



Is This Really the Internet of Things?

BY LUIGI DE BERNARDINI | MON MAY 23 2016

For several months, I have been writing about smart manufacturing and the Internet of Things (IoT). I promised to myself to change topic, but my recent participation in the annual CSIA Executive Conference pushed me back on topic. The Executive Conference is the annual occasion when the Control System Integrators Association members get together to discuss best practices to manage and grow their businesses, market developments, and trends that will impact their businesses over the coming months and years.

As happens these days at every conference, IoT issues were prevalent—enough to give them their own “unconference” session, crowded with system integrators and technology providers, reflecting the attention to the issues and the need for discussion and clarity.

We are, in fact, in a critical time, when the three components typically involved in any solution (end customer, technology supplier and system integrator) are not aligned in their awareness of IoT, what exactly it is, and what possibilities and opportunities it could deliver in various cases.

Though end customers are confused by the different messages they are receiving, they understand that IoT is something with great potential to improve production management, and they are curious about a topic that has been described as a destructive element in the current market.

Technology suppliers need to fight—at least from a marketing viewpoint—with competitors and tailor their offerings in terms of IoT. The disruptive noise that the term is creating makes it mandatory for suppliers to tell the market that they have IoT solutions, even if this means they're just presenting the same portfolio in a different way. This incidentally means that the very definition of IoT is adapted, more or less, to match existing offerings.

System integrators, for their part, are caught between demand and supply, both unclear. They see the urgency of mastering IoT, with its potential to transform both the technology of their business and the business model itself.

So it is that I come back to the topic of IoT—to try to bring some order and clarity, at least based on my perception and knowledge, to what exactly IoT is and what it is not. As I have mentioned before, there are several trustable and not so trustable IoT definitions out there. I will start with the one identified by the Institute of Electrical and Electronics Engineers (IEEE) in the document “Towards a Definition of the Internet of Things”:

We are, in fact, in a critical time, when the three components typically involved in any solution (end customer, technology supplier and system integrator) are not aligned.

“Internet of Things envisions a self-configuring, adaptive, complex network that interconnects ‘things’ to the Internet through the use of standard communication protocols. The interconnected things have physical or virtual representation in the digital world, sensing/acting capability, a programmability feature and are uniquely

identifiable. The representation contains information including the thing's identity, status, location or any other business, social or privately relevant information. The things offer services, with or without human intervention, through the exploitation of unique identification, data capture and communication, and actuation capability. The service is exploited through the use of intelligent interfaces and is made available anywhere, anytime, and for anything taking security into consideration."

This definition contains all of the elements that are useful and necessary to identify what IoT is and what it is not:

- First, the things must be interlinked—must interact with each other as well as with a central service. This makes IoT substantially different from any other data collection solution through sensors or RTU.
- Secondly, the things must use the Internet as the communication infrastructure. It doesn't matter whether it is efficient or not, if it involves delays or is done in real time. If things are interconnected using any fieldbus or closed network and ad hoc, then it is not an IoT solution.
- Things must provide information and have actuation ability; they must have an onboard programmable intelligence that enables them to offer consumables services anywhere and anytime.

These three elements alone, if kept in mind, allow you to bring clarity and recognize whether you're talking about IoT or not. A group of PLCs connected via a fieldbus are not IoT. PLCs connected to the Internet, on the other hand, exchanging information among themselves and with any base unit, are IoT. Collecting data into a centralized database for subsequent processing, however complex, is not IoT.

I don't want to hurt technology suppliers that sometimes promote such solutions as the Internet of Things. The value of their proposal is not in question, but the use of the IoT label inappropriately taking advantage of the confusion in the industry. Using the IoT label just for marketing purposes does not do the market any good, especially in a market that is transforming very quickly and needs clarity to keep from exploding in a speculative bubble.