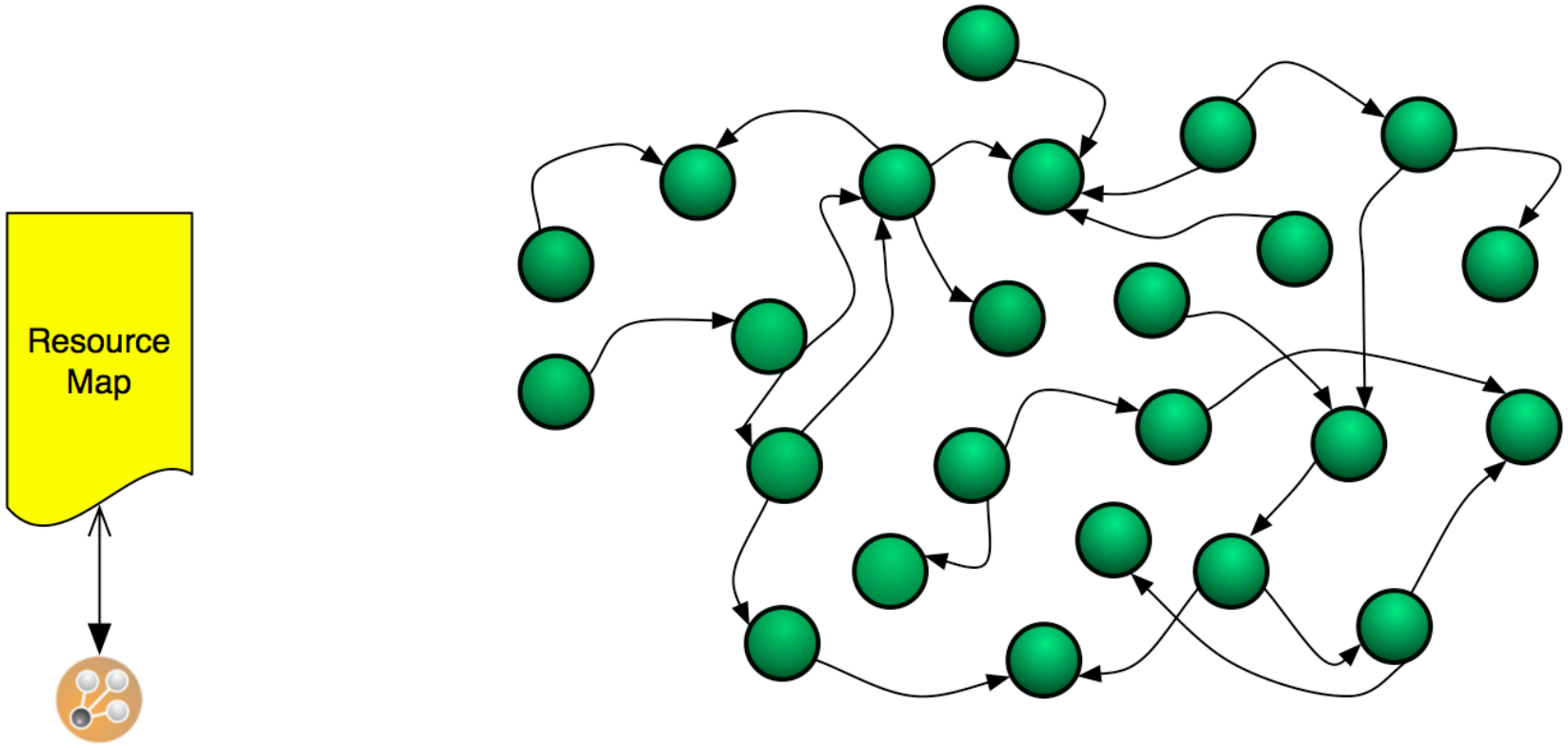
An Aggregation and the Web

- Resources of an Aggregation are distinct URI-identified Web resources

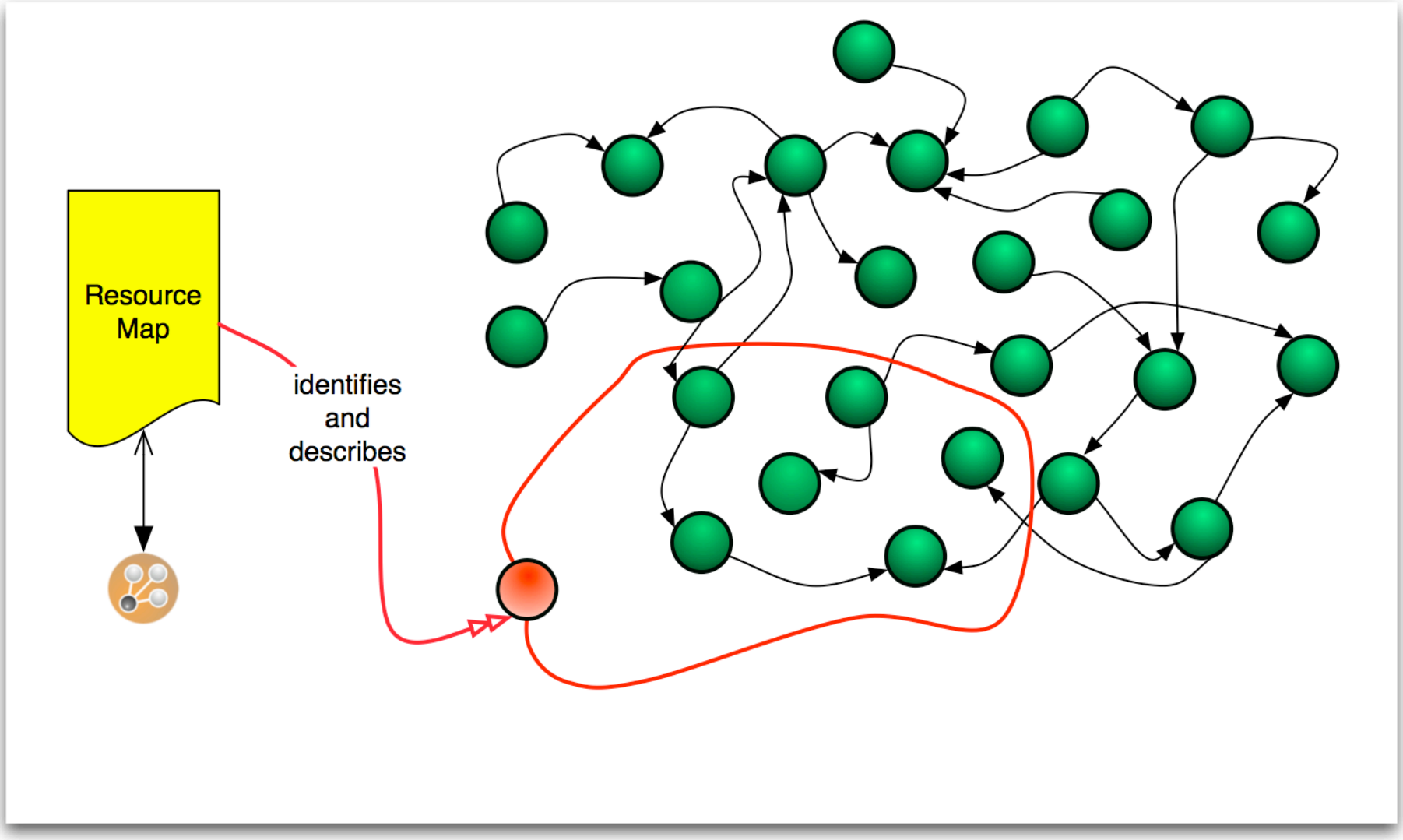


- Missing are:
  - The boundary that delineates the Aggregation in the Web
  - An identity (URI) for the Aggregation

