REuse and Migration of legacy applications to Interoperable Cloud Services
REMICS
Small or Medium-scale Focused Research Project (STREP)
Project No. 257793

Deliverable D4.2

Remics Migrate Toolkit
Preliminary Release

Work Package 4

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Versioning and contribution history

Version	Description	Contributors
0.1	Initial outline (15-08-2011)	SOFTEAM
0.5	Version submitted for internal review (31-08-2011)	SOFTEAM
0.8	Review	Tecnalia
0.9	Review	Netfective
1.0	Final Version	SOFTEAM

Executive Summary

The **D.4.2 : REMICS Migrate Toolkit** is a product which represents a preliminary version of the Migrate Toolkit. This version is dedicated to demonstrate the feasibility of the methods developed in WP4. The toolkit will include the implementation of interoperability system between tools, the implementation of PIM4Cloud profile and a first version of knowledge discovery tool.

This document intends to comment on the D4.2 deliverable of REMICS. It provides a "getting started" guidelines for the prototypes developed within WP4 and gives instructions for tools installation, deployment and the first usage.

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1 Introduction

1.1 Purpose of this deliverable

This deliverable documents the initial prototypes of the Remics Migrate Toolkit. It focuses on "getting started" instructions, covering installation, example deployment and troubleshooting.

1.2 Structure of this document

This deliverable is structured in the following way:

- Chapter 1 provides an introduction;
- Chapter 2 provides descriptions of delivery content.
- Chapter 3 provides getting started guidelines for Modelio Modeler and Remics Migrate Toolkit.

1.3 Requirements traceability

This document presents the Remics Migrate Toolkit developed within WP4.

The Remics Migrate Toolkit tools are designed to edit models as proposed by the PIM4Cloud modelling language following the methodology outlined in D4.1 "REMICS PIM4Cloud SoaML extension".

Task T2.3: "Tool suite integration" focuses on integration of the required tools and component in order to build an integrated development environment. The Remics Migrate Toolkit integrates an exchange method of models based on XMI format.

The D4.2 includes a first implementation of architecture decomposition method defined in T3.3 : Component model recovery and T4.2 : Model Analysis and Architecture Decomposition.

2   Delivery content

2.1   Tool integration support

During recovery process, Softeam will be involved in creation of SoaML models out of models produced by **Netfective**. Setting up of communications protocol between BluAge and Modelio was our first priority.

Since Modelio and BluAge have tools dedicated to XMI import / export, we first chose this standard model exchange format.

*The **XML Metadata Interchange** (XMI) is an Object Management Group (OMG) standard for exchanging metadata information via Extensible Markup Language (XML).It can be used for any metadata whose metamodel can be expressed in Meta-Object Facility (MOF) but the most common use of XMI is as an interchange format for UML models.*
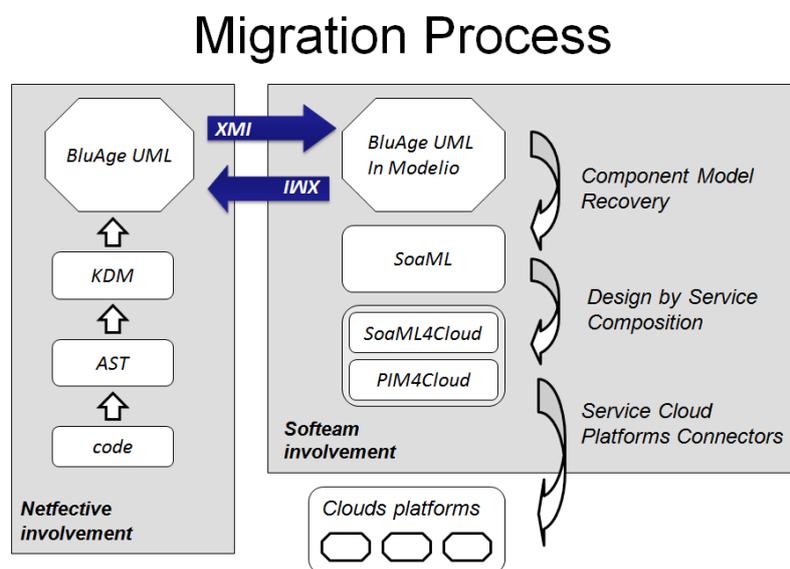

Figure 1 XMI-based communication in migration process

Unfortunately, although XMI is a standard, it appeared that Modelio and BluAge tools could not exchange models using this format. The inconsistency was that the UML meta model used by internal Modelio differed on several points with the UML metamodel used by BluAge. We solved this problem by developing a specialized XMI module to overcome these differences between meta models.

The **RemicsXMI** module is the result of the work of adapting the Modelio XMI standard module for use in the REMIX framework.

