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1 Acknowledgements

We would like to thank the North West Regional Development Agency (NWDA), the Institute of Entrepreneurship and Enterprise Development (IEED), LEAD Wales and Lancaster University Management School (LUMS) for their support and interest in this project.

2 Project Summary

This project was to support management and business professionals in university departments and related organisations who provide the essential link between research and commerce, i.e. they are engaged in managing the process of Knowledge Exchange (KE). These groups develop best practice in management and liaise with other stakeholders such as the Regional Development Agencies. CRIB focused on their requirements, and demonstrated how a Virtual Research Environment (VRE) could be extended to include management research and practice with tools enabling more effective collaboration, sharing of information and accelerating their progress through the research lifecycle.

Our key challenge was to provide a Web-based VRE platform using existing tools to enhance collaboration. This platform supported the opportunity for staff in business and management schools to change their relationships both with each other and with the groups they support. For the project, Sakai was chosen as it is already familiar to users at the partner institutions and the project partners had experience of enhancing the current tools stack. The tools we enhanced or developed for this project are:

Unity

(<https://confluence.sakaiproject.org/display/CONF2010/The+Unity+Sakai+Service+and+Collaborative+Research+in+Business>);

Floating Chat (integral to Sakai 2.9 see

<https://confluence.sakaiproject.org/display/FLTCHAT/Home>;

<https://jira.sakaiproject.org/browse/SAK-17524>;), Profile2

(<https://confluence.sakaiproject.org/display/PROFILE/Profile2>);

Roster2 (<https://confluence.sakaiproject.org/display/RSTR/Roster2>); and

YAFT (<https://confluence.sakaiproject.org/display/YAFT/Yaft>).

For general discussion on these issues see <http://alirobertson.blogspot.com/2011/02/six-months-of-changes-in-sakai.html>.

We now have alternative approaches to obtaining the information provided by the BRII and CREE tools which were specified in the original proposal. Following user requirements we made a change in emphasis and did not integrate CREE (<http://www.hull.ac.uk/esig/cree/>) or BRII (<http://brii.medsci.ox.ac.uk/>), the reasons for this are explained more fully in the body of the report.

	WP	Deliverables	Proposed effort	Actual effort
<i>Existing practice & Innovation report</i>	1	1.1	3 Months	3 Months
<i>Base Sakai set up</i>	2	2.1	1 Week	1 Week
<i>Service delivery and support</i>	2	2.2	7 Weeks	7 Weeks
<i>Cree</i>	3	3.1	6 Months	0
<i>Profile2 deployment</i>	4	4.1	2 weeks	3 weeks
<i>Additional work: Profile2 development</i>				5 months
<i>Additional work: Roster</i>				2 months
<i>Additional work: Floating chat</i>				3 months
<i>BRIL/Unity</i>		4.2	4 months	2 months
<i>Case 1</i>	5	5.1	7 weeks	7 weeks
<i>Case 2</i>	5		1 week	1 week
<i>Case 3</i>	5		1 week	1 week
<i>Evaluation report</i>	5	5.2	1 month	1 month
<i>Sustainability Report</i>	5	5.3	1 month	1 month
<i>Reports</i>	6	6 1 to 3	2 weeks	2 weeks
<i>Dissemination of results</i>	7	7.1	4 weeks	4 weeks

Table 1 Summary of Project Activities

3 Project Main Body

3.1 Introduction to CRIB

Undertaking research in business/ management is closely entwined with the practice of business, and there is a clear need for the two activities to work hand in hand. CRIB was about shortening the research lifecycle for academic business and management specialists and those involved in Knowledge Exchange (KE), facilitating their research and managing strategic collaborations between academic and commercial partners, in particular small to medium enterprises (SMEs). Moreover, business can learn a great deal by working with academic sectors for many reasons (e.g. improve business practice, learn new engineering techniques, etc). For this project, a key ambition was to create a community portal, built on the Sakai collaboration framework, which would offer a conduit for communication between the sectors and provide unique yet secure information and people search facilities for those using the service. The portal provides specialised tools, designed to shift more of a group's, or individual's, time from preparation to actual Management e-Research or learning. The tools that have been created focus on assisting in some of the repetitive though crucial background work, such as literature searches, consortia building and programme management. The Sakai framework has evolved considerably due to CRIB but also because of its abundant and productive world wide open source community. At the beginning of CRIB, Sakai contained various tools that are used to provide users a communications platform within secure worksite settings. Due to CRIB, Sakai now has additional social networking tools that work across worksites and allow all Sakai service users (academics, students and business contacts) to find and contact each other without the limitation of worksite associations. This is highlighted by Figure 1.

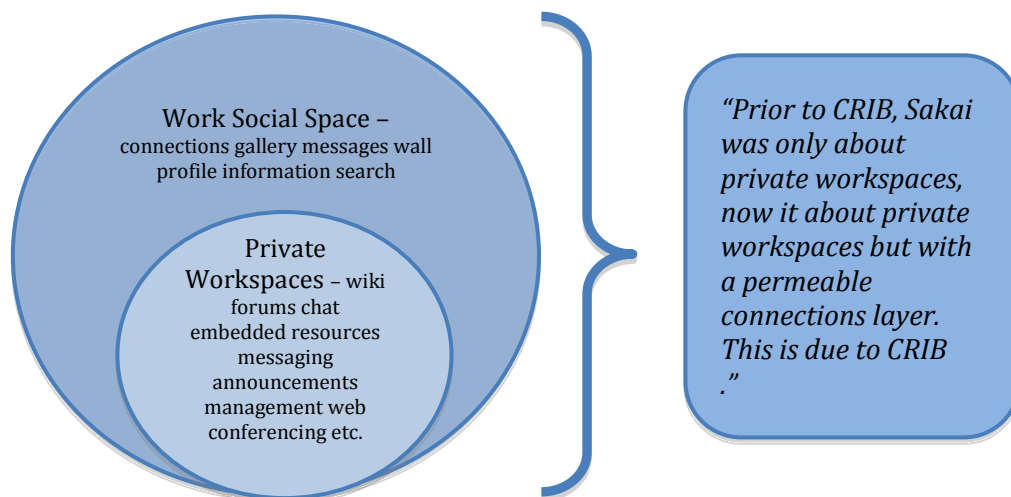


Figure 1: New ways of working

Prior to CRIB, Sakai was about private workspaces (referred to as worksites) that allow researchers, learners and e-community builders to deploy as range of shared tools (e.g. forum discussions, chat, announcements, document store) and also link in external web resources.

Most actions within worksites are linked into the Sakai mail server system so that users are sent e-mail alerts when specific actions are initiated. For example, when new resources (e.g. a Word document) are uploaded into the worksite resource area, e-mail alerts (if selected) are sent to all participants of that worksite. This feature is also available in forums, wiki and announcements. This reminds users that worksite activity is taking place that may be of interest to them. The user group tailors worksites so that look, feel and content will vary by the research/ learning needs of each community. Due to CRIB, a work/ social space has been developed and added called Profile2. Profile adds an outer layer of communication among users that goes beyond worksites and allows users (subject to privacy settings) to search and link up using various tools. This breaks the limitation of a worksite only approach and allows people with common interests across various stakeholder groups (academics, business and public sector) to make contact and work together.

