Curation and Characterization of Web Services

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Wf4Ever

2011 - 2013

Advanced Workflow Preservation Technologies for Enhanced Science

1. Intelligent Software Components (ISOCO, Spain)
2. University of Manchester (UNIMAN, UK)
3. Universidad Politécnica de Madrid (UPM, Spai
4. Poznan Supercomputing and Networking
5. University of Oxford and OeRC (OXF,
6. Instituto Astrofísica Andalucía
7. Leiden University Medical

Web-services based Workflows

The University of Manchester

MANCHESTER 1824

INSTITUTO de ASTROFISICA de ANDALUCIA CSIC I·A·A

POZNAN SUPERCOMPUTING NETWORKING

iSOCO enabling the networked economy

LUMC

SEVENTH FRAMEWORK PROGRAMME

European Commission Information Society and Media

The next generation of archives

Much wider FoV and spectral coverage

- Huge sized datasets (~ tens TB)
- Big Data science highly dependent on I/O data rates
- Subproducts as virtual data generated on-the-fly

We are moving into a world where

- **computing and storage are cheap**
- **data movement is death**

The next generation of archives

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The *move computing to data* paradigm

Archives should evolve from data providers into **services providers**, where web services may help to solve bandwidth issues.

The next generation of archives

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Data Discovery
Data Access
Data Management