2.2   PIM4Cloud profile support

The PIM4Cloud profile is an extension of the OMG SoaML profile dedicated to the modelling of applications based on cloud computing at IaaS (Infrastructure as a Service) level. This deliverable includes a preliminary implementation of PIM4Cloud profile based on the specification issued in D4.1.

This implementation provides a set of PIM4Cloud stereotypes which allows modelling an application on the cloud computing platforms.

The profile is not currently tooled. The model is obtained by manually adding the required stereotypes onto a UML model. In a second step, we plan to add a set of controls and specialized diagrams to manipulate the PIM4Cloud profile concepts directly.

For more information on PIM4Cloud profile, you can refer to the document D4.1 - PIM4Cloud SoaML extension   and D4.1 - Application of PIM4Cloud profile to Modelio SaaS case studys.
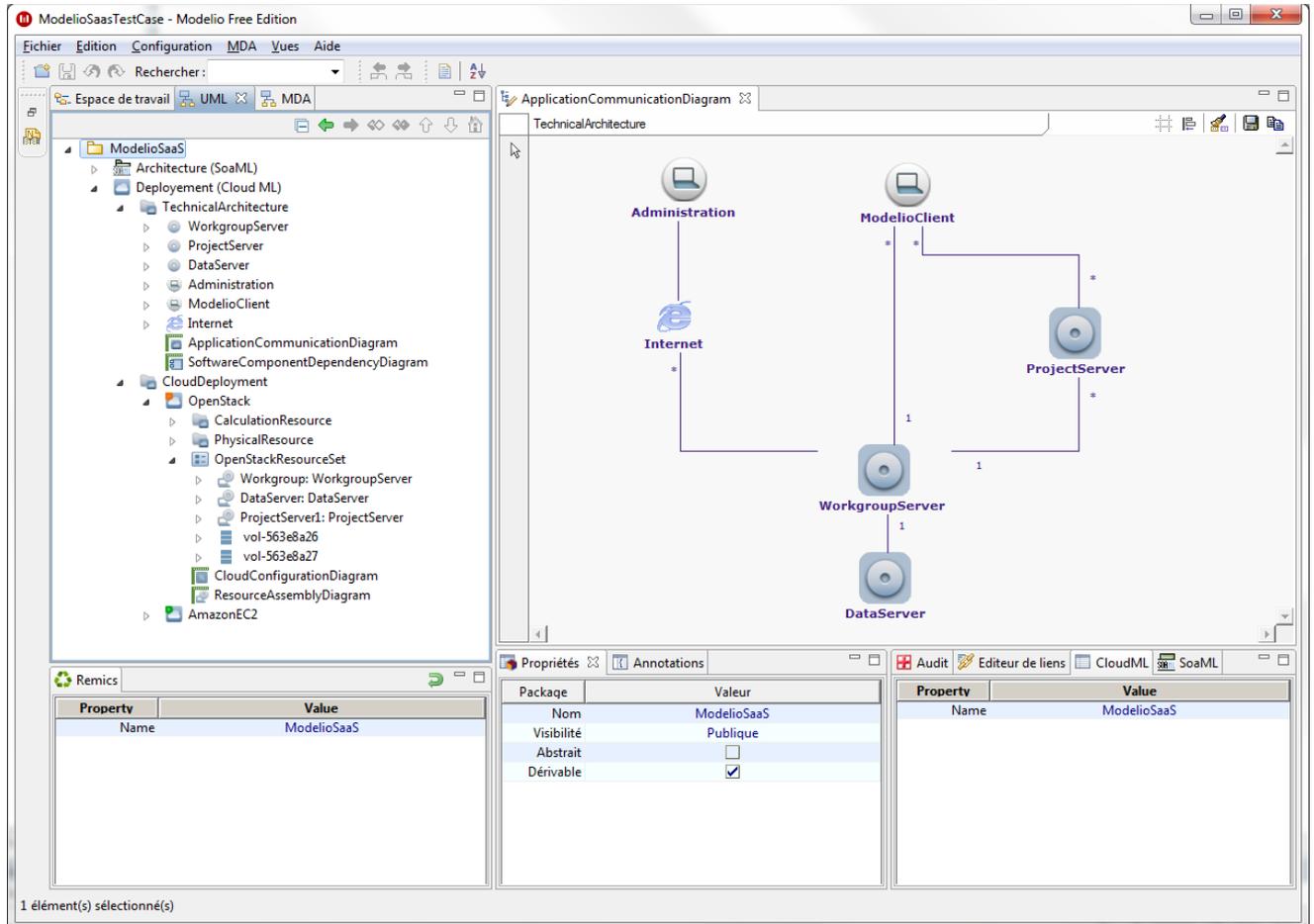
Figure 2 : PIM4Cloud profile in action with Modelio

The implementation of the PIM4Cloud profile is provided with the *PIM4Cloud Module* for Modelio.

