Prototype Knowledge Base: an on-line information service in dependability and security

Hugh Glaser
Electronics & Computer Science
University of Southampton

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Information Society Technologies

SIXTH FRAMEWORK PROGRAMME

With

- Ian Millard
- Afraz Jaffri
- Benedicto Rodriguez
- ReSIST Partners
  - esp. Brian Randell

Background: Semantic Web Challenge 2003 Winner

- CS AKTive Space
  - Gather data
  - UK People, projects, publications
    - Research funding
    - Top Universities
  - Geographical presentation
- AKT Project (www.aktors.org)

The Challenges

- Scientific Intelligence
  - Who is doing what where?
  - What impact are they having?
- Integrating resources
  - CORDIS, Institutional DBs and web sites, ePrints, NSF, CiteSeer, RISKS list, ISO LoCodes…
- Information: distributed and heterogeneous
  - Not under own control
  - Not in a common format
  - Not where you expect it
- Presenting to users & agents

ReSIST - Start Again

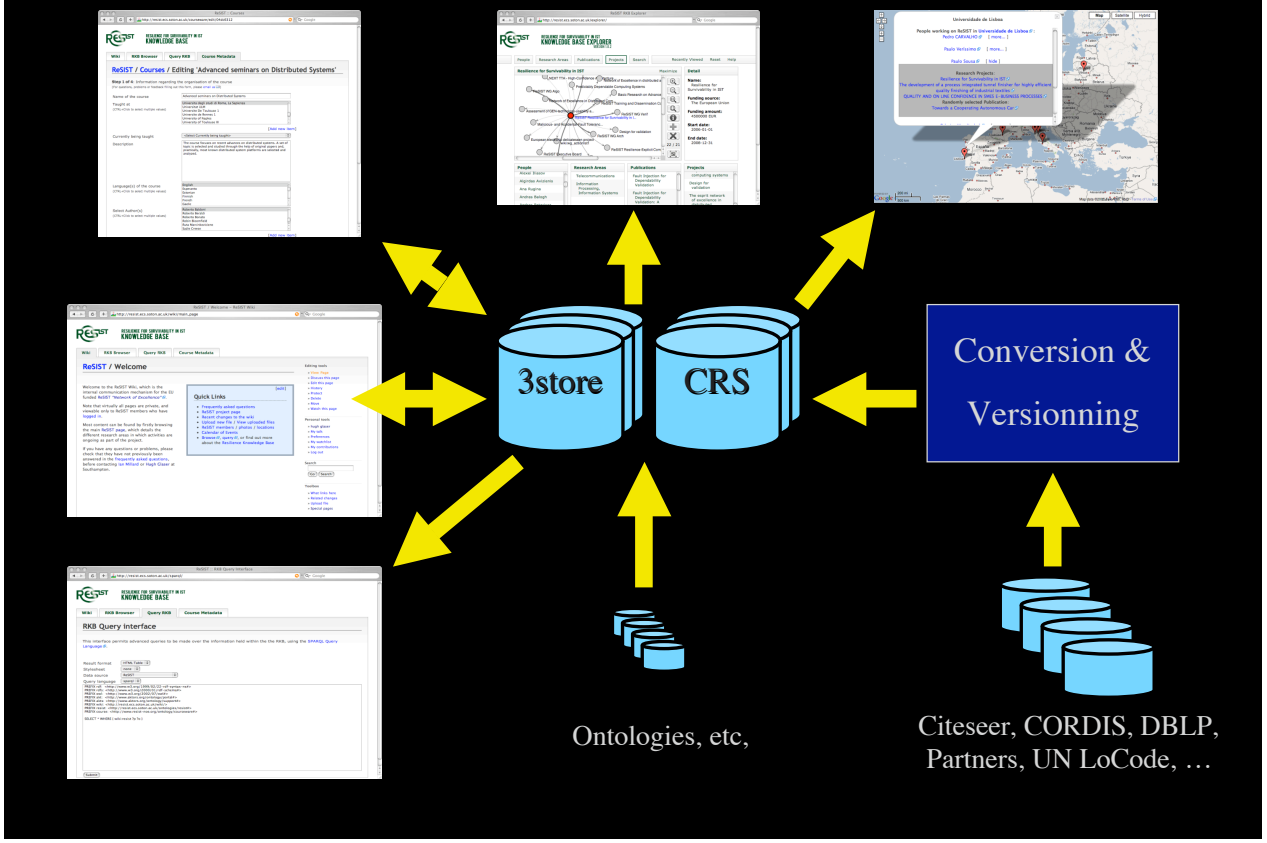
- A ReSIST Knowledge Base - The *RKB*

- Project Infrastructure support
- Europe (no longer UK-centric), the World
- Up to date
- Extra subject targets (resilience)
- Browser & platform independent
- Engineer for maintenance
  - Empower partners and other contributors
  - Empower other application builders

ReSIST - and deliver

- D10 - 2007-01-01T00:00:00A
- In fact it is just a URI to a service:
  - http://resist.ecs.soton.ac.uk/sparql/
- Or the raw content can be browsed
  - http://resist.ecs.soton.ac.uk/browse/
- But there is a brand new faceted browser
  - http://resist.ecs.soton.ac.uk/explorer/
- The RKB is embedded in the infrastructure
- The prototype is already being used

