Open Archives Initiative
Object Reuse & Exchange

Context and Motivation

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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

- John Hopkins University

OAI Object Reuse and Exchange: Technical Experts

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Les Carr	University of Southampton
Tim DiLauro	Johns Hopkins University
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Pete Johnston	Eduserv Foundation
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Rob Sanderson	University of Liverpool
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Simeon Warner	Cornell University
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Savas Parastatidis	Microsoft Corporation
Sandy Payette	Fedora Commons
Thomas Place	University of Tilburg - DARE
Andy Powell	Eduserv Foundation - DCMI
Robert Tansley	Google, Inc. - DSpace

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; today)
  - ORE Specifications beta (04/2008)
  - ORE Specification 1.0 (09/2008)

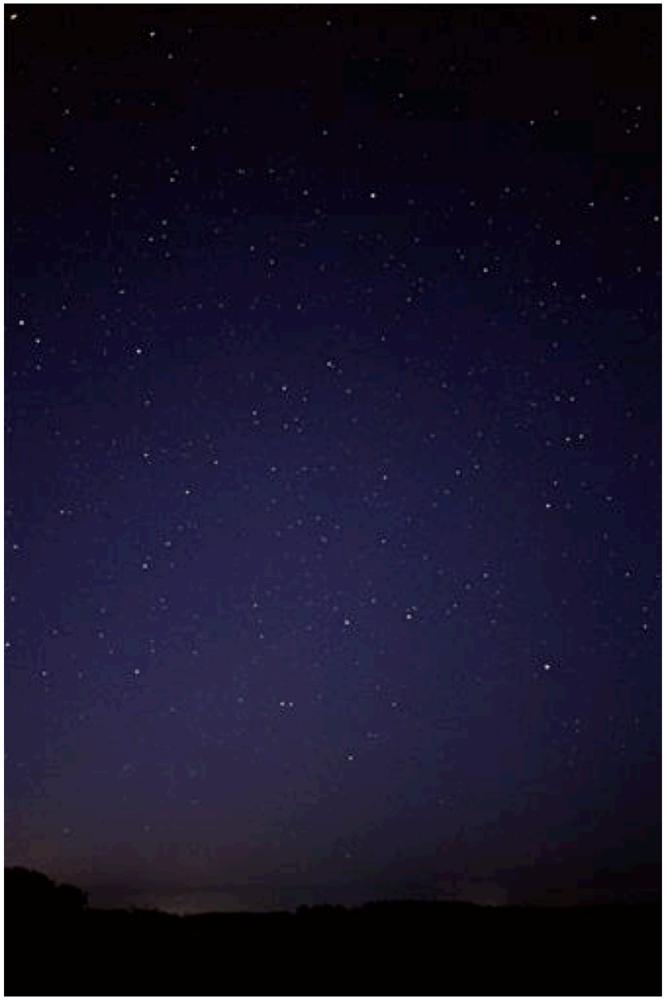
- Experiments to obtain feedback for specifications
  - 02/2008-08/2008

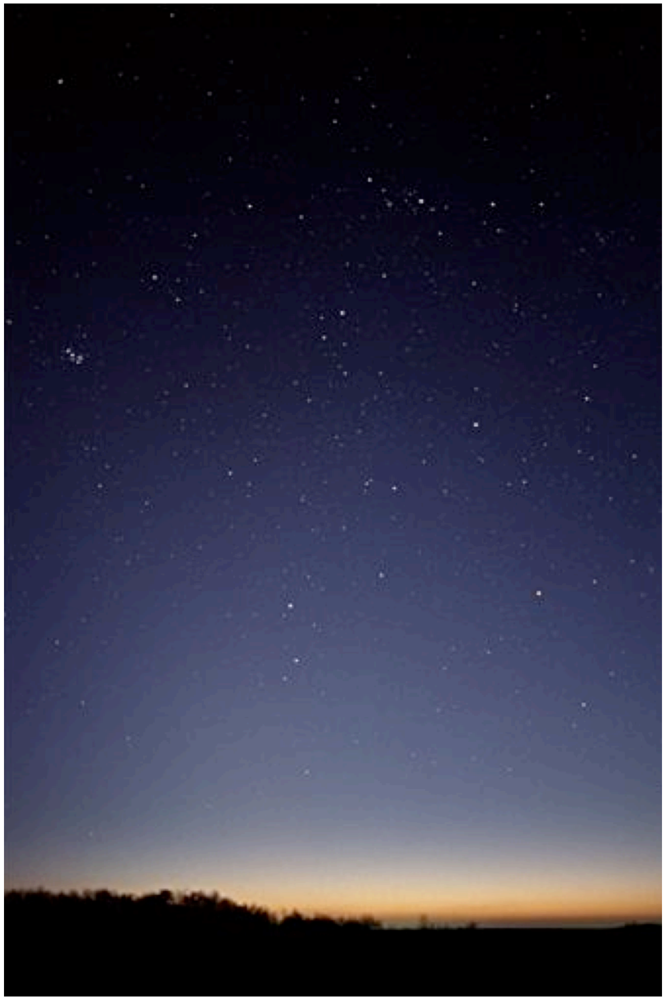
- Meetings:
  - April 4th 2008, University of Southampton: European ORE Open Meeting
    - Register at http://www.regonline.com/oai-ore-eu

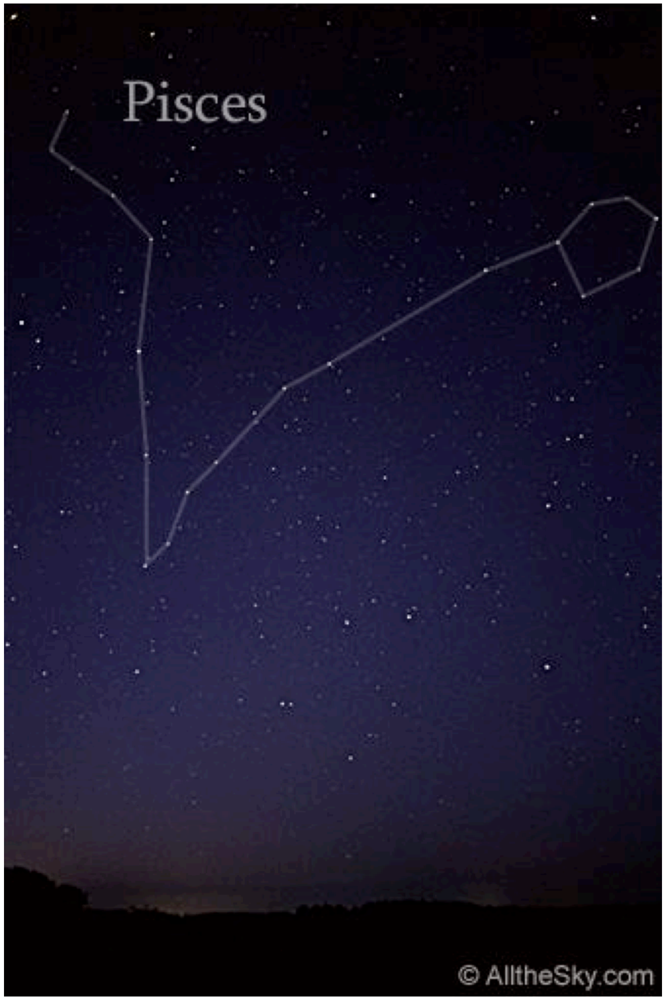
OAI Object Reuse and Exchange

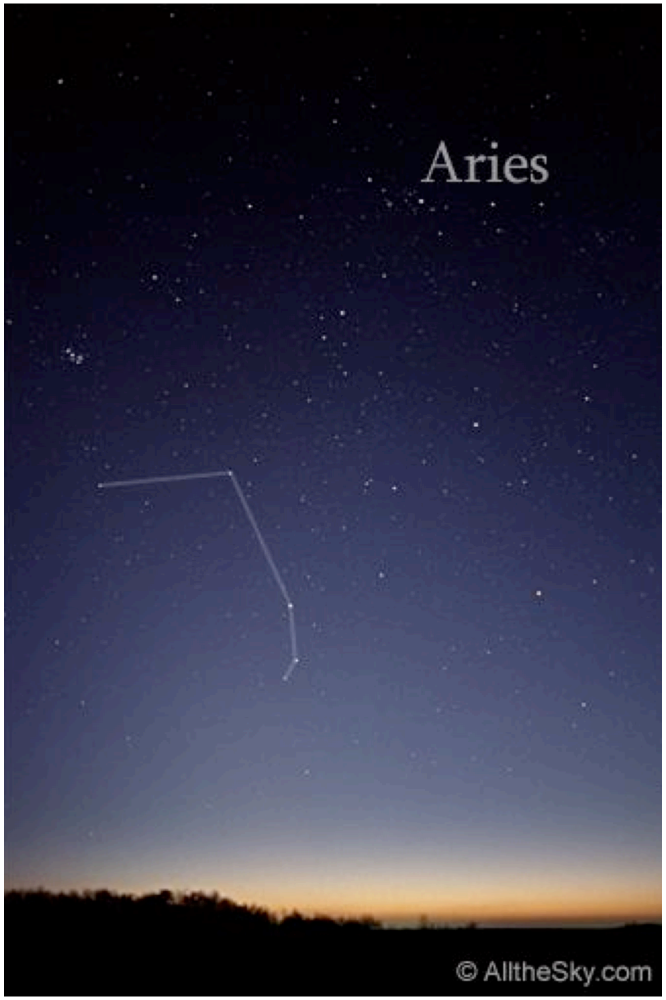
Subject: **Aggregations** of Web resources

