

Distributed Authority

Hugh Glaser
Seme4 Ltd.

With thanks to many, including Ian Millard

- What Happens When Authorities Collide?
 - What is the Granularity of an Authority?
 - When we have PIDs, what do we do next?
 - How do we Manage the Infrastructure?
-
- <http://eprints.ecs.soton.ac.uk/18452/>

Some Assumptions

- Authority is established, not bestowed
- IDs are URIs and can be resolved
 - Preferably to RDF, but not necessarily
- But they must resolve
 - otherwise you can't even guess what they mean
- Not just people
 - the infrastructure should work for publications, institutions, lectures, experiments...
- We want to solve problems, not create them
- I don't have long...

Barcode on the forehead is a Chimera



Each Metadata owner publishes its own identifiers

- This is absolutely right
 - Their workflow depends on them
 - Their concept of the entity will be unique to them
 - They own it
 - If they used someone else's, how would they deal with a change?
 - Split of entity
 - Join of entity
 - Correction of entity

Institutional “Use cases”

- What other institutions do my workers work with?
- What do my departments know about Jane?
- What projects (RCUK, JISC, EU) do we have in photovoltaics?
 - Why would a University keep project metadata?
 - Surely they can just “use” the JISC metadata
- Give me a snapshot of Jane’s activity
- How does the library know who is using which texts?

Identity Knowledge

- Is different from other knowledge
- Goodness about separation
 - License
 - Provenance
 - Trust
 - Duplication (maintenance)
 - Internal process
- Mistake to combine discovery with service
 - Simple services that do one set of things well
 - Do not duplicate/copy data, e.g. names
 - Creates many problems: coherence, maintenance...
- Identity is context-dependent
 - Use context more than publication context

