

Keep Calm and Carry On with the IoT

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You may have seen endless variations of the “Keep Calm and Carry On” message on t-shirts and posters, but I doubt you have seen the venerable British wartime theme applied to the Internet of Things (IoT). But this is an area in which calmness and perseverance are certainly necessary. My greatest fear about the IoT is not that it won’t ultimately provide value, but that patience will run out for it. It may end up in the “trough of disillusionment” (to use the Gartner term) that befalls technologies with high expectations and difficult implementations. Some technologies never seem to make it out of the trough, and it would be a real tragedy if that happened with the IoT.

The reason patience is necessary with the IoT is the incredibly large scope of the technology and the fragmentation of its current state. The numbers of sensors, data formats, and possible uses of the data are all massive—as is, of course, the volume of data produced. We haven’t really seen a lot of sophisticated analytics on IoT data, largely because the world has to undertake a major data integration initiative first. And that’s true for every particular IoT domain I know of.

Take, for example, the IoT focus area with some of the highest potential value—automotive. Even given the existing human-driven model of automotive transportation, the potential benefits of the IoT are substantial, including traffic improvement, maintenance alerts, new insurance business models, and so forth. And if we have any chance of having truly safe autonomous vehicles, we’ll need IoT on steroids. All those positioning and image sensors in a vehicle will have to communicate with other vehicles and with external weather and traffic systems.

Cars already have between 100 and 200 sensors on average. The sensors don’t communicate with each other very well today; there are almost as many data formats as sensors, and no way to pull all the data together. The US federal OBD-II standard for on-board diagnostics captures only a small subset of the available sensor data in a car. New sensor development is taking place at a much faster rate than data standard development—OBD-II, for example, was implemented exactly 20 years ago. OBD-III is still a twinkle in some bureaucrat’s eye.

The same problem in cars also is found in other broad sensor domains, be they airplanes, homes, offices, or manufacturing plants. In airplanes, for example, there are data bus standards, but companies such as Boeing and Airbus, who manufacture complete airframes, compete with suppliers like engine manufacturers GE, Pratt & Whitney, and Rolls Royce for ownership and use of engine data. In the home, there are as many different data standards as most houses have rooms. In manufacturing the same profusion of IoT data and interoperability standards prevails.

There are, of course, software companies that seek to handle all this integration for you. But the problem is that there are too many of them. It’s not at all clear whether

GE, PTC, Xively, Jasper, Google, OSISoft, Apple, or any other IoT platform contender will ultimately prevail.

What this all means is that grand, sweeping IoT initiatives are unlikely to be successful anytime soon. If you are planning to integrate and use data across an entire car, home, or even human body, think again—or at least plan to be very patient. It could take years to integrate and make sense of all the different data, and even if you succeed you may choose the wrong standard or platform.

Instead, limit your ambitions and IoT applications. If you want to do something with IoT in cars, stick to the data that's in the OBD-II standards, which mostly involve engines, emissions, and vehicle speed. If you want to do something with health care, employ the data on behaviors that are measured by activity trackers. If you're working with IoT in homes, limit your ambitions to lighting or thermostats or refrigerators. That way you'll actually accomplish something in a reasonable period of time.

If you need to make a commitment on software platforms, do so in a limited fashion. Don't assume that one vendor will be able to control all your plants or offices, or that one software platform will manage and digest all health care data. There is likely to be an eventual shakeout among IoT software firms; if you make a small commitment to a big company vendor you are unlikely to be left totally high and dry.

It also doesn't make sense to wait until all the relevant data is available before proceeding with some analytics. Yes, it would be great if your dashboard or predictive model could address every sensor-measured phenomenon in a vehicle or home. But that would take too long to come to fruition. So make sure that whatever sensor data you have access to, you try to turn it into something useful right now.

I'm guessing that the integration of IoT data is going to take another twenty years or so. If I'm right, it doesn't make sense to wait until all the integration and application work is done before proceeding. Bets need to be made today, and there are plenty of useful things to accomplish on the smaller scale I have described. But make sure your bets are relatively small and focused ones.