Next Generation Repositories
Scaling up repositories to a global knowledge commons

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The current scholarly communication system is broken!
Not Sustainable, Equitable or Innovative
COAR’s Vision

A global knowledge commons based on a network of open access repositories
But... repository systems are using old technologies developed over 15 years ago that do not support the functionalities we need.
Next Generation Repositories

Major strategic priority for COAR

Working Group launched in April 2016

Aim: to identify functionalities and architectures for the next generation repositories within the context of scholarly communication
The aim of this activity is to develop a *global network* of repositories that allows *frictionless access* to open content and encourages the creation of *cross-repository added-value services*. 
Current repositories

Services we can develop with repositories today

Conceptual layer

- Batch discovery
- Metadata
- Interoperability

Persistence layer
Current repositories

Services we can develop with repositories today

Persistence layer

Interoperability

Conceptual layer

Metadata

Batch discovery

Interoperability

Interoperability CORE to the IRs mission. (Crow, 2002 - SPARC’s position paper on IRs); (COAR, 2011 - The Case for Interoperability for Open Access repositories)
Repositories in crises?


» Eric van de Velde: “Institutional Repository (IR) is obsolete. Its flawed foundation cannot be repaired. The IR must be phased out and replaced with viable alternatives”: http://scitechsociety.blogspot.ch/2016/07/let-ir-rip.html

» Criticism of lack of interoperability across repositories.

» No comparison with the publishing platforms which are by far less interoperable!
Importance of interoperability

Lack of interoperability in the scholarly communication system is a major barrier to innovation.
User stories

• Data mining
• Discovering metadata that describe a scholarly resource
• Discovering the identifier of a scholarly resource
• Discovering usage rights
• Resource syncing and notification
• Recognizing the user
• Commenting & annotating
• Providing a social notification feed
• Recommender systems for repositories
• Preservation
• Peer-review
• Comparing usage

Current repositories

Services we can develop with repositories today

Persistence layer

Interoperability

Metadata

Next generation repositories

Services we can develop with the next generation repositories

Conceptual layer

Discovery mechanisms, Batch, Navigation, Notification

Usage interactions and metrics

Comments

Peer-reviews

Messages

Global sign-on

Metadata

Content

Links between resources

Notifications

Persistence layer

Interoperability

Metadata


“...making the **resource**, rather than the repository, the **focus** of services and infrastructure.”
Behaviours and Technical Recommendations

- Exposing Identifiers
- Discovery Through Navigation
- Interacting with Resources (Annotation, Commentary, and Review)
- Resource Transfer
- Batch Discovery
- Collecting and Exposing Activities
- Identification of Users
- Authentication of Users
- Exposing Standardized Usage Metrics
- Declaring Licenses at the Resource Level
- Preserving Resources

November 28, 2017
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## User stories and priority areas

| Discovery and exposing resources | Batch | • Data mining  
| • Discovering metadata that describe a scholarly resource  
| • Discovering the identifier of a scholarly resource  
| • Discovering usage rights  
| • Resource syncing and notification |
| Discovery and exposing resources | Navigation | • Recognizing the user  
| • Commenting & annotating  
| • Providing a social notification feed  
| • Recommender systems for repositories  
| • Preservation |
| Research workflows and lifecycle | Annotation | • Peer-review  
| • Comparing usage |
| Research workflows and lifecycle | Commenting |
| Research workflows and lifecycle | Social interaction |
| Research evaluation | Peer review |
| Research evaluation | Metrics |
| Discovery and exposing resources | Batch | • Data mining  
|                                 |       | • Discovering metadata that describe a scholarly resource  
|                                 |       | • Discovering the identifier of a scholarly resource  
|                                 | Notice | • Discovering usage rights  
|                                 |       | • Resource syncing and notification  
| Research workflows and lifecycle | Annotation | • Recognizing the user  
|                                 |       | • Commenting & annotating  
|                                 | Commenting | • Providing a social notification feed  
|                                 | Social interaction | • Recommender systems for repositories  
|                                 |       | • Preservation  
| Research evaluation | Peer review | • Peer-review  
|                                 | Metrics | • Comparing usage  

Three vertical discovery mechanisms

» Batch – Transferring bulk data
» Navigation – Helping robots to find resources in repositories by means of navigation
» Notification – Enabling robots to subscribe to changes in repositories
Visualize technologies and behaviour
Priority technologies: Signposting & ResourceSync

- Discovery Through Navigation
- Declaring Licenses at the Resource Level
- creative-commons-licenses
- Exposing Identifiers
- Batch Discovery
- sitemaps
- Preserving Resources
- sword
- ipfa
- Collecting and Exposing Activities
- Resource Transfer
- webmention
- websab
- activity-streams-2.0
- linked-data-notifications
- web-annotation-model-and-protocol
- Interacting with Resources (Annotation, Commentary, and Review)
Signposting is an approach to make the scholarly web more friendly to machines exposing relations as Typed Links in HTTP Link headers, fully aligned with hypermedia (REST, HATEOAS) lines of thinking regarding web interoperability.