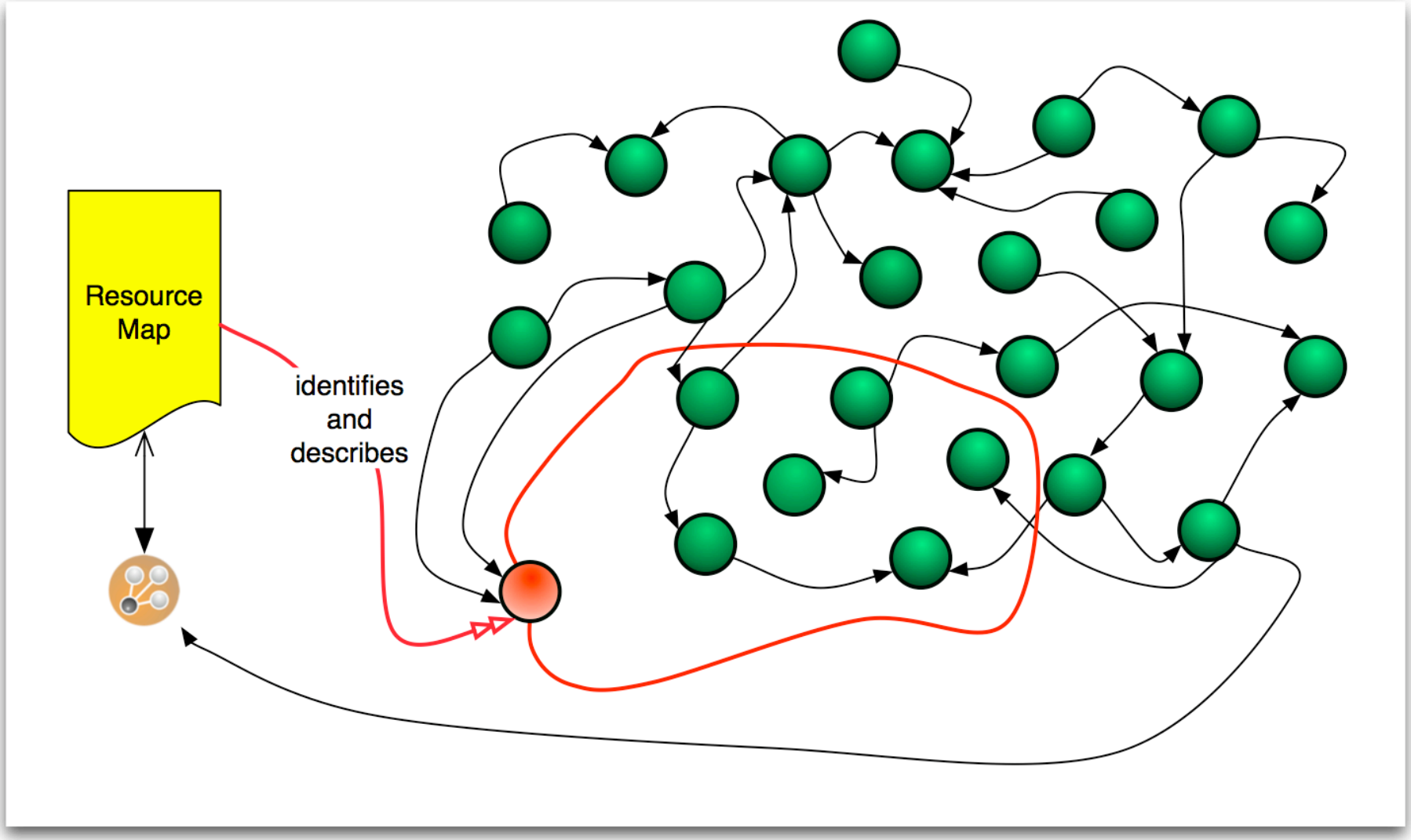
Publish a Resource Map to the Web



The Resource Map Identifies and Describes the Aggregation



The Resource Map and the Aggregation integrate into the Web



Open Archives Initiative Object Reuse and Exchange

ORE User Guide - Primer

Your point of entry to the ORE world

2 April 2008

Note: This document is alpha and subject to change at any time. It is being made available to the public for review and comment. Any implementation of the specifications or recommendations within should be undertaken with recognition of this alpha status. Please comment via the OAI-ORE Google Group.

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Michael Nelson, Old Dominion University
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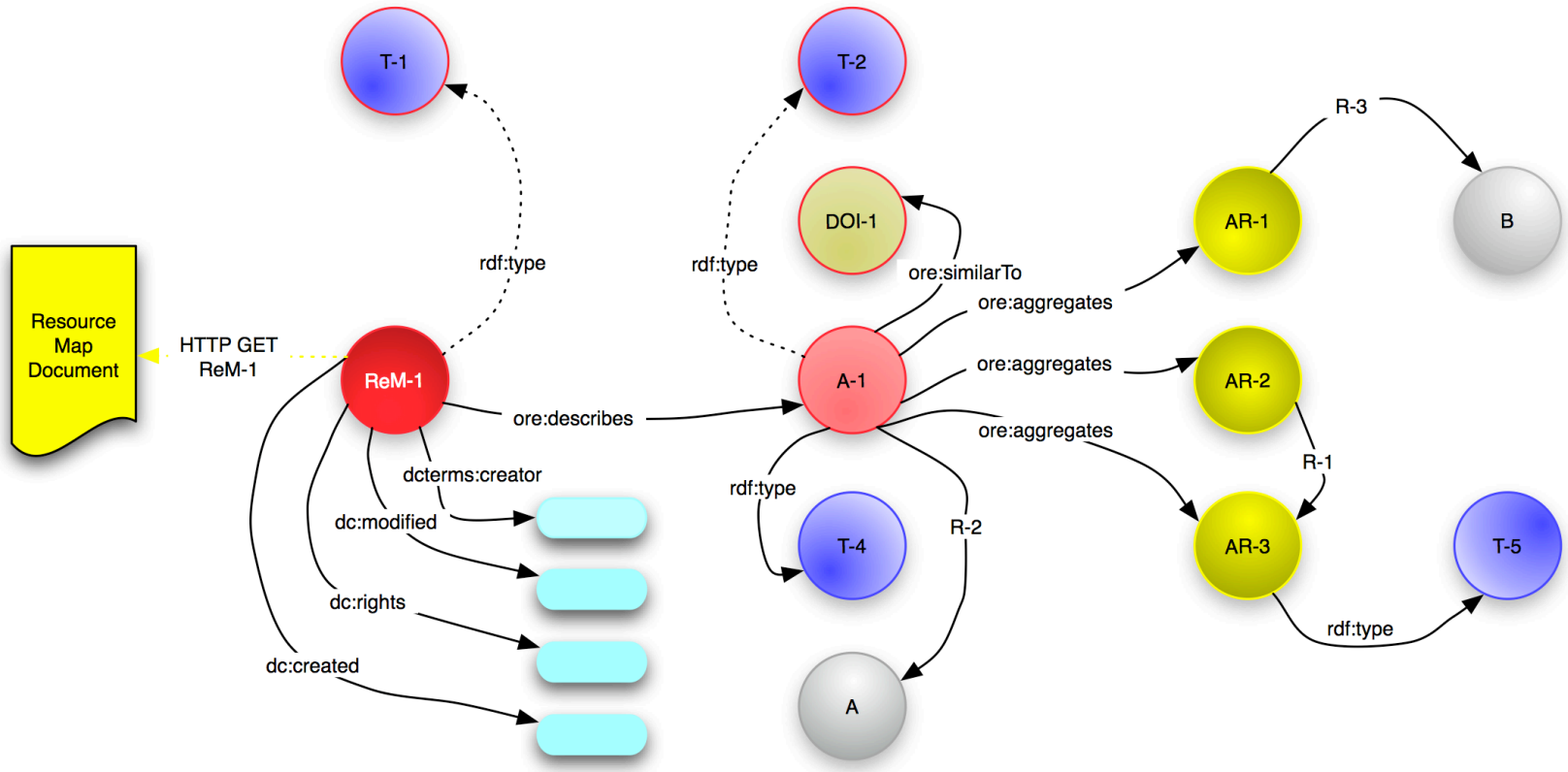
Abstract

Open Archives Initiative Object Reuse and Exchange (OAI-ORE) defines standards for the description and exchange of aggregations of Web resources. This document provides a brief overview of the abstract data model underlying these standards, serializations, implementation with HTTP, and discovery. This user guide is one of several documents comprising the OAI-ORE specification and user guide. It is intended as the place to start for first time readers.

ORE Data Model



Open Archives Initiative Object Reuse and Exchange

ORE Specification - Abstract Data Model

28 March 2008

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Abstract

Open Archives Initiative Object Reuse and Exchange (OAI-ORE) defines standards for the description and exchange of aggregations of Web resources. This document describes the abstract data model that is the foundation for these standards. This model is conformant with the Architecture of the World Wide Web [Web Architecture] and leverages Named Graphs

