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44790, S Grimmer Blvd.
#202, Fremont, CA-94538

IIoT Business Drivers and Investment Priorities

By Bob Karschnia, VP of Wireless, Emerson Process Management

A recent white paper by GE and Accenture titled Industrial Internet Insights Report for 2015 highlights the potential of the Industrial Internet of Things (IIoT)—detailing business drivers, investment opportunities and expected benefits. While the white paper provides a good overview of current state of the IIoT, it only touches on existing practical applications.

This article will summarize some of the key points from the GE/Accenture white paper, and will then show how the theory outlined in the white paper is being turned into reality using technologies such as wireless instruments, wireless mesh networks and advanced data analytics.

IIoT Business Drivers

Most IoT discussions to date have focused more on commercial than industrial implementations. But according to the GE/Accenture white paper, this focus should be changed to favor the IIoT because "data created by industrial equipment such as wind turbines, jet engines and MRI machines holds more potential business value on a size-adjusted basis than other types of Big Data associated with the social web, consumer Internet and other sources."

Industrial enterprises agree with this conclusion as "80 to 90 percent of companies indicated that Big Data analytics is either the top priority for the company or in the top three," according to the GE/Accenture white paper. And agreement with the importance of the IIoT is not only at the operations level, where benefits will be most pronounced and apparent, but also at the board-level as "53 percent of all survey respondents indicated that their Board of Directors is the primary influencer of their Big Data adoption strategy."

So, industrial enterprises realize the value of the IIoT, often driven by fear of being left behind by competitors acting more aggressively to implement the IIoT, as "89 percent (of respondents) say that companies that do not adopt a Big Data analytics strategy in the next year risk losing market share and momentum."

Figure 1 delineates some of these specific fears from delaying IIoT implementations, with the top five being:

1. Loss of market share
2. Inability to recover and catch up
3. Loss of qualified talent to competitors
4. Losing confidence of investors, and
5. Products/solutions cannot be competitively priced.

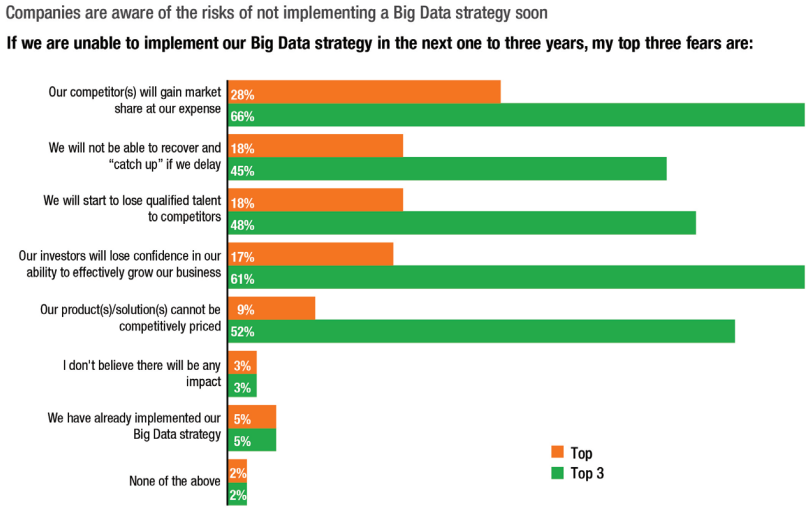

Bob Karschnia

These are the business drivers for IIoT interest, and here are some of expected benefits from IIoT investments.

Areas for IIoT Investment

The IIoT has certainly garnered the attention of top management, and some of the reasons for growing awareness of its importance are outlined in the report. For example, one reference claims that "by introducing analytics and more flexible production techniques, manufacturers, for instance, could boost their productivity by as much as 30 percent."

Even seemingly small operational improvements can



IIoT is well accepted across industry and real-world implementations are rapidly being put in place to meet IIoT investment priorities

yield huge benefits, says Apache, an oil and gas exploration and production company. "Executives at Apache claim that if the global Oil and Gas industry improved pump performance by even one percent, it would increase oil production by half a million barrels a day and earn the industry an additional $19 billion a year."

Anecdotes like these are helping executives at industrial end-user companies frame their priorities for IIoT investments. As shown in Figure 2, their top five priorities are to:

1. Increase profitability through improved resource management
2. Gain a competitive edge
3. Improve environment safety and emissions
4. Gain insights into customer behaviors, preferences and trends, and
5. Gain insights into equipment health for improved maintenance.

The question now becomes how to meet these priorities with present day technology, and the following examples will show just how this is being done.

Addressing IIoT Investment Priorities

Pump health monitoring is a good example of how IIoT investment priorities can be met with wireless monitoring. In this case, installing wireless flow, pressure, level, temperature, vibration and other transmitters can help industrial facilities gain insights into equipment health for improved maintenance.

At a fraction of the installed cost of wired transmitters, plants can replace preventive maintenance and manual rounds with on-line condition monitoring of pumps. This not only gives early indication of failure, but also avoids unnecessary maintenance on pumps that are healthy.

Stream trap monitoring is another area where IIoT investment priorities can be addressed, in this case by installing wireless acoustic transmitters on critical steam traps. Critical traps are those which waste a lot of energy if they fail open, or those which can cause significant damage to equipment if they fail closed (Figure 3). Online wireless monitoring of these critical steam traps cuts energy loss, prevents failures and increases uptime.

Wireless monitoring of flare gas stacks improves environmental safety and reduces emissions. Specifically, wireless acoustic transmitters can be installed on the pressure relief valves controlling the release of gas to flare stacks. These transmitters use acoustics to detect lifts, leaks, releases and blockage — and do so for a fraction of the cost of their wired equivalents as they must be installed in locations which are very hard to access with traditional wired instruments.

The theory of IIoT is well accepted across industry at the highest levels of most every major company and real-world implementations are rapidly being put in place to meet IIoT investment priorities. CR