

# Hands-on session with Scientific Workflows using the SHIWA Simulation Platform

Wednesday, 21 May 2014 16:00 (1h 30m)

Scientific workflows are an important part of e-science endeavors. Workflow management systems provide tools to coordinate execution and data flow in large computational experiments, and can be valuable allies for the adoption of e-infrastructures by new and well-established scientific communities. There are several workflow management systems, each with its strengths and weaknesses, and there are many e-infrastructures, each with its particularities. Interoperability has become a key concern. The SHIWA platform facilitates interoperability of workflows and infrastructures by providing tools to share, execute and combine workflows in a large variety of scenarios. The SHIWA platform is explored in the ER-flow project by partners from four major research communities - Astrophysics, Computational Chemistry, Heliophysics and Biomedicine. In this hands-on session, instructors from the ER-flow project will lead demonstrations and discussions with the participants for learning, designing, constructing and executing scientific workflows to address the participant's own research questions.

SHIWA Portal Task 1 (Youtube): [http://go.egi.eu/SHIWA\\_Portal\\_Task1](http://go.egi.eu/SHIWA_Portal_Task1)

SHIWA Portal Task 2 (Youtube): [http://go.egi.eu/SHIWA\\_Portal\\_Task2](http://go.egi.eu/SHIWA_Portal_Task2)

SHIWA Portal Tasks (PDF): [http://go.egi.eu/SHIWA\\_Portal\\_Tasks](http://go.egi.eu/SHIWA_Portal_Tasks)

## URL(s) for further info

[1] ER-flow website <http://erflow.eu>

[2] Tutorials, training materials:

<http://www.erflow.eu/shiwa-in-a-nutshell>

<http://www.erflow.eu/tutorials>

<http://www.erflow.eu/getting-started>

<http://www.erflow.eu/shiwa-user-forum>

## Wider impact and conclusions

Expected Goals: the participants will learn in practice how to design, create and execute scientific workflows to address their own research questions using WS-PGRADE workflow system provided within the SHIWA Simulation Platform. Also participants will get familiar with solution from the demonstration, which addresses interoperability between the different workflow systems, as well as supports sharing of scientific workflows through SHIWA Workflow Repository.

Approach: the session will be composed of demonstrations, discussions and hands-on exercises.

Level: Introduction

Intended audience:

- Scientists of any research domain who work with multiple applications and are willing to learn how to combine all them into scientific workflows.

- Scientific Workflows developers who are familiar with multiple workflow systems and workflow engines.

Prerequisites: laptop, wireless.

Instructors: Partners of ER-flow project.

## Description of work

The ER-flow project is building a European Research Community that investigates interoperability of scientific data in the context of scientific workflows. The project disseminates the Coarse-Grained workflow interoperability solution (CGI) using the SHIWA Simulation Platform. The project includes four major research communities, Astrophysics, Computational Chemistry, Heliophysics and Biomedicine, which already successfully run their experiments using SHIWA Simulation Platform and have their scientific workflows exported to the dedicated SHIWA Workflow Repository for sharing. The platform supports various Distributed Computing Infrastructures such as clouds and grids. The interoperability solution includes various workflow

systems. By using the SHIWA platform the research communities have freedom to choose from a large variety of workflow management systems, infrastructures or middleware to implement their Virtual Research Environments.

The workshop will be structured as follows:

1. Introduction (5')
2. Getting familiar with SHIWA technology (30')
3. Applying workflow technology to scientific problems (group exercise) (50')
4. Closing remarks (5')

After a brief introduction to the SHIWA platform and the WS-PGRADE workflow management system, the participants will be invited primarily to solve scientific problems provided by DRIHM, VERCE, EarthServer and EUDAT communities. The participants will work in groups to discuss how to adopt workflow technology to these scientific problems. Secondly prepared scientific problems will be provided by the instructors to the participants which will be not interested in the problems provided by above listed scientific communities. The instructors, will lead the discussion and, as much as possible, illustrate the solutions using examples of workflows already in the SHIWA repository. Depending on time, they will also create simple illustrations using the SHIWA portal.

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**Session Classification:** Hackathon: Scientific workflows & SHIWA