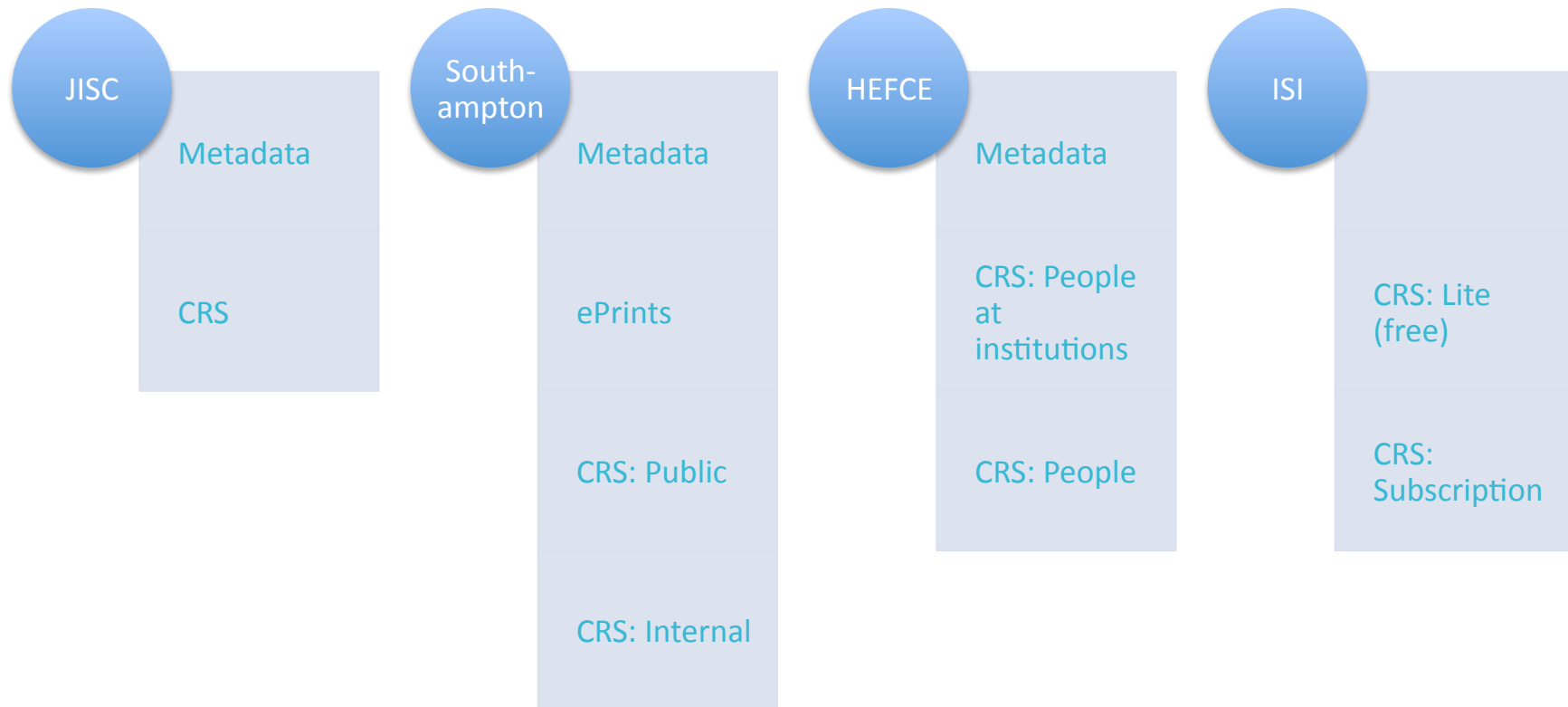
Some requirements

- Scalability
 - Distributed
 - Metadata publishers should be able to give some authority of their equivalence
- These may be context dependent, e.g.
 - Equivalence as a worker here (Department, JISC?)
 - Equivalence as a professional (previous inst.)
 - Equivalence as a person (dbpedia)
- Other should be able to make different statements
- Essentially anarchy, as the rest of the Web

Co-Reference Service (CRS)

- How we do it
- RESTful service
- $URI_i \rightarrow \{ URI_1, \dots, URI_i, \dots, URI_n \}$
- Any metadata owner can publish co-reference to other sources
 - Multiple “opinions” if required
- Others can provide such services
- Middleware or simpler can aggregate
 - From recognised/approved CRSes
 - “Let the buyer beware”?
 - “Let the buyer be empowered”

For Example



Some Other Issues

- Deprecation
- CRS Discovery
 - Recommended CRSes from metadata from resolved URI
- Aggregating Services
- Robustness to failure
- Actually CRS is not confined to Linked Data

Examples

- Running out of time
- For the Sceptical
- So this is what can be done
 - <http://rkbexplorer.com/>
 - <http://dotac.info/>
 - <http://sameas.org/>
 - <http://jisc.rkbexplorer.com/id/org-77>

RKBExplorer – The ReSIST Project

RKBExplorer » Projects » ReSIST Resilience for Survivability in IST

http://www.rkbexplorer.com/explorer/#display=project-%7Bhttp%3A//wiki.rkbexplorer.com/id/resist%7D

iPhone Single (50) And ECS UoS DH ReSIST MacOS X Football RKB iPhone App dwb Benny Uni Air Canada P SWC GPS IPK Freqs

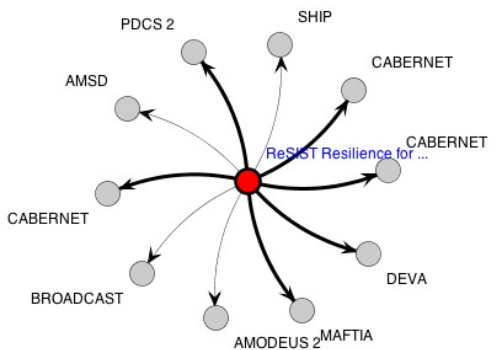
People » Tim Berners-Lee Projects » ReSIST Resilience for S...

RKBExplorer » Projects » ReSIST Resilience for Survivability in IST

Search... Search

about system requirements help data sources contact acknowledgements

Related projects



Details

Title:
Resilience for survivability in IST

Other Names:
ReSIST Resilience for Survivability in IST

Project Overview:
ReSIST is a NoE that addresses the strategic objective "Towards a global dependability and security framework" of the Work Programme, and responds to the stated "need for resilience, self-healing, dynamic content and volatile environments". It will integrate leading researchers active in the multidisciplinary domains of Dependability, Security, and Human Factors, in order that Europe will have a well-focused coherent set of research activities aimed at ensuring that future "ubiquitous computing systems", the immense systems of ever-evolving networks of computers and mobile devices which are needed to support and provide Ambient Intelligence (AmI), have the necessary resilience and survivability, despite any residual development and physical faults, interaction mistakes, or malicious attacks and disruptions. The objectives of the Network are: 1) Integration of teams of researchers so that the fundamental topics

People

[Jean-Claude Laprie](#) ?
[Aad van Moorsel](#) ?
[Abdelmajid Khelil](#) ?
[Achour Mostefaou](#) ?
[Adnan Noon Mian](#) ?
[Afraz Jaffri](#) ?
[Agnan de Bonneval](#) ?
[Alberto Pasquini](#) ?
[Alessia Milani](#) ?
[Alex Buzzone](#) ?

Organisations

[The University of Newcastle upon Tyne](#) ?
[LAAS-CNRS](#) ?
[CITY UNIVERSITY LONDON](#) ?
[Laboratoire d'Analyse et d'Architecture des Systèmes](#) ?
[The University of Pisa](#) ?
[Institut Eurecom](#) ?
[Technische Universitat Darmstadt](#) ?
[UNIVERSITA DEGLI STUDI DI ROMA "LA SAPIENZA" - UNIVERSITY OF ROME "LA SAPIENZA"](#) ?

Publications

[Malicious- and Accidental-Fault Tolerance in Internet Applications: conceptual model and architecture](#) ?
[Conceptual Model and Architecture](#) ?
[Conceptual model and architecture of MAFTIA](#) ?
[ASSERT Automated proof based system and software engineering for real-time applications](#) ?
[Malicious- and Accidental-Fault Tolerance in Internet Applications: reference model and use cases](#) ?
[Revised version in Predictably dependable computing systems](#) ?

