# Is eResearch about the technology?: Space, platforms, hubs and social change.

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## INTRODUCTION

Collections Australia Network (CAN) [1] is a technological platform for content aggregation, enabling access to well-structured and organised collection information for the convenience of the research community to retrieve. Content aggregator services, like CAN, have a role to play beyond providing a technological platform in service of eResearch. Content aggregation services need to evolve from their current state as technological platforms to active agents of social change in support of eResearch goals. Content aggregating services operate as a hub, a key player and broker technically – and socially – in the wider network of contributors. Content aggregating services already operate as boundary negotiators but it is as incubators and facilitators of change in practice and the discernment of areas for strategic digital development that these services are in a unique position to contribute to advancing eResearch initiatives.

## TECHNOLOGICAL PLATFORMS

Content aggregating services have an explicit role to design and provide technical architecture and utilise machine processing and metadata standardisation for improved intellectual access. This architecture – "the pipes" – acts as a technical conduit for improved and more efficient channelling of content for intellectual access. The primary value of investment in this technical infrastructure is the greater speed and easier reach for researchers (with access to the Internet) to retrieve research content with the advantage of having well organised and coordinated content to retrieve from. The secondary value is the confidence and capacity built up to begin to exploit technology more as part of the research process. The necessary buy-in from participants and contributors to the design of technical architecture and the level of adherence to shared metadata standards is a social part of this architecture framing and pipe-building process [2]. Once the "pipes" are up and the engineering works, another intensified block of work requiring stakeholder participation is on the agenda. The investment in getting the technology to work is one hurdle, consensus and buy-in is another hurdle, capacity to contribute yet another hurdle, and then there is continuity of contribution and the need for ongoing sustainable and evolving service levels and sector participation. The distributed cost of getting contributors to participate in consultation for the design of the technological infrastructure is rarely calculated. The process of stimulating the contribution of content to flow into that infrastructure is a large and crucial step but… a particularly challenging one. This step has to ensure that the well-designed and engineered infrastructure **– actually –** serves the purpose for which the infrastructure was built. If the return on the investment into infrastructure is at its most basic greater access to research resources, the process of engaging content contributors is where the technical big picture starts to become more clearly tested against the technical and social reality or "the hitch".

## SCENARIO: THE TECHNICAL HITCH

An example of overcoming "the technical hitch" is how the OpenSearch [3] technology is being used by CAN to enable live search across CAN Partner collection data. CAN Partner 1 is a large government organisation and has its prestigious collection up online to search. CAN liaises to get the organisation's approval to "hook up" OpenSearch and it emerges that the collection searchable via the website is not compatible with OpenSearch technologies and it will take two months to enable OpenSearch effectively. This is just one, large, well-funded collecting organisation with a long history of collection documentation, and an increasing comfort with the exposure of collection information via its website, and participates with other key content aggregating services such as Picture Australia [4]. Content aggregators, such as CAN, play a key liaison and social change role in the technical changes wrought, at a face-to-face implementation level. This small sub-process of liaison ensures that eResearchers will have an increasingly greater ability to search across the nation's collections and retrieve information from a concentrated and well-organised intellectual access point. This is a relationship building exercise is aimed at sparking collecting organisations to extend their hand using technology and make their collections publicly accessible in multiple and innovative ways. Once CAN Partners get used to overcoming "the technical hitch" it becomes easier to undertake this liaison and the notion of unionised access across collections becomes more technically and socially embedded and part of "business as usual". If all the CAN Partners had OAI compliant systems up online, this would be a very different scenario to be analysing.

## SOCIAL NETWORKS

The social nature of technical change and innovation can be analysed using different theoretical models, e.g. diffusion of innovation or technology of adoption models. These models aid understanding in how and why technology is accepted and used or staggers along in its endorsement and use. If content aggregators are technical brokers, necessarily they need to operate as a social hub and an agent of change. Metadata standards, as much as the standards are about the sharing the

benefits of greater coordination and computation power for improved intellectual access, metadata standards are significantly social and socially generated.

## SCENARIO: THE SOCIAL HITCH

An example of overcoming "the social hitch" is helping collecting organisations make the decision and be confident about what to put online. CAN Partner 2 is a small, regionally based, volunteer-run organisation. The collection is not yet available for searching online via the organisation's website and making the collection available via CAN would be one of the first steps in thinking carefully about what collection information to make available. At the same time, this small organisation is wrestling with the technology they are also grappling with their own concerns about making certain types of collection information publicly available. For example, are the collection items adequately documented (according to specific collection standards for description); are the collection items "sensitive" in nature, that is, are there ethical issues with public access such as cultural or social mores that inhibit unmediated access; and do the collection items have any commercial rights that control access. Once the CAN Partner has selected a portion of its collection to make publicly accessible, the biggest hurdle is over. The issue of enabling public access to collection information remains a complex one. Where technical conventions or challenges require flicking the requisite "switches" to make data flow, the social dilemmas and conventions, are not the same, and require a level of social preparedness and confidence.

## DIGITISATION AND ERESEARCH

The digitisation of work processes, such as desktop applications, and work resources, such as collection access, are the foundation for researchers to contemplate advancing their use of technology to work on research problems. Researchers that move past general computerisation are more likely to move to employ technologies in more sophisticated ways. Content aggregators play a part in supporting eResearch and are part of the digital lifecycle [5]. Early transition points provide the stimulus and crucial confidence for change and can spur collectors and researchers on alike. As researchers become increasingly reliant upon and successful in using digital tools and resources in their research processes then they may have time and space to be innovative or test new ideas out with specialist technologies. Until these hitches, particularly social hitches are overcome in the content aggregation realm the process of enabling eResearch is going to be slow, as similar technical and social hitches occur in the eResearch realm. Researchers will struggle less with the most basic of issues: knowing what has been collected to draw from and/or to reinterpret, and become increasingly confident in their exploration of these digital tools and resources. It is from this position of comfort that eResearchers are enabled to develop and incorporate digital research outputs and make enriched data sets available and/or use or develop new technologies.

**Table 1: eResearch and Digitisation Levels**

| Digitisation Level | Role of Technology | eResearch Benefits | Researcher Needs | Digital Skills, Tools and Resources |
|---|---|---|---|---|
| General computerisation | Facilitates the research process | Efficiency gains<br>Foundation for eResearch | Up-skilling<br>Awareness raising | Desktop applications<br>Digital content and access tools |
| Specialist use of technology | Part of the research process | Efficiency gains<br>eResearch domain explored | Up-skilling<br>Awareness raising | Data capture and analysis tools<br>Research repository |
| Modifications to available technology | Key to research process | Efficiency gains<br>eResearch domain established | Data specialists and programmers | Specialist IT services<br>Research repository |
| Smart technologies | Central to the research process | Efficiency gains<br>eResearch domain extended | Data specialists and programmers | Specialist IT services<br>Research repository |

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