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Big Data Sparks a New Industrial Age

By Randy Bean | Contributor | January 15, 2015

While many financial services executives still struggle to identify compelling Big Data use cases there is another world where Big Data is yielding a big impact right now. This is the world of heavy industry, where companies like General Electric are finding many opportunities to generate meaningful outcomes from accurate, timely, and precise data.

For GE this pursuit falls under The Internet of Things, where embedded devices and smart systems connected to the Internet enable the automation and optimization of complex mechanical processes. “We are pursuing big industrial change,” said Bill Ruh, who heads GE’s Software, Big Data and Analytics initiative. “We are tackling big things with big complexity, big efficiency, and big payback.”

The company collects 50 million individual sensor data elements from sensor-enabled equipment found in its heavy industrial business, which includes gas and wind turbines, oil exploration, jet aircraft engines and locomotive equipment. “The opportunity is to use 100% of this data to predict and enable outcomes, which can result in $20 billion in customer savings,” he said.

Mr. Ruh cites the ability to shorten and improve sensor data capture and analysis process cycles as an example. What were once 30-day processes can now be completed in 20 minutes. This has been made possible through the establishment of a data lake approach using the Big Data technology Hadoop, which enables GE to capture the “full flight” of available sensor data.

Mr. Ruh is a passionate advocate for the new Big Data approaches, noting that traditional data management and warehouse approaches were “schema bound,” requiring long cycles to rationalize the data. “We never got it right,” he notes. Hadoop represents a breakthrough for GE, because it can be fully optimized to the problem that is being solved, operating at speed and scale.

The ability to undertake pattern-matching in real-time, by sifting through vast amounts of highly disparate data in varying formats and in an “infinite number of patterns” enables GE to optimize warnings, remedy problems, and realize opportunities. “We are looking for early indicators” Mr. Ruh said. The ability to optimize a wind turbine can increase the electricity generated by 4%-5%, but this is a continual optimization process with a “short shelf life”.

Mr. Ruh notes that heavy industry data represents an order of magnitude greater data when compared to the volumes associated with traditional consumer applications. GE is routinely managing and analyzing petabytes and exabytes of data as part of highly complex industrial control systems, where the volumes of data are growing exponentially. In fact GE had to look to the consumer Internet giants – Apple, Google, Amazon – to find analogous examples which could operate at the inbound-outbound processing scale required, he said.

So, while in some industry sectors, Big Data remains a solution searching for a problem, in the harsh and unforgiving environment of heavy industry, Big Data seems to have become a brutal and transformative necessity.

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