Research Areas

[Testing](#) ?
[Safety](#) ?
[Trust](#) ?
[Human Made Fault](#) ?
[Symbolic Execution](#) ?
[Dependability And Security Provision](#) ?
[Dependability, High Confidence, Survivability](#) ?
[Development Fault](#) ?
[Environment](#) ?

Applet eu.resist.rkb.RKBExplorer2 started

A Paper

RKBExplorer » Publications » A Web-Based Resource Model for eScience: Object Reuse & Exchange

http://www.rkbexplorer.com/explorer/#display=publication-%7Bhttp%3A/dblp.rkbexplorer.com/id/journals/corr/abs-0811-05: Google

RKBExplorer » Publications » A Web-Based Resource Model for eScience: Object Reuse & Exchange

Search... Search

about system requirements
help data sources
contact acknowledgements

Related publications

Details

Title:
A Web-Based Resource Model for eScience: Object Reuse & Exchange

Author:
[Herbert Van de Sompel](#)
[Simeon Warner](#)
[Michael Nelson](#)
[Pete Johnston](#)
[Robert Sanderson](#)
[Carl Lagoze](#)

Web Address:
<http://arxiv.org/abs/0811.0573>

Journal:

Volume:
abs/0811.0573

People

- [Carl Lagoze](#)
- [Herbert Van de Sompel](#)
- [Michael Nelson](#)
- [Pete Johnston](#)
- [Robert Sanderson](#)
- [Simeon Warner](#)

Organisations

- [Cornell University](#)

Publications

- [Object Re-Use & Exchange: A Resource-Centric Approach](#)
- [Pathways: augmenting interoperability across scholarly repositories](#)
- [A Practical Ontology for the Large-Scale Modeling of Scholarly Artifacts and their Usage](#)
- [Access Interfaces for Open Archival Information Systems based on the OAI-PMH and the OpenURL Framework for Context-Sensitive Services](#)
- [An Architecture for the Aggregation and Analysis of Scholarly Usage Data](#)

Research Areas

No results found

Now Look at an Author

RKBExplorer » People » Carl Lagoze

Search... Search

about system requirements
help data sources
contact acknowledgements

Related people

Details

Full Name: [Carl Lagoze](#)

Email Address: lagoze@cs.cornell.edu

Raw Linked Data:
[Resolvable URI](#)
[All Known Co-reference Data](#)

View in external viewer:
[Zitgist Data Viewer](#)
[OpenLink Data Explorer](#)
[Tabulator \(Firefox only\)](#)

People

- [Herbert Van de Sompel](#)
- [Dean Krafft](#)
- [Donna Bergmark](#)
- [James R. Davis](#)
- [John Saylor](#)
- [Pavel Dmitriev](#)
- [Simeon Warner](#)
- [Carol Terrizzi](#)
- [Diane Hillmann](#)
- [Jane Hunter](#)

Research Areas

- [H.3.7. Digital Libraries](#)
- [H.3.5. Online Information Services](#)
- [H.3.3. Information Search and Retrieval](#)
- [H.3.4. Systems and Software](#)
- [H.3.6. Library Automation](#)
- [H.5.3. Group and Organization Interfaces](#)
- [I.7. DOCUMENT AND TEXT PROCESSING](#)
- [C.2.1. Network Architecture and Design](#)