Note also that all of the tools that are discussed in this document have been subjected to quality assurance and accepted into Sakai 2.7 (released 2010), 2.8 (to be released 2011) and 2.9 (2012) and are also available to download and install from the sakaproject.org web site. Moreover, the addition of Profile2 has also generated momentum for new developments that link into its functionality. For example, Adrian Fish (Lancaster) was able to create the Floating Chat tool. People that share connection space can now chat 1 to1 providing both are using Sakai and logged in (see Screenshot 2). The benefit of the floating system is that other elements of Sakai can now be extended into it. For example, focus groups highlighted that Profile2 information (and its social elements) should be readily available without need to navigate away from worksite settings. The floating profile concept is presently being worked on to accommodate these findings. It also became apparent that a social space Wall was required to help connections to stay in touch. Both of these developments, undertaken at Lancaster under CRIB, go beyond the planned deliverables of CRIB but are now accepted tools or ways of thinking within the Sakai community. Professor Charles Severance (originator of the Sakai concept), University of Michigan, is also working with the Lancaster Centre for e-Science to enhance the user interface of Sakai 2.x based on the new functionality produced by CRIB.

3.2 Project Outputs and Outcomes

Output 1: Quantitative and Qualitative Research Discussion

To meet this deliverable a survey was designed to capture present needs among academics and, during the project, qualitative studies and workshops were undertaken that addressed some of the findings of the survey. This survey report forms part of the first stage of research for CRIB that determines metrics on how research partners (Lancaster University, STFC Daresbury and Hull University) presently communicate with businesses during the course of research, consultancy and other business support initiatives. It also evaluates the nature of communication tools employed by researchers at the institutions and the difficulties they face when either locating suitable enterprises to work with or communicating with existing business contacts. The online survey was deployed during September and November 2009 and we asked academics research business activities, outreach support staff and those that administer communication with business to respond to the survey. In total 117 responses were received for all institutions that represented in this report. The full report document is publically viewable at [https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB Outputs/CRIBevaluation.docx](https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB%20Outputs/CRIBevaluation.docx).

Below are a series of quotes taken from the research that highlight the dimensions on which KE are based and also possible approaches to improving KE.

When I am organising 10 or more projects involving researchers, students, business organisations and the University, at some point there will be confusion over some piece of information, someone will be off work unexpectedly, e-mails might not be answered, projects take an unexpected direction (etc). Knowledge exchange is impossible to predict and if one develops an expectation that it will run smoothly without personal intervention, one will always be disappointed. An improvement would be to make everyone work harder or more predictably but this is unlikely to happen. We could be smarter. The willingness of participants vary.

Our mutual interests and objectives may not entirely coincide. The human dimensions are always the most complicated, particularly when working with people who do not understand what research is, but want to appropriate its strategic benefits.

On matters of KE a number of respondents highlight that KE could be improved.

They [knowledge exchange mechanisms] can always be improved - being a relatively youthful discipline means that organisations are constantly learning about effective KE; this is an ongoing process and therefore can always be improved.

Some highlight setting up KE networks is complex and that application of Web 2.0 technologies to enhance the interface may be difficult as culturally as these technologies are not in standard use (a finding shown earlier in this document).

Knowledge Exchange is not widely understood. Many people are protective about their knowledge. Setting up and maintaining KE networks are hard work - blogs, forums, wikis etc are seen as beyond the norm.

There is much improvement to be made in terms of us understanding what issues organisations need to prioritise and also how those organisations understand what we can offer.

More technologically focused difficulties are also faced with limited technology support seemingly restricting the ability of staff to organize online resources as they would like.

I would like to be able to increase the flow of information that goes out to businesses I work with, for example via e-newsletters in order to make them better informed about what is going on at LUMS and the kind of support available to them.

It is not clear from this quote the extent to which lack of support or over-complexity of existing technology solutions limits sending e-newsletters. The following quote, however, does highlight problems of online tool complexity and how simplification may lead to enhanced KE.

Tools are disparate and often hard to use, being overly complex with poor user interfaces. Simple and well-designed tools will help develop better knowledge solutions.

The following quotes highlight that no existing support is in place to manage information or knowledge but that Web 3.0 (e.g. semantic search tools) may bring solutions; the final quote highlights the need for properly supported online technologies to ensure they are applied correctly.

No KM [Knowledge Management] system in place, limited IM [Information Management] system in place, bring on Web 3.0.

[KE mechanisms could be improved] By having proper technical support to help me use online stuff better.

What did we learn? Reflective Analysis

This element of the CRIB project was designed to determine how academics and those working on 3rd mission activities communicate and exchange knowledge with external organisations. A key component of CRIB is to integrate more advanced profiling system with embedded semantic search tools. Key findings of this report are:

Newly forming research/ consultation groups prefer to meet face-to-face wherever possible, although this may not always be possible due to time and geographic constraints. Many would prefer to delay an inaugural meeting rather than continue using methods alternative to face-to-face (e.g. video or teleconference).

Very few new external contacts are made using Web 2.0 technology. For example, LinkedIn is used by 45% of respondents but only 2% of respondents suggested it was used to make new contacts. Facebook and other social media are rarely used to maintain communication among work contacts. This issue needs to be examined in detail using qualitative techniques. For example, are the security parameters too weak or is this more to do with the interface not being professional enough?

The following quote from the survey highlights Web 2.0 are gimmicky, limiting their adoption.

The majority of communication tools mentioned [e.g. forums, chat] are not used. They are gimmicks or academic and unlikely to be used by my clients. If I suggested to a client that we use Facebook as a method of communicating about the progress of a stock control database development, I would not be taken seriously. Previous experience with video conferencing (video problems, delays, hitches, pauses, sound issues) has taught me to avoid it at all costs.

It is useful to note that this respondent tried video conferencing but unsuccessfully. Again, if time spent travelling to and from meetings is to be reduced meaningfully, we need to explore why existing technologies that should assist with this are failing users.

During the study period various interviews and workshops were undertaken, prior to the deployment of new tools, to meat out the findings presented by the study. For business support personnel, the use of technology is quite biased towards the psychological traits of both the provider of business support but also that of the OMs. Sakai is now deployed across 15 service providers in the NW England and Welsh regions and significant variations in

propensity to apply computer IT to support communication have emerged. For example, highly experienced computer users seem better able to encourage and engage OMs into online communication. Several communications and visits to providers suggested the following qualitative insights.

