

Open Archives Initiative Object Reuse & Exchange

Context and Motivation

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Acknowledgments: Michael Kurtz, Astrophysics Data Service



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ORE Open Meeting, John Hopkins University, Baltimore, MD
March 3rd 2008



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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; 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>



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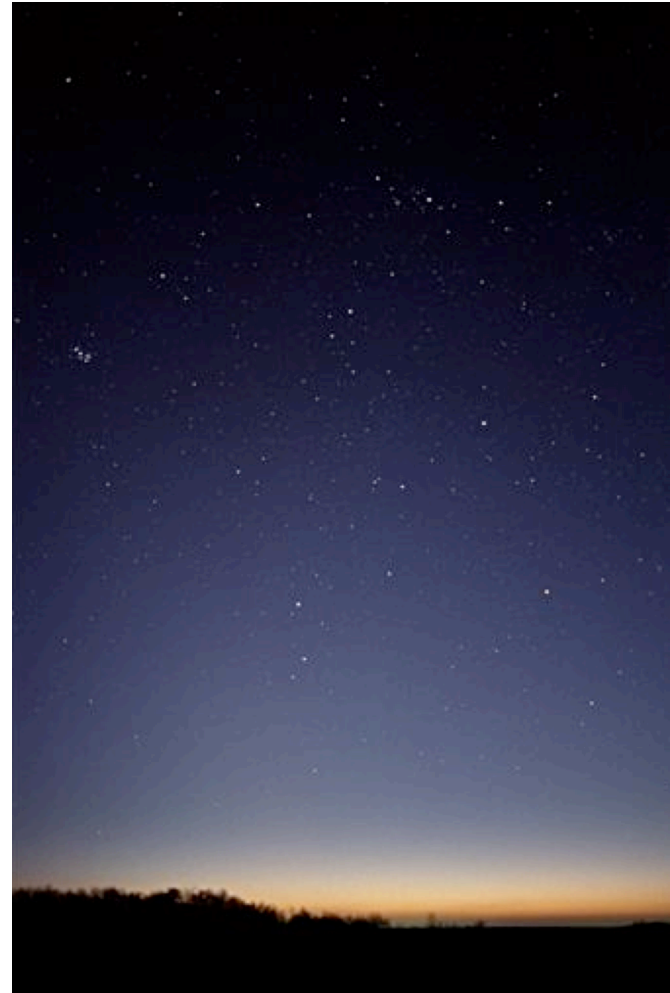
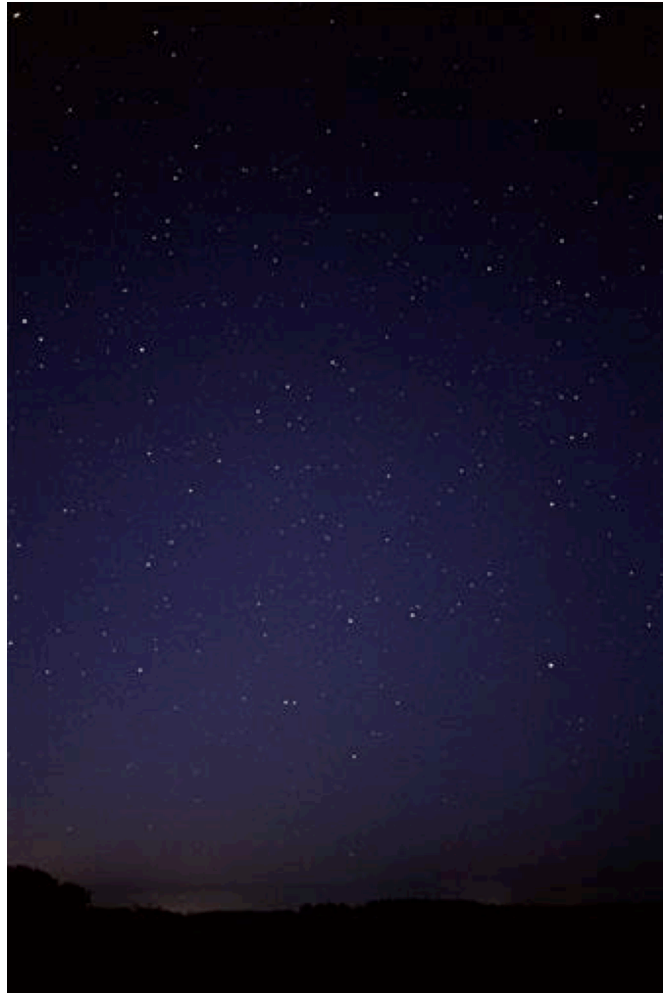
Subject: **Aggregations** of Web resources

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



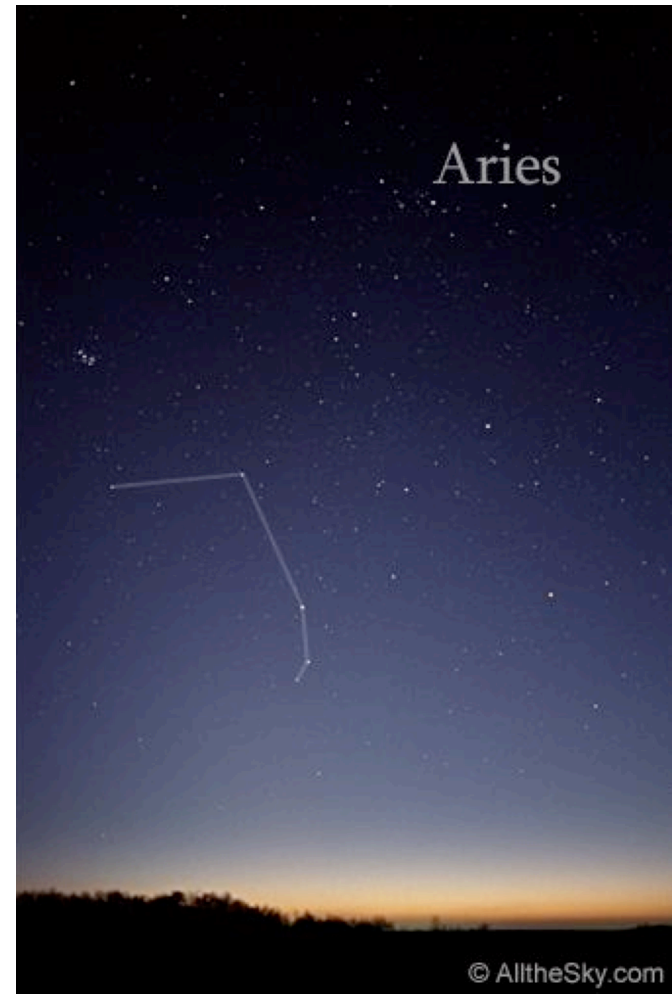
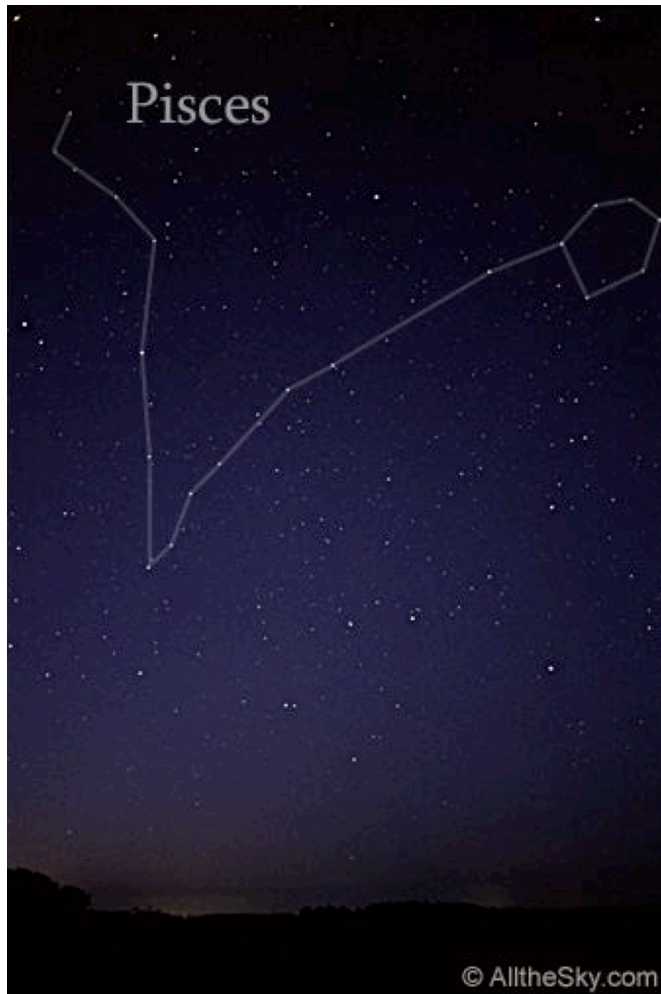
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Instantiate, Describe, and Identify Aggregations