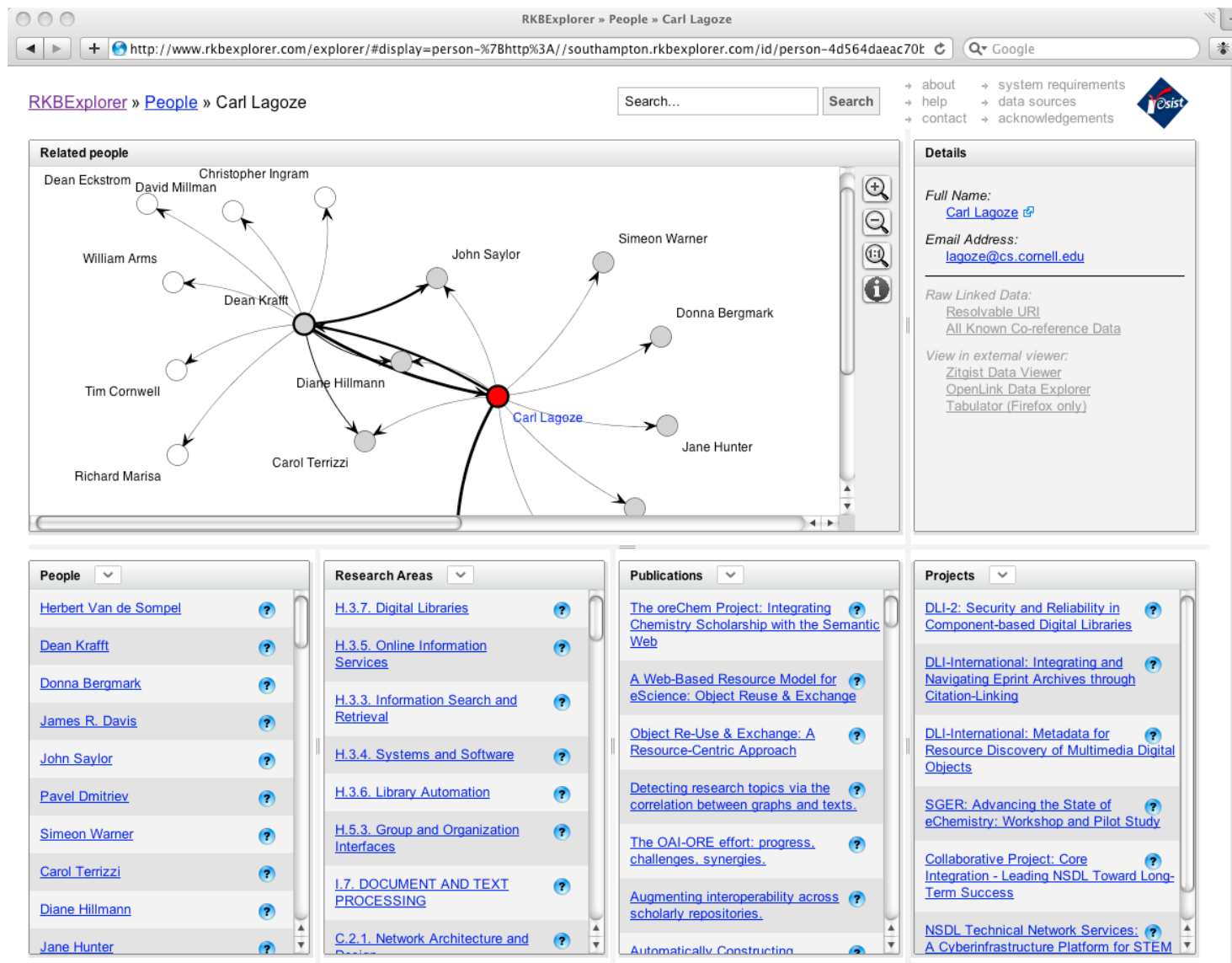
Publications

- [The oreChem Project: Integrating Chemistry Scholarship with the Semantic Web](#)
- [A Web-Based Resource Model for eScience: Object Reuse & Exchange](#)
- [Object Re-Use & Exchange: A Resource-Centric Approach](#)
- [Detecting research topics via the correlation between graphs and texts.](#)
- [The OAI-ORE effort: progress, challenges, synergies.](#)
- [Augmenting interoperability across scholarly repositories.](#)
- [Automatically Construction](#)

