A WEB PORTAL BASED FRAMEWORK FOR THE INTEGRATION OF BUSINESS PROCESSES TO SUPPORT THE NETWORKED VIRTUAL UNIVERSITY

Miltos Petridis, Chaoying Ma, Liz Bacon and Gill Windall
Computer Science Department, University of Greenwich, Park Row, London SE10 9LS
{ M.Petridis, C.Ma, E.Bacon, G.F.Windall}@gre.ac.uk

Overview
This paper describes an approach aiming to provide a seamless integration of business processes and quality assurance systems across the Networked Virtual University. The approach adopted in this work is discussed and the proposed architecture based on a web portal based framework is described. An evaluation of the approach is provided through a simple case study showing the integration of heterogeneous quality assurance processes within the NTU. The limitations and challenges of this approach are presented and discussed in the context of ongoing work on this project.

1. The Networked Virtual University
The NVU provides a virtual web-centred integrated presence of a coalition of Higher Education Institutions aiming to provide a seamless and coherent e-learning service across geographic and education system boundaries. The concept of the Networked Virtual University emerges as a result backed by the rapid development of the Internet technologies. Networked means there are more than one HEI collaborating to face the new challenges. Virtual means that learning/teaching and related functions are made available through the Internet as well as through external workflows.

2. The proposed approach and Architecture
Early work within the mENU project showed that the main barrier to the effective integration of business processes within the NVU is related to the significant differences in standards, processes and culture between the various stakeholders. The differences are related to different semantic views related to:
- incompatible National standards – QA procedures
- Varying institutional business cultures
- Different Communities of Practice (administrators, educators, systems managers/developers, learners)

The architecture uses WS-BPEL (OASIS 2006) to achieve an orchestration of the workflows included in the integrated business process.

The evaluation of the exercise showed that the architecture is capable to support a business process of this complexity across partner institutions. However, the evaluation showed some weaknesses in the human interfaces of the process. This pointed to the relative weakness of BPEL in supporting human-centric business processes.

The effort of building this demonstrator, showed the challenges of interdisciplinary work necessary for the effective and flexible design and development of a NVU portal system. A number of different communities of practice (such as administrators, educators) are involved even in a relatively straightforward business process such as the exam moderation process presents an additional dimension of complexity that complicates further the efficient and flexible design of such systems.

Although effective system to system interfaces are easily designed and maintained, the system to people interfaces are more difficult to be designed and operated effectively. Extensions to BPEL, such as BPEL4P (BPEL for People) have been proposed to deal with the shortcomings of BPEL for People in this respect [IBM 2005].

3. The Portal Framework
A portal framework provides the infrastructure and tools for building portal sites regardless of their types. It contains the tools for aggregation, organization and presentation of information through a Web browser.

The user interface to a portal is a portal page, containing some number of portlets that users can arrange into columns and rows, minimize or maximize, or arrange to suit their individual workplace. Each portlet is a window into an application. A portal framework can define a default appearance for the portlets, and is responsible for intercepting and routing URL requests into specific portlets and for supporting navigation between or within portlets.

A portlet can be seen as a user-facing Web service. In addition a portal framework provides the infrastructure for handling common services across portlets.

4. An evaluation of the architecture and system
A typical NVU case study was considered. This is the set of processes involved in the setting and moderation of an exam paper. This involves the setter who sets the paper, the moderator who moderates the paper, the drafter who approves a paper and the external examiner and exams administrator. All these roles can operate across various systems, in different institutions and countries operating under different business and quality assurance processes. The set of workflows needs to be orchestrated and translated seamlessly across business process and cultural boundaries to achieve the overall goals of the exam setting process for the NVU.

The case study was tested on a NVU portlet-based system created at Greenwich using WS-BPEL standards.

Conclusions
The architecture and web portal based framework for the integration of workflows across incompatible business processes and culture, national standards and practices and quality assurance processes and standards has been presented.

An evaluation of the approach and architecture, based on a simple exam moderation process has been conducted showing the suitability of the approach for seamless systems integration within the NVU, but it was shown to be less effective in workflows involving direct human interaction. Further work is under way focusing on the BPEL extension BPEL4P to address this.

References:
IBM, SAP WS-BPEL Extension for People – BPEL4People White paper, 2005