

Computing Subject Group  
Thames Valley University  
Wellington St  
Slough  
SL1 1YG

21<sup>st</sup> November 2006

**Alice Colban**  
JISC Executive  
Northavon House  
Coldharbour Lane  
Bristol  
BS16 1QD

**RE: JISC Circular 4/06: Capital Call  
e-Learning: Call VII: Domain Maps**

Dear Alice Colban and Heather Williamson

I am pleased to submit a proposal entitled “**Programme Specification Domain Map (P-Spex)**” to the above call. The proposal documents submitted with this letter include:

- a) Completed cover sheet;
- b) The proposal document (10 pages);
- c) Letters of support from Thames Valley University, University of Manchester, Manchester Metropolitan University and UKOLN;
- d) Supporting appendices.

The project represents a substantial opportunity to build on previous collaborative work between these institutions (COVARM and XCRI).

Please do not hesitate to contact me for further information if required.

Yours sincerely



Professor Balbir S. Barn

balbir.barn@tvu.ac.uk

<b>Cover Sheet for Proposals</b> (All sections must be completed)	<b>JISC Capital Programme</b>
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<b>Name of Capital Programme:</b> e-Learning				
<b>Bid for Call:</b> (Please tick ONE BOX ONLY, as appropriate)				
<b>Supporting lifelong learning</b>				
<input type="checkbox"/>	<b>Call I – HE in FE</b>			
<b>Technical developments to support learning and teaching</b>				
	<b>Call II – Assessment</b> <input type="checkbox"/> a) Item Authoring Tool <input type="checkbox"/> b) Item Bank Software <input type="checkbox"/> c) Assessment Delivery Tool	<b>Call IV – Admissions demonstrators</b> <input type="checkbox"/> a) structured personal profiles, course entry profiles and pre-assessment; <input type="checkbox"/> b) improving applicant feedback; <input type="checkbox"/> c) accreditation of prior experiential learning; <input type="checkbox"/> d) e-portfolio based admissions.	<input type="checkbox"/>	<b>Call VI – Course validation</b>
<input type="checkbox"/>	<b>Call III – Technology supported learning environments</b>	<input type="checkbox"/>	<b>Call V – Course description and discovery</b>	<input checked="" type="checkbox"/> <b>Call VII – Domain maps</b>
<b>Name of Lead Institution:</b> Thames Valley University				
<b>Name of Proposed Project:</b> Programme Specification Domain Map (P-SPEX)				
<b>Name(s) of Project Partner(s):</b> Manchester Metropolitan University University of Manchester				
<b>Full Contact Details for Primary Contact:</b>				
<b>Name:</b>	Dr Balbir S. Barn			
<b>Position:</b>	Professor of Information Systems			
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<b>Tel:</b>	+44 1753 697699			
<b>Fax:</b>	+44 1753 697651			
<b>Length of Project:</b> 2 years				
<b>Project Start Date:</b> March 07		<b>Project End Date:</b> March 09		
<b>Total Funding Requested from JISC:</b>				
<b>Funding Broken Down over Financial Years (April – March):</b>				
<b>Apr06 – Mar07</b>	<b>Apr07 – Mar08</b>	<b>Apr08 – Mar09</b>		
£3136	£34504	£37340		

<b>Total Institutional Contributions:</b> £97260		
<b>Percentage Contributions over the Life of the Project:</b>	<b>JISC</b> 44%	<b>PARTNERS</b> 56%
<b>Outline Project Description</b>		
<p>As a result of the Dearing Report, the programme specification has been identified as the primary source of information for all stakeholders involved in designing and using programme specific information. However, the processes around programme specification production and usage (e.g. validation, marketing, timetabling) have highlighted issues such as lack of clarity of information required by different stakeholders, and in particular, the issue of configuration management (varying versions of programmes and modules available at different HE sites is especially intractable. What is required is a detailed understanding of how programme specifications can be better managed within the overall Curriculum Domain.</p> <p>This project will undertake a case study based analysis of the business domain impacting and containing all interactions with Programme Specification production and usage. The case study will be used to develop a Domain Map for Programme Specification. The Domain Map delivered from the project will include a variety of models, descriptions and implemented Java based services for submission to the E-Framework. The project will be delivered by an experienced team that have collaborated successfully in related areas (COVARM and XCRI).</p> <p>As a result of this project, substantive knowledge of the Curriculum and Programme Specification domain will be formalized together with exemplar software services to implement aspects of the domain. This particular domain map will provide essential information for HEIs as they seek to have a detailed, formal understanding of key administration areas in which they may be considering implementing process improvement programmes.</p>		
I have looked at the example FOI form at Appendix A and included an FOI form in the attached bid (Tick Box)	YES ✓ (App D)	NO
I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)	YES ✓	NO

## FOI Withheld Information Form

We would like JISC to consider withholding the following sections or paragraphs from disclosure should the contents of this proposal be requested under the Freedom of Information Act.

We acknowledge that the FOI Withheld Information Form is of indicative value only and that JISC may nevertheless be obliged to disclose this information in accordance with the requirements of the Act. We acknowledge that the final decision on disclosure rests with JISC.

NB: We do NOT wish to withhold information for this project.

Section / Paragraph No.	Relevant exemption from disclosure under FOI	Justification
NB: We do NOT wish to withhold information for this project.		

Please see <http://www.ico.gov.uk> for further information on the Freedom of Information Act and the exemptions to disclosure it contains.

# Program Specification Domain Map (P-SPEX)

## 1 Introduction

### 1.1 Background and Rationale

1. The Dearing Report documented the need for clear and explicit information for students so that students would be able to make informed choices about their studies and the level of study they should aim for. As a consequence it was envisaged that the Programme Specification (PS) would become the primary source of information for all stakeholders including students. Harrison<sup>1</sup> and Jackson<sup>2</sup> both identify how the PS can be used as a source of information by multiple stakeholders both internal and external. Internally, to an institution, the PS information is typically consumed by marketing, student records, finance (fees section), planning, and many other functional areas of institutions as well as by staff and students who manage selection and progression. This may be perceived as an ideal and there would appear to be different levels of integrative usage of PS information to support business administration functions.
2. As part of the COVARM project a detailed and intensive exploration of course validation and impact on wider institutional business processes was conducted within one university. The purpose of this investigation was to establish the extent of integration or lack of between the validation process and other business processes in the institution. The study highlighted problems relevant to this bid:
  - Quality assurance requirements on the course planning and delivery cycle impose challenges on the timing of traditional planning cycles so responsiveness to markets is impeded.
  - There is a lack of clarity about the audience for much information about courses. The prime example is the programme specification, but this also applies to such things as module descriptors.
  - As course information as become more complex, universities have faced challenges in joining information up to serve different systems and audiences.
3. The provision of accurate and timely information about the nature and delivery of courses to students is problematic. The example of students complaining that assessment patterns of modules had changed between selection and delivery is a common one across the sector.
4. The problem scenario captures some of the problems listed above:

#### **Example Problem Scenario**

5. At the "University of Walford", A five year review board meeting in April 2007 agrees a name change for a three year full-time programme to reflect revised module choices. The prospectus for 2007 entry was printed a long time ago and contains the old name, the prospectus for 2008 entry is with the printers for type-setting. Transition arrangement agreed at the review board identify a phased roll-out of the revised programme, year-by-year. First years starting in September 2007 will be surveyed to confirm that they accept the revised title and structure for the course to which they had applied; subject to that acceptance they will take the revised module diet from 2007 onwards. Second and third years in 2007 will be on the old scheme, with the old name and module diet. Special arrangements will be made for a handful of students who were first years in 06/07 who failed and are required to re-sit particular units in 07/08. Bologna transcript requirements mean that the university must be able to identify correctly the course and module titles that the student actually took. For the 07/08 academic session, there will be old and new course titles running concurrently - the student records system must be able to identify the correct version for each student. A model based only on course code, title and academic session would be insufficient, as level 1 is on the new title whereas levels 2 and 3 are on the old. For student repeating parts of courses the picture could be further complicated.

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<sup>1</sup> Harrison, M. (2000) "Creating programme specifications for different audiences", *Quality Assurance in Higher Education*, Vol. 8 No. 4, pp. 180-189.

<sup>2</sup> Jackson, N. J. (2000) "The concept of programme specification and its application in the new quality assurance framework", *Quality Assurance in Higher Education*, Vol. 8 No. 4, pp. 164-172

## 1.2 Proposed Work

6. This project will undertake a case study based analysis of the business domain impacting and containing all interactions with Programme Specification production and usage. The case study will be used to develop a Domain Map for Programme Specification and will include a variety of models, descriptions and implemented Java based services for submission to the E-Framework.

## 1.3 Project Dates

7. Start Date: March 2007

End Date: March 2009

## 1.4 Contribution to the Programme

8. This project makes the following contributions to the E-Learning Programme:
- This project formalizes and enhances significantly the joint work between the COVARM and XCRI projects to develop and substantiate knowledge of the Curriculum and Programme Specification domain and thus meets the JISC Programme goals of developing and piloting technical models required to support learning and teaching as well as building capacity across the sector.
  - This project will provide substantive experience of applying the JISC e-Framework strategy for understanding new domains and determining service specifications and requirements for interactions between domains.
  - The process of interacting with the e-Framework will provide strong evidence on the usability, applicability and possible limitations of the e-Framework. This consideration of e-Framework use within workplace environments is of interest to JISC members across the educational spectrum.
  - This particular domain map will provide essential information for HEIs as they seek to have a detailed, formal understanding of key administration areas in which they may be considering implementing process improvement programmes.

## 2 Project Description

### 2.1 Preamble

9. The heart of this project is the production of a Domain Map. Our proposal preparation process sought to define with some precision our interpretation of the concepts contained within Domain Maps originally described<sup>3</sup>. Here some key assumptions and assertions are made (details are in appendix B where a glossary and a conceptual model of Domain Maps is presented).
10. A Domain Map is a high level description of a domain – Higher Education is a domain – and Research, Administration and Teaching are examples of sub-domains contained in HE. Within these sub-domains, further sub-divisions are possible. For example Curriculum Management is that sub-domain that captures in its entirety, the range of activities that include, course / programme specification, teaching and learning strategies, award management, external examiner engagement, curriculum content and programme administration such as assessment design, verification and scrutiny. Clearly this is a significantly large domain in terms of coverage and functions. One detailed area of functionality that is of interest to the wider community is Programme Specification management, over the whole lifecycle of a programme.

### 2.2 Project Aims and Deliverables

11. This project aims to: ***Produce a Programme Specification Domain Map for Higher Education***

#### Objectives and Deliverables

12. Key deliverables and their contents are shown here:

1. Domain Map Elements described as a website using a semantic wiki - (see FREMA<sup>4</sup> for an example)

#### Deliverable:

- Domain Models: Including information about stakeholders
- High Level Functions (process centric descriptions)

<sup>3</sup> Olivier, B (2006) "Domain, Process and Service Usage Models". Document supplied as supporting material with the Capital Call.

<sup>4</sup> <http://www.frema.ecs.soton.ac.uk/db/>

- Information Model (UML and XML descriptions of domain data elements)
  - Two Functions elaborated as Business Process Model (BPM) descriptions captured using BPMN notation ( A candidate function is Programme Configuration Management)
  - Use Case Models scoped by the selected functions
  - Task Scenarios showing usage of the selected functions (captured in UML or other appropriate notation)
  - Service Descriptions of implemented services deriving from the selected functions
2. Proof of concept implementation of services such as “Programme Configuration Management” from the two functions.

**Deliverables:**

- Documentation as Service Usage Models
  - Submission of the Services to the e-Framework as Service Usage Model (SUMs)
  - Implementation conforming to JISC and Project quality standards and made available by open source license – likely to be JAVA based ReST or WSDL services.
3. Final Report