Projects

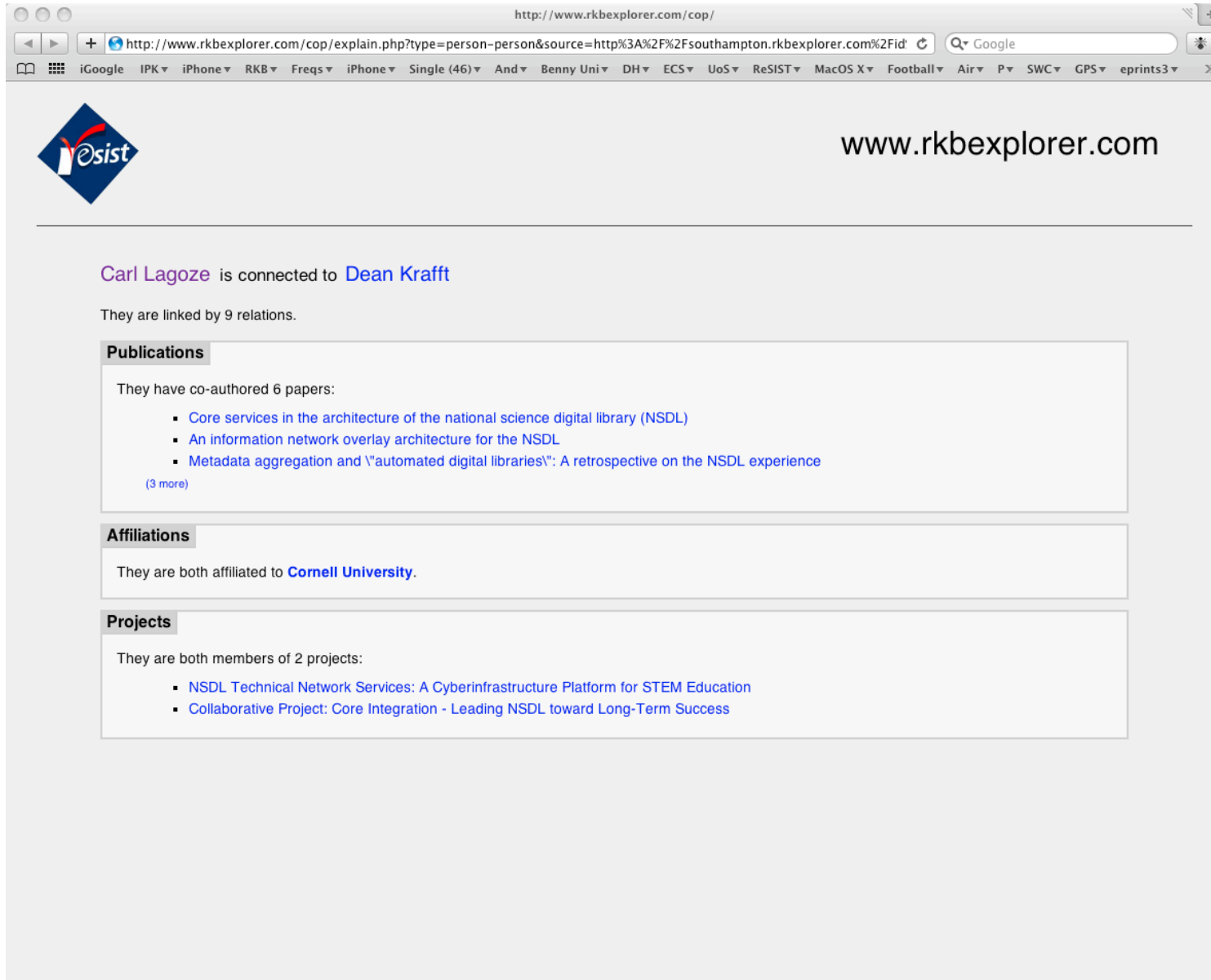
- [DLI-2: Security and Reliability in Component-based Digital Libraries](#)
- [DLI-International: Integrating and Navigating Eprint Archives through Citation-Linking](#)
- [DLI-International: Metadata for Resource Discovery of Multimedia Digital Objects](#)
- [SGER: Advancing the State of eChemistry: Workshop and Pilot Study](#)
- [Collaborative Project: Core Integration - Leading NSDL Toward Long-Term Success](#)
- [NSDL Technical Network Services: A Cyberinfrastructure Platform for STEM](#)

Or a Couple of People



And how
they are
linked

And Why are they Linked?



The screenshot shows a web browser window with the URL <http://www.rkbexplorer.com/cop/>. The browser's address bar and search bar are visible. The website header includes the **resist** logo and the URL www.rkbexplorer.com.

Carl Lagoze is connected to **Dean Krafft**

They are linked by 9 relations.

Publications

They have co-authored 6 papers:

- [Core services in the architecture of the national science digital library \(NSDL\)](#)
- [An information network overlay architecture for the NSDL](#)
- [Metadata aggregation and \"automated digital libraries\": A retrospective on the NSDL experience](#)

(3 more)

Affiliations

They are both affiliated to [Cornell University](#).

Projects

They are both members of 2 projects:

- [NSDL Technical Network Services: A Cyberinfrastructure Platform for STEM Education](#)
- [Collaborative Project: Core Integration - Leading NSDL toward Long-Term Success](#)

 **Seme4**
LINKED DATA SOLUTIONS

Co-Reference Closure

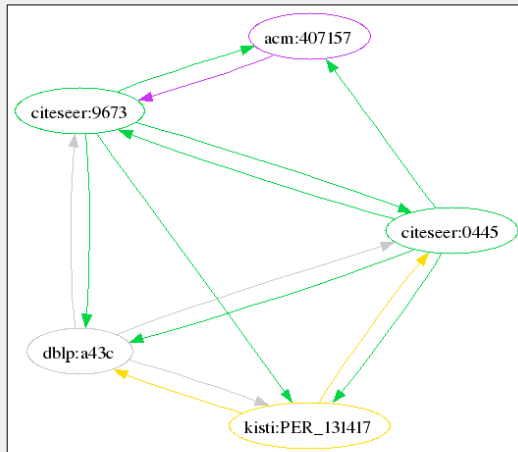
Complete Co-Reference Information

This service computes the equivalence class within the known URIs for a specified URI, by consulting all relevant CRS knowledge bases.

Equivalent URIs...

1. **(Canon)** <http://acm.rkbexplorer.com/id/person-407157>
2. <http://citeseer.rkbexplorer.com/id/resource-CSP179673>
3. <http://citeseer.rkbexplorer.com/id/resource-CSP180445>
4. <http://dblp.rkbexplorer.com/id/people-1ec5a60029922dd6374695ef5214f05-90d423eb148125a6e5c573dc5a15a43c>
5. http://kisti.rkbexplorer.com/id/PER_000000000000131417

The following diagram shows the interconnectivity between the CRS knowledge bases which maintain the context-dependent representation of coreference for each of the RKBExplorer domains.