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Aggregations

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



Babylonian Astronomical Catalogue



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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

1857 Astrophysics paper

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

TABLE DES MATIÈRES
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PAR A.-J. YVON VILLARCEAU.

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text

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GRAND INSTRUMENT MÉRIDIEN. — DISTANCES POLAIRES. A 5

Bar. V Lecture. Microm. L₁ Réfr. de coll. au pôle nord. à jansv.

JANVIER 1875.

OBSERVATEURS PÉRIHAUD ET SOGROUX. Correction moy. de coll. = - 2".0.

Janvier 5. 0 ^h .7	88.11.50.0	30.4.7	14.46.3	+ 55.5	88.13.36.5	+ 6.1
883 Lal.....	87.18.19.0	30.5.2	48.6.8	+ 53.1	87.40.9.5	+ 5.1
9099 Lal.....	88.23.8.0	30.5.3	30.4.3	+ 54.4	88.23.51.6	+ 6.3
⊙ Élyde.....	79.58.30.0	30.13.9	58.5.7	+ 48.1	79.59.11.8	
⊙ Orion.....	91.59.33.0	30.4.0	59.3.4	+ 73.2-2.1	90.0.38.27	+ 5.4
⊙ Orion.....	88.36.9.7	30.3.0	36.2.3	+ 53.8-1.4	88.36.58.1	+ 6.6
⊙ Pallas.....	85.18.36.9	19.49.0	18.49.6	+ 56.9	85.19.11.5	
⊙ Cérés.....	61.17.6.9	19.58.7	17.6.6	+ 52.0	61.17.30.6	
⊙ Gémeaux.....	73.50.2.1	19.59.3	20.1.2	+ 38.0-3.0	73.50.10.2	+ 6.7
⊙ Hestia.....	600 1.7	70.33.3.4	19.56.6	33.13.6	+ 33.9	70.33.45.5

OBSERVATEURS PÉRIHAUD ET FOULX. Correction moy. de coll. = - 0".9.

Janvier 6.							
⊙ Orion.....	585 2.4	91.15.45.9	30.3.4	15.43.9	+ 71.5-0.6	91.16.51.5	+ 5.2
⊙ Orion.....		88.36.10.7	30.4.1	36.7.3	+ 52.0-1.4	88.36.59.3	+ 6.5
⊙ Pallas.....		65.30.1.0	30.1.2	30.1.5	+ 56.9	65.30.27.5	+ 6.5
⊙ Gémeaux.....	584 1.8	67.27.2.6	30.5.4	36.52.8	+ 59.6-2.2	67.27.56.5	+ 7.2
⊙ Cérés.....		336.36.57.0	19.40.7	37.16.4	+ 59.0-2.2		
⊙ Gémeaux.....	584 3.0	61.13.3.5	30.1.6	13.3.5	+ 51.0	61.13.24.5	
⊙ Gémeaux.....		73.50.8.0	30.7.2	29.1.7	+ 38.0-0.5	73.50.28.8	+ 6.7
⊙ Hestia.....	585 1.5	70.31.32.7	19.55.0	31.18.8	+ 33.8	70.31.11.7	
⊙ Polymnie.....	583 1.4	61.39.3.2	30.26.5	34.31.1	+ 56.1	61.39.3.3	

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

Janvier 9.							
⊙ Uranus.....	556 1.8	74.39.48.3	30.3.9	39.45.9	+ 39.6-0.6	74.40.26.8	+ 7.6
⊙ Uranus Lal.....		67.59.1.5	30.3.9	58.59.3	+ 36.2	67.59.36.8	+ 9.2
⊙ Uranus Lal.....		71.5.19.7	30.2.7	5.11.9	+ 54.4 1.3	71.5.49.9	+ 8.2
816 Lal.....		86.47.0.9	30.3.2	46.58.9	+ 61.0	86.48.1.2	+ 1.2
Aldebaran.....		73.43.53.6	30.3.0	43.53.6	+ 38.0 0.5	73.43.11.2	+ 7.8
8258 Lal.....		51.57.16.8	30.2.5	27.17.7	+ 11.4	51.57.28.4	+ 12.7
8883 Lal.....		87.18.1.3	30.2.2	48.1.0	+ 63.2	87.19.8.3	+ 1.2
⊙ Orion.....	554 1.7	83.13.39.8	30.3.7	11.29.1	+ 53.9 1.8	83.15.23.3	+ 5.2
9197 Lal.....		66.18.16.7	30.3.9	18.14.7	+ 58.1	66.18.14.1	+ 9.4
9304 Lal.....		66.20.21.4	30.3.5	20.02.0	+ 58.2	66.21.18.5	+ 9.4
9163 Lal.....	554 1.3	60.8.15.2	30.2.7	8.11.5	+ 50.6	60.8.36.1	+ 10.6
9366 Lal.....	554 1.3	63.9.54.0	30.2.1	9.53.5	+ 51.9	63.10.19.0	+ 9.9
⊙ O. P. 1 ^{re}		136.37.24.7	30.19.0	37.15.0	+ 50.0 0.1		
12014 Lal.....	555 1.0	53.37.27.5	30.4.7	37.43.2	+ 43.3	53.37.57.8	+ 9.0
⊙ Gémeaux.....		67.16.21.5	30.3.7	16.18.8	+ 56.8 2.3	67.16.10.7	+ 7.6
12283 Lal.....		99.51.2.5	30.1.6	50.59.8	+ 70.5	99.51.11.6	+ 5.4
12360 Lal.....		57.2.27.0	30.4.3	2.27.0	+ 17.4	57.2.41.3	+ 8.2
12481 Lal.....		69.4.39.5	30.1.2	4.32.0	+ 25.0	69.5.1.2	+ 7.2
⊙ Gémeaux.....		73.50.3.3	30.4.1	29.0.3	+ 37.8 1.3	73.50.39.4	+ 6.3
⊙ Gémeaux.....	551 1.7	55.53.3.1	30.9.9	53.1.4	+ 15.7 1.1	55.53.19.4	+ 7.4

data

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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 nebulae. An attempt has therefore been made to enumerate all the nebulae 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 nebulae may be greatly increased by this method. The region selected extended from $5^{\circ} 10''$ to $5^{\circ} 50''$ 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

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Photo plate kept separate from text
(digitized version of original plate shown)



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

2006 Astrophysics paper

ENTROPY PROFILES IN THE CORES OF COOLING FLOW CLUSTERS OF GALAXIES

MEGAN DONAHUE,¹ DONALD J. HEISLER,² KENNETH W. CAVAGNOLI,¹ AND G. MARK VOIT¹

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 $\sim 10^8$ 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

