The repository ecology: an approach to understanding repository and service interactions

R. John Robertson
Repositories Research Officer
JISC-CETIS
rr@cis.strath.ac.uk

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Outline

- The implementation challenge
- A repository ecology?
- A scholarly research ecology
- Ecology concepts
- Data and eLearning ecologies
- Using this approach
- Future developments

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The implementation challenge

- The repositories domain is well served by technical specifications and architectural models
- Implementers of repositories and dependent services are however, still faced with a challenge to plan and manage their service in relation to the rest of the information environment
- In particular they face challenges when trying to:
  - Articulate needs
  - Identify opportunities
  - Express complexity
  - Manage development

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The implementation challenge (2)

- Boundaries
  - Primarily interested in the academic sector
  - A focus on the institutional and subject repository domain
  - An interest in interactions (technical and non-technical) between services and between repositories and services
- Characteristics
  - A semi-structured information space – sitting between the highly-ordered library world and the unstructured web
    - Between AACR2 and agreeing a del.icio.us tag
    - Often using OAI-PMH and Dublin Core
    - Interacting with both library catalogues and web 2.0 tools
    - Frequently providing a service based Open Source software such as, ePrints, DSpace, Fedora
    - ‘Repository’ as an abbreviation for a particular set of functions implemented and used in a particular cultural setting

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A repository ecology?

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A repository ecology? (2)

- The idea of an information ecology
  - A way of thinking about the relationships between information systems and services
- Information systems are like ecologies:
  - Multiple interacting things
  - Dependent on each other
  - Connections are not always obvious to participants
- A repository ecology as a type of information ecology

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The example of a scholarly research ecology

- The first stage of the research process – the initial literature review/search process
  - User carries out a number of different search tasks
    - Looks in Google
    - Finds eprints in a relevant subject repository
    - Checks recent theses
    - Is notified by RSS of recent deposits in subject domain at local institutional repository
    - Checks aggregated search service for other eprints
    - Finds additional papers because harvester enhances query using subject terminology mapping
    - Uses library interface to locate publisher's version of an article

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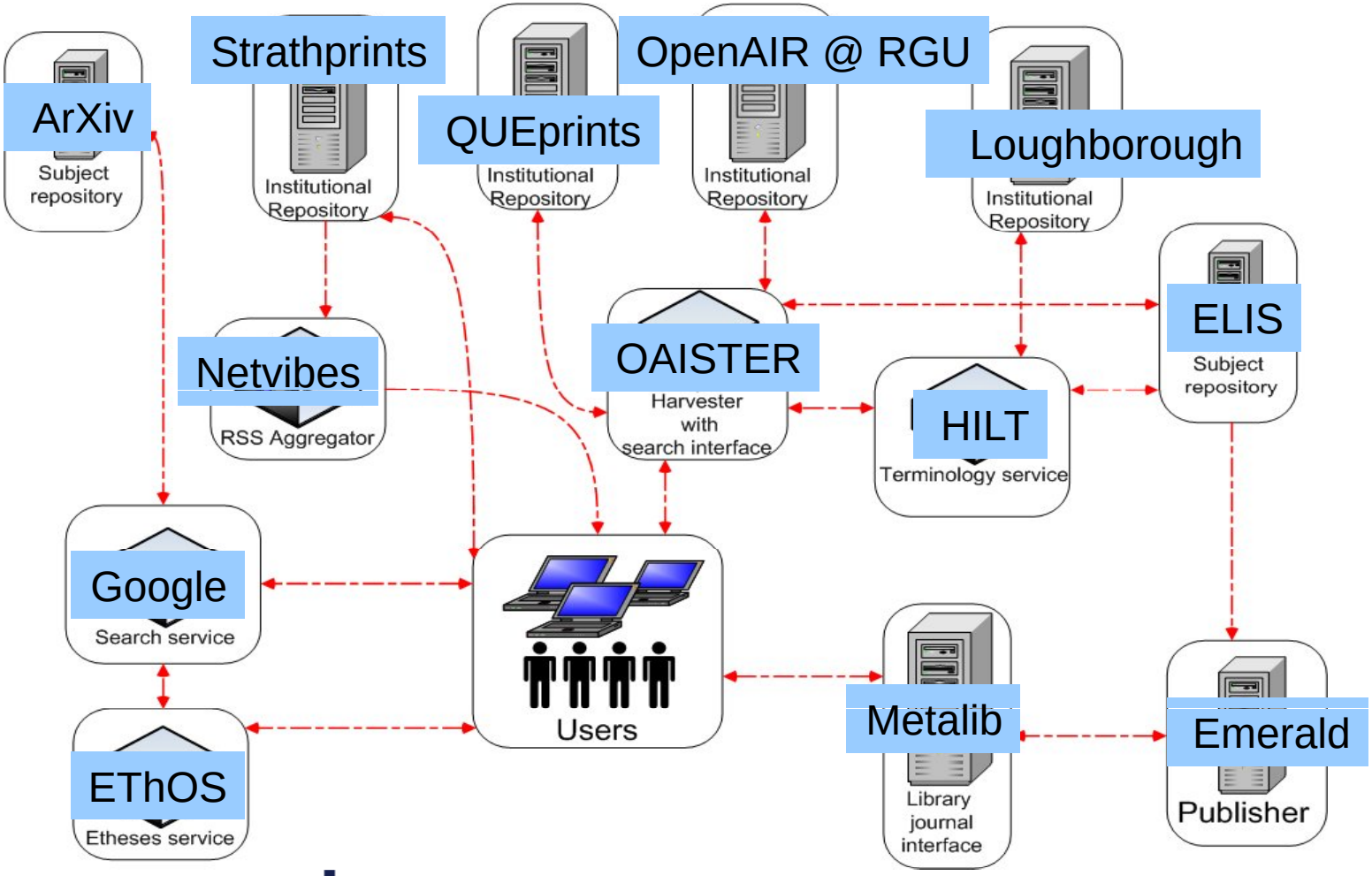
A scholarly research ecology (2)