Seungwoo Lee

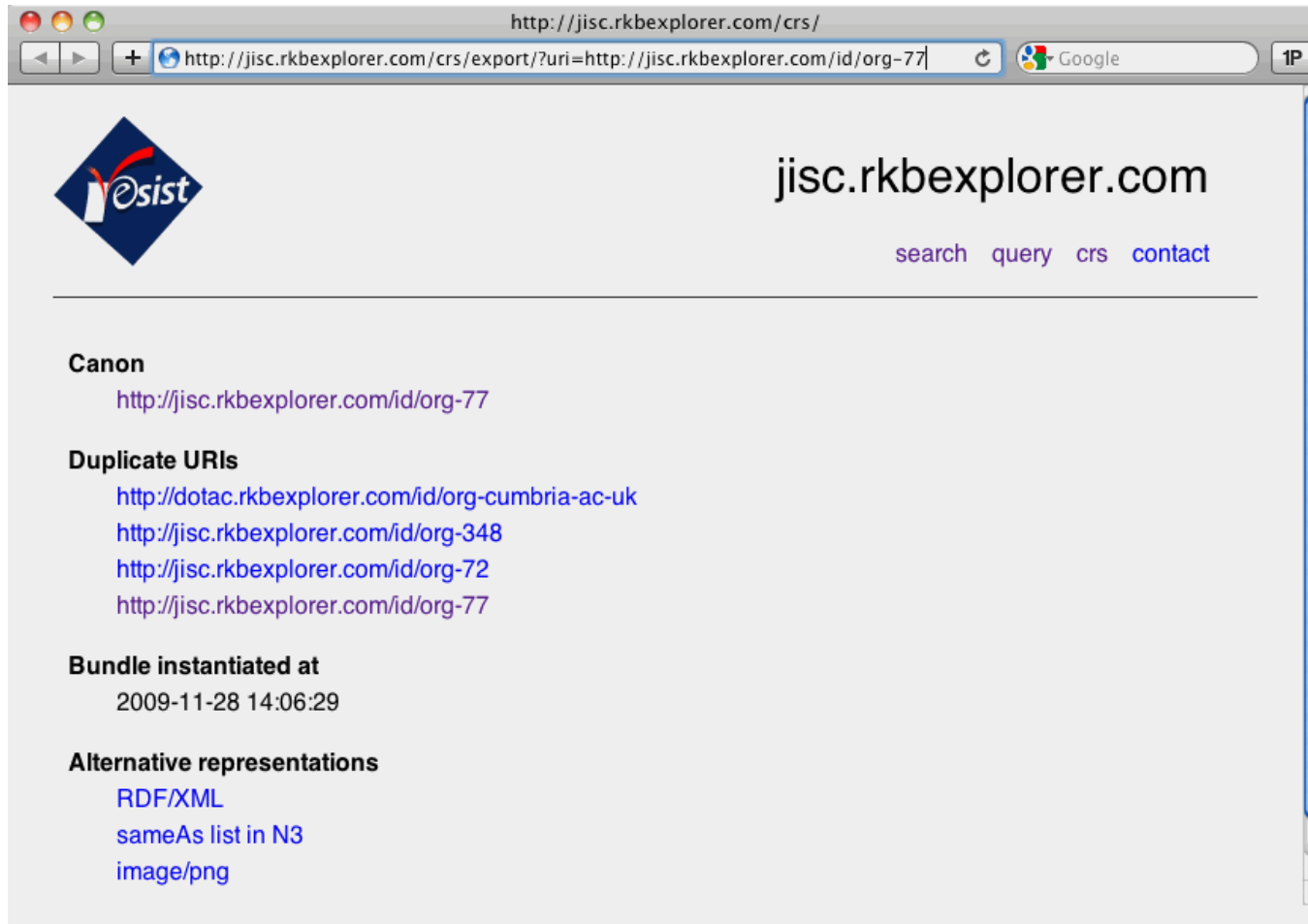
Showing information queried from all repositories ...

Showing information queried from all repositories ...

Subject	Property	Object/Value	Source
Seungwoo Lee	akt:full-name	Seungwoo Lee [Explore]	acm-periodicals.rdf >>
Seungwoo Lee	akt:full-name	Seungwoo Lee [Explore]	acm-proceedings.rdf >>
Seungwoo Lee	akt:full-name	Seungwoo Lee [Explore]	dblp-publications-2001.rdf >>
Seungwoo Lee	akt:has-affiliation	Electrical and Computer Engineering Division, Pohang University of Science & Technology (POSTECH), Pohang, South Korea.gblee@postech.ac.kr	acm-periodicals.rdf >>
Seungwoo Lee	akt:has-affiliation	POSTECH, Pohang, Korea	acm-proceedings.rdf >>
Seungwoo Lee	kisti:engNameOfPerson	Seungwoo Lee [Explore]	datatypeproperties.ttl >>
Seungwoo Lee	rdf:type	akt:Affiliated-Person	acm-periodicals.rdf >>
Seungwoo Lee	rdf:type	akt:Affiliated-Person	acm-proceedings.rdf >>
Seungwoo Lee	rdf:type	Generic Agent	acm-periodicals.rdf >>
Seungwoo Lee	rdf:type	Generic Agent	acm-proceedings.rdf >>
Seungwoo Lee	rdf:type	Generic Agent	dblp-publications-2001.rdf >>
Seungwoo Lee	rdf:type	akt:Person	acm-periodicals.rdf >>
Seungwoo Lee	rdf:type	akt:Person	acm-proceedings.rdf >>
Seungwoo Lee	rdf:type	akt:Person	dblp-publications-2001.rdf >>
Seungwoo Lee	rdf:type	PER_char(20)^^^	datatypeproperties.ttl >>
Seungwoo Lee	rdf:type	PER_char(20)^^^	objectproperties.ttl >>
Seungwoo Lee	rdf:type	PER_char(20)^^^	resources.ttl >>

