

### M2.3.3 - Interface with workflow designer

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#### **Abstract**

Image simulators are integrated as workflows in VIP. While T2.3 of the project produced an interface to facilitate the integration of workflows in the platform, the development of these workflows is still cumbersome. “Cowork”, the workflow designer produced by task T1.2.b, is the result of the project’s investigations to facilitate workflow development using semantic information. This document describes the integration of Cowork in the VIP portal. Cowork can be launched as an applet from the portal, and executable workflows generated from conceptual workflows can be published in VIP and executed as any other workflow. As a result, practical experimentation is now possible with Cowork in VIP.

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## 1 Introduction

One of the goals of the VIP project is to facilitate the porting of image simulators to the platform. For this purpose, a special attention has been devoted to facilitate the integration and management of *workflows* in the VIP portal. Workflows can be integrated just by adding the URL of a Gwendia [2] workflow document to the VIP portal; launching and monitoring interfaces are then automatically generated, resulting in an executable application available as an icon in the portal. Workflows are grouped into *classes* that can be mapped to user groups to manage access rights.

However, this interface still requires that simulation workflows are developed. Workflow development remains a tricky process, in particular when distributed computing resources are involved. Indeed, technical concerns, such as data transfers or format conversions have to be dealt with. To explore how workflow development could be facilitated, task T1.2.b produced a workflow designer (see VIP deliverable D1.2.2). Named “Cowork”, this tool allows to design conceptual workflows [1] that consist only of the functions involved in the workflow. Conceptual workflows can then be mapped to Gwendia workflows for execution. These operations exploit the concepts defined in the VIP ontology (see VIP deliverable D1.1.1).

This milestone reports on the integration of Cowork in the VIP portal. Cowork is a Java application with a Swing GUI. It accesses a mysql database to store RDF triplets describing the conceptual workflows. The VIP portal (see VIP deliverable D2.3.4) is a web application developed with the Google Web Toolkit (GWT).

## 2 Interface design and implementation

The Cowork workflow designer was integrated as an applet in the VIP portal. Figure 1 describes a sequence diagram of the 4 main interactions with Cowork in VIP. Figure 2 illustrates some of these steps with screenshots extracted from VIP.

**1. Application start and database connection.** Users can start the Cowork module by clicking on the corresponding icon in the VIP portal. This module launches an applet that asks database credentials (login and password) to the user, and then starts the Cowork application (see screenshot on Figure 2(a)). The Cowork application connects to the Cowork database hosted in the VIP portal.

**2. Conceptual workflow design.** The user can interact with the Cowork application to design conceptual workflows (see screenshot on Figure 2(b)). Conceptual workflows can be loaded and saved to the database through the application’s GUI.

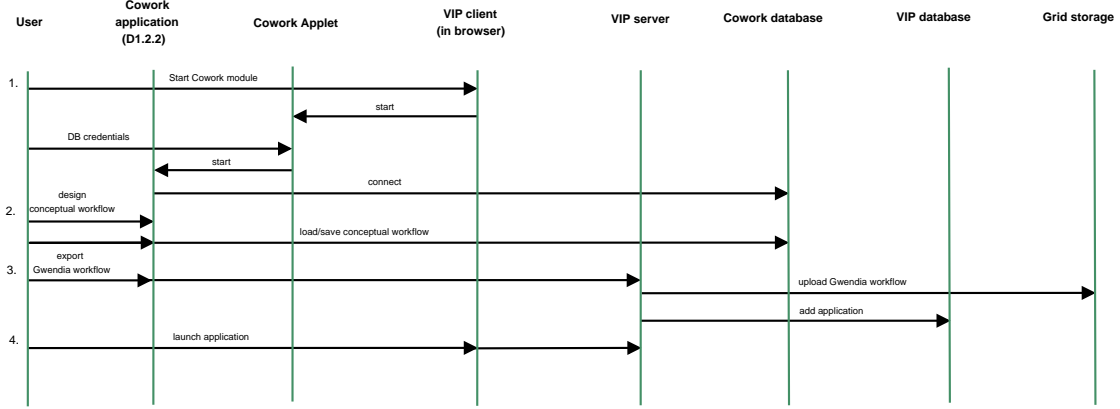


Figure 1: Sequence diagram of the workflow designer integration in VIP

**3. Export to Gwendia workflow.** From the Cowork application’s GUI, the user can export conceptual workflows as executable Gwendia workflows. The Cowork application sends the Gwendia document to the VIP server. The VIP server then upload the Gwendia document to the Grid storage and adds an application to the VIP database. The application is now available in the VIP portal (see screenshot on Figure 2(c)).