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









Instantiate, Describe, and Identify Aggregations

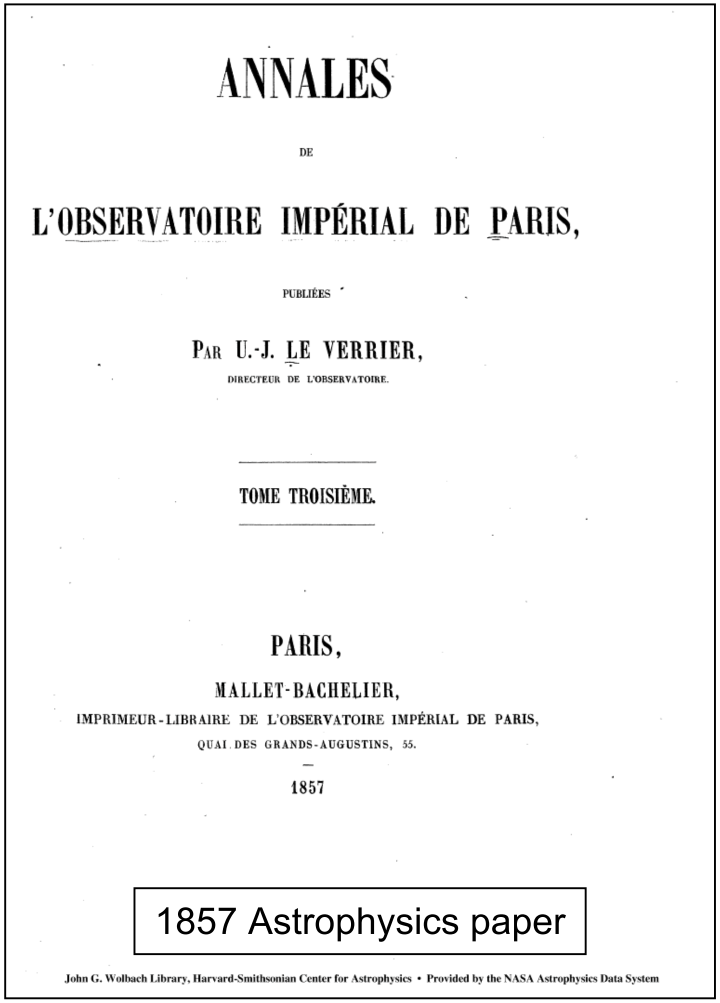
Aggregations

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

Babylonian Astronomical Catalogue

Aggregations

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


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

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

1857 Astrophysics paper

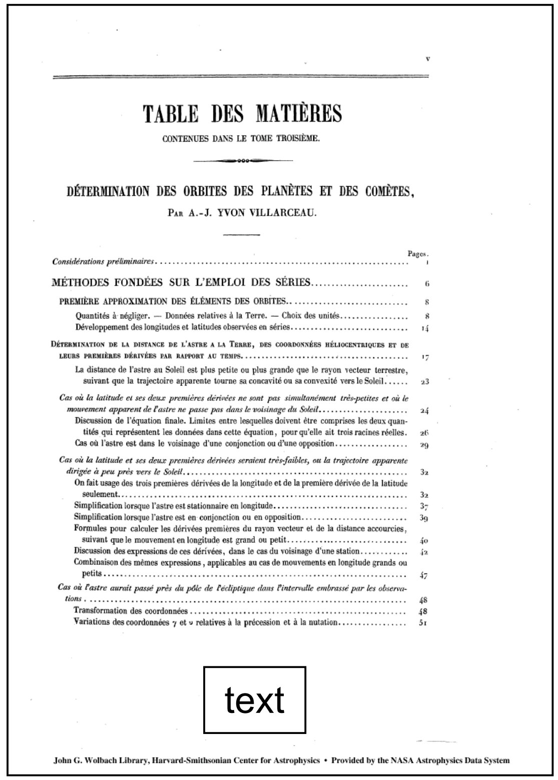


TABLE DES MATIÈRES

CONTENUES DANS LE TOME TROISIÈME.

DÉTERMINATION DES ORBITES DES PLANÈTES ET DES COMÈTES,

PAR A.-J. YVON VILLARCEAU.

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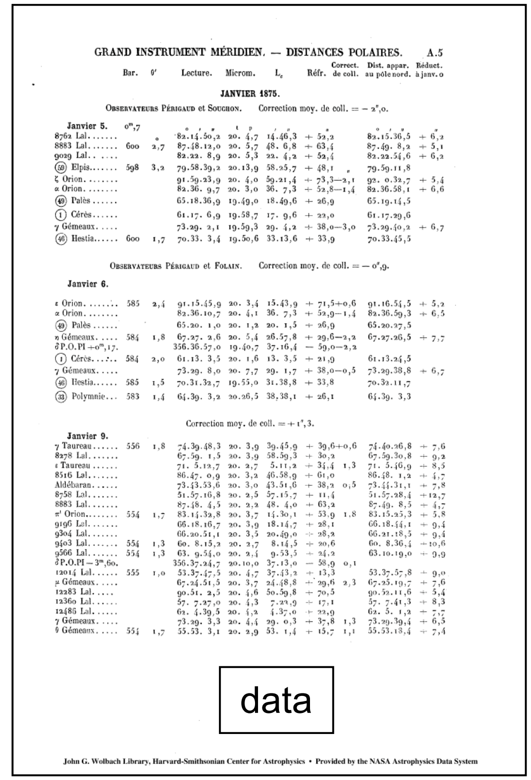

GRAND INSTRUMENT MÉRIDIEN. — DISTANCES POLAIRES. A.5

JANVIER 1875.

OBSERVATEURS PÉRIGAUD et SOUCHON. Correction moy. de coll. = − 2",0.

	Bar.	θ'	Lecture.	Microm.	L_c	Réfr.	Correct. de coll.	Dist. appar. au pôle nord.	Réduct. à janv. 0
Janvier 5.	0m,7								
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. 8,2	+ 5,1
9029 Lal.			82.22. 8,9	20. 5,3	22. 4,2	+ 52,4		82.22.54,6	+ 6,2
(59) 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	+ 73,3	−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
(49) 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	
γ Gémeaux			73.29. 2,1	19.59,3	29. 4,2	+ 38,0	−3,0	73.29.40,2	+ 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.

	Bar.	θ'	Lecture.	Microm.	L_c	Réfr.	Correct. de coll.	Dist. appar. au pôle nord.	Réduct. à janv. 0
Janvier 6.									
ε Orion	585	2,4	91.15.45,9	20. 3,4	15.43,9	+ 71,5	+0,6	91.16.54,5	+ 5,2
α Orion			82.36.10,7	20. 4,1	36. 7,3	+ 52,9	−1,4	82.36.59,3	+ 6,5
(49) 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
δ P.O.PI + 0m,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	
γ 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	70.31.32,7	19.55,0	31.38,8	+ 33,8		70.32.11,7	
(33) Polymnie	583	1,4	64.39. 3,2	20.26,5	38.38,1	+ 26,1		64.39. 3,3	

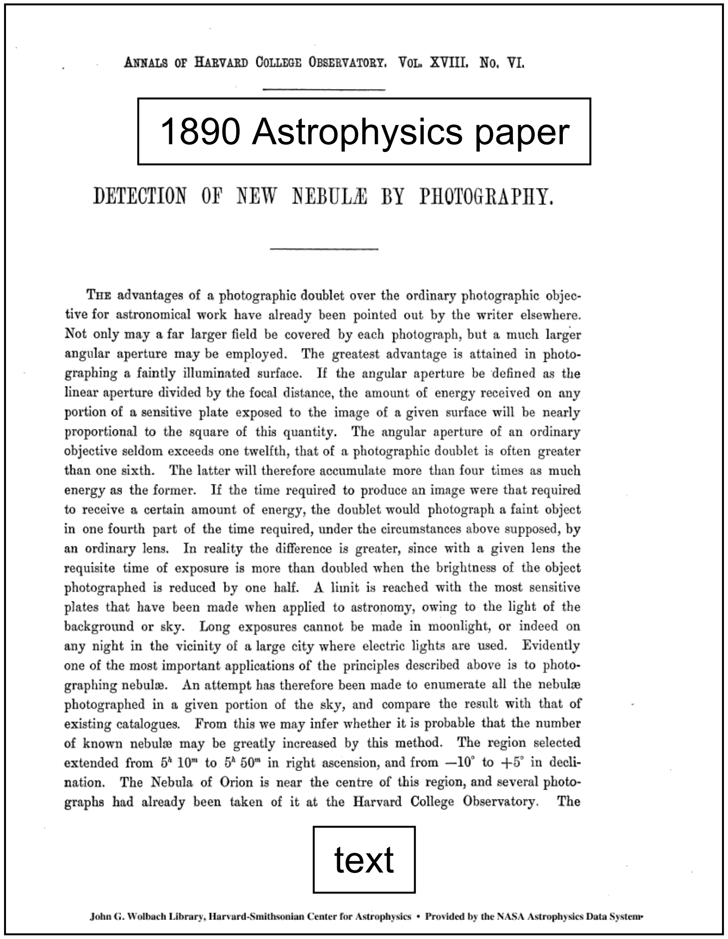
Correction moy. de coll. = + 1",3.

