HeLMET final Report

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HeLMET (Horus eLearning Management Extension for Tutors)

Final Report

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Executive Summary

- This report provides an overview and findings of the JISC project HeLMET, delivered by the University of Manchester as part of the Users and Innovation Programme.

- The project set out to create an online system that services the needs of a group of disparate healthcare professionals involved in the delivery of the undergraduate medical curriculum at Manchester.

- The challenge lay in creating a system that would allow these users to contribute to an ongoing review of the medical curriculum whilst offering the chance to network and build an online community of practice.

- The aims of the project were broadly met, with the project team creating an online system called e-llaborate which offers social networking capability in a closed community, combined with collaborative reviewing and editing of documents in discreet group spaces, linked to task-related forums, chat rooms and resources.

- The project followed the UIDM approach to software development as required by the project funding, changing and adapting the elements of the model as required by the demands of the technology or the context. For example, the project went quickly into Stage 3 of UIDM, producing a basic prototype for users to test based on assumed need.

- The project team found many Web 2.0, open-source products lacked the functionality or reliability for professional, academic use. Many of the applications available have been built for social or non-business use and therefore lack the rigour or functionality required by our professional users. In the end the tool was created in Drupal.

- The project encountered problems with sourcing and integrating appropriate collaborative editing tools, until in the end it took the route of developing a bespoke module for Drupal which allows sophisticated editing.

- Creating a cohesive community of users also proved challenging and the project team changed its strategy mid-project to focus on community building activities outside of the online environment. These have been documented and built into the implementation plan for the tool as good practice.

- The project has generated a number of outputs, including the e-llaborate tool itself, and achieved a number of outcomes, including the creation of a community of medical educators and initiation of an online review of the medical curriculum. The project has also provided a significant contribution to the JISC e-Framework.
The e-laborate tool offers a working environment for any group or sub-group of a community and its potential use in the HE sector is enormous. The system is already being used for a number of uses beyond a review of the medical curriculum and is attracting interest from a number of national and international institutions and organisations, keen to use its unique set of features.

The University of Manchester are committed to offering e-laborate as an open source system which can be used and adapted by any other Institution, and is already piloting the system in two other Universities. The collaborative editor module will also be made available as a Drupal module and the project team aim to further enhance e-laborate if further funding can be secured.

The project concludes by offering nine key recommendations to future development projects:

1. Manage user expectation
2. Redesign UIDM to include risk assessment and configuration planning
3. Manage user demands and conflict resolution
4. Build online communities ‘offline’
5. Know and define your community
6. Build around a stable set of core functions
7. Don’t be tempted by ‘sexy technology’
8. More investment is required for interoperability standards of open-source material
9. More investment is required to develop a sophisticated collaborative editor

Background

The HeLMET (HORUS e-Learning Management Extension for Tutors) project arises from the need to connect geographically distributed stakeholders involved in the delivery of the undergraduate medical curriculum. The main focus of the project, and the primary users, are the medical teacher-practitioners involved in the delivery of the undergraduate medical curriculum. These are doctors, consultants and other professional healthcare workers who need to interact and participate in Faculty programme development but rarely do so due to competing demands on their time and geographical spread. Work-based tutors, such as this, are often loosely affiliated with Faculty and on dispersed sites beyond the HE/FE environment. However, the contribution of teacher-practitioners to curriculum development and other activities is a valuable asset to the awarding institution, and provides the additional benefit of assuring commitment of the remote partner to the outcome. Medicine, in particular, is a dynamic environment with an ever-increasing expansion in medical knowledge, service organisation and patient management. The teacher-practitioners are best-placed to help develop the curriculum to reflect current practice. The Quality and Assurance Agency (QAA) Code of Practice for the Assurance of Quality and Standards in Higher Education places strict quality assurance obligations on awarding institutions with regard to partners providing collaborative, work-based, placement and distance learning. In this context, engagement of dispersed tutors is crucial to ensure that the programme is delivered as specified and that standards are maintained for equity of experience for students. Such a large, widespread group can lead to disparity between teaching standards and curriculum delivery for students.

Hence, the proposed solution was to design and build a system which comprised of five component parts: a social networking manager, an ontology development tool, a semantic wiki, a collaborative document authoring tool and an interface to a portfolio. The five components were intended to work together to support cycles of discussion and collaborative document authoring in order to facilitate online curriculum review and development. Following any such review, pieces of the wiki content may be gathered together (harvested) to be made into a portfolio entry for any of the participants in the collaboration, allowing people to preserve their contributions. Other consultation/brainstorming activities could also be supported. The intention was that the developed system would help catalyse and support the development of the existing loose network of users into a fully functioning Community of Practice based on the
Communities of Practice concept (Wenger, 1998). The system hoped to engage the wider community in issues such as curriculum design, quality reviews and changes to practice.

By basing the intended solution on Web 2.0 technologies and using the UIDM approach, the project aimed to develop a system based on the needs of real end-users, which would help evolve practice and influence cultural change through adoption and embedding next generation technologies in the community. This directly addressed the requirements of the Users and Innovation Programme and by using a service oriented approach, would also support the e-Framework.

Aims and Objectives

The aims and objectives agreed at the start of the project were:

Project Aims

1. To deliver services to support collaborative working within distributed work-based communities of practice, leveraging the benefits of Web 2.0 technologies;

2. As an exemplar, to use the services to develop an on-line community of practice for distributed placement education supervisors (PES), and utilise the services to update the curriculum of the Manchester Medical School undergraduate Medicine programme.

Both these aims were achieved, though what isn’t clear from these general statements is the degree of success in achieving the stated aims and issues and challenges in achieving them. This, perhaps, becomes clearer when we examine the initial objectives agreed to achieve the aims.

Objectives

1. Using an agile development methodology, to develop an integrated SOA-compliant system comprising social networking and collaborative working modules, and to integrate the modules with the existing JISC-funded HeLM Teacher Portfolio services. (Month 10). This was achieved only in part, with the requirements to actually complete this particular objective in full changing as the project developed.

2. To use the system to demonstrate the update of the undergraduate Medicine curriculum. (Month 11) – This was achieved, and the developed system was used to demonstrate the update of the curriculum. However, the value of doing so, and the impact on how the project progressed is reported in subsequent sections.

3. To undertake change management activities to realise a distributed PES community of practice and achieve full-scale roll-out of the curriculum development system. (Month 14) – Again, this objective was achieved, but how that was achieved and the activities undertaking shifted significantly as the project evolved and the project team recognised the need of the users.

4. To evaluate the impact of the software system on collaborative development of curriculum within a distributed environment. (Month 14)

5. To evaluate the development and change management processes, within the context of the UIDM Stages 3 and 4 and the e-Learning Maturity Model (eMM). (Month 10-14) – These again were achieved, in full or in part, and the results of this evaluation are laid out in this report.

6. To disseminate and promote the project’s process and outputs to the JISC community and the national and international medical and education communities. (Month 3 onwards) – Achieved, with dissemination activities listed (Appendix 1)

7. To provide curriculum development domain information to the e-Framework semantic wiki. (Month 14) – Completed, and the e-framework submission completed.
Methodology and Implementation

Introduction

This, and subsequent sections of the report, have been structured to reflect the three main areas of work on the project. In this way we hope the reader can easily find the areas which are of interest to them and the report then properly represents the activities and findings which emerged as it progressed. The three themes are:

- The Users and Innovation Development Method (UIDM) – this will discuss how the project implemented this approach and the issues and challenges which emerged
- Web 2.0 and Collaborative editing technologies – this section will examine which technologies were both considered and rejected through the development of the system and the problems which were overcome in developing a stable system that reflected the needs of the user.
- Social Network and Communities of Practice – this section will cover the theories and practices which drove the development and emergence of our particularly online community and the implications of this for other sectors.

Within the context of the three themes outlined above, the report will also discuss the tensions which existed, or were generated, between the three key sets of actors on the project. The role of these actors, and in particular, the dynamics between them, played a significant part in how the project and its outputs developed. These were:

1. The ‘customers’ – these consisted of the Manchester Medical School managers, together with the representatives for the project partners. This group represented the key stakeholders who had, in effect, ‘commissioned’ the work and determined how the system should operate and what it could and could not provide to the community of tutors.
2. The ‘Users’ – represents the community of tutors and doctors who would be the end-users of the tool. They clearly had a key role within the implementation of a UIDM approach, where user evaluation plays a crucial part of the development process. The tool needed to be designed to meet the needs of these users and also enable the development of this group into a mature community of practice.
3. The ‘Project Team’ – the small group of individuals directly involved in the delivery and evaluation of the project itself.

There is clearly some overlap here, with some individuals residing in two or three of these groups, but the influence of these groups in how the project evolved can clearly be seen, and are referred to in the following sections.

UIDM

As part of the JISC Users and Innovation Programme, the project was committed to using the User Innovation and Development Model (UIDM) approach to develop the collaborative working environment deemed necessary to support the distributed community of educational supervisors (The Users). Using the templates and guidelines provided by JISC (Fowler 2007) a basic approach was planned and submitted as part of the project plan (see fig 1.) This describes the four stages of the UIDM approach as a UML diagram, identifying actors, activities and artefacts (outputs and inputs). The methodology chosen and described was based on a number of assumptions. These were, firstly that there was already a certain understanding of the users inherent in the stakeholders and domain experts directly involved in the project (described by Fowler (2007) as ‘intuitive understanding’); secondly that the project was primarily a ‘mashing’ of existing Web 2.0 applications and integration with existing tools to provide an intuitive, relevant system – i.e. there was to be no application development scripting; and thirdly that the project
team was to remain stable. Based on these assumptions and the UIDM guidelines, a series of activities that matched the chosen methodology were decided on.

Fig 1. UML model of the project workflow related to UIDM stages

The first stage of the UIDM model was planned to capture a set of user requirements for the tool from the users. In order to do this, a small group of end users were identified to attend the first requirements workshop. This enabled us to get an initial set of user requirements from a representative sample of users, rather than the more impossible task of consulting all 500+ users. The question was how to capture the
user requirements in this workshop? The UIDM guidelines suggest a range of techniques for this, but rather than abstract scenario planning or time-consuming observation, it was decided to build a basic prototype of the tool based on the assumption that we already had a relatively clear understanding of the users and their requirements at the start of the project. This was also done to provide users with a concrete example of what they may like to do and allowed the first group of users to visualise the potential of the tool and feedback their requirements more easily.

The output from this early test was an initial set of user requirements (Appendix 2). Based on this and in particular, the feedback on the collaborative author technology, a second iteration of the tool was developed by combining Zoho and Drupal (see section on Web 2.0 and project timeline – Appendix 3).

Hence, the project seemed to have moved quickly between Stage 1 and Stage 2 and 3 of the UIDM model, with new iterations of the tool of the being produced based on user feedback and no clear demarcation between the stages. The only ‘Stage 2’ output at this stage of the project was the set of User Requirements, which was used to direct and check the development, but was being amended and updated through further testing and feedback. It was only later in the project that a curriculum development domain model and ontology were produced as this wasn’t deemed vital to the development or success of the tool. There was no paper piloting of the system solution as advocated in the UIDM guide, but the project went straight to an early pilot based on a rapid prototyping approach.

This didn’t prevent the development from progressing and this second iteration was tested with the representative group of users who provided positive feedback. It was therefore decided to test this version with a larger group of users, via hospital based workshops and events, thereby gradually increasing the community of users. It was also decided that a small group of users should be given a test case to trial. In order to facilitate this, the project identified a leader from within the users for this first test case. The revision of the Families and Children’s module in the curriculum was chosen and the module leader approached to be group leader.

Through this testing in the hospitals and test case trial, it soon became apparent that Zoho was not reliable enough to meet the demands required. Although it provided the necessary features requested by users, the technology failed to work reliably and Zoho consistently caused frustration. A search for other suitable applications failed to find any open-source product with the sophistication required. It became clear that the team would need to develop a new application, in-house. The project was thus moving from a ‘mashing’ or integration project to a semi-scripted solution, placing more unexpected demands on the developer.

During this period, the project team consulted with Sarah Jones from Core Education UK about community building, which resulted in a change in emphasis for the project (See Community Building and Social Networking section). Based on this it was decided to create a stable version of the tool which abandoned any collaborative editor function, whilst the new one was scripted. Instead the system focussed on allowing the community to interact in a secure environment in order to build a community purpose. Hence, the project continued to cycle through stages three and four of the UIDM model, with small features being added and bugs fixed during the hiatus of the collaborative editor creation. This coincided with the summer break, resulting in a noticeable reduction in user activity and feedback, again raising questions about the timing and implementation of the UIDM approach.

Web 2.0 and Collaborative Authoring technologies

As stated above, the development of the system was based on the assumption that the technologies to create the system already existed as Web 2.0 applications, or as in-house systems, and that the completed solution would be created through the integration and reconfiguration of appropriate applications. Hence, initially the system development focussed on matching user requirements with appropriate applications that were both open-source or free to use and were stable and mature enough to cope with the demands of the users.
The central purpose of the new application was to “develop an online community of practice for distributed placement education supervisors (PES), and utilise the services to update the curriculum of the Manchester Medical School undergraduate Medicine programme.” (Project Plan, Mar 08). Hence, it was clear that there needed to be two key elements to the new system:

1. A networking feature which would allow users to interact and develop as a community
2. A collaborative authoring capability which would allow them to complete the specific task of curriculum development online.

The belief (of the Customers) was that by providing an environment for the community to complete a necessary task, this would cohere and catalyse this hitherto loose community. An Activity Theory based approach was adopted in order to capture current interactions of the group and help determine the best way of replicating this in an online environment. According to Sapsomboon et al (1997), collaborative authoring online consists of a set of acts or activities supported by effective communication between members. It therefore seemed appropriate to determine what the set of activities involved. Based on the Project Team’s and the Customers’ ‘inherent knowledge’ of the users and of the task required, we were able to identify a pattern of collaboration even before the individual activities within that pattern were identified, allowing us to assess prototype technologies suitable for development.

This first prototype was therefore based on the main purpose of the tool, i.e. collaborative authoring, and the predicted pattern for group authoring. This basic pattern of ‘review, edit, save’ indicated the use of a wiki, so a number of open-source wikis were compared using comparewikis.com. This showed that Dekiwiki was the only open-source product with the required set of features and an Open Source Maturity Model (OSMM) assessment of the product demonstrated its stability and relevance to the project. Dekiwiki had the usual wiki functionality of allowing users to edit and save revisions, as well as leave comments about their edits. It also had a WYSIWYG interface which allowed users to edit text without having to use any kind of syntax. An early prototype was therefore built using Dekiwiki.

The first workshop with the selected users identified a number of features that users felt were lacking from this prototype; mainly the ability to easily view where and how the document had previously been edited and by whom. This relates strongly to Sapsomboon et al’s (1997) work, which states that participants should be able to leave comments and directly modify or alter text, and be able to associate these comments directly with the relevant piece of text. They also agreed that the identity of the commenters and revisers should be clear. Users described this as having ‘something like track-changes in word’.