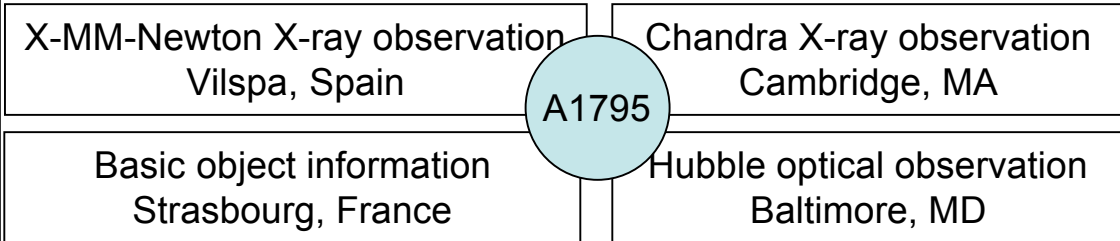
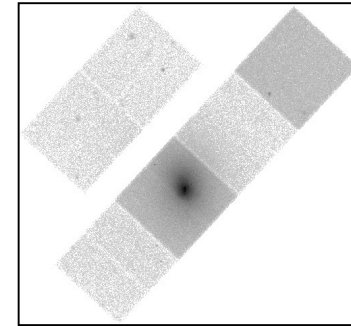
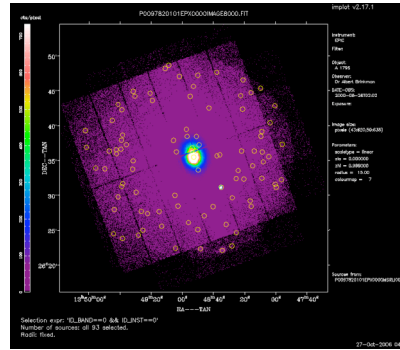
The global properties of a cluster of galaxies, such as its bolometric X-ray luminosity L_X and its mean temperature T_X , are determined primarily by the mass M_c within a suitably chosen virial radius. A cluster’s temperature depends on mass because mass determines the depth of the cluster’s potential 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_c , 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_c (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 condensing

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. It is these processes, by themselves, that are responsible for shaping the appearances of clusters and groups, then we would expect their properties to be self-similar, with a luminosity-temperature relation like that of galaxy groups. Furthermore, we would expect groups and clusters to have similar surface brightness profiles, when scaled to the virial radius of the system. However, observations indicate that



Basic data:
ACO 1795 -- Cluster of Galaxies

Other object types: X (2A, 3A, 2E, 1E0, EX05, 1E, H, H00, 1E05, 2U, 3U, 4U, 1W0A, X05) , C10 (ACO, C10, FR, XCC, (FR1), (FR5)) , spm (ISTREF)

ICRS coord. (epo=2000 eqo=2000): 13 49 00.5 +26 35 07 (-Unknown) [- - -] D 2001ApJ...554L.1239

FK5 coord. (epo=2000 eqo=2000): 13 49 00.5 +26 35 07 (-Unknown) [- - -] D 2001ApJ...554L.1239

FK4 coord. (epo=1950 eqo=1950): 13 46 42.0 +26 50 00 (-Unknown) [- - -] D 2001ApJ...554L.1239

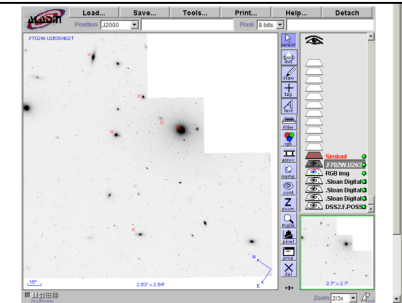
Gal coord. (epo=2000 eqo=2000): 033.7880 +77.1553 (-Unknown) [- - -] D 2001ApJ...554L.1239

Radial velocity / Redshift / cz: 000 ± 1000 (-) / z = 0.00246 (-) / cz = 1873.0 (-) D 2001ApJ...554L.1239

Fluxes (J):
B 16.00 (-) D -
V 14.30 (-) D -

Identifiers (22):

ACO_1795	J8X_1346+26_8	R08_1318	J09A_1338B_02635
2A_1346+26	R08X_1346_5+2650	R08C_1338B_02635	R08D_1338B+2632
3A_1346+263	FR_82	J0808_1338052_61263581	FR11_218
C10_1346_+2650	JR_1348+262	2U_1348+26	18851_212
JR_1346	R_1346+263	2U_1348+26	
2E_1346_5+2650	XMMUFR_518	0U_1348+25	



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Aggregations!

Splash page

The screenshot shows the arXiv abstract page for the paper 'Accelerating cosmologies tested by distance measures' by V. Barger, Y. Gao, and D. Marfatia. The page includes a navigation bar, a search box, and several sidebars. The main content area contains the title, authors, submission date, and a summary of the paper. The 'Identifiers' sidebar lists the journal reference, DOI, and citation information. The 'Versions' sidebar shows the history of the paper's uploads. The 'Formats' sidebar offers options to view the paper in PostScript, PDF, or other formats. The 'Relationships' sidebar lists related papers and a trackback. At the bottom, there is a link back to the arXiv form interface.

75] Accelerating cosmologies tested by distance measures

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

arXiv.org > astro-ph > arXiv:astro-ph/0611775

Astrophysics

Accelerating cosmologies tested by distance measures

V. Barger, Y. Gao, D. Marfatia

(Submitted on 25 Nov 2006 (v1), last revised 23 Jan 2007 (this version, v3))

We test if the latest Gold set of 182 SNIa or the combined "Platinum" set of 192 SNIa from the ESSENCE and Gold sets, in conjunction with the CMB shift parameter show a preference between the LambdaCDM model, three wCDM models, and the DGP model of modified gravity as an explanation for the current accelerating phase of the universe's expansion. We consider flat wCDM models with an equation of state $w(a)$ that is (i) constant with scale factor a , (ii) varies as $w(a)=w_0+w_a(1-a)$ for redshifts probed by supernovae but is fixed at -1 at earlier epochs and (iii) varies as $w_0+w_a(1-a)$ since recombination. We find that all five models explain the data with comparable success.

ESSENCE SN data included
Cosmology (gr-qc); High Energy Physics - Phenomenology (hep-th)

Journal reference: Phys.Lett. B648 (2007) 127-132
DOI: 10.1016/j.physletb.2007.03.021
Cite as: arXiv:astro-ph/0611775v3

Identifiers

Formats

- PostScript
- PDF
- Other formats

Relationships

- SLAC-SPIRES HEP (refers to, cited by, arXiv reformatted)
- NASA ADS
- CiteBase

1 trackback (?)

previous | next

Versions

From: Danny Marfatia [view email]
[v1] Sat, 25 Nov 2006 20:26:32 GMT (313kb)
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[v3] Tue, 23 Jan 2007 21:45:01 GMT (923kb)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface.