Structure



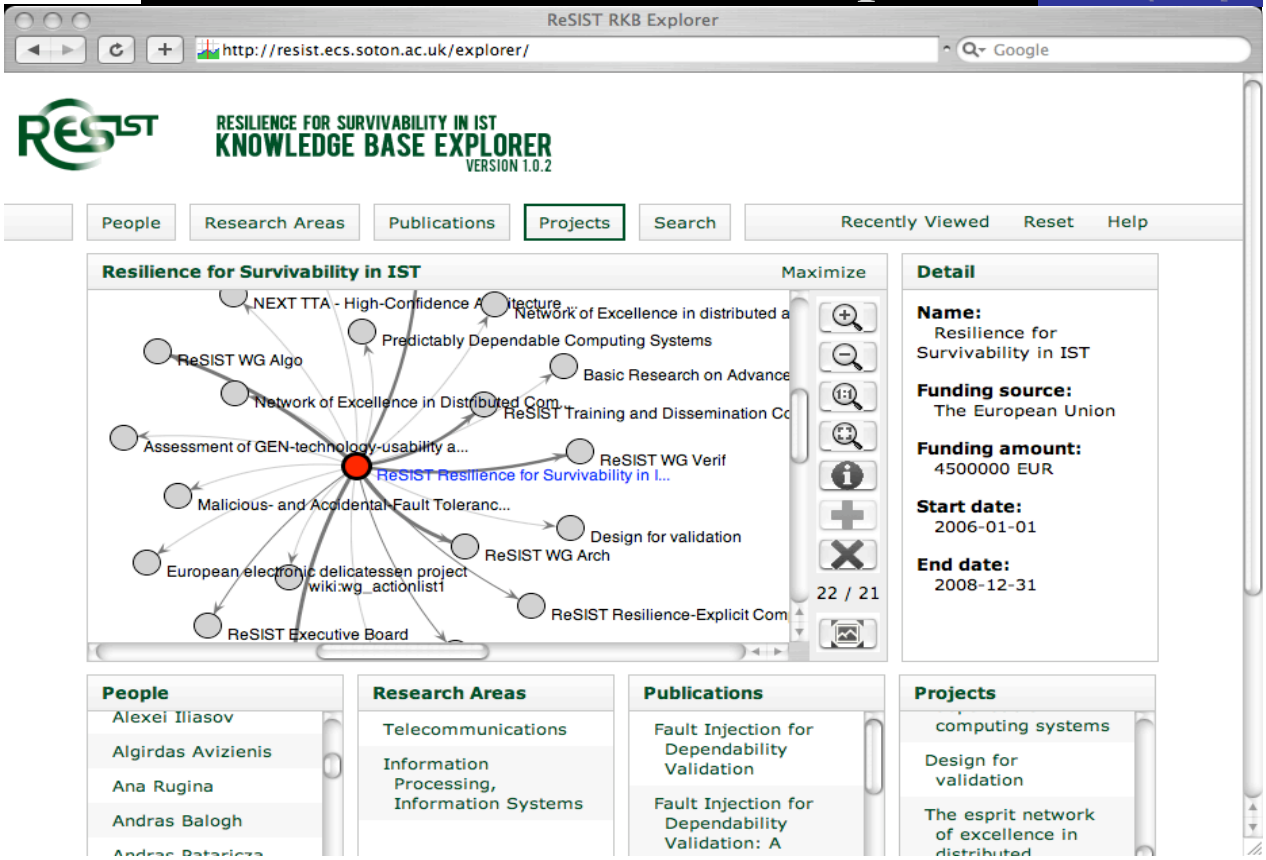
Sources

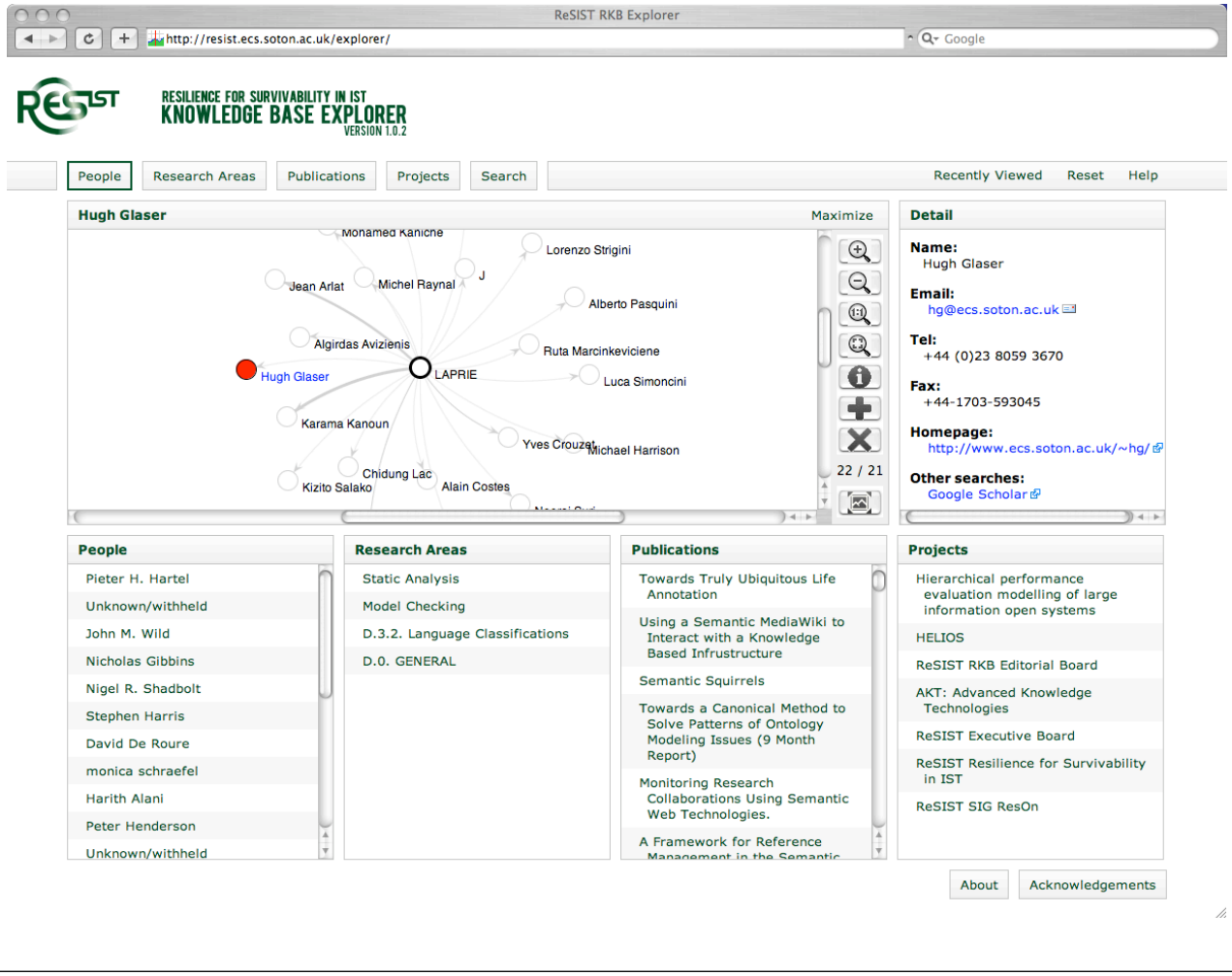
- Publications
  - Partners
  - Citeseer
  - DBLP
  - ACM
  - DSN & FTCS Series
- Documents
  - RISKS Digest
- Projects
  - CORDIS
  - NSF
- People
  - Partners
- Support
  - UN LoCode