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Ecology concepts

> "We believe that the ecology metaphor provides a distinctive, powerful set of organizing properties around which to have conversations. The ecological metaphor suggests several key properties of many environments in which technology is used. An information ecology is a complex *system* of parts and relationships. It exhibits *diversity* and experiences continual evolution. Different parts of an ecology *coevolve,* changing together according to the relationships in the system. Several *keystone species* necessary to the survival of the ecology are present. Information ecologies have a sense of *locality*."

Nardi and O'Day (1999) First Monday 4 (5)
http://www.firstmonday.org/issues/issue4_5/nardi_chapter4.html

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Ecology concepts (2)

- *System*
  - changes can affect whole ecology
  - local changes not in line with dynamic of the ecology may fail
- *Diversity*
  - different kinds of species can work together
  - species overlap and duplicate to a degree
  - “Monoculture - a fake, brittle ecology - gives sensational results for a short time, then completely fails.”

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Ecology concepts (3)

- *Coevolution*
  - the ecology is constantly changing
    - new things develop
    - existing things continue to develop
    - existing things are used differently
- *Keystone species*
  - critical species needed for ecology to survive; these are often 'middleware' - infrastructure and people who make and assist connections
- *Locality*
  - 'name': what something is used for in a particular location
  - 'habitation': how this thing sits within a network of relationships with other things

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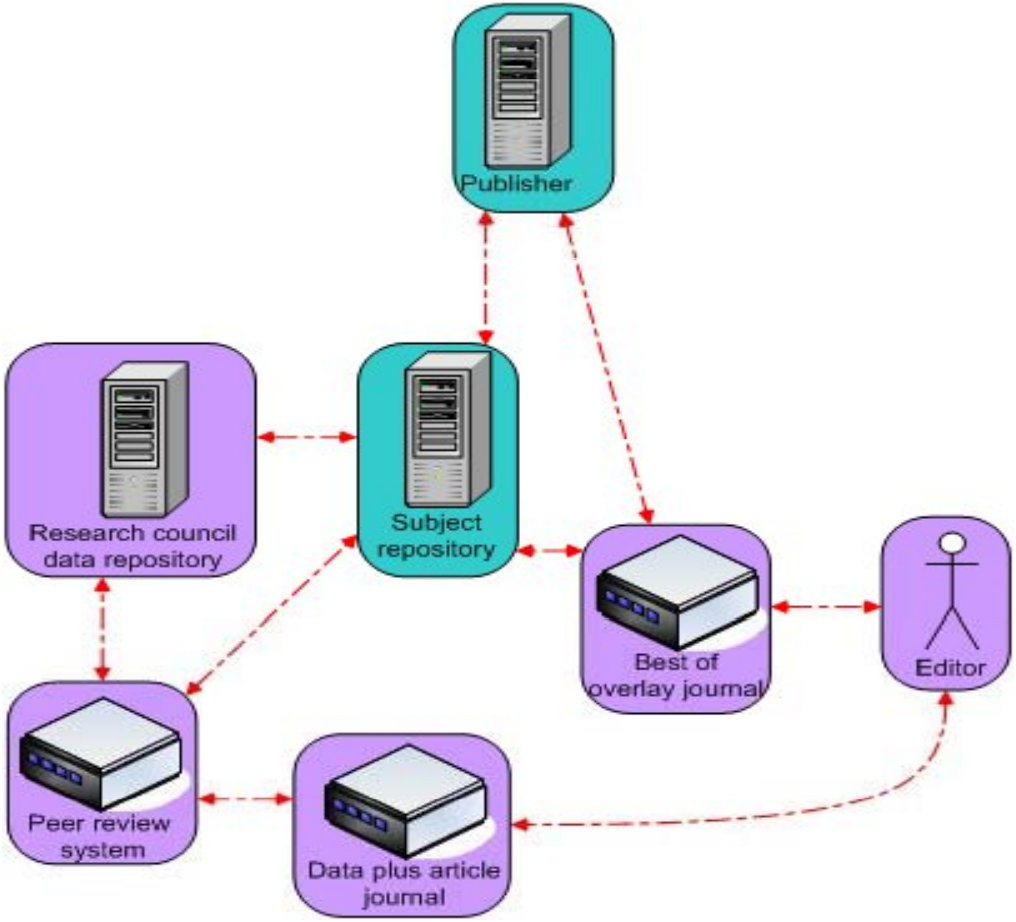
An scientific overlay journal ecology: basic elements