	Bar.	θ'	Lecture.	Microm.	L_c	Réfr.	Correct. de coll.	Dist. appar. au pôle nord.	Réduct. à janv. 0
Janvier 9.									
γ 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. 5.12,7	20. 2,7	5.11,2	+ 34,4	1,3	71. 5.46,9	+ 8,5
8516 Lal.			86.47. 0,9	20. 3,2	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		51.57.28,4	+ 12,7
8883 Lal.			87.48. 4,5	20. 2,2	48. 4,0	+ 63,2		87.49. 8,5	+ 4,7
π¹ 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		66.18.44,1	+ 9,4
9304 Lal.			66.20.51,1	20. 3,5	20.49,0	+ 28,2		66.21.18,5	+ 9,4
9403 Lal.	554	1,3	60. 8.15,2	20. 2,7	8.14,5	+ 20,6		60. 8.36,4	+ 10,6
9566 Lal.	554	1,3	63. 9.54,0	20. 2,4	9.53,5	+ 24,2		63.10.19,0	+ 9,9
δ P.O.PI − 3m,60.			356.37.24,7	20.10,0	37.13,0	− 58,9	0,1		
12014 Lal.	555	1,0	53.37.47,5	20. 4,7	37.43,2	+ 13,3		53.37.57,8	+ 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. 4,6	50.59,8	+ 70,5		90.52.11,6	+ 5,4
12360 Lal.			57. 7.27,0	20. 4,3	7.22,9	+ 17,1		57. 7.41,3	+ 8,3
12486 Lal.			62. 4.39,5	20. 4,2	4.37,0	+ 22,9		62. 5. 1,2	+ 7,7
γ Gémeaux			73.29. 3,3	20. 4,4	29. 0,3	+ 37,8	1,3	73.29.39,4	+ 6,5
θ Gémeaux	554	1,7	55.53. 3,1	20. 2,9	53. 1,4	+ 15,7	1,1	55.53.18,4	+ 7,4

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

data

Aggregations


Annals of Harvard College Observatory. Vol. XVIII. No. VI.

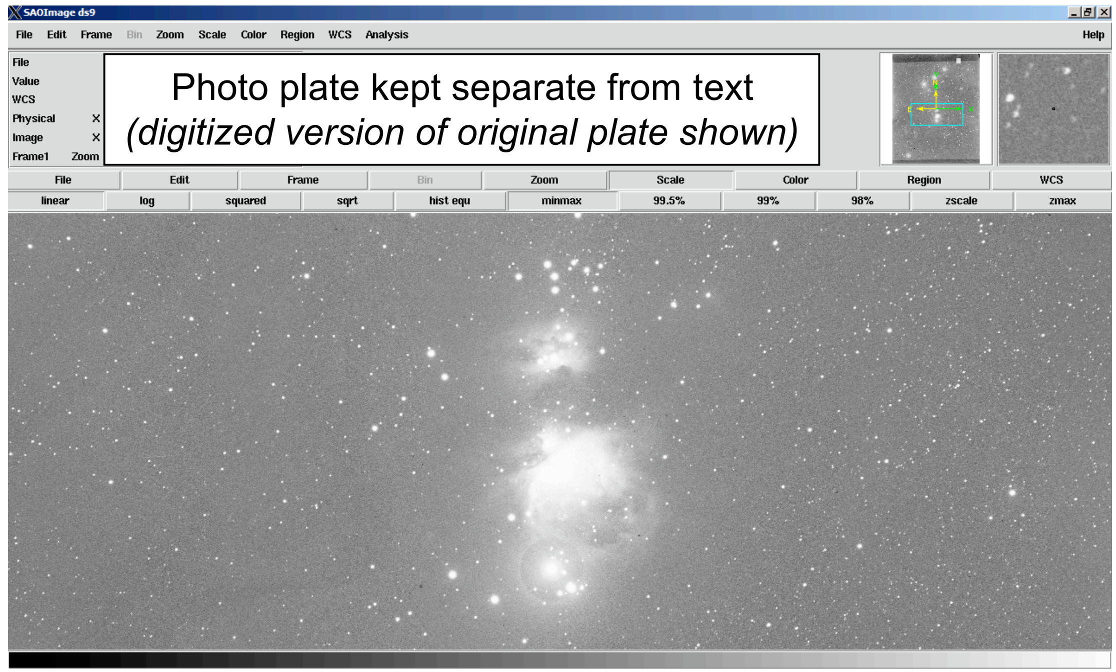
1890 Astrophysics paper

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

In scholarly communication that didn't last very long.



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 ≈130 keV cm^2 at 100 kpc that declines to a plateau ~10 keV cm^2 at ≲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 ~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.

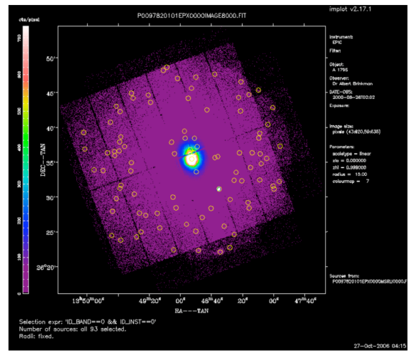
Subject headings: catalogs — cosmology: observations — galaxies: clusters: general — methods: data analysis — X-rays: galaxies: clusters

Online material: color figures

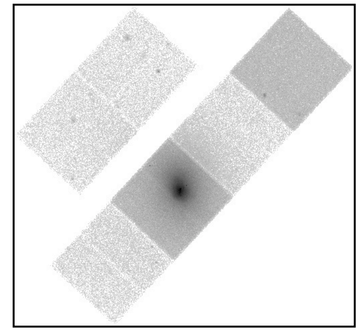
1. INTRODUCTION

text

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



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

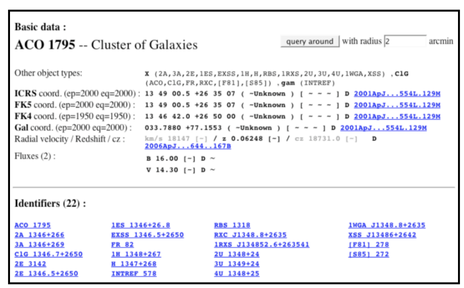


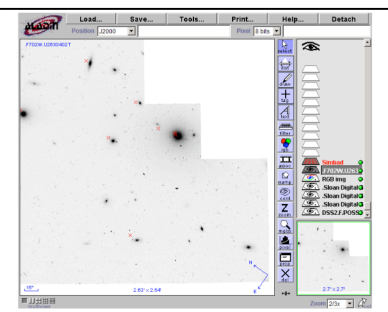
Chandra X-ray observation
Cambridge, MA

A1795

Basic object information
Strasbourg, France

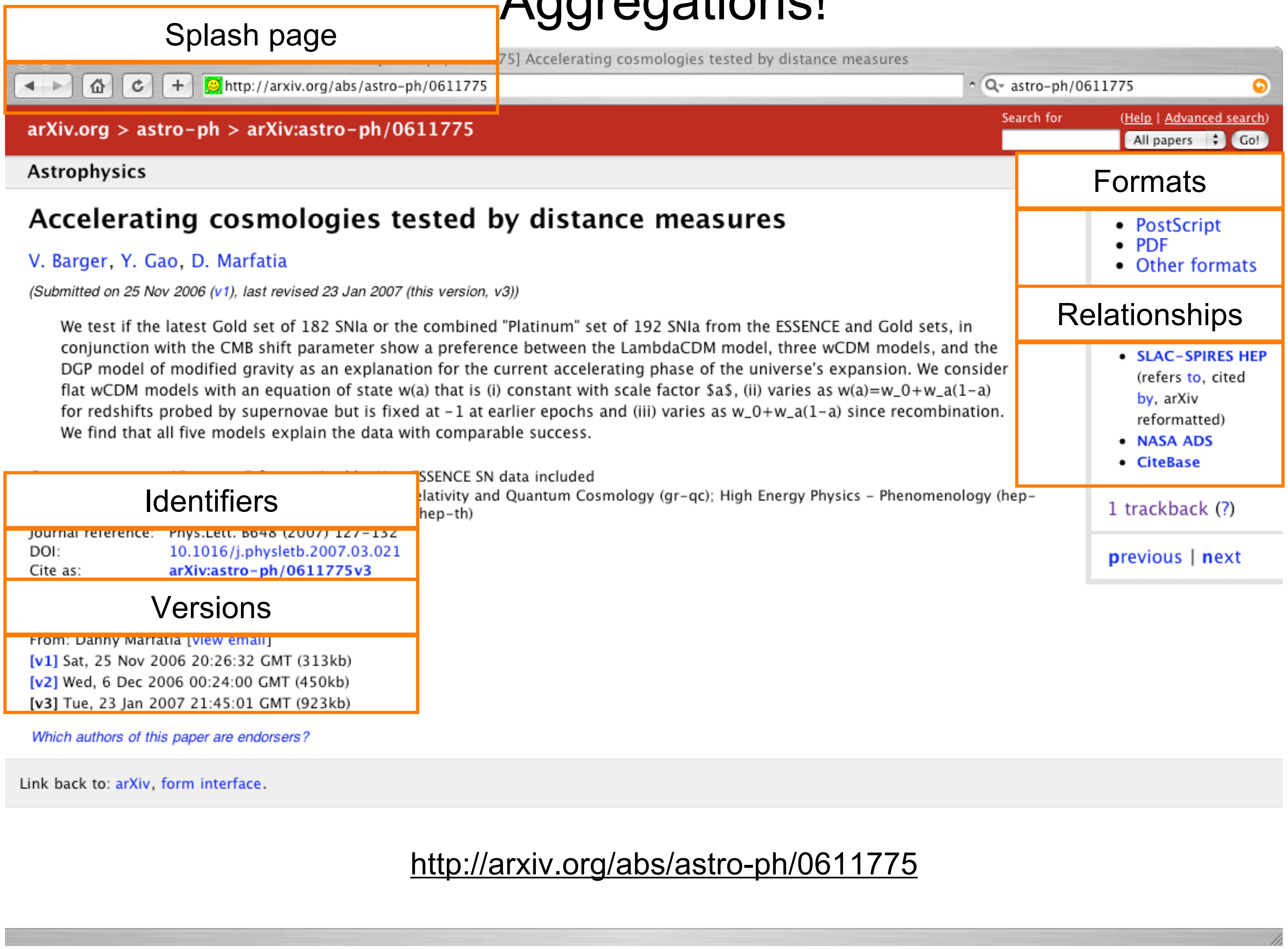
Hubble optical observation
Baltimore, MD