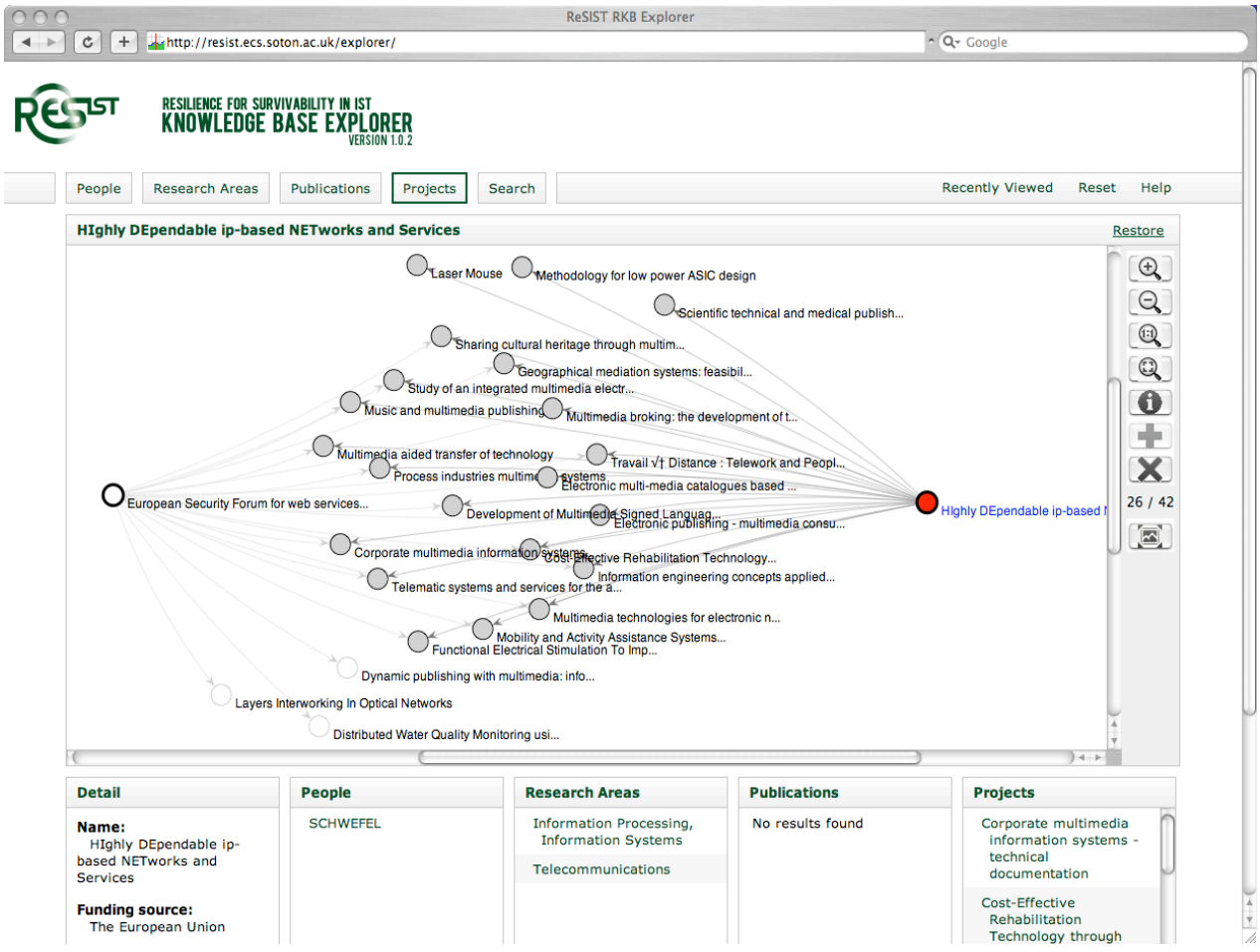
Ontologies etc.

- AKT Ontology
  - Scientific Research Activity
  - Dates
  - Location
  - …
- ALRL Paper
- Courseware (extension of LOM)
- RISKS Codes
- ACM Classification

