

HOW RESEARCHERS EMBRACE ERESEARCH: A CASE STUDY OF CLOUDSTOR

Much consideration has been given over the past 10 years to developing a suitable e-infrastructure to encourage and support researchers across Australia to embrace the eResearch paradigm. This has involved extensive consultation with researchers and research groups across a wide spectrum of disciplines, leading progressively to the SII (2001-2005), NCRIS (2005-2011), SuperScience (2009-2013), all overseen by NRIC and now AeRIC, and culminating in the September 2011 Strategic Roadmap for Australian Research Infrastructure. Very often, this has focused on flagship (priority) research endeavours, and has resulted in significant investment in major pieces of infrastructure, including networks, supercomputing, data storage, and authentication and authorisation infrastructure, as well as substantial development of collaborative software tools and facilities (such as most recently through the NeCTAR projects).

This paper seeks to add to the community's knowledge of how researchers embrace and utilise eResearch tools, by describing the case of a particular eResearch large-file transport tool, CloudStor (also known as FileSender), and how that has been embraced and utilised by researchers in this country and in Europe. Typically, these are individual researchers, but with a need to share large data sets with colleagues elsewhere in Australia or overseas; usually, these collaborations involve just a handful of researchers.

This system, introduced in pilot form by AARNet in 2009, and simultaneously by its counterpart NRENs in Ireland and Norway, with whom AARNet co-developed the tool, has seen really dramatic take-up by researchers, mostly hearing of it by word of mouth. Its primary attributes are that it will transfer files securely, of any size, to any other person(s), as long as one at least has credentials authenticated by the national federation(s). There are over 4,000 researchers currently using it in Australia. It now operates in more than a dozen countries around the world, and continues to be developed and supported by a core consortium of NRENs.

Case studies include researchers in Australia as well as in Europe. Analysis of these and other similar case studies should give us a good idea of the sort of tools that researchers value, that they can appropriate easily, and which make a real difference to their work. This should lead to an appreciation of how to identify other eResearch tools or services that may represent gaps in the repertoire of tools and facilities that researchers need or can make good use of in pursuing their collaborative eResearch.

In looking at how and why to develop some additional service, it is vital that a “market” for some new eResearch tool or service be identified; it is important also to consider how well that market can be served by any development or acquisition to be undertaken. Two factors at least have contributed to the rapid up-take of CloudStor (for example). These include the significant effort put into testing and proving the system before release to researchers, and careful design of the user interface. When researchers find that something “just works” and is easy to use, not only do they take to it rapidly, but also are quick to promote it among their colleagues. In the case of CloudStor, a significant part of the usability has been full AAF-integration, and very simple set-up for users; as it happens, this has been particularly hard to accomplish, but it certainly has paid dividends. Of course, this has the valuable by-product of also substantially reducing the amount of user support effort that has to be mounted.

Secondly, there needs to be in place a long-term plan for the system’s support and longevity. Researchers are understandably very cautious about committing to any system or service unless they can be sure it will last. So any simple development program must be devised within the context of a support organisation; this is hard for many of the national eResearch entities to undertake, given their relatively short-term horizons. Of course, all universities understand and provide for this long-term support need – but these days they rarely have software/system development (in-house) on their agenda.

The criteria for successful development and effective use of a generic eResearch tool are apparent in the variety of ways in which CloudStor has been used, as evidenced by representative case studies. These case studies (described in more detail in the presentation) include the following:

- Sydney University researcher sending MRI files to Europe;
- Monash University PhD student sharing data among the geoscience community in Australia;
- University of Technology Sydney researcher sharing microscopy scans with visiting scholars;
- Southern Cross University researcher moving genomic data to European colleagues;
- Monash University academic sharing conference output with colleagues in the Netherlands;

- Griffith University IT researcher sharing radio sample files between Sydney and Brisbane;
- UWA researcher exchanging ocean modelling data with collaborators around Australia;
- Belgian university administrator transferring files with colleagues at other universities;
- Slovenian IT student sharing videos, images, computer code with co-workers.

In developing an IT tool or service for researchers, two distinct approaches can be taken. In the first case, a very broad spectrum of users is targeted with a very generic tool (as in the case of CloudStor). In the second case, the goal is to work with a specific group of researchers (perhaps in a particular discipline) to develop a tool that really suits their needs, guided all along by this “focus group”. In the latter case, the plan usually is to then broaden the scope of the tool by generalising it. But this is not always successful. On the other hand, in the case of the first approach, it is a real challenge to discover researcher needs that can be met by a generic tool, implying a generic need; these are very rare and hard to identify, but the results are much more likely to be successful. The challenge is to find such opportunities.

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