Based on this feedback, the project searched for another Web 2.0 application that would allow users to easily view edits and comments left by others. It soon became apparent that no truly open source product existed that would provide this sort of functionality in a synchronous environment. In the end the project decided to use Zoho Writer as a free to use, though not open source, product to deliver this central function. However, it was clear that this needed to be part of a larger system which would allow users to communicate and interact both as a group and in a wider community – i.e. a social networking facility. As Sapsomboon et al (1997) point out, the facility to communicate and share information in the group is key to collaboration. Hence a suitable system was sought.

During this period, the group leader for the first test case was identified and interviewed to identify the set of activities she expected to undertake with the group in order to complete a review of the curriculum. This resulted in a collaborative editing workflow (see fig 2.), which indicating that whatever system the collaborative editor was part of, it needed to be able to workflow the tasks to complete the review process.
Based on this need, Drupal was chosen to create the main framework for the tool, with Zoho writer embedded within this. Drupal is described as a Content Management Framework (CMF). That is, a Content Management System (CMS) which provides a modular, extensible, framework for building custom, community driven websites. A Drupal website can be built using existing, Open Source module components. If desired, custom modules can be written using the well documented Drupal API to provide extra functions, if an existing module from the vast Drupal development community does not satisfy requirements.
Drupal purports to sit somewhere between an abstract framework and set of tools geared toward specific functionality. Drupal is designed with abstraction in mind. For example, content within the system is treated as a collection of "nodes", an abstraction which can represent pages, blogs, forums, groups, etc. Upon these nodes a common (extensible) set of properties can be applied, such as user permissions, sharing, and menus. Along with this idea of proving extensible functionality via abstraction, Drupal's core modules are designed specifically for providing a social networking platform for a collaborative community. It provides an excellent platform for connecting components which support a distributed, collaborative community. The aforementioned features of Drupal, which appear not to be key design goals of other Content Management Systems, were found to be valuable strengths for supporting the requirements of our system.

**Community Development and Social Networking**

The purpose of the HeLMET project was to demonstrate that Social Software applications could be developed to support collaborative work through a variety of online communication and resource-sharing channels.

Social Software has the potential to support social interactions and collaborative knowledge construction with much greater emphasis on community than previous generations of software, which tended to be more task-orientated.

The project aimed to bring together online a widely geographically distributed group of doctors and consultants involved in medical student’s work-placed education, to address a need for curriculum reform. At its inception, the project identified that a Communities of Practice (Wenger, 1998) approach would be used to develop the curriculum review process from a non-participatory email-based process to a more involving Web interface-based model.

Stewart (1996) defines communities of practice as groups of people who have specific reasons to have an affinity. A community of practice can be an informal network where opinions and advice are exchanged and ideas generated. Membership is not exclusive, but often members are connected through exposure to a common class of problems, sharing a common pursuit of solutions. In doing so, they become a body of knowledge.

The central concept of social constructivism is that knowledge is shared and developed as a result of context and social interaction. This approach is particularly suitable to the use of Web 2.0 tools which can be used for the collaboration of doctors, who are working at diverse times and locations.

Inherent in this approach was the assumption that a Community of Practice already existed, the need for curriculum reform being a shared concern with active interest, motivation and understanding of the need to participate in the process.

During the early stages, the project team focused on rolling out a web-based toolset, relying principally on tool training to promote online engagement with tasks. This approach proved that simply installing a technical solution will not automate the process of community development, challenging the “build it and they will come” assumptions.

As the project developed, the project team identified that a wider set of stakeholder needs had to be considered before the review process transformation could take place.

To address the wider needs of the group, a new approach to engagement was taken by the project team. Networking events took the place of formal training sessions, representing a shift of our understanding of user needs from skills development to consensus building. Activities orientated around requirements capture shifted quite radically from a technology and process-orientated approach to refocus on
fundamental community issues such as membership, rules and scope. There was a clear need to establish value in the membership of and participation in a wider community.

The project began to focus on connecting the tacit networks and micro-communities together. Workshops were used to discuss value with participants, which identified thematic common concerns that provided social ‘glue’ with which to inform our engagement activities. These carried varying volumes of traffic, but there was a clear opportunity to exploit the connections.

**Outputs and Results**

The project outputs are described below:

**E-llaborate**

The main deliverable from the HeLMET project was the tool, e-llaborate. This tool, as described above, has been built in Drupal to provide a social networking based environment, which will support the activities of a community of practice. The community in this case is a group of clinical educators with an interest in networking, sharing good practice and collaborating on curriculum review. The use of UIDM inherently produces a tool that reflects the desires of these users. Hence e-llaborate is a closed system, viewable only to its members, with criteria for membership clearly defined.

The schema in Fig 3 represents the structure of e-llaborate.

![Figure 3. A representation of the structure and features of e-llaborate.](image)

Within e-llaborate, each member has their own profile which they can use to tell other members about themselves and their interests. They also have their own guestbook (similar to the Wall in Facebook) where other members can leave public messages. Members can make links to other users my creating ‘Friendships’ or ‘Associations’ which can then act as a means to communicate information. Members can post blogs, take part in forums and chat in a private and public chat rooms, all within the closed environment of the community. Within the community are a series of groups. Groups are established by members to carry out a specific task or discuss a given topic and are closed off from the rest of the community. Users are either invited into the group or request membership from the group leader. Each
group has its own blog page, forum and chat room, but the key focus of a group is the task. A task sets out the main activity of the group, e.g. the review of a document or the creation of an artefact, and is usually time-bound and workflowed. Within the task, the group leader can post any number of documents. Some of these will be non-editable resources to support the task, whilst others will be the documents to be reviewed or edited collaboratively by the group. These are placed in the system’s new collaborative editor, which allows members to comment on and edit single paragraphs of the text, with changes saved similar to ‘track changes’. The group leader can then view and add suitable changes based on members comments, using a prescribed workflow (see fig 2– workflow for collaborative editing)

A video, demonstrating how this tool works in practice can be found at: http://tewpl.manchester.ac.uk/ali/support/welcome.htm

Collaborative editor module

E-llaborate’s collaborative editor allows users within a group to work cooperatively on a single document, whether that might pertain to altering the body of text to align with individual opinion and eventually arriving at a group consensus or providing comments on existing revisions of that document.

To create a document users are required to enter their text into the site, the input format used can be plain text, HTML, or Word document format. The editor allows upload of documents, using Open Office to parse and strip the text of unnecessary format code. None of this is visible to the users, who simply upload the file using a file browser. When creating a task, users can also attach useful documents or other resources that may aid its completion, but without the facility for collaborative authoring. Users may also select whether they want to make a document public or private and select a time and end date if a deadline is desired.

Once the document has been created it will be available to other users in three views; normal, edit and history. The normal view provides users with the current version of the document. The edit view divides the document into paragraphs which can be selected individually. When a paragraph has been selected for review the paragraph editor box will open allowing users to make any alterations they wish to that particular selection. The paragraph editor also permits users to provide comments on that paragraph, view proposed changes to that paragraph made by other users or post replies to those proposed changes as well as view comments provided by other users; all of which help to foster a collaborative working environment.

The edit view also features the paragraph tree in which all of the tasks proposed changes can be viewed along with which user made them and when is a clear and easily digestible format.

The history view provides a more detailed background of all of the document's versions with a list of revisions made, the content of those revisions and any other comments provided.

A fourth, moderator view is available to the group creator. The collaborative authoring process is reliant upon a group moderator to approve or reject the proposed revisions made by other users in line with the overall consensus of the group. When all revisions have been approved or rejected by the moderator, a new version of the document can be created. At this point the document is finalised or a new cycle of editing can begin.

The editor itself is part of the ellaborate module which is a plug-in to the Drupal content management system. A document entered using the upload feature is converted into XML and stored in Drupal's MySQL database. Subsequent revisions, versions and comments are stored in the database. These can then be accessed by the collaborative editor's edit view which is an AJAX interface allowing fast response times and ease of use.
A video showing a demonstration of the editor can be found at: http://tewpl.manchester.ac.uk/ali/support/tasks2.htm

**Sustainability Plan**

In order for e-llaborate to be maintained beyond the project funding, both within the Manchester Medical School and beyond, it needs to be supported and funded as a mainstream application. To facilitate this adoption and implementation of e-llaborate, a ‘sustainability plan’, has been created for the senior managers in Medicine to enable the continued support of the system beyond project funding. This is essentially a resource plan laying out the benefits of, and requirements for, implementation and embedding the system. This plan is intended for use by any institution to help determine whether e-llaborate fulfils its own requirements and a plan for subsequent implementation. The plan is attached (Appendix 4).

**HelMET process and concepts**

A potentially useful output from our activities in the UIDM process for e-llaborate is a ‘picture’ of the worlds of social networking and collaborative authoring. To create this picture we considered the following areas:

- Concepts of social networking
- Concepts of collaborative authoring
- Linking to other ontologies such as FOAF for social networking

In addition we mapped the issues which arose from following the UIDM method for developing e-llaborate and the potential created by combining the collaborative authoring and social networking aspects.

The topic map produced provides a navigable view of what has been done during the HelMET project and provides pointers to the issues encountered and some resources for further investigation. The top level of the topic map is given in Figure 4 below. The full topic map is provided in Appendix 5.

![Figure 4. Topic map (top level) for the HelMET project](image)

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HeLMET e-Framework outputs

A workshop to collect the outputs from the UIDM projects for the e-Framework contextual layer, Innovation Base, was delivered by JISC, in December 2008. This involved identifying and giving a brief description of the following elements:

*Project, Domain, Organisation, Motivation, Benefits, Role, Work, Artefacts, Rule, Service.*

<table>
<thead>
<tr>
<th>Element</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefact</td>
<td><strong>Roles</strong> use <strong>Artefacts</strong> (resources) to perform <strong>Work</strong>, and produce <strong>Artefacts</strong> (deliverables/outputs) in the course of performing <strong>Work</strong>.</td>
</tr>
<tr>
<td>Domain</td>
<td>A sphere of activity, concern, or function.</td>
</tr>
<tr>
<td>Motivation</td>
<td><strong>Motivation</strong> is the set of reasons that leads an organisation (roles in the organisation which decide and manage activities) to engage in a particular behaviour. It encompasses goals, aims, objectives, benefits and strategy.</td>
</tr>
<tr>
<td>Organisation</td>
<td>A company, corporation, firm, enterprise or institution, or part thereof (whether incorporated or not, public or private) that has its own function(s) and administration and supplies products or services.</td>
</tr>
<tr>
<td>Project</td>
<td>A <strong>Project</strong> is a discrete thing that is resourced, has purpose or goals and a timeframe.</td>
</tr>
<tr>
<td>Role</td>
<td>A <strong>Role</strong> defines the behaviour and responsibilities of an individual (person), or a set of individuals working together as a team, within the context of an <strong>Organisation</strong>.</td>
</tr>
<tr>
<td>Rule</td>
<td><strong>Rules</strong> define specific constraints that must be satisfied. <strong>Rules</strong> may apply always (in which case they are called invariants) or only under a specific condition. If the condition occurs, the rule becomes valid, and must therefore be complied with.</td>
</tr>
<tr>
<td>Service</td>
<td>A <strong>service</strong> is an implementation of a function or activity. A service has meaningful business value and is aligned with the concept of a ‘unit of work’.</td>
</tr>
<tr>
<td>Work</td>
<td>The activities carried out by <strong>roles</strong> as part of their responsibilities.</td>
</tr>
</tbody>
</table>

Innovation Base bridges to the e-Framework with the following elements:

*Service Description, Service Trigger, Service Implementation, Entities Changed, Link to Work, Link to SUMs*

- Service Description: *What the service does – its function. NOT how it does it. Services can be assemblies of services or service components*
- Service Trigger: *What event or trigger causes the service to come into operation?*
- Service Implementation: *Is the service a new one to be coded in software; or an existing service from a website or repository; or a people service rather than a software service?*
- Entities Changed: *What is the impact or change brought about by a service? What things are affected by it? What data changes?*
- Link to Work: *What work (processes, activities, tasks, workflow) is supported by the service?*
- Link to SUM: *Which SUM in the e-Framework will describe this service or refer to this service?*
HeLMET produces the following content for these elements:

<table>
<thead>
<tr>
<th>Element</th>
<th>HeLMET instance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain</strong>&lt;br&gt;Topic, area of interest, discipline, environment</td>
<td>Our Case is: Medical Education:- curriculum development and maintenance&lt;br&gt;More generally: collaborative authoring</td>
</tr>
<tr>
<td><strong>Organisation</strong>&lt;br&gt;HEI, faculty, school, company, ad hoc e.g. EU project</td>
<td>Our Organisations involved are: Manchester Medical School, teaching hospitals and the NHS&lt;br&gt;Central Manchester and Manchester Children's University Hospitals NHS Trust&lt;br&gt;Salford Royal NHS Foundation Trust&lt;br&gt;University Hospital of South Manchester NHS Foundation Trust&lt;br&gt;Lancashire Teaching Hospitals NHS Foundation Trust&lt;br&gt;More generally: Any academic unit with a need to support online collaboration</td>
</tr>
<tr>
<td><strong>Motivation</strong>&lt;br&gt;Goals, Mission, Vision, Benefits, Aims, Objectives</td>
<td>Our tutors are spread over a wide area. They are very busy people. Getting together to work on curriculum review is difficult so few people really get involved. This leads to a drift of the teaching hospitals away from the curriculum as designed within the university. The goal is to get a lot more clinical tutors involved in working together in developing and maintaining the curriculum. More generally: improve quality by supporting collaboration&lt;br&gt;Benefits:&lt;br&gt;Higher quality curriculum content&lt;br&gt;Time Saving (no email mish mash)&lt;br&gt;Atmosphere of collaboration and ‘belonging’ to a community with shared concerns and interests&lt;br&gt;Exchange of information between practitioners&lt;br&gt;Sense of ownership of the curriculum&lt;br&gt;More generally: community, shared practice, quality outputs</td>
</tr>
<tr>
<td><strong>Role</strong>&lt;br&gt;Set of responsibilities, position, job title, behaviour</td>
<td>Our community of practice is the that of clinical (placement education supervisors) and academic staff who are involved in the development and maintenance of the medical curriculum. Student input will also play a part</td>
</tr>
<tr>
<td><strong>Work</strong>&lt;br&gt;Activity, process, workflow, task, practice</td>
<td>consultation phase of the update of the undergraduate medical curriculum&lt;br&gt;capture appropriate pieces of any collaboration for future personal development –teacher portfolio&lt;br&gt;The business processes for MMS: maintain curriculum&lt;br&gt;More generally: iterative consultation and refinement of documents</td>
</tr>
<tr>
<td><strong>Artefact</strong>&lt;br&gt;things in the domain, resources, outputs, documents</td>
<td>Index Clinical Situation docs&lt;br&gt;GMC doc&lt;br&gt;Programme specification&lt;br&gt;Research papers&lt;br&gt;PBL Cases and their tutor notes&lt;br&gt;CoP&lt;br&gt;Social network&lt;br&gt;The project delivers a tool: e-llaborate&lt;br&gt;Technology here does:</td>
</tr>
<tr>
<td>Element</td>
<td>HeLMET instance</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| **IT infrastructure** | ✓ Store knowledge / information / data (database, knowledgebase, spreadsheet…)  
✓ Enable communication (email, voip, phone, fax…)  
✓ Facilitate collaboration and community (social networks, online meetings, shared space, virtual worlds…)  
✓ Provide collaborative authoring  
✓ Develop ontology |

