Creating a Digital Mineral Library at Curtin University

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INTRODUCTION

The John de Laeter Centre for Isotope Research (JdLC), which hosts a range of analytical and mass spectrometry infrastructure [1], is implementing a system to automate the capture and storage of data and metadata from instruments, acquisition of identifiers such as Digital Object Identifiers (DOIs) [2] and International Geo Sample Numbers (IGSNs) [3], the propagation of metadata, and the discoverability and delivery of data.

METHOD

A laboratory information management system (LIMS) will be used to handle the capture of data and metadata from instruments and analysts and apply an IGSN to each geological sample. The metadata will be sent to Curtin University's metadata store, which will augment the records with DOIs. Research Data Australia [4] will harvest the metadata from Curtin University's metadata store for public discoverability.

Unprocessed data will be stored in Curtin's systems and made available via Open Geospatial Consortium (OGC) [5] compliant web services. The AuScope Portal [6] will access the data through these web services, present to the user and make available for download. A proposed extension will automate the execution of geochemical processing algorithms on applicable datasets. The resulting metadata-rich datasets would be made available through discovery services like the AuScope Portal.

PATHFINDER

An ANDS-funded Major Open Data Collection [7] project is in place to use an ARC-funded TESCAN Integrated Mineral Analyser (TIMA) [8] to scan 150 of 2000 geochemical samples from the Geological Survey of Western Australia (GSWA) [9] and publish the datasets. This will act as a proof of concept for further open data projects.

ACKNOWLEDGEMENTS

This e-Research project is supported by the Australian National Data Service (ANDS) and AuScope through the National Collaborative Research Infrastructure Strategy Program,. The hardware component of the project was funded via the Australian Research Council[10] with support from Curtin University, GSWA, University of Western Australia and Murdoch University

This project is being jointly run between the JdLC, Curtin University Library and Curtin Information Technology Services.

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ABOUT THE AUTHORS

Adam Brown holds a Bachelor of Computer Science degree with majors in Computer Science and Computer Security. He has been a software engineer at the JdLC since August 2014 and is involved in the design and implementation of the Digital Mineralogy Library. Prior to his involvement with the JdLC he has worked with CSIRO and Curtin University on the AuScope Portal and its underlying infrastructure such as GeoTools, GeoServer and GeoNetwork. He was responsible for the integration of various Australian datasets into the AuScope Portal. Examples include the University of Melbourne's Multi-sensor Core Logger data and Incorporated Research Institutions for Seismology's Seismographs in Schools datasets.

Matthias Liffers is a Coordinator, Research Services at the Curtin University Library. His interests include research data management and social media. More specifically, his work involves training researchers in good data management practices, enabling open access data publishing and promoting the use of social media to raise research profiles and discover collaborators. He is currently leading an Australian National Data Service funded Major Open Data Collection project for the open publishing of geochemical datasets. Previously, Matthias worked as a Librarian at the Australian Institute of Marine Science and an Emerging Technologies Specialist at Murdoch University.

Brent McInnes was educated at McMaster University (BSc Hons, MSc), University of Ottawa (PhD) and the California Institute of Technology (NSERC Fellowship). Since 2009 he has held the position of Executive Director of the John de Laeter Centre for Isotope Research at Curtin University. He is an Economic Geologist and a former Chief Research Scientist in the CSIRO Earth Sciences and Resources Engineering where he received the 2003 CSIRO Chairman's Gold Medal for Research Excellence for marine exploration, the 2007 CSIRO National Service from Science Award for research commercialisation and the 2007 Australian-American Fulbright Professional Scholar at NASA Goddard Space Flight Centre. He serves on the Strategic Advisory Panel of the New Zealand Institute of Geological and Nuclear Science (GNS Science, 2010-) and served as Vice-President (Australasia) for the Society of Economic Geologists (2003-2009).