

Modern geoscience covers old mining camps

Presenters from CSIRO, GeoScience Australia and AuScope were a valuable presence at last month's AMEC Convention in Perth, contributing to the important question of how explorers might find the next big discovery.

Understanding how mineral systems work was crucial to pinpointing the features of prospective deposits, according to CSIRO's Dr James Cleverley, who used an example of Northern Territory uranium fields to show how this could be done.

Cleverley began by asking the audience whether current discovery methods were sufficient.

"The question we need to ask is do we keep on doing the same old stuff?" he said.

"In the eastern goldfields, they're saying all the gold is gone, and it's important to talk about mineral systems and how they affect our approach to these problems."

With a large amount of new data to work with, Cleverley explained how current researchers were approaching the features of these systems, allowing them to draw parallels between others in the search for deposits.

"The PMD CRC (Cooperative Research Centre for Predictive Mineral Discovery) came up with five main questions relating to a system," he said.

"They cover geodynamic setting, architecture and fluid reservoirs – asking what's driving the system, and what pathways are the fluids using?"

"What you come out with at the end is the where question – where do I go to find another one of these systems?"

Given the varying size of these systems and the deposits they relate to, Cleverley said it was important to consider the data across different scales, with different applications.

"This range of scales feeds into the way we do our exploration, because we might be dealing with province selection, or we might be doing mine exploration," he explained.

"It's critical that we understand how these scales fit into process – we have to collect our data from a whole range of scales as well."

In the latter case, this could include a 3D model of an entire province, or a micro-scale to examine how certain processes affected one another.

"With a 3D model for all of the goldfields, we can look at the architectural structure that sits in the crustal scale, and the controls that dominate in this region," he said.

Another significant innovation in the geosciences field is the AuScope Grid, an IT tool which enables users to access previously unavailable data.

AuScope chief executive Dr Bob Hayden explained development of the grid and its applications looking forward.

"The core element is an information exchange that allows us to connect to resources such as organisation data," he said.

"This forms a key part of the AuScope infrastructure system that was funded by the Commonwealth Government.

"It is aimed at rectifying the issue of information access, interoperability and cross-organisational collaboration."

Hayden emphasised the potential for greater data access to open up the field of exploration, as users analyse different data sets and compare what they know.

"It's no longer just about using friendly IT systems to access data and produce nice maps – it's very much about analysing the data, it's about work flows," he said.

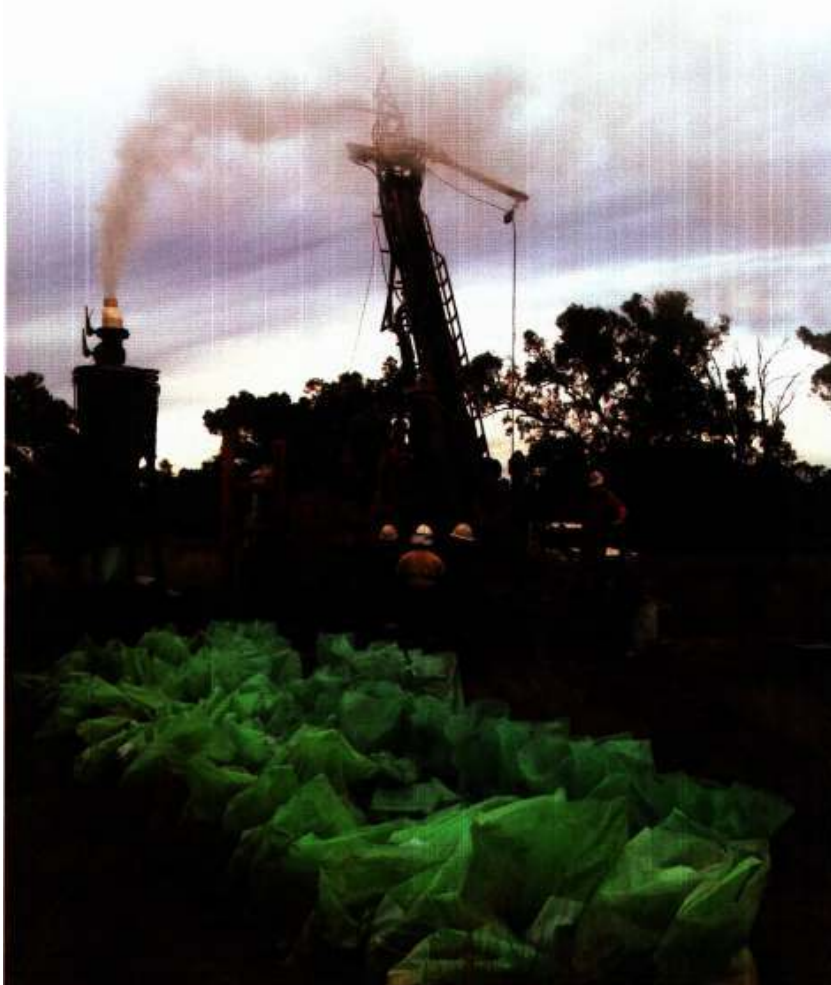
"There's been a national issue of information access, interoperability and cross-organisational collaboration, so the grid challenge for us over the last decade has been to rectify that issue."



Dr James Cleverley



Dr Bob Hayden



A lot of science may be applied before the drill rig operates.

Caroline Smith