1. If the psychology of the provider was weak in relation to online communication generally, weaker communication conduits will emerge among OMs and between OMs and providers. The role of e-facilitator/ technology steward is critical to engage online communication, and this is particularly important for older OMs that tend to find online communication approaches daunting or lacking in any real value. Please see <http://alirobertson.blogspot.com/2010/11/inter-generational-differences-brought.html> for discussion on intergenerational differences and the difficulties posed by them when managing online communities.
2. Project leaders must support the online element of the project in a coherent and consistent way. If the overall project is to be evaluated then so must the online element. Failure to evaluate the online element implies that e-facilitators can limit work loads but limiting the online interaction. Metrics for success/ failure must be developed that allow all providers benchmarked targets they should hope to achieve.

Barriers to the use of online tools would imply that much of the information flows that port via Sakai do not exist as heavily as they should. This would imply that, in part at least, the 'information network' has not maximised its full potential. The question, therefore, is whether the delivery of new social tools within Sakai are able to encourage more communication among the stakeholders. Results for this are presented later in the text. Before that, we discuss the Sakai setup, service delivery and support operations which were managed from Lancaster University.

Output 2: Base Sakai Setup, Service Delivery and Support Plan.

Lancaster's Sakai Instance

Lancaster's Sakai service is available at <https://sakai.lancs.ac.uk>. It presently runs on blade servers, but general acceptance of Sakai's suitability for both business support, VRE and VLE have lent strong support for it to be installed and maintained centrally across Lancaster's VM stack. Presently, Lancaster runs Sakai 2.7x with upgrade to 2.9 planned for next year. During the project period, numerous tools were deployed within its framework to enable all stakeholders to evaluate a range of asynchronous and synchronous communication methods. For example, the BigBlueButton web conferencing toolset was integrated into Sakai during 2010 so that worksite participants can set up video/ web conferences as needed. Within the Lancaster domain it has been used to live feed workshop participants from the USA into workshops hosted at Lancaster. Post workshop, delegates were able to communicate with the presenters and other delegates using the asynchronous forum tools. BBB was deployed across 2 servers and embedded as a Sakai tool for all stakeholders to take advantage from. This enables users to engage in n-way web conference incorporating presentations, desktop sharing and online chat. To manage demand, e-Science developed load-balancing software to ensure that loading demands are equalised across both BBB servers.

For CRIB, all project partners were added into the main project support worksite. This site was used to centralise project management, data stores and document updates (see Appendix photos). It is also used to make project reports publically available (see

<https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB%20Outputs/> for publically available documents folder for the CRIB project).

The Lancaster VRE/ VLE service support is provided by the Lancaster Centre for e-Science. Support is provided by Alastair Robertson, Daniel Robinson and Adrian Fish. Support requests are made by users via a ticketing system, Monday to Friday, 9 to 5 excluding Bank holidays. Telephone support has also been provided for those queries that have been unable to deal with using the ticketing system. Furthermore, all users are placed into a common worksite that e-Science uses to communicate system information, including scheduled downtime and risk periods. The Sakai web site (see <http://www.opensourceforenterprise.org>) also provides Q&A to the most commonly encountered problems. Various additional training materials (text and video based) have been developed and placed online at the gateway (see <https://sakai.lancs.ac.uk>) so that users can browse prior to logging in. Most worksites contain links to these materials on their main page.

Amendments to Development Work Packages

The Centre to e-Science works a developmental cycle to ensure that various community needs are accounted for in tools attributes. This lifecycle runs from tool design, to deployment among users, then incorporates user/ community feedback into tool development. The cycle repeats leading to user/ community needs being fully accounted for. With the profiling system in place (WP4, see below for output discussion), we began to link it to a system called Unity. On the initial design board, Unity would evaluate user's profiles and match people of common interest. For example, it is commonly found that within academic environments that people with common research interest may exist across different disciplines but that they would have difficulty meeting up, or even not know of each other's existence. The function of BRII (WP4.2) was to provide the data that Unity could use.

Search and binding tools were created as specified in the original proposal, that is, on request or automatically user profiles would be mined and then would group people of common interest. Once the common interest group was determined Sakai would then place them into a worksite that contains a generic set of tools (i.e. people, discussions, resources, site stats, BigBlueButton). We encountered a privacy problem that forced us to change the direction of this development work (see Table 1 for details of how work time has been amended to reflect these changes). As background, during 2010, Facebook launched its Group function which allowed users to group together people they deem to have a common interest - however those people that find themselves automatically placed into groups may not actually wish to participate. Within Unity, they would also find themselves embedded into a flow of communication (such as forum email alerts, BBB conference requests) that they had not subscribed to and would not always welcome. Initial reviews from users were negative once they had observed the final software in operation. We suspect that applying algorithms to automatically mine profile data and then use this information to group people together is contrary to the UK Data Protection Act 1998 (DPA), since we are using user profile data in ways that may be against their wishes or their best interests. Even if the DPA regulations are not broken, it may cause users to be wary and to limit the amount of profile data that they would otherwise be prepared to offer into the system. In view of these points, an alternative

approach was developed that allows users to form groups and create worksites on their own terms, through choice rather than automation - we call this Unity2.

Unity2 removes automation that was designed into the original Unity. Unity2 uses the social networking element of Profile2 (i.e. the Connections list) to provide users a list of people that they are able to invite to join a worksite of specific community of interest. This overcomes the risks discussed previously and is more in line with current ways of thinking regarding online community formation. For example, E. Wenger suggests that, as digital stewards, we can only enable the environments into which online communities form, and that access or participation in them should be voluntary. In view of this way of thinking we have now provided an eco-system for voluntary social linkage and Unity2 provides the framework for pre-existing contacts to form up into worksite communities. The mechanism for this is relatively straightforward. By selecting those connections with which you wish to communicate, and pressing the Form Worksite option, a worksite is created (as with Unity1) but invitations to participate are e-mailed to prospective participants who can choose to accept them or not. On agreeing to participate, the user is placed into the worksite and will see it the next time they login.

Note also that CREE (WP3.1 <http://www.jisc.ac.uk/whatwedo/programmes/portals/cree>) was not enabled for this project. CREE has failed to attract attention within academic establishments using Sakai that we are aware of and there is no developer community supporting the tool's continued growth and adaptation to newer ways of working. Without continual development the CREE tools will become obsolete as the environments they are built to work in move forward. In view of this, it was decided that the project should focus on tools, as requested by the users, that help enhance collaboration that could be fully supported by the Sakai community; but also open source communities that keep external developments moving. For example, BigBlueButton and OSPI are fully supported outside of the Sakai community as stand-alone products, but also supported within the Sakai community.

Some delays arose due to slippage in the deployment of Sakai 2.7. Since the new profiling system was embedded into 2.7, deployment was a critical phase in the project. Sakai 2.7 was meant to have cleared the Sakai Open Source Community QA process and be available for install during April 2010; but actual rollout occurred in August 2010. Sakai 2.7 did not initially include all Profile2 enhancements that have been developed for CRIB as development work did not begin until late November 2010, which was the earliest that we could employ Dan Robinson. This delay means that some of the tool enhancements were not presented to users until a later date. Note that many of the tools we have developed and used at Lancaster rely on Sakai 2.7 (e.g. Roster, BigBlueButton, Chat) and will be available from that version onwards.