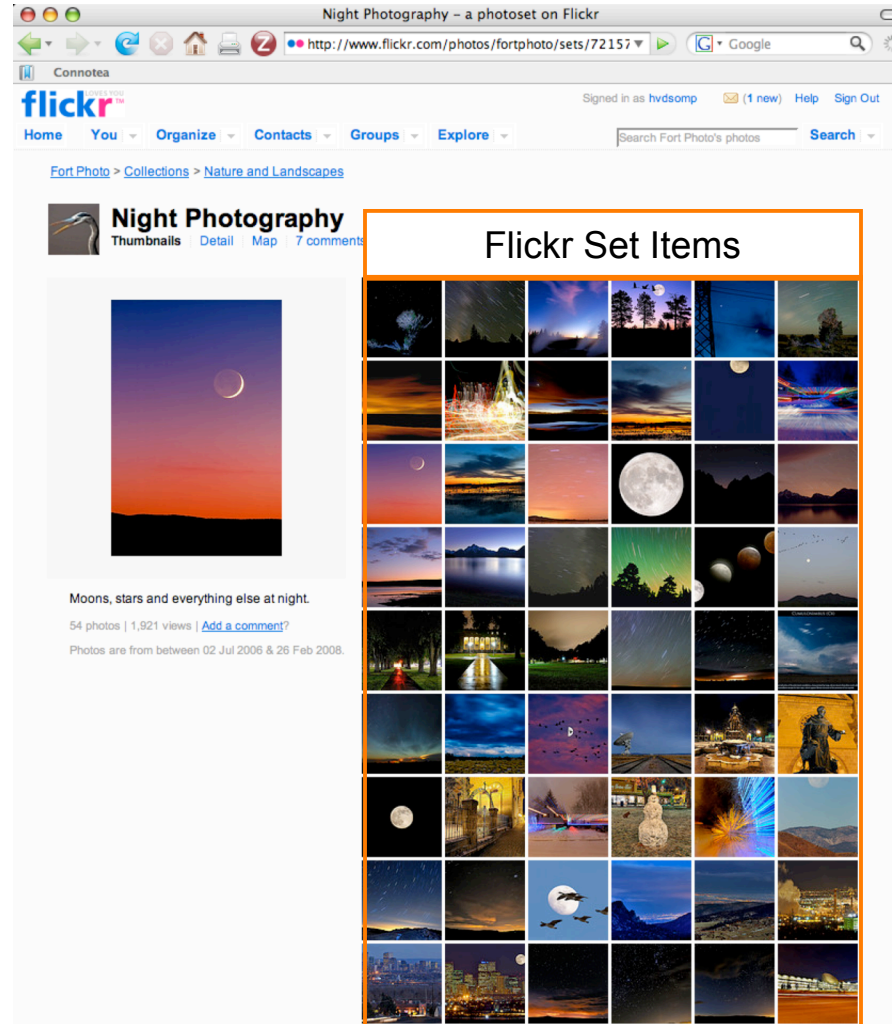
<http://arxiv.org/abs/astro-ph/0611775>



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Aggregations!!



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



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Aggregations!!!

The screenshot shows a web browser window with the address bar displaying <http://www.flickr.com/photos/fortphoto/2187905895/sizes/l/in/set-72157594190>. The page content includes a 'Sizes' section with a table of available download options:

Available sizes:	Square	Thumbnail	Small	Medium	Large	Original
	(75 x 75)	(100 x 66)	(240 x 159)	(500 x 332)	(1024 x 680)	(4288 x 2848)

Below the table, there is a link to 'Download the Large size' and a note that all sizes are available for download under a Creative Commons license. The main image is a star trail photograph of a landscape at dusk. At the bottom of the image, there are Creative Commons license icons: CC BY-NC-SA.

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



OAI Object Reuse & Exchange: Motivation and Context
ORE Open Meeting, John Hopkins University, Baltimore, MD
March 3rd 2008



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

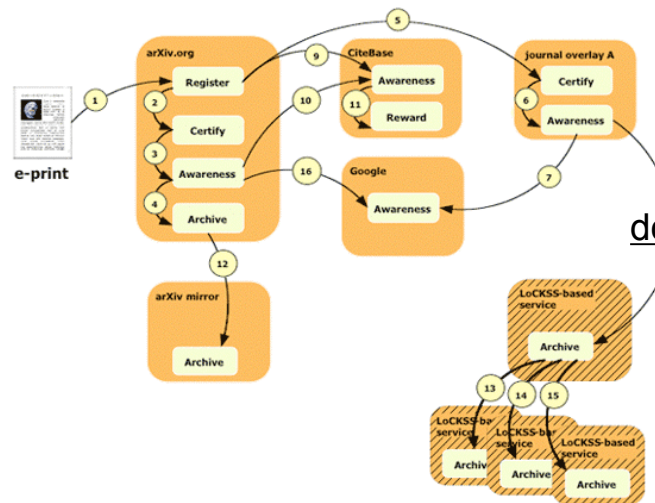
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[doi:10.1045/september2004-vandesompel](https://doi.org/10.1045/september2004-vandesompel)



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OAI Object Reuse and Exchange: The Reality

Subject: **Aggregations** of Web resources

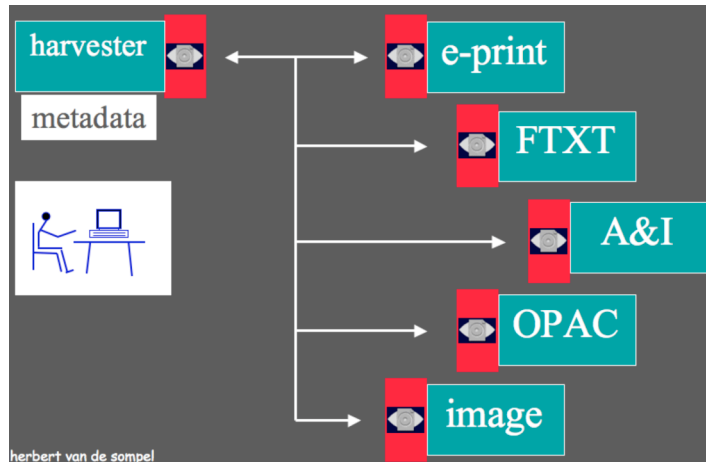
Approach: Publish **Resource Maps** to the Web that
Instantiate, Describe, and Identify Aggregations

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

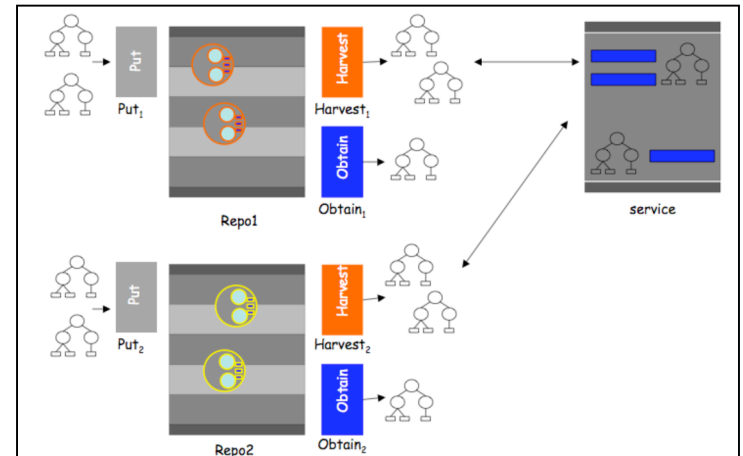


OAI Object Reuse and Exchange: A Resource-Centric Approach

- 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.

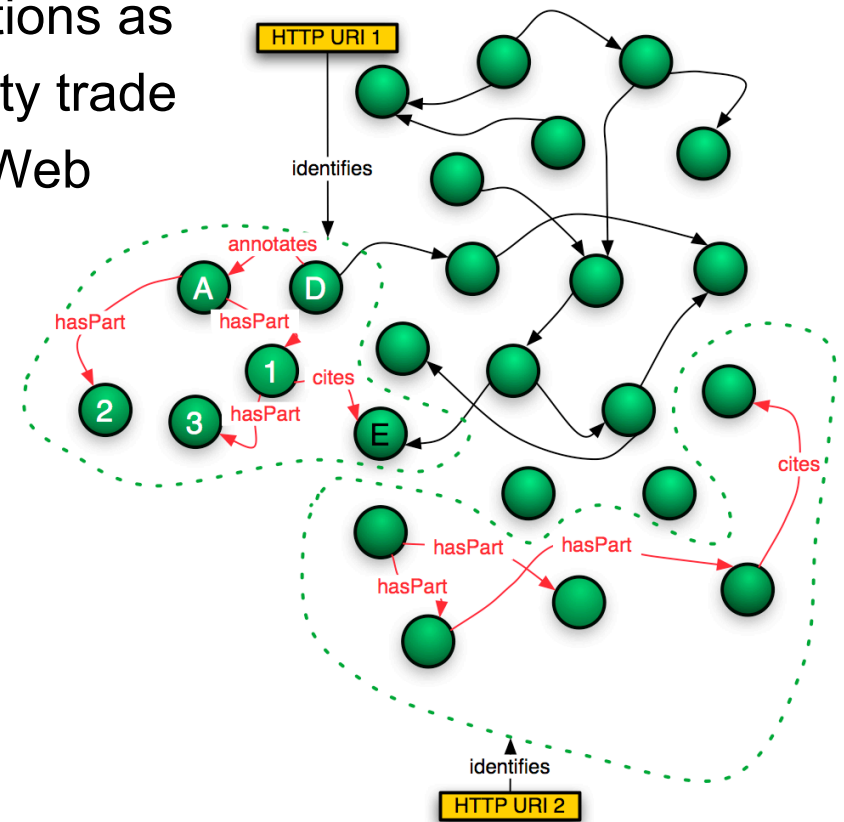


Keep dreaming!