**Deliverables:**

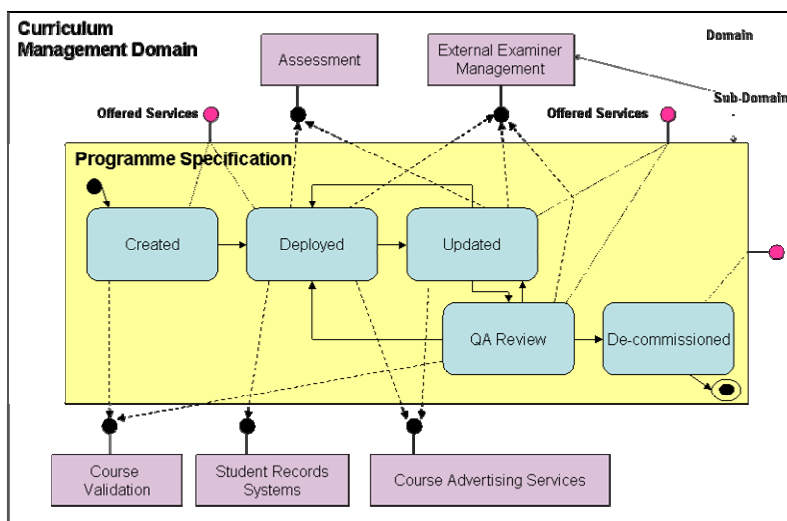
- Evaluation of organizational and technical issues arising during the development of the Domain Map
  - Evaluation of and contribution to the XCRI, COVARM and FREMA reference model projects
  - Recommendations to JISC on the e-Framework and related strategy
13. A note on the implementation: Programme/Course Management has the potential to be viewed as a conflation of two generic services in a specific context – workflow services and repository services with rules supplied from the context.

**2.3 Methodology**

14. This section describes in detail, the methodology we will be adopting to address delivery of the aims and objectives stated above.

**Conceptual Framework**

15. As already evidenced in the COVARM project – the design of courses is one of the core activities of an HEI. The outcome of this activity is a description of the Programme Specification (PS), aspects of which have been formalized in the XCRI project. Considering PS as part of a larger context – there are a number of domain maps and HEI systems where there is known need for collaboration and requirements for transfer of information. Details of this collaboration are captured in a Context Diagram.
16. The diagram below provides the conceptual framework, informing the methods and planned outputs, in which this project will be conducted.



**Figure 1 Conceptual Framework**

### The Curriculum Lifecycle

17. Modelling of the lifecycle of a product or service or concept provides a valuable insight into the functional and structural requirements (hence state modelling is a core element of many modelling notations and methods). This project will explore in detail the lifecycle of the Programme Specification Concept. (A candidate lifecycle is shown above). A PS Object (let's say PSO) is first created (as a result of activities from the course validation domain). It is then deployed into the institution (where modules forming the overall PSO are made available on the HEI VLE and students are enrolled on the PSO. Over time, the PSO will be regularly updated to meet new needs (e.g. mode of delivery; changes in modules; location changes etc.). Further, the PSO will be subject to institutional quality reviews and the PSO will eventually be de-commissioned.
18. State modelling provides a useful approach for understanding what functions are required by a system from external sources and functions that are offered by the system. Thus the diagram above serves to illustrate dependencies (i.e. requirements on services from external systems (shown by dashed lines to interfaces)) and also the services that are offered by the PS domain itself. These services correspond to the domain map functions.

### The JISC E-Framework and engaging with the Community

19. The project approach and outputs envisage close collaboration with and between the e-Framework architects since see the e-Framework strategy for utilizing a service oriented architecture to deliver e-Learning and other HEI technology based solutions as central to HEI future planning.
20. A key observation from the Reference Model projects funded over 2005-6 was the distinct contribution made by the FREMA project in the use of a Semantic WIKI to support community engagement and communication of key concepts of the Assessment Reference Model. Given the centrality of the PS to an HE institution we consider that the use of a Semantic WIKI to be particularly useful in allowing us to present concepts of the PS Domain Map at different levels of abstraction and in a form that is useful to the wider community.

### Methodology Steps

21. The characteristics of this project make it necessary to deploy a multi-faceted methodology.
22. A Case study approach to the problem is adopted as there are several examples in IS research where there is evidence that case study based methodologies are well suited for exploring business processes in an organisational setting (Huang et al 2005, Sedora et al 2003). We expect to explore in detail, two case study institutions that are likely to be from amongst the project partners. This will result in a detailed problem requirements definition as specified in the work packages.
23. For the production of Domain Map elements we expect to use a variety of adapted techniques previously deployed in the COVARM and XCRI Projects as they are relevant to this problem domain. COVARM utilised a formal UML /Rational Unified Process based approach to developing the COVARM reference model. Adaptations were made to support a service oriented architecture perspective and there was a considerable focus on business process modelling. XCRI utilized an



31. **Workpackage 4: Problem Requirements Definition:** This will involve the preparation and delivery of the analysis of the curriculum development domain. Work will include, identifying institutions, preparing access and conduction of the analysis via workshops and interviews. Early elements of the Domain Map deliverables such as Domain Models, Information Models and High Level Functions will be produced in draft mode.
32. **Workpackage 5: Configure Technical Architecture:** This will involve the selection and setting up of the software development environments including: software tools such as Eclipse, Rational Software Architect; Configuration Management and Build environments, Testing Frameworks. The package is expected to leverage experience from the COVARM project.
33. **Workpackage 6: Produce Domain Model:** This package will be led by TVU and will lead to the development of one of deliverables of the Domain Map. The Domain Model will include stakeholder analysis, high level functions and “As Is” and “To Be” process models (See footnote 3).
34. **Workpackage 7: Produce Domain Information Model:** This will be led by TVU and will focus on the production of an “implementation specific” data requirements for the domain. The model will be captured using UML and the package will include transformation into XML.
35. **Workpackage 8: Produce High Level Functions:** This will focus on the production of precise descriptions of high level functions (services/processes supported by the domain). The descriptions may be in the form of process maps or other model artefacts.
36. **Workpackage: 9-15: Iteration 1:** One of the functions identified in Workpackage 8 will be researched and modeled in detail. Scenarios of usage of the function will be developed, use case model views of the scenarios produced and more formal models of the services identified as part of the functional areas will be produced using model based tools such as Rational Software Architect. The services will be implemented using either REST or SOAP technology and Service Usage Models contributed to the E-Framework.
37. **Workpackage 16-22: Iteration 2:** As per the first iteration but for a second selected function.
38. **Workpackage 23: Produce Final Report:** This will involve the production of the final report and will include details: evaluation of our approach; organizational issues; use of XCRI, COVARM and FREMA outputs; and recommendations to JISC about the e-Framework.
39. **Workpackage 24: XCRI/COVARM Conformance:** This Workpackage will include detailed evaluation and cross-referencing to the two main previous projects contributing to this project. The outcomes of this package will be used to contribute evaluation information to the final report and to the two projects' websites.