Linking Profile to Centralised University Profiles and Resources

It had been originally suggested that we would use the experiences from the BRIL and CREE projects and embed them as tools in Sakai to enable broad searches of university resources (e.g. ePrints, databases). During CRIB, Lancaster University independently began Project Sophia, which is equivalent to BRIL and CREE. It uses the EU Cerif format standard, meaning that profiles of individuals, across multiple institutions, are described in a common way. We are presently working with the Project Sophia team and re-designing the data schema of Profile2. Moreover, we are developing content viewing areas within profiles that will present

key publications and news items for individuals. The new Sophia database will be searchable within Sakai and will provide users that ability, as discussed above, to create voluntary and joinable worksites. It is hoped that Sophia, or similar projects based on the Cerif standard, will be taken up by other institutions.

Sakai Profile Tool Enhancements due to CRIB

The new services were deployed across Lancaster's 3,000 users (academics, entrepreneurs and public sector) starting in August 2010. Since this time, most users have taken the effort to update their profiles in considerable detail. The following paragraphs introduce the reader to the various new features that have been created due to CRIB and which use this profile information.

Profile2 contains 8 tabbed areas called My Profile, Connections, Pictures, Messages, Search, Privacy, Preferences and Wall (see Screenshot 1). Each of these elements is now discussed.

My Profile (see Screenshot 1 to view core profile element) is a space where users can add a personal photo, personal details, research and/ or business details and contact details (e.g. telephone, e-mail, Facebook, Skype, LinkedIn). This information integrates across Sakai in various ways. For example, depending on privacy settings, profile data is available for the searching element of Profile2. Elements of profile data are also viewable within worksites. Profile2 is fully integrated to provide users an 'easy identification' culture that makes users more confident to communicate. Due to CRIB, Lancaster redesigned the older Roster tool (called People on the Lancaster instance) so that it was social networking enabled and to encourage people to add connections and start using the tools. Roster enables users to identify with other users within any worksite and view their profiles. They are also able to connect with those that are not already connected too and view contact details. It however was reported by some users that the earlier version of the People as cumbersome and poorly formatted. The new Roster was designed with such comments in mind. Adrian Fish also integrated Profile2 profile data into the YAFT Forum tool (see Screenshot 6) so that forum participants can identify more easily during forum discussions. By rolling the cursor over the photo of a participant a summary of key profile information appears. Note that when a user updates their profile e-mail alerts are sent to their connections list indicating this activity. Connections are discussed below.

Connections are equivalent to 'friends' in Facebook or 'followers' in Twitter. To develop e-communities of any type it is important to cater for the 'social graph' that allows people to easily and flexibly form working partnerships from workplace social connections. Users can connect with each other in various ways. For example, in worksites the People tool is enabled to show users if they are connected to a person, and if not, whether they would like to connect. If the person would like to connect, on selecting the option, an email is sent to that user informing them that person X has requested to be connected to them. On logging into Sakai (Profile2), or clicking on the link in the e-mail alert, the connection request can be confirmed. An alternative approach to making connection requests is to search out users within Profile2 using the search function or looking at your connections list and viewing their connections. When a profile is viewed (if the user allows their profile to be viewed, see privacy discussion below) an 'Add as Connection' option is presented which allows them to make the request. Unity2 is also presented in Connections. Recall that Unity2 allows users to create their own workgroups without need to contact Sakai administrators. To do this, users

can select the Create Worksite Option, and then add some or all of their connections to the proposed site. Potential worksite participants are then emailed an invitation to join the site. Note that they are only added to the worksite if they select that they wish to participate.

Privacy Connections are used in various ways to link people to each other. The Privacy settings area also relies on the Connections list, should the user wish to limit access to any part of their profile to connections only. All the elements of a profile can be made private (e.g. profile image, personal information, pictures). Three settings are available to select from: Everyone (all Sakai users can search out and see the element); Only My Connections (Only connections can see element); and Only Me (element of profile is completely locked down).

Wall operates like a message or news feed for people you are connected too. Users are able to add information about themselves or their organisations so that their connections can see the update. Content can include rich text, HTML (e.g. embed YouTube) or photos. Should a connection add or change information in their profile your wall is notified. The Wall also takes advantage of the e-mail alert system (although this depends on preference settings from within Profile2). The Wall also allows Connections to add information to their connections wall using the same process. Again, it is linked to an e-mail alert system. The Wall also allows users to delete comments/ updates as needed.

Pictures is a gallery tool designed for CRIB that allows users to upload and store personal or work related photos, e.g. products. Each photo that is added triggers the e-mail alert system to tell connections that person X has updated their album.

Searching profiles is also possible within Profile2. For those that allow their profiles to be searchable, customised search features have been added to allow users to search for each other by common interest and name.

Output 3: Case Studies

For CRIB, 3 case studies were created for each of the partners that link software developments into their ways of working. Case studies can be found at: [https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB Outputs/](https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB%20Outputs/)

Project Outputs and Outcomes

Sakai Conference June 2010

Daniel Robinson developed and presented a paper titled *The Sakai Unity Service Collaborative Research in Business* that focused on the Unity tool enhancements developed for CRIB.

Abstract: Our presentation describes a Sakai service, Unity, that we are working on as part of our JISC (UK) funded project, Collaborative Research in Business (CRIB). Whereas search is a resource finder, Unity is a people finder and an e-community builder, and that is probably the best way to summarise its purpose. Unity is being designed to provide members or worksites the ability to search other members, even though they are not associated by any common worksite. As part of Unity we also explore linking more than one Sakai installation, so that

Unity can function across multiple institutions that would take advantage of all searchable data across institutions, identify people with similar or complimentary interests, and create worksites populated with collaboration tools for matched people to use. Unity will work with Profile2 in that matched people will have the opportunity to add the users suggested by Unity to their personal connection list.

The CRIB project is concerned with developing and deploying Profile2 and Unity to business owner managers across the north of England as part of university third mission activities. We anticipate two thousand owner managers will be engaged into the service before mid-2012. We will examine, using market research approaches, how Sakai is taken up and used, and whether the development of meaningful relationships between business owners, academics and support staff are in any way facilitated by the use of tools such as online fora and social networking. Unity fits into this research agenda thus: How frequently do people connected together by automated systems form meaningful collaborations? As Dr. Seuss stated in 'The Lorax', "Business is business"; we are hopeful that some of our findings and tools may be directly transferable to other institutions focussing on engaging with business, but also in other e-community building initiatives beyond the business world.

PowerPoint slides: [_](#)

<http://confluence.sakaiproject.org/download/attachments/69277343/Unity-Sakai-2010.pdf>

Institute of Small Business and Entrepreneurship (ISBE) November 2010 London

This paper presented the results of CRIB to the wider business focused academic community.