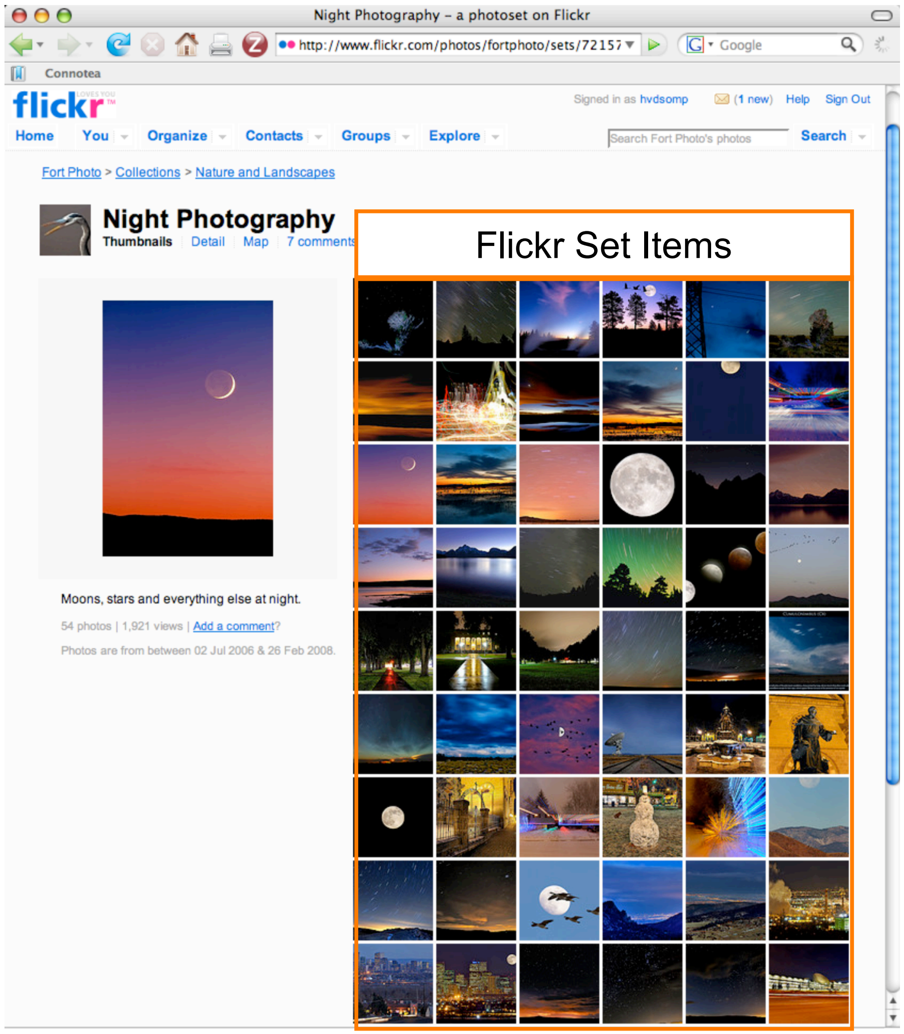
OPEN ARCHIVES

Aggregations!



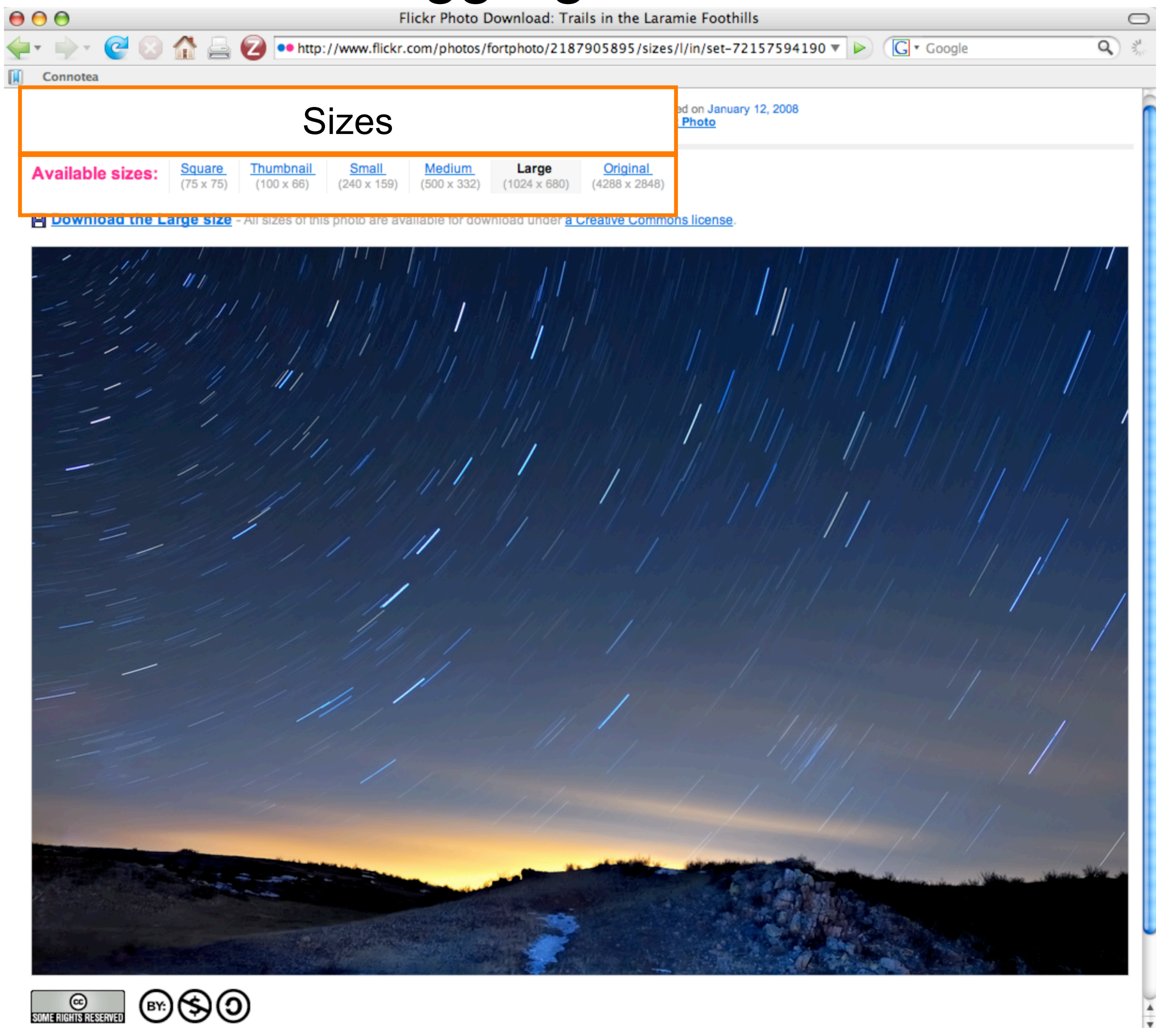
http://arxiv.org/abs/astro-ph/0611775

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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Rethinking Scholarly Communication