<table>
<thead>
<tr>
<th>Rule</th>
<th>Policy, standards, guideline, procedure, business rule</th>
</tr>
</thead>
</table>
| Ensure privacy for the working group – manage authorisation  
Define group managers who control membership  
Set editing etiquette – agreed rules about text deletion and what requires comment  
Open standards in the software development |

<table>
<thead>
<tr>
<th>Service</th>
<th>Specification or implementation of a function or activity</th>
</tr>
</thead>
</table>
| The service is called: “e-llaborate: community, consultation and collaborative authoring”  
It will manage groups, the members’ interactions, tasks for the members, workflow, documents for use in tasks, collaborative authoring, harvesting of contributions for portfolio |

<table>
<thead>
<tr>
<th>Service Description</th>
<th>“e-llaborate: community, consultation and collaborative authoring”</th>
</tr>
</thead>
</table>
| ✓ Manage groups – membership and authorisation  
✓ Provide social networking: wiki, blog, calendar, chat  
✓ Manage tasks and workflow for group  
✓ Manage documents for reference during consultation  
✓ Manage iterative, collaborative authoring  
✓ Allow harvesting of contributions for portfolio  
✓ Create domain knowledgebase |

<table>
<thead>
<tr>
<th>Service Trigger</th>
<th>What event or trigger causes the service to come into operation?</th>
</tr>
</thead>
</table>
| 1. Annual review cycle  
2. New directive from GMC or other external body  
3. Student feedback |

<table>
<thead>
<tr>
<th>Service Implementation</th>
<th>Is the service a new one to be coded in software; or an existing service from a website or repository; or a people service rather than a software service?</th>
</tr>
</thead>
</table>
| Combination of existing software components and existing tools.  
Social networking from Drupal (integration of many Drupal components and parameter setting within Drupal). Collaborative authoring written by e-llaborate team, having ruled out the use of Zoho.  
Ontology in OWL using Protégé to be viewed through the InnovationBase.  
Integration with HeLM portfolio as POC interface to be written by e-llaborate team |

| Entities Changed | What is the impact or change brought about by a service?  
What things are affected by it? What data changes? |
|------------------|------------------------------------------------------------------------------------------------------|
| Impact on Placement Education Supervisors – change in their role and involvement  
Other groups taking this up for collaboration e.g. NW Deanery for discussions on simulation software  
New approach (process and practice) to matters requiring consultation and collaboration  
New knowledge elements in the curriculum world knowledgebase |

<table>
<thead>
<tr>
<th>Link to Work</th>
<th>What work (processes, activities, tasks, workflow) is</th>
</tr>
</thead>
</table>
| Supports business processes:  
• Consult and update documents  
• Maintain curriculum  
• Collaborate on an issue |
<table>
<thead>
<tr>
<th>Element</th>
<th>HeLMET instance</th>
</tr>
</thead>
<tbody>
<tr>
<td>supported by the service?</td>
<td>• Add to your portfolio for personal development record</td>
</tr>
<tr>
<td>Link to Service Usage Model Which SUM in the e-Framework will describe this service or refer to this service?</td>
<td>“community, consultation and collaborative authoring” With services: • Group Manager • Social Network • Task and Workflow Manager • Document Manager • Collaborative Authoring • Harvester • Knowledgebase</td>
</tr>
</tbody>
</table>

Outcomes, Impact and Implications

The outcomes from the project result from the joint tool development and community building activities. These are:

Creation and articulation of a community. The project forced the Medical School to examine the purpose and constituency of the community in order to provide a meaningful system for them to collaborate in. This was reinforced by networking events and community activities. As a result the community is more coherent and participatory with members feeling more valuable. At one event, a senior consultant stood up and said,

“In my 15 years of teaching students, this is the first time anyone has asked me for my views on the curriculum and how it should be delivered. I think this is a wonderful idea.”

The community definition resulted in written guidelines and purpose for the community whilst the community development activities started to create better, more open connections between practitioners and the university, which can now be continued and built on in e-llaborate.

An improving curriculum. Development of the e-llaborate system has enabled the more efficient and participatory updating of the medical curriculum. Although still at an early stage, it is clear that e-llaborate will provide an integral part of ongoing curriculum development, especially if we are able to combine it with the emerging curriculum mapping knowledgebase being developed in Crampon¹

Increasing use of e-llaborate. From early on in the project, the potential for using e-llaborate beyond updating the medical curriculum became apparent. Hence, e-llaborate is already being used to review medical ethics questionnaires, write a book on medical education with over 30 international authors and provide a forum for student seminars. The Medical School are also looking at using e-llaborate as a mechanism for gathering and acting on student feedback, whilst the project is in discussion with Medev subject centre in using the system nationally for medical education. Other groups, outside of medicine, have also shown an interest with Etienne Wenger keen to use it for his collaborative work.

¹ Crampon JISC project [www.medicine.manchester.co.uk/crampon](http://www.medicine.manchester.co.uk/crampon)
UIDM

Evaluation of the UIDM method, both on this project and within the cluster of UIDM projects, demonstrated the series of tensions which exist within the method:

a) Time v completion v scope creep
   With any iterative process, there is always a decision to be made as to when the completed version has been reached. This is particular true in a development process such as UIDM which involves users, since there are always additional features or functions that users will think of. In a ‘standard’ development process where the system architecture is defined at the start, adding additional features are seen as ‘scope creep’ and can be controlled using a control management protocol, where the project manager or customer determines the benefits of adding extra features. When the design is driven by the user, where does user evaluation stop and scope creep begin? Having a time limit on the project sets a boundary on the development process, but does this mean the final version has been reached? Are the users involved in the process satisfied? This view was reflected by the other projects in our cluster, who stated the need for clear guidelines to determine when to move from one stage to the next of UIDM, but also when to stop!

b) User needs v user understanding
   UIDM is dependent on users providing an evaluation of the system and expressing what they require. However, users might not always be equipped to articulate such need. Early on in our project, the users focussed on the collaborative editor, so that is where we focused on our development effort. However, this may be because this is the part of the system that they understood and could comment on, being familiar with ‘track changes’ in Word. The community aspects of the system got ignored by the users and (initially) the development. Users did not perceive that a community issue existed, so how could they define the solution? Also many of the users were unaware of Web 2.0 and what it could offer. This raises the question of whether it is possible to gather user requirements about such technologies without a prototype to show them. At what point do users know what they want? Sometimes solutions to issues are hidden (or even the issues are hidden) but become apparent when the technology is demonstrated. However producing a prototype runs the risk of users being led by the developer. Any development must be conscious of this tension and work carefully to help articulate user requirements without pushing them in a particular direction.

c) Customer requirements verses user needs
   We found clear evidence of tension between what the community of users said they wanted from the technology and what the ‘customers’ wanted them to have. There were several examples of users requesting certain features or permissions within the system, only for the request to be vetoed by the Medical School ‘customers’. This is reflected in the differing views of the community’s purpose, demonstrated by figure 5 below.

   This raises an important issue; who drives the development? Is it the customer or is it the user? The UIDM approach is based on user determination of system features. However, what happens when these conflict with the host organisation or customer’s requirements for the technology? These findings were again reflected in the other projects in our cluster, with colleagues reporting similar tensions in their own projects. It was felt that UIDM should include a process for handling such tensions and that users should be aware that requests for features were perhaps dependent on authorisation.
Web 2.0 and collaborative editor technologies

HeLMET was devised principally as a mashing of Web 2.0 applications rather than a coding development. Hence, the task was to identify suitable, open source applications to create a community of practice and allow them to collaborate online. The use of a wiki clearly did not meet the demands of the users, so a different document editing application was sought. Zoho was chosen based on its functionality, maturity and support. No other tool we looked at had the same WYSIWYG interface, or functionality as Zoho, and even commercial applications such as Pleasereview lacked the functionality required. However, Zoho is not truly open-source but rather free-to-use and hosted on Zoho servers. This means the e-llaborate tool we created and host on our local server has to link to Zoho via API tokens. This is the critical point where e-llaborate failed. In initial trials with the team and Core group of users, Zoho seemed to perform well. However, as user numbers increased, failure become more common.

This failure became apparent in the hospital workshops, and in the first real-trial with a small group, where Zoho consistently caused frustration. The impact of an unreliable system could have been
enormous, alienating existing users and preventing new users from using the tool. Until the tool was robust and usable, it was impractical to carry out any meaningful task and make the building of a community of practice impossible. The project ran the serious risk of being unable to deliver a stable solution by the end of the project. To resolve the problem the project team worked with the Zoho developers in India to try and address the problem directly. A meeting was carried out via Skype and the team provided a closed-off version of e-llaborate for the Zoho developers to try and address the session-issue problem. This solution never materialised, and the HeLMET team re-examined other potential solutions, including commercial applications. Again, none provided the necessary functionality, although Pleasereview did provide some ideas on how to create an in-house application, which could provide a solution. Instead, a solution specification for a custom collaborative editor, which could be developed in-house, was written and developed over the next few months. This was written in PHP, enabling full integration with Drupal.

The fact that the multitude of Web 2.0 applications available failed to provide a reliable, robust and fully functional collaborative editor should, perhaps, come as little surprise. A posting by the JISC digitisation Team (http://digitisation.jiscinvolve.org/2008/07/07/is-academia-ready-for-web-20/), points to the fact that Web 2.0 applications are still used primarily for pleasure rather than work. Although this is a perception issue, in that HE students and tutors see social-networking and other Web 2.0 activities as non-work practice, it could be argued that this is driven by the range of applications available – i.e. Facebook, wiki’s, blogs etc are aimed at non-work activities. The Web 2.0 community has yet to provide fully functional, open-source, work-based applications. This is highlighted by the UIDM programme manager’s posting on Emerge:

“However, I do feel there is a serious lack of maturity in the Web 2.0 arena when it comes to providing applications to complete real tasks. I could point to thousands of mini-applications that will rate whether I'm 'hot or not' or send someone a virtual drink. However, trying to discover an online collaborative editing tool which provides rich-text editing and reviewing functionality with a WYSIWYG front-end is proving impossible. We have tried the usual suspects (Google docs, Zoho) but each have failed to provide. So if anyone knows of a suitable application....

In the meantime, I feel this illustrates the issues with Web 2.0. As John points out, there is a desire to use the new technologies, but perhaps a lack of skills or understanding of how they can be used in a meaningful way for work. In addition, the existing technologies are aimed at the leisure side of web-use and are not mature enough to be used in a work context. Should it not therefore be the aim of the JISC community to bridge this gap by identifying how the new technologies can be used to support the work of academics and then push the development of existing technologies to meet this need?”

Hence, the lesson to learn from this, is that for all the hype and activity around Web 2.0, the actual availability of suitable applications may not yet meet the demands of the HE sector and new tools and applications suitable for use in the sector may require more than a straight-forward mashing together or adaptation of existing applications.

As stated, the UIDM approach creates a system, which necessarily reflects the requirements of users. Hence, the described system differs fundamentally from that envisaged in the original bid. Significantly, the system doesn’t contain three key elements included in the original solution design. These are:

Teacher portfolio – although the potential of doing this has been explored, there was no evidence in the user requirements and use cases gathered that integration with the existing portfolio was something users actually required. Hence, given the problems with development of the social network and collaborative editor, which users were keen to have, it was felt prudent not to add to the development issues by trying to integrate a non-essential element. Instead, the viability of doing an integration with e-llaborate will be examined and written into the sustainability plan presented to senior managers at the end of the project.
Curriculum knowledgebase – It was apparent early on that access to the elements of the curriculum needed to be a key feature of the tool (as the initial task for users was reviewing the curriculum). At the moment, these are provided as resources within the group as uploaded documents. However, it also became apparent that a more sophisticated and intelligent way of accessing the curriculum was required and it is proposed that the tool will eventually integrate with the curriculum knowledgebase currently being developed in the Crampon project. This is due to end in June 09, and hence although an early integration is possible in the lifetime of this project, full integration is likely to occur after project end.

Semantic Wiki – As in the case of the portfolio, use of a semantic wiki wasn’t apparent as a requirement by users in early workshops. In addition, use of such a wiki would be reliant on a useable ontology and involve users marking-up text when they contributed. So far we have found that problems navigating and understanding the technology have proved to be the main barriers for tutors using the tool, thus this may provide a further barrier that outweighs any benefits to the community. Hence the strategy for this is to explore the potential of semantic technologies further (by talking to Leeds and Southampton Universities and through the workshops offered by Tony Linde at Leicester) before presenting this to the community as a future development of the tool. In this way, the community can be involved in determining how the tool progresses.

Community Building and Social Networking

The development and implementation of e-llaborate was only possible through the parallel development of the community of users it seeks to serve. Hence, for us a major outcome of this project is the creation of a sustainable community and the related output, is an articulation of this process. As highlighted above, it became apparent that the success of the tool depended on gathering the appropriate set of requirements from this loose community, which in turn was reliant on developing and supporting the community itself. Hence, the project carried out a series of activities and events, with varying success, aimed at defining and creating the community. Through observation and evaluation of these activities, the project team was able to determine a workflow or process for community development in the context of product development and implementation. This has been included as part of the sustainability plan for use by other HEIs in implementing e-llaborate, and will be tested by the team in other intuitions as part of the roll-out phase.

The HeLMET project has illustrated that the process of developing a web-based toolset to support an immature process, which is not embedded within the existing working practices of a community, entails consideration of a very wide-ranging set of factors.

Wenger et al, (2002:pp51) identify seven principles in developing a sense of “aliveness” in community design:

1. Design for evolution
2. Open a dialogue between inside and outside perspectives
3. Invite different levels of participation
4. Develop both public and private community spaces
5. Focus on value
6. Combine familiarity and excitement
7. Create rhythm for the community

Eliciting the requirements to develop a community of education practitioners, involved in the delivery of undergraduate education in the workplace, requires an understanding of the complex range of power, culture and identity issues that membership of multiple communities presents. The Community of Practice model has been used as a device to consider the social and cultural aspects of practice transformation. We have explored a variety of roles involved in the transformation, from the position of brokers, who identify, connect and repurpose existing networks. The Community of Practice model provides a means by which to make sense of some of the issues that arose in this undertaking, but doesn’t go so far as to provide guidance in the many instances where contradictions occurred. Our experience also
highlighted the conflicting forces that work-placed tutors have to contend with, based in an environment where patient care often must take priority over education. With consultants and doctors working 50 to 60 hour weeks, there remains little time for even those who are highly motivated to spend time learning their way around new technology systems and engaging in consultation activities.

Curriculum reform, in an organisation where workplace learning, teaching and assessment involves many hundreds of stakeholders, holds many challenges that require sensitive evaluation. The diagram below (Figure 6) illustrates the various stakeholders involved in directing the development of e-llaborate.

