

## FREMA e-learning Framework Reference Model for Assessment: **Who we are, what we've done and where we're going.**

FREMA is developing the reference model for the Assessment domain area. Web services in the assessment domain focus upon the creation, execution and recording of electronic assessments which are accessible across institutions and to the lifelong learner.

Frema is a 1 year collaboration between the Universities of Southampton, Strathclyde and Hull. This is the team <http://www.frema.ecs.soton.ac.uk/people/index.htm>

### **What we've done so far: Project initiation & reference model specification**

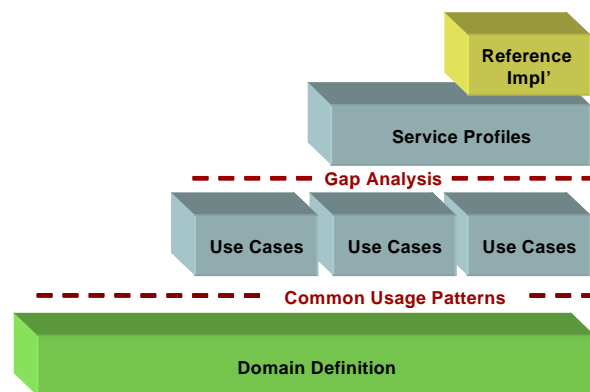
The size and complexity of the assessment domain means that for the reference model to be a usable community resource, the complexity must be hidden so that it is easy to locate resources within it and is accessible to a variety of users with different needs.

In fact our very first task was to work out what the reference model should be and how the e-learning community might use it.

The Frema project view is that in order to ensure usability, the reference model should be an evolving, dynamic, cross referenced, searchable web site. It should contain indexed resources and narrative descriptions of the domain, UML use cases and scenario documents, service profiles and service implementations for re-use. There should be different gateways into the model according to how a user may want to use it.

### **Anatomy of a Reference Model**

We defined a Service-Oriented Reference Model, SORM, as a series of layers, where each layer is smaller in scope but more concrete than the one below it.



**Domain Definition:** This layer is an overview of the domain that the reference model covers.

**Use Cases:** This layer formalises the usage patterns into use cases: formal descriptions of user activity in both diagrammatic and narrative form.

**Service Profiles:** This layer contains the descriptions of those services identified in the in the domain (both formal, e.g. in WSDL, and informal, e.g. written description), including those currently fulfilled by existing non-service-oriented software.

**Reference Implementation:** The most concrete layer is an actual reference implementation of the service profiles. Not all services will necessarily be implemented, and some may be wrappers around existing systems. The

implementations are exemplars that validate the service profiles and demonstrate interoperability.

Here is a link to a presentation about the FREMA Service Oriented Reference Model  
<http://www.frema.ecs.soton.ac.uk/publications/>

### **Navigating the FREMA Reference Model**

For the FREMA Assessment Reference Model we wanted to use a structure for the domain that could be used by human users of the model to orientate themselves and navigate around the resources. So we chose to create concept maps that described the domain in familiar terms, but which were not explicitly typed or restricted. Every resource in the reference model is associated with at least one concept. Users of the reference model can explore the maps and click through the concepts to the resources that are associated below.

In several consultation activities we visited potential reference model users at community events within the UK in an effort to extract common terms and perspectives on the assessment domain. The result was a concept map of resource types which are considered important within the assessment domain, and another concept map of the common processes.

Here's a link to a paper that will be presented at e-learn 2005, Vancouver.  
<http://www.frema.ecs.soton.ac.uk/publications/>

In summary, we have produced a domain definition that describes the scope of the Assessment domain and we have assembled a portfolio as evidence that gives an overview of current practices, processes and systems and standards. We have produced a web site which presents the reference model as a searchable knowledge base.

We will preview the web site at the briefing meeting and we are planning for it to go live to the assessment community very soon.

### **What we're working on at the moment: Work Package 2**

We are working on the higher levels of the FREMA SORM (Use cases and reference implementations of interoperating services) to continue to build the knowledge base.

In this first iteration of our development cycle, we are addressing a subset of the Assessment domain (expected to be around half). The particular portion is the more straightforward aspects of the Assessment domain area, where relevant Assessment services can be readily identified and related to the reference model, and which form a core identified from common usage patterns.

We are developing use cases that formally describe common usage patterns within our domain core. These will be coupled with narrative descriptions of the elements/actors and processes involved in the domain area and the ways in which they interact.

Based on these use cases a gap analysis will be undertaken. This is the process of mapping the Use Cases to atomic Web Services and identifying which ones are missing a definition. In some cases the functionality of the identified services will be encompassed by existing software systems, in which case the mapping will be

described. Not all use cases will necessarily be mapped. This analysis provides an initial table of service gaps in the e-Learning Framework, as well as an identification of the Assessment domain area services to be implemented.

A Service Profile will be produced for the Assessment domain area that describes the existing and new services in context and gives details of each service in terms of its functional scope, data and behaviour, and API. If new services are required for the Assessment domain area then they will be scoped, and their behaviour and data defined.

A proof of concept prototype will be designed and implemented based around the Assessment domain area core use cases and the Service Profile.

**Upcoming FREMA events:**

November, JISC/CETIS conference workshop, hands on use of the reference model knowledge base for the assessment community

December, Educa Berlin Reference Model Workshop

Our Project Website: <http://www.frema.ecs.soton.ac.uk/>