Research Information Management

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What is research information management?

- Generated by activities across the research life-cycle
- Facilitates the strategic management of research activities
- Supports research, reporting, measuring impact, generating metrics
What is research information?

- HR data
- Project management data
- IP
- Financial data
- Publications
- Research outputs
- Research data
- Student records
Using a Current Research Information System (CRIS)

A platform to integrate & manage research information

Allows data input

Creates data outputs

HR data
Financial data
Research outputs
Metadata
Project documentation

CVs
Profile pages
Reporting
Metrics
Institutional Repository
RIM Challenges

Ensuring consistent, high quality input data

- Resourcing

Encouraging uptake from key stakeholders (staff, researchers)

- Building on existing systems and practices; coordinating multiple inputs and users
Publication enhances reproducibility, reduces duplication of work, increases citations, raises researcher profiles
Mandated by Horizon 2020 from January 2017

Data should be Findable

Data should be Accessible

Data should be Interoperable

Data should be Re-usable

https://www.force11.org/group/fairgroup/fairprinciples
Research Information Management: drivers & challenges

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Stakeholders, entities, data, relationships

- **Funder**
  - Name

- **Institution**
  - Name
  - Location

- **Publisher**
  - Name

- **Project/Grant**
  - Title
  - Grant Id
  - Start/End date

- **Researcher**
  - Biography
  - Expertise
  - Bibliography

- **Research Output**
  - DOI
  - Title
  - Description

- **Collaborators**

- Citations
Institutional Drivers

• Provide local, relevant support for researchers

• Increase visibility, availability and impact of research

• Access high-quality management information
  • Benchmark against peers
  • Improve in international rankings
  • Identify & attract potential collaborators

• Comply with funder and Government policies

• Protect & manage I.P.

• Streamline processes & reduce redundant data entry
**External Drivers: Policy, Mandates, Impact**

**Action 4.7:** “Integrate and support open access repositories, the national research classification system, HEI research information systems, research funders’ grant management systems, and expertise locator systems …

... a major impediment to system-level monitoring, management and impact assessment.”

“Broader access to scientific publications and data helps to:

- build on previous research results
- encourage collaboration and avoid duplication of effort
- speed up innovation
- involve citizens and society”

- H2020 Programme Guidelines
External Drivers: “Open Science”

- “Scholarly communication” industry has seen rapid disruption
- Fundamental changes in research process
- Broad trend towards “openness” & collaboration
- Increasingly data & compute driven
- Significant commercial interest & investment
- Considerable technical challenges
- Even more considerable social & cultural challenges
Global infrastructure & ecosystem

Where to invest? What does it mean for institutional systems & structures? What do researchers want?
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Research Lifecycle

- Frameworks/methodologies: Sekaran, 2003; Welman & Kruger, 1999
Imagine

When you are planning your research project

- **CRIS**
  - find others to collaborate with
- **IP system**
  - is there technology available to use/license
- **Institutional Repository and Open Access Journals**
  - Literature review
- **Grant management system**
  - For oversight of all funding within the institution
- **Ethics approval**
Invent

Carrying out your research

– A wide range of IT systems
– Not in scope for this panel!
Inform

Getting your research out there CRIS

- Open Access Journals
  - For many funders this is now the only option for publishing

- Institutional Repository
  - Deposit a pre-print of your paper here, especially if not being published in Open Access

- Data Repository
  - Curate and deposit datasets for verification and re-use
Impact

Measuring how your research was received

– Online tools
  • Scopus, PubMed, Web of Science, Google Scholar

– CRIS
  • Feed your CRIS from these sources

– Alternative metrics
  • Altmetric.com, Plum Analytics
Workflows

• Ensure the minimum amount of work for your researchers
• Ideally input data once (or not at all)
• Adhere to community standards
• Leverage online sources like Scopus and ORCID
Technology Options

- Wide range of commercial and open source options
- Cloud based vs in house
- CRIS – Symplectic Elements, Mendeley, VIVO, Vidatum
- IR – DSPACE, EPrints, ContentDM
- Data Repository – Invenio, Hydra, Zenodo
- IP management – Wellspring, Inteum
Open Access Publishing

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Institutional Repositories

• Maximises uptake, usage and impact of the output of the Institution
• Collects and manages a permanent record of this research
• Can be used to measure the uptake of this research.
Ireland’s Open Access Repository Network

- Greater discoverability
- Higher impact

- Ireland’s OA Repository network: 19+ institutions
- All universities, many other research institutes
National Supports

- National Steering Group (2012)
  - National principles on Open Access (2012)
- Repository Network Ireland (2014)
- Official Publication Policies (TCD, DIT, Maynooth,)
- Funder Mandates
  - European Commission, SFI, Irish Research Council
- Horizon 2020 and ERC…mandating Open Access on publications/ data
Library Led Publishing

- Service to staff and students
- Emphasise research expertise
- Serve unmet needs
- Emerging field, small societies, local/regional interest
- Viable publishing model
This is a very exciting time in scholarly publishing. Now that the “fight” for open access has more or less been won, we are able to move beyond open access and work to create a new ecosystem and infrastructure for scholarly publications and communications.

Doctor Caroline Sutton, Co-Founder of Co-Action Publishing and Director at Infrastructure Services for Open Access (IS4OA), 2014
David Kane
Waterford Institute of Technology
What a Repository Is

“a mechanism for managing and storing digital content.”

- JISC Repositories Support ’06-’13 Project
  http://www.rsp.ac.uk/
What a Repository Stores

• Academic Outputs
• Research Data
• Historical & Cultural
What a Repository Does

• Offers long term preservation
• Manage metadata
• Supports discovery
• Provides access control
Areas of Repository Functionality

- Ingest
- Storage
- Data Management
- Administration
- Preservation
- Access
Research Information, Research Data and Metadata

- **Research Information** (Wider information connecting Researcher, Project, Funding, Group, Publications, Citations, Bibliometrics, Altmetrics, etc...)
- **Research Data** (Generated during Research Process)
- **Metadata** (Describing Digital Artifacts in Repository)
“The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) is a low-barrier mechanism for repository interoperability. Data Providers are repositories that expose structured metadata via OAI-PMH. Service Providers then make OAI-PMH service requests to harvest that metadata. OAI-PMH is a set of six verbs or services that are invoked within HTTP.”

– Open archives initiative

1. Identify
2. **ListMetadataFormats**
3. ListSets
4. ListIdentifiers
5. ListRecords
6. GetRecord

Used by the aggregation services mentioned earlier.
Import and Export

And SWORD deposit
Import and Export

- ASCII Citation
- BibTeX
- Dublin Core
- EP3 XML
- EndNote
- HTML Citation
- JSON
- METS
- Object IDs
- OpenURL ContextObject
- RDF+NL-Triples
- RDF+N3
- RDF+XML
- Refer
- Reference Manager
- Performance and Reliability of File Systems and Databases, 2008
Unique Identifiers in Research
Research Information Management
Context

Support Strategic management of research
Streamline Research Administrative Processes
Promote Researchers, Institute, and Research