Abstract:

Objectives: This paper demonstrates the feasibility of developing large-scale social networks of Small and Medium Sized Enterprises (SME) to support Knowledge Exchange (KE) between public sector and SMEs. Those universities that provide business community engagement programmes form a backbone of growth for those SMEs they impact. A recent evaluation of Owner/ Managers that used Lancaster University's business consultation service/ training suggested that business growth and Gross Value Added (GVA) increased faster as a result of outreach activities provided. We need to maximise the impact of delivery success by creating agile computing environments that provide multiple benefits to university outreach services and the SMEs they serve.

Prior work: This research provides results from a JISC funded project called Collaborative Research in Business (CRIB) which is about the design of a new social networking and communication technology based on the Sakai framework. As far as we are aware, there is no prior research or software development in this area.

Approach: Using this technology we demonstrate how KE between management and business professionals in university departments is enhanced via the application of secure social networks. CRIB focuses on user requirements, and shows how a Virtual Research Environment (VRE) can be extended to include management research and practice with tools enabling more effective collaboration, sharing of information and accelerating their progress through the research/learning lifecycle. Our key challenge has been to provide a secure VRE platform using existing tools to enhance collaboration.

Implications: We show that by developing and deploying social networking tools within the Sakai framework, KE is quickened between academics and the SMEs they assist or research.

Value: This paper will be of value to any organisation seeking to develop online networks of SMEs to enhance knowledge transfer and exchange activities.

Keywords: VRERI, SAKAI, SME, Collaboration, LEAD, business support

Working paper: Collaborative Research in Business

This paper builds from the ISBE conference (see above) and will be ready for submission to business journals during the Summer of 2011.

Focus Group and Workshop at Hull University Business School (HUBS), Hull, UK

Workshop brief: This JISC funded workshop is designed to highlight how private social networks combined with online collaboration environments can be applied to support public service organisations that provide support to business in various ways. As support service provision increases, the question of how to maximise the benefit to all stakeholders needs to be addressed. This workshop shows how cloud based technology has been applied to maximise the impact of business support programmes. The model that has been applied shows that large numbers of owner-managers can be e-managed to the benefit of support initiatives (e.g. Solutions for Business and Business Link). Moreover, it provides support agencies the ability to remain in close contact with the people they support, both service providers and clients are readily contactable as needed quickening knowledge exchange between stakeholders. Additionally, we are able to create support worksites which existing users can voluntarily opt into. Using this 'joinable' site approach we are also able to provide social networking areas designed to help people meet up and communicate on matters of interest. The workshop will live demonstrate portal technology and engage delegates into online communication using a variety of online tools.

For more information and to register for the event please visit:

<http://www.ictresearch.org/daresbury.htm>

This workshop was targeted at research staff, business support personnel, hi-tech businesses at Daresbury and regional SMEs. In attendance also were representatives of Business Link NW. For this workshop, a worksite was created and each participant was sent login instructions and asked to access and complete their profile. Several days before the workshop, various communications were sent to participants to encourage online participation. During the workshop it became apparent that the Sakai way of working had wide applicability across all stakeholder groups. Online communication in the forums after the workshop highlight the interest raised, as the following quotes emphasise. Note that responders have been made anonymous.

Forum thread 1:

Alastair Robertson (CRIB Project Fellow): A great question has been posed by Participant X regarding the skill set that a good e-Facilitator should have. I have set up this discussion so that we can engage a discussion regarding this. The

Lancaster experience is that without good e-facilitation online communities will usually eventually die. So to begin this thread, here is my perspective. Firstly, when a new online community is produced each person should be introduced to the technology where they are expected to communicate. I mentioned during the demonstration some form of face to face meeting is very important as an initial comforting step. During face to face meetings it can be explained to people that part of the community engagement strategy is to participate online. A little bit of online training goes a long way, particularly for older generations that are unfamiliar with the new ways of working.

At an face to face meeting people should be shown how to login, navigate and submit information. During the meeting people can be asked to look out for email alerts and that they should submit a response to the alerts, even if it contains very little content. During the e-facilitation course for LEAD Providers people were asked to login and engage within a specific time scale. We call this the icebreaker.

You can be quite relaxed about the icebreaker content at this stage. A question could be posed, like, how could lunch be improved, or what is your favorite drink? Once people have submitted information of any type once, it seems to be easier for them the second time round. If any key points emerged during the initial meeting, expand on these using the Discussion tool as I am doing here. Always, leave the forum with a readily answerable question.

Much of online community development is about keeping the conversation going and I've seen various approaches. For example, the Daresbury Worksite community was brought together under the heading Cloud Technology. But did the presentation meet your expectations? In this case, I should set up an anonymous poll to get a feel for what perceptions are. The results can then be transferred into a discussion forum to spin off further discussion about the results. Keep track of interesting news items too, that are relevant to the community. Do this daily, and always respond to the discussion as it emerges.

Once the community has emerged the trick to keeping the conversation going is to develop Digital Capital (a must read is Digital Capital: Harnessing the Power of Business Webs, Tapiscott and others). This is like a life force in online communities whereby the person with 'the force' is followed by people wanting to hear their view.

So, to answer the question, the key attributes of a good e-facilitator are...

- 1. Keen to work online using Web 2.0. Probably someone who loves Facebook*
- 2. A natural conversationalist when face to face as this is where relationships form initially*
- 3. A person that'll happily work evenings and weekends looking at and guiding forum messages*
- 4. Ability to study the online tools to perfection (a real techno lover)*
- 5. Able to empathize with those who can be much less attached to online communication or even computers*
- 6. Someone that'll review news stories that'd interest people and post questions*

*about it...and knows how to 'poke' conversations to keep them flowing
We think it is about creating value in the community. Ensuring everyone
(almost) gets something from it.
I am no expert in this area, but I have seen a few excellent facilitators in my time
and I have also seen e-facilitation fail.
Does anyone have any views on this?*

Participant Y (Marketing specialist): *Hi Alistair - thanks for this...
My two pennies worth on this is that a 'facilitator' is a bit like a chairman or
chairwoman - but working digitally.*

*Typically, our TV screens show us successful or experienced journalists fulfilling
this chair role - such as the Dimbleby bros.
Equally, the best social media people - especially on Twitter - are journalists or
ex-journalists.
So, I think the best people come out of an editorial background (as do I - and
hence, may explain why I am writing this - whilst others are more comfortable
watching) and have often gained commercial experience by being exposed to
commercial editorial objectives via a PR agency.
It is interesting that you have managed to name the role - I had never heard that
term before - but I agree entirely, that the success of the community depends on
your ability to facilitate it - and the software simply provides a platform.
Imagine a beautiful glossy magazine printed on the best paper - lots of adverts
but without any editorial - might that be a social media platform without
facilitation?*

Participant W, (Business Link NW): *Guys,
Agree with your comments. Thoughts that I would like to add for consideration.
During the early years of BT's Intranet, the CEO at the time had a couple of one
liners that I think sum the power of these systems and peoples use up - "the
intranet is our central nervous system" and "Intranet management ethos is
controlled anarchy" - we were allowed to collaborate and develop with limited
boundaries. I think the eFO is as an important role as the CIO or Intranet
Manager - managing the controlled anarchy within their communities.
eFO is a job not a hobby in a very short sentence.
Sakai, f2f, meetings, email, - all part of our Blended Working.*

The comments highlight how much interest was garnered by the workshop; but also how usefully Sakai can be applied to continue discussion beyond face-to-face meeting points (i.e. the workshop).