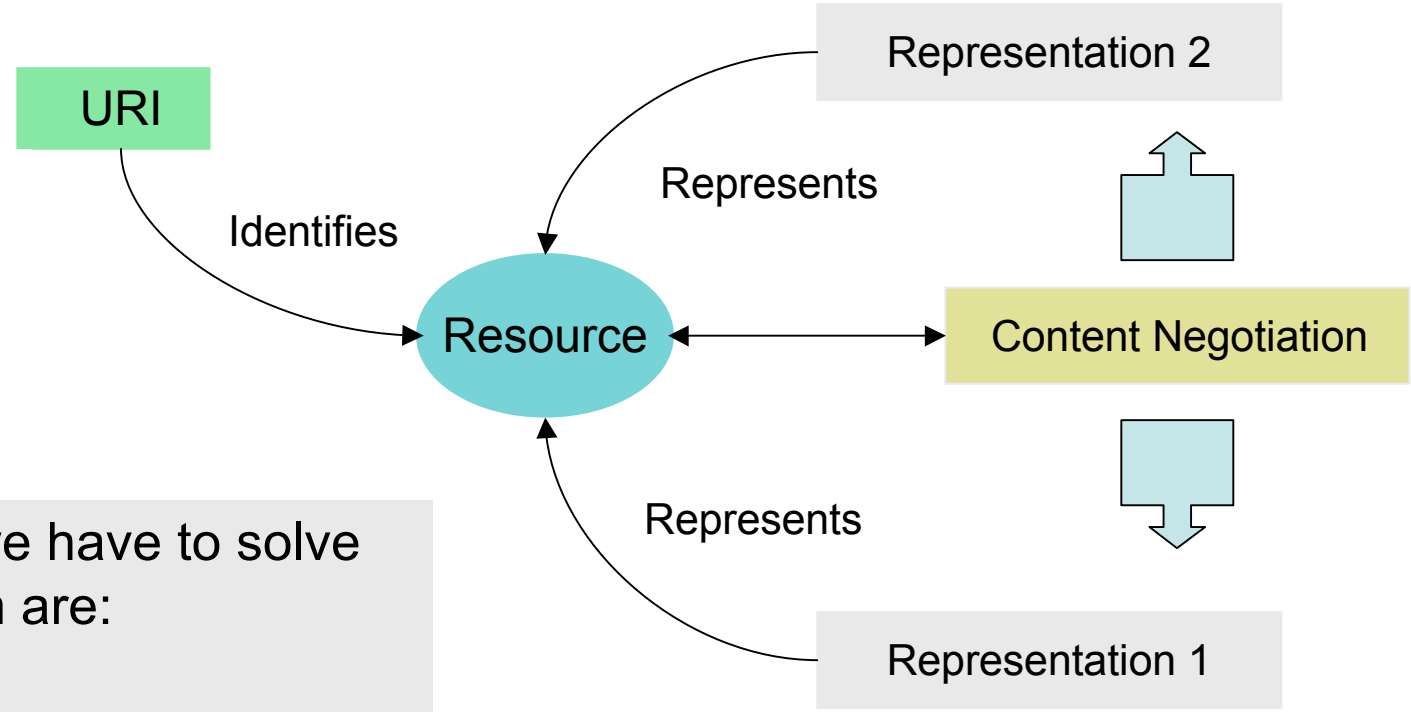
Abstract Data Model: Why and What?

- Separation of concerns
  - Design
  - Implementation
- Provide basis for future implementations
  - Technology of the web (e.g. HTTP) will change over time
  - Other implementations are possible

Requirements of the Model

- Aggregations
  - Both simple hierarchical and inter/intra related
  - Identification via URI
  - Metadata
- Resource Maps
  - Description of aggregations via a set of assertions
  - Identification via URI – independent of aggregation
  - Metadata
- Conformance to web architecture and RDF Semantics

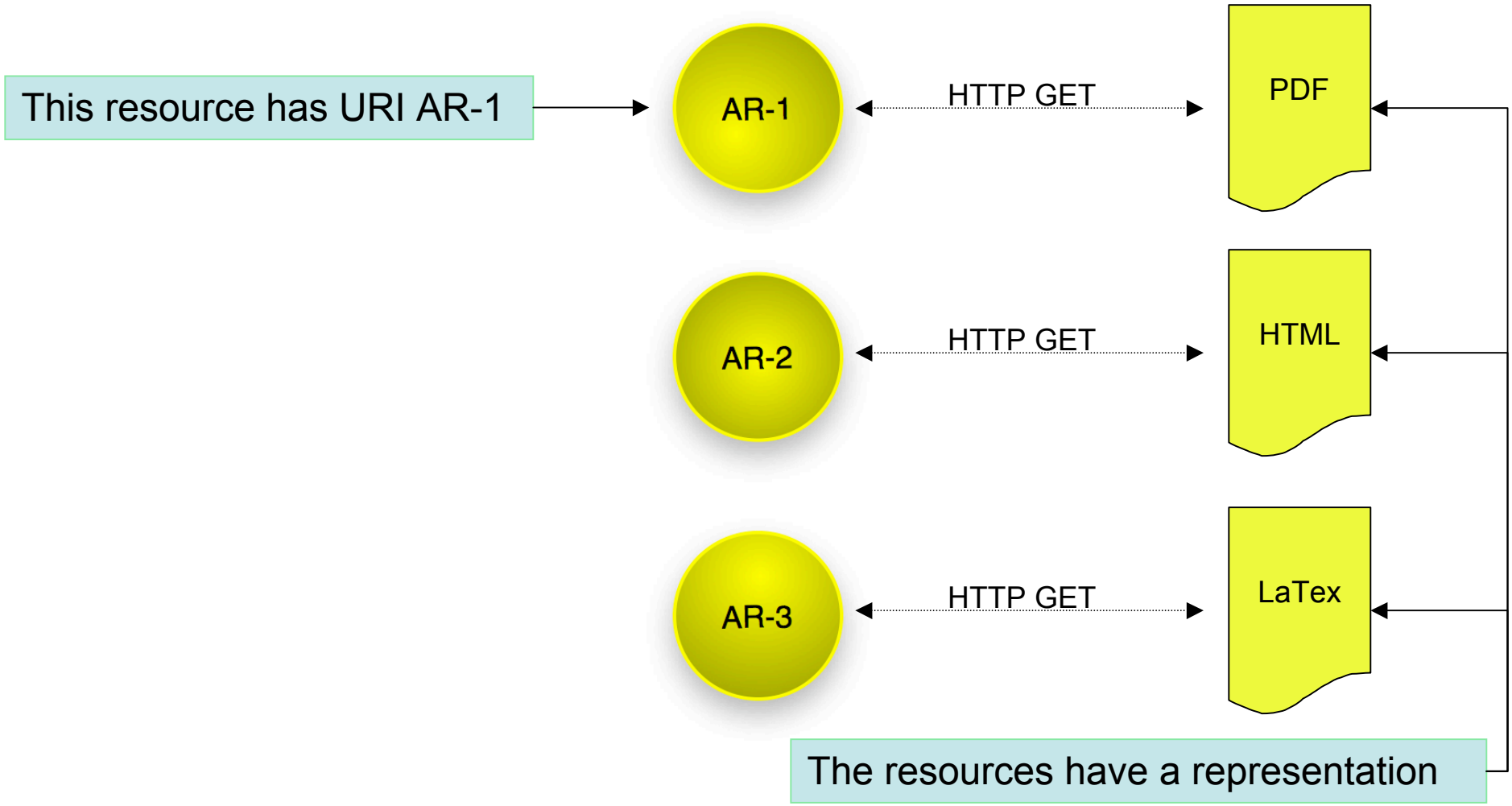
W3C Web Architecture



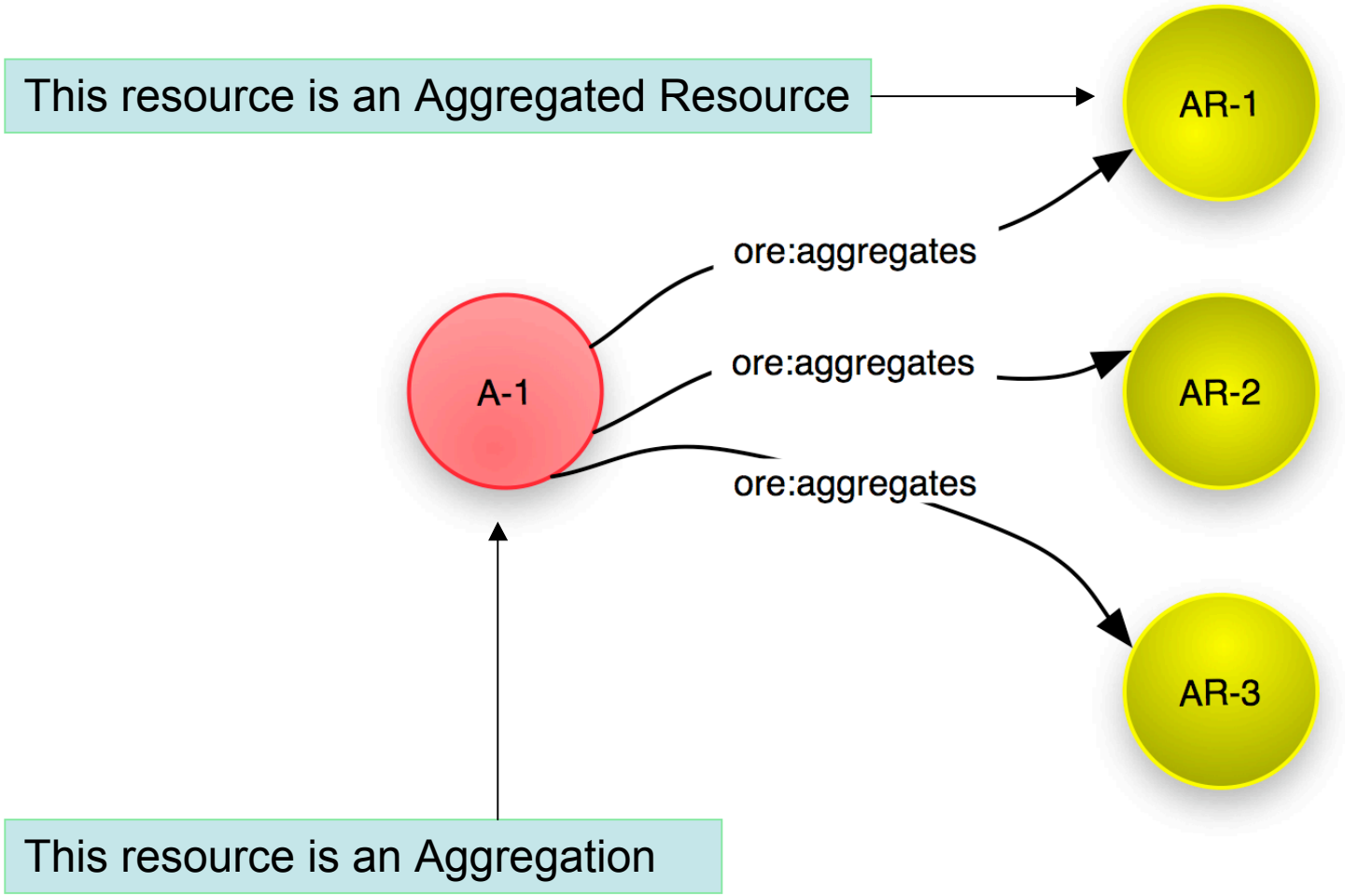
So, the tools we have to solve the problem are:

- Resource
- URI
- Representation

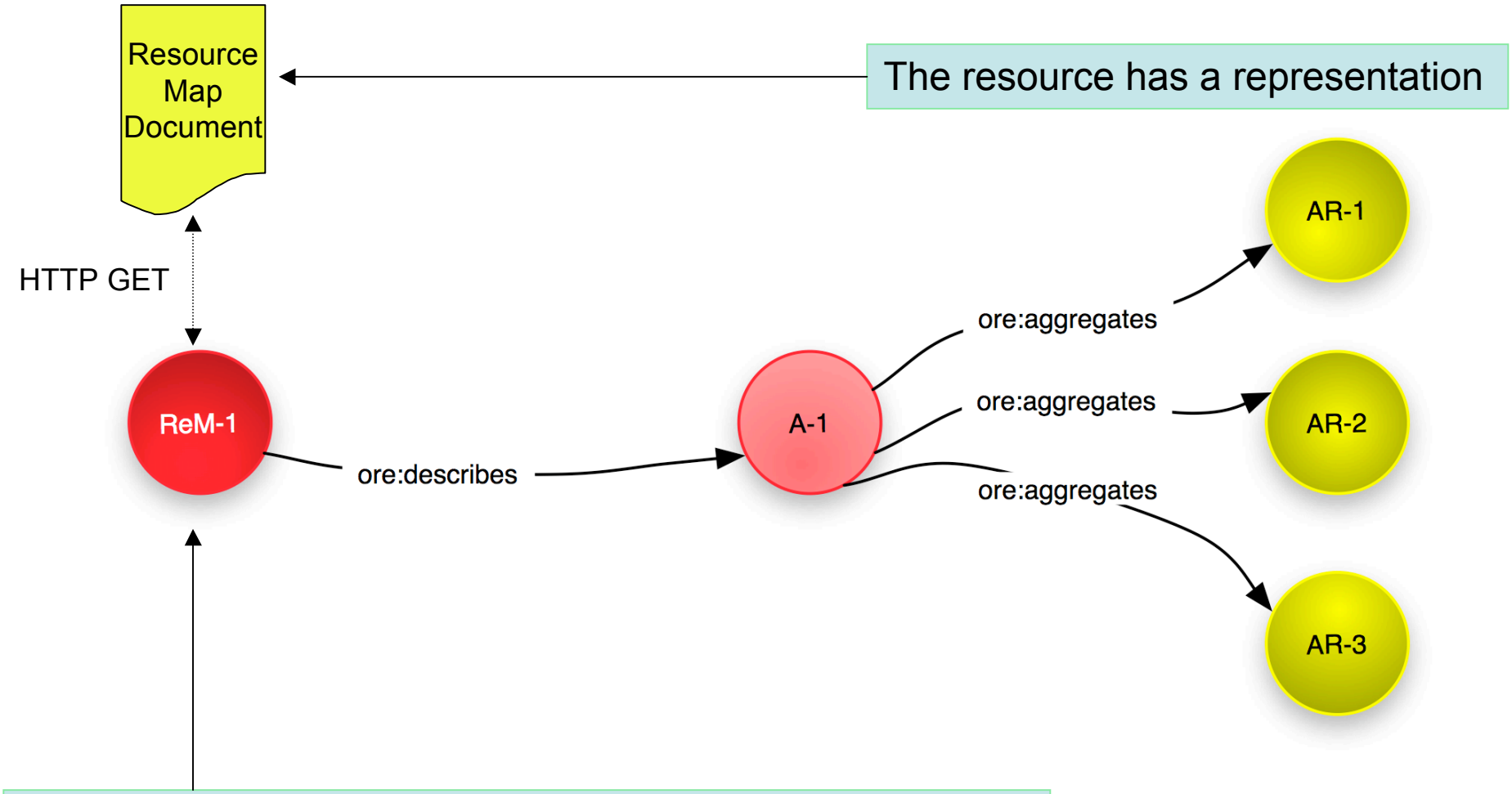
It starts with some resources that belong together