Building the System that Scholars Deserve

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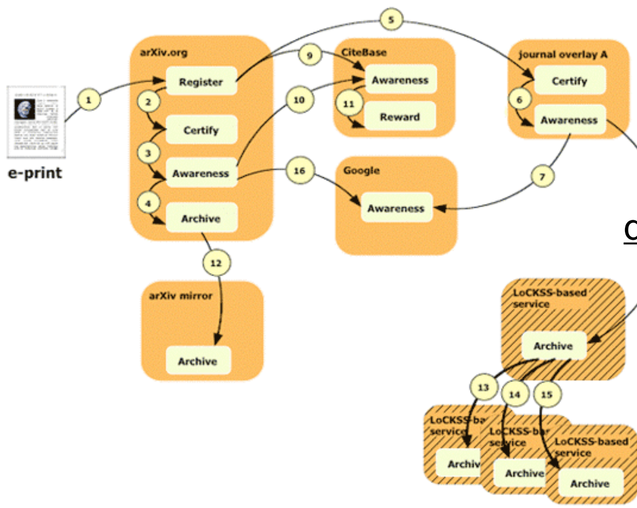


doi:10.1045/september2004-vandesompel

OAI Object Reuse and Exchange: The Reality

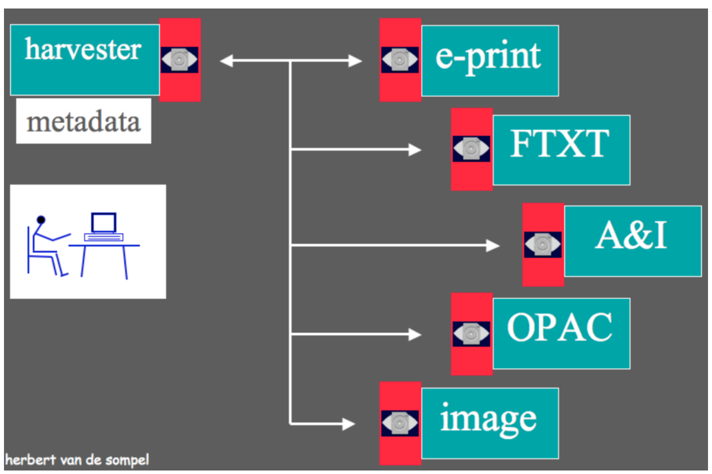
Subject: **Aggregations** of Web resources

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

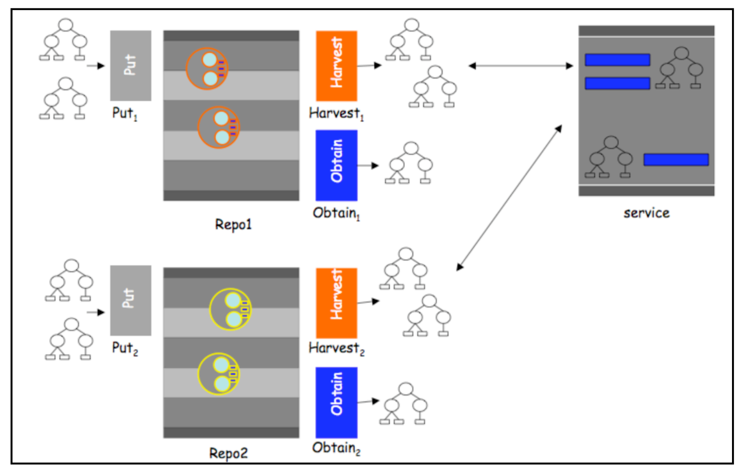
Reuse: URI of Aggregation as handle; Resource Map as the ore for value chains

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.

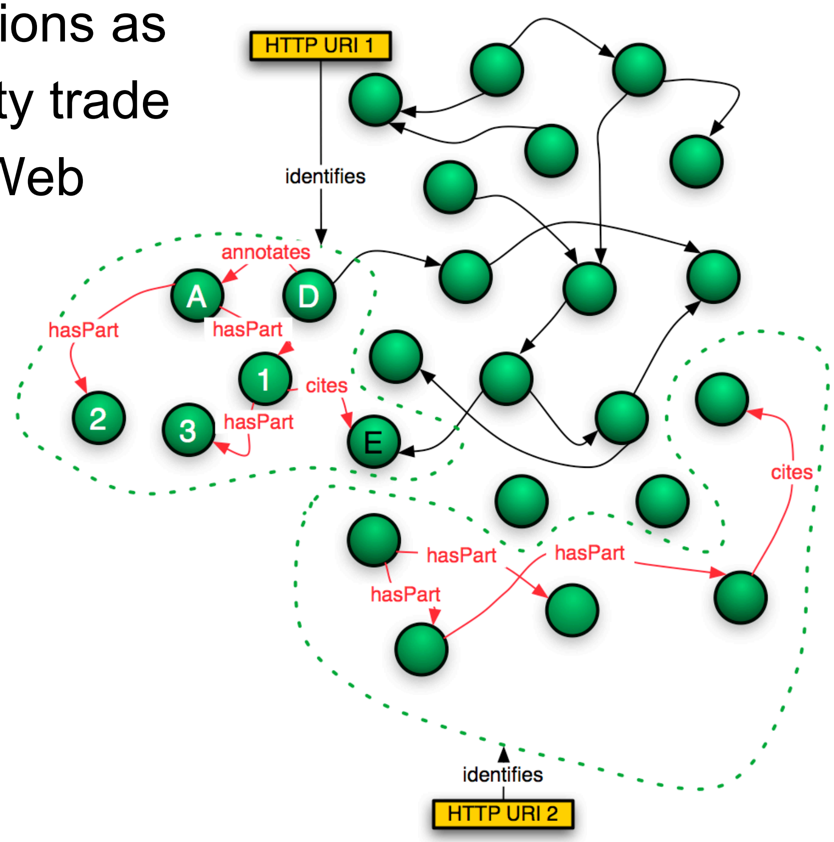


Keep dreaming!

