# Using GWorkflowDL for Middleware-Independent Modeling and Enactment of Workflows

Simone Pellegrini, Francesco Giacomini, Antonia Ghiselli (INFN Cnaf)
Andreas Hoheisel (Fraunhofer FIRST)

Abstract. We present an extension to the Petri-Net-based Grid Workflow Description Language GWorkflowDL that enables the middleware-independent definition of workflows, which can be processed by several WfMSs. A real-world example workflow using the rendering software POV-Ray serves as a case study to validate the interoperability of workflow descriptions over two WfMSs targeting different Grid middlewares: the Grid Workflow Execution Service (GWES) and the INFN/CNAF WfMS.

Workflow Description. Using High-Level Petri Nets to model workflows independent from the infrastructure → GWorkflowDL.

Resource Matching. Automatic mapping to available and suitable resources.
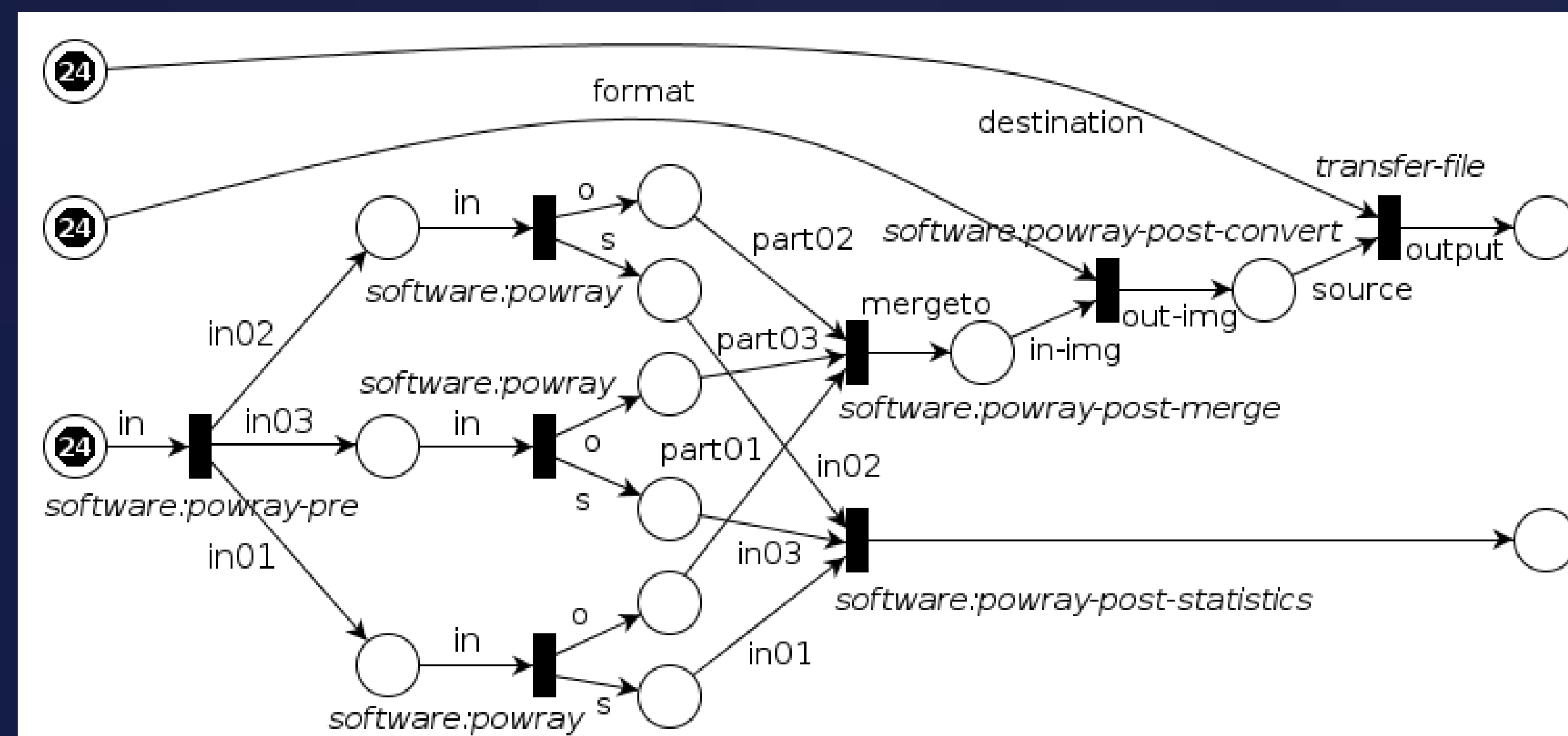

