

# COVARM Project summary

Report for the JISC Reference Model Meeting 15 Sept 2005

Date: 24<sup>th</sup> August 2005

## Project summary

The COVARM project sets out to contribute a reference model for a “Course Validation” service to become a component of the the JISC eLearning Framework Programme. This project will produce a canonical process model, an information model, component service specifications and a proof of concept prototype.

Our computer-based description covers a basic validation processes with the ability also to handle the course validation processes required to support eLearning based foundation degrees. Course validation is a resource intensive activity and can require considerable inter and intra institution collaboration. The dissemination of the results of this project and adoption of the candidate reference model may be a significant contribution to reducing the resources required to support course validation.

Main deliverables expected:

1. **ELF Reference Model for the application domain of COURSE VALIDATION** comprising:
  2. An enterprise information model of concepts and relationships expressed as a UML Class Diagram and additional constraints in OCL.
  3. A model based specification of a canonical business process for new course validation expressed using Activity Diagrams from UML. Further, one of the emerging standards for process execution – BPEL4WS will be reviewed for potential use.
  4. Specifications of Services that fulfill the new course validation business process ( as abstract application programme interfaces - UML descriptions and WSDL); This will include identification and specification of services that are required from other components of the ELF (e.g. XCRI);
  5. Implementations of Services in either J2EE or .NET;
  6. XML data representation specifications conforming to the current ELF standards;
  7. **Proof of Concept Application** that provides an execution of the Course Validations business process utilizing the various services that fulfill the business process using either BPEL4WS or other technologies.

## Methodology

The general approach taken by the project will be based on three principal foundations. Firstly, an adapted version of Rational Unified Process (RUP) will be used to support the design / implementation of the services and the proof of concept application for the reference model. RUP will be adapted to support component based /service based principles of software architecture. A second foundation will be the use of a model driven architecture using UML 2.0 as the primary mechanism for defining and delivering models. The ELF and the general JISC strategy would appear to be predicated on the use of models. This project will enforce that approach and we will be using a model driven approach in a systematic manner to:

- represent the results of the analysis of various institutions;
- construct the canonical information requirements and business processes for the domain;
- define technology independent specifications of services;
- define XML data representations of the information consumed and produced by services;
- generate appropriate implementation models of the service specifications.

The third element will be an iterative approach to enable early outputs of deliverables for dissemination and review. This is particularly relevant to the technical deliverables. Iteration and early testing will allow the changes to specifications. A use case driven approach will enable us to scope requirements and the content for the iterations based on prioritized use cases.

## **Current Results**

So far, we have completed our analysis of the four institutions forming the information sources. Based on this analysis the following initial results are available.

1. Draft models of our understanding of the individual institutional business processes have been constructed.
2. Modelling has raised some of the following issues: Tool support for UML 2.0 is not ready; Rational Software Architect used and then tabled after several problems; XDE provides a more stable environment for business modelling; Modelling of business rules as constraints is burdensome and lacks modelling rigour with XDE;
3. There has been a very positive response from institutions whose enterprises have been modelled.
  - a. Staffs have indicated that this activity has raised some questions on their processes
  - b. Manchester and MMU want posters of the process!
  - c. TVU have expressed interest in the additional reporting that will be possible via tools hosted on the reference model
4. Various Process Patterns are emerging from the models – these have the potential to provide a tool palette approach to process execution.

We have also identified a conceptual approach to how different models may be synthesised. This and the above results in more detail are described in a paper we have submitted to a conference.

We have recruited our software engineer who has now set up the appropriate development environments ready to begin the design and implementation phase.

## **Next Steps**

We are currently working on the model synthesis and may have some further results in time for Sept 15. Work is also being done on developing the information models underpinning the process models. Once the synthesised process model is in place, we will be ready to begin describing the functional requirements of the application prototype using use cases.

## **Further Reading**

Much of the work we have currently done is described in detail in the paper submitted for publication and available to you via the COVARM web site:

<http://covarm.tvu.ac.uk/covarm>