![Figure 6: A representation of stakeholders involved in the development of e-llaborate](image)

The constellations of community groups have explicit links with the core curriculum members, who monitor, evaluate and develop the core curriculum components. The explicit links are represented by solid lines in the above diagram. The core curriculum team is composed of curriculum directors, curriculum area leads, quality assurance team leaders and a small contingent of representatives from the wider community.

The core HeLMET team, combining business process analysis, technical development and community building capability, works in partnership with the existing core curriculum team to develop the tacit practice and knowledge-sharing capability between the work-placed communities. These links are represented by dashed lines.

The selection of a Community of Practice approach, building a self-sustaining learning community, was an ambitious goal which has been difficult to approach in a manner that meets the needs of all participants. Taking a complex cumbersome process as the first instance for community engagement has proven to be one of the project’s main stumbling blocks. Many members of the community fail to relate the value proposition of the project to their own practice, but can see great potential in the tools to support other areas of their practice.
Next Steps

The dissemination work carried out during the length of the project has generated a high degree of interest in e-llaborate and its potential both within its original context of developing the medical curriculum, but far beyond that, both within the University of Manchester the HE sector as a whole. The key uses over the next few months that will help cement e-llaborate’s position as a preferred choice for online collaboration are:

1. Continued use in curriculum development: The system is just reaching a critical mass of users in this area and curriculum development is being realised. The project will lobby the Head of School to ensure e-llaborate is maintained and supported post-funding.
2. Use in other collaborative ventures in the University of Manchester: E-llaborate’s potential has been identified by a number of other projects across the university and is being adopted for at least four major collaborative ventures across the university, ensuring its sustainability beyond the project funding.
3. Use in other HEIs: E-llaborate is currently being trialled in at least two other Institutions, with hopes that both will adopt their own version of the system.
4. Use nationally in Medical Education: A meeting with the Medev subject centre in April 2009 will hopefully lead to utilisation of e-llaborate by the medical education community nationally.

This exposure and increased use has already identified ways in which e-llaborate can be improved and built-on to create a next generation tool. Hence our plans for the next 12m are:

1. Develop a new interface and improved functionality for the tool. User feedback has told us the need for improved navigability and user features in e-llaborate. This will be undertaken within the next few months as part of the ongoing support for the tool.
2. Develop the collaborative editor. A major output of this project has been the development of a collaborative editor that reflects good practice in document editing and collaboration. The project is committed to making this available as a module in the Drupal Community. Our research shows the lack of an open source, Web 2.0 product that delivers this functionality and feedback from our community, including Professor Wenger, highlights the demand. Hence, over the next few months, the project team will work to secure funding to further enhance this editor and develop a more open product that can be used in a range of applications such as Moodle.
3. Integrate e-llaborate with a content management system. Drupal does not provide scalable document management capabilities for the editable documents stored in e-llaborate. It is believed the addition of such features as auditable document lifecycle management, check in/out and import/export of traditional office documents will maximise the potential of e-llaborate such that documents can be imported directly from the document management repository, and exported back as a new version of the document after a collaborative authoring / review process. Therefore, a document management system, such as Alfresco, will be combined with e-llaborate. A joint funding bid with Thames Valley University is seen as the potential first step to achieving this.
4. Integrate e-llaborate with a curriculum knowledgebase. A sister JISC project, Crampon, is being delivered by the HeLMET team to develop a curriculum knowledgebase for medical education. This builds and complements the work of the Innovations Knowledgebase project carried out for JISC by Manchester and Southampton Universities. Combining the outputs from Crampon with e-llaborate will enable curriculum documents to be found, reviewed, updated and replaced by a team of reviewers, whilst maintaining the integrity and relationships of a complex curriculum. This work will also consider the work done by University of Teeside on curriculum mapping in the UKan project. Funding is currently being sought to enable this work.
5. Integrate e-llaborate with a semantic metadata extraction tool. One of the key functions of e-llaborate is to support the collaborative review of documents. This is a highly knowledge intensive task and users are provided with links to a number of resources, which are expected to support them in conducting the review process. In addition, they may also need to refer to the outputs of some previous review tasks. As a result, the process of finding relevant information during a review session
can be very laborious, especially when a large repository of documents are involved, each of which can be large in itself. One way of making this process easier for users is to provide quicker access to relevant aspects of the resources that are required to support any given task. There are a number of ways to achieve this. The first is to index the documents so that the index helps users find relevant documents for a given subject. A disadvantage with this approach is that the relationships between the contents of these documents are not taken into consideration in building basic indexes. A better approach is to use techniques that can also take the semantic properties of the documents into consideration. Such a tool can then be used to provide a context-sensitive panel with deep links into resources that are inferred to be useful for the particular review task the user is working on. The project has identified Calais as a potential semantic tool that might be used in this way and are keen to collaborate with the UIDM team from Leeds University in order to build on their experience of semantic text in Awesome.

Conclusions and Recommendations

The project set out to create an online system using Web 2.0 technologies in a UIDM approach in order to support and evolve a community of practitioners. In this respect, it achieved its main objective and in doing so gained an insight into UIDM, Web 2.0 technologies and Community building. The project team offer nine key recommendations in these areas for any future projects.

UIDM

1. UIDM relies on users trialling the tool and providing feedback for the next iteration. However many of the applications in the Web 2.0 arena are non-stable and users are often inexperienced in the use of technology. Asking naïve users to participate in development work with immature technology represents a toxic mix and user confidence is undermined by the development process. We recommend that any UIDM project pays careful attention to managing user expectation and controlling roll out of the tool to avoid disenfranchising users with applications which continually fail.

2. UIDM as an approach lacks the risk assessment and configuration planning which are key features of more traditional development methods. We recommend that the model should be revisited and redesigned to fully support participation in a managed environment. UIDM should offer a module design, with project managers able to construct a workflow based on core and optional units for each stage.

3. In UIDM the users are often a different group of actors from those sponsoring the completed application. This can create tensions in development when users request one set of features or functionality for the tool, only for this to be ‘overruled’ or denied by the key stakeholders. This creates tension for the development team and disillusionment for the users. We recommend that a proper stakeholder analysis is carried out prior to Stage 1 of the model and priorities and conflict resolution protocols established – i.e. who has the final say in system design and development. It would also be wise to establish if the key stakeholders/sponsors have any ‘no-go’ features that users were not permitted prior to users becoming involved.

Community building

4. We quickly discovered that the creation of a tool alone does not build a community. No matter how geared to needs of the community the tool was or the fact that the community were given a specific task to carry out within the system, an online community of practice will not emerge without additional, offline activities to generate trust and community value. We recommend that any project creating an online community pay attention to community generation and follow some of the activities laid out in the sustainability plan (Appendix 4).
5. Know your community. It is important to understand the needs and drivers of the community which the application will serve. We discovered that working with technology-shy, time-short professionals brought its own set of problems and challenges. We recommend that UIDM should contain guidelines on establishing the constituency and values of the users and that future projects follow some of the guidelines outlined in the sustainability plan (Appendix 4).

Web 2.0

6. As stated, many Web 2.0 technologies, particularly open source, are immature and unstable. Maturity and stability can be established through proper testing using OSMM, etc. but often the more mature applications don’t offer the features required for the project. We recommend establishing the core functionality of any system first using mature technology and ensuring it is stable prior to user testing. This core, stable application can then be built upon using less stable, more innovative technology if necessary as long as the core functionality remains solid.

7. There is often a temptation to use new technologies because they offer something ‘of-the-moment’. However, many of these applications are a solution looking for problem, with no real value for the user over and above a novelty feature. This project soon discarded several features because they remained unused by the user. We recommend that projects should not be afraid to use ‘traditional’ Web 1.0 features such as forums if they provide a familiar, well used environment for the user rather than include innovative features such as Twitter.

8. Despite the rhetoric about the ability to ‘Mash’ Web 2.0 applications easily, there is often a lack of interoperable standards between different Web 2.0 applications, as demonstrated by our inability to integrate Zoho with Drupal. Such standards are often driven by commercial interests, meaning open source, free-to-use applications lag behind. We recommend JISC look into this area and support further research or activity in interoperability for open-source applications.

9. This project highlighted the lack of an effective, free-to-use collaborative authoring tool which meets the demands of academic authors. Demand for such a tool is great, with users, including Etienne Wenger, providing an evaluation of the tool we developed and suggestions for improvements. We recommend that there is further investment into development of a sophisticated technology which reflects good practice in collaborative authoring and fulfils the needs of academic writers and reviewers.
References


## Appendix 1 – Dissemination Activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Website link</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2008</td>
<td>Faculty of Medicine and Human Sciences Awayday – Workshop and presentation to colleagues in the Faculty</td>
<td><a href="http://www.medicine.manchester.ac.uk/helmet/news/">http://www.medicine.manchester.ac.uk/helmet/news/</a></td>
</tr>
<tr>
<td>March 2008</td>
<td>Manchester Medical Education Conference - workshop with medical teacher-practitioners</td>
<td><a href="http://www.medicine.manchester.ac.uk/helmet/news/">http://www.medicine.manchester.ac.uk/helmet/news/</a></td>
</tr>
<tr>
<td>June 2008</td>
<td>Hospital based workshops - Preston Royal, Wythenshawe Hospital, Hope Hospital, Manchester Royal Infirmary and University of Manchester</td>
<td><a href="http://www.medicine.manchester.ac.uk/helmet/news/">http://www.medicine.manchester.ac.uk/helmet/news/</a></td>
</tr>
<tr>
<td></td>
<td>And</td>
<td><a href="http://www.heacademy.ac.uk/assets/York/documents/events/conference/AnnualConferenceHandbook.pdf">http://www.heacademy.ac.uk/assets/York/documents/events/conference/AnnualConferenceHandbook.pdf</a></td>
</tr>
<tr>
<td></td>
<td>And</td>
<td><a href="https://alt.conference-services.net/programme.asp?conferenceID=1272&amp;language=en-uk">https://alt.conference-services.net/programme.asp?conferenceID=1272&amp;language=en-uk</a></td>
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<tr>
<td>October 2008</td>
<td>Hospital workshops – Preston, Fairfield, Pendlebury. Workshops with community members</td>
<td><a href="http://www.medicine.manchester.ac.uk/helmet/news/">http://www.medicine.manchester.ac.uk/helmet/news/</a></td>
</tr>
<tr>
<td>January 2009</td>
<td>Cluster meeting – meeting of the six universities in the UIDM programme cluster</td>
<td></td>
</tr>
<tr>
<td>March 2009</td>
<td>Faculty Awayday and Manchester Medical Education Conference</td>
<td></td>
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</table>
### Appendix 2 – User Requirements