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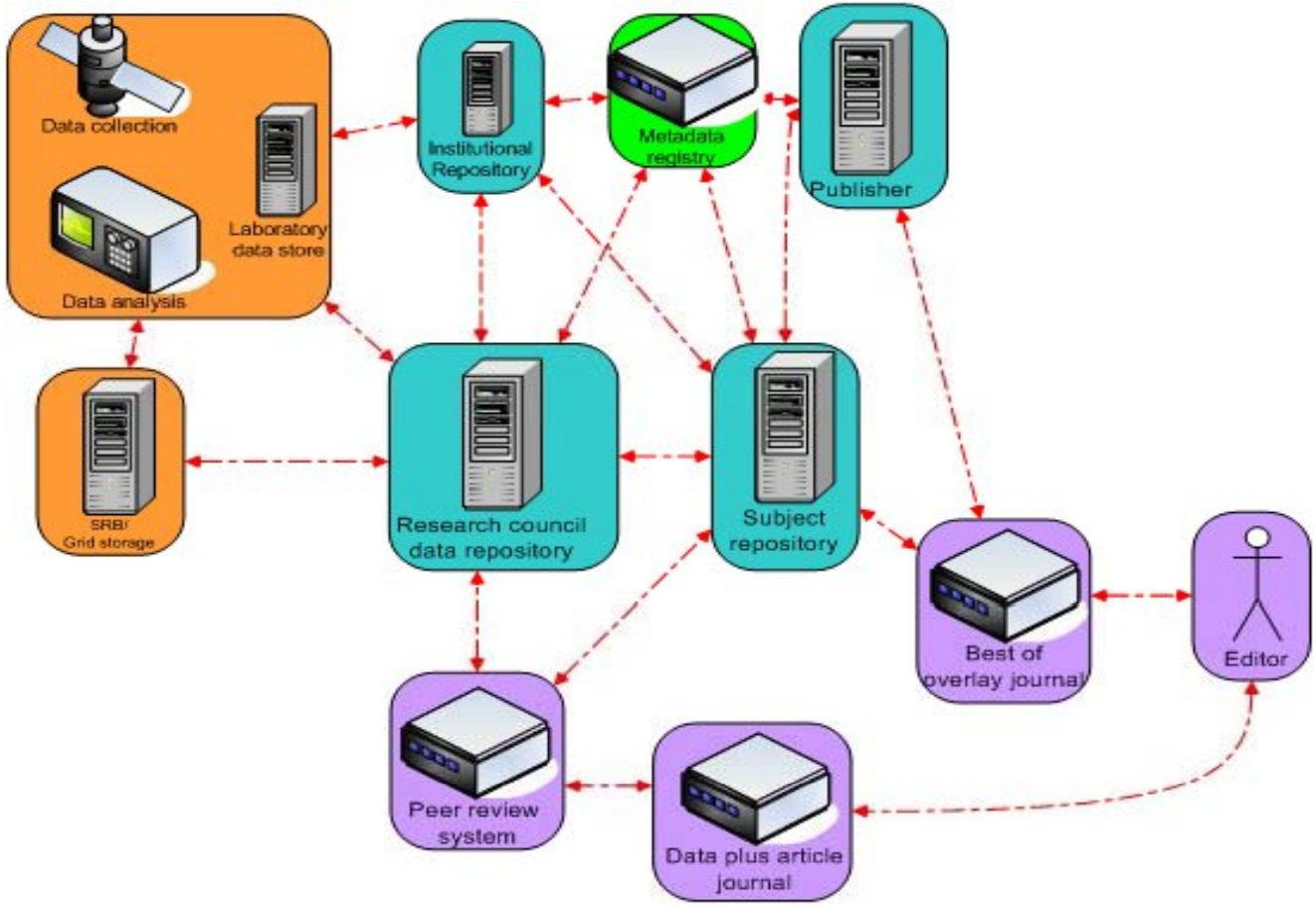
An scientific overlay journal ecology: adding data capture



