Research. Innovate. Collaborate. (RIC) A Framework for Research Collaboration

Mark Kosten[1], Vikas Sahni[2], Anuradha Sharma[2]

La Trobe University, Australia, M.Kosten@latrobe.edu.au

Softedge Systems (NI) Limited, United Kingdom, vikas@softedge-systems.com, anu@softedge-systems.com

INTRODUCTION

RIC V2 (originally Research Information Centre, but rebadged at La Trobe as Research. Innovate. Collaborate.), also distributed by Microsoft as part of VRE Toolkits for Microsoft Sharepoint, is a virtual research environment (VRE) based on Microsoft Sharepoint 2010. It was originally developed by the British Library and Microsoft Research because there was a lack of generalised VREs. Using Sharepoint for an open source framework creates some difficulty with the need for commercial underpinnings and client licenses, but it is almost ubiquitous, versatile, has much basic functionality that doesn't have to be rebuilt and is constantly being improved. It is also extensible (toolkits that specialise in discipline specific features are being developed) and has credentials by being a Microsoft product. In Australia all universities signed on to the CAUDIT Microsoft Agreement have client licenses that enable use of Sharepoint.. It is under development as a community effort and is being rolled out at La Trobe University and others around the world.

RESEARCH NEEDS

RIC has been designed to fit into the research paradigm (Figure 1) and provide solutions to the problems with sharing and collaborating among researchers (Figure 2) [1]. There are many VREs but all have some restriction or lack key features, one of the most basic being file locking for multiple user access [2, 3].
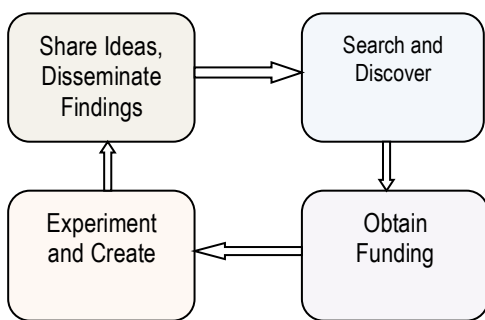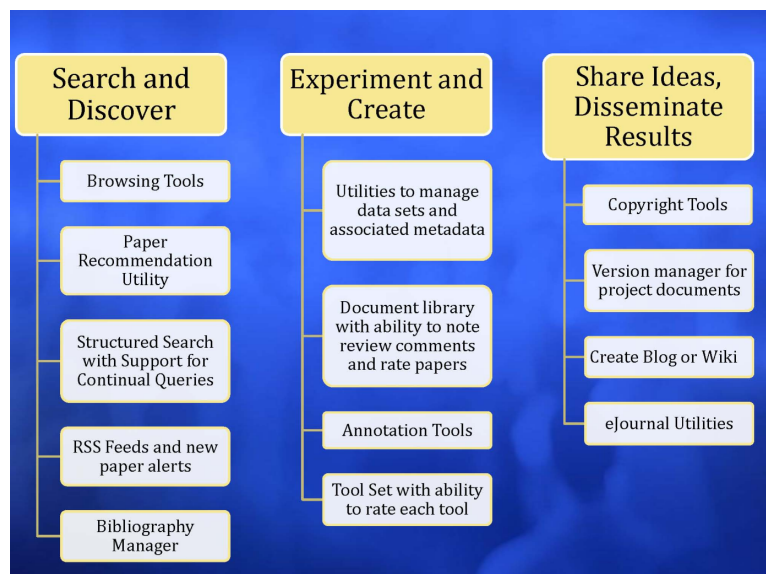

Figure 1

Figure 2

From surveys and extensive consultation a number of key research needs have been identified:

- Single repository for documents that can be shared with collaborators
- Simple interface uncluttered by unnecesary features
- Personal and project areas
- Easy to begin with and use intermittently as well as allow the sophisticated user to shortcut pages/more complex features
- Link to larger file directories, including search
- Single portal for all research management processes
- Easy but strong and granular security

DEVELOPMENT & DEPLOYMENT

SharePoint is a foundation platform from which development occurs. Enhancments, new functionality and new websites are created using this underlying platform. The changes are deployed in packages made of .wsp

files. These packages are self-contained and do not change underlying code, maintaining the integrity of the system. The package can only be deployed on a SharePoint farm, made up of servers working together.