2.3 Component model recovery

The T3.3 task requires the development of methods for SoaML components identification, discovery of their services, interfaces and dependencies. The discovered components will be stored as UML models from which SoaML models will be recovered for subsequent migration activities.

Remics Migrate Toolkit should provide a model transformation-based process to produce an UML model from a SoaML component model. The *RemicsEngine module* for Modelio was designed for that purpose.

3 Installation

3.1 Prerequisites

Modelio Modeler: Remics Migrate Toolkit needs the following prerequisites:

- ***Java Development Kit 6 available at:***
  http://www.oracle.com/technetwork/java/javase/downloads/jdk6-jsp-136632.html

- ***Modelio Free Edition v.1.2.1 available at:***

  http://www.modeliosoft.com

3.2 Packaging

Modelio Modeler: Remics Migrate Toolkit is built on top of top Modelio Free Edition v.1.2.1. The installer is available for Windows and Linux platforms.

The Modelio Modeler: Remics Migrate Toolkit is composed of the four following Modelio modules:

- ***RemicsXMI.jmdac***: Module dedicated to importing and exporting models to XMI format and specialized for Remics project.

- ***PIM4Cloud.jmdac***: Module providing support for PIM4Cloud profile.

- ***RemicsEngine.jmdac***: Module providing model transformation support and model analysis features.

- ***SoaMLDesigner.jmdac***: Module providing support for SoaML profile.

3.3 Installation instructions

The installation of the Modelio modeler is quite easy. It consists of three steps:

1.   Install JDK6

2.   Install Modelio Free edition v1.2.1;

3.   Download the four modules listed in 2.2 from

https://project.sintef.no/eRoom/informatics/ReMiCS/0_8ed1e

and store them in a dedicated system folder, for example `$ModelioIntallPath\mdastore\remics`.

3.4 Getting started

The goal of this section is to give you the main keys for using Modelio Modeller configured to Remics project.

3.4.1 Create and configure a new Remics project

This section will guide you to create a first remics project in modelio from scratch.

1. Launch Modelio and create a new project by using the command "*New project*" shown in Figure 3 or by using *File -> New Project*.
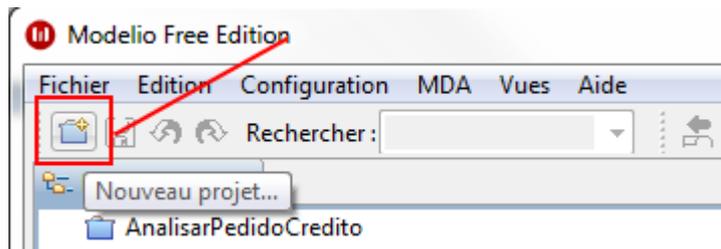
Figure 3 : create a new project with Modelio

2. The project wizard, depicted in **Error! Reference source not found.**, must appear. It allows you to specify various parameters for your future project such as its name, its description, or its type. A Remics project is a UML project along with the modules RemicsXMI, PIM4CloudPIM4Cloud,RemicsEngine and SoaML modules activated.
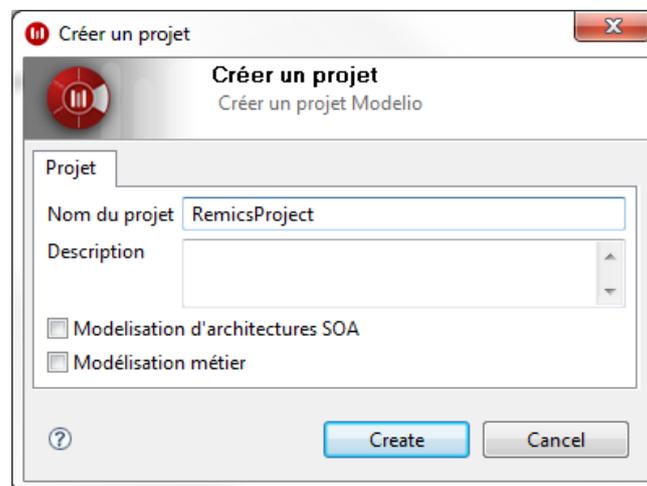

Figure 4 : project creation wizard

3. The modules **RemicsXMI**, **PIM4Cloud**, **RemicsEngine** and **SoaML** must be deployed within the current project. A module is deployed by using the command "*Install a module*" shown in Figure 5. Repeat the operation for all the four modules listed above.
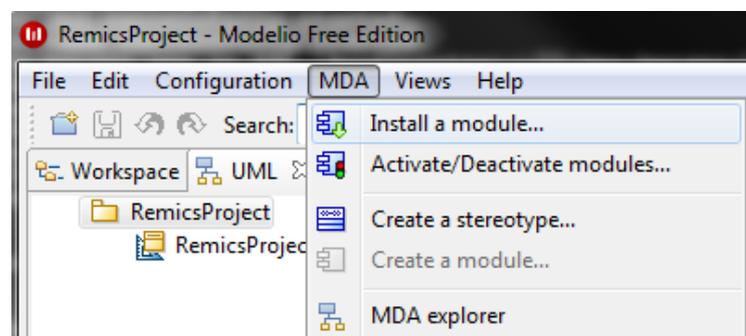

Figure 5 : menu command for module installation

3.4.2 Import a Remics model from BLU AGE

This section will guide you to import a model created by BluAge as input in Modelio.