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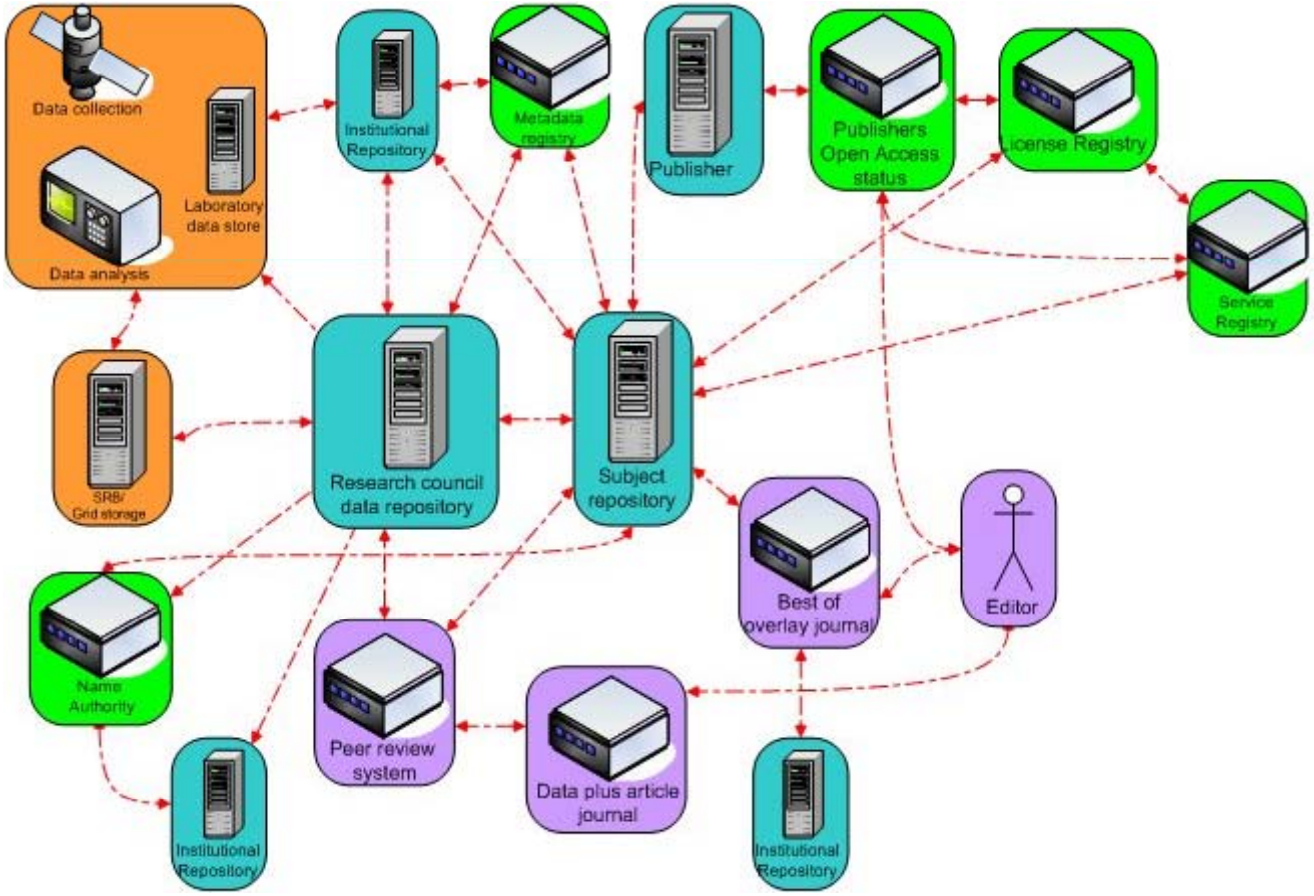
An scientific overlay journal ecology: bringing in other repositories



