

Efficient Provision of Online Collaborative Workspaces

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INTRODUCTION

The dynamic world of research demonstrates a distinct requirement for improved communication tools that easily facilitate collaboration. More than ever before, the need for solutions that are both flexible and economically sound has become a necessity. In order to better support the ever-growing needs of researchers for access to digital resources, this work demonstrates the necessity for delivering cost-effective infrastructure that can provide such a service. When utilised, this allows the deployment of feature-rich, online systems befitting not only researchers and but organisations in general.

WHY COLLABORATIVE WORKSPACES?

In today's society, commonly used collaboration and communication media, such as email and the like, do not satisfy the complicated requirements of research groups. Whilst email is, and will likely remain a critical method of contact, collaboration is difficult to structure, data access is problematic, ordering becomes the responsibility of each recipient, and miscommunication is common, and all too frequent [1]. Persons accessing emails with multiple versions of documents each with disparate and disconnected comments attached can understandably become easily confused. Imagine attempting to browse the World Wide Web using such a process, and immediately, the problems become apparent. In addition, email is not without its downfalls. As regards to security, emails are commonly transmitted unencrypted, allowing anyone to read them; also, the respective service providers do not cope well with the handling of large attached files. In many cases, providers offer comparatively restricted mail quotas [3], compared to what one may store on a standard computer hard drive.

In order to overcome this issue, whilst still maintaining the ease of use and accessibility that email provides, many researchers have sought provision of online, collaborative workspaces. Such an environment mimics the usage of emails in this context, whilst allowing for a structured environment, controlled by one or more administrators. Depending on a site's configuration, contributors granted access, at an administrator's discretion, able to upload content, participate in threaded discussions, and share data with others. By having an online system, sites are potentially more accessible than email, and can be more secure, with data sharing options available on a per-user basis.

Such workspaces are not without complications themselves, however. The most significant issue that becomes evident for research groups is the cost, in terms of monetary cost and development time. Only in exceptional situation, will researchers have unlimited funding and time. The authors have investigated these problems, and here propose a solution determined via analysis of common requirements between researchers and across multiple disciplines.

CORPORATE IT VS. RESEARCH

The usage of corporate information technology (IT) systems within a research environment cannot seek to act as a complete solution, as the requirements of a researcher and an institution rarely align. Policies and strict rules set out to ensure that the corporate image of the organisation stays consist, and order maintained, apply to corporate IT systems. However, real-world observations demonstrate that research groups requires a much greater deal of freedom and flexibility at a granular level, from aspects such as security and access, data storage and manipulation, to others such as a dedicated domain namespace, and specialised visual branding.

Consider the difference between the provision of a tightly controlled, strictly-structure content management system provided by a university, and a research team's personal web space. Each researcher requires the ability to readily created and upload files, images, and other content as they would like, without restriction. The university, however, in maintaining their corporate appearance, requires content to follow a much stricter workflow process for the publication of information, as they are entirely responsible for ensuring that the content maintains their corporate image and research agenda. A researcher trying to align themselves within the constraints of the latter system, in the authors' experiences, finds themselves restricted and sometimes unable to perform even the simplest content management tasks due to rigid policies. With a dedicated system that is fully under their control, any research group can control access rights, publish and modify content at will, and thus collaborate much more easily.

This example demonstrates that within IT, there is an ever widening disconnect between key stakeholders in research. Whilst the institution is the physical locale for a researcher's work, the two sets of requirements will almost certainly differ drastically. Observations of such requirements indicate an increasing demand for instant access to collaborative tools that are more flexible and effective than what is currently available. Without such tools, progress within a research community slows - at times, potentially dramatically.

COMMON REQUIREMENTS

Traditionally, any individual or organisation that requires an online workspace needs a custom-built system created specifically for them. In addition, because of this specialised development, the research group typically has to fund the entire development cycle of the software from inception to completion. In current times, however, such groups are under mounting financial pressure, including the increasing difficulty in obtaining research grants, and the ever-present global financial crisis. Because of this, the luxury of affording proprietary software and web development cannot proceed.

Unsurprisingly, researchers feel the necessity to spend as little as possible of their research funds on collaboration software, given the presence of free tools, such as email. However, as previously highlighted, there is a requirement from researchers to possess a tool that offers extended functionality, flexibility, and security. Through the development process of many such systems - each for different disciplines of researchers - the similarities in requirements of different groups became evident. Above all, all researchers stated a need for a collaborative workspace to be readily procurable and cost effective, aspects that are not easily achievable within the traditional development model. This is because traditionally, online systems serve one organisation, and thus fail to consider others who may share their same goals. By ascertaining the common elements, and abstracting them accordingly, the costs of money and time are dividable fairly across each research group receiving such a workspace.

EFFICIENT PROVISIONING: A COST EFFECTIVE SOLUTION

In order to facilitate the efficient provision of common collaborative workspaces, the service must be reusable and replicable to the farthest extent possible. Several strategies that achieve this requirement are as follows:

- Use a shared set of configuration options, such that a set of 'checkbox' requirements can translate to the creation or modification of a workspace instance. Thus, a research group can have additional or fewer features with minimal effort and the same configuration can apply across multiple sites as required.
- Utilise software that offers extensibility and uses a well-known development language. The authors are currently engaged in producing collaborative workspaces built on the open-source Content Management System Plone, (utilising the Zope application server). Software layers use Python, a highly modularised, extensible programming language [2].
- Implement software that provides a large degree of flexibility and customisability. Plone – is customisable to benefit all observed common requirements for an online workspace. These include, but are not limited to, customised security requirements (different protocols and access rights) and specialised design (colours, logos, and themes).

By developing collaboration software using the above techniques, workspaces and features are deliverable and deployable quickly, with minimal effort and expense. The creation of multiple workspaces can take place with ease from a basic configuration, and the technology used facilitates future updates being 'pushed' to the sites being provided.

CONCLUSION

In order to support the research world of today and tomorrow, there is a need for collaborative workspaces that are easily producible and uncomplicated. The described process aims to make these online systems readily available and cost-efficient by removing the typical restraints experienced. By distilling the commonalities in researchers' goals, the aim is a reduction the burden of costs to researchers. In doing so, the target is to deliver impressive, useful workspaces that are flexible enough to meet changing requirements. Once complete, the delivery of any such system allows a researcher more time to conduct their work without fighting what already exists.

Examples of the described work are visible at <http://eresearch.jcu.edu.au/portfolio>, categorised according to the purpose of the workspace.

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