Netherlands Bioinformatics Centre

Enacting Taverna Workflows in Galaxy

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Introduction

- Bioinformatics tools
  - large number and diversity
  - more than one tool for the job
  - different access mechanisms
  - non-interoperable

- E-Laboratory Components
  - reusability (of existing and new components)
  - interoperability (open source, standards, …)
  - system integration (possible at several layers)

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Some Background

- Galaxy: web portal and framework for bioinformatics
  - data sources (UCSC, BioMart, …) and analysis tools
  - new tools
  - unified intuitive interface
  - other: pipelining, provenance, sharing, open source
- Taverna: workflow management system
  - for bioinformatics resources (WS) and other domains
  - flexible and expressive workflow language
  - several extensibility points (e.g. shims and plugins)
  - other: provenance, open source
- myExperiment: web site
  - workflow repository for sharing and reuse

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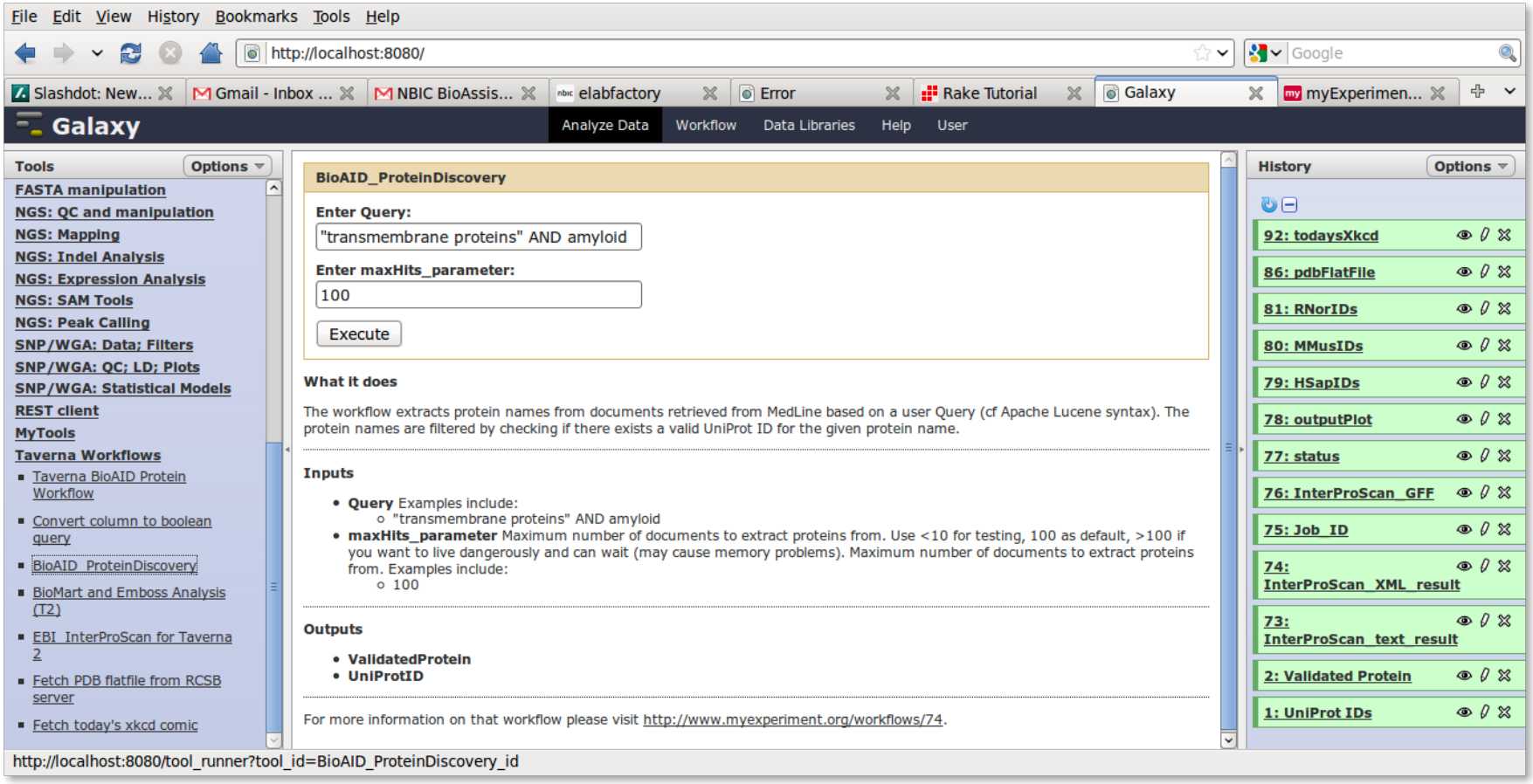
Galaxy