1. The module **RemicsXMI** provides commands to import and export xmi model from BluAge. Importation is performed by using the command "*Import*" from RemicsXMI menu, as shown in Figure 6.
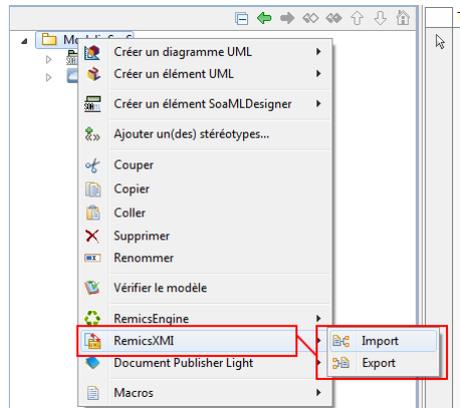

Figure 6 : menu commands for XMI exchange

2. Select the file to import and click on *Import* button. As illustrated by Figure 7, a progress dialog appears.
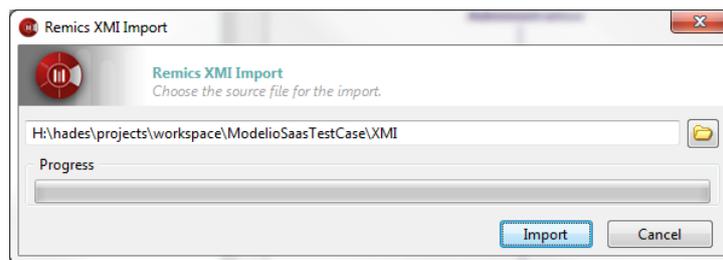

Figure 7 : import of a XMI model in progess

3.4.3 Apply the PIM4Cloud profile

The PIM4Cloud profile is not currently tooled. Consequently, a PIM4Cloud model is obtained by manually adding the required stereotypes onto a UML model, as explained below:

1. Create the corresponding UML element (e.g. a package in the case you want to create a VirtualImage)

2. Use the "Add Stereotype" command and select the "VirtualImage" stereotype (See Figure 8)
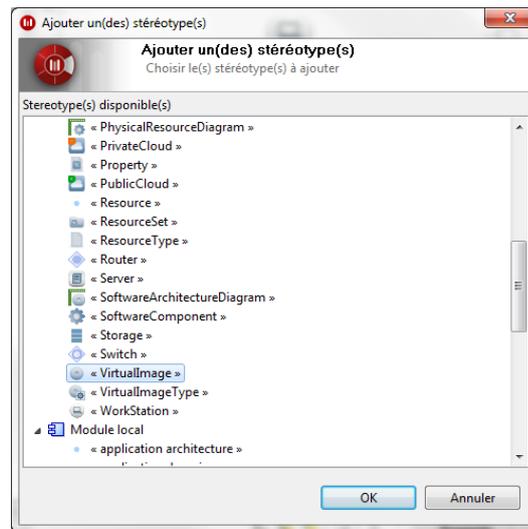
Figure 8 : stereotype selection command

3.4.4 Transform uml model to SoaML model

To transform a UML model into an SoaML model,use the " Transformation : UML to SoaML" command provided by the RemicsEngine menu.
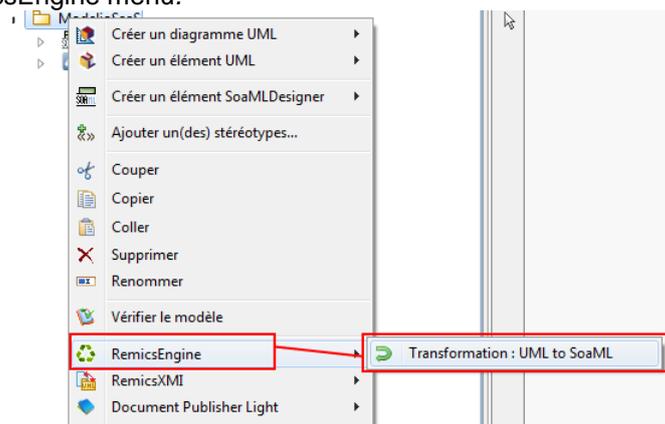

Figure 9 : UML to SoaML transformation command

3.5 Troubleshooting

In you encounter a problem please contact:

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