A second discussion thread direct evolved post-workshop. A series of quotes are presented from it below.

Forum Thread 2

This quote show that even without attendance at the workshop, knowledge exchange can still be encouraged by use of the Sakai platform.

Participant Z (software developer, entrepreneur): Apologies for not being able to attend today's workshop due to having to MOT my car. I wanted to attend the workshop to find out whether there are any strong synergies for integrating Sakai with www.edocr.com. If you are unfamiliar with edocr.com, please open a free account and upload few documents to get a feel for it. Always good to read www.edocr.com/tips first. edocr.com is used by 10,000 strong global community from students, freelancers to multinationals. Please give me a shout if you do not get our value proposition in 60 seconds. Whilst Sakai sits as an internal collaboration platform, edocr.com could complement it by providing an external collaboration platform, but in this case, purely from a documents perspective.

I see two opportunities:

1. One click [edocr](http://edocr.com)-it button on Sakai to publish documents from Sakai to [edocr](http://edocr.com) for public sharing. Once a document is on edocr.com, it could be bookmarked to about 300 social networks including twitter, facebook and LinkedIn; indexed by search engines such as google and bing; emailed to thousands by simply dropping a list of email addresses. The beauty is, anyone can do this once a document is on edocr.com, not just who uploaded it. Our API is OAuth based

2. Display thumbnails of users documents from edocr.com against his Sakai profile. In addition, same could be implemented against keywords and full inventory on edocr.com

Let me know if you see this as an opportunity.

Some quotes highlighting value of Sakai as a collaboration framework.

Participant X (marketing specialist): Hi Alistair - thanks for today - and sorry for all the questions!

As discussed, we want to give this collaborative software a go - and we'll aim to run it at our next event on the 9th of November 2010 in Manchester.

I'll send you over a brief of what we want to achieve and how I think the Sakai software might allow us to do this.

Also, I'd be happy to give a report to this group of how the implementation went and how it helped us deliver the event, if you think that would be of use?

Participant Y (business man): Alastair,

Many thanks to you, Rob and your colleagues for a very enjoyable three hours. I had a meeting at Daresbury de Veres hotel at 3pm so had to rush off. I have finally managed to access the site and will play around to try out the facilities you showed us, over the next few days.

I will also put photo and profile up.

Glass of red wine time now. Enjoy!

Participant S (business man): I also wanted to add my thanks to Alastair for coming down and showing us around. I've been a Sakai user

for a while, but evidently only using a tiny bit of it's power. A lot of new features have been added which make it quite attractive to us for doing some things I hadn't thought of before.

Alastair Robertson:

*Hi (Participant S),
It (Sakai) is a very flexible system and its power is increasing all the time. Don't hesitate to contact me or Rob Allan (STFC Daresbury) should you need any user/deployment advice.*

Overall, this workshop was deemed a resounding success with 38 attendees and numerous spin-off activities working out from it.

National Science Foundation, Invitation only, Workshop, Chicago, June 24-25, 2010

Rob Crouchley was invited to the NSF worldwide consultation on the future of portals, he participated in the "Future Opportunities" focus group, June 24-25, Chicago, see <http://www.sciencegateways.org/about>.

JISC VRE Knowledge Exchange Workshop Rotterdam

As requested by JISC, presented and discussed CRIB with various KE workshop participants.

Working paper: Decision Makers Attitude towards the Computer and its Impact on Smaller Business Technology Adoption

This paper brings together our learning of the last 4 years as relates to the barriers to adoption of collaboration frameworks among entrepreneurs of small businesses. CRIB is discussed from the context of understanding how older generation entrepreneurs require more support to use portal technologies and how this appears to be slowing the diffusion of collaboration frameworks within this cohort. Paper will be submitted to a business journal during the Summer of 2011.

Public Services Review European 20: Alastair Robertson was asked to respond to the question: *What are the major challenges for ICT research in Europe today?*

Response began: Much debate has occurred surrounding social networks and their implications in the workplace. Social networks quicken information and knowledge transfer and therefore speed up research findings and workflows. The advent of Facebook in 2004 taught us about the power of online human networking and how much people value these services. Yet security is woefully inadequate among social tools. The challenge facing Europe will be how to take advantage of social networks without opening up to the security risks they can pose. See journal for complete article.

View: http://www.publicservice.co.uk/article.asp?publication=European Union&id=451&content_name=Information Communication Technology&article=15082

3.4 Immediate Impact

Difference to institutions

For Lancaster University Management School, Sakai has become the VLE/VRE of user choice since it offers social networking linked to cross-worksite related communication tools (e.g. floating chat). Unlike internal VLE systems that are Domino based and use LU internal authentication systems, Sakai is able to provide access to external non-LU registered users using its own independent authentication system. For Lancaster, this allows for users of many types (e.g. academic, student, entrepreneur, public sector) to engage within a common framework without concern from central information services whether users are LU registered. Also, the time spent working on CRIB allowed for the addition of the BBB web conferencing service, which also helps students, academics and business communicate during periods where face-to-face interaction was not possible. For example, the IEED recently held a workshop on entrepreneurship and, using BBB, was able to live feed workshop presenters from University of California, Berkeley. This saved of time, money and reduced the carbon footprint of the event considerably.

For the Lead Community

The LEAD community takes great benefit from the new profiling system in various ways. There is now more engagement within Sakai as all users are now able to present their profile data in ways that make them more likely to be submitters of, say, forum information. We note that of all LEAD users that more than 95% complete their profiles voluntarily. This means that they are now readily identifiable using either the roster tool or within forums. Within the profiling area they are also able to use the database as a useful directory system. Floating chat has also been a great success among users as it allows connected users to 'knock on' each other's door, even if not online. Prior to CRIB, there was no need to remain online once forum activity had been checked or completed. We now see that Sakai's 'stickiness' has increased significantly due to people wishing to remain logged in for longer, taking advantage of the various tools Sakai now provides.

Lancaster has made in-roads into new institutions that will take advantage of the Sakai collaboration framework. For example, Lancaster University recently purchased The Work Foundation in London (see <http://www.theworkfoundation.com/pressmedia/news/newsarticle.aspx?oItemId=368>) and Sakai has been selected to increase communication between staff at both centres via its application as intranet.