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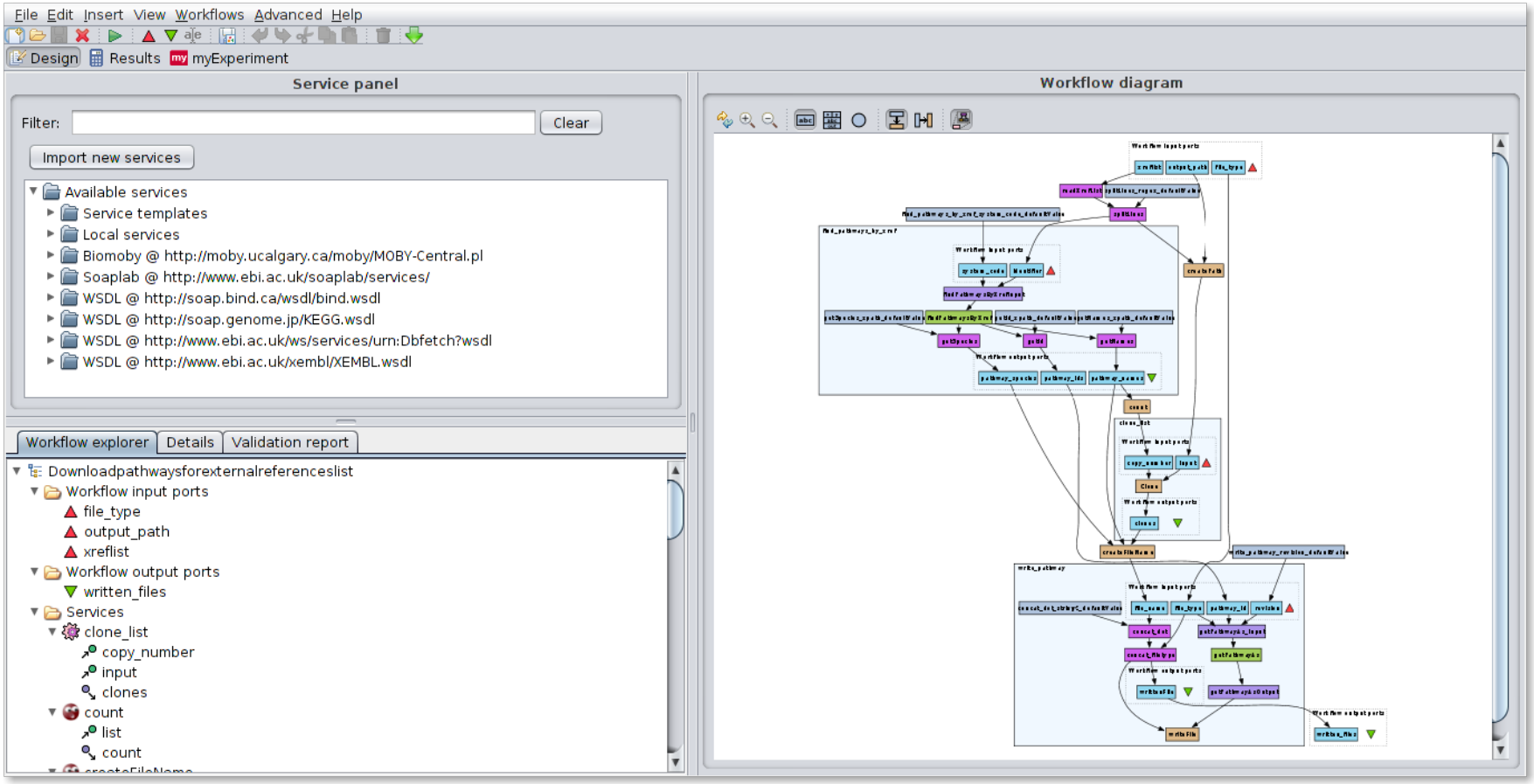