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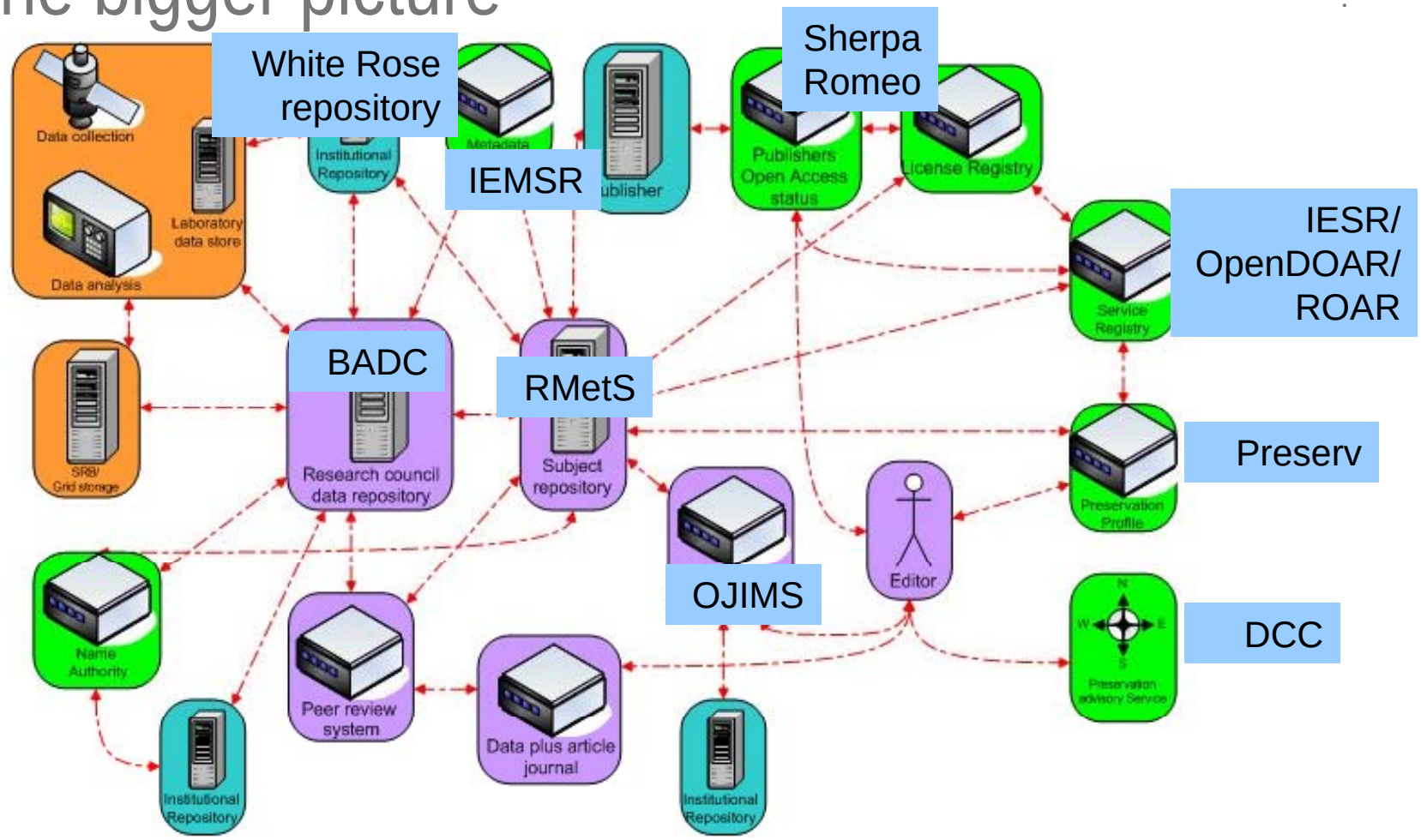
An scientific overlay journal ecology: the bigger picture



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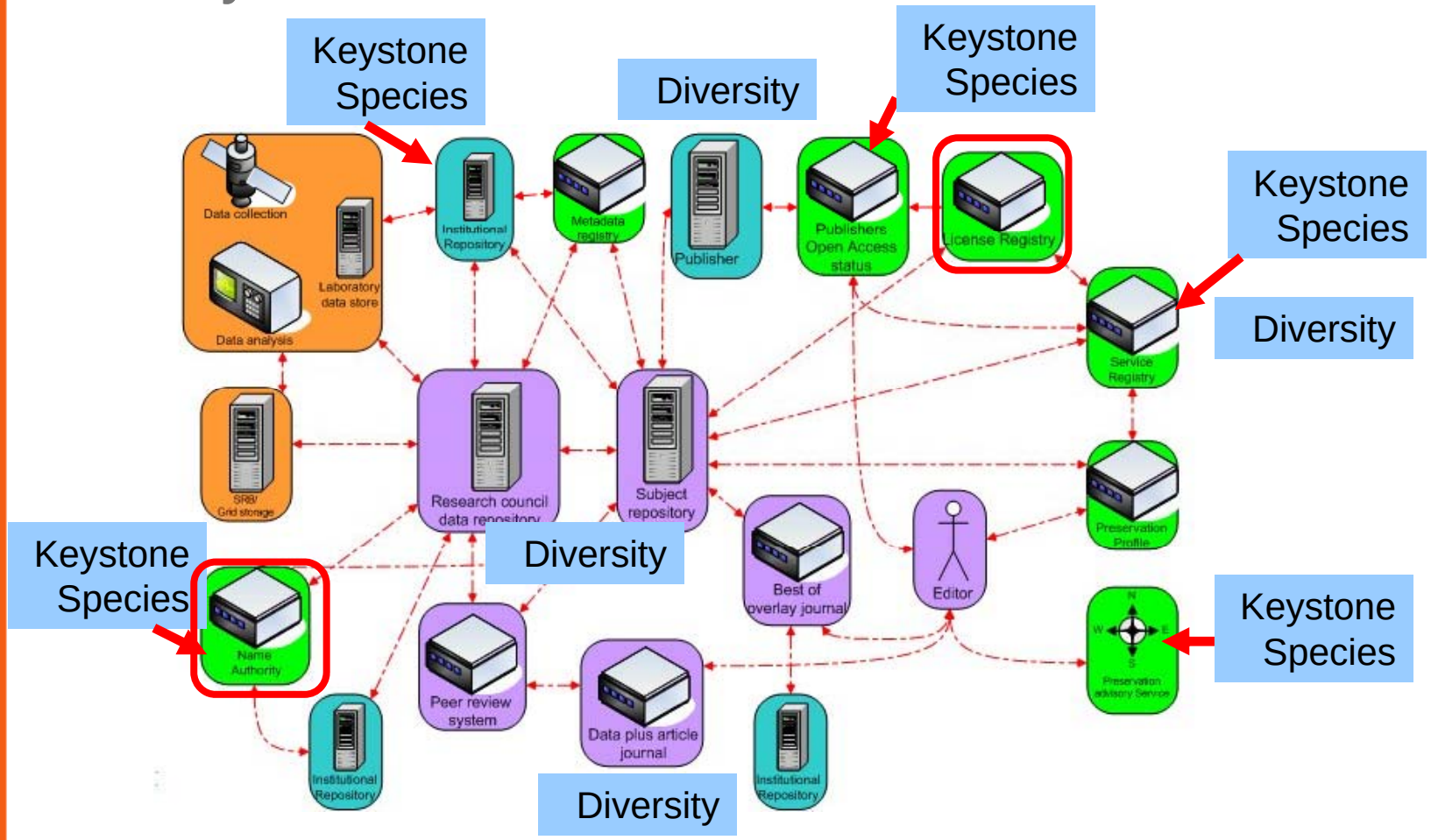
An scientific overlay journal ecology: analysis