The next generation of archives

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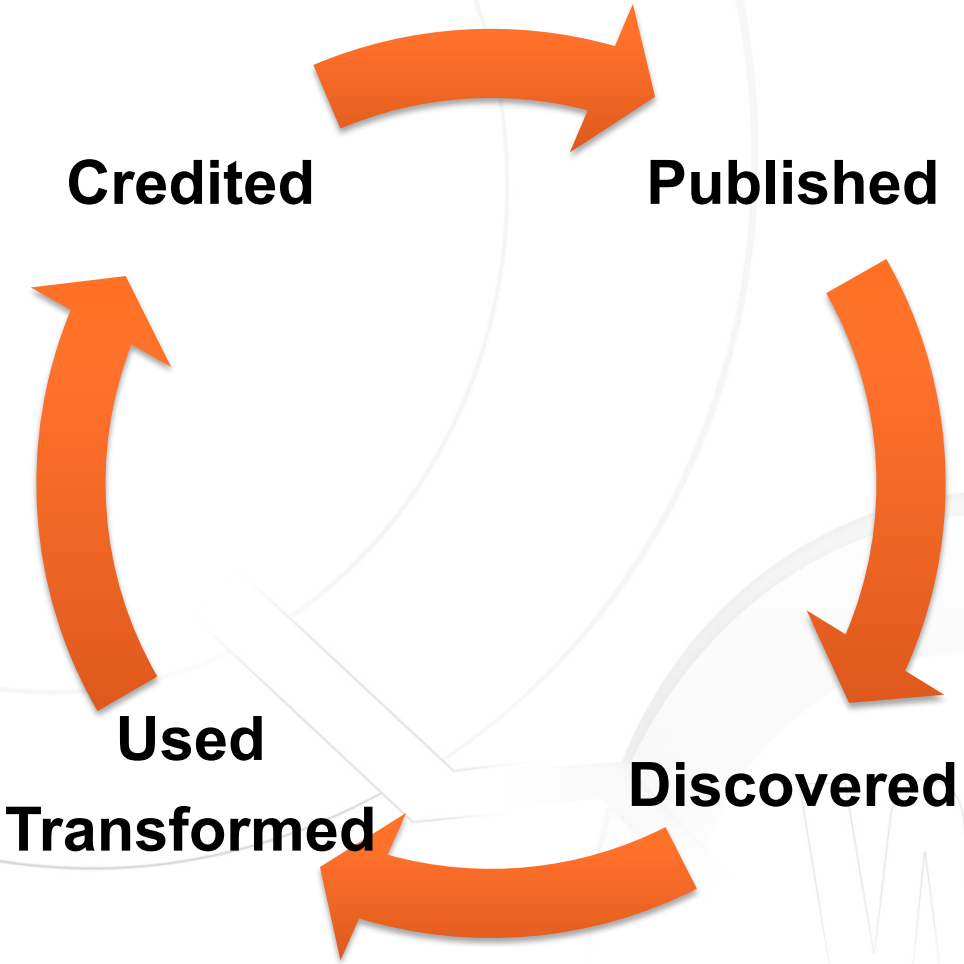
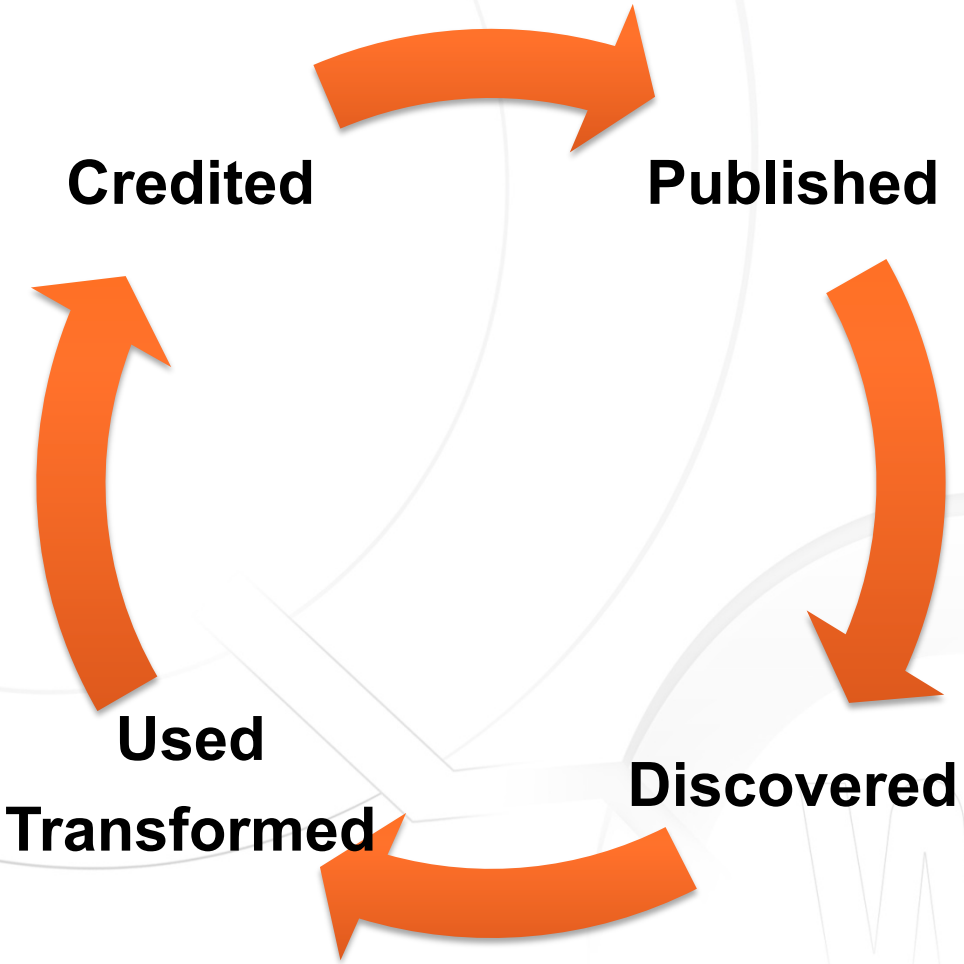
Web Services Discovery
Web Services Access
Web Services Management

The Data Lifecycle



The Service Lifecycle

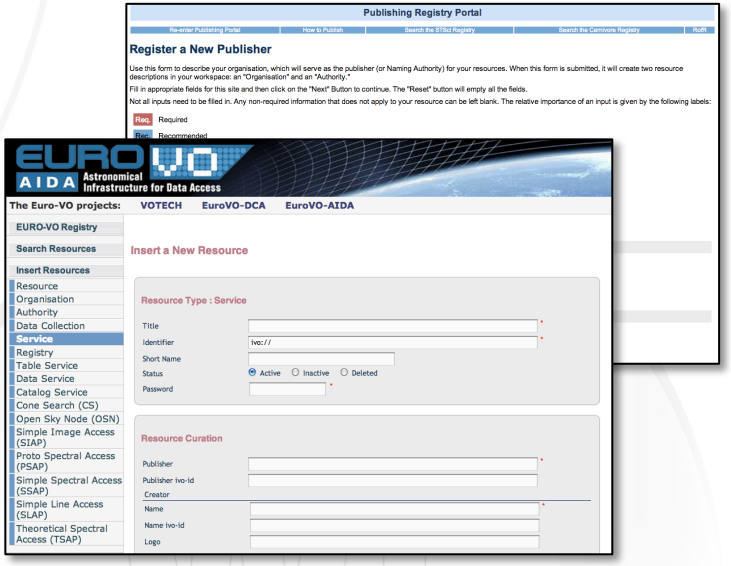


Published

- The VO Registry
- Easier to publish services than datasets in the VO ?
- WS are not exclusive property of big data archives