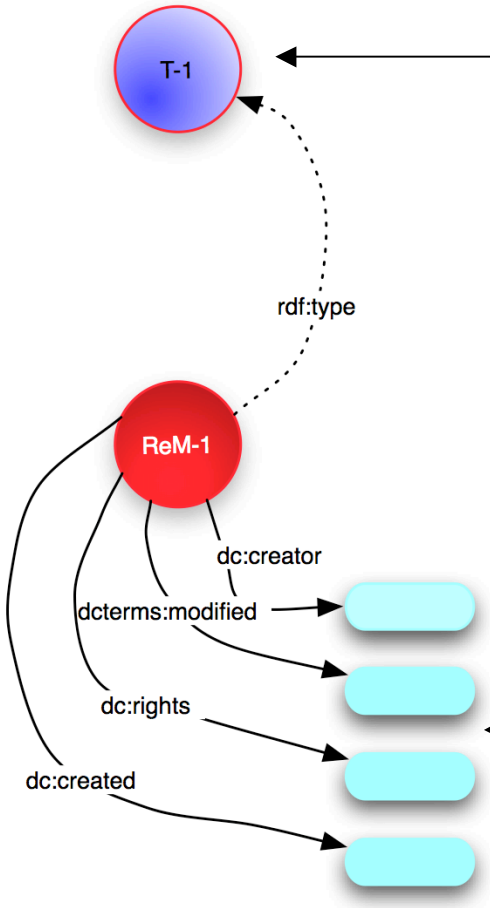
Aggregation: a Set of Resources



Describe this Aggregation: Resource Map



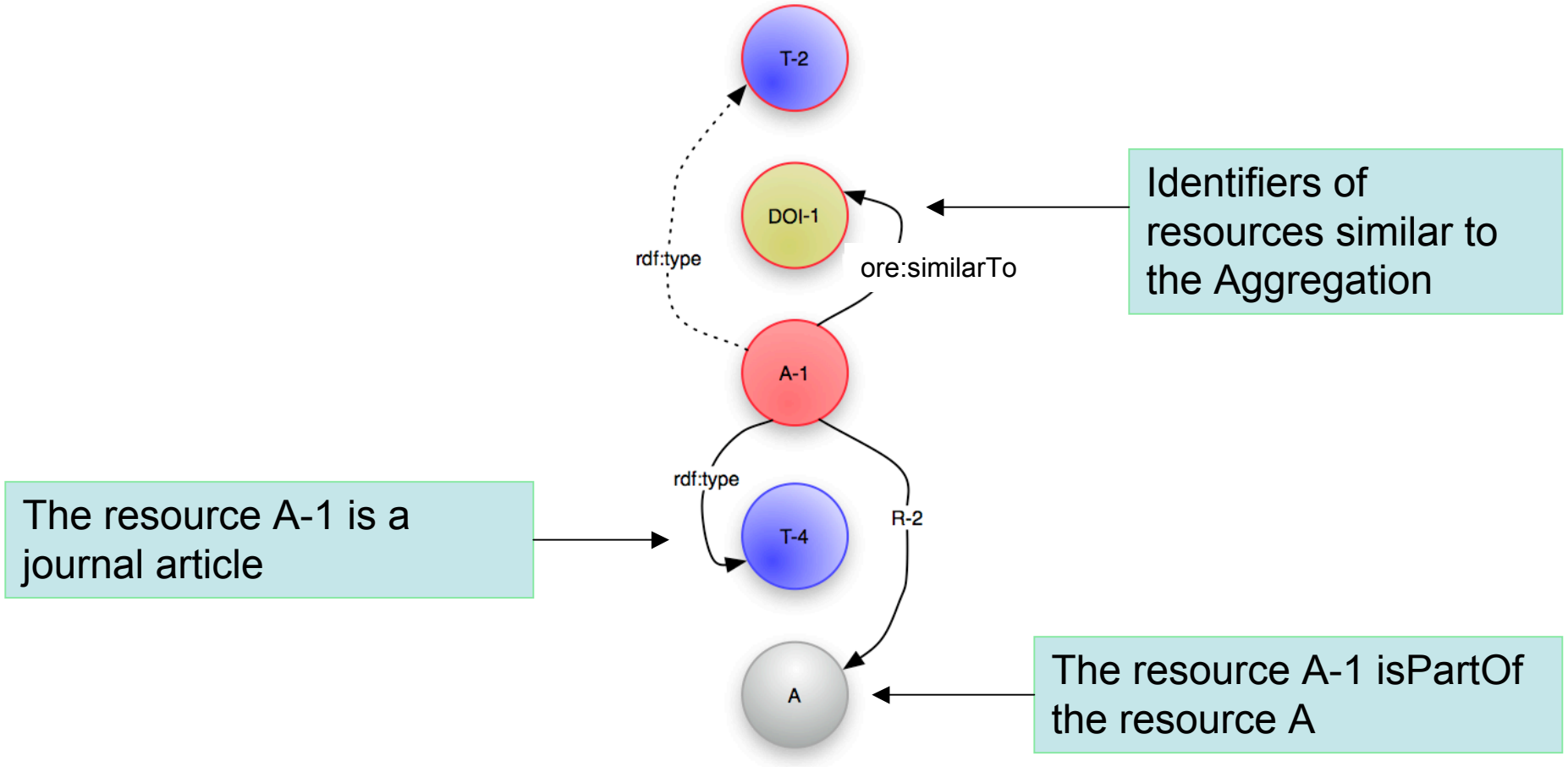
The Resource Map can assert more



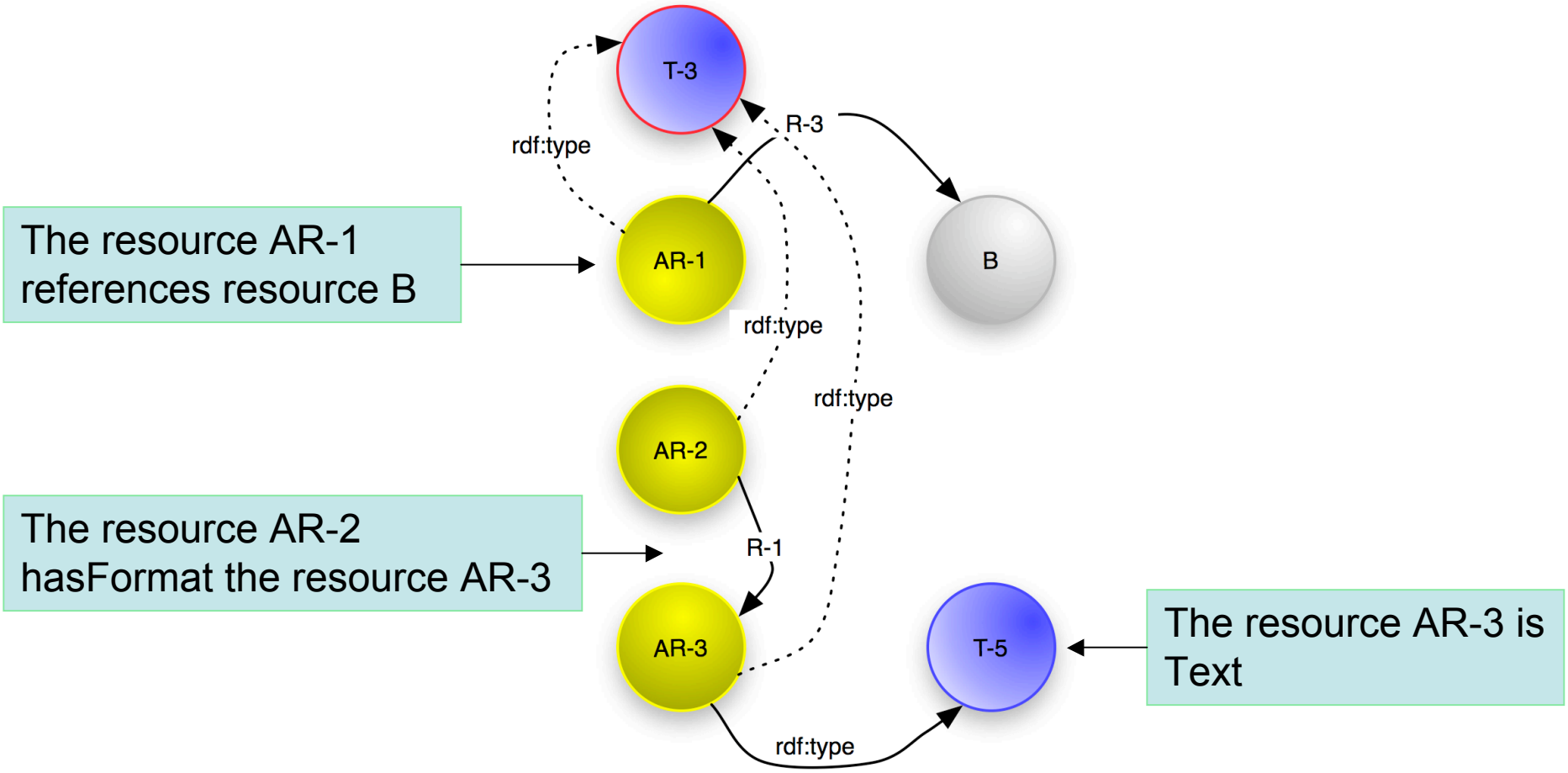
The resource ReM-1 is a Resource Map

About the Resource Map:
- **creator**
- **modification datetime**
- creation datetime
- rights

