

Taverna Workflow Management System

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WMS

What is a Workflow Management System?

Workflow Management System (WMS) is a piece of software that provides an infrastructure to setup, execute, and monitor [scientific workflows](#). In other words, the WMS provide an environment where *in silico* experiments can be defined and executed.

In silico

From Wikipedia, the free encyclopedia

For other uses, see [In silico \(disambiguation\)](#).

In silico is an expression used to mean "performed on [computer](#) or via [computer simulation](#)." The phrase was coined in 1989 as an analogy to the [Latin](#) phrases *in vivo*, *in vitro*, and *in situ*, which are commonly used in [biology](#) (see also [systems biology](#)) and refer to experiments done in living organisms, outside of living organisms, and where they are found in nature, respectively.

What is 'in silico' experimentation?

The rapid increase in the processing power of computers in the past few decades has enabled the emergence of *in silico* experimentation across many domains, where research is conducted via computer simulations with models closely reflecting the real world.

Workflow

What are workflows?

- ◆ Workflows are input files that specify the sequence of computational and data manipulation steps required for a given scientific analysis. They are a powerful mechanism to develop, execute and share scientific calculations.
- ◆ Workflows can be written in graphical or text environments. They are run in workflow engines that read and execute the sequence of steps specified in the input file, using data and compute services from e-infrastructures, such as the European Grid Infrastructure.

Taverna



The University of Manchester

MANCHESTER
1824

What is Taverna?

Taverna enables the interoperation between databases and tools by providing a toolkit for composing, executing and managing workflow experiments

- Access to local and remote resources and analysis tools
- Automation of data flow
- Iteration over large data sets

myGrid   open middleware infrastructure institute uk
www.omii.ac.uk

AstroTaverna Plugin

What is AstroTaverna plugin for?

Preamble

- ☞ Why should we know something about Taverna?
 - ☞ General knowledge
 - ☞ Because for the 2nd year of ER-flow as Astrophysics community we have to provide 8 new workflows to put on the SHIWA Simulation Platform, and some of them are coded in Taverna (for instance some of those coming from [IAA](#))
 - ☞ The target is to take these WFs and to put them on the SSP
 - ☞ In doing so there is an increasing learning about Taverna

Links

☞ Taverna on wikipedia

☞ Official site

Download

- Download
- Taverna Workbench
- Current Release
- Binary for Windows, Mac OS X, Linux and also the source code
- unzip the tar

Prerequisite

☛ JAVA

☛ install (Linux Ubuntu case):

☛ `sudo apt-get purge openjdk*`

☛ `sudo add-apt-repository ppa:webupd8team/java`

☛ `sudo apt-get update`

☛ `sudo apt-get install oracle-java7-installer`

Prerequisite

👉 graphviz

👉 install (Linux Ubuntu case):

👉 `sudo apt-get update`

👉 `sudo apt-get autoremove graphviz`

👉 `sudo apt-get install graphviz`

Otherwise error message: [Missing dot](#)

Run the software

- Go into the unzipped directory and run: `./taverna.sh`

Add AstroTaverna Plugin

- ☛ Menu → Advanced → Updates and Plugins
- ☛ AstroTaverna plugin
- ☛ Add a plugin site
- ☛ Install
- ☛ Restart Taverna

Search for workflow

- 👉 IAA Workflow
- 👉 Workflow description
- 👉 Download workflow → .t2flow file
discovery_of_brown_dwarfs_mining_the_2mass_and_sdss_databases_215462.t2flow

Upload workflow

- ☛ Menu → File → Open workflow
- ☛ Running
- ☛ Finished
- ☛ See the output

Taverna on SSP

- ☛ Taverna on the SHIWA Simulation Platform
- ☛ Upload the workflow from myExperiment: [ER-Flow](#) → SHIWA Workflow Repository → myExperiment → Workflow ID
- ☛ Run the workflow: [ER-Flow](#) → SHIWA Simulation Platform → Security → Certificate → gemlca-devel.cpc.wmin.ac.uk:8443 → Workflow → Concrete (after configuration ...) → Submit

Conclusions

👉 We are Taverna experts now!