For the Sakai Community- Adrian and Daniel need to input here

For the Sakai community the development of Profile2 has provided multiple advantages. During the Sakai conference at Denver during 2010, Daniel Robinson's presentation of profile2 raised considerable user interest, to the extent that RSmart (a Sakai reseller) was requested to upgrade services as soon as possible so that institutions could take advantage of the new ways of working. For those institutions (approximately 400 globally) already using Sakai 2.x, future upgrades will take advantage of the new tools that were created for CRIB, impacting more than 1,000,000 users. Moreover, CRIB developments have led to spin-off activities about the new toolset. For example, without the Connections function it would not be possible to build the chat tool or consider using it to allow simpler BBB web conferencing.

Beyond this, the development of Sakai 3 is now underway and involves some of the code developed by Adrian Fish for CRIB.

3.5 Future Impact

The developments that have taken place mean that we have generalized Sakai's potential for deployment to enable other communities of common purpose to work more effectively. This reduced the demand on the institutional technical staff to deploy alternative technologies as mentioned in the stakeholder analysis.

Describe ant future impact that project will have (e.g. use of publication/software)

The tools that have been prepared by CRIB are to be deployed in Sakai 2.9 (and all 2.x versions thereafter) during 2011 as core code. All institutions that move to use 2.9 will take advantage of these tools.

There are presently more than 400 global institutions using Sakai. We cannot tell how many will adopt Sakai 2.7 or versions beyond but expect that significant numbers will do so. Since there are now significant Sakai resellers (e.g. RSmart), all new clients will now take advantage from CRIB tools. This development will be tracked by continued activity and development in the Sakai community as we participate in most of the mailing lists and attend regular conferences.

4 Conclusions

General conclusions

Prior to CRIB Sakai was a collaboration and learning environment designed to provide users private working spaces for use in project collaboration and virtual learning. By developing Sakai, to incorporate profiling and social networking facilities, Sakai is also now enabled to provide intranet/extranet functionality, information search, people and community management abilities. Due to developments undertaken at the Lancaster Centre for e-Science new developments are now emerging that spin out from this work (see Recommendations).

Conclusions relevant to this wider community and JISC

The key conclusion CRIB draws for JISC, the VRE community and other interest parties is that Sakai is very close to being a '1 size fits all' VRE platform. There are multiple instances of Sakai across the UK (e.g. Lancaster 1, Hull has 1, Daresbury manages 5) spread across various disciplinary/project area spanning enterprise support, enterprise research, employment research, sociology, molecular engineering etc.

Conclusions for open source communities

The wider Sakai community has contributed to the CRIB project via its adoption, development and testing of the tools produced or enhanced during the project's lifespan. The BBB video conferencing tool was jointly developed by Adrian Fish and Nuno Fernandes from the Fernando Pessoa University in Portugal, the Sakai quality assurance team carried out a

substantial analysis on Profile2 and the new Roster tool and many bug reports on the tools have been submitted by the community in general. A healthy mixture of code contributions and testing such as occurred during the project are indicative of a vibrant OS community and have helped improve the Sakai software stack for its many users both in the UK and worldwide. On a final note: another indicator of a healthy community, the busy Sakai developer's mailing list, has proven to be an asset time and time again during CRIB.

5 Recommendations & Implications for the Future

Specific Developments and Recommendations

Further development will include Floating Profile tool that simplifies how people access Profile2 information by disengaging it from the My Workspace area of Sakai. Some users have noted that Profile is hidden from view and has too many mouse clicks to before it is entered. Scoping work is now underway at e-Science to determine the workload required to complete this work.

BigBlueButton web conferencing has proved very popular but the current Sakai integration means that users can only conference with worksite members. In collusion with developers in the USA (Michigan), we are look at using Sakai connections (developed within Profile2) to allow conferencing to occur across the Sakai social network using a simple 'drag and drop' approach that is born out of the Floating Chat.

General Developments and Recommendations

We wish to develop a common collaboration framework that works across multiple communities simultaneously. This moves us away from developing 'stand-alone' tools for smaller communities of practice; instead we look to larger scale deployment of single instances of Sakai to manage multiple communities. We want to develop a global network of integrated research and learning activity. Note that with the advent of Profile2 that Sakai instances can be linked so that various communities can search each other out, find resources and collaborate in a single, seamless working environment. This would enable researchers to obtain and publish information much faster (see evidence in Case Study 1, [https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB Outputs/](https://sakai.lancs.ac.uk/access/content/group/8ca78112-c0be-4b4e-a2d3-3a2fdcea90d4/CRIB%20Outputs/)) and to allow them to branch out into new areas more easily. For example, Web 2.0 has shown us that discussions can take place about content itself. We should take from this that discussion from academic outputs (e.g. research, learning and community support) should be built out from the content.

Integrating social networking tools will require more standardisation for identity management, role management, membership lists and groups, and publishing (security, privacy, etc.). Shibboleth and the proposed Project Moonshot are only the beginning of this potential revolution in the use of online presence. A first step would be a tool that provides the user a 'dashboard' view across all his or her social network and portal spaces, independent of what framework or toolkit they are using.

Note also that Sakai has been widely adopted in New Zealand to support heterogeneous research programmes and has central government support to do so. It would make clear

sense to involve Sakai similarly in the UK so that institutions (both public, academic and potentially business) do not need to bare the costs of managing services, yet could take advantage of the VRE platform it provides. A key advantage of this way of working is that academic profiles/data could be searchable across participating institutions and group formations, via projects sites, made without need for internal institutional support. Building on this, we make the following recommendation also.

The current JISC VRE programme could benefit from re-examining the overlap between it and e-learning activities that it supports. The divide between e-research and e-learning activities has narrowed considerably over recent years. Despite this fact, we still have distinct VLE and VRE research streams whereby the interplay between VLE and VRE has not realised its potential. We at the Lancaster Centre for eScience propose that the agenda on the interplay be re-opened, to re-examine the issues in light of new technological developments. For a more complete discussion of the argument please see <http://aliorbertson.blogspot.com/2010/04/blending-vle-and-vre-time-to-re-examine.html>.

Sustainability of Current Service

The Sakai services that e-Science provides are becoming sustained in various ways. Although changes in the political spectrum has left us without regional project partners, we are still working on LEAD, and various expansions of it. For example, LEAD is likely to expand into South West England and Scottish regions during 2011/12. We have also participated in the writing of a bid document for LEAD Australia to include locally hosted Sakai services. Beyond this, we are working with Lancaster University Network Services (LUNS Ltd.), a wholly owned university company, to deploy Sakai services across the UK at University institutions and also into private companies that seek learning and research solutions. We are also to work across Lancaster's business contact base (approx. 7,000 SMEs) to support extranet functionality across various business consultation units. During 2010 Lancaster eScience was also awarded £40,000 that is to be used to add to Lancaster's current VM stack, yielding capability to manage upwards of 250,000 users in one Sakai instance. Sakai services are to be rolled out across campus during 2011 to support VRE, VLE and extranet applications. Note that Lancaster is rolling out a new centrally managed staff profile tool called Sophia, based on the European Cerif profile format. The Profile2 will be amended to meet the Cerif format and the code for this will be made available to the Sakai community.