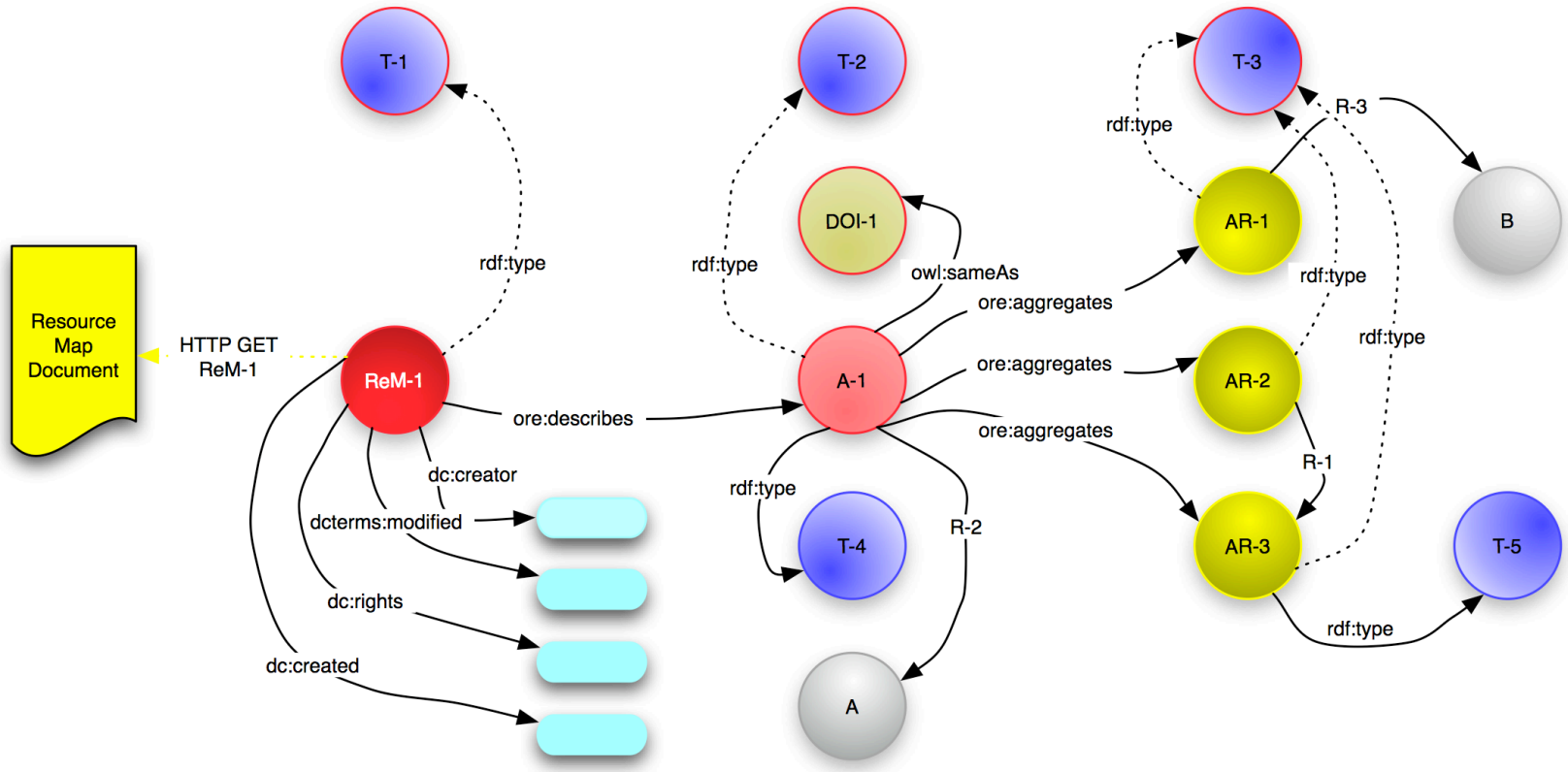
The Resource Map can assert more



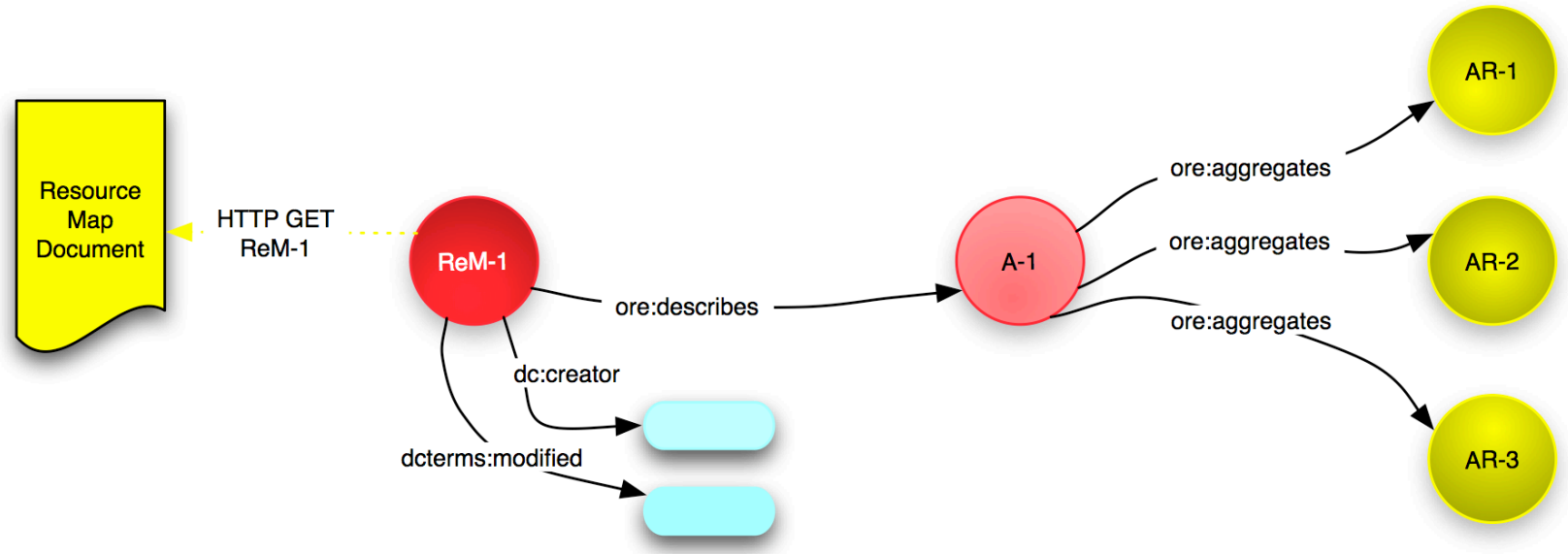
The Resource Map can assert more



So, the Resource Map can assert a lot …



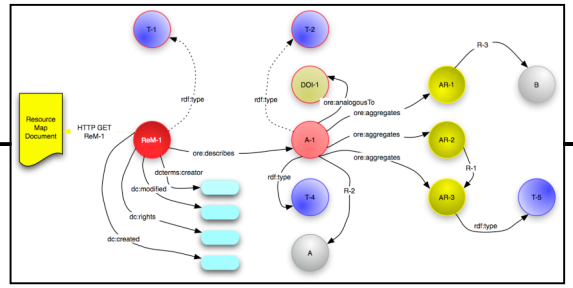
But minimally it asserts this …



Relationship between Aggregation and Resource Map

- An Aggregation is a Resource with a URI
- A Resource Map is a Resource with a URI
- Each Resource Map asserts (identifies) and describes one Aggregation
- Each Resource MUST have one serialization (representation)
- Each Aggregation MAY be asserted and described by multiple Resource Maps

Serializations of the ORE Model



Serialization

Serialization

Serialization

Resource Map

GRDDL Transformation

Resource Map

splash page

Resource Map

Atom

RDF/XML

RDFa

Open Archives Initiative Object Reuse and Exchange

ORE Specification - Resource Map Profile of Atom

4 April 2008

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Abstract

Open Archives Initiative Object Reuse and Exchange (OAI-ORE) defines standards for the description and exchange of aggregations of Web resources, named Aggregations. OAI-ORE introduces the notion of Resource Maps that describe an Aggregation. A Resource Map is resource that is a specialization of a named graph. A Resource Map identifies an Aggregation, it asserts the finite set of constituent resources (the

Open Archives Initiative Object Reuse and Exchange

ORE Specification - Representing Resource Maps Using RDF Syntaxes

29 February 2008

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Abstract

Open Archives Initiative Object Reuse and Exchange (OAI-ORE) defines standards for the description and exchange of aggregations of Web resources. OAI-ORE introduces the notion of a Resource Map, a named RDF Graph [RDF Concepts] which describes the Aggregation, the Aggregated Resources of which it is composed, and the relationships between them (and/or the relationships between these and other

Atom Feeds

- Attempt to rationalize RSS 1.x, 2.x divergence
- Extensible model
- Adopted by Google, Microsoft, …
- IETF FRC 4287
  - http://www.ietf.org/rfc/rfc4287

Structure of Atom Feed

- **Feed**
  - ID
  - Author
  - Link
  - Title
  - Updated
  - *
  - **Entry**
    - ID
    - Updated
    - Link
    - Summary
    - Content
    - *
  - **Entry**

Simple Atom Feed

```
<?xml version="1.0" encoding="utf-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">

 <title>Dan's Blog</title>
 <link rel="self" href="http://netzooid.com/blog/"/>
 <updated>2007-11-07T18:30:02Z</updated>
 <author>
   <name>Dan Diephouse</name>
 </author>
 <id>urn:uuid:60a76c80-d399-11d9-b91C-0003939e0af6</id>

 <entry>
   <title>Building services with AtomPub</title>
   <link href="http://netzooid.com/blog/atompub_services"/>
   <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
   <updated>2007-11-07T18:30:02Z</updated>
   <content>
     … (you must have content or a summary)
   </content>
 </entry>

</feed>
```

Feed

Feed Metadata

Entry

Entry Metadata

Simple Atom Feed

```
<?xml version="1.0" encoding="utf-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">

 <title>Dan's Blog</title>
 <link rel="self" href="http://netzooid.com/blog/"/>
 <updated>2007-11-07T18:30:02Z</updated>
 <author>
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 </author>
 <id>urn:uuid:60a76c80-d399-11d9-b91C-0003939e0af6</id>

 <entry>
   <title>Building services with AtomPub</title>
   <link href="http://netzooid.com/blog/atompub_services"
   <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
   <updated>2007-11-07T18:30:02Z</updated>
   <content>
     … (you must have content or a summary)
   </content>
 </entry>

</feed>
```

Feed Document URL

Feed id (URI)

