Taverna Plugins @ CISTIB

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CISTIB (www.cistib.org) performs cutting-edge research in areas of fundamental and applied biomedical imaging and modelling with impact in personalised minimally-invasive therapies and active and healthy ageing.

What we do

- **Multimodal Diagnostic Imaging Methods & Systems**
- **Interventional Planning & Guidance Methods & Systems**
- **Image-based Optimisation of Medical Devices & Implants**
- **High-Throughput Image Analytics for the Pharmaceutical Industry**
- **Biomedical Information Management and Systems**
GIMIAS

- GIMIAS (Graphical Interface for Medical Image Analysis and Simulation - www.gimias.org) provides basic and advanced 3D data visualization, image processing and simulation tools
- Processing tasks are based on plugin technology
How we use Taverna?

- GIMIAS can become a web server and expose its plugins as web services
- We use Taverna to compose workflows that include GIMIAS plugins
- Two plugins available:
  - Taverna plugin for GIMIAS Command Line Plugins (CLPs)
  - Taverna plugin for VPH-Share
Taverna plugin for GIMIAS CLPs

- Importing of services was customized to request for locations of the CLPs

- Plugin scans the folder and checks XML descriptors
Taverna plugin for GIMIAS CLPs

- Plugin provides Taverna with the details of each service and organizes CLPs in categories
Taverna plugin for VPH-Share

- GIMIAS web server produces a WSDL document
- GIMIAS web services could be invoked via the WSDL importer but
  - VPH-Share has a different kind of security
  - GIMIAS is installed in “sleeping” Virtual Machines
Taverna plugin for VPH-Share

- Plugin customizes user authentication and importing of services,

- Allows the user to specify deployment location and execution mode of each service,

- Handles the life-cycle of the VM where GIMIAS resides
Taverna plugin for VPH-Share

- Plugin was originally developed to work on Taverna Workbench, but was adapted to Taverna Server
- Had to change the way in which:
  - Services are imported (GUI vs. non-GUI, i.e., Workbench vs Server)
  - User ticket is obtained
  - Remote desktop links are notified to the user
  - Workflow clean-up is done
- Managed to maintain one version that works for both
- This allowed integration with OnlineHPC
Taverna plugin for VPH-Share

- However, to make a workflow run, lots of things have to be specified manually via REST
- We created a “Workflow Manager” to run workflows on Taverna Servers
- Taverna Server can also be a Virtual Machine
  - To speed-up VM spawning, required plugins are loaded from disc
Final remarks and future work

- “Execute this workflow step elsewhere”
  - GIMIAS can execute an application hosted in the AHE in either a run-and-wait or an execute-and-return fashion. Execution progress can be monitored via the AHE web client.

- In the future the VPH-Share plugin is planned to work with other cloud infrastructures, and to support the invocation of services via WADL endpoints.