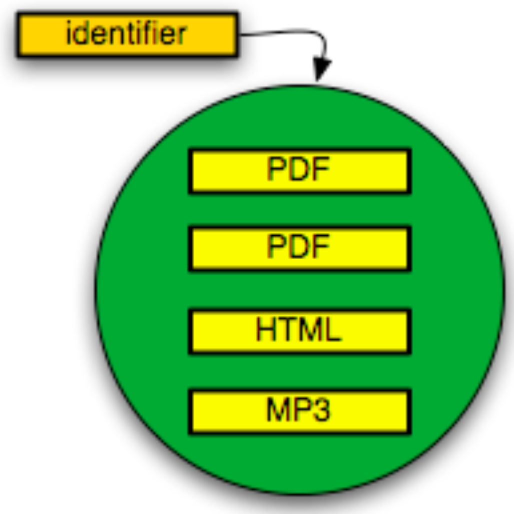


OAI Object Reuse and Exchange: A Resource-Centric Approach

- 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

From Compound Information Objects to Aggregations

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

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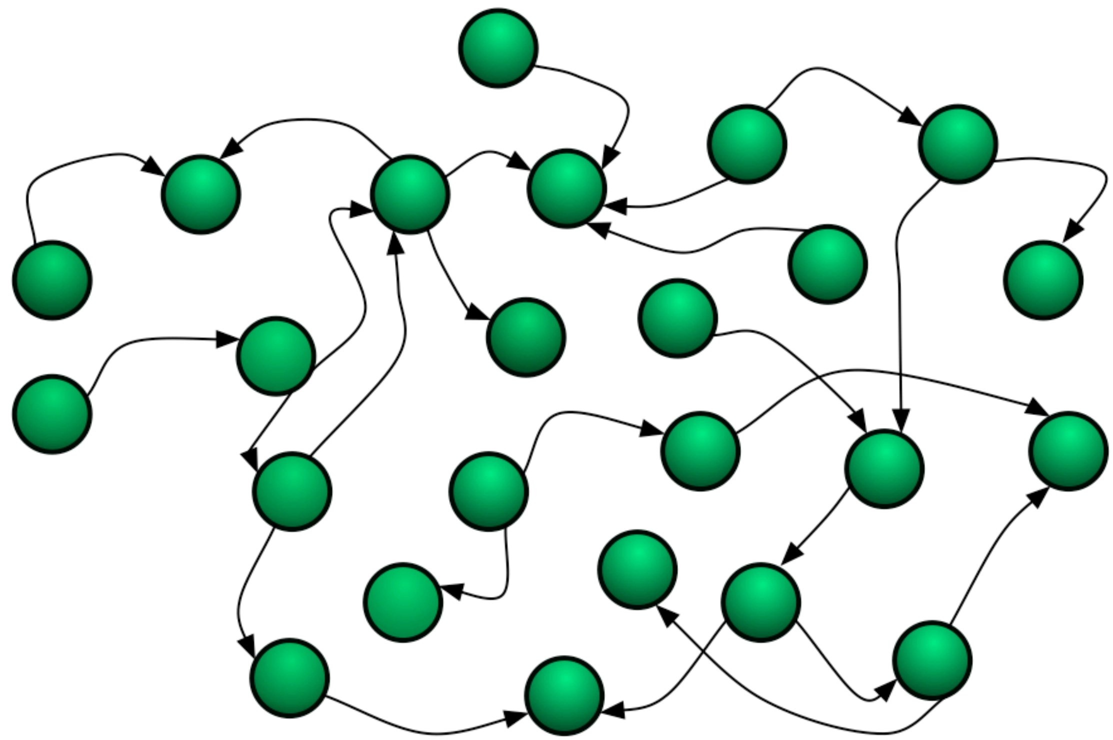
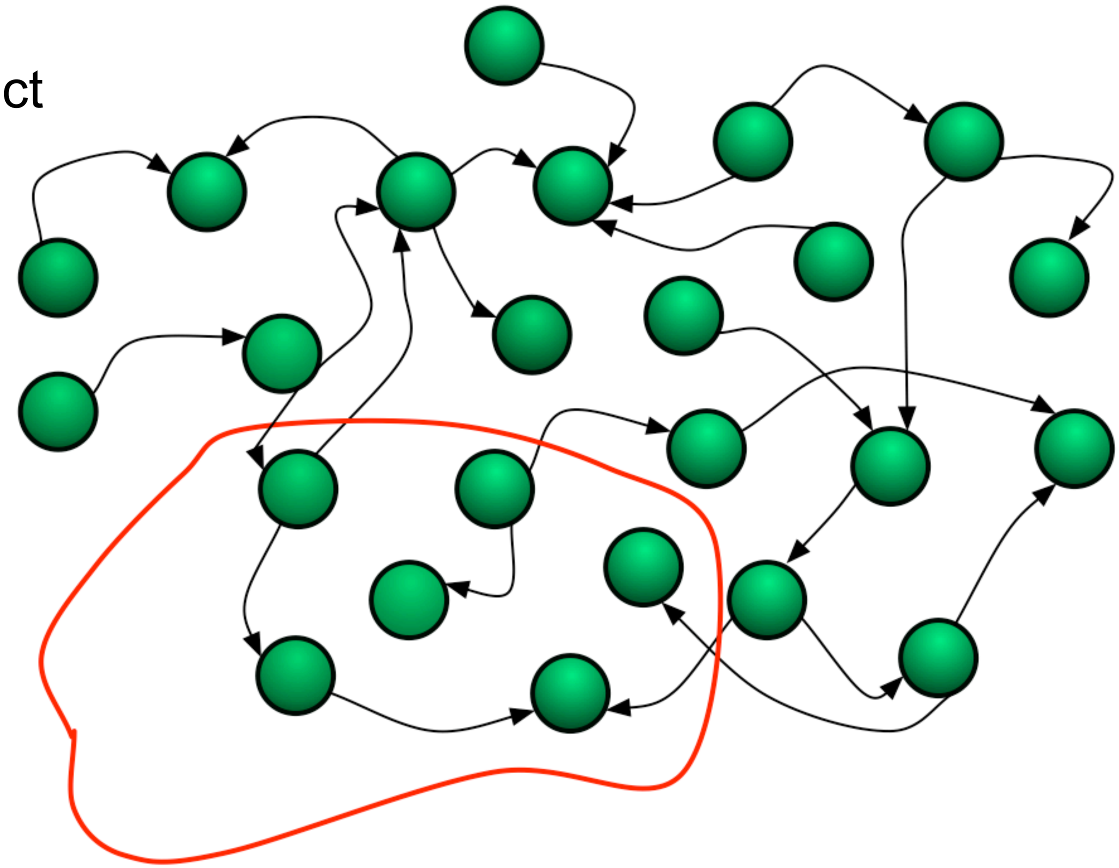
The Web



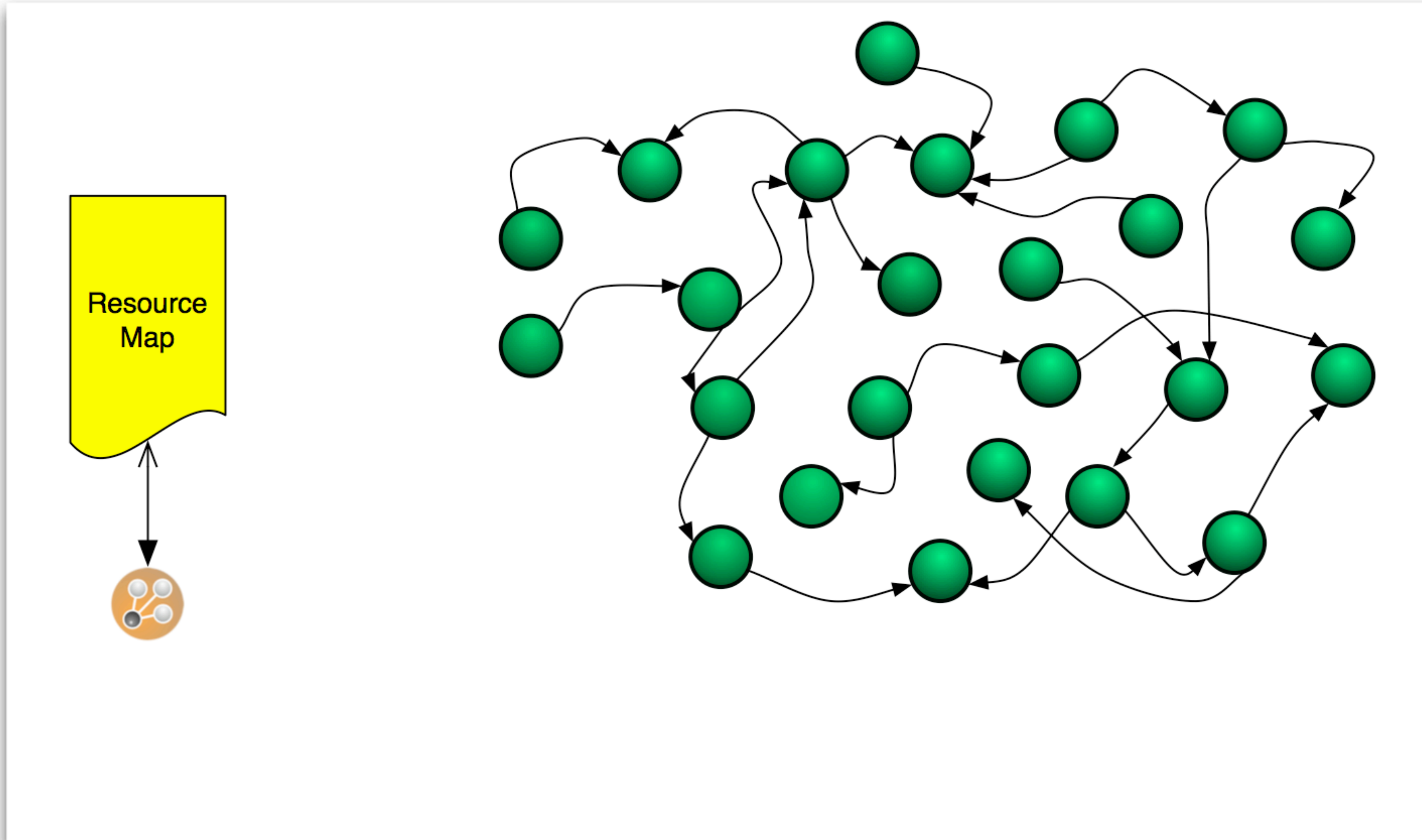
An Aggregation and the Web

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

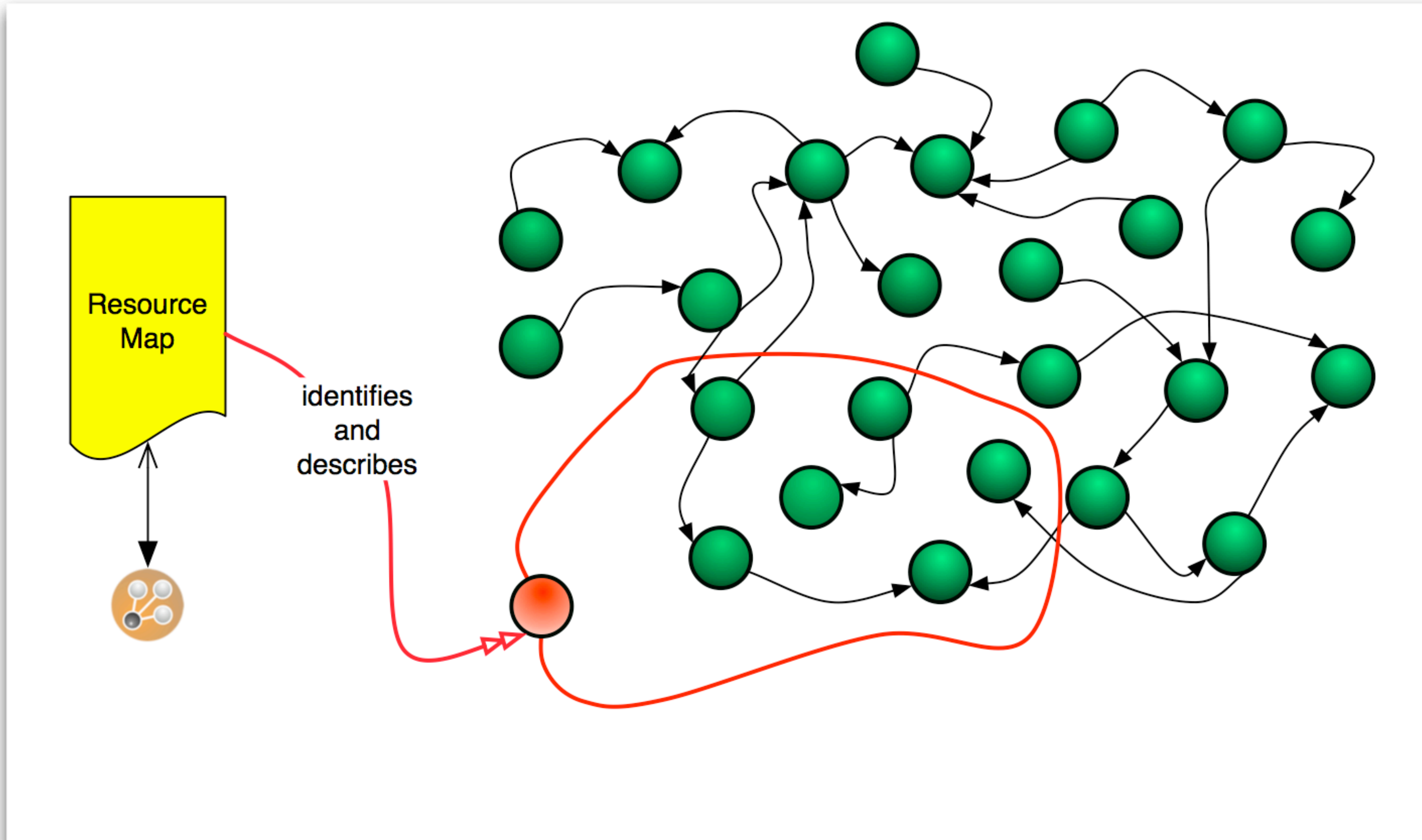
- Missing are:
    - The boundary that delineates the Aggregation in the Web
    - An identity (URI) for the Aggregation