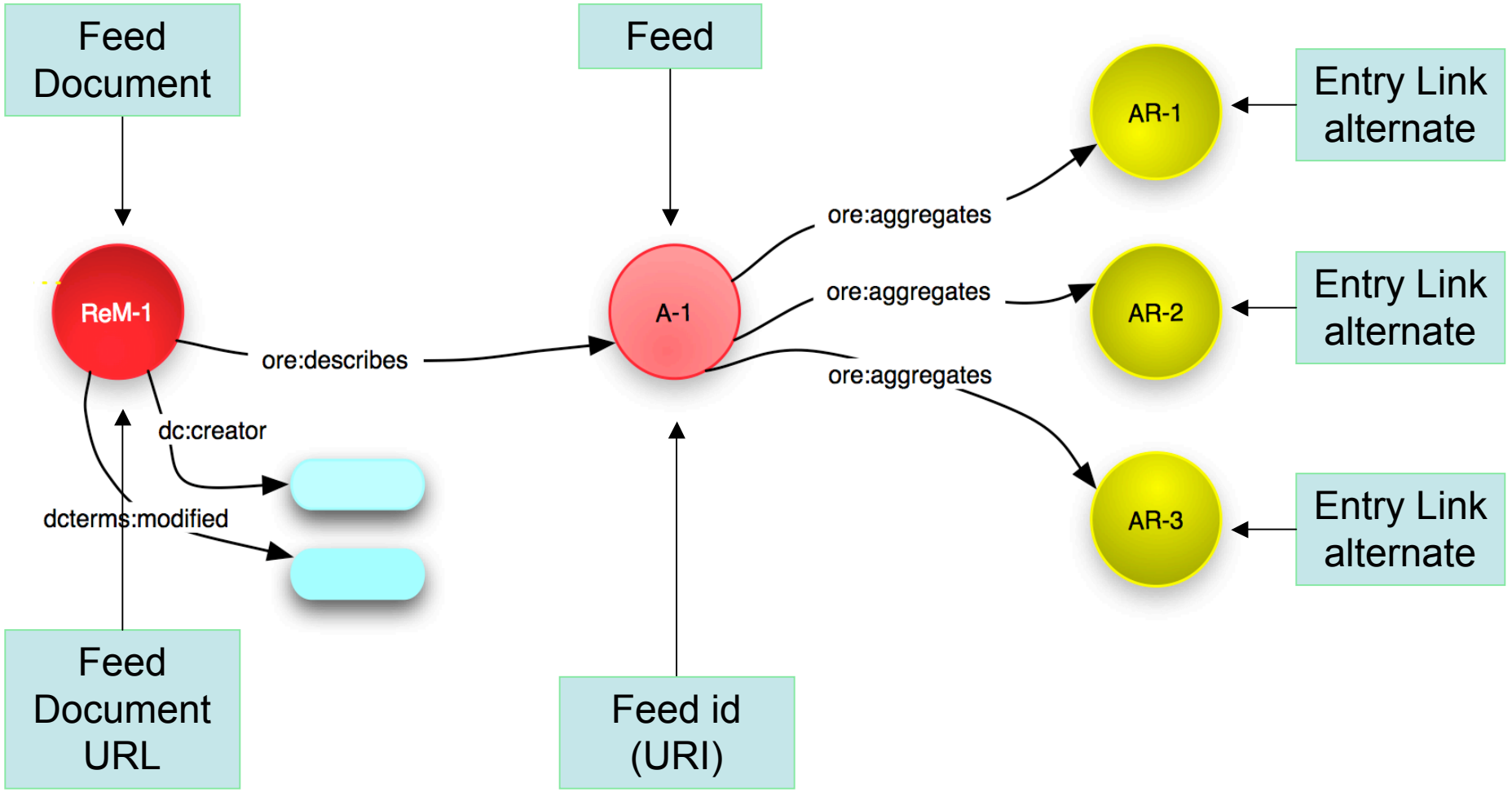
Link altenate

Entry id (URI)

Atom Serialization Goals

- Result must be valid Atom
- Use as many Atom constructs as possible
  - Don’t rely on extensions
  - Don’t distort semantics
- Rely on RDF/XML when necessary

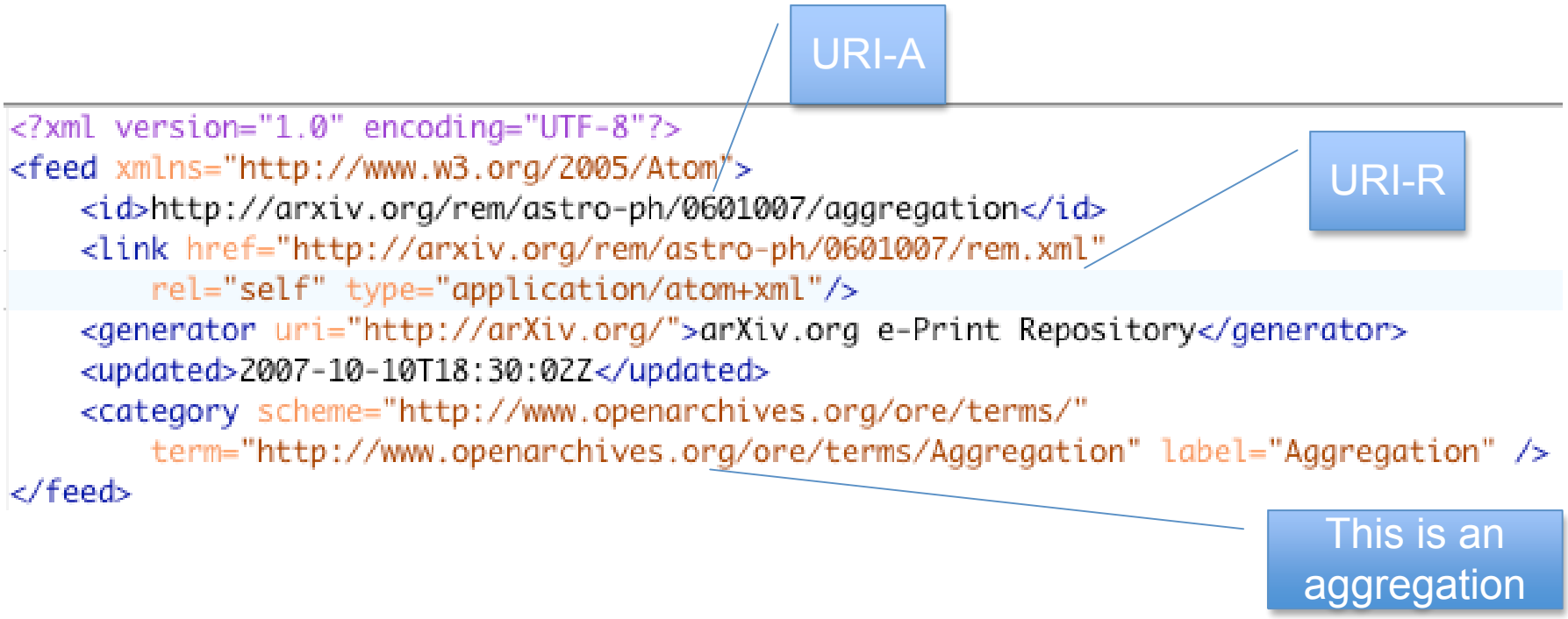
Mapping ORE Model to Atom



Mapping ORE Model to Atom

ORE	Atom
Aggregation	*Feed*
URI-A	Feed <id>
URI-R	<link href="URI" rel="self">
ore:similarTo	<link href="URI" rel="related">
Aggregation Properties/Metadata	Feed metadata (with exceptions)
Aggregated Resource	*Entry*
URI-AR	<link href="URI" rel="alternate">
Aggregated Resource Properties/Metadata	Entry metadata (with exceptions)

Atom-based Aggregation




```
<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">
    <id>http://arxiv.org/rem/astro-ph/0601007/aggregation</id>
    <link href="http://arxiv.org/rem/astro-ph/0601007/rem.xml"
        rel="self" type="application/atom+xml"/>
    <generator uri="http://arXiv.org/">arXiv.org e-Print Repository</generator>
    <updated>2007-10-10T18:30:02Z</updated>
    <category scheme="http://www.openarchives.org/ore/terms/"
        term="http://www.openarchives.org/ore/terms/Aggregation" label="Aggregation" />
</feed>
```