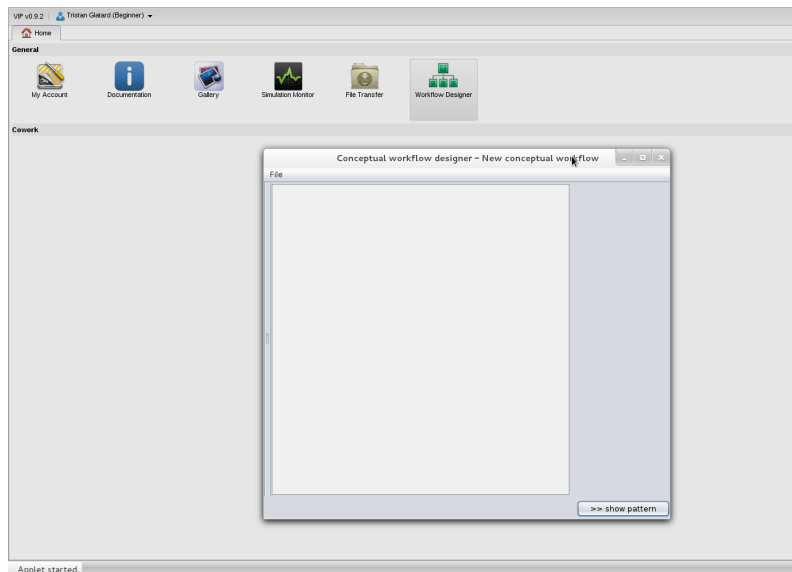
**4. Execution of the application.** The Gwendia workflow can now be executed as any other application in the VIP portal. For security reasons, however, this application is put in a *Cowork* class only accessible to selected VIP users. This prevents non-authorized users to deploy their own workflow in the platform, which would be an important security leak. Platform admins ensure that members of the *Cowork* class can be trusted.

### 3 Conclusion

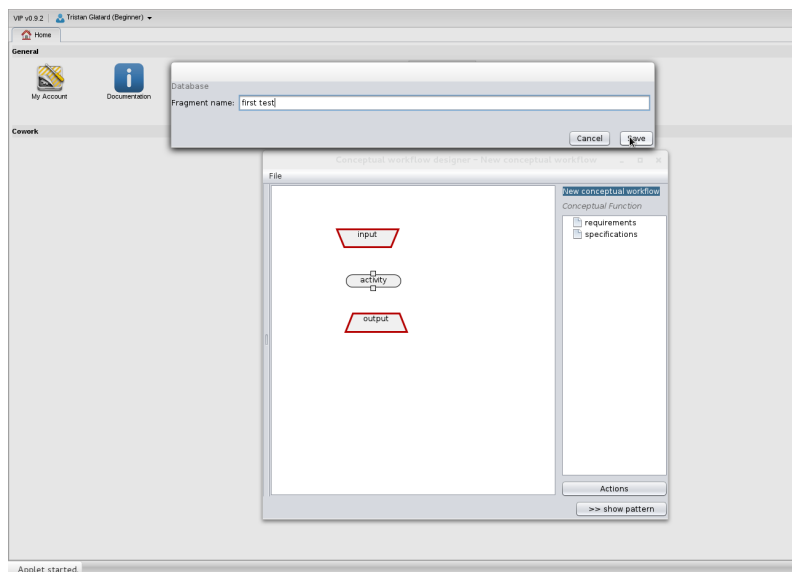
The Cowork workflow designer is available in the VIP portal deployed at <http://vip.creatis.insa-lyon.fr>. Login to the VIP portal is publicly available, but access to the Cowork group should be asked to the platform administrators. This integration facilitates the instantiation of conceptual workflows as Gwendia workflows executable in VIP. Cowork is a promising tool to facilitate the development of workflows for medical simulation. Practical experimentation is now possible with this tool in VIP.

### References

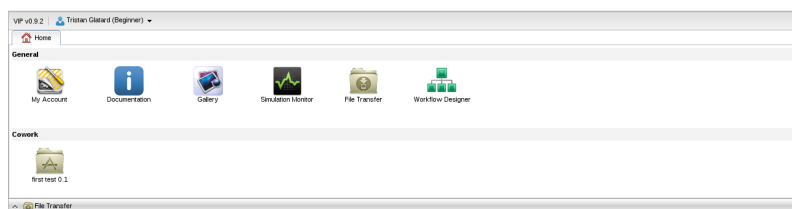
- [1] Nadia Cerezo and Johan Montagnat. Scientific Workflow Reuse through Conceptual Workflows. In *Proceedings of the 6th Workshop on Workflows in Support of Large-Scale Science*, WORKS’11, pages 1–10, Seattle, WA, USA, November 2011. ACM.
- [2] Johan Montagnat, Tristan Glatard, Damien Reimert, Ketan Maheshwari, Eddy Caron, and Frédéric Desprez. Workflow-based comparison of two Distributed Computing Infrastructures. In *5th Workshop on Workflows in Support of Large-Scale Science (WORKS’10)*, , pages 1–10, New Orleans, LA, USA, November 2010.



(a) Cowork application starting from VIP portal



(b) Conceptual workflow editing and saving in database



(c) Export to Gwendia and new application in the portal

Figure 2: Screenshots