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Abstract: Advances in mining machines during the last two decades have been dominated by increasing size and unit productivity. However, to a significant degree, the future of mining belongs to the Information Age. Data collection, “data mining”, and data analysis are becoming the new “efficiency” frontier. Machines today are not only larger, but also much smarter; being equipped with multiple sensing packages and on-board high speed computers that can measure most aspects of the machines’ performance. Advanced wireless technologies are emerging that provide a window into this remote machine data. As more data are made available to mine operators, these data must be organized and converted into useful information, resulting in action taken in the field. Expert maintenance, engineering and operating staff, co-located in a centralized area, can monitor mining fleets and also provide valuable guidance to less experienced field personnel. Operator performance can also be assessed in a similar fashion, providing management with an abundance of information that allows efficiency and productivity improvements to be made that can also result in significant cost savings. Ironically these Smart Mining Systems will greatly help meet the growing challenge of finding qualified field personnel facing the industry today.

This paper will present the Freeport McMoRan Mine Technology Group’s vision and advancements in smart mine technology.