*INDUSTRY DIRECTIONS*

Jayanta Bhattacharya
Hony. Chief Editor

Wireless network capacity and capability is a pre-requirement for implementation of automation and other technologies in open pit mining

Australian iron ore producer Fortescue Metals Group revealed that on February 11th, 2019 one of its massive driverless trucks collided with another at one of its Western Australia mines. There were no injuries. The truck, said the company, was traveling at low speed and crashed into another that was parked at its Christmas Creek iron ore mine in the Pilbara region. Chief executive Elizabeth Gaines said the incident was not the result of any failure of Fortescue's autonomous haulage systems (AHS). "Since the introduction of the first AHS truck at Solomon in 2012, AHS trucks have safely travelled over 24.7 million kilometres," Gaines said in a statement. It is believed the collision occurred after wi-fi coverage, which provides communications between the truck and Fortescue's control center, dropped out. The effective and efficient communication of data and information is crucial to mine productivity, especially when it comes to the use of automation. The more technology that is designed and implemented onto equipment to improve operating efficiencies, the greater the requirements are in terms of being able to successfully transmit and interpret this data for use in real-time. Automating operations allows companies to control activity at the mining site from a remotely located operation center but in order to issue real-time instructions to autonomous equipment and other machinery, a dedicated network with the capacity to transmit large volumes of data is needed.

Whilst some of the technology developed in the last decade alone for the mining industry is impressive, the implementation strategy for this technology is often not fully considered. Typically, existing wireless networks for open pit mines were installed with the view of supporting individual products such as complex automated systems like the dispatch system, which assigns trucks to specific loading and unloading locations. Previously, preferences were for a quick solution by an approximated method in the dispatching process rather than to the exact solution of optimal methods, – arguing that the exact solutions are expensive and time consuming. However, with
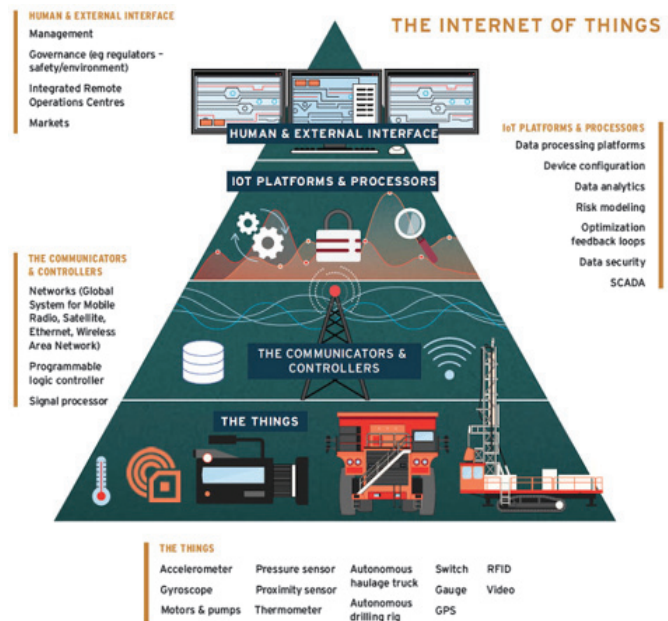
Reference: J. Lee, K. Prowse, Mining & Metals + Internet of Things (2014), http://www.marsdd.com/news-and-insights/mining-industry-iot-technology.

automated dispatch systems, this is done without the need for operator input and truck solutions are then implemented using a real-time dispatching system, with or without the interaction of the truck dispatcher. Dispatch solutions, such as Modular's DISPATCH™ or Caterpillar's MineStar™ system, were often the catalyst for the installation of wireless networks though sometimes the installed network was simply to provide a radio communications network.

Nonetheless, the progression of technology and innovation in the mining industry is bringing more and more products to the market, to improve efficiencies and optimise operations, which produce data in real time on various pieces of heavy equipment. These data then need to be communicated wirelessly, also in real time, increasing the need for necessary capacity and capability of the wireless networking system.