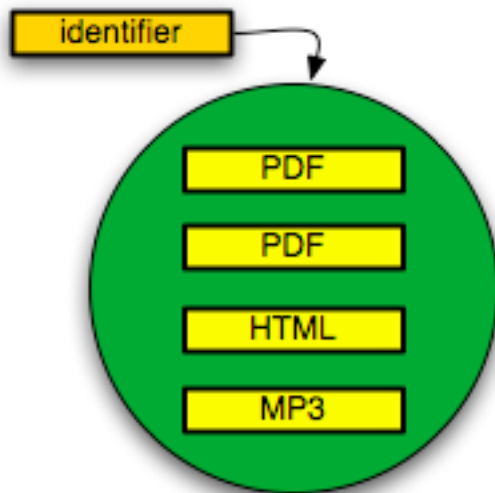
OAI Object Reuse and Exchange: A Resource-Centric Approach

- 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.



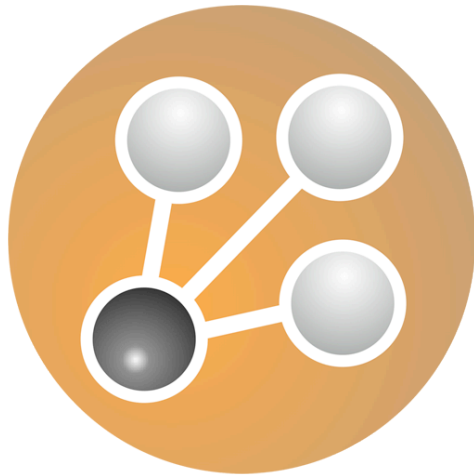
Components of a compound object may vary according to:

- 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

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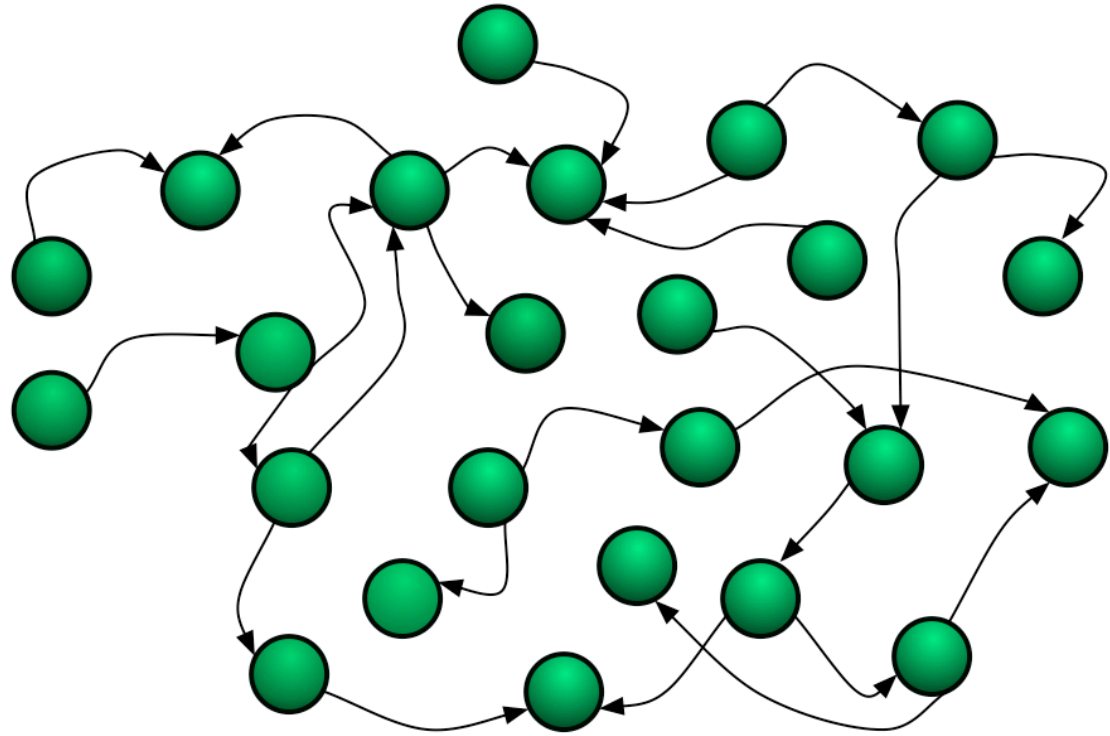