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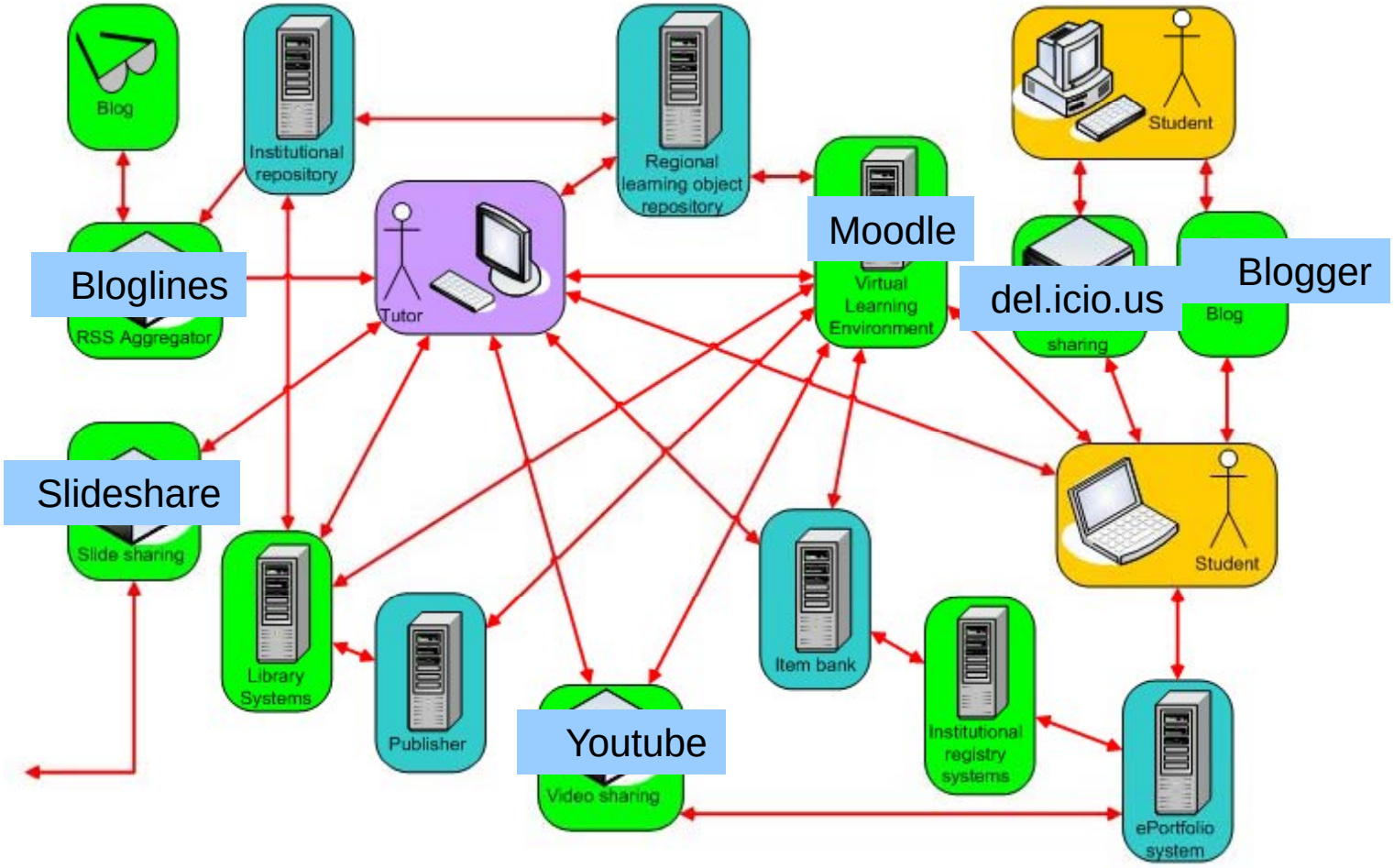
An eLearning ecology