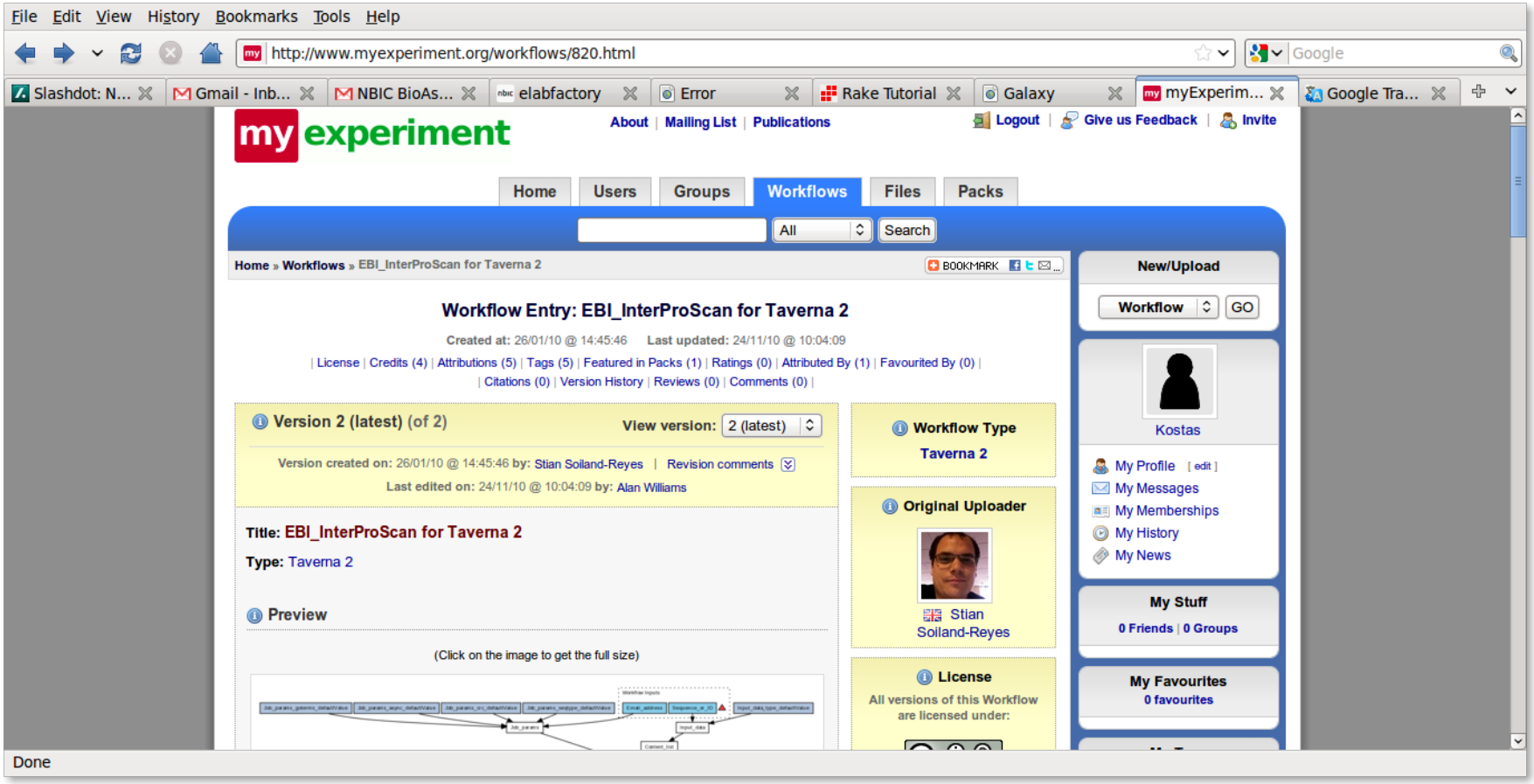
Taverna2 Workbench