Case Study. POV-Ray: Rendering of Images from 3D scenes. Speedup by distributing rendering of different lines of images or by distributing rendering of different frames of an animated movie.
(refer to http://instant-grid.org)

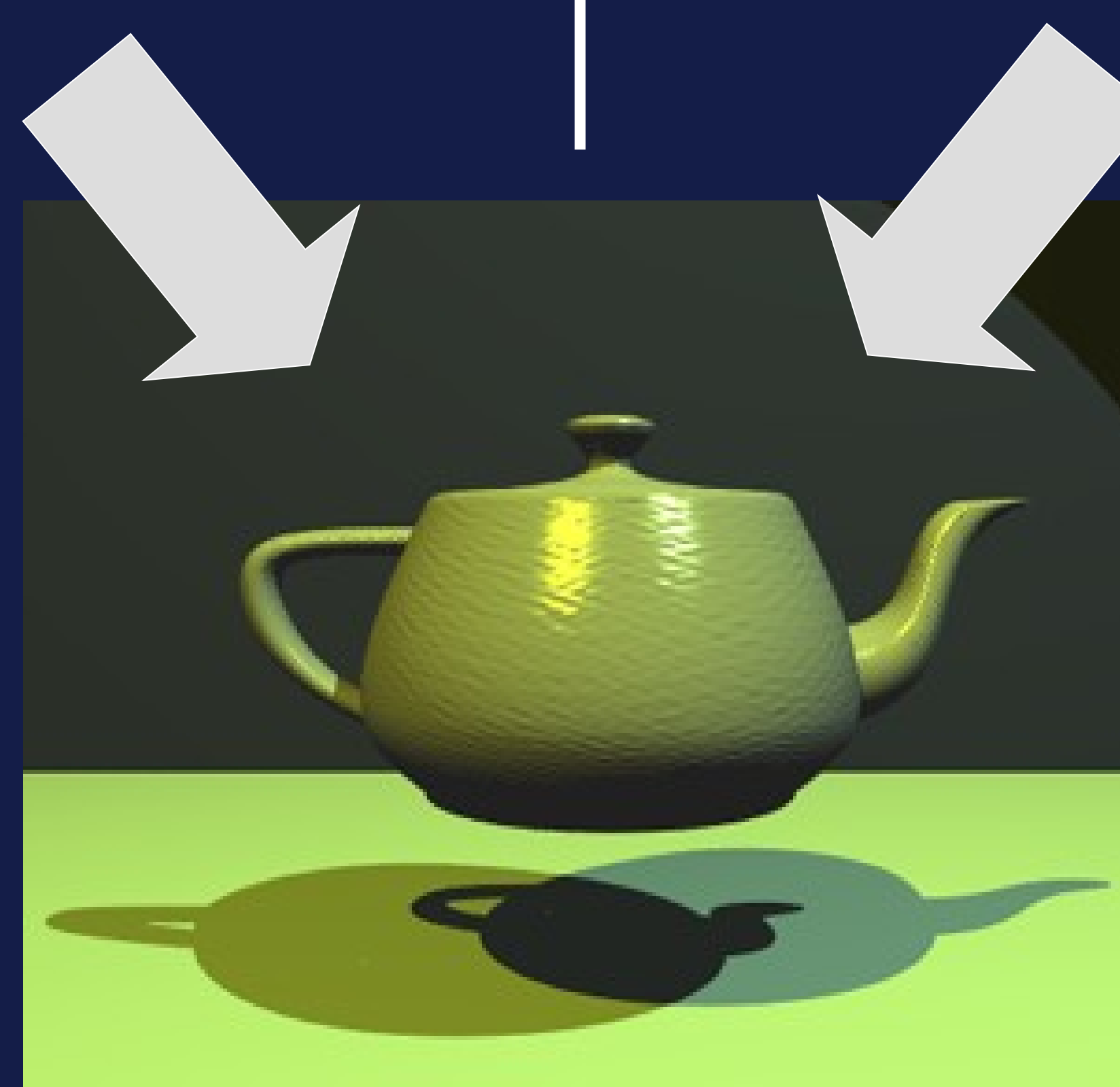**INFN/CNAF WfMS**. C++ implementation by INFN/CNAF. Tested on the gLite middleware.
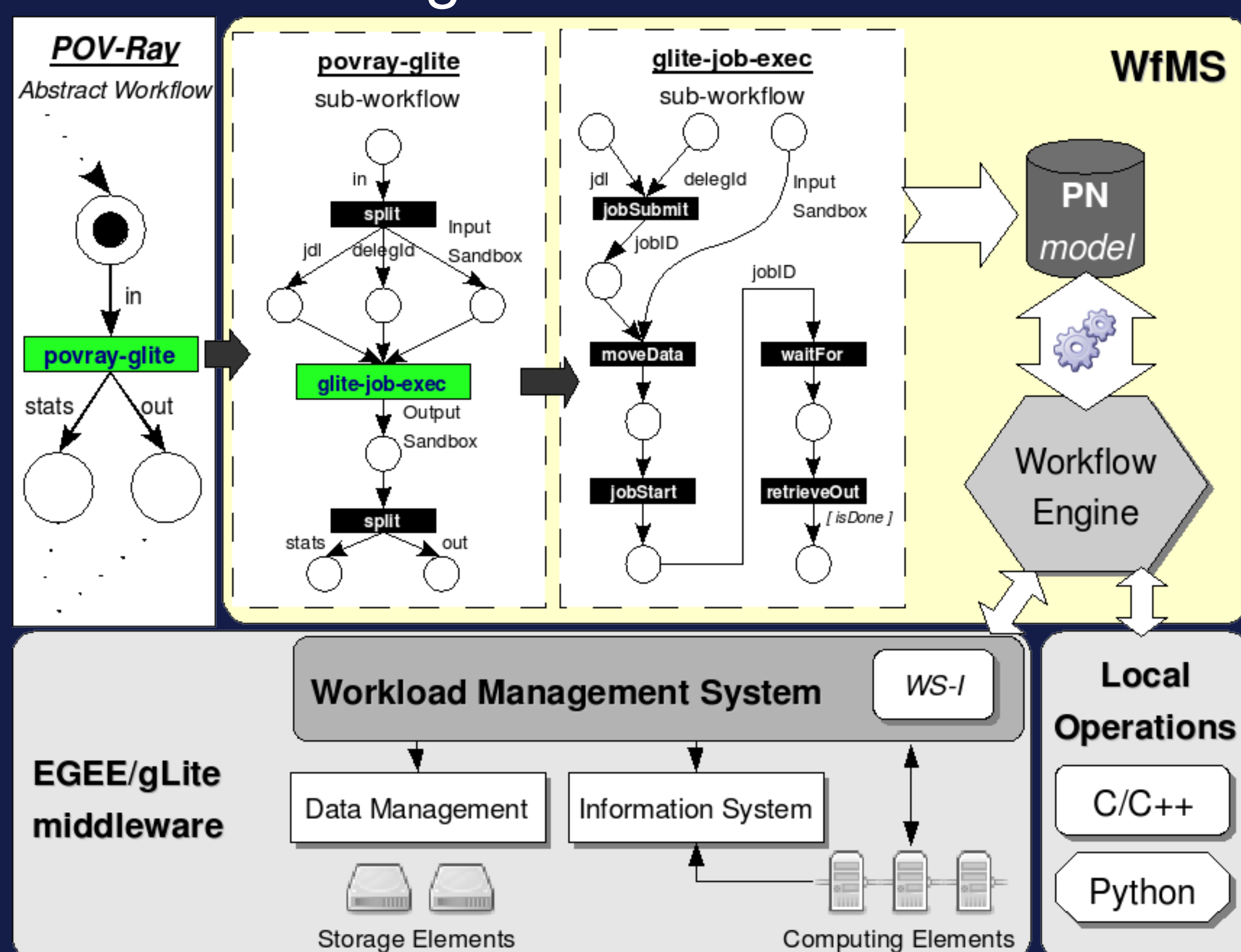
EGEE/gLite