Main Browser - RKB Explorer




ReSIST RKB Explorer
http://resist.ecs.soton.ac.uk/explorer/
Google
RESILIENCE FOR SURVIVABILITY IN IST
KNOWLEDGE BASE EXPLORER
VERSION 1.0.2
People
Research Areas
Publications
Projects
Search
Recently Viewed
Reset
Help
Hugh Glaser
Maximize
Mohamed Kaniche
Lorenzo Strigini
Jean Arlat
Michel Raynal
J
Alberto Pasquini
Algirdas Avizienis
Ruta Marcinkeviciene
Hugh Glaser
LAPRIE
Luca Simoncini
Karama Kanoun
Yves Crouzet
Michael Harrison
Chidung Lac
Kizito Salako
Alain Costes
22 / 21
Detail
Name:
Hugh Glaser
Email:
hg@ecs.soton.ac.uk
Tel:
+44 (0)23 8059 3670
Fax:
+44-1703-593045
Homepage:
http://www.ecs.soton.ac.uk/~hg/
Other searches:
Google Scholar
People
Pieter H. Hartel
Unknown/withheld
John M. Wild
Nicholas Gibbins
Nigel R. Shadbolt
Stephen Harris
David De Roure
monica schraefel
Harith Alani
Peter Henderson
Unknown/withheld
Research Areas
Static Analysis
Model Checking
D.3.2. Language Classifications
D.0. GENERAL
Publications
Towards Truly Ubiquitous Life Annotation
Using a Semantic MediaWiki to Interact with a Knowledge Based Infrustructure
Semantic Squirrels
Towards a Canonical Method to Solve Patterns of Ontology Modeling Issues (9 Month Report)
Monitoring Research Collaborations Using Semantic Web Technologies.
A Framework for Reference
Projects
Hierarchical performance evaluation modelling of large information open systems
HELIOS
ReSIST RKB Editorial Board
AKT: Advanced Knowledge Technologies
ReSIST Executive Board
ReSIST Resilience for Survivability in IST
ReSIST SIG ResOn
About
Acknowledgements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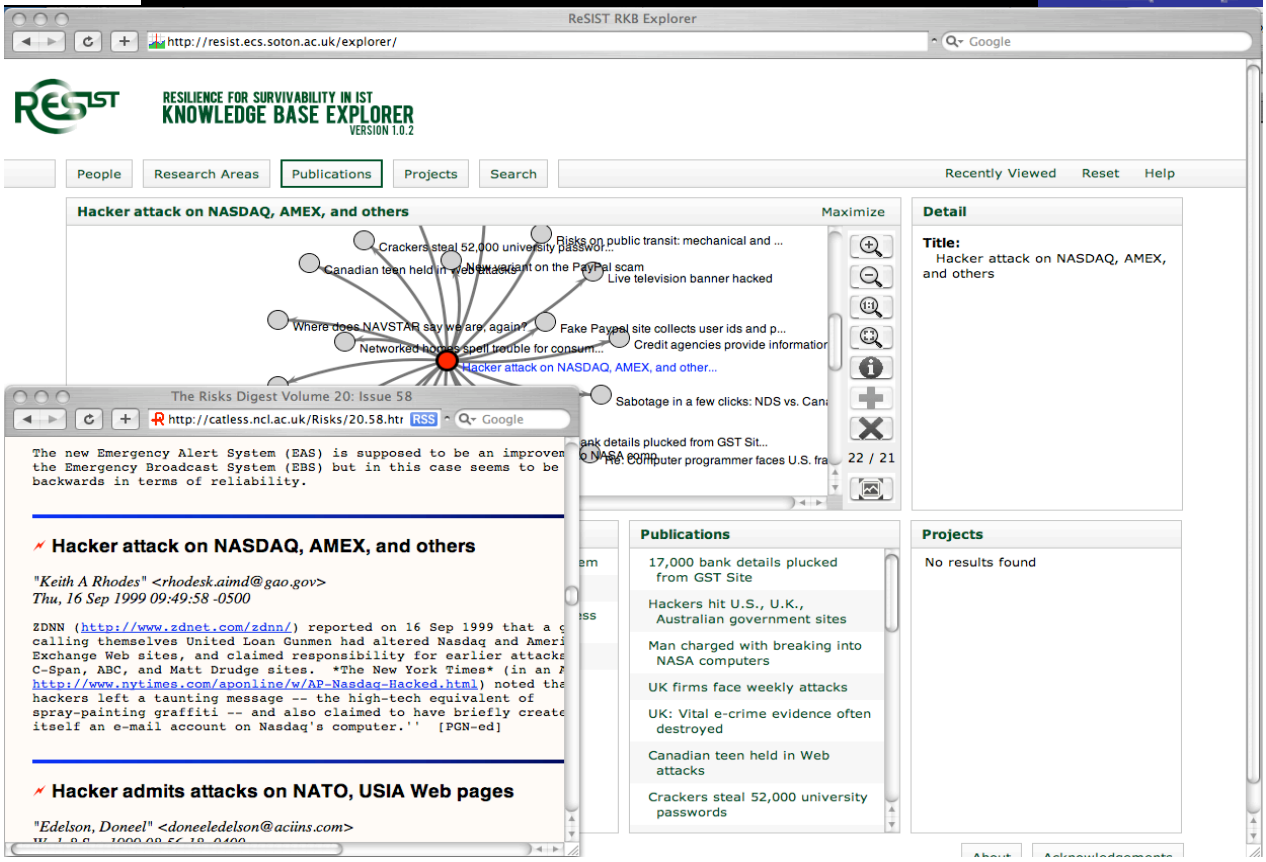
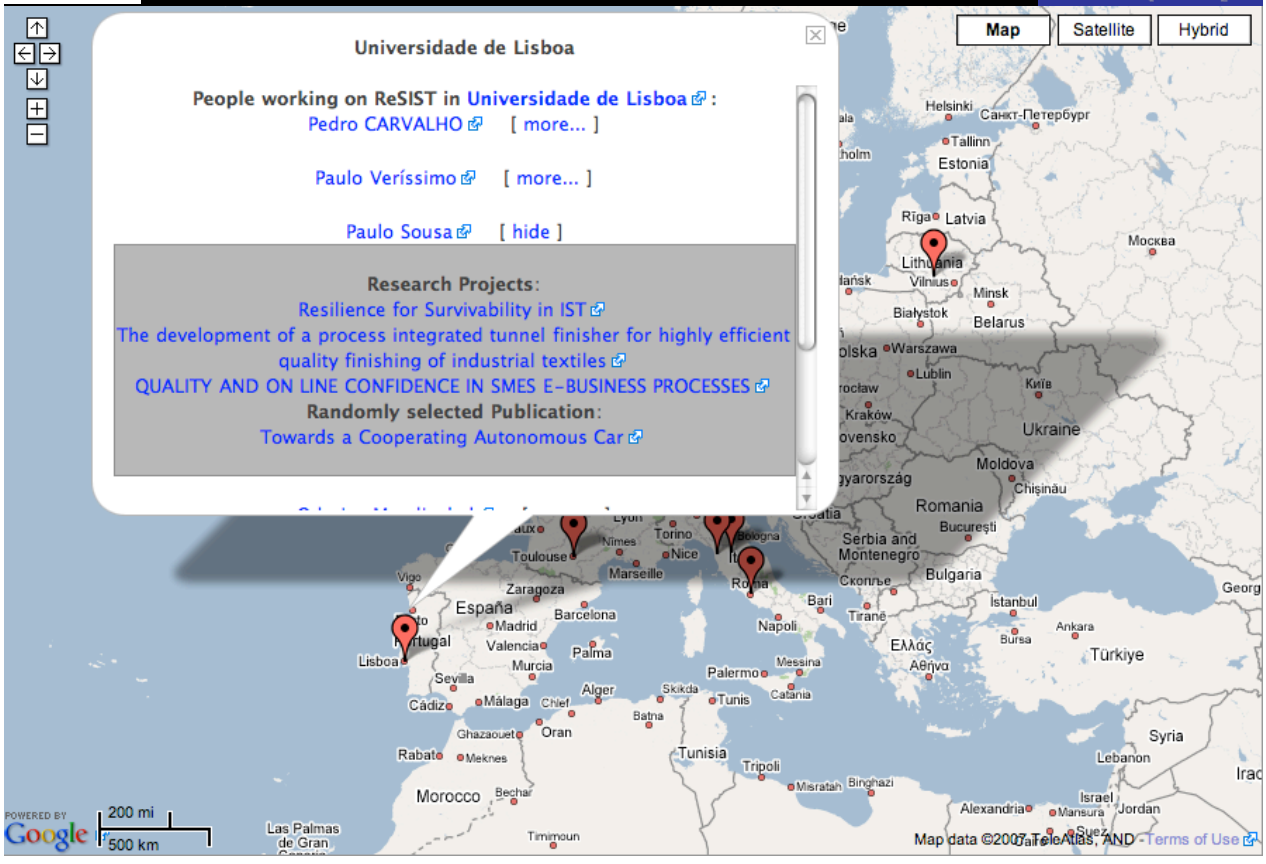
Methodology for low power ASIC design
Scientific technical and medical publish...
Sharing cultural heritage through multim...
Geographical mediation systems: feasibil...
Study of an integrated multimedia electr...
Music and multimedia publishing
Multimedia broking: the development of t...
Multimedia aided transfer of technology
Travail √† Distance : Telework and Peopl...
Process industries multim
systems
Electronic multi-media catalogues based ...
European Security Forum for web services...
Development of Multimedia Signed Languag...
Electronic publishing - multimedia consu...
HIghly DEpendable ip-based
Corporate multimedia information systems
Cost-Effective Rehabilitation Technology...
Information engineering concepts applied...
Telematic systems and services for the a...
Multimedia technologies for electronic n...
Mobility and Activity Assistance Systems...
Functional Electrical Stimulation To Imp...
Dynamic publishing with multimedia: info...
Layers Interworking In Optical Networks
Distributed Water Quality Monitoring usi...
26 / 42
Detail
Name:
HIghly DEpendable ip-based NETworks and Services
Funding source:
The European Union
People
SCHWEFEL
Research Areas
Information Processing, Information Systems
Telecommunications
Publications
No results found
Projects
Corporate multimedia information systems - technical documentation
Cost-Effective Rehabilitation Technology through