myExperiment



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Taverna Workflows in Galaxy: motivation

- Galaxy
  - easy to use for biologists
  - e.g. NGS analysis, …
- Taverna
  - powerful expressive workflows
  - e.g. text mining, …
- active communities that add new functionality
  - some overlap but added value if combined
- Approaches
  - incorporating Galaxy tools in Taverna
  - incorporating Taverna workflows in Galaxy

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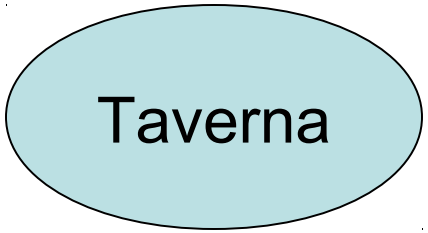
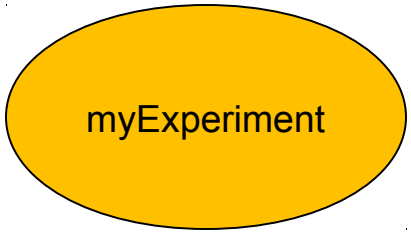
Taverna Workflows in Galaxy: requirements

- Taverna
  - a server (access)
- myExperiment
  - browse workflows
- Galaxy
  - a server (admin)
  - the new tool
    - GUI plus config file
    - program (binary or script)





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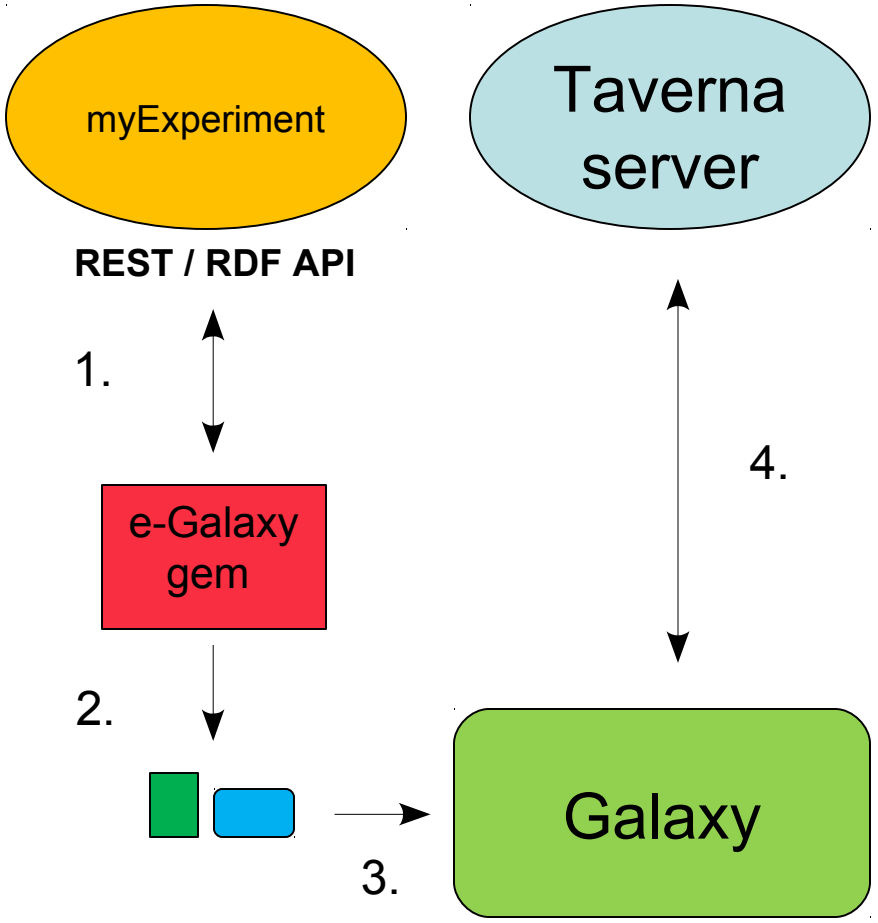
Taverna Workflows in Galaxy: phase one