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The Web

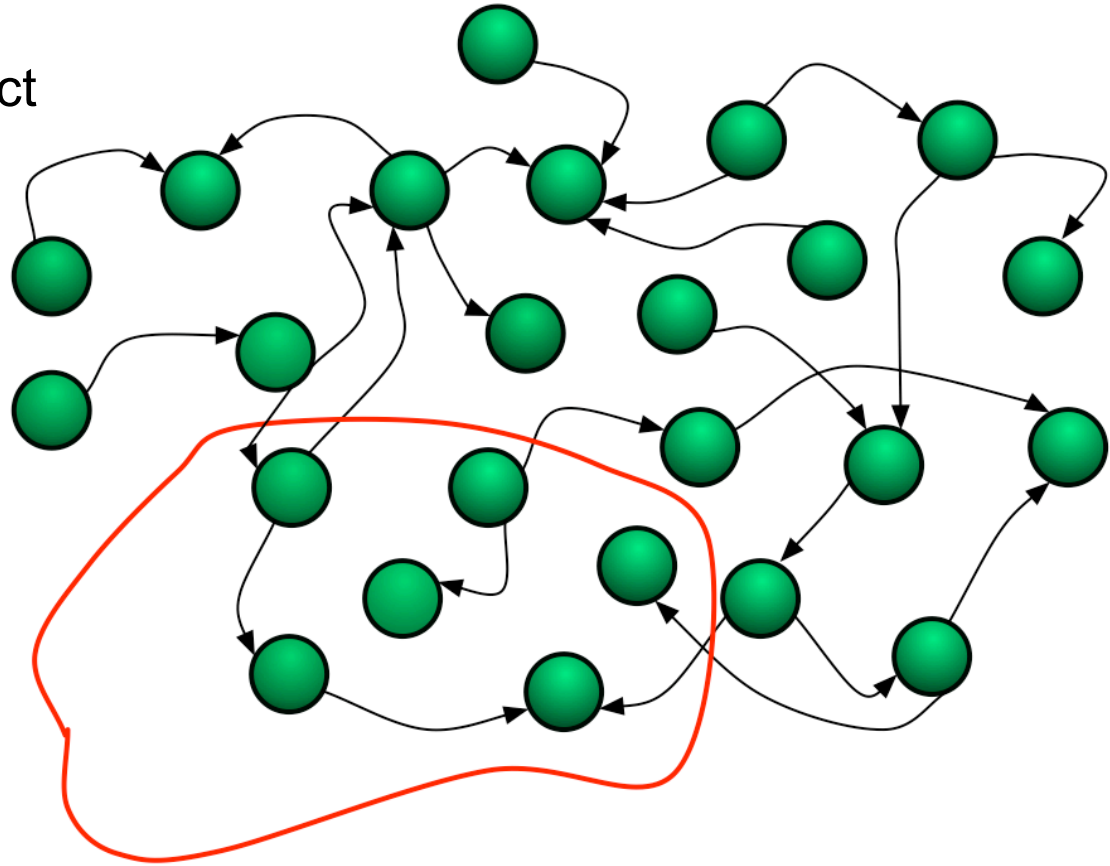


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An Aggregation and the Web

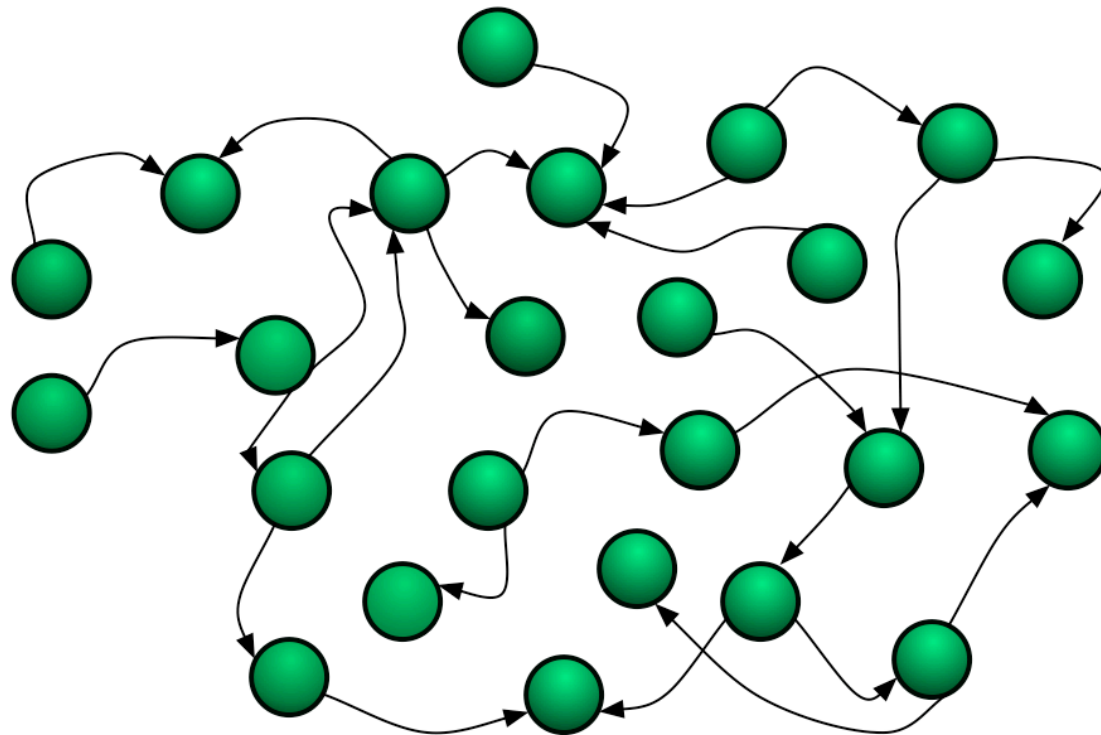
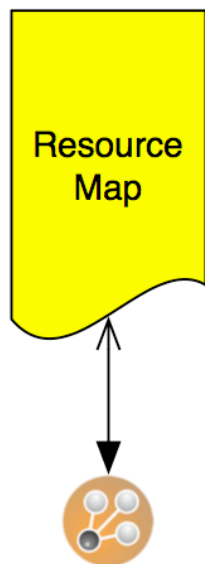
- Resources of an Aggregation are distinct URI-identified Web resources



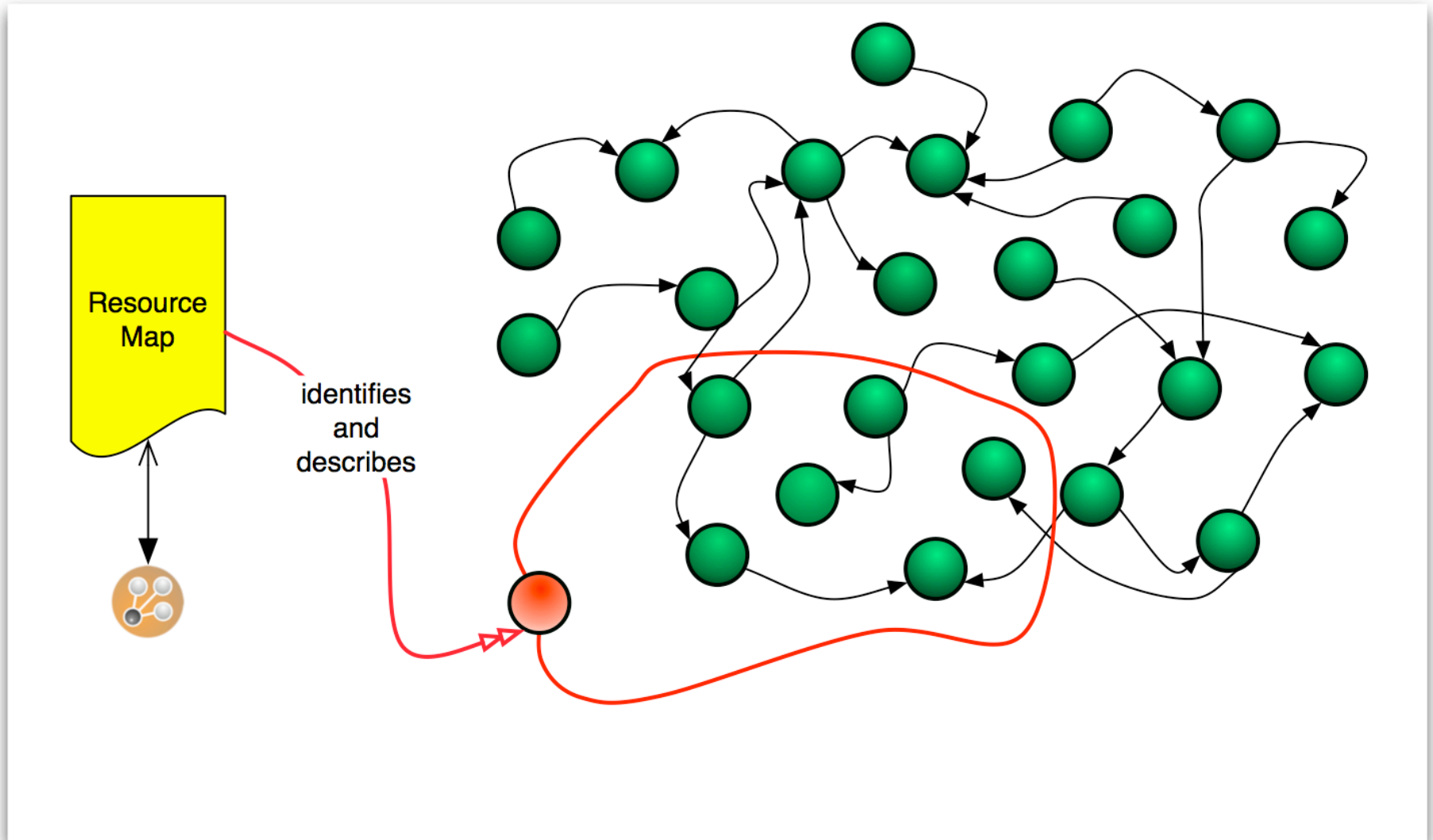
- Missing are:
 - The boundary that delineates the Aggregation in the Web
 - An identity (URI) for the Aggregation