<table>
<thead>
<tr>
<th>ID</th>
<th>Requirement</th>
<th>UC</th>
<th>Component</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>F017</td>
<td>Facility to open up a discussion or a piece of content to a wider group</td>
<td>Authorisation</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F022</td>
<td>Selective privacy on particular items</td>
<td>Authorisation</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F036</td>
<td>Management of who sees what in terms of content and changes to content</td>
<td>Authorisation</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F050</td>
<td>Manage authorisation to make changes in a document</td>
<td>Authorisation</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F051</td>
<td>Manage authorisation to accept new members to the group</td>
<td>Authorisation</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F008</td>
<td>Social software should allow users to find others with shared professional interests at a ‘quite specific’ level</td>
<td>Collaborative Filtering</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F009</td>
<td>Social software should be aware of the areas of expertise of others</td>
<td>Collaborative Filtering</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F011</td>
<td>Social software should be aware of research interests and be able to identify people who might collaborate</td>
<td>Collaborative Filtering</td>
<td>25.2.2008</td>
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</tr>
<tr>
<td>F016</td>
<td>Polling tool for the group</td>
<td>Collaborative Filtering</td>
<td>25.2.2008</td>
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<tr>
<td>F024</td>
<td>Continuation of use of usual email accounts</td>
<td>Communications</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F039</td>
<td>Synchronous chat</td>
<td>Communications</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F054</td>
<td>Link to Medlea to see the ILOs for relevant phase of the curriculum</td>
<td>Communications</td>
<td>25.2.2008</td>
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<tr>
<td>F014</td>
<td>Maintain version history in wiki and other content collection parts of the system</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F015</td>
<td>Manage content with concurrent parallel discussion</td>
<td>Content Authoring and Editing</td>
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<tr>
<td>F025</td>
<td>Review of previous versions of content</td>
<td>Content Authoring and Editing</td>
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<tr>
<td>F026</td>
<td>See who made what changes</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F029</td>
<td>Preserve ‘outlandish’ views on a topic to revisit in the future even if they are not incorporated in the current document</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F030</td>
<td>All the functionality of Word’s ‘track changes’ – text colour, author id, time of change etc</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F031</td>
<td>Have both ‘track changes’ in the text and comments to suggest changes, alongside the text.</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F033</td>
<td>Voting on acceptance or deletion of a particular item in a document</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Requirement</td>
<td>Component</td>
<td>Date</td>
<td></td>
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<tr>
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<tr>
<td>F034</td>
<td>Facility to operate a policy of no deletion of text but suggestion of changes and additions possible</td>
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<td>F037</td>
<td>Annotation of text</td>
<td>Content Authoring and Editing</td>
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<tr>
<td>F045</td>
<td>Collection and collation of a set of comments and changes for resolution of conflicts by one member of the group</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F046</td>
<td>Accept/reject changes as in Word’s track changes</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F047</td>
<td>When text is candidate for deletion show with strikethrough</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F055</td>
<td>Apply constraints to what may be changed in the curriculum</td>
<td>Content Authoring and Editing</td>
<td>25.2.2008</td>
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<tr>
<td>F001</td>
<td>Link to supporting documents</td>
<td>Documents</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F002</td>
<td>Supporting documents can be associated with community and/or task</td>
<td>Documents</td>
<td>25.2.2008</td>
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<tr>
<td>F032</td>
<td>Maintain an unchanged ‘master copy’ of the document for reference alongside the document that is being commented and edited</td>
<td>Documents</td>
<td>25.2.2008</td>
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<tr>
<td>F038</td>
<td>Support documents should be linkable to specific parts of the work as well as having a general set of docs</td>
<td>Documents</td>
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<tr>
<td>F004</td>
<td>Link teaching and learning activities to curriculum elements</td>
<td>Educational Design</td>
<td>25.2.2008</td>
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<tr>
<td>F021</td>
<td>Location awareness available but optional</td>
<td>Localisation</td>
<td>25.2.2008</td>
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<tr>
<td>F019</td>
<td>Notification</td>
<td>Notification</td>
<td>25.2.2008</td>
<td></td>
</tr>
<tr>
<td>F043</td>
<td>Reminders to group members</td>
<td>Notification</td>
<td>25.2.2008</td>
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<tr>
<td>F054</td>
<td>If a PES becomes aware of an apparent gap in a student’s knowledge then they can raise this as a curriculum issue for discussion – feed back to the appropriate teaching staff or managers</td>
<td>Notification</td>
<td>25.2.2008</td>
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<tr>
<td>F002</td>
<td>Link to relevant PBL cases</td>
<td>Repository</td>
<td>25.2.2008</td>
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<tr>
<td>F003</td>
<td>Link to curriculum browser</td>
<td>Repository</td>
<td>25.2.2008</td>
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<tr>
<td>F044</td>
<td>Review of past synchronous discussions</td>
<td>Repository</td>
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<tr>
<td>F052</td>
<td>Curriculum should be in a database : database functionality for CRUD, search, retrieve etc. Structure is for the full set of ICS</td>
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<td>25.2.2008</td>
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<tr>
<td>F053</td>
<td>Facility to revise the data model of the ICS</td>
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<tr>
<td>ID</td>
<td>Requirement</td>
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<td>Component</td>
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<tr>
<td>F057</td>
<td>Navigation through the curriculum to see the for each element the roles (responsibilities and their profiles) participating in its delivery/provision</td>
<td></td>
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<tr>
<td>F018</td>
<td>Online calendar with management of the group activities</td>
<td></td>
<td>Scheduler</td>
<td>25.2.2008</td>
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<tr>
<td>F020</td>
<td>Meeting scheduling</td>
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<td>Scheduler</td>
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<tr>
<td>F035</td>
<td>Management of timeframes for iterations in a collaboration; creation of a new version at the end of each iteration</td>
<td></td>
<td>Scheduler</td>
<td>25.2.2008</td>
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<tr>
<td>F040</td>
<td>Scheduling of online synchronous meetings</td>
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<td>25.2.2008</td>
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<tr>
<td>F005</td>
<td>Manage membership of groups</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
</tr>
<tr>
<td>F006</td>
<td>Members are identified by role or interest in the particular CoP/group as well as by name, contact details, affiliation etc</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F007</td>
<td>A CoP may have more than one group. An individual may belong to more than one group.</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F010</td>
<td>Groups should not necessarily be discipline specific</td>
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<tr>
<td>F012</td>
<td>Identify and encourage newcomers to groups</td>
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<tr>
<td>F013</td>
<td>Maintain etiquette in the groups</td>
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<td>Users and Groups</td>
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<tr>
<td>F023</td>
<td>Ethical guidelines for interactions between tutors and students</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F027</td>
<td>A ‘chair’ can be named with rights to collate all the views on a topic</td>
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<tr>
<td>F028</td>
<td>Chair person is not fixed for a particular person but can rotate in the group</td>
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<td>Users and Groups</td>
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<tr>
<td>F041</td>
<td>Place for terms of reference for a group</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F048</td>
<td>Classify groups by the level of trust between the members</td>
<td></td>
<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F051</td>
<td>Support formal groups such as the curriculum committee</td>
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<td>Users and Groups</td>
<td>25.2.2008</td>
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<tr>
<td>F004</td>
<td>Ability to define a workflow for the group: docs to read, docs to prepare, discussions and reviews</td>
<td></td>
<td>Workflow</td>
<td>25.2.2008</td>
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<tr>
<td>F042</td>
<td>Task definition in terms of deliverables, deadlines etc</td>
<td></td>
<td>Workflow</td>
<td>25.2.2008</td>
</tr>
<tr>
<td>F049</td>
<td>Classify tasks by degree of formality and type, e.g. operational, blue skies brainstorming, formal process</td>
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<td>Workflow</td>
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<tr>
<td>F051</td>
<td>A formal process should have an audit trail and know who needs to sign off any changes in documents.</td>
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<td>Workflow</td>
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<tr>
<td>F056</td>
<td>Collect a set of proposal for change to the curriculum</td>
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<tr>
<td>ID</td>
<td>Requirement</td>
<td>UC</td>
<td>Component</td>
<td>Date</td>
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<tr>
<td>N007</td>
<td>Protection from ‘false profiles’ – authentication of participants</td>
<td>Authentication</td>
<td>25.2.2008</td>
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<tr>
<td>N003</td>
<td>Privacy for all participants. Authorisation levels to be flexible and manageable for each group</td>
<td>Authorisation</td>
<td>25.2.2008</td>
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<tr>
<td>N004</td>
<td>Users need a feeling of privacy; that they’re in a secure place where they can make mistakes; tackle issues; solve problems</td>
<td>Authorisation</td>
<td>25.2.2008</td>
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<tr>
<td>N002</td>
<td>Network boundaries and constraints must be understood in relation to users’ locations</td>
<td>Communications</td>
<td>25.2.2008</td>
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<td>N010</td>
<td>Easy integration with email</td>
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<tr>
<td>N008</td>
<td>Availability alongside other online or offline activities</td>
<td>Integration</td>
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<tr>
<td>N001</td>
<td>All UI elements must be completely explained and intuitive</td>
<td>User Interface</td>
<td>25.2.2008</td>
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<tr>
<td>N005</td>
<td>Minimise number of different user interfaces/environments and maintain consistency of interaction with the system</td>
<td>User Interface</td>
<td>25.2.2008</td>
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<tr>
<td>N006</td>
<td>Attractive interface</td>
<td>User Interface</td>
<td>25.2.2008</td>
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<tr>
<td>N009</td>
<td>Intuitive navigation within the toolset</td>
<td>User Interface</td>
<td>25.2.2008</td>
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<tr>
<td>N011</td>
<td>Should feel like sitting round a table, capturing the ‘usual’ process of discussion</td>
<td>User Interface</td>
<td>25.2.2008</td>
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<tr>
<td>N012</td>
<td>The switch between edit-write-save in wiki should not slow the work. Should have a temporary save during work and then a final submit when batch of work complete</td>
<td>User Interface</td>
<td>25.2.2008</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4 – Sustainability Plan

University of Manchester

Implementing e-llaborate: A case for supporting and sustaining a networking and collaboration tool

Introduction

This document sets out the case for implementation and maintenance of the ellaborate system within an institution. Ellaborate was created as a product of HeLMET, an 18 month project funded by JISC. The project set out to create and establish an online environment that would support and facilitate the community of teacher-practitioners involved in the delivery of the undergraduate medical curriculum. These are doctors, consultants and other professional healthcare workers who need to interact and participate in Faculty programme development but rarely do so due to competing demands on their time and geographical spread. The contribution of teacher-practitioners to curriculum development and other activities is a valuable asset to the awarding institution, and provides the additional benefit of assuring commitment of the remote partner to the outcome.

The solution was to design and build a system that allowed members of this disparate community to interact and allow the review of the curriculum to be carried out online. The intention was that the developed system would help catalyse and support the development of the existing loose network of users into a fully functioning Community of Practice based on the Communities of Practice concept (Wenger, 1998). In doing so, we have discovered the tool is ideally placed to be used for a range of purposes which involve collaboration.

The e-llaborate tool.

Ellaborate’s Web 2.0 based software could be said to be an amalgamation of social networking websites like Facebook and online collaborative authoring environments such as Google Docs or Zoho. The components and structure of e-llaborate are shown in the diagram below.
The main features of the system are:

• Upon registration E-llaborate users are required to complete a brief personal profile that includes professional and personal interests that will aid social networking with other users who may share in these interests. Other social networking aspects upon the site include individual user guestbooks as well as the ability to find and make connections.

• E-llaborate is built around Groups that represent a plethora of issues or tasks. Users can join any number of groups or create their own groups.

• All groups can have Tasks, which define the activities to be completed within the group. Each task has a set of related Documents and Resources to support task completion.

• The Documents represent the document, paper, part of the curriculum, etc to be revised and reviewed by the group members. This is created and revised within the new collaborative editor.

• Communication between group members is facilitated by a number of channels both synchronous and asynchronous with the real-time correspondence being offered by the chat feature and non-simultaneous options taking the form of group blogs, forums and email.

The specifically designed collaborative authoring software allows users to upload text documents which others can then access, alter and provide their comments on, fostering a group working environment of cooperation and mutual support.

Benefits

There are a number of potential benefits brought about by the adoption and broad take-up of E-llaborate. Use of the e-llaborate system brings with it a number of benefits, to the awarding institution, the community of users and ultimately to the students.

• A current curriculum – as stated, the original intention of the project was to allow teacher-practitioners to contribute to the review and development of the medical undergraduate curriculum and prevent ‘curriculum drift’ (Jones et al 2001) – that is, deviation of the curriculum from current practice in the profession. Logic and evidence (Jones et al 2001) tells us that those best placed to ensure the curriculum is current are those involved in current practice. This has previously been done via meetings or email; the first of which is costly (in terms of travel and time) and the second is not discursive, but reflects a single viewpoint. E-llaborate has shown its value in allowing practitioners to comment on curriculum improvement at a time, which suits their schedule, but allows for discourse with colleagues. This affords module leaders and the curriculum development team to consider a broader, more connected view before amending any part of the curriculum. It also allows the results of student feedback, both formal and informal, to be taken into consideration. This creation of a more dynamic, responsive curriculum will be further supported when e-llaborate is combined with the curriculum mapping system from the Crampon project (see Further Developments below) as the use of an online mapping system has been shown to expatiate curricular design and alignment (Hale 2008, Jacobs 2003)

• Community Development – By uniting all those linked by a common purpose in one online space, geographic and temporal limitations are overcome and allows disparate individuals spread across departments, sites or a region, the opportunity to interact and share information such as good practice when before this wealth of experience has gone un-tapped. Evidence from our own evaluation and previous studies (Wenger 1998, Cox 2006) demonstrate that creation and support of a community of practice brings benefits to both community members and the supporting organisation. Evaluation data from the project shows that community members see value in being part of this community.
What is the value of being part of a community of practitioners engaged in medical education?

- Sharing (1)
- Form a team/Networking (2)
- Moral Support (3)
- Keeping up to date (4)
- Other (5)

All these benefits can, and are, facilitated through e-llaborate. Sharing of good practice, teaching resources and networking with colleagues are seen as valuable to the members but also have obvious benefits to the host organisation, concordant with the theories of Wenger (1998).

Shirky (2008) argues that organisational networks for the 21st century need to move away from the model of the host organisation being the centre of a spoked wheel. Instead it needs to allow, encourage and capitalise on the links between members of the community, since it is here where the real debate is taking place.

Source: David Wilcox, Social Reporter

- Community commitment - Another benefit achieved by this social learning are the emergent shared sociocultural practices that have scope to evolve when those with common goals work together to attain them. Where the project communities’ original priority was curriculum review, the nature and quality of collaboration was not restricted to this one aim with the organic growth of the group. Instead, it could be quickly seen to branch out to the annual review of teaching materials such as placement based learning cases, consultations with staff regarding changes in practices or indeed consultations with students over course quality. Involving the community in the development of the curriculum and providing them with a secure environment for them to network and exchange information, builds trust and commitment from the teacher-practitioners. Work-based tutors, such as this, are often loosely affiliated with their Faculty. However, the contribution of teacher-practitioners to curriculum development and other activities is a valuable asset to the awarding institution, and provides the additional benefit of assuring commitment of the remote partner to programme outcomes. This is demonstrated by a quote from a senior consultation, who praised this initiative, stating this was the first time in his 15 years of work that he had been asked for his views on the curriculum. Regardless of the truth of this, if the perception is that this is inclusive and participatory, then commitment to the curriculum as a whole is likely to be greater.
Financial savings – On a purely financial basis, e-llaborate has the potential to deliver significant cost savings to the host organisation. By allowing geographically disparate staff to work together online, e-llaborate negates the need for them to be away from their normal practice and to travel often, long distances. An example of cost savings is shown below:

Number of staff in Group 15
Staff located in Preston, Manchester, Salford.
Average return journey to central point = 20 miles
Average journey time = 1 hour
Total mileage per meeting = 20 x 15 = 300 miles
Total hours = 15 hours
Review carried out via two iterations representing two meetings = 600 miles
Total mileage costs @ 40p/mile = £240
Hours of staff involved in travelling = 30 hours
Total staff cost @ £70/hr = £2100
Total cost = £2340

If this is multiplied over the many groups that might be facilitated within e-llaborate, the financial savings could be significant.

Risks

The implementation and support of any technology, particular a relatively new one, is not without risks. The risk analysis below lays out the risks associated with implementing and supporting e-llaborate.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Probability</th>
<th>Impact</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-llaborate is not used extensively by the community and the</td>
<td>4</td>
<td>6</td>
<td>Our project demonstrates the popularity of e-llaborate and that this is</td>
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<td>organisation are left with a legacy software</td>
<td></td>
<td></td>
<td>unlikely. However, the implementation plan below sets out simple, cost</td>
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<td></td>
<td>effective activities that can be carried out to promote the use of the</td>
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<td></td>
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<td></td>
<td>tool if required</td>
</tr>
<tr>
<td>e-llaborate fails, leaving the organisation with development costs</td>
<td>6</td>
<td>7</td>
<td>e-llaborate is newly developed but built on stable technology (Drupal).</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>However, there are still minor, but not fatal, bugs in the system which</td>
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<td>will be exposed as the usage increases. The University of Manchester will</td>
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<td></td>
<td></td>
<td></td>
<td>continue to work and this project and make any fixes or new versions</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>available as open source content. Organisations are also free to develop</td>
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<td></td>
<td></td>
<td></td>
<td>the code for themselves.</td>
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</table>
Fig 2. Process work flow for implementing e-llaborate to support a community

The above model represents the set of activities, actors and artefacts recommended in order to successfully introduce and implement e-llaborate and use it to facilitate and support a community. This process is not compulsory but represents good practice based on the evidence of the HeLMET project. It may be amended or added to, to reflect local context and requirements. The key elements of the process are:
1. Identify 5-6 key members of the community. This is particular key if the community you are servicing is large and disparate. This ‘Core group’ of individuals should be representative of the community of a whole but be particularly committed to community collaboration and the introduction of e-llaborate and preferably be influential within the community as a whole.

2. This Core group should be used to define the initial purpose, role and constituency of the community as a whole, in order to help determine the type of activities expected in e-llaborate, the required content and the membership. This task will be guided by a set of Community guidelines.

3. Community guidelines have been created by the HeLMET project. These set out a list of areas and issues for the core group to consider, with examples of best practice. These are attached in Appendix 1. Working through these guidelines should result in a community constitution. The Community constitution articulates the set of principles by which the community operates and can be used as the terms and conditions for membership to e-llaborate. These can be included in the registration page of e-llaborate.

4. Identify micro-communities. Most large communities are characterised by having smaller, sub-communities which are often based around a geographical site or special interest. One of the most effective methods of supporting and encouraging the larger community to work collaboratively is to support these smaller communities and then start to build links between them. E-llaborate is a group based system which is ideally suited to providing and environment for these micro-communities. Identifying such communities and a group leader from each community to manager the group enables this process. The group leaders then require training on establishing and managing groups within the system.

5. Networking events. To be successful the e-llaborate system must offer benefits and value to the community members. The first set of community-wide activities should be to determine what members perceive as the value of being part of the community and what activities the community would consider useful online. This can be done simply using workshops based on a basic set of community questions. These Networking events also start to put members in touch with each other and build awareness of e-llaborate.

6. These Community questions (Appendix 1) were used successfully in the HeLMET project to determine what value the members put on the community and the type of activities and information required.

7. Based on the feedback from the networking events, the e-llaborate system should be configured to offer the benefits required by members to make it attractive – For example, if members see the main benefit of the community as ‘discussion’ then forums can be made the primary focus; whilst if the main value is ‘collaboration’, then the groups can provide the focus. The system should also be seeded with information relevant to the group – e.g. forum topics, resources, news in order to trigger community participation.