- Ruby gem
  - generates a Galaxy tool
  - requires a workflow description
- Workflow description
  - myExperiment
  - why?
- Galaxy
  - tool needs to be manually installed
- TODO
  - part of myExperiment



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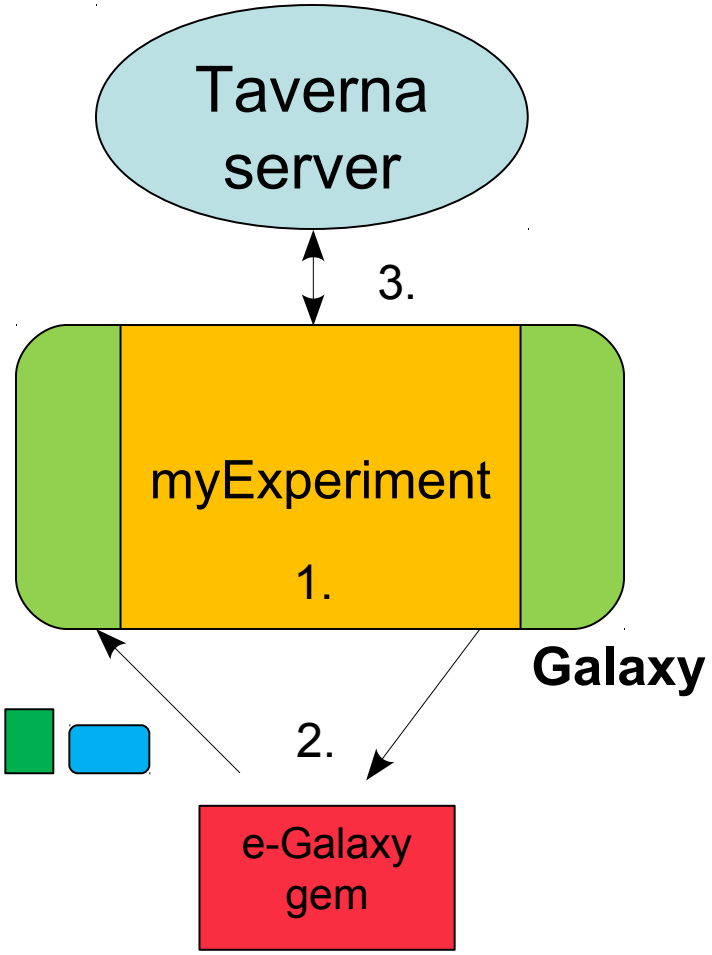
Taverna Workflows in Galaxy: phase two

- Future work
- Galaxy
  - integrate myExperiment as an external interface
- Galaxy new functionality
  - dynamic loading of new tools
  - selected workflows will be generated and installed in one step
- Further investigation is needed



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- More information
  - http://galaxy.psu.edu/
  - http://www.taverna.org.uk/
  - http://www.myexperiment.org/
- Questions?

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