

# The University of Manchester

## e-Science Group

Carole Goble

Alan Williams, Finn Bacall

[carole.goble@manchester.ac.uk](mailto:carole.goble@manchester.ac.uk)

# eScience Group

- Research Software Engineers
- Advanced application researchers
- Domain computational scientists
- Community workers
- Advanced e-Infrastructure specialists



# Computational Workflows

FAIR Workflow registries & repositories

Workflow interoperability, preservation, sharing and exchange

Portable workflow packaging & execution

**my experiment**

**BioCompute Objects**

**COMMON WORKFLOW LANGUAGE**

**Apache Taverna**  
Open source & distributed workflow engine for designing and executing scientific workflows  
<http://taverna.apache.org>

**Galaxy**

Open for Innovation  
**KNIME** **nextflow**

# Sharing Commons Platforms

FAIR Asset management & federated cataloguing

Asset standards (data, models, workflows, SOPs)

Project collaboration and publishing

**FAIRDOM SEEK**

**BiodiversityCatalogue**  
"The Biodiversity Sciences Web Services Registry"

**RightField** **Jupyter**

# Metadata

Semantic (web) technologies,  
Linked data,

Metadata services

Metadata packaging, provenance

"FAIRification" methodologies

Reproducibility.

**research object.org**

**JSON-LD**

**EDM**

**Bioschemas**

# Software & Training

Software sustainability and best practices

ELIXIR Training Portal

The Carpentries

**www.software.ac.uk**

**elixir**  
**TeSS**

**THE CARPENTRIES**



*Computational environments, workflow registry and interoperability, identifiers, standards, tools*



*Biomolecular modelling  
Workflows over HPC  
Workflow standards*



*Workflow-based coordination and analysis, workflow library, interoperability, standards, tools, SOPs*

*Asset management for projects and method outcomes*



*Open collaborative digital space for European Open Science  
FAIR datasets, Workflows  
13 Research Infrastructures*

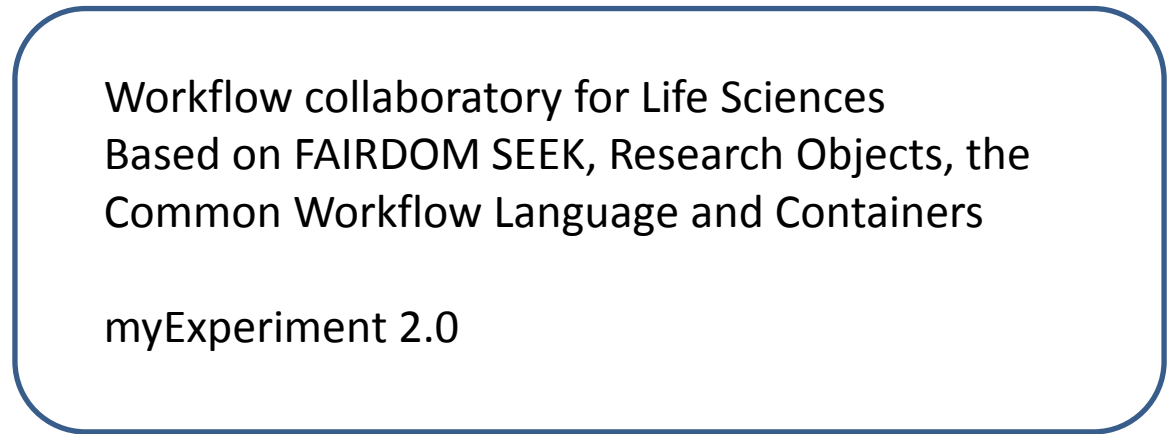


*Workflow-based Reproducible  
Research Objects*



**IMI FAIRplus**

*FAIRification processes for  
Life Science and Drug  
Discovery datasets*

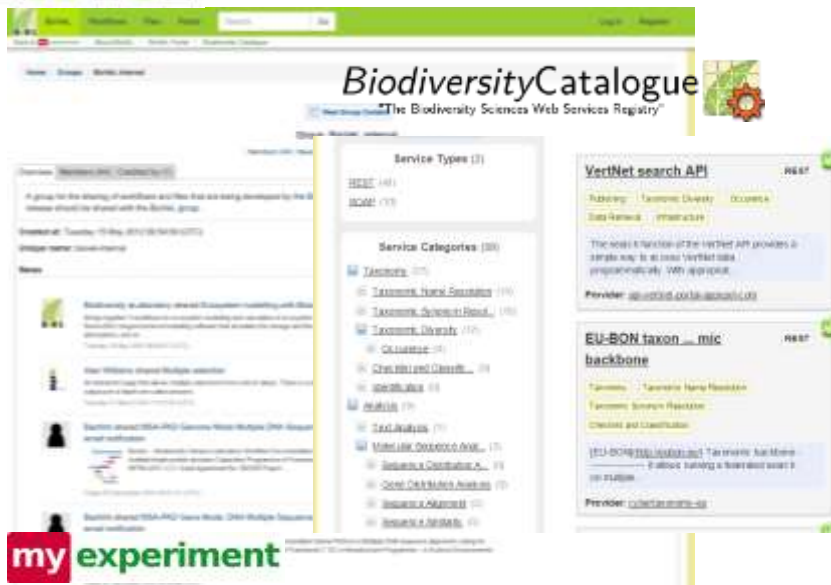


# Synthesys+

## JRA3: Specimen Data Refinery

*To develop the Specimen Data Refinery platform that integrates artificial intelligence and human-in-the-loop approaches to extract, enhance and annotate data from digital images and records at scale*

- 1: Development of **SDR Services**
- 2: Development of the **SDR Registry** for packaging the SDR Services into (digitisation) workflows and tools
- 3: Development of the **SDR Run Platform** for workflow and tool execution



**EUROPEAN OPEN  
SCIENCE CLOUD**