Digital optimisation: lessons learned from other industries at the forefront to deliver iron ore mines of the future

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ABSTRACT

The next generation of iron ore mines will be digital, remotely operated and will intelligently gather data to inform precise operational decisions. The benefits of improved safety outcomes, step change in productivity and availability, as well as far better real time management of the pit to port value chain will all be realised through data acquisition, analytics and machine learning scenarios.

Digital design enables this quantum leap in value improvement, embedding an artificial intelligence approach across all facilities and the entire operating environment. The long-term survival of iron ore producers will require engagement at the forefront of this fourth industrial revolution and it is all enabled by the digital environment.

Industries at the forefront of digital design that face similar challenges to the iron ore industry of long, complex logistics chains and interfaces provide the greatest opportunity for the industry to deliver next generation iron ores today. The aerospace, advanced facilities and defence sectors all have proven technologies and solutions that have been tried and tested, both on decades old facilities and greenfield projects.

Through our paper, we will demonstrate how success can be achieved by leveraging the solutions and insights from industries at the forefront of digital design. A demonstration of the benefits of this approach will be provided by referring to two different case studies where technology and new approaches have been applied, defining the journey and the process to deliver tomorrow's iron ore mines.