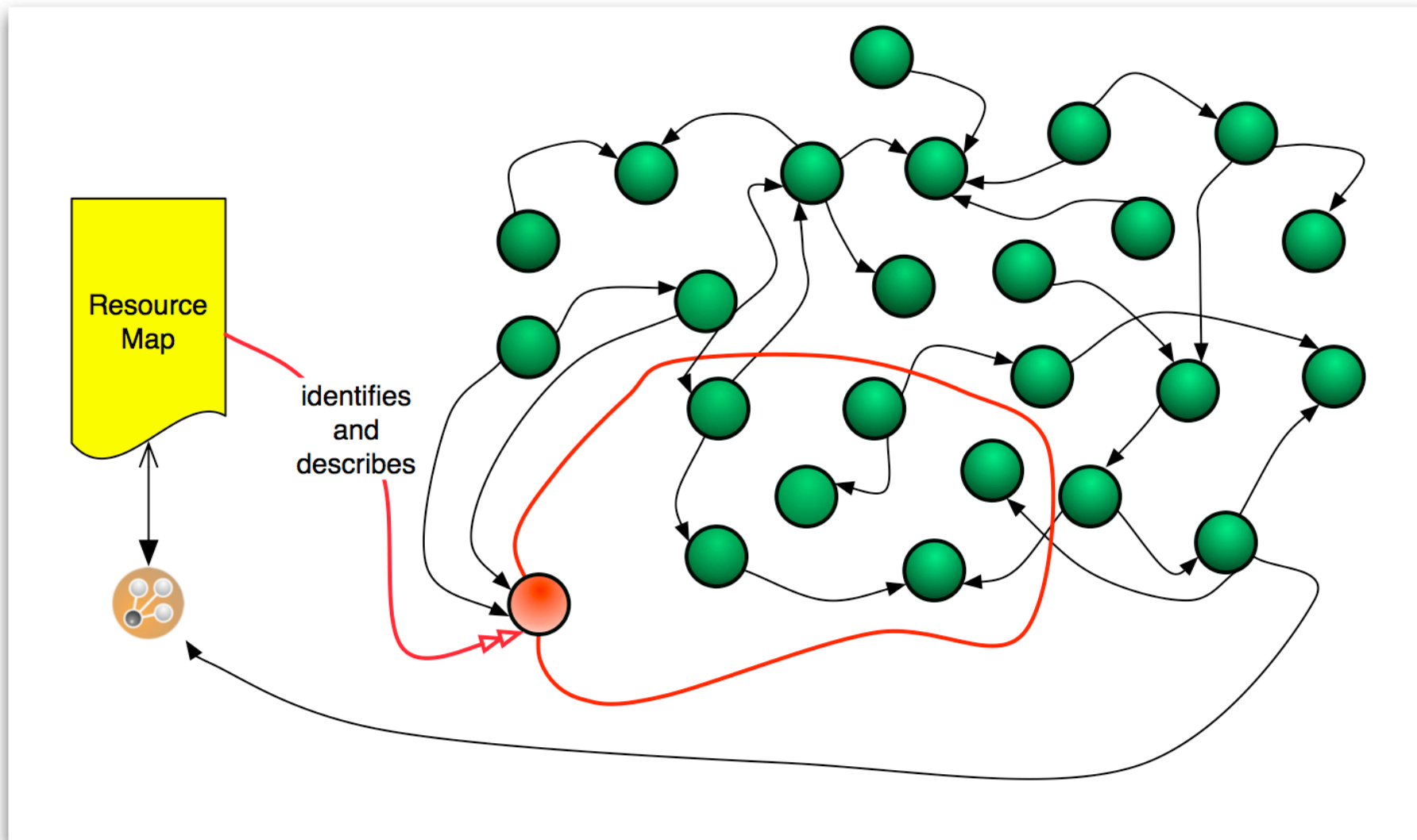
Publish a Resource Map to the Web



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

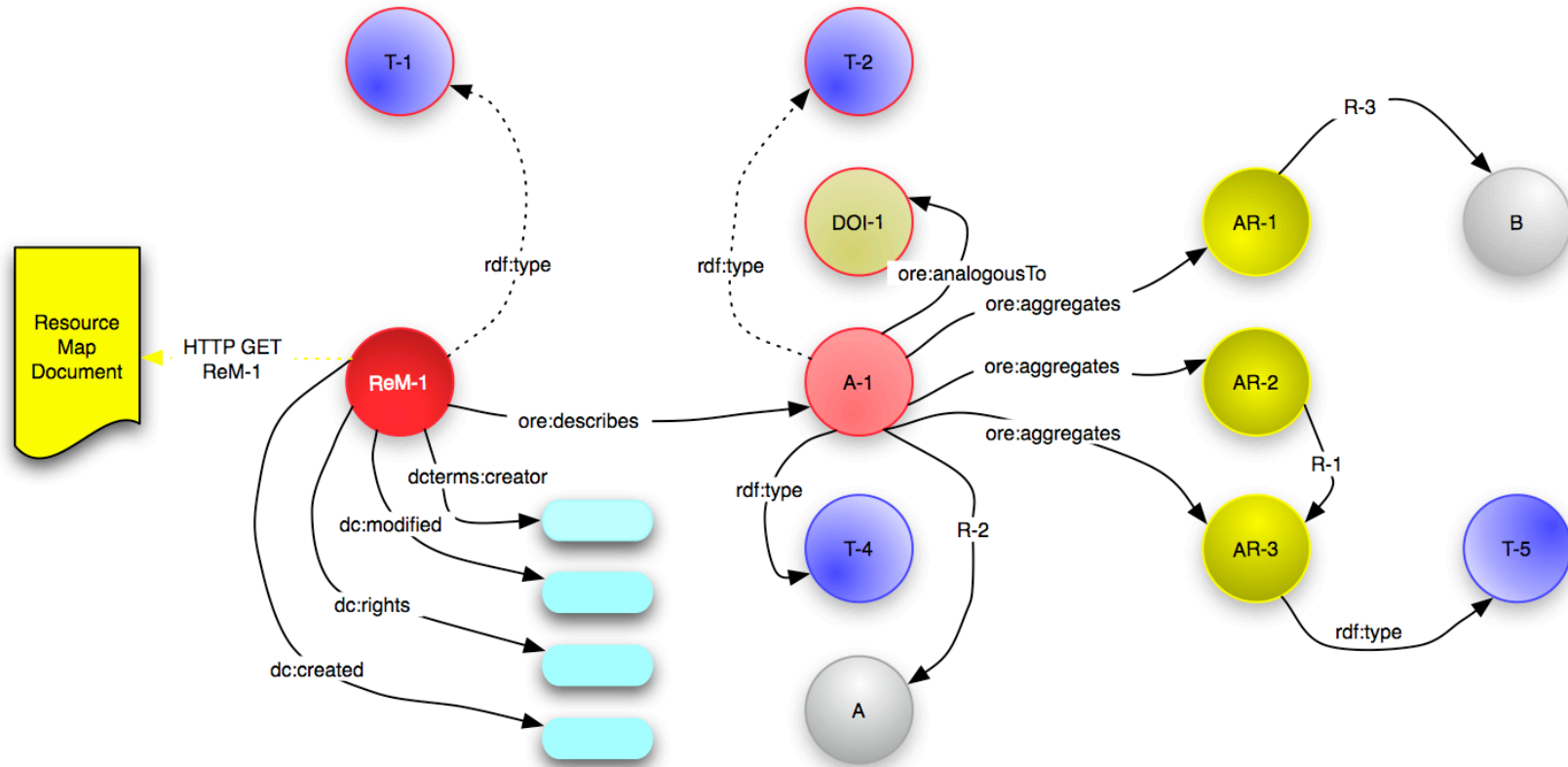
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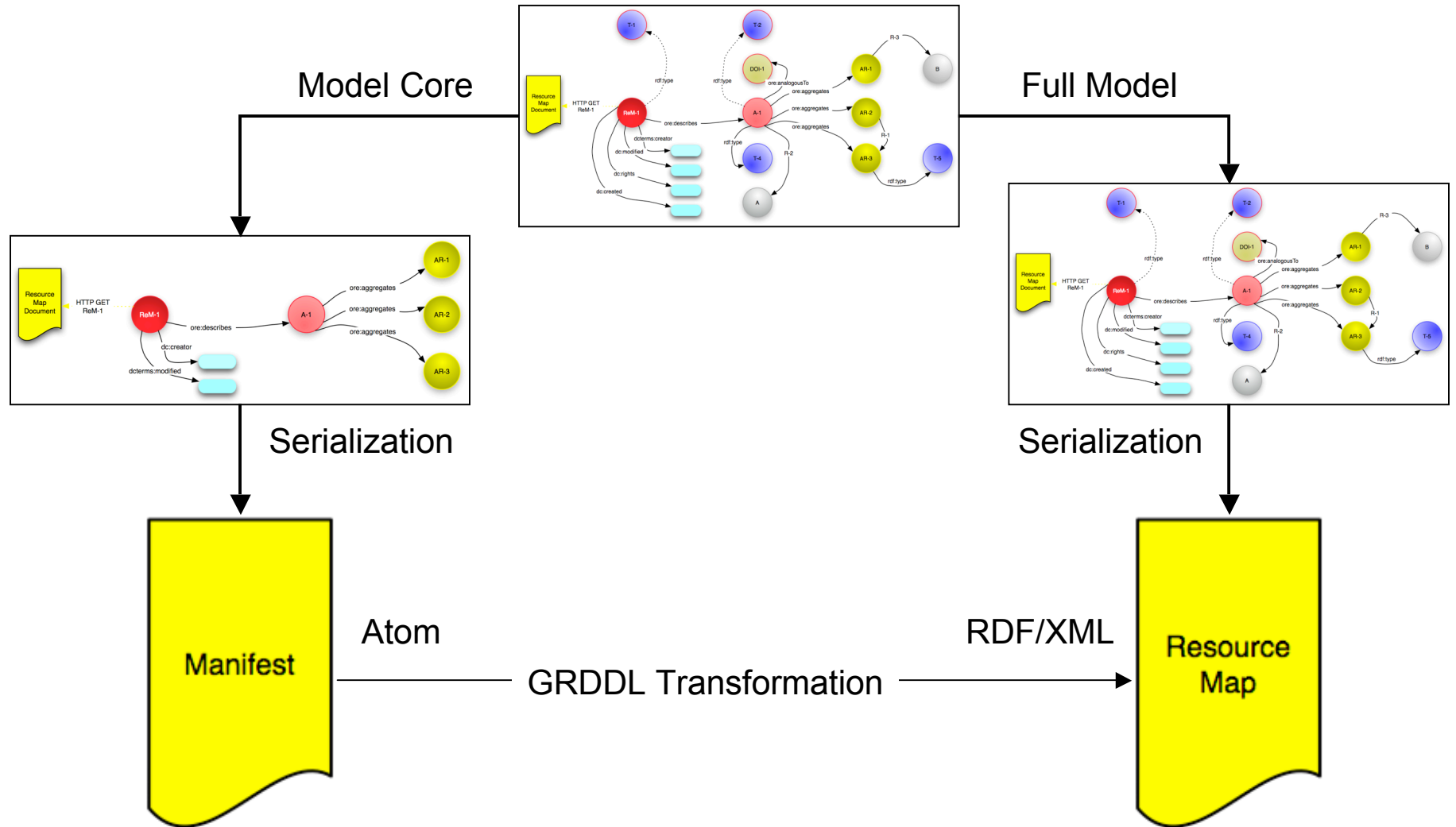
How exactly: Learn today.