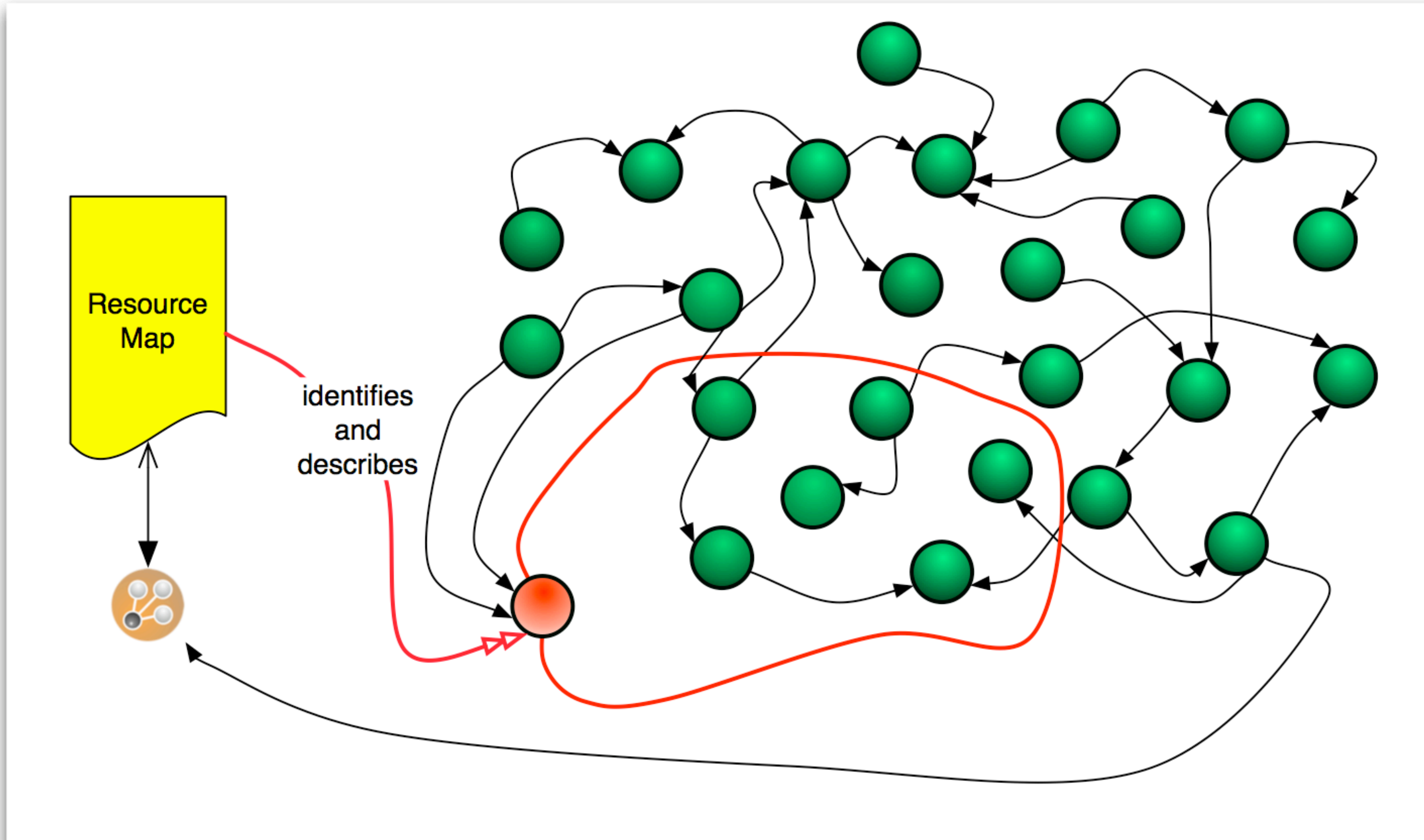
Publish a Resource Map to the Web



The Resource Map Identifies and Describes the Aggregation



The Resource Map and the Aggregation integrate into the Web



OAI Object Reuse and Exchange: Today's Agenda

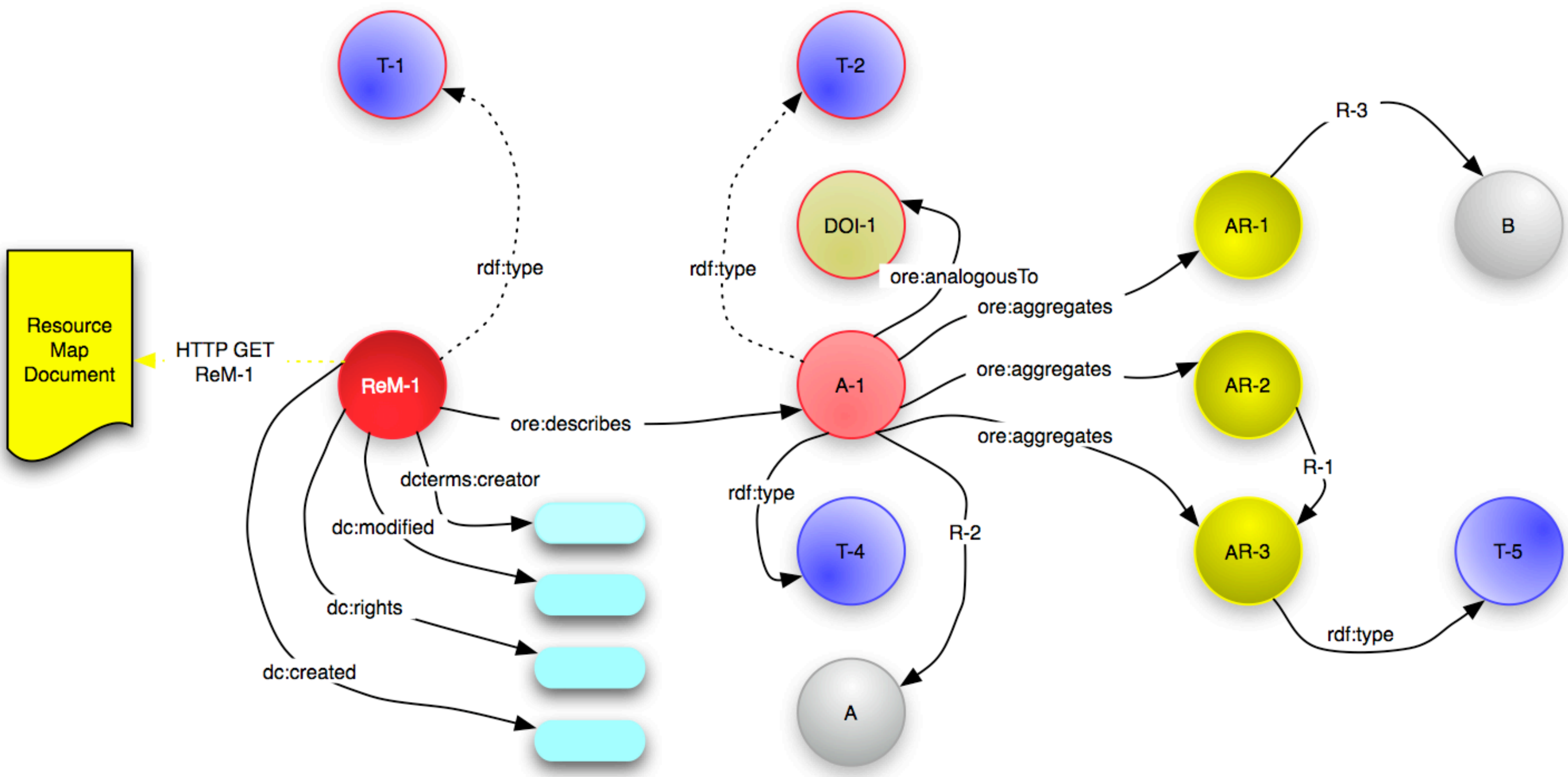
Subject: **Aggregations** of Web resources