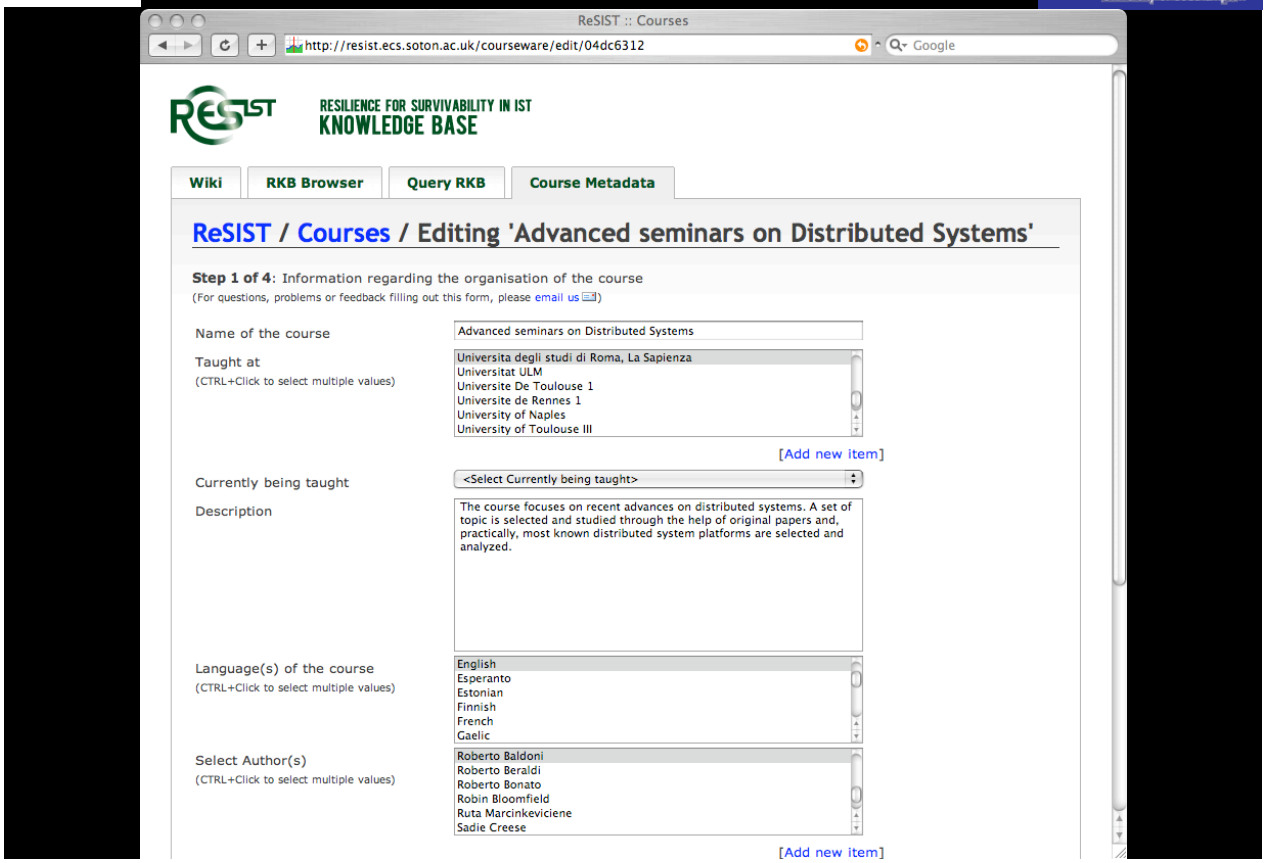
Searching



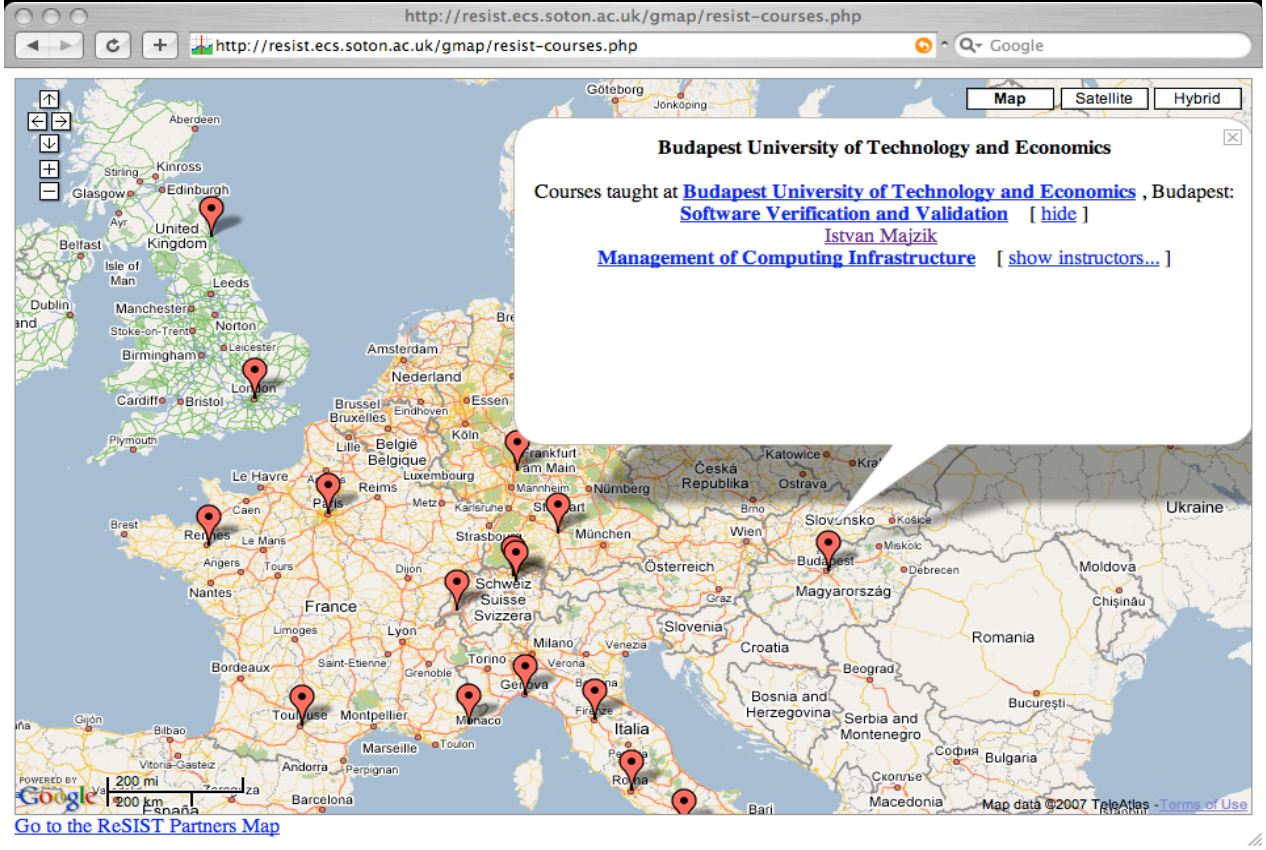
Location



Course Metadata

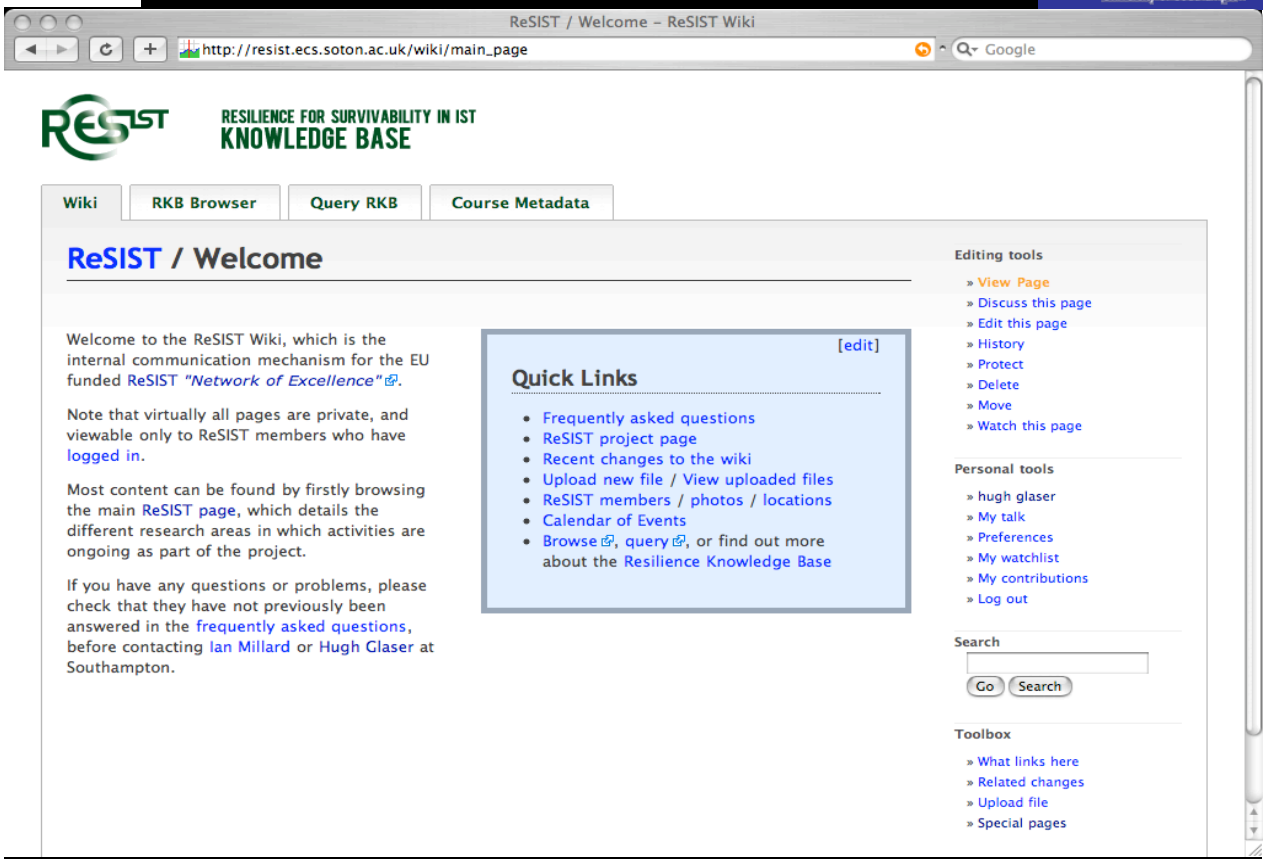


Course Locations

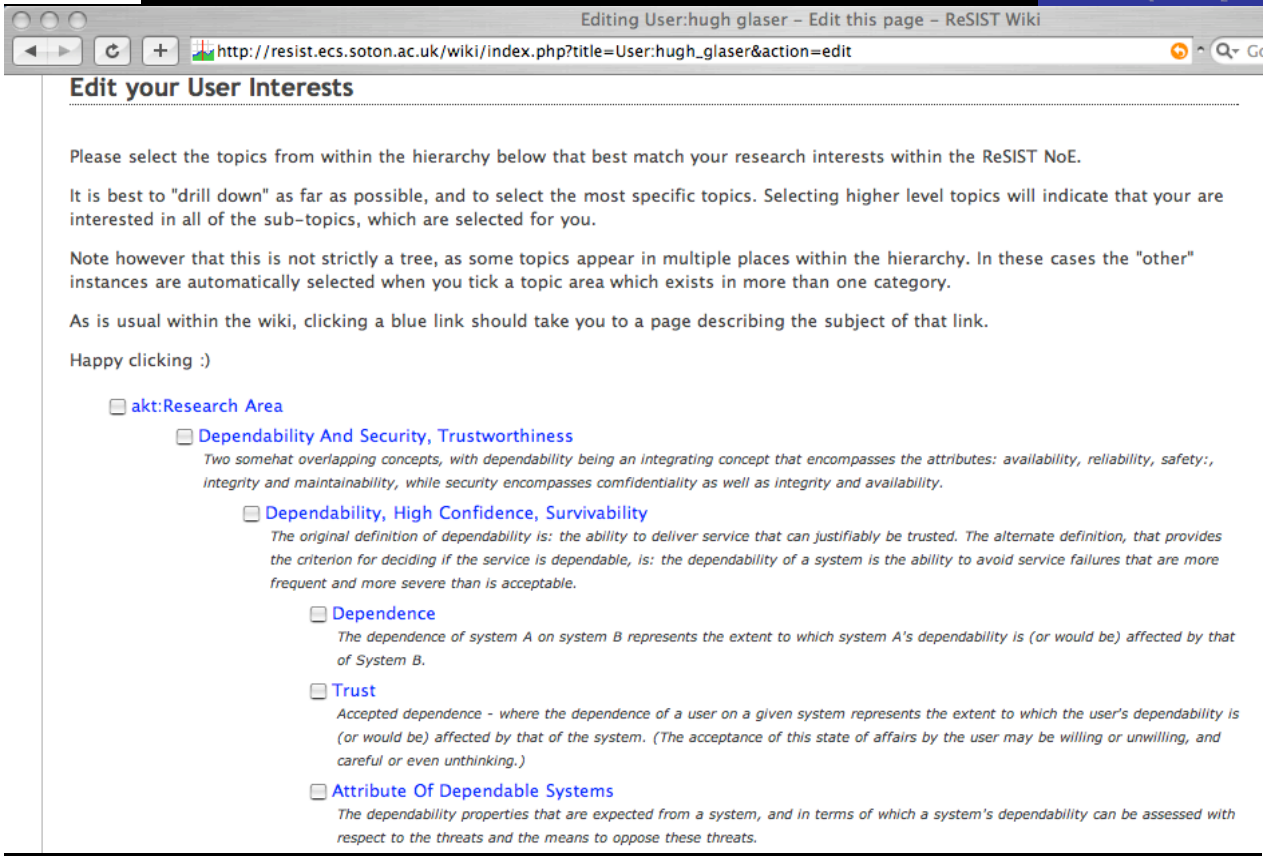


Go to the ReSIST Partners Map