Subject	Property	Object	Source
Automatic acquisition of named entity tagged corpus from world wide web	akt:has-author	Seungwoo Lee	acm-proceedings.rdf >>
A Corpus-Based Learning Method of Compound Noun Indexing Rules for Korean	akt:has-author	Seungwoo Lee	acm-periodicals.rdf >>
SiteQ: Engineering High Performance QA System Using Lexico-Semantic Pattern Matching and Shallow NLP.	akt:has-author	Seungwoo Lee	dblp-publications-2001.rdf >>
A Corpus-Based Learning Method of Compound Noun			dblp-publications-

Using the CRS Service



The screenshot shows a web browser window with the address bar displaying `http://jisc.rkbexplorer.com/crs/`. The page header includes the **jisc.rkbexplorer.com** logo and navigation links: [search](#), [query](#), [crs](#), and [contact](#). The main content area displays the following information:

- Canon**
<http://jisc.rkbexplorer.com/id/org-77>
- Duplicate URIs**
 - <http://dotac.rkbexplorer.com/id/org-cumbria-ac-uk>
 - <http://jisc.rkbexplorer.com/id/org-348>
 - <http://jisc.rkbexplorer.com/id/org-72>
 - <http://jisc.rkbexplorer.com/id/org-77>
- Bundle instantiated at**
2009-11-28 14:06:29
- Alternative representations**
 - [RDF/XML](#)
 - [sameAs list in N3](#)
 - [image/png](#)

Solving an Existing Problem

The screenshot shows a web browser window with the address bar displaying `http://jisc.rkbexplorer.com/browse/` and the page content showing the University of Cumbria profile. The page lists coreferenced URIs and a table of results in the repository.

University of Cumbria

Showing combined information from the following coreferenced URIs ...

- <http://jisc.rkbexplorer.com/id/org-348> [View this URI only]
- <http://jisc.rkbexplorer.com/id/org-72> [View this URI only]
- <http://jisc.rkbexplorer.com/id/org-77> [View this URI only]

The CRS managing coreference data for jisc.rkbexplorer.com knows of 1 additional equivalent URIs in other repositories.

You can also view the [global equivalence closure](#) across all repositories.

Results in repository [jisc.rkbexplorer.com...](#)

Subject	Property	Object/Value	Source
Cumbria Institute of the Arts	jisc:name	Cumbria Institute of the Arts	jisc-instituions.rdf >>
St Martin's College	jisc:name	St Martin's College	jisc-instituions.rdf >>
University of Cumbria	jisc:name	University of Cumbria	jisc-instituions.rdf >>
University of Cumbria	rdf:type	foaf:Organization	jisc-instituions.rdf >>
Cumbria Institute of the Arts	rdf:type	foaf:Organization	jisc-instituions.rdf >>
St Martin's College	rdf:type	foaf:Organization	jisc-instituions.rdf >>

Finding Co-reference

Les Carr « owl:sameAs

http://sameas.org/html?q=Les+Carr&x=24&y=22

iGoogle Canada dwb IPK iPhone RKB Freqs iPhone Single (51) And ECS Benny Uni DH UoS ReSIST MacOS X Football >>

Les Carr « owl:sameAs

<sameAs>

interlinking the Web of Data

The Web of Data has many equivalent URIs. This service helps you to find co-references between different data sets. Enter a known URI, or use Sindice to search first.

<sameAs>

Sindice

Search results from [Sindice](#), with co-references applied...