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

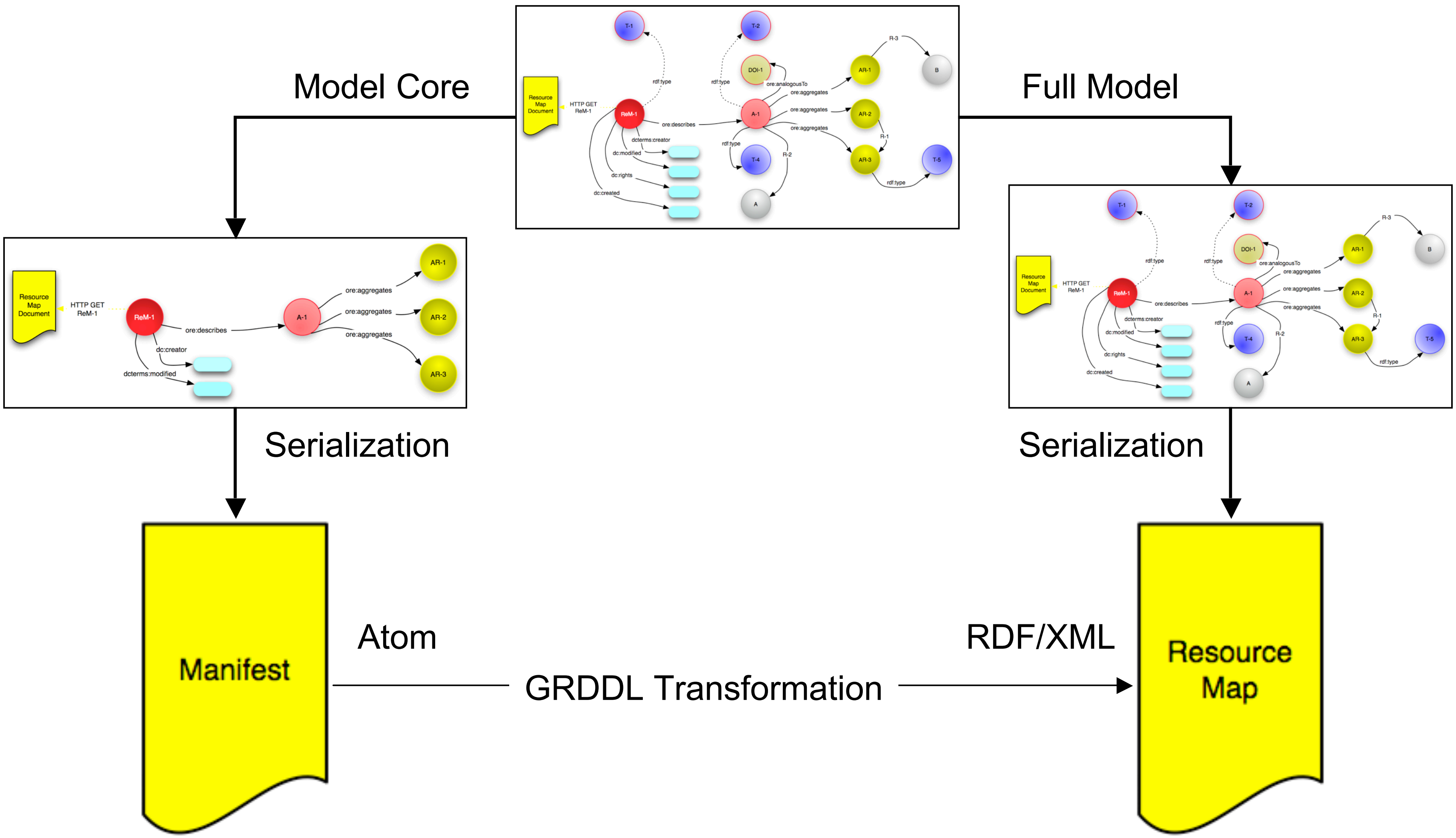
Reuse: URI of Aggregation as handle; Resource Map as the ore for value chains

How exactly: Learn today.

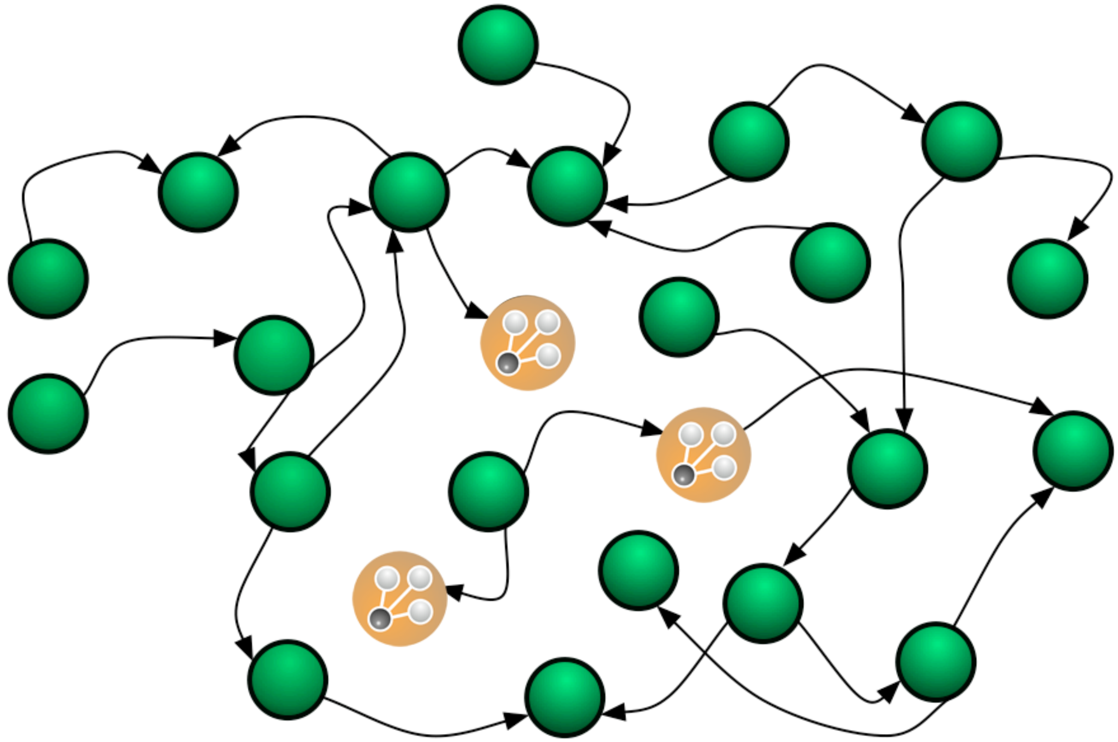
Agenda: Data Model (Carl Lagoze)



Agenda: Serializations (Carl Lagoze, Simeon Warner)



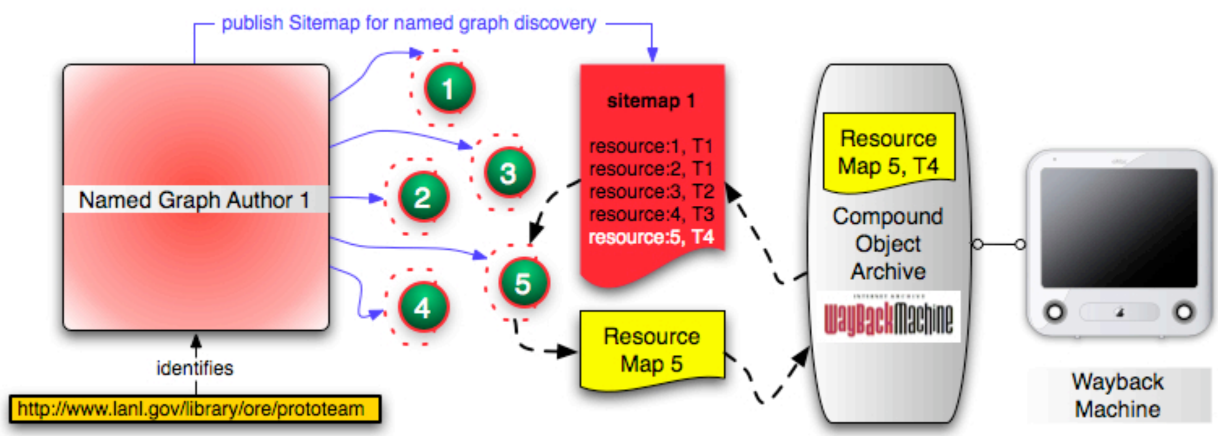
Agenda: Resource Map Discovery (Michael Nelson)



Agenda: Experiments

- Tim Cole, Tim DiLauro, Matthew Graham, Michael Nelson, Herbert Van de Sompel, Carl Lagoze

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



Agenda: Q&A

- You and Cliff Lynch, Carl Lagoze, Michael Nelson, Herbert Van de Sompel, Simeon Warner

Agenda: Reception

But First: Carl Lagoze