## 2.5 Project Management

40. The project team will meet regularly to monitor progress across work packages, monitor and manage risks, agree changes and address major issues. Day to day project management will be coordinated by the project lead. The Project management Board will use a set of instruments for documentation and management that will be set out in the Project Plan but will include a Risk Register, a Quality Assurance Plan and an Issues Log.
41. Internal and external communications will be managed by a dedicated (external facing) website with an integrated Blog and Wiki to support internal requirements. This structure is based on the experience gained from the JISC funded COVARM project (<http://covarm.tvu.ac.uk/covarm>).

## 2.6 Standards

42. The software developed in this project will be Java based. The project will take a Service Oriented Architecture (SOA) approach. The services developed will be written in JAVA. Coding standards will be adopted to ensure readability, testability and installability. Code will be unit tested using Junit. The project will build upon existing specifications and standards from JISC, and other projects. In particular, it is expected to reference agreed standards such as SOAP and WSDL of the W3C. The outputs of this project will conform to published standards and guidelines.

## 2.7 Quality Management

43. The team already has experience of compliance with the JISC Software Quality Assurance Policy from the COVARM and XCRI projects and experience and practical techniques from earlier work will be transferred to this project to address issues of methodology, version and configuration management, and documentation guidelines. Quality management in this project will be addressed

by focusing on three aspects: Quality assurance; Quality Planning and Quality Control. This project will use the JISC guidelines on quality assurance and enhance them as appropriate.

44. The Quality Planning on this project will develop a quality plan at the start of the project. This plan will describe standards for document production (e.g. requirements specifications, the use of a project glossary; non-functional requirements). In addition, the plan will describe standards for process management such as: Version and configuration management for software development activities; Change management control; Requirements tracking; and guidance on use of specific tools (e.g. IBM Rational Rose Software Architect, IBM Requisite Pro, MS Project).
45. Quality Control on this project will include the use of quality reviews where the software, models and documentation will be reviewed by a subset of the team. Examples of such reviews will include design model reviews, code walkthroughs and elements of Xtreme programming (peer review). Other elements of quality control will include the regular maintenance of a risk register and issues log.

## 2.8 Sustainability

46. We anticipate that use of the FREMA style WIKI will provide an opportunity to sustain and enhance the Curriculum Development Domain Map beyond the lifetime of the project.
47. Sustainability of the code is produced by ensuring that other institutions have access to the code through appropriate open source licensing arrangements. Close collaboration with the e-Framework will ensure that specifications are readily available in a standard format. Finally the code will be given further life by being available for use by students at TVU through a mechanism already set up to allow students to engage in dissertations in service oriented architecture using services developed from JISC projects.

## 2.9 Dissemination

48. Dissemination of information and outcomes from the project activities will be achieved using a number of methods. Project findings and the developed system will be promoted through national and international forums, workshops, conferences, and JISC meetings. A Project Web site will be created at the start of the project and will contain current information on activities (a blog with Atom and RSS feeds), reports on the infrastructure, toolkit architecture and tools, and evaluation reports. Links to relevant articles and projects relating to the project will be added. Presentations and publications derived from project work will also be available on the site. The project consortium has considerable experience of dissemination via these routes as exemplified by the partners' involvement in previous JISC projects such as COVARM and XCRI.

## 2.10 Project Risks

Risk	Prob. (1-5)	Severity (1..5)	Score	Action to Prevent/Manage Risk
Project schedules slippage	4	2	8	Regular project management meetings and plan update; Use of virtual meetings (Skype)
Access to stakeholders	2	3	6	Widen set of institutions; widen potential stakeholders
Recruitment of Research Assistant on short term contract	2	3	6	Consider using internal resources \ expertise differently
Loss of key personnel	2	3	6	Ensure that there is overlap between roles
Project Team availability	3	2	6	Ensure that line managers of project team are aware of the project and the resource requirements throughout the project lifecycle.

## 2.11 Statement on IPR

49. The code will be published via the project website and made available under an appropriate open source agreement and may be used within any educational establishment in line with JISC's

requirements, as per the terms and conditions of JISC grants. The University and its partners will retain shared IPR on the learning content, the software artefacts, and associated documentation. This will be confirmed via a Consortium agreement for defining IPR arrangements that conforms to JISC requirements.

50. Sustainability of the code produced is through ensuring other institutions and JISC/CETIS projects have access to the code and documentation for the system, through LGPLM or GPL licences. All reports, tools and code from the project will remain on the project server for a minimum period of 3years and archived in an appropriate JISC repository.

## 2.12 Value to JISC and the HE Community

51. This project has the potential to make a significant impact in terms of value and strategy to JISC and to the wider HE community.
52. This project leverages experience and outputs from previously funded projects to provide significant value to JISC. COVARM and XCRI have already as part of their previous outputs began work on a unifying information model that goes across the two domains. This project formalizes that work and provides a singular opportunity to develop and substantiate knowledge of the curriculum domain from curriculum inception (COVARM) to deployment and usage (XCRI). The domain maps produced will make explicit additional areas that impact the already known areas of interaction.
53. This project will provide further substantive experience of applying the JISC e-Framework strategy for understanding new domains and determining service specifications and requirements between domains. The process of interacting with the e-Framework will provide strong evidence on the usability and applicability of the e-Framework. This consideration of e-Framework within workplace environments is of interest to JISC members across the educational spectrum. The e-Framework is expected to have a significant impact of HEI IT strategy – our contribution will enable HEIs evaluate the benefits of the e-Framework from the perspective of the HEI community.
54. Further, HEIs are increasingly recognizing the need to have a detailed, formal understanding of key administration areas as they look to process improvement and re-engineering programs by the introduction of IT support. The domain map work will provide useful data to those initiatives for example by providing evaluatory information to use in discussion with potential IT suppliers.

