

**From knowledge to innovation**  
**24 August 2009**

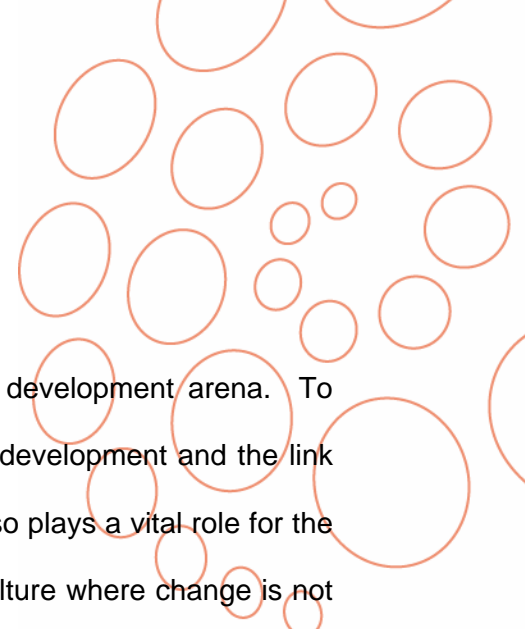
In my previous article I discussed the creation of knowledge and adding value through change (innovativeness). The big step forward which is needed for the mining industry is a better understanding of the link between knowledge and innovation. The figure was presented by Jari Kuusisto at the Smart Innovation Festival held in Brisbane in May 2008. It shows the innovation process having four characteristics.

1. **Being part of the global world.** Knowledge is everywhere and there is good work being done around the globe. For example, Europe is not renowned for mining knowledge (although maybe Russia and several of the former Russian States may be exceptions). Many of the European countries fall in the top quartile for innovativeness and as such frequently have developments of interest here in Australia. In addition to a number of large equipment companies from Germany which are doing some good work, there are real technology advancements coming out of Europe. The Vienna Test System which comes from Austria has tremendous application in the Australian mines for operator selection; significant electrical advancements are being made in Germany and tested on draglines in Estonia; etc, etc. Mines should be grasping knowledge and/or developments from anywhere they might come. As a primary consideration they should be benchmarking wherever possible.

2. **Innovative individuals and communities.** This industry needs innovative people. I have mentioned it before but the perfect example is the Australian Coal Association Research Program which distributes over \$10M annually of the industry's money for coal mine research. This program draws some of the smartest and

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most innovative thinkers into the coal industry research and development arena. To ACARP's credit, they do get the whole concept of knowledge development and the link to innovation and have a clear focus on adding value. AMIRA also plays a vital role for the broader mining industry. Mines need to build an innovation culture where change is not done for the sake of change but rather to make the operation better.

3. **Systemic Nature.** Being innovative is not something which can be turned on and off. It is the culture; the way the people think and act. Some people believe it is difficult being innovative within a large mining company. This is because they are thinking on too large a scale. Too often we think that multi-million dollar projects such as Universal Dig and Dump, equipment automation, etc. are required to be innovative. However, knowledge intensive mining and being innovative can be done on a micro-scale. Each person can take responsibility for themselves and can follow the path of acquiring, absorbing and applying. On a micro-scale the operator who, having difficulty loading one bucket ends up with half a load, actively changes their digging for the next cycle and the one after that has applied knowledge. As a summary, each individual being innovative relies on how they are acquiring, absorbing and applying the knowledge which is available.

4. **Customer and user-centric.** This is what the author calls "bottom line" service. From the provider's perspective, knowledge and service provision must be focused on what the user / mine needs. All too often the mining industry funds work by research groups and consultants, which focuses on the process and how smart the process and people are. For knowledge to be valuable and to facilitate the innovation process it must be value-based, ie. it must provide bottom-line / profitability improvements for the mines.

The key to this is the person  
pulling the levers or turning the

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steering wheel. This person has the ultimate control over what output is achieved.

Therefore the mine must engage the operator / driver in the optimisation process.

In the European Innovation Survey, Australia fell in the third quartile. We are below average in innovativeness, and by industry standards the mining industry is very conservative. In fact, I could name quite easily those mines in Australia which I consider to be genuinely innovative. The reasons for this are quite clear and I will address them in my next article.

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