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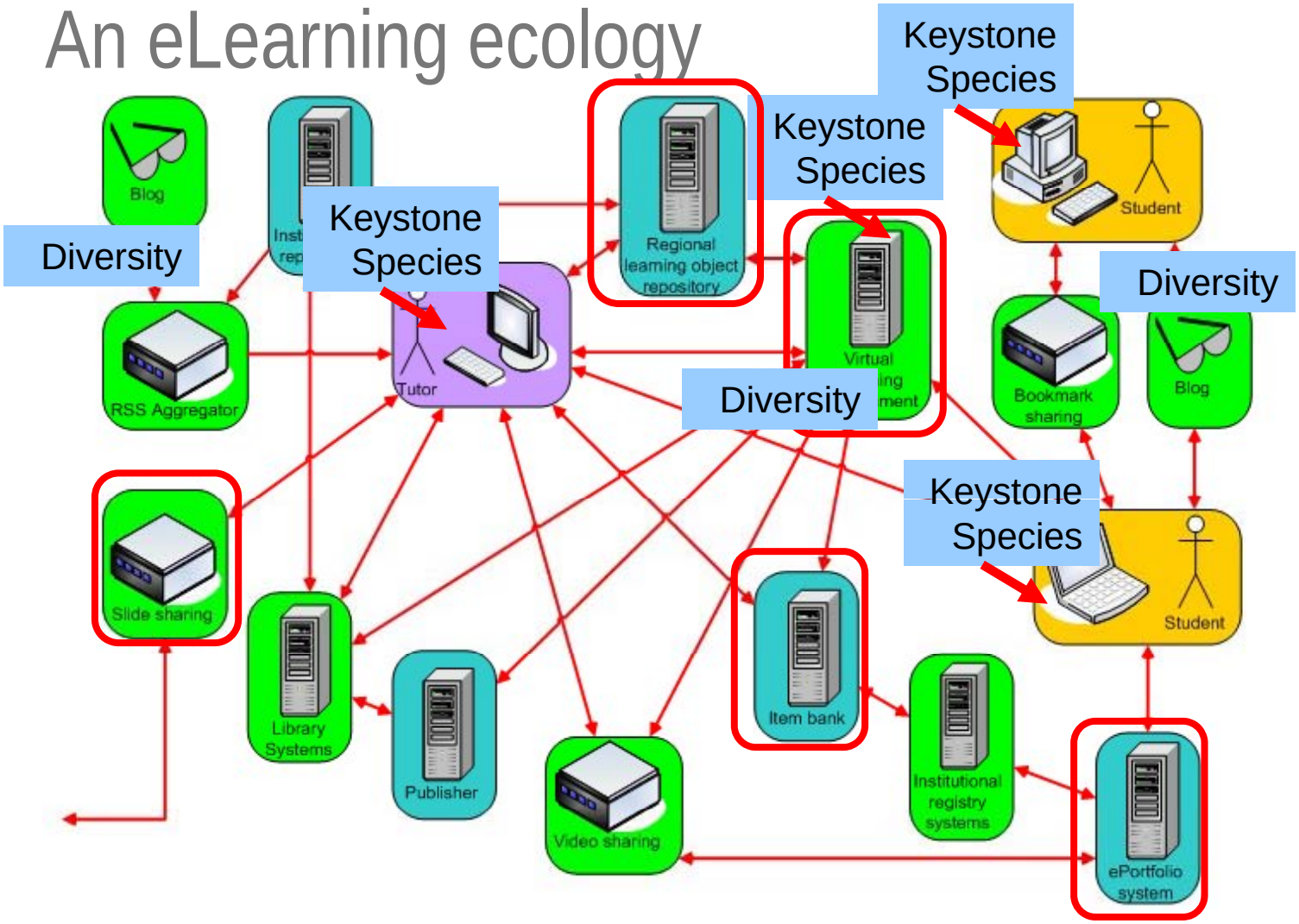
An eLearning ecology



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Using this approach: what benefit does it offer?

- For an ‘end user’
  - Services that have thought about their place in a wider network may offer the user a richer, multifaceted, and more personalised service
- For a repository or service administrator
  - The ecology approach offers the opportunity to looking for efficiencies and, as indicated above, to offer better services
- For developers and funding agencies
  - The ecology approach offers another approach to examining how services and repositories relate and interoperate and what aspects of the environment present opportunities or are under threat

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Using this approach: thinking ecologically

Key questions for thinking about interactions between repositories and services

- What sort of thing (repository or service) is this?
- What does it relate to (other repositories or services)?
- What does it depend on?
- How adaptable is it?
- What helps it to thrive?