Agenda: Data Model (Carl Lagoze)



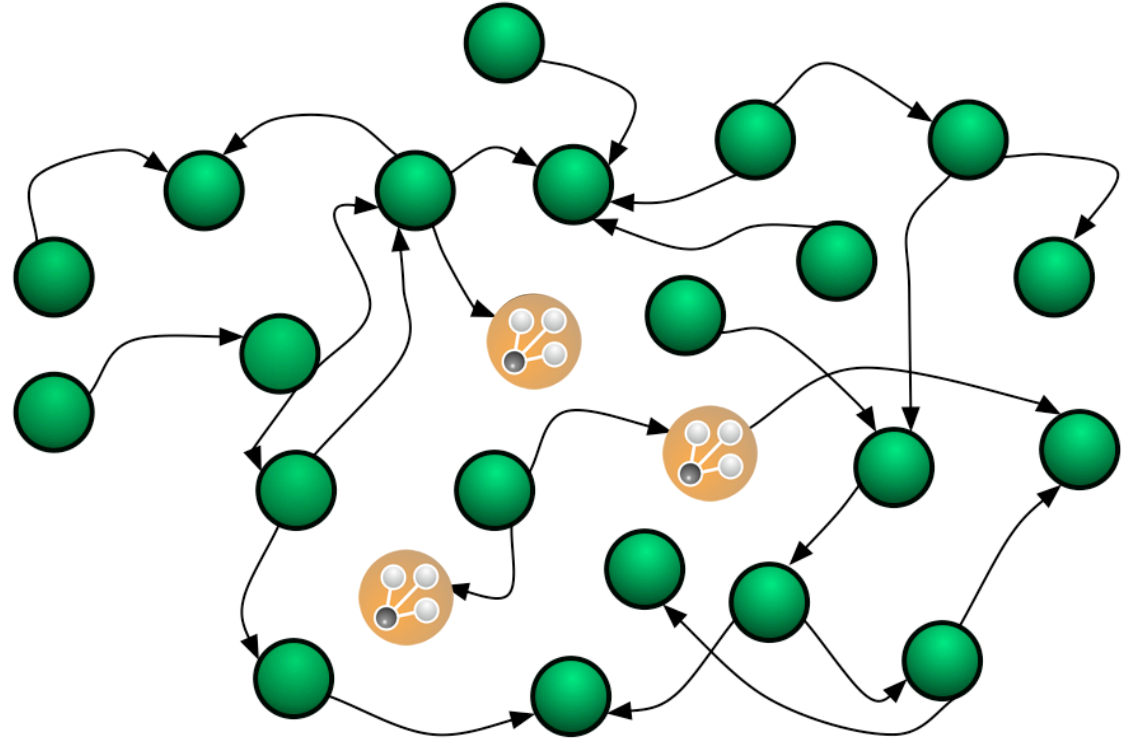
Agenda: Serializations (Carl Lagoze, Simeon Warner)



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Agenda: Resource Map Discovery (Michael Nelson)



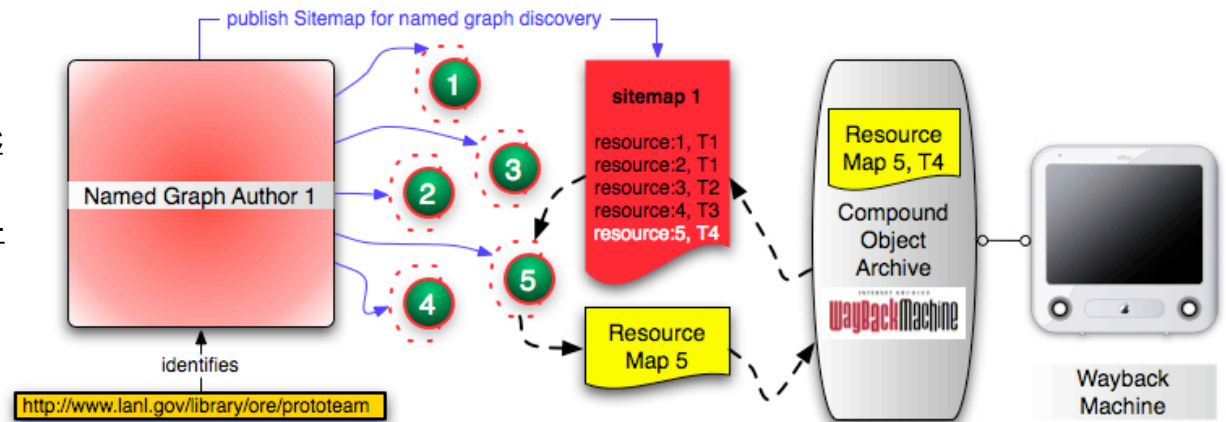
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Agenda: Experiments

- 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



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Agenda: Reception



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But First: Carl Lagoze