## 3 Budget

Directly Incurred Staff	Mar-07	April 07– March 08	April 08– March 09	TOTAL £
<b>Total Directly Incurred Staff (A)</b>	<b>2553</b>	<b>28087</b>	<b>30640</b>	<b>61280</b>
Non-Staff	Mar-07	April 07– March 08	April 08– March 09	TOTAL £

<b>Total Directly Incurred Non-Staff (B)</b>	<b>583</b>	<b>6417</b>	<b>6700</b>	<b>13700</b>
<b>Directly Incurred Total (A+B=C) (C)</b>	<b>3136</b>	<b>34504</b>	<b>37340</b>	<b>74980</b>
<b>Directly Allocated</b>	<b>Mar-07</b>	<b>April 07– March 08</b>	<b>April 08– March 09</b>	<b>TOTAL £</b>
<b>Directly Allocated Total (D)</b>	<b>1865.25</b>	<b>20521.75</b>	<b>22387</b>	<b>44774</b>
<b>Indirect Costs (E)</b>	<b>2187</b>	<b>24056</b>	<b>26243</b>	<b>52486</b>
<b>Total Project Cost (C+D+E)</b>	<b>7188</b>	<b>79082</b>	<b>85970</b>	<b>172240</b>
<b>Amount Requested from JISC</b>	<b>3136</b>	<b>34504</b>	<b>37340</b>	<b>74980</b>
<b>Institutional Contributions</b>	<b>4052</b>	<b>44578</b>	<b>48630</b>	<b>97260</b>
<b>Percentage Contributions over the life of the project</b>		<b>JISC</b>	<b>Partners</b>	<b>Total</b>
		<b>44%</b>	<b>56%</b>	<b>100%</b>

### Benefits to the Institutional Partners

55. The project is expected to benefits to TVU and the partner institutions in the following manner: Issues around programme specification maintenance as discussed earlier are pertinent to all the institutions involved. A project that provides a detailed examination of these issues will help by enabling a knowledge based strategy to resolve problems and issues. TVU for example, is already engaged in a review of administration functions supporting academic requirements. This work will provide valuable information that will contribute to that review.

56. The project scope and activities have a high level of correspondence to the research and professional interests of the team members. While this is difficult to quantify – it is clearly beneficial and is one of the reasons why the project proposal has been submitted.

#### 4 Why Us? - Key Personnel

57. The key to a successful project is a strong team with right blend of skills, knowledge and experience. This team is characterised by:

- **In-depth domain knowledge of the problem area:** Team members have played key roles at their respective institutions in the design and management of course curricula as heads of department; programme leaders and module leaders.
- **Technical skills:** A range of business and technical skills are important. The Domain Map section of the call requires extensive business analysis skills to ensure that information and process models of the problem area are appropriately captured. This team has extensive commercial and academic project experience in business analysis from an enterprise perspective. From a technical perspective, the team has detailed systematic knowledge of technical architecture, software development for service oriented architectures (both WSDL Services and REST based services), modelling (including the use of UML). This is evidenced by the software services that were implemented as part of the XCRI and COVARM projects. A key aspect of the domain maps is a detailed understanding of top level functions or processes within the domain. This team includes members that have been among the early users and developers of BPEL based processes and as a consequence the team has potentially critical knowledge of model based process definition. We anticipate making a significant contribution to the community in the area of Business Process Modelling and notations (BPMN).
- **Extensive experience of JISC and other projects:** All members of the team have previous experience of JISC projects (as project leaders and team members) that have included: COVARM (TVU), XCRI(MMU) and HORUS(Manchester). These projects have produced outputs which have had a strong influence on the current JISC Programme Call. We anticipate that this bid would have a similar impact.

58. When these attributes are combined with large scale project management experience (in both commercial and academic research contexts) and relevant Information Systems research skills, the quality and depth of the project team should provide JISC with an appropriate level of reassurance on the capability of the this team to deliver the outputs as stated.

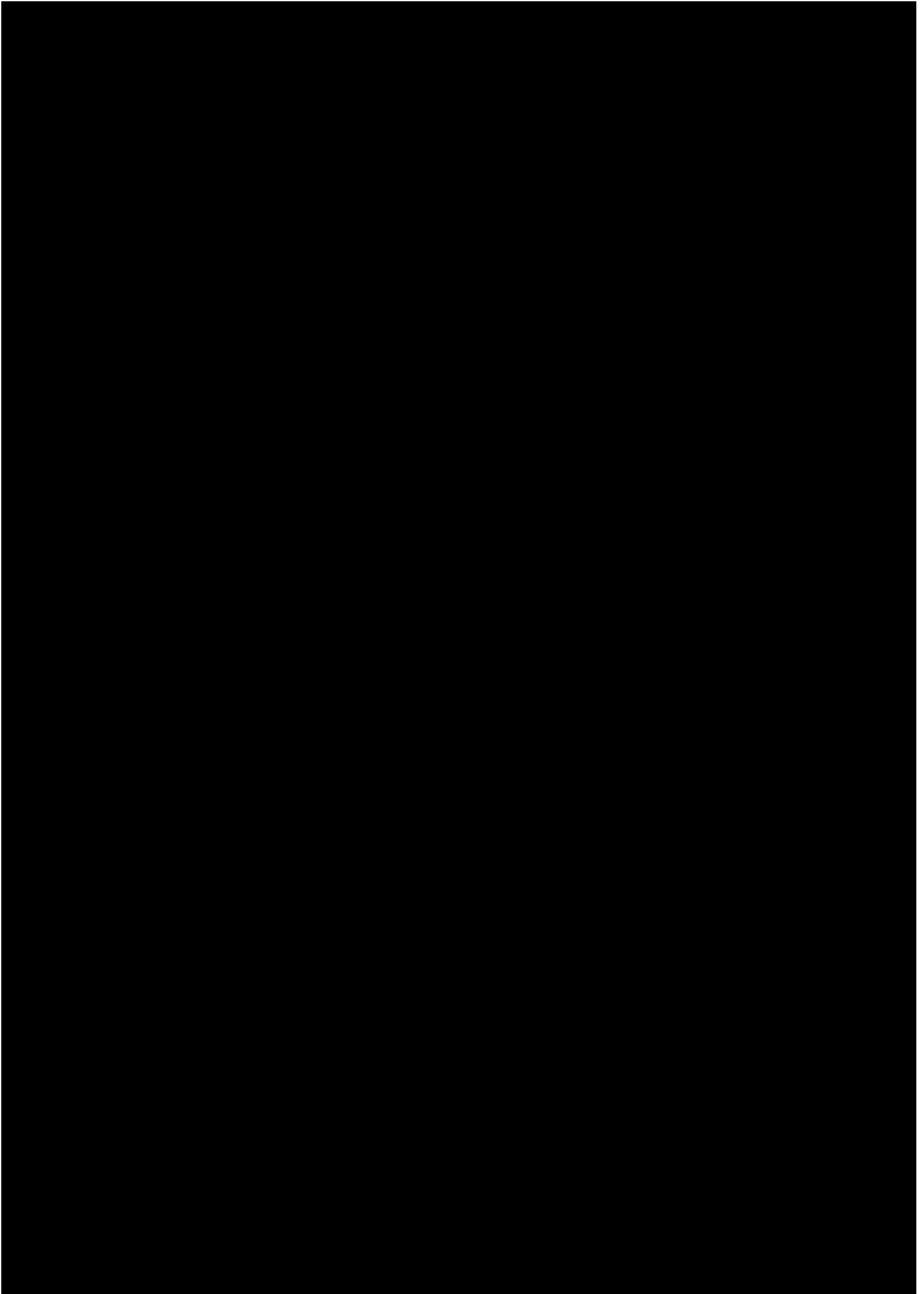
59. The team comprises the following individuals:

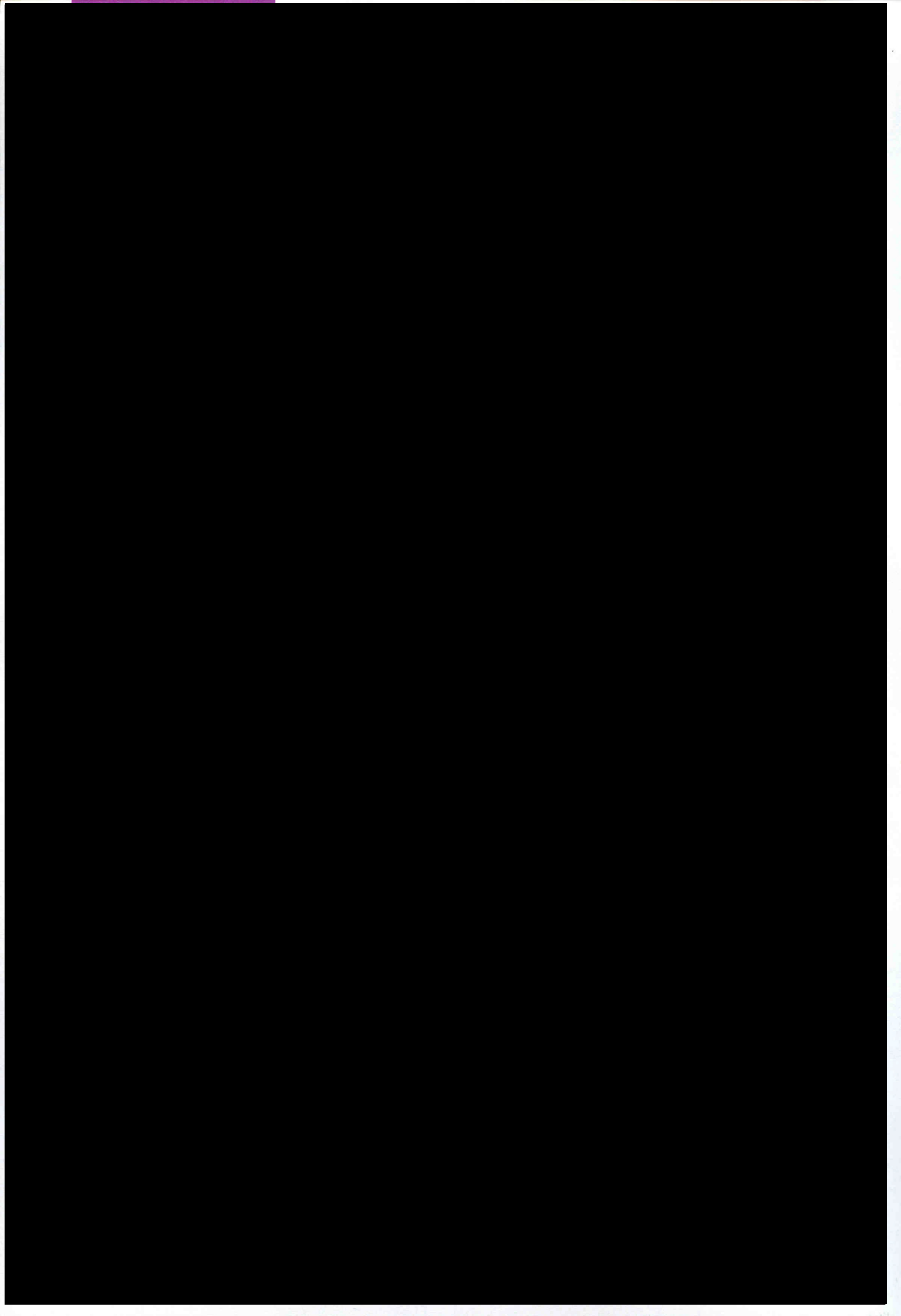
60. **TVU: Prof. Balbir S Barn (Project Management and Research Design and Analysis):** Balbir is currently the project lead on a JISC funded project – COVARM which explored processes and systems requirements for course validation. His research interests are in large scale systems development using service oriented architectures. Balbir has extensive industry consulting experience where he has led the development of a CRM strategy for a leading travel agent; re-engineered operational systems for BT amongst other major projects and also been the UK project lead on \$5M US NIST project.

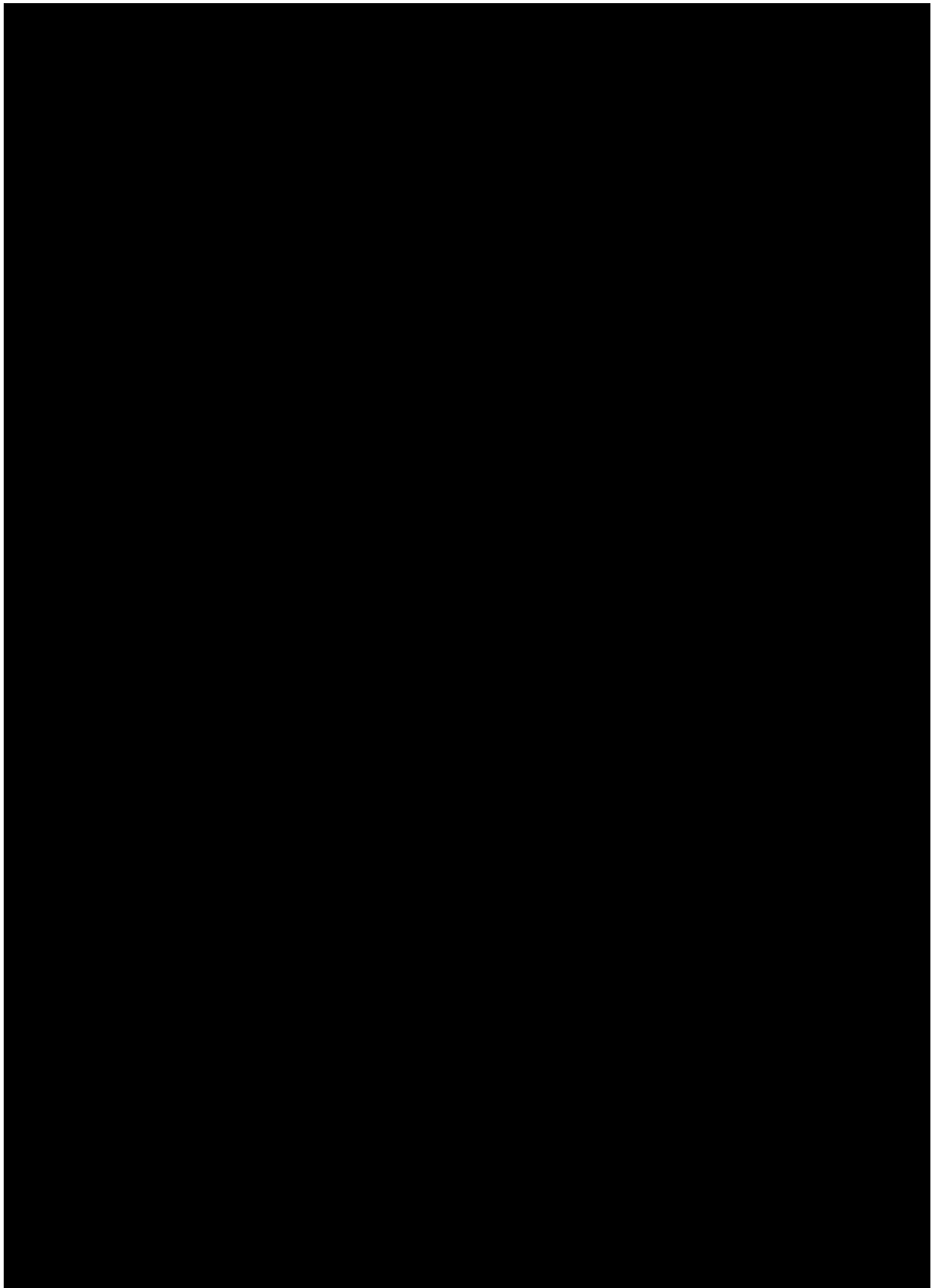
61. **MMU: Dr Mark Stubbs (Consultant and XCRI Liaison):** Mark is leading the JISC-funded XCRI project as it moves into national trials of its course advertising specification. He is also project manager for MMU's Managed Learning Environment project and on the steering group for MMU's new Student Record System. His research interests are in systems integration and technology-supported learning.

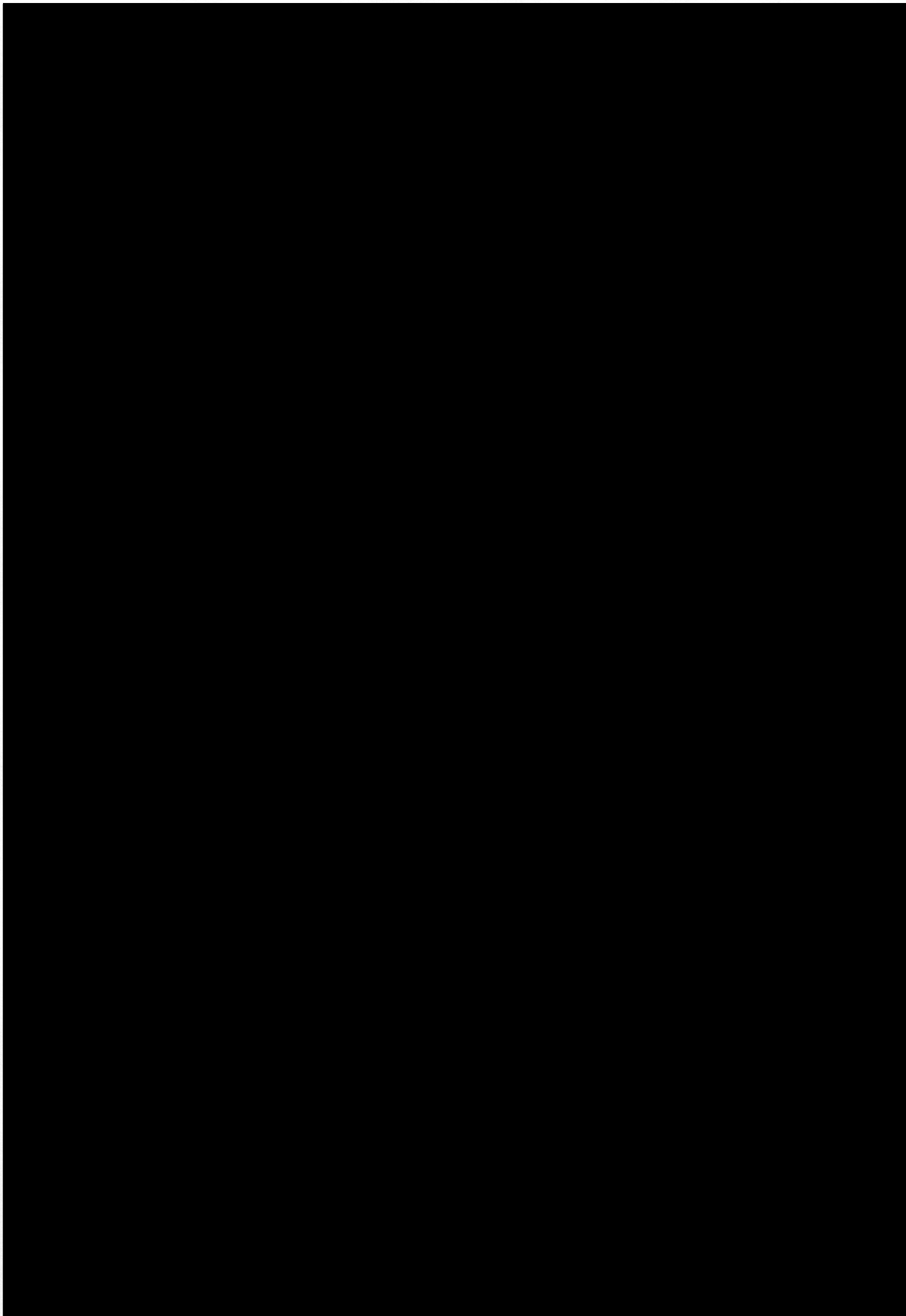
62. **TVU: Dr Samia Oussena (Design, Analysis and implementation):** Samia is a member of COVARM team, a JISC funded project where she led the BPEL specification and development of the two scenarios that are to be implemented in this project. Samia has an extensive industrial experience in software development. She has lead and been involved in a number of application development projects for the insurance and oil& gas sector.

63. **UoM: Dr Hilary Dexter (Business Consultant):** Hilary is currently a distributed learning advisor in the Teaching, Learning and Assessment Office of the University of Manchester. Hilary's research and development work focuses on supporting change management for process and practice improvement and the scaling up of e-learning service provision, employing a model driven approach.

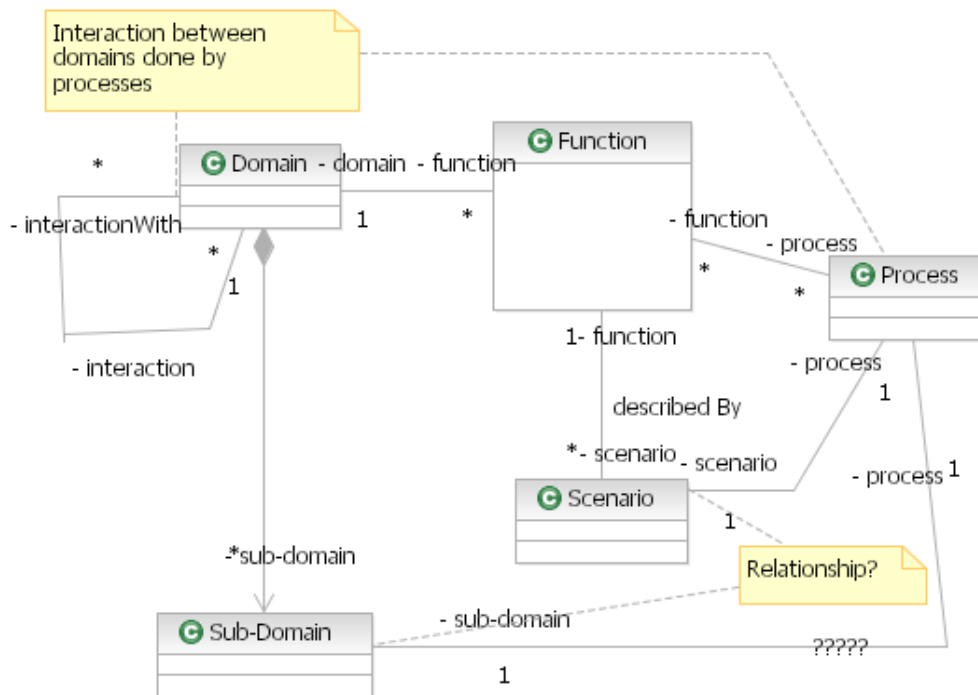








**Appendix B: Glossary and subset of metal model for capturing Domain Maps**



Term	Definition
Domain	<p>A coherent area of practice, as recognized by the practitioners within it and also by external stakeholders.</p> <p>Can be partitioned into smaller sub-domains.</p> <p>Domains are informally described by domain maps which may be refined into domain models – more formal descriptions of the domain.</p>
Domain Map	<p>An informal description of the characteristics that are typically used to conceptualize a domain: functions, information, processes, roles and stakeholders.</p>
Domain Model	<p>A refinement of a domain map that uses formal model notations to represent the informal descriptions. Examples of formal models include UML and BPMN.</p>
High Level Function	<p>The purpose/s or aims/s of the domain are carried out by a set of 'functions'. They may, at the top level, be mainly characterised by their outputs, i.e. <u>what</u> they produce or provide (product or service), rather than <u>how</u> these are achieved.</p>
Business Process	<p>A set of inter-related activities / tasks that are performed by stakeholders in an organization to meet the goals of a particular function.</p>
Business Process Model	<p>An articulation of a business process using a formal modeling notation such as BPMN.</p>
Use Case Model	<p>The collection of Uses Cases is referred to as a Use Case Model.</p>

Domain Scenario		A particular way of delivering a domain high level function.
Domain Model	Information	Typically there are domain specific information entities that are used by people working in a domain. The main focus of the Information Model is the entities about which information is commonly exchanged in the various applications and services that support the practices and processes. These entities can be defined and characterised and the relationships between them can also be modelled. At this level, it is important that the Domain Information Model defines the entities and their relationships in terms that practitioner understand.
Service Usage Model		The set of services that are pulled together and coordinated by a service oriented application are referred to as a Service Usage Model.
Service		A Web service is an interface that describes a collection of operations that are network accessible through standardized XML messaging. A Web service is described using a standard, formal XML notion, called its service description.
Interface aka Service Interface		The interface is the service description It covers all the details necessary to interact with the service, including message formats (that detail the operations), transport protocols and location. The interface hides the implementation details of the service, allowing it to be used independently of the hardware or software platform on which it is implemented and also independently of the programming language in which it is written.
Service Interface		See above
Service Specification Architecture		A model based description of the inter-service constraints required to "implement" an application architecture. The constraints are expressed as required interfaces and provided interfaces of a set of inter-connected services.
Reference Model		The term <i>reference model</i> is generally used to describe a set of technical recommendations, specifications and standards for a given application or application-domain. Here, it describes the constraints under which services are utilised.
Provided Interface		The set of operations offered by a service interface
Required Interface		The set of operations required by a service interface
Canonical Process	Business	A standardised model based description of a business process for a particular business need which has been developed by evaluation and inspection of several business processes.
Model Architecture	Driven	The MDA is a way of writing specifications and developing applications, based on a platform-independent model (PIM). A complete MDA specification consists of a definitive platform-independent base UML model, plus one or

more platform-specific models (PSM) and interface definition sets, each describing how the base model is implemented on a different middleware platform. A complete MDA application consists of a definitive PIM, plus one or more PSMs and complete implementations, one on each platform that the application developer decides to support.