Packages are created with Visual Studio 2010 and above for most components and services. These SharePoint development tools provide a few SharePoint project item templates, such as Application Page and User Control, which handle the details of deploying files into the appropriate location within the SharePoint root directory. The development tools also let you create mapped folders, which make it possible to deploy any type of template file into any location inside the SharePoint root directory.

Each SharePoint sub-site can have its own collection of users. The RIC application is a collection of SharePoint sites, which have SharePoint and custom Web Parts. The Web Parts typically completely encapsulate a particular piece of functionality and are the basic building blocks of all SharePoint web pages. The RIC project sites, based on custom templates, provide site elements and functionality that is enabled by features that activate at the level of the website or the site collection.

The back-end database for RIC is SQL Server, but for files larger than a few MB a large file store is required. A feature has been incorporated to allow creation of volumes on a network file system for each project.

The RIC application introduces a new client object model and a new REST-based web service, both of which make it possible to access and update SharePoint sites over the network. They also make it possible to access collections from server-side applications that are running on servers that are not part of a SharePoint farm.

USAGE

RIC operates in two modes: personal pages (My Content) and shared pages (My Project). The landing page is My Site, which is an overview of contents. Also, on My Site is a Connected section, which is where you can share your personal information with others and see information about them. In this part of RIC you can create blogs, wikis and provide information for your colleagues about you and your projects. Another section called My Newsfeed has the personal organisational and public information about you and your colleagues.

The Getting Started web part on the homepage contains training documents, presentations, and audio visuals. Meeting Requests can be created that use SharePoint 2010 Meeting Workspace which is visible to all the team members of a project. Publications web part shows the list of publications of the user in Summon Serial Solutions. The user can choose to display publications of other users. There is provision to add other information sources. The user can bookmark search results, save queries, subscribe to RSS feeds, set alerts, etc.

The paradigm of RIC has two difficulties for novice users: (1) web pages that look similar but are designed either for project development versus designed for management of personal files; and (2) understanding that all files have associated metadata, and that metadata is what is used to characterise files into types or associations. Regular use of RIC overcomes problem (1), but (2) can take some time to understand, with users trying to create folders to organise files. The correct method is to attach enough metadata (keywords) to files so that live lists can be used to rearrange their associations according to their descriptors.

FUTURE DEVELOPMENTS

La Trobe, in conjunction with the developers Softedge Systems, are working on V3 of RIC, which will make it Sharepoint 2013 compatible, and make use of key new features that will be of tremendous value. These include: Compatibility with AAF/Shibboleth/OpenID; direct deposit into SWORD compliant repositories; linking in to financial systems, such as SAP; and linking to research data sources, such as repositories, databases and file systems, using OData.

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ABOUT THE AUTHOR(S)

Mark is the Director, eResearch, at La Trobe University. He developed and founded the eResearch Office in 2007. Before that he was Director, ITS, at La Trobe for 4 years, looking after central IT with about 120 staff covering systems, networks, AV, enterprise apps and service desk. Originally he started in biology, getting a PhD in population genetics in 1988, so the combined experience of research, teaching and IT has been ideal for the last few years in eResearch. The change in research since the mid-2000s has been enormous, with features of "big science" flowing to all disciplines and sizes of research projects. The data management needs are also increasing rapidly, especially with the "long tail" of smaller projects that tends to slip under the radar.

Vikas is a consultant, lecturer and mentor with 28 years' experience. He is a Microsoft MCT and currently works with clients using the Windows Azure, SharePoint and Dynamics CRM platforms. He regularly speaks at conferences and events. His knowledge and experience ranges from products to projects, from Cloud Computing to IBM Mainframe Assembler, from SMEs to a Global multi-university academic community. He has experience of full Software Development Lifecycle, Outsourcing, Quality and Processes. Vikas started off his career as a Lecturer in Electronics, teaching at the third degree level and providing consultancy to some of the earliest software outsourcing service providers in India. He completed the shift to the corporate sector and to Ireland in 1998.

Anu is the Chief Technology Officer and founder of Softedge Systems. She has a PhD in Computer Graphics with 7 research papers in international/national journals and conferences. She has worked on cutting-edge technologies for large enterprises like Microsoft, Irish Independent, Aer Lingus to small start-ups. Her projects range from mobile devices like Windows Phone, Android to large SharePoint farms. Before coming to Ireland, she was the Head of the Computer Science Department in IP College in University of Delhi.