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## The smart way to manage research data

### Abstract

The University of Wollongong's \$62 million SMART (Simulation, Modelling, Analysis, Research, Teaching) Infrastructure Facility will become a research and development powerhouse with an unprecedented level of impact within the broader infrastructure sector nationally and overseas [1]. With a vision to be a world class intellectual leader and educator in 'integrated' infrastructure planning and management and the capacity to host 200 PhD students, comprising 30 integrated research laboratories, data demands and volume are increasing exponentially.

### Keywords

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# THE SMART WAY TO MANAGE RESEARCH DATA

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## INTRODUCTION

The University of Wollongong's \$62 million SMART (Simulation, Modelling, Analysis, Research, Teaching) Infrastructure Facility will become a research and development powerhouse with an unprecedented level of impact within the broader infrastructure sector nationally and overseas [1]. With a vision to be a world class intellectual leader and educator in 'integrated' infrastructure planning and management and the capacity to host 200 PhD students, comprising 30 integrated research laboratories, data demands and volume are increasing exponentially.

Recognising accessibility, discovery and creation of research data is imperative to enable innovative and efficient research outcomes, SMART has established a National Infrastructure Data Centre underpinned by a research data management framework which integrates IT systems, a dedicated team of eResearch professionals, the effective governance of data (through policy development, process and procedures) and established linkages with organisations including ANDS. The Data Centre provides a robust, interoperable, standards based platform where infrastructure planners, designers and researchers can discover, access and reuse infrastructure data from various sources. However, this cannot happen in a vacuum. Research leaders and decision-makers need to view research data as an asset and must place priority on implementing mechanisms to manage it effectively in order to gain maximum value.

In this paper the author will present the importance of intergating these 3 components in the management of research data and articulate how the engagement of key stakeholders in executing innovative IT projects in data management is essential to ensure the SMART Infrastructure Facility is an internationally recognisable source of quality infrastructure data assets.



Figure 1. Data Management Framework

## **GOVERNANCE**

The SMART data governance model consists of a robust and best-practice structure of policy, procedures and integrated project data management.

SMART has been integral in developing UOW's data management policy which details the legislative, statutory and legal protocols regarding ownership, use, access and control of research data at the University. SMART has also developed comprehensive data management guidelines specific to its researchers and projects. These guidelines are spearheading University-wide research data management education and awareness programs.

Data management planning is a mandatory component of all project initiatives at SMART. The process of data management planning ensures that all aspects of data management are considered from the commencement of each research project.

## **IT SYSTEMS**

The SMART Infrastructure Data Centre (IDC) is underpinned by a platform of data discovery, access and storage services supported by the SMART Data Team and University of Wollongong's Information Technology Services (ITS) Division.

The newly implemented IDC system at SMART is promoting the inter-disciplinary research output through enhanced discoverability and visibility of infrastructure related data assets and activities of national significance. The system is built on an open source application, GeoNetwork [2]. GeoNetwork is a standards based catalogue application to manage spatially referenced resources and provides powerful metadata editing, searching and is highly interoperable with other catalogues to facilitate discoverability and data sharing.

The development of the SMART Infrastructure Data Centre [3] was an integrative, collaborative development to ensure the needs of stakeholders were addressed while minimising and simplifying the typically arduous task of metadata creation.

## **PEOPLE & EXPERTISE**

With an established team of data managers SMART has been able to actively provide data management support to its researchers and project teams. Partnering and supporting the research activities the SMART data team is an integral and central factor in ensuring the adoption of sound data management practices to achieve success in the capturing, creating, discovering and re-usability of quality infrastructure datasets and remove some of the administrative burdens on researchers.

## **REFERENCES**

1. SMART Website <http://smart.uow.edu.au/about/index.html>
2. GeoNetwork <http://geonetwork-opensource.org/>
3. SMART Infrastructure Data Centre, <http://smart.uow.edu.au/data-management/index.html>

## **ABOUT THE AUTHOR(S)**

Craig Napier commenced as Systems Manager in the SMART Infrastructure Facility in 2010, integral in the start up of the facility. Craig effectively led the development, formulation and implementation of the Infrastructure Data Centre that would deliver flexibility in the execution of the SMART Vision.

Craig has in excess of 15 years experience in data intensive environments both domestically and internationally and has utilised his data warehousing, business intelligence, change management, project management, tendering and contracting skills to deliver a comprehensive innovative Infrastructure Data Centre. More importantly has effectively integrated and involved academics on the journey to create, discover and re-use data assets in the establishment of a 'research data culture'.

Craig Napier is a CPA with a Bachelor of Business from University of Western Sydney and a Master of Business Administration (distinction) from the University of Wollongong.

Despina Clancy is a Research Data Manager at the University of Wollongong's newly established SMART Infrastructure Facility. Prior to joining SMART, Despina worked as a Business Analyst specialising in the Cognos 8 BI suite of products at the University's business intelligence competency centre, and also previously as a Market Research Analyst at the Illawarra Regional Information Service.

Her role at SMART involves managing and curating the research data acquired and generated by SMART research, while also promoting and establishing best-practice processes in an effort to ingrain a "research data culture" within SMART. Despina has been integral in developing SMART's data governance structure - a framework of policy, procedures and guidelines - which is now a standard component of research project processes at SMART and is also currently being considered for wider University application. Despina has studied Information Technology and Business Information Systems at the University of Wollongong where she earned her Bachelor's Degree.

Tim Davies is a Data Manager at the SMART Infrastructure Facility at the University of Wollongong. Tim holds a Bachelor's degree from the University of Wollongong and is currently studying a Masters of Information Technology Management. Tim is passionate about data management and promoting a research data culture at the University of Wollongong, his can do attitude certainly shows when he is dealing with the challenges of his role and has been instrumental in implementing and administrating the Geo-Network Infrastructure Data Centre at SMART.

Katie Elcombe, Policy Analyst, was appointed to the SMART Infrastructure Facility for the development of the University of Wollongong's Research Data Management Policy in 2011. She was instrumental in creating the supporting framework that provisions the policy, enabling SMART's Data Team to have a mandate within the governance structure of the University. Katie is now working with key stakeholders from UOW's Information Technology Services (ITS), Library, and Research Services Officer to strengthen the University's eResearch strategy, services and tools for the benefit of the research community.

With over 13 years of international and national experience, Katie has vast experience in policy development, governance, compliance and legislative analysis, strategy development, project management, communication and client engagement. At the University of Wollongong, and prior to her role at SMART, Katie was with the Policy & Governance Unit within the Academic Registrar's Division as well as an ESOS Compliance Officer.

Katie Elcombe has a Bachelor of Arts (HONS) degree from the University of Guelph, Canada and is currently working on her Master of Arts (Modern History) from Macquarie University.