Sindice "Les Carr" 🔍

<sameAs> {
1. <http://southampton.rkbexplorer.com/id/person-00060>
2. <http://southampton.rkbexplorer.com/id/person-98e0f2e8dd84b079a54318...f484814122>
3. <http://southampton.rkbexplorer.com/id/person-a635f51b18c81bf1df7dab...84425e0250>
Show 118 more
122. http://kisti.rkbexplorer.com/id/PER_00000000000000081787
rdf+xml · n3 · json · text

Sindice "Les Carr" 🔍

<sameAs> {
1. http://dblp.l3s.de/d2r/resource/authors/Les_Carr
rdf+xml · n3 · json · text

Currently serving 23268924 URIs in 8454882 bundles!

about · contact

CC BY

Many Platforms - Gadgets



RKBExplorer » Networks (Communities of Practice)

Carl Lagoze

Search Reset

Found 1 result for "Carl Lagoze"

[Carl Lagoze](#)

Carl Lagoze

[Display Metadata](#)

James Allan Massoud Amin Ross Anderson **William Arms** Jeroen Bekaert **Donna Bergmark** **Les Carr** **Tim Cornwell** Lorrie Cranor **James R. Davis** **Pavel Dmitriev** Naomi Dushay Doug Dyer Dea Eckstrom Adam Finkelstein J. French Stone

RKBExplorer » Networks (Communities of Practice)

Les Carr

Search Reset

Les Carr

[Display Metadata](#)

[Christopher Bailey](#) [David Barron](#) [Sean Bechhofer](#) [Donna Bergmark](#) [Tim Brody](#) [Grainne Conole](#) [Hugh Davis](#) **David De Roure** [Samhaa El-Beltagy](#) [Quintin Gee](#) [Nicholas Gibbins](#) [Lester Gilbert](#) [Yves Gingras](#) [Hugh Glaser](#) [Carole Goble](#) [Simon Grange](#) [Christopher Gutteridge](#) **Wendy Hall** **Stevan Harnad** [Stephen Harris](#) [Jessie Hey](#) [G Hill](#) **Steve Hitchcock** [Neil Jefferies](#) [Zhuoan Lin](#) [Simon Koppa](#) [Carl Lagoze](#) **Timothy**

RKBExplorer » Networks (Communities of Practice)

Les Carr

Search Reset

Les Carr

Full Name:
[Les Carr](#)

Telephone:
+44 (0)23 8059 4479

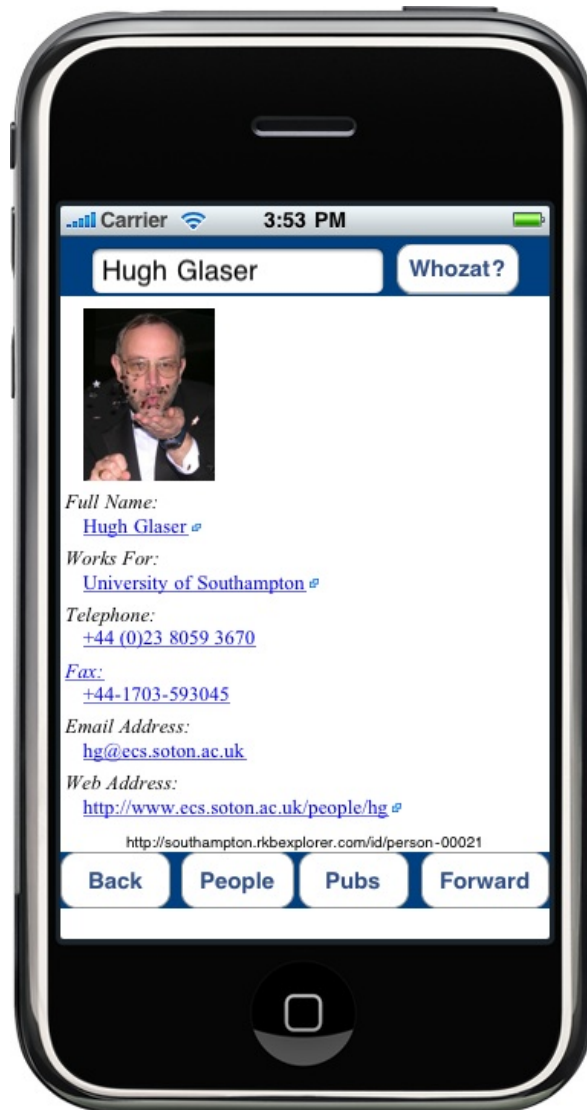
Email Address:
lac@ecs.soton.ac.uk

Web Address:
<http://www.ecs.soton.ac.uk/~lac/>

Raw Linked Data:
[Resolvable URI](#)
[All Known Co-reference Data](#)

Mark Borkum did this

iPhone App



Concluding Remarks

- CRS
- A service to mediate between authorities
- Simple, mature service (5 years+)
- Well understood, already deployed
- Can be used now, without major coordination
- Open
- We have <http://oai.rkbexplorer.com/>

What Might JISC Do?

- Probably clear what I think
 - Facilitate CRS deployment
 - Software
 - Package CRS software
 - (They funded a co-reference editor as part of dotAC)
 - Training
 - Outreach
 - Take co-reference discovery initiatives
 - Publish co-reference data in a CRS
 - Make their data available as Linked Data
 - Examples are good
- Join the data.gov.uk world
- Encourage/help other to do the same

URIs

- <http://sameas.org/>
- <http://jisc.rkbexplorer.com/id/org-77>
- <http://rkbexplorer.com/>
- <http://dotac.info/>
- <http://oai.rkbexplorer.com/>
- <http://eprints.ecs.soton.ac.uk/18452/>