Adding Aggregated Resources

URI-AR

```
<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom">
    <id>http://arxiv.org/rem/astro-ph/0601007/aggregation</id>
    <link href="http://arxiv.org/rem/astro-ph/0601007/rem.xml" rel="self" [1 line]
    <generator uri="http://arXiv.org/">arXiv.org e-Print Repository</generator>
    <updated>2007-10-10T18:30:02Z</updated>
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    <entry>
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            type="application/pdf"/>
    </entry>
    <entry>
        <id>tag:arxiv.org,2007:astro-ph/0601007v2:e-print</id>
        <link href="http://arxiv.org/e-print/astro-ph/0601007" rel="alternate"/>
    </entry>
</feed>
```
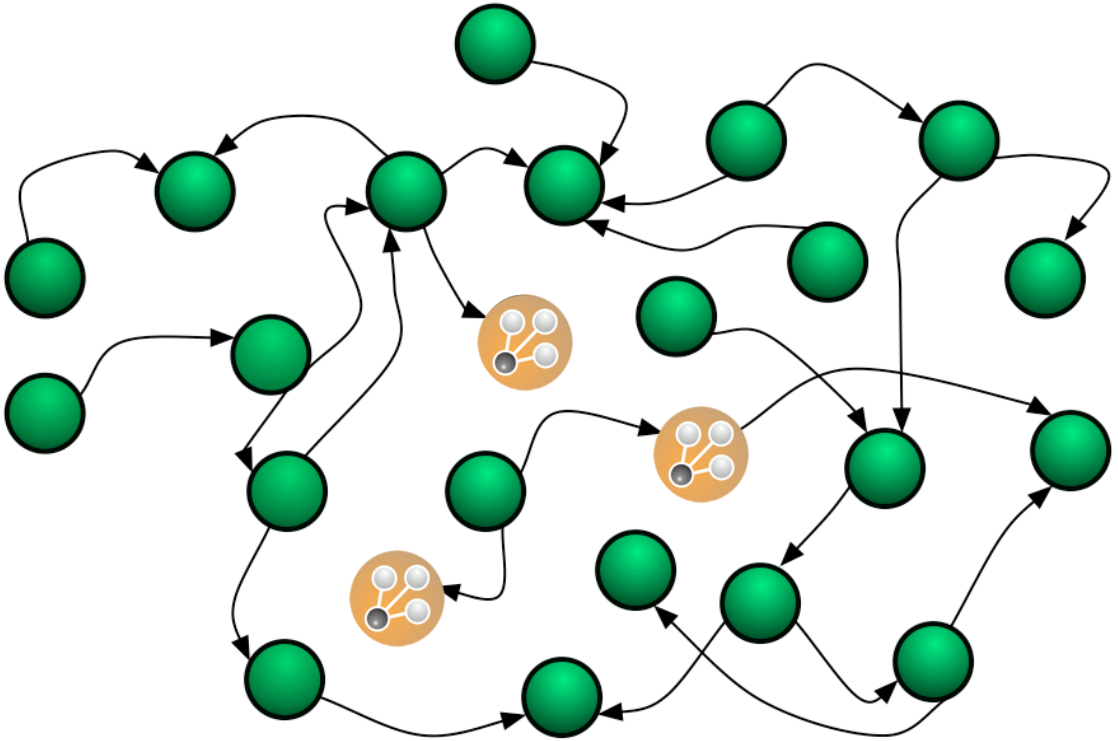

Looking to the future with Atom

- Atom Publishing Protocol
- SWORD
- Microsoft/Google APIs

Resource Map Discovery



Open Archives Initiative Object Reuse and Exchange

ORE User Guide - Resource Map Discovery

1 April 2008

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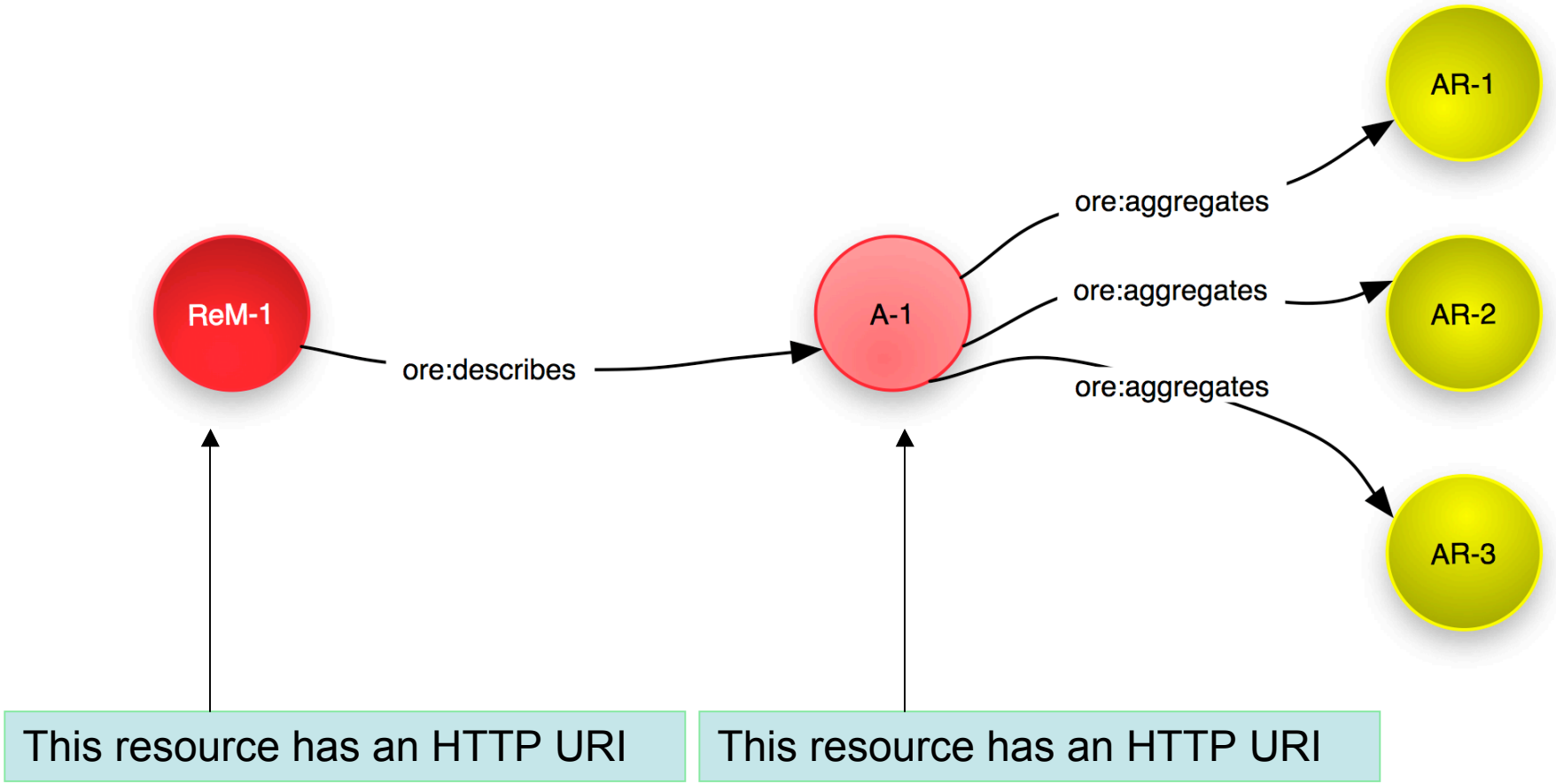
Abstract

Crawlers or harvesters must discover ***Resource Maps*** (***ReMs***) before the aggregations described by them can be understood. ReMs can be discovered in any number of ways and this document discusses some of the recommended discovery mechanisms. Other discovery mechanisms may evolve over time and vary based on the practices of particular communities. This user guide is one of several documents comprising the OAI-ORE specification and user guide.

Resource Map Discovery

- Batch Discovery
  - OAI-PMH
  - SiteMaps
  - Feeds (RSS, Atom)
- Discovery via HTML pages
- Discovery via HTTP LINK Headers

Aggregation & Resource Map: HTTP Implementation



Open Archives Initiative Object Reuse and Exchange

ORE User Guide - HTTP Implementation and Multiple Serializations

02 April 2008

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Abstract

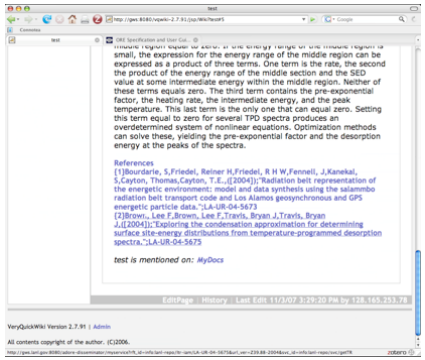
Open Archives Initiative Object Reuse and Exchange (OAI-ORE) defines standards for the description and exchange of aggregations of Web resources. This document describes implementation of OAI-ORE using HTTP [RFC2616], the must widely used protocol of the current World Wide Web. Mechanisms that support multiple Resource Maps in different serializations are described in detail. This user guide is one of several documents comprising the OAI-ORE specification and user guide.

Experiments

- Early experimentation started, e.g.:
  - UIUC: representation independent annotation
  - U of Liverpool & HP Labs: JSTOR objects
  - Cambridge U: Chemistry Thesis
  - U of Queensland: Dekstop-based publishing tool for compound scientific objects
  - Caltech: Astrophysics Portofolios for time-critical automated decisions
  - Netherlands: Building block in national infrastructure
  - See slides from ORE Open Meetings on ORE web site

Experiments: LANL team

- Citation without citation manager



- Compound object archive prototype

http://www.ctwatch.org/quarterly/articles/2007/08/interoperability-for-the-discovery-use-and-re-use-of-units-of-scholarly-communication/