- Publication is not Preservation
- Backup strategies
- Replication/Mirrors
- Versioning

- Software Publishing Platforms

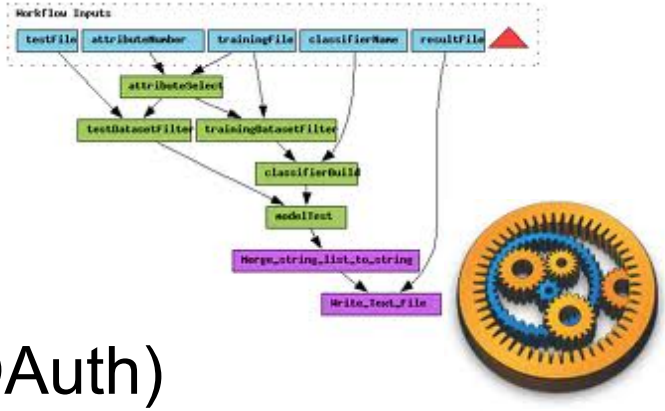


Discovered

- **Search Criteria**
  - Relevant Keywords (Semantics)
  - Authoring - Institution, Archive
  - Waveband, Science
  - Function-based
    - VO Services mainly focused on Data Discovery and Access (DAL)
    - Wrapped Legacy Apps and Data Processing (SIAv2, Theory IG)
    - KDD IG
  - Input/Output Data (TAP, UTypes, VOSI #tables)
  - Access Policy (Authentication – SSO, OAuth)
  - A-Synchrony (SOAP, REST) and Stage Data (VOSpace)
  - Allocation of CPU/Storage, Estimated Computing Time
- **Proposition of alternatives and similars**

Used and Transformed

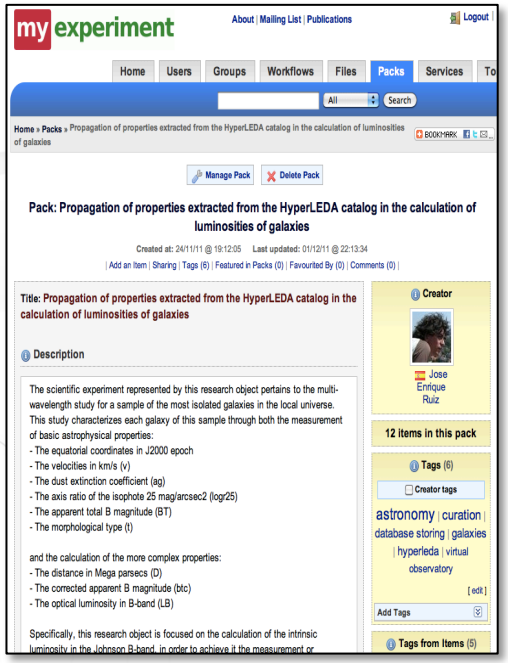
- **How to use them ?** (WADL, WSDL – VOSI #capabilities)
  - Input Data -> Parameters needed and formats
  - Self-described WS (PDL, S3, SimDAL, SimDB)
  - Output Data -> Response format - TAP
  - Example Data, Self-Consistency Checking



- Access Policy (**Authentication** – SSO, OAuth)
- **WS orchestration in Workflows** (Data-flow vs. Control-flow)
- How the **community** uses WS ?
- Propositions based on patterns of statistical use or popularity
- **Provenance** of the methods is Wf-evolution by re-use
- Consumed by Humans and Machines - **Interoperable** (WS-I)

Credited

- **Linked to related Artefacts**
  - Data Facilities and Archives
  - Authors, ACSL Software, Wfs
- **Quality Assessment**
  - Technical and scientific
  - Penalize abandoned and award the maintained
- **Automate Monitoring (VOSI #availability)**
  - Decay
  - Performance, WS Analytics
  - Change of interfaces, permissions, etc.
- **Community Curation**
  - Blogging
  - Recommendation
  - Folksonomy



Conclusions

In a cloud of web services and data..

Web Services should benefit of the *same privileges* acquired by Data until now.

Start thinking on how to provide

- **Detailed curation**
- **Thorough characterization**