Signposting is now implemented in DSpace-CRIS and OJS. DSpace 7 plans to provide Signposting support.
Influência da garantia institucional sobre o risco de crédito

Nascimento, Marcos Aurélio (2009)
Publisher: Contabilidade, Gestão e Governança
Journal: Contabilidade, Gestão e Governança
Languages: Portuguese
Types: Unknown
Subjects:

O presente artigo discute a análise do crédito ao consumidor sob os aspectos pessoais - caráter e capacidade - passando pelos demais "cs" do crédito - capital, condições e colateral - como complemento do análise. Com base em uma pesquisa de campo, buscou-se identificar fatores que justificavam um tratamento diferenciado para consumidores que dispõem de garantias institucionais. Este tratamento diferenciado poderia ser materializado por taxas de juros menores ou linhas de crédito mais atraentes para o cliente de menor risco. Trata-se de uma pesquisa sob a ótica do tomador de recursos que, invariavelmente, vai de encontro aos interesses das instituições financeiras. A política de crédito das instituições financeiras deve ser estabelecida de forma a recompensar, também, a garantia institucional, na medida em que estes concorrem para a redução do risco de crédito. Admitindo-se que há uma relação direta entre a taxa de juro e risco de crédito, pode-se inferir que quanto menor o risco menor a taxa de juro, portanto, a recompensa esperada pelo menor risco é aplicação de uma taxa menor.
A license link type has been proposed to drive this information
ResourceSync - http://www.openarchives.org/rs/toc

» Successor of the OAI-PMH protocol and much more...
» Faster, reliable and scalable
» Allows real-time notification (and recovering of missed messages)
» Drives resource synchronization: content and metadata are both managed
ResourceSync – core specification

» Based on the Sitemap protocol...

» essentially some XML files that list your resources (ResourceList)...but also machine «discoverable» from well known URLs...auto explicative in the supported functionalities (CapabilityList) and able to eventually deal with changes (ChangeList) and synchronization of large amount of data (Dumps)

» It is a framework: additional specifications add more features, for example the Change notification allows «push-based» synchronization
A Next Generation Repository...

- manages and provides access to a wide diversity of resources
- is resource-centric
- is a networked repository
- is machine-friendly
- is active (notify other systems, allow local active interaction)
Types of metadata: descriptive and activity

- Active Repository Pattern
- repositories could become pro-active components in an event-driven scholarly system
- publishing ‘events’ such as the addition of a new item to one or more notification hubs
- third-party systems ‘subscribing’ to these notifications - many potential applications
- would involve very little or no effort by repository administrators
- modest software development

http://www.paulwalk.net/2015/10/19/the-active-repository-pattern/
Repositories and notification hubs

- Metadata changes hub
- Peer review hub
- Comments/annotations hub

Diagram showing connections between hubs and repositories.
Ongoing work and next steps

1. Implementation of technologies in repository platforms
2. Development of network or hub services
3. Ongoing monitoring of new technologies, standards and protocols
1. Implementation of technologies in repository platforms

• Already progress – several platforms are implementing NGR recommendations
  • OpenAIRE – Europe
  • National Institute of Informatics (NII) - Japan
  • US Next Generation Repositories Implementers Group
  • CARL Open Repositories Working Group - Canada

• Meeting of repository platforms here at OR 2018
2. Support the development of network or hub services

- 2 days of meeting of Repository Networks, May 14 & 15, 2018 in Hamburg, Germany to discuss NGR functionality and international alignment

- Pilot Projects 2\textsuperscript{nd} half 2018 (Open Peer Review, Common Standards for Usage Statistics, Recommender Systems)
3. Monitoring of new technologies, standards and protocols

COAR Next Generation Repositories Editorial Group

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Paolo Manghi   Kazu Yamaji
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How to contribute?

Support the implementation of the identified behaviours and technologies in your community (DSpace, Eprints, Fedora, Dataverse, Samvera, etc., etc.)

Join the conversation on GitHub

https://github.com/coar-repositories/ngr