



Linking earth science informatics resources into uninterrupted digital value chains

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The CSIRO Mineral Resources Flagship was established to tackle medium- to long-term challenges facing the Australian mineral industry across the value chain from exploration and mining through mineral processing within the framework of an economically, environmentally and socially sustainable minerals industry. This broad portfolio demands collaboration and data exchange with a broad range of participants and data providers across government, research and industry. It is an ideal environment to link geoscience informatics platforms to application across the resource extraction industry and to unlock the value of data integration between traditionally discrete parts of the minerals digital value chain.

Despite the potential benefits, data integration remains an elusive goal within research and industry. Many projects use only a subset of available data types in an integrated manner, often maintaining the traditional discipline-based data 'silos'. Integrating data across the entire minerals digital value chain is an expensive proposition involving multiple disciplines and, significantly, multiple data sources both internal and external to any single organisation. Differing vocabularies and data formats, along with access regimes to appropriate analysis software and equipment all hamper the sharing and exchange of information.

AuScope has addressed the challenge of data exchange across organisations nationally, and established a national geosciences information infrastructure using open standards-based web services. Federated across a wide variety of organisations, the resulting infrastructure contains a wide variety of live and updated data types. The community data standards and infrastructure platforms that underpin AuScope provide important new datasets and multi-agency links independent of software and hardware differences. AuScope has thus created an infrastructure, a platform of technologies and the opportunity for new ways of working with and integrating disparate data at much lower cost. An early example of this approach is the value generated by combining geological and metallurgical data sets as part of the rapidly growing field of geometallurgy. This not only provides a far better understanding of the impact of geological variability on ore processing but also leads to new thinking on the types and characteristics of data sets collected at various stages of the exploration and mining process.

The Minerals Resources Flagship is linking its research activities to the AuScope infrastructure, exploiting the technology internally to create a platform for integrated research across the minerals value chain and improved interaction with industry. Referred to as the 'Early Access Virtual Lab', the system will be fully interoperable with AuScope and international infrastructures using open standards like GeosciML. Secured access is provided to allow confidential collaboration with industry when required.

This presentation will discuss how the CSIRO Mineral Resources Flagship is building on the AuScope infrastructure to transform the way that data and data products are identified, shared, integrated, and reused, to unlock the benefits of true integration of research efforts across the minerals digital value chain.