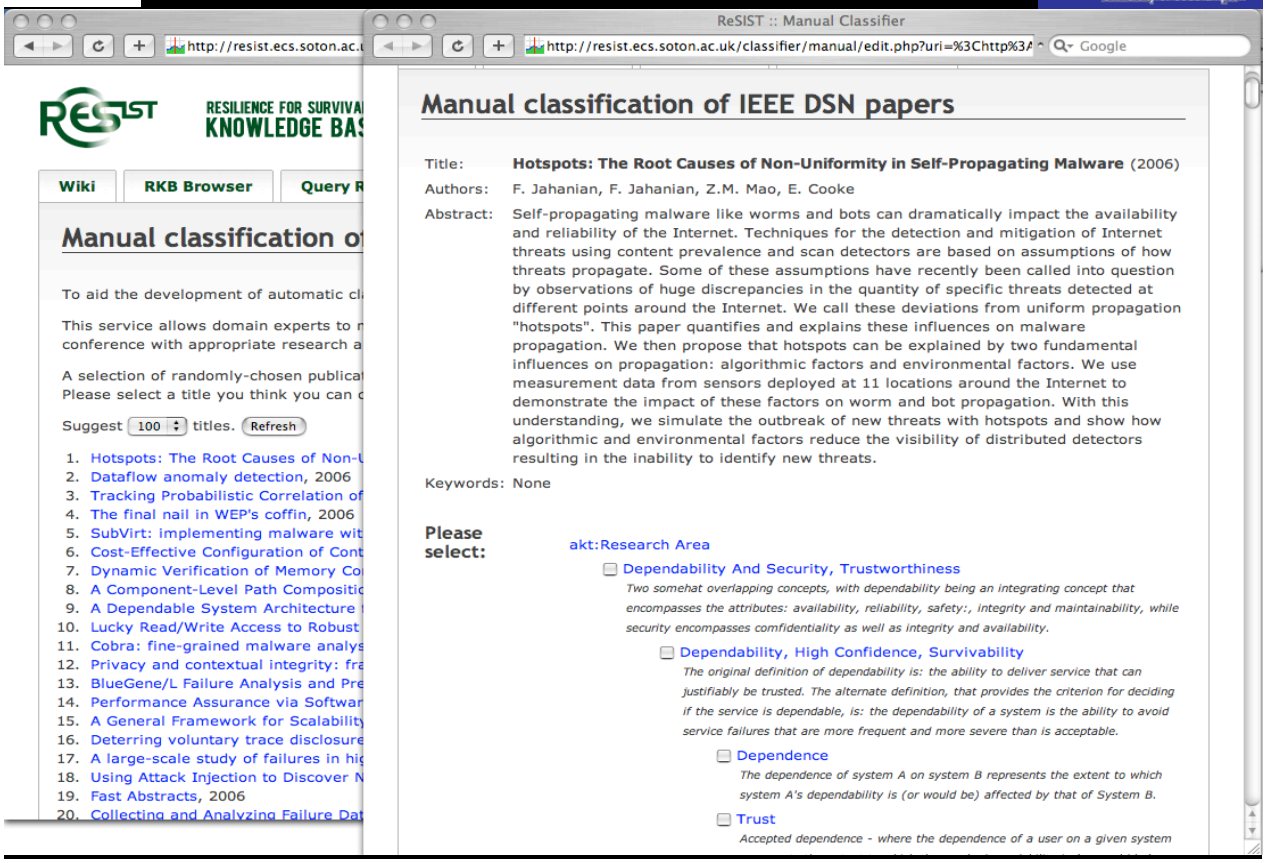
Semantic Wiki



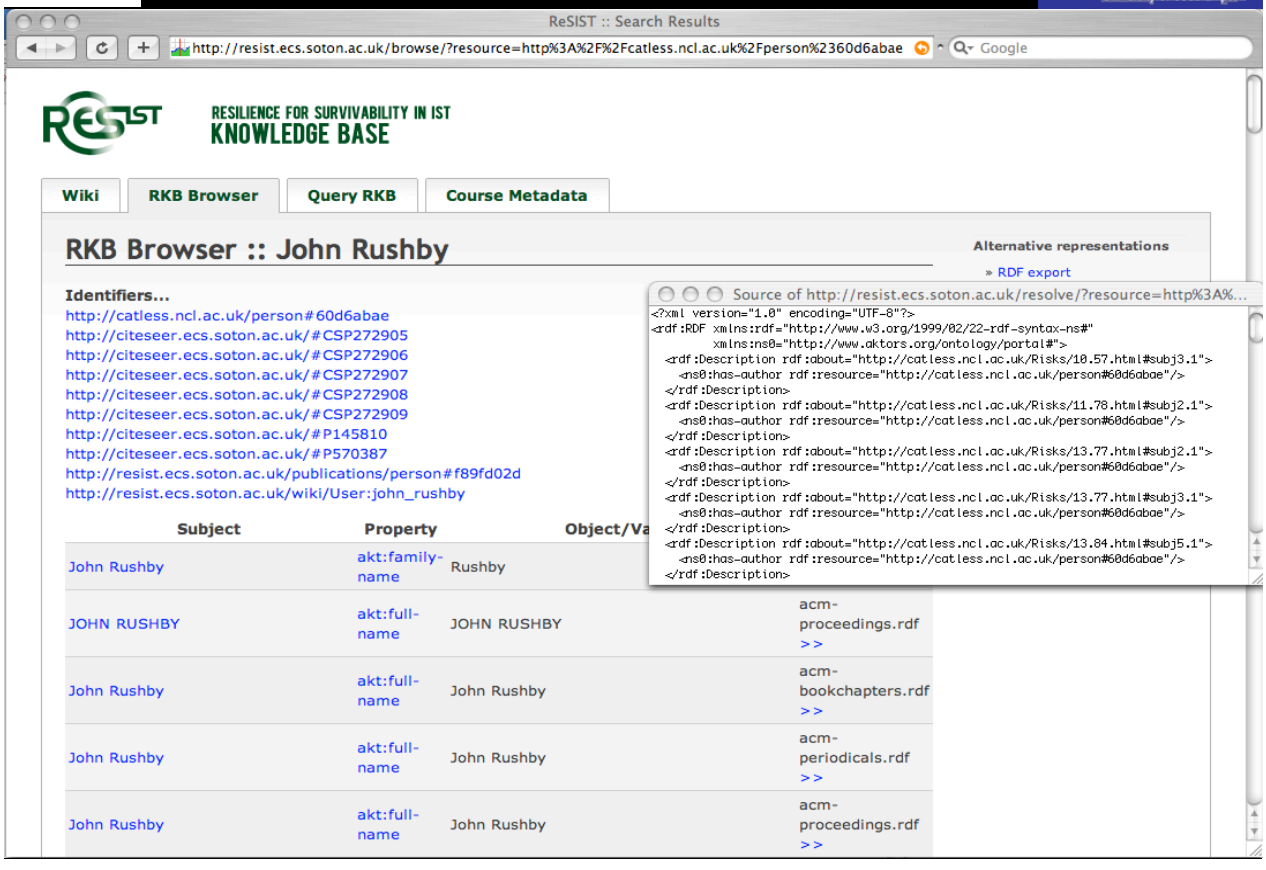
Editing



Classifying



Browsing Raw Data



Open Access

ReSIST :: RKB Query Interface

http://resist.ecs.soton.ac.uk/sparql/

RESILIENCE FOR SURVIVABILITY IN IST
KNOWLEDGE BASE

Wiki | RKB Browser | Query RKB | Course Metadata

RKB Query interface

This interface permits advanced queries to be made over the information held within the the RKB, using the SPARQL Query Language.