Grid Workflow Execution Service (GWES). Java Implementation by Fraunhofer FIRST. Target middleware: Globus Toolkit 4, Web Services.
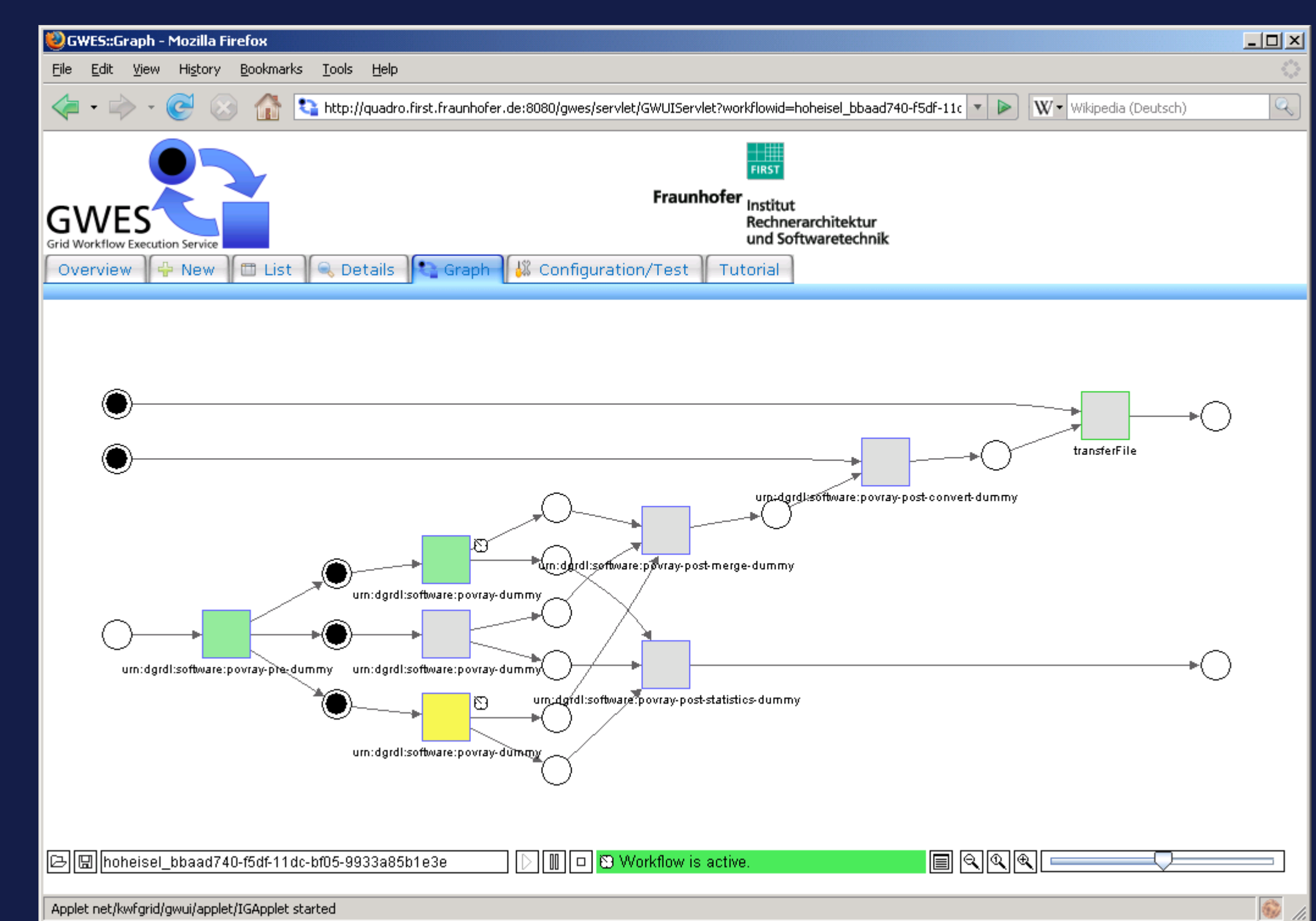
Globus Toolkit 4, Web Services

Benefit. Reuse abstract workflows in several Grid-Infrastructures without modification of the workflow description.