8. The newly trained Group leaders should now be encouraged to establish groups in e-llaborate for their sub-communities, offering the community members a ‘Private Space’ (Wenger 1998)

9. Alongside this central, common areas for the community as a whole should be created in order for the community members to interact in a ‘Public Space’, although private from those outside the community.

10. Now the system has been established and seeded with content and groups, the focus should move to awareness-raising in the community. Events or workshops can be delivered offering basic demonstrations and training to members.

11. Alongside this, the newly established groups should be encouraged to carry out a collaborative task in line with the overall purpose of the community. This is often best started with an initial workshop meeting where the task is started and then continued in the on-line environment of e-llaborate.

12. Demonstrate action based on feedback. As the community grows and evolves, e-llaborate should be used to capture user feedback; whether on the system itself, on the community purpose or the group tasks. These can be harvested from feedback emails, forum discussions or comments. The important part is to act on the feedback and make this action visible to the community – whether this is a change in the system, a change in policy or no change at all, the community members need to see that their views are valued an considered, otherwise they will cease to contribute.

13. This process of acting on feedback to improve the system, raising awareness and gathering more feedback can be repeated as often as necessary to grow the community. Eventually, the community
becomes more and more self-sustaining with members supporting each other and guiding new members around the system. A bank of FAQs can also be created by the community to support new members, until the helpdesk function becomes almost redundant.

**Resources**
The resources required to run and maintain e-llaborate are:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
<th>Time/Amount</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Space</td>
<td>Hosting and maintaining the e-llaborate site obviously requires a certain amount of space on a MYSQL web server, both for hosting and backup.</td>
<td>Current space taken up by e-llaborate is: Webspace: ~ 100 MB, Database: ~ 50 MB. This will grow as the number of users/resources increase, but a space of 1GB should be sufficient for the foreseeable future.</td>
<td>0.03FTE @ grade 6 = £1058</td>
</tr>
<tr>
<td>Technical Support</td>
<td>Providing bug fixing and system support/maintenance. Backup is carried out automatically.</td>
<td>This currently takes up around a day a week for our developer, as the tool is still in beta form. However, this should reduce as the tool stabilises, and should represent only around 1hr/wk and become more routine.</td>
<td>1st 12m – 0.06FTE @ grade 4 = £2046, 2nd yr &gt; - 0.06 FTE @ grade 4 = £1023</td>
</tr>
<tr>
<td>Service Support</td>
<td>The Community users have defined a set of roles which need to be carried out in maintaining the system and the community online. These are: Help Desk, Social Host, Policing/Referee, Janitor.</td>
<td>Much of the support can be catered for through a support site already constructed, using videos and instruction manuals, Other help and support will taken on by the community itself. Currently this takes the system administrator around two hours a week, but will reduce to around an hour as the community becomes more self-sustaining, even though numbers will increase.</td>
<td>1st 12m – 0.06FTE @ grade 4 = £2046, 2nd yr &gt; - 0.06 FTE @ grade 4 = £1023</td>
</tr>
</tbody>
</table>

**Licence Costs**
E-llaborate is created in Drupal which is an open source product. £0

**Competitor comparison**
A full comparison with other commercial and non-commercial products, similar to e-llaborate has been carried out and included in Appendix 2. From this analysis it would appear that the main competition comes from Google Docs, Zoho, Moodle and Confluence, all of which place the most emphasis upon collaborative authoring with social networking being a secondary aspect.

It seems that in terms of the creation of personal profiles E-llaborate and all of the other competitors listed, excluding Please Review and Group Hub, are equally matched. E-llaborate also seemed to perform well against rival sites with respect to searching for other users on that system. However, Zoho features...
the ability to import existing contact lists from their respective webmail services giving it an advantage in user functionality.

*Group Hub, JISC Emerge and Moodle* all emphasise the social networking aspect, with the first two applications like *E-llaborate* being created with a specific community in mind. In fact, while *Group Hub* and *JISC Emerge* state they provide an environment in which to collaborate with peers it would seem that all they achieve is bringing likeminded individuals together and do not provide the means by which to collaborate.

*Google Docs* and *Zoho* are extremely similar in the features they offer for collaborative authoring, using familiar user interfaces in their document, spreadsheet and presentation editors. These two also happen to be free to use with no restrictions on access but do not provide as much opportunity for social networking as other rival applications do. The editing features in these applications are also very linear, not allowing users to start and maintain a series of discussion threads on particular edits or comments. *Confluence* and *Moodle* also appear to be strong competition with respect to collaborative authoring with their flexible wiki systems being able to cater to a wide variety of user needs. With the majority of the competition offering collaborative editing on more than just text documents it would seem *E-llaborate* is less well equipped in this area. However, it should be remembered that along with supporting a community of practice *E-llaborate’s* main objective is the review of the medical curriculum and not the collaborative editing of spreadsheets and presentations.

After reviewing the communication channels offered by each application *E-llaborate* can be seen to provide a good choice of both synchronous and asynchronous methods for users. This is something that only *Moodle, Zoho* and *Confluence* can claim to also possess as the rest of the competition can only offer limited asynchronous channels such as blogs.

In terms of any other features offered *Zoho* has a plethora of other applications to be used to aid collaboration and productivity as well as a range of business applications. When observing *Google* from a wider perspective and not just that of *Google Docs* the range of possibilities for the user eclipses *E-llaborate*. Yet again it should be remembered that unlike *Google* and *E-llaborate* has a specific objective and community in mind and satisfies their needs without offering them applications that would be useless.

*Please Review* and *Confluence* are hindered by their high cost which could dissuade possible users. It could also be said that *Google Docs* and *Zoho’s* absence of any user restrictions could be disadvantageous in terms of community building as unlike *E-llaborate, Group Hub* and *JISC Emerge* there is not one specific community with which users would want to network and collaborate with.

**Future Development**

Although e-llaborate provides a complete system for collaboration and networking, the advantage of it being developed in-house using an open-source, stable platform is that it can relatively easily be expanded and upgraded to enhance its capability. There are currently three areas of development that we believe would bring significant benefits to the university. These are outlined below, and a feasibility study for each development is included in Appendix 3.

*Curriculum mapping with crampon and alfresco*

Crampon is the sister project to HeLMET, and is building a curriculum navigation knowledgebase for the undergraduate curriculum. This will collect and connect all the various elements of the curriculum, allowing users to identify Intended Learning Outcomes related to each PBL case and related ICSs. This Curriculum Mapping application will facilitate curriculum review and development by enabling the identification of curriculum requirements against course contents and assessment. The literature on curriculum mapping advocates the use of an online mapping system as it expedites curricular design and alignment (Hale, 2008; Jacobs 2003; Kallick and Wilson 2004). In addition, our research on HeLMET has indicated the need for a central repository for all the curriculum documents, since many academics and
staff have difficulty in actually accessing particular documents. Part of e-llaborate’s intended development is integration with an open source content repository system called Alfresco. Alfresco will allow all content placed on e-llaborate to be tagged and stored to allow intelligent searches to be carried out. By placing all curriculum documents in Alfresco, and combining this with e-llaborate and the crampon knowledge, we can create a powerful, integrated environment for curriculum development that will allow users to find, review, connect and discuss each element of the curriculum. While in theory collegial conversations about curriculum improvement are taking place, in reality teacher-practitioners or academic staff are busy and find engaging in formal curriculum design and revision difficult. A fully integrated curriculum mapping system such as this provides instant access to an entire curriculum with the click of a mouse. Without having to travel to a particular location on campus, or meet a particular individual, a user can view or generate comparative reports, write new cases or respond to student feedback by suggesting immediate improvements.

**Semantic web technology**

Semantic web (sometimes referred to as Web 3.0) is the next development in the evolution of browsing and using web applications. Semantic web applications allow the semantics of information or services to be defined, enabling requests for use of content to be better understood. The attached report looks at the use of an application called Calais with e-llaborate. Calais Web Service automatically creates rich semantic metadata for the content each user submits. Using natural language processing, machine learning and other methods, Calais analyses each document and finds the taxonomy entities within it. This includes not only classic entity identification but also the facts and events hidden within each text as well. This allows automatic tagging and connections to be created as each piece of text is stored in e-llaborate, affording the system the facility to report an present relevant documents back to the user based on their required information.
References


Sustainability Appendix 1 – Community Guidelines

It is helpful to think about what you want to accomplish and how, with an online group or community. Take a few minutes to fill out this checklist. Ignore any questions that are not relevant to your situation, or which you don’t know how to answer and add any particular context that is missing.

1. Membership
Who can join the community? When an individual applies to join e-llaborate, what restrictions, if any, are applied? Do we restrict it to just University staff? Students? Other HEI staff?

Whatever you decide needs to be explicit on the joining instructions. Below is the eligibility for membership for Facebook:

Membership in the Service is void where prohibited. This Site is intended solely for users who are thirteen (13) years of age or older, and users of the Site under 18 who are currently in high school or college. Any registration by, use of or access to the Site by anyone under 13, or by anyone who is under 18 and not in high school or college, is unauthorized, unlicensed and in violation of these Terms of Use. By using the Service or the Site, you represent and warrant that you are 13 or older and in high school or college, or else that you are 18 or older, and that you agree to and to abide by all of the terms and conditions of this Agreement.

Size of group
• What is the minimum number of people you need for a successful initiative? Maximum?
• How might your community expand if there is greater interest? Where will these people come from?

Make up
• What is the gender, professional, cultural make up of the group?
• Are there power issues (i.e. will some feel disinclined to participate because people of power are participating?)
• Are there any particular learning style issues you should be aware of?
• Are there any language issues such as the need for translation, a common language or set of (or no set of) common languages?
• How many different time zones might be represented by the group?
• Do you want your community to be public or private? If private, what determines eligibility?
• Where might you find potential participants? Are you building from an existing pool of participants? Or drawing in new people?
• How might you communicate with your participants to market your online interaction space? (Remember: just putting up an online space does not guarantee anyone will come participate in it!)

Motivation and Interest
• How motivated are people to participate? What is “in it for them?”
• Is this part of their job, or in addition to their job?

2. Purpose
Why does the community exist? Is there a global community purpose – i.e. for the whole of e-llaborate – or does each group have its own purpose and e-llaborate simply exist as a vehicle for these disparate groups?
What is the desired purpose and outcome for the group? What is the INTENT behind the purpose? People are busy and if they don’t see and understand the purpose and its value, they won't participate.

- What is the purpose of your group that you can communicate to potential members? (Practice on a friend or colleague. If they don’t understand, refine your statement further.) Please write it down here.
- What are the group’s specific outcomes or process goals? Please describe them. (i.e. an outcome oriented group may be compiling a set of useful practices for use in the field. A process oriented group may be about building relationships that can then be deployed in the field, such as a group of emergency relief workers, building relationships before disasters so they ca better respond and relate in the field. A network may look to create many weak connections and amplify the flow of ideas and information, but have very little interest in being a community or group.)
- What are the benefits of participation? Are they measurable and visible to members and potential members? Describe them. Use the test question “what is in it for me” from the perspective of the participants.
- Who is determining the goals? By the organizer? Group members? Both? How are these outcomes negotiated? Think about how ownership by members may or may not play a role in the success of the group.
- Is the goal of the group in line with your organization? If the group is part of a larger organization, is the purpose consistent with organizational goals and culture? If not, how will that affect your group? Are you trying to do something new that may or may not be welcomed by the larger organization?
- Must this happen online? Is the group’s purpose something that can only be done / accomplished online? Will it replace something offline? Or is it some combination?
- What can you learn from others’ experiences? Do you have examples of other groups with similar goals that you might explore for ideas? Please list, and if they have open websites, please bring the URLs to share.

3. Rules and Protocol

What are the rules and protocol for using the site? If e-laborate is to exist and function as a community, there needs to be rules established about what is acceptable and what is not in order to remain part of the community. The list below looks at the questions to consider.

What kind of agreements, rules or governance do you want/need for your online interaction space?
- Will there be strong and defined rules, or more general and/or casual guidelines? Remember, balance control and emergence. People like enough structure to be comfortable, but not so much control as to feel oppressed or controlled.
- How will you communicate this to your members?
- Will there be problem resolution processes? How will you share that process?
- If this is a work team, what processes and agreements will you need? Virtual teams benefit from explicit processes and it is worth investing time in them. Short term events won’t usually sustain a lot of attention for process issues.
- Do members have to agree to a “Terms of Service” or other form of agreement before becoming members?

Who makes decisions in the community about the online interaction space?
- The online interaction leader(s), or sponsoring organization(s)?
- The members?
- Both?
- How?

Who will host or facilitate in your online interaction space?
- If not you, how will the hosts/facilitators be trained?
- What will be their responsibilities?
• How will they be supported and/or compensated?
• What kind of reporting will you have them do to monitor as needed?

Examples of terms and rules for membership of MySpace and Facebook are shown below as guidelines. You can use these as a focus for discussions and structure your rules around a set of basic principles. Ultimately the rules should come from the community, but you should lay out the basic principles from which these rules can emerge.

**Myspace Rules**

1. **Don't bad mouth people on MySpace.** Sure, it's tempting. And some people probably deserve to be flamed publicly. But humiliating someone on a format as open as the Internet is just a nasty and immature thing to do. Besides, it makes the poster look like a drama queen, so don't do it. If someone tries to bully you into a flame war, ignore them.

2. **Use bulletins in moderation.** Don't send more than one bulletin per week, max. People who send along quizzes and junk mail and an announcement of every little event in their lives are annoying. Bulletins are best used if you have some big news you'd like to share, like pregnancy or a new job. You can also use them to tell people that you've got new pictures up or a blog you'd really like people to read. (Don't do this for every blog—just for special ones.)

3. **Send quizzes and surveys in moderation-- if ever.** If you're on MySpace, you probably have at least one friend who's a serial survey sender. Ugh! If you find a really neat quiz or survey, and if you're incredibly bored, then send it as a bulletin—but do this on rare occasion!

4. **Never send chain mail bulletins.** Those MySpace bulletins that say, "Send this along to 10 friends or you will have bad luck for a year" are juvenile. Avoid irritating your friends and delete them.

5. **Make sure your page is easy to open and navigate.** You can pimp your page with all kinds of great skins and cursors, but make sure you don't add something to your page that takes ages to open and makes it hard to read. Avoid overloading your page with pictures.

6. **Keep your page PG-13-- unless your friends really don't care.** One of the first rules of all etiquette is to avoid making people feel uncomfortable, so keep your page in line with your friends’ comfort level. If you add your 78-year-old Aunt Bertha, make sure she feels welcome.

7. **Email people before requesting an add.** If you find an old friend on MySpace, it's polite to send them a friendly MySpace email as opposed to simply requesting to be their friend. Chances are, if they want to be your friend, they'll follow your email up with an add request.

8. **Don't put people in an awkward position who don't really want to add you.** Here's an example: a coworker you don't know well sends you an add request. You'd rather not have someone you work with reading your private page, but if you say no, you'll have to deal with this person at work. Avoid putting people in positions like this.