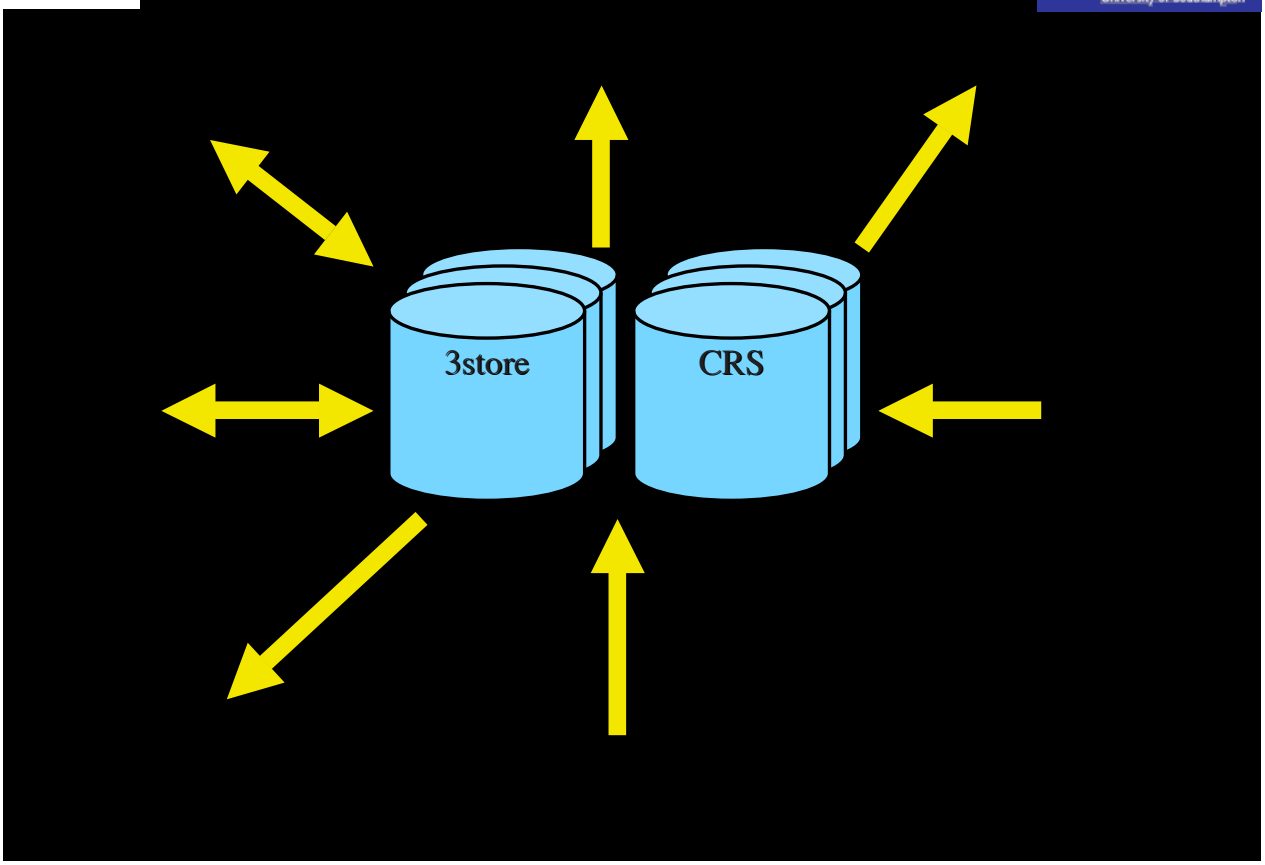
Result format: HTML Table
Stylesheet: none
Data source: ReSIST
Query language: sparql

```
PREFIX rdf:  <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX owl:  <http://www.w3.org/2002/07/owl#>
PREFIX akt:  <http://www.aktors.org/ontology/portal#>
PREFIX akts: <http://www.aktors.org/ontology/support#>
PREFIX wiki: <http://resist.ecs.soton.ac.uk/wiki/>
PREFIX resist: <http://resist.ecs.soton.ac.uk/ontologies/resist#>
PREFIX course: <http://www.resist-noe.org/ontology/courseware#>

SELECT * WHERE { wiki:resist ?p ?o }
```

Submit

At the Centre



So what *is* RDF...?

- Resource Description Framework
- W3C recommendation
  - From Semantic Web research efforts
- Modelling language
  - Represents facts about resources
- Can model any abstract domain
  - Things do not have to be accessible *on* the web
  - But can be described *in it*

RDF: Basic components

- RDF graphs are formed by *triples*

Important Components 3store and CRS

- 3store
  - Open source semantic store
  - Scalable
    - ReSIST - 50 million facts
      - (cf Wikipedia metadata)
- CRS - Consistent Reference Service
  - Bridges between disparate sources

Openness

- Almost nothing shown was private
- Except
  - Wiki project discussion pages
    - But semantic relations go to RKB
  - Data entry
    - Controlled
    - Not moderated

Future for ReSIST & the RKB

- Improve on the Prototype
  - Sources
  - CRS
  - UI
- Resilient-Explicit Computing
  - Model expert knowledge
  - Model processes, components, mechanisms
- Support Engineer/Scientist
  - Move effectively between
    - System design
    - Knowledge Base
    - People
  - To choose cost, characteristics, etc
- Support Run-Time Deployment
  - Dynamic Reconfiguration

Future Resources

- Original proposal
  - Now primarily maintenance
- Victim of success?
  - Important infrastructure
  - Serious resources to be maintained
  - People want to provide data (costs)

Response

- ReSIST
  - Has increased future RKB resources
- Other Funding and Additionality
  - Lithuania & Saarbrücken
  - JISC
- Longer term
  - Self-funding - SIGs, Clubs
  - Infrastructure - EU, EPSRC, NSF
- Engineer for maintenance and Openess
- Open
  - Knowledge Sources
  - Knowledge Publishing

Some Review Highlights

- One year of work - one RF funded
- ReSIST has done what it said it would do
  - And more
    - In particular, 1M -> 40M
    - Sophisticated UI
- Real tool for the network, from Day One
- Excellent Partner co-operation
  - Data
  - Evaluation
  - Ontology work
- Much Value in Expert Involvement