Long-term project contact and outputs

Contact: Professor Rob Crouchley, r.crouchley@lancaster.ac.uk
Community: Sakai project, <http://sakaiproject.org/>

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8 Appendix

Appendix 1 Screenshot of Profile2

Lancaster University Management School

My Workspace Administration Workspace Advanced Marketing alastair2 alastair3 - more -

Profile

My profile Pictures Connections Messages Search Privacy Preferences

Alastair Robertson

Say something

Basic Information

Nickname: Ali
Birthday: 18 May 1968

Personal summary

Ph.D in Management, MA International Economics and BA Economics (First Class).
I began my professional career as technology researcher. Founder of the ICTResearch.org research site and member of the Lancaster Centre for Forecasting. Senior Research fellow in e-Science and Honorary Research Fellow in Management Science, both at Lancaster University. Specialist research consultant to the various organisations. Roles include survey design and data collection, qualitative research and data reporting. Worked on projects focussing on FMCG modelling, ICT market forecasting, human interactivity with ICT and general market modelling (e.g. consumer sensitivity to price changes). More recently focussed on development and deployment of tools for the Sakai Project. As part of all roles, writing bids to fund new product developments.

Contact Information

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Staff Information

Position: Research Fellow
Department: Centre for eScience
School: LUMS

Business Information

Business biography: burnthebankers.org
Company profiles:
Company name: burnthebankers.org
Company web address: <http://www.burnthebankers.org>

Student Information

You haven't filled out any information yet.

Social Networking

Twitter: http://twitter.com/lancs_escience
Skype: ali_robertson

Personal Information

Favourite books: I love books about long haul motorcycle trips, and strangely enough, economic catastrophe and reporting. See burnthebankers.org for my blog on the current economic climate...

Favourite TV shows: I'm not a fan of TV, but I'm partial to motor sport action. I'd watch the Max TT on TV, but I'm usually there watching it live!

Favourite quotes: "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it" Max Planck

My kudos

9

My connections

101 connections [View all connections](#)

Beryl Thomas, George Lazaris, Charlotte Kelly, Emma Louka, Linda Matthews, Dider Sogropainse

My pictures

[View all pictures](#)

Appendix 2 Screenshot of wall and floating chat

The screenshot shows a web browser window displaying a profile page for Alastair Robertson on a platform called LUMS Sakai. The browser address bar shows the URL: https://sakai.lancs.ac.uk/portal/site/~robertaw/page/a60c31a5-392e-4d94-85be-1c64e422f6. The page header includes the Lancaster University Management School logo and navigation tabs for 'My Workspace', 'Administration Workspace', 'Advanced Marketing', 'alastair2', and 'alastair3'. A 'Logout' link is visible in the top right.

The profile page for Alastair Robertson includes a navigation menu on the left with options like Home, Profile, Calendar, Resources, Announcements, Worksite Setup, Account, Preferences, Membership, and Help. Below this, it shows 'Users present: Alastair Robertson'. The main content area features a profile picture of Alastair on a motorcycle, a 'Say something' input field, and a 'Post to wall' section. There are several posts on the wall, including one from 'Nice Mike' and another from Alastair Robertson thanking David. A floating chat window is open on the right, showing a conversation between Daniel Robinson and Alastair.

One of the posts on the wall contains a table with the following content:

Site Name	The Special Enterprise Zone
	Government's recent announcement that it intends to reintroduce the EZ concept underlines its commitment to supporting enterprise and economic growth.
	EZs in the UK were introduced by the Thatcher Government in 1979. They were designated urban areas, usually the "worst" areas in terms of job

The floating chat window shows a message from Daniel Robinson: 'Hey, like the bike!' and a list of online users including Adrian Fish, Daniel Robinson, and Ties Van Ark.

Appendix 3 Screenshot of People (aka roster) tool



My Workspace Administration Workspace Advanced Marketing alastair2 CRIB Project site - more -












Home People
Calendar Overview Pictures Permissions
Announcements
Resources
Chat Room
Wiki
CLIK Web site
LUMS Web site
HUBS Web site
TRAC
Institutional survey
Sugar CRM
Doodle schedule
BBC
People
Site Admin
Discussions
Mailtool
Meetings
Messages
Help

Users present:
Alastair Robertson

Pictures: CRIB Project site

Name or ID Find Clear Currently showing 11 participants
4 in maintain role, 7 in access role

Hide Names View in Single Column

 Allan, Barbara Connection requested	 Allan, Robert Remove connection	 Awre, Chris Remove connection	 Bancroft, John Connection requested
 Brown, David Add connection	 Crouchley, Robert Remove connection	 Gleaves, Michael Remove connection	 Robertson, Alastair This is you!
 Robinson, Daniel Remove connection	 Rose, Mary Remove connection	 Sherratt, Robert Remove connection	

Appendix 4 Screenshot of profile elements accessed via People tool



My Workspace Administration Workspace Advanced Marketing alastair2 CRIB Project site - more -

Home People

Calendar Overview Pictures Permissions

Announcements

Resources

Chat Room

Wiki

CLIK Web site

LUMS Web site

HUBS Web site

TRAC

Institutional survey

Sugar CRM

Doodle schedule

BBC

People

Site Admin

Discussions

Mailtool

Meetings

Messages

Help

Users present:
Alastair Robertson

Mary Rose

[View full profile](#)
[Remove connection](#)

Nickname: Mary Rose
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Appendix 5 Screenshot of profile data view in Sakai forum tool YAFT

The screenshot shows a web browser window displaying a Sakai forum tool YAFT. The browser's address bar shows the URL: <https://sakai.lancs.ac.uk/portal/site/a75064f6-2f77-4599-85fb-18b2068813b5>. The page title is "LUMS Sakai : MSCI375 : Discussions".

The forum interface includes a navigation bar with "My Workspace", "Administration Workspace", "Advanced Marketing", and "alastair2". The main content area shows a discussion thread titled "Seminar reflection" by Alastair Robertson, dated Tue Jan 25 09:52:21 2011. The thread content includes a greeting "Hi Manchun and Ammar," and a request for feedback on the seminar. Below the main text, there is a user profile for "Manchun Lee" with a profile picture, contact information (Email: yl000@lancaster.ac.uk), and department details (Department: Management Science, School: LUMS, Room: Q6EX).

The profile data view shows a list of users present: Oleksandr Mykhailenko, Deepthy Pathengurayil, Alastair Robertson, Ekaterina Sukhoverkhova, and Manchun Lee. The profile for Manchun Lee is expanded, showing a profile picture and contact information. The main text of the discussion thread is partially visible, including the text "the end of the seminars:" and "I found that students found it hard and unclear to identify who are actually the 'major players' in the industries they chose".