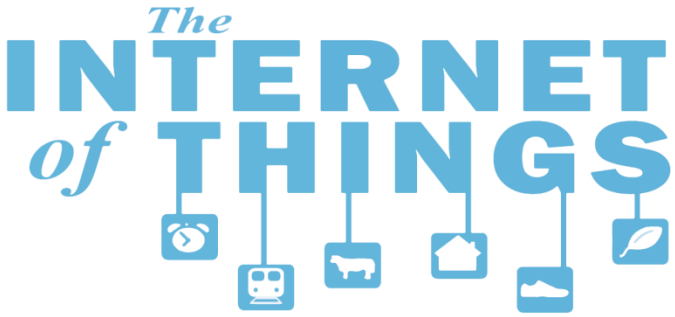
Condition Monitoring and the Internet of Things

Scalable and efficient applications of knowledge are vital

by Burt Hurlock, CEO, Azima DLI

Now that we know the NSA can monitor every communications device everywhere any time, should it come as any surprise that monitoring of all kinds is proliferating elsewhere? The penetration and transparency of the Internet and the spread of low-cost data-enabled devices, from drones to smart phones, daily erodes expectations of privacy; and why shouldn't it, with the desire to be "liked" and "followed" escalating to epidemic proportions? What began as harmless social networking became business networking, and what started as a way to connect people is now connecting things — the so-called internet of things — the last frontier.

People are selective about what they share, and things not so much. You don't have to listen, but machines will tell you everything. They are guileless and uninhibited, like the kids on the AT&T ads. Attach the right sensor and out comes a stream of consciousness: I'm hot; I'm cold; I'm misaligned or out of balance; my parts are aging; or I need lubrication. "TMI," might groan a Facebook friend, but not an industrial competitor, not a contractor that competes on delivering uptime, or an OEM that sells a competing machine with a several million dollar price tag. That stream of consciousness is invaluable to:



- the operator for optimizing production
- the incumbent for defending the installed base
- the competitor looking to exploit vulnerabilities.

Whichever you may be, shouldn't you be listening?

A tale of two generations

If you made it through high school before the Internet, as most experienced production teams did, you may never "get it." Way back when there was privacy, and being followed sounded sinister, you did your own thing your own way, and that was good. It was possible, even likely, that you discovered tricks that made you smarter and better than your competitors, and the idea of sharing such things was preposterous, even treacherous. Production operations were islands of pride, like ships in a fleet with tenured captains and loyal crews. There were practical reasons, like distant commands and poor communications, which demanded autonomy at sea. And that worked, especially during the U.S. industrial plateau, or decline, of past decades. Managers pined for reasons to worry about scalability, and efficiency was a poor prospect for big wins.

And then came the Internet and what Amazon is doing to every retailer you know, and what Apple did to cell phones and music, and what Google has done for curiosity. Do scalability and efficiency matter today? How would you sound saying no?

A smaller piece of a bigger pie?

It used to be that a smaller piece of a bigger pie was acceptable wisdom, but it doesn't work that way any more. The size of the piece matters more than the size of the pie when information drives strategy and advantage. While Amazon and Apple and Google can all be said to sell and deliver things, the sale is the tail on the dog. What precedes the sale is identifying the buyer, understanding the buyer's needs, and serving the opportunity for a sale. Executing that process at massive scale is like knowing where the fish are and dropping baited hooks on each one. It's not the same as trying your luck when conditions are good. When information drives strategy, size determines your knowledge of the marketplace, as well as the relevancy and completeness of your understanding. Information is the currency of the Internet Age because knowing more is outflanking your enemy. That's second nature to the Internet generation. They crowdsource everything, from funding to research, because there's an assumption of knowledge in the crowd. Is it blind faith or stupidity, or smart and efficient, because the knowledge is out there to be harvested? Warning: your answer may reveal your age.

The presumption of knowledge and the expectation of sharing it is revolutionizing strategy everywhere. Capturing information and moving it is cheap, and aggregating it for analysis at massive scale is easy, and the advantages of doing so far outweighs the

risks. It's only a matter of time until information drives strategy everywhere because better knowledge is becoming the most potent form of differentiation. So if listening matters, if listening can yield actionable information, you can bet somebody is listening. They may be younger, and they may have less experience, but they're hearing more and learning faster than anybody too proud to listen.

Don't cover your ears

The Internet of Things will have as dramatic an impact on the industrial landscape as social networking has had on your teenager, perhaps even more. Teenagers get bored and need sleep, and some of us wonder if they don't live for unplanned downtime; but machines are supposed to run in perpetuity and perform as reliably as the sunrise, as long as we maintain them. Maintenance has been reinvented many times over. Call yourself reactive, time-based or predictive, the maintenance strategy you use has cultural roots in your company and reflects the predisposition of your managers, who probably left high school before the Internet. Walk the floors of today's American industrial sites and most staff will tell you that sharing is HR-speak and following is the failure to lead. They are loyal to the enterprise and proud of their methods and largely resistant to change.

What would they say to a machine surveillance system that's always on, smart enough to generate automated diagnostics and repair recommendations, and demonstrably correct enough to auto-populate a work order system? And what if that system had already reduced unplanned maintenance and capital equipment spending by more than 90% where the enterprise had shared the data and followed the detected faults, all of which were visible to the whole enterprise, from the initial alert to the repair? When information was shipwrecked on islands of pride and loyalty, the idea of substituting process with surveillance, and experience with expert systems, was unconscionable and impractical. But the coming generation doesn't know another way. They consume information, important and absurd, in the same way that refineries consume oil, or paper plants consume pulp, or steel mills consume ore, or power plants consume gas and coal and oil. They expect to listen, and watch and learn, and to share and follow, and to find knowledge in the crowd. What does "state of the art" or "thirty years of experience" mean on an island nation when the rest of the world is comparing timely data and tracking and documenting events on a massive scale?

Cover your ears if you please, but somebody is listening, or will be soon, and they're looking for opportunity: to improve their performance, to exploit vulnerabilities, to demand more from vendors. The Internet pioneers who survived proved a point, which was that size matters. Scalable and efficient applications of knowledge (information and data gathered on a massive scale) are vital elements of effective strategy, and it's a winner-take-all game. The first player to leverage new insights correctly wins. There are no second prizes. The second movers are the fishermen who go where the fish were yesterday.

The promise and risk of information strategies is that there's no telling where they lead. It's impossible to predict the lessons or how they might be used. But with data so easy to capture, and new insights so disproportionately valuable, can you really afford not to listen?

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