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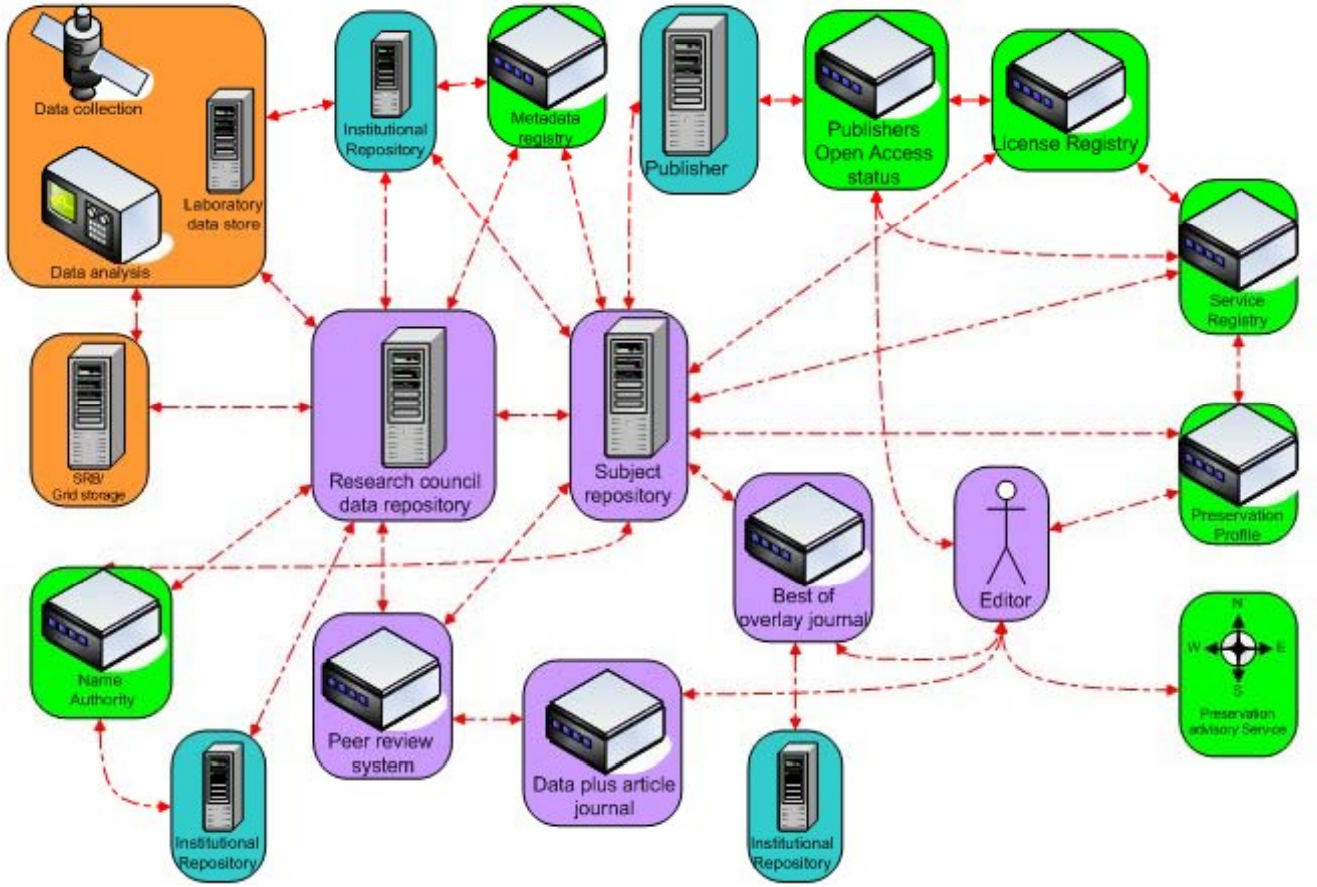
An scientific overlay journal ecology: the bigger picture - revisited



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Using this approach: the scientific overlay journal

- What sort of thing (repository or service) is this?
  - Overlay journal based on subject and data repositories
- What does it relate to (other repositories or services)?
  - illustrated connections (and more)
- What does it depend on?
  - Success of DR and SR – advocacy as well as technical deposit mechanisms
  - Publishers licensing agreements and being able to discover this information
- How adaptable is it?
  - Presenting different views of data
  - Offering lots of service discovery points
- What helps it to thrive?
  - Google visibility / fit with RAE (or equivalent exercise)/ other measurable prestige

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A repository ecology

- It is not the only way to approach any of these issues but a repository ecology allows:
  - A way for repositories and services to articulate their place in the information environment
  - An approach for implementers to identify areas of opportunity within their communities
  - A mechanism to present the complexity of real settings (with different views on them)
  - A support for planning and decision making that can identify missing links and crucial elements

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Future developments, Acknowledgements, Questions

- Further developments
  - In the coming months, we will:
    - Explore useful extensions of the metaphor
    - Produce a report for JISC
    - Hold a workshop on developing and applying the approach
- Acknowledgements
- Questions

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Further information

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