eResearch practices, barriers and needs for support: Preliminary study findings from four NSW universities

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ABSTRACT
This paper will present initial findings from a survey that investigates existing technology-enhanced research practices, researchers’ readiness to adopt eResearch, their needs and major barriers. The study was conducted as a part of a larger project which aims to establish researchers’ requirements for eResearch infrastructures and support, build researchers’ awareness about eResearch potential, and engage with them to co-develop eResearch services. Preliminary results indicate a gap between researchers’ positive dispositions, willingness and obvious need to adopt new technology-enhanced research practices and their limited awareness and utilisation of eResearch and eResearch bodies. By offering some key preliminary findings in this presentation we have two aims: a) to shed some light into current researcher technology-enhanced practices, needs and constraints; and b) to open a discussion about the importance of taking these practices seriously when developing new research infrastructures and services. We argue that lack of awareness of researchers’ needs and limited engagement with researchers in co-development of infrastructures may not only disenfranchise many researchers, but may also actively discourage short- and long-term uptake of eResearch technologies.

BACKGROUND AND RATIONALE
Over the last decade, individual universities and governments in various countries, including Australia, have made significant commitments and investments in developing advanced technological infrastructures to support research – in short, eResearch [1, 2]. These investments have been fuelled by an explicit expectation that eResearch infrastructures will be taken up by broader research communities and will enhance the nature, quality and efficiency of research. Nevertheless users and developers of eResearch infrastructures and services face numerous challenges embracing and scaling up eResearch [3-5]. While some of these challenges might be technical, others are likely to be social, cultural and epistemic, but in any case none of them are explored or well understood. In a consultative study for the Economic and Social Research Council, Steve Woolgar argued:

“Despite the enormous unfolding investment in e.g. grid technologies, it seems we know almost nothing about how and why (and by whom) these new technologies will be taken up, nor what will be the likely effects on the nature and conduct of e-Science and e-Social Science research. The need for attention to these questions is urgent because the initial current investments are establishing systems that will remain in place for some time to come.” [6:2].

In order to improve eResearch uptake and maximise the benefits of research infrastructure, we need to understand existing research and technology practices; what motivates researchers to go beyond traditional research approaches; and what prevents them from adopting eResearch. In this study we aimed to investigate the role of technologies in current research practices, what kinds of challenges researchers typically face, and what kinds of eResearch solutions and support could be most beneficial for them.

APPROACH AND PROCEDURE
This study was conducted using an online survey which covered three main eResearch areas: a) data management, retention and sharing; b) technology-enhanced research methods, tools and services; and c) research collaboration and dissemination. The questions focused on four aspects: a) present practices and barriers for eResearch; b) attitudes, and awareness about eResearch; c) priorities and requirements for new infrastructures, services and support; and d) researchers’ willingness to be involved in future elicitation of needs and specification of requirements. In total, participants were asked to respond to 40 questions, most of which required them to choose from a range of options and allowed a short comment, while eight questions asked participants to provide open narrative answers.

The online survey was conducted in May–June 2009 at four NSW universities: the Universities of Sydney, Newcastle, New England and New South Wales. Email invitations were initially distributed via Deputy Vice-Chancellors Research inviting all academic staff, research students and research support staff to participate. Further invitations and reminders were sent directly to some interest groups, centres and faculties within universities. The invitation clearly stated that “We are interested in your research practices and opinions, whatever your discipline, and whatever the extent of ICT use in your research”, thus targeting both researchers who may be new to eResearch and existing users. After the survey was closed, multiple-choice answers were analysed using statistical analysis, while written answers were categorised and further explored for common patterns.

INITIAL FINDINGS
Results presented in this abstract are preliminary, based on findings after initial technical data analysis of data. By the time the paper is presented detailed and analysed results will be available. In total 658 participants took the survey and

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across different disciplines. These results indicate that eResearch development is not only a technical, but also a social opening eResearch to a broader research community. As one respondent commented, "(the) survey gave me an idea of what software may be available that I hadn't even considered using or even knew of - eg. audio analysis - what is that! Concerns are also very welcome (please contact the authors). Participating universities for cooperation, and all participants of this survey for their time and willingness. The survey is expected to run at the other NSW universities in the second half of 2009. Further universities interested in doing this would like to know more." The results reported here are snapshots of the current situation based on the responses of self-selected participants from four universities in NSW. While results cannot be generalised, they are indicative of existing attitudes and practices across different disciplines. These results indicate that eResearch development is not only a technical, but also a social challenge. They point to a significant interest in eResearch, but a lack of awareness and minimal engagement between eResearch service providers and researchers. In many ways the survey itself contributes towards the important task of opening eResearch to a broader research community. As one respondent commented, "(the) survey gave me an idea of what software may be available that I hadn't even considered using or even knew of - eg. audio analysis - what is that! Would like to know more."

CONCLUSIONS
The work reported in this paper was initiated and part-funded by University of Sydney ICT (Tools and Frameworks for Research Collaboration project) and Intersect Australia Ltd. We would like to thank DVCs/PVCs for Research of all four participating universities for cooperation, and all participants of this survey for their time and willingness. The survey is expected to run at the other NSW universities in the second half of 2009. Further universities interested in doing this survey are also very welcome (please contact the authors).

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