9. **Don't confront someone who doesn't want to be your friend.** If they deny you, so be it. Asking them why will make them feel uncomfortable and can border on stalking.

10. **If you use your page to promote something, do so tactfully.** Lots of people use MySpace to promote bands, products, and webpages, and that's fine. But there's a thin line between promotion and spam, so be subtle

**Facebook Terms**

You understand that except for advertising programs offered by us on the Site (e.g., Facebook Flyers, Facebook Marketplace), the Service and the Site are available for your personal, non-commercial use only. You represent, warrant and agree that no materials of any kind submitted through your account or otherwise posted, transmitted, or shared by you on or through the Service will violate or infringe upon the rights of any third party, including copyright, trademark, privacy, publicity or other personal or
proprietary rights; or contain libelous, defamatory or otherwise unlawful material.

In addition, you agree not to use the Service or the Site to:

- harvest or collect email addresses or other contact information of other users from the Service or the Site by electronic or other means for the purposes of sending unsolicited emails or other unsolicited communications;
- use the Service or the Site in any unlawful manner or in any other manner that could damage, disable, overburden or impair the Site;
- use automated scripts to collect information from or otherwise interact with the Service or the Site;
- upload, post, transmit, share, store or otherwise make available any content that we deem to be harmful, threatening, unlawful, defamatory, infringing, abusive, inflammatory, harassing, vulgar, obscene, fraudulent, invasive of privacy or publicity rights, hateful, or racially, ethnically or otherwise objectionable;
- upload, post, transmit, share, store or otherwise make available any videos other than those of a personal nature that: (i) are of you or your friends, (ii) are taken by you or your friends, or (iii) are original art or animation created by you or your friends;
- register for more than one User account, register for a User account on behalf of an individual other than yourself, or register for a User account on behalf of any group or entity;
- impersonate any person or entity, or falsely state or otherwise misrepresent yourself, your age or your affiliation with any person or entity;
- upload, post, transmit, share or otherwise make available any unsolicited or unauthorized advertising, solicitations, promotional materials, "junk mail," "spam," "chain letters," "pyramid schemes," or any other form of solicitation;
- upload, post, transmit, share, store or otherwise make publicly available on the Site any private information of any third party, including, addresses, phone numbers, email addresses, Social Security numbers and credit card numbers;
- solicit personal information from anyone under 18 or solicit passwords or personally identifying information for commercial or unlawful purposes;
- upload, post, transmit, share or otherwise make available any material that contains software viruses or any other computer code, files or programs designed to interrupt, destroy or limit the functionality of any computer software or hardware or telecommunications equipment;
- intimidate or harass another;
- upload, post, transmit, share, store or otherwise make available content that would constitute, encourage or provide instructions for a criminal offense, violate the rights of any party, or that would otherwise create liability or violate any local, state, national or international law;
- use or attempt to use another's account, service or system without authorization from the Company, or create a false identity on the Service or the Site.
- upload, post, transmit, share, store or otherwise make available content that, in the sole judgment of Company, is objectionable or which restricts or inhibits any other person from using or enjoying the Site, or which may expose Company or its users to any harm or liability of any type.

Without limiting any of the foregoing, you also agree to abide by our Facebook Code of Conduct that provides further information regarding the authorized conduct of users on Facebook.

4. Facilitation

Who will facilitate the site and what roles will they perform? The community will need facilitating to both guide and encourage users as they move around the site and participate in the community. In order to determine this we need to look at a series of questions:

1. When are the users likely to need support?
2. When are the users likely to need encouragement?
3. How does the facilitator motivate the users to contribute?
4. Who performs these various tasks?
See below for details on Community Facilitation and the various roles within, which you may wish to consider. (taken from http://www.fullcirc.com/community/communityfacilitation.htm)

Who is the Facilitator?
The online facilitator can be the convenor, online community owner, or someone designated by the community owner. The role may evolve within a group. Small communities may have just one, while large online spaces with many spaces and topics may use teams. Facilitators may be unpaid volunteers in the social communities, where facilitators in online work groups often draw from the team. Facilitators may be a team leader or outside contractor. Online facilitators' most important skills are as a skilled group facilitator and genuine, authentic communicator. In a text environment, that means people at ease reading and writing with care and clarity.

What specifically do Online Facilitators Do?
Facilitators in offline situations have certain established roles providing leadership, focus, stimulation for group interaction, support, team building, refereeing, dealing with problems, timekeeping, responding to member feedback and group regulation. These may also be needed online, but there are also differences due to the primarily text-based nature of the environment. Communication has a few more challenges, plus there are the advantages and disadvantages of electronic tools. Facilitator approaches depend on the nature of the community. Some communities, such as conversational "salon type" communities, need a very low-key "host." Some need very clear and rapid responses, or distinct leadership qualities. Others need facilitators to help raise the overall skill level of the community to facilitate itself.

In general, there are four frameworks for online facilitation:
1. Understanding of group facilitation as it occurs face to face and online.
2. Knowledgeable about design. Ideally, they are involved in the conceptualization, design and implementation of the online space to ensure that group member needs are accounted for. They participate in pre-assessment and planning.
3. Grounded in the group's purpose with full understanding. They can convey it clearly to group members.

Facilitators use their group facilitation skills to enable the group to meet it's goals. This involves a group of processes which include:
1. Entry and engagement processes which help members become active participants
2. Supporting sociability, relationship and trust building
3. Constructing, adapting and modeling norms, agreements and accountability
4. Support discussion and dialog (foster communication)
5. Support divergent, convergent and task-oriented group processes (help get work done)
6. Anticipate and work with conflict and abrasion to both allow emergence of new ideas and protect people from harassment
7. Work with full understanding of diversity in learning style, culture and personal styles
8. Understand and make visible group participation cycles and "rituals" in the online environment.
9. Summarize, harvest, weave and support appropriate content and connections
10. Provide basic help as needed with the tools
11. Ensure the space is kept "tidy" and navigable.

To get a sense of some of the variety of facilitator roles, you may wish to read first hand from Hosts on Hosting. As you consider your role compared to theirs, you will probably find that you are doing a combination job, utilizing skills from all areas. And it varies over time as a community matures and members start to take on various roles. People have created many metaphors to describe the role of online facilitator that help us visualize the roles. Here are some examples along with links to resources:

The Social Host
The social host or "host as innkeeper" is the most well-known online facilitation model originating out of long time discussion communities like The Well, Electric Minds (note, this page seems to be rarely up
anymore) and Salon Table Talk. This is the most familiar role, but is not the ONLY role. As a dinner host brings together the elements of a successful party, a social host helps create an environment where the members feel comfortable to participate. Part conversationalist, part counselor, part role model and sometimes even part bouncer. They are also usually part of the conversation.

Applications include:
- social, conversational communities
- helping entrants feel "at home" and acclimated in work groups and communities of practice
- customer service

Key skills include:
- greeter
- social skills
- conversation stimulator (content, style, process)
- sometimes utilizes a persona or a "character."
- conflict resolution (particularly in open, public online communities)

The Team or Project Manager
In communities with a strong task, work orientation or subject focus, the team manager pays attention to adherence to focus, timelines, task lists, commitments and process. This can be a leadership and/or support role. This can be aided by the use of static web pages to organize information, the combined use of linear and threaded conferencing space, and the regular use of summaries and reviews. Skills include traditional project management and organizing.

Applications include:
- Virtual work groups and teams
- Online events (especially time-delimited)

Key skills include:
- traditional project management skills
- writing and summarization skills
- technical skills such as HTML to create information and summaries with visual impact
- ability to abstract information and process it for the group

The Community of Practice (CoP) Facilitator (or Coordinator)
CoPs share and build knowledge around a practice. Part of this process is being a group - having identity and reputation, being able to have agreements and some sense of accountability to the group. Facilitating CoPs online can focus on some of these "sociability" and relationship issues. This includes helping members get to know each other, articulating and making visible agreements, and watching/nurturing group dynamics. Skills include group facilitation and a working knowledge of CoPs.

Applications include:
- Internal formal and informal CoPs
- Cross organizational CoPs
- Formal and informal learning communities.

Key skills include:
- Group facilitation skills
- Cybrarianship
- Passion for community
- Ability to facilitate facilitative behaviors within the community

The Cybrarian
Cybrarians represent the gift of knowledge and information. They are "topical" experts. Cybrarians help members find information internally and externally of the community. They organize information and make it accessible. And they stimulate interaction with the introduction of or pointer to new and relevant information.

Applications include:
Virtual workgroups and teams
• Topic-oriented conversation communities
• Help desks
• Distance learning settings

Key skills include:
• web-savvy research
• strong organizational bent
• love of learning and information

The Help Desk
In online interaction spaces where there is an ongoing influx of new members, there is often repeated need for simple help pointers on using the software or understanding the community purpose and guidelines.

Applications include:
E-Commerce and service organizations
• Larger communities where new folks need help with the software

Key skills include:
• technical understanding
• patience
• clear communication skills

The Referee
Good cop or bad cop, this is the role of bringing attention to and/or enforcing community norms, rules and procedures. Referees help the community regulate, protect members and deal with problems. For example, if a community has a policy of no posting of advertising, the host has the job of deleting offending posts and asking the poster to refrain from posting ads. The clearer the rules, the easier the job. Likewise, where there are no clear rules, this job is often perceived as authoritarian and arbitrary. Referees are often not "regular members" who are "just part of the conversation," but a role apart. These tend to be employees of online community sites and have rather small facilitative impact on a group.

Applications include:
• social, conversational communities
• topic oriented discussion groups
• customer service
• workgroups

Key skills include:
• thick skin and a slow fuse
• Internet experience
• familiarity with common netiquette

Links to articles
• Netiquette Basics!

The Janitor
It can get messy in cyberspace, as we leave our words in conferences and topics. The Janitor tides up forgotten topics by freezing and archiving, redirects activity if it is in the wrong area, and generally tidies up.

Applications include:
• any community with multiple spaces
• high volume spaces

Key skills include:
• familiarity with software
• attention to detail
Co-Facilitating
In some online interaction spaces there are co-facilitators. This can be very helpful in busy or large spaces where one person cannot cover all the territory. It allows the work to be spread out when volunteers are used. Co-facilitating can also provide training opportunities, pairing an experienced facilitator with a new facilitator.

Facilitators as Role Models
Facilitators are the most emulated members of a group -- no matter if they are modeling positive or negative behaviors. They are often the first members to be challenged. Integrity, patience, a good sense of humor and a love of other people will be valued in any host. And as virtual communitarian Howard Rheingold so aptly wrote, “One point of heart is worth ten points of intellect.” Sometimes the facilitator is also a “member” of the group. Keep in mind when playing multiple roles in a community that people may not know what role you are “playing” at any one time and react in ways you might not anticipate. Facilitators might see themselves as also "just members" of the community. Members may not. This distinction becomes critical when there is cause for intervention or problem solving. No longer will you be perceived as "just a member." And in some cases, you will never again be considered in that role. You are most often held to a higher standard.

Community Questions – The set of questions to be addressed at Networking events

What is the value of being part of a community of practitioners engaged in medical education?
What role should the community play in curriculum development?
Who should be part of the community?
What kinds of information would it be useful to access and share within the community?
What would you like to be able to do online to be part of the community?
### Sustainability Plan Appendix 2 – Competitor comparison

<table>
<thead>
<tr>
<th>Application</th>
<th>Personal Profiles and User Searching</th>
<th>Social Networking (Communities &amp; Groups)</th>
<th>Collaborative Authoring</th>
<th>Communication Channels</th>
<th>Other Features/ Misc.</th>
<th>Cost/ Access Restrictions</th>
</tr>
</thead>
</table>
| e-llaborate         | • Users can create own profile which contains a photo, professional and personal information, a guestbook and list of groups they are a member of. • User can use the search facility to find others encouraging social networking | • Users can create their own groups which fall into 4 categories (open/moderated/invite only/private) ensuring a variety of users needs are met • Forums allow users to start and contribute to on-going discussions about any relevant topic. Each group has its own forum, where the group tasks can be discussed, but there are also several community wide forums, which are open to all members of the community to participate. | • Allows members of a group to review, edit and update a document, saving each revision or comment as an addition to the original text until the group leader, or appointed editor, integrates them into the next iteration. | • Users can communicate both synchronously (chat feature) and asynchronously via email, forums and blogs | • News group - keeping users up to date with relevant topics, further encouraging debate and communication. • Events calendar | • Free
• Strictly for the use of those involved in the delivery of the Manchester University medical curriculum. |
<p>| Google Docs         | • Users can create a brief personal profile including a picture. • Profiles are not viewable or searchable through Google Docs. | • Large number of different groups divided via subject areas (eg Schools &amp; Universities, News) available through Google Groups. Users are able to navigate easily to their specific interest &amp; create and customise their own groups. | • Able to collaboratively edit documents, spreadsheets and presentations using familiar user interfaces. • Limits the number of users able to edit a document to 10. | • If multiple people are editing or viewing the same spreadsheet at the same time, the Discuss tab will open allowing users to see the names of those people listed and chat. | • Google Reader - users are able to read news and their favourite websites is one location through subscribing to RSS feeds. | • Free to use by anyone. |</p>
<table>
<thead>
<tr>
<th>Please Review</th>
<th>• Users are unable to create a personal profile and can't search for other users.</th>
<th>• Predominantly a collaborative editor which places less emphasis on social networking</th>
<th>• Supports the review of Word documents, PDF's, PP presentations, images, source code and plain text.</th>
<th>• Users can comment on the same document in real time or asynchronously</th>
<th>• Predominantly is a collaborative editor.</th>
<th>• Standard corporate installation - $200 (US) Per user</th>
</tr>
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<tbody>
<tr>
<td><a href="http://www.pleasetech.com">http://www.pleasetech.com</a></td>
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<tr>
<td>Zoho</td>
<td>• Users can create a brief personal profile including a picture.</td>
<td>• Users can create their own groups but unable to search existing groups and communities.</td>
<td>• Able to collaboratively edit documents, spreadsheets and presentations using familiar user interfaces.</td>
<td>• Has a range of communication channels, synchronous (Zoho Chat) and asynchronous (Zoho Mail).</td>
<td>• Provides a range of productivity and collaboration applications (Zoho notebook, wiki, share, planner ...)</td>
<td>• Free to use by anyone.</td>
</tr>
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<td><a href="http://zoho.com/">http://zoho.com/</a></td>
<td>• Users can import existing contact lists from their respective webmail services.</td>
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<tr>
<td>Moodle</td>
<td>• Users can create a brief personal profile that includes a picture along with recent blog and forum posts. • All of Moodle (Users, Sites...) is searchable.</td>
<td>• Features 47,664 registered sites in 202 countries with 26,703,888 users. • Can be scaled to very large deployments of students as well as small groups (primary school) • Lists links of all sites on Moodle categorized by country.</td>
<td>• Moodle is highly flexible in terms of collaborative authoring, predominantly featuring Moodle Docs (Wiki), databases and assignments.</td>
<td>• Features a variety of communication channels with a synchronous chat feature on the individually created sites and a range of asynchronous forums.</td>
<td>• Provides a news channel with a subscription to an RSS feed available.</td>
<td>• Free to use by anyone, specifically created for those involved in education.</td>
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<td><a href="http://moodle.org">http://moodle.org</a></td>
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<tr>
<td>Platform</td>
<td>Features</td>
<td>Tools</td>
<td>Additional Information</td>
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<td><strong>JISC Emerge</strong></td>
<td>• Promotes both the creation of brief individual user profiles and more detailed profiles relating to JISC projects.</td>
<td>• The entire site is a social network environment making use of already established software eg Moodle, Elgg, Secondlife.</td>
<td>• Emerge is also a support project conducting research and events.</td>
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<td></td>
<td>• Able to search both people and communities.</td>
<td>• Doesn't feature an inbuilt collaborative editor, however makes use of other software such as Moodle which is designed specifically for that task.</td>
<td>• Main asynchronous communication channel available is blogs which are linked to an RSS feed.</td>
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<td></td>
<td>• Google search facility also inbuilt.</td>
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<td>• Events calendar</td>
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<td><strong>Group Hub</strong></td>
<td>• No way exists in which users can create personalised profiles or search the community for other users. However users can use the blog search facility to find relevant topics.</td>
<td>• The whole site itself is a community group designed around the concept of networking and collaboration. It also provides a list of related groups (Friends).</td>
<td>• Predominantly is a forum for a community group.</td>
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<td></td>
<td>• The site revolves around personal blogs which are asynchronous in nature.</td>
<td></td>
<td>• Free to use, for bringing together individuals and business in Lancashire to create, design &amp; innovate.</td>
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<tr>
<td><strong>Confluence</strong></td>
<td>• Users can create and easily personalise their organisations' home page to suit their needs via the provided themes and the ability to upload pictures and logos.</td>
<td>• The 'My Dashboard' feature allows users quick access to every space as well as the peoples directory. Also has an up-to-the-minute list of recently added or updated pages, comments, blog posts and attachments.</td>
<td>• Encourages users to build powerful, navigable knowledge stores through links, hierarchy, tags and searches increasing user functionality.</td>
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<td></td>
<td>• Everything in Confluence is searchable - pages, blogs, news items, comments, emails, attachments, people.</td>
<td>• Is a highly flexible wiki system allowing users to taylor it to their needs, applicable to be used in different manners - Intranet, collaboration, knowledge management, extranet web publishing and more.</td>
<td>• Price ranges from $600 - $4,000 (Academic) $1,200 - $8,000 (Commercial)</td>
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<td>• A variety of communication channels exist - email (includes mail archive), mail threading (allows users to view entire email conversations) &amp; discussion threads concerning the content of users' wikis.</td>
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</table>
HeLMET final Report

Sustainability Plan Appendix 3 – Feasibility studies of e-llaborate development

Report on the feasibility of integrating e-llaborate with Alfresco document management system

1. **Background**

   *e-llaborate* is the main product delivered by the HeLMET project. HeLMET is a JISC funded project which aims to provide generic services to support on-line consultation and brainstorming in distributed communities of practice, using social software. Currently, e-llaborate is being used by an increasing number of communities for a wide range of purposes.

   The system features a collaborative document editor, which implements a simple workflow that supports the collaborative editing and review of documents associated with group tasks. Ellaborate organises its users in groups. A *Group* in ellaborate represents a community of users with shared interests. A group can be public – meaning that any registered user can join and participate in the group’s activities, or restricted to members only. Each group can have blog posts, calendar events, *document review tasks* and resources in the form of PDFs, Office documents, Images, and links to other web resources.

   The document review task consists of a set of documents that are to be collaboratively authored/reviewed by designated group members within a stipulated timeframe. The entire authoring / review process is overseen by a set of designated moderators and is realised through the following workflow:

   1. A moderator creates a document review task within e-llaborate and sets task properties such as name, description and duration. The moderator also identifies a set of resources that are relevant to the review task.
   2. Initial documents are imported into the system. These could be blank documents with sections only (for authoring) or existing documents (for reviewing).
   3. The moderator sends an invitation to users to begin the authoring / review process.
   4. Users iteratively edit and/or make comments on the document(s) on a paragraph-by-paragraph basis.
   5. When the process is completed, a set of moderator collates the changes made and reviews the comments made to arrive a new version of each document.
   6. This cycle can be repeated any number of times.

2. **Document Management Integration Requirements**

   Currently, documents that are being authored / reviewed are stored in HTML format within ellaborate. However, the Drupal framework on which ellaborate was built, does not provide scalable document management capabilities such as *auditable document lifecycle management, check in/out, import/export of traditional office / ODF documents* as well as *enterprise integration capabilities*. It is expected that the long-term use of ellaborate in production environments will require these features. Rather than build these functionalities into ellaborate, the HeLMET team decided to investigate the feasibility of integrating ellaborate with an existing document management system.

   The key requirements for such a system will be that it provides a *standards based programmable interface* (specifically the Content Management Interoperability Services (CMIS)) such that documents can be imported directly from the document management repository, and exported back as a new version of the document after a collaborative authoring /review process. Therefore, such a document management system must also support incremental versioning and the ability to revert to a previous version of the document.

   Although integrating a document management system with ellaborate will require a programmable interface, it is also required that the system itself is *accessible and easy to use* since it will ultimately serve as a normative repository of all the documents and resources used and created/reviewed within ellaborate.

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2 [http://www.jisc.ac.uk](http://www.jisc.ac.uk)
In view of these requirements, this report evaluates the feasibility of integrating e-llaborate with an open source document management system – Alfresco, which is a product of one of the organisations that proposed CMIS.

3. Alfresco Document Management System (DMS)
Alfresco is an open source document management system. It is part of an Enterprise Content Management (ECM) suite that has the following other components:

1. Collaboration,
2. Records Management,
3. Knowledge Management,

A review of the features of the Alfresco document management system indicated that it supported the key requirements outlined in the previous section. Some of its features are outlined below:

1. Open Search
   a. Native OpenSearch from Firefox or IE7 across multiple Alfresco repositories and also other Open Search repositories
2. Data Management and Transformation Engine
   a. Transformation Services – Office to ODF/PDF, PowerPoint to Flash
3. Auditable Document Lifecycle Management
   a. Check-In/Out – minor and major version control
   b. Auditing – who created, who updated, when created, when updated
   c. Document cross linking – across multiple spaces
4. Programmable Interface
   a. REST API Binding
   b. WSDL API Binding
5. Authentication and Authorisation
   a. Security and user management with users, groups and roles
   b. Document Level Security
   c. Single Sign-On through NTLM or LDAP

4. Integrating e-llaborate with Alfresco DMS
The basic use of alfresco within the context of e-llaborate will be to serve as the repository for documents used within the system. This includes those that are uploaded to be used as resources during task review sessions. In addition, the repository will also house the outputs of review iterations with versioning support. Although alfresco is developed in the Java 2 Enterprise Edition platform, its support of the CMIS standard makes it easy to implement the integration using SOAP/WSDL based web services.

In a potential application scenario, the original workflow introduced earlier will be modified as follows:

1. A moderator now imports the initial document that users will work on from the document repository through a new module extension that will be developed within e-llaborate (this is the module that will communicate with alfresco through the CMIS interface).
2. Resources relevant for any review task will no longer be imported into e-llaborate. Rather they will remain within alfresco but linked with the review task. Accessing these resources will still be transparent to the user since all the integration work happens behind the scenes.
3. When a review task is completed, the moderator generates a new version of the document from within e-llaborate. The system sends it back to alfresco with versioning information.

Lastly, an interesting feature of alfresco is that it supports the use of a virtual file system to access the content repository. This means that a user or moderator can access files in the repository just the same way they would access files on their local machines. In summary, alfresco as a document management system has all the features required for value-added integration with the e-llaborate system.
Integrating e-llaborate with Calais – A Semantic Metadata Extraction Tool

1. Background

e-llaborate is the main product delivered by the HeLMET project. HeLMET is a JISC[^3] funded project which aims to provide generic services to support on-line consultation and brainstorming in distributed communities of practice, using social software. Currently, e-llaborate is being used by an increasing number of communities for a wide range of purposes. The system features a collaborative document editor, which implements a simple workflow that supports the collaborative editing and review of documents associated with group tasks. Elaborate organises its users in groups. A Group in e-llaborate represents a community of users with shared interests. A group can be public – meaning that any registered user can join and participate in the group’s activities, or restricted to members only. Each group can have blog posts, calendar events, document review tasks and resources in the form of PDFs, Office documents, Images, and links to other web resources. The document review task consists of a set of documents that are to be collaboratively authored/reviewed by designated group members within a stipulated timeframe. The entire authoring / review process is overseen by a set of designated moderators and is realised through the following workflow:

7. A moderator creates a document review task within e-llaborate and sets task properties such as name, description and duration. The moderator also identifies a set of resources that are relevant to the review task.

8. Initial documents are imported into the system. These could be blank documents with sections only (for authoring) or existing documents (for reviewing).

9. The moderator sends an invitation to users to begin the authoring / review process.

10. Users iteratively edit and/or make comments on the document(s) on a paragraph-by-paragraph basis.

11. When the process is completed, a set of moderator collates the changes made and reviews the comments made to arrive a new version of each document.

12. This cycle can be repeated any number of times.

2. Semantic Metadata Extraction Requirements

One of the key functions of e-llaborate is to support the collaborative review of documents. This is a highly knowledge intensive task and users are provided with links to a number of resources, which are expected to support them in conducting the review process. In addition, they may also need to refer to the outputs of some previous review tasks. As a result, the process of finding relevant information during a review session can be very laborious, especially when a large repository of documents are involved, each of which can be large in itself.

One way of making this process easier for users is to provide quicker access to relevant aspects of the resources that are required to support any given task. There are a number of ways to achieve this. The first is to index the documents so that the index helps users find relevant documents for a given subject. A disadvantage with this approach is that the relationships between the contents of these documents are not taken into consideration in building basic indexes. A better approach is to use techniques that can also take the semantic properties of the documents into consideration. Such a tool can then be used to provide a context-sensitive panel with deep links into resources that are inferred to be useful for the particular review task the user is working on. This report briefly evaluates the feasibility using the Thompson’s Calais Web Service[^4].

[^3]: [http://www.jisc.ac.uk](http://www.jisc.ac.uk)

[^4]: [http://www.opencalais.com](http://www.opencalais.com)
3. **Calais Web Service**

The Calais Web Service is a web service provisioned by Thomson Reuters that automatically creates rich semantic metadata for submitted content. It is fast and uses a combination of natural language processing, machine learning, and other methods. Calais analyzes each document and finds the entities within it. It also returns the facts and events hidden within the text. A demo of the functionalities of the web service can be found at [http://viewer.opencalais.com/](http://viewer.opencalais.com/). The service is free for commercial and non-commercial use but requires an API key that is obtained by registration.

4. **Integrating Calais with e-laborate**

The e-laborate tool is built on the drupal⁵ content management system. Fortunately, a module has been developed by Phase2Technology⁶ that provides an API for interacting with the Calais Web Service from a drupal installation. It works by using the Calais web service to extract semantic metadata from each document that is created or uploaded into the e-laborate system. It then uses the internal taxonomy subsystem of drupal to associate the extracted metadata with the document. This makes the document accessible by searching on those tags.

To apply this capability within the context of the review process, we first use the Calais API to extract semantic metadata from each document and resource in the system. The extracted metadata is then used to index these documents. For any document review session, we can define a working set (i.e. a search query context) based on the entire document that the user is working on, or a lead paragraph, or the even current paragraph / line. The Calais API is then used to extract semantic meta-data from this working context, the result of which is then used to identify relevant resources. The Calais Web Service computes a degree of relevance, which can be used to rank the matching resources.

Based on this approach, users can be presented with a panel on some part of the screen during each review session that dynamically lists relevant documents for the current task. If a user clicks on any such link, the system would be able to bring up the particular parts of that document that is relevant.

A key concern however is when an external document repository (e.g. Alfresco) is used as the store for resources and outputs of reviews. In this situation, the drupal-based Calais module would be of little use in indexing the documents and resources. However, it would still be useful in extracting semantic metadata that can be used as a basis for applying other search techniques to retrieve relevant documents depending on the document repository in use.

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⁵ [http://www.drupal.org](http://www.drupal.org)
⁶ [http://www.phase2technology.com](http://www.phase2technology.com)
Integration of e-llaborate with the Teacher Portfolio System (Topcat)

1. **Background**

*e-llaborate* is the main product delivered by the HeLMET project. HeLMET is a JISC[^7] funded project which aims to provide generic services to support on-line consultation and brainstorming in distributed communities of practice, using social software. Currently, e-llaborate is being used by an increasing number of communities for a wide range of purposes.

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15. The moderator sends an invitation to users to begin the authoring / review process.

16. Users iteratively edit and/or make comments on the document(s) on a paragraph-by-paragraph basis.

17. When the process is completed, a set of moderator collates the changes made and reviews the comments made to arrive a new version of each document.

18. This cycle can be repeated any number of times.

2. **Teacher Portfolio**

The teacher portfolio system (Topcat[^8]) in the Manchester Medical School currently enables teachers to record their contributions to teaching and learning. For each contribution entered, a teacher gets rewarded with a notional amount of teaching credits, which is based on a set of teaching activity tariffs. Reports from the system showing these credits can then be used as evidence of a teacher’s contributions during appraisals.

3. **Integrating both systems**

The work carried out by teachers using the e-llaborate system can be considered as contributions to teaching and learning. Therefore, it is possible to integrate both systems so that each review and moderation session undertaken by a teacher is automatically recorded in the Teacher e-Portfolio depending on the role of the teacher.

This may require a creation of new teaching tariffs for each of the various types of activities that teachers might engage in within the e-llaborate system (e.g. moderator, reviewer, collator, etc.)

Currently, the teacher portfolio system is implemented in the .NET platform but does not expose any external application-programming interface (API) for sending data into the system. To facilitate integration, there are three alternatives:

**Option 1:**
First, the existing teacher portfolio system can be extended to expose a web service based API for adding and accessing teaching load entries. This API can then be used by the e-llaborate system to directly enter

[^7]: [http://www.jisc.ac.uk](http://www.jisc.ac.uk)
[^8]: [http://topcat.manchester.ac.uk](http://topcat.manchester.ac.uk)
teaching load entries corresponding to a teacher’s activities in the teacher’s e-portfolio. This is not difficult as the services already exist and only needs to be publicly accessible.

Option 2:
Second, the e-llaborate can directly access Topcat’s database so that there will be no need to modify the existing Topcat system. The advantage of this option is that it is easier and quicker to implement, but the disadvantage is that the credentials for accessing the Topcat database will have to be known to the e-llaborate application, which might pose some security concerns. In addition, it is always good practice to minimise data entry through backdoors.

In summary, option 1 is a more sustainable approach to integrating e-llaborate with the Teacher e-Portoflio system. This is because in addition to ensuring data consistency and integrity as well as data security, it also means that any other application wishing to send teaching load entries to Topcat can reuse the same application interfaces that were exposed during this integration.
Appendix 5 – HeLMET Topic Map

For an interactive Map go to:

http://www.medicine.manchester.ac.uk/helmet/projectdocs/helmetmap.pdf