How the Internet of Things Changes Everything

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Currently in the business world we are witnessing something like the epic collision of two galaxies — a rapid convergence of two very unlike systems that will cause the elements of both to realign. It's all thanks to the Internet of Things.

If you are not familiar with the term, the Internet of Things refers to a dramatic development in the internet's function: the fact that, even more than among people, it now enables communication among physical objects. By 2015, according to my own firm's projections, not only will 75 percent of the world's population have access to the internet. So will some six billion devices. The fact that there will be a global system of interconnected computer networks, sensors, actuators, and devices all using the internet protocol holds so much potential to change our lives that it is often referred to as the internet's next generation.

For managers, this development creates challenges both long-term and urgent. They need to envision the valuable new offerings that become possible when the physical world is merged with the virtual world and potentially every physical object can be both intelligent and networked. And, starting now, they must create the organizations and web-based business models that can turn these ideas into reality.

As consumers, we have all had a glimpse of how the relationship between buyer and seller changes when devices are connected to the internet. Nobody these days carries a Sony Walkman and cassettes; instead we carry Apple iPods — and our major access point for music has become the online iTunes Store, also by Apple. The company sells the devices and the music, profiting handsomely from both. In the same way, industrial product buyers are seeing their relationship to equipment manufacturers changed by smart, connected things. In the field of mechanical and plant engineering, consider the advent of predictive maintenance. When a machine is fitted with sensors, it can know what condition it is in and, whenever necessary, initiate its own maintenance.

Clearly, when things are networked, that has an impact on how actual value is produced. In many cases, it is no longer the industrially manufactured product that is the focus, but rather the web-based service that users access through that device. So, for example, we see the Daimler Group investing in mobility services such as car2go, myTaxi, and moovel; GE using what it prefers to call the "Industrial Internet" for mechanical and plant engineering services; LG paving the way to "smart homes" with IP-enabled televisions and home appliances and related services.

A study undertaken by researchers from the Institute of Technology Management at the University of St. Gallen in Switzerland (Service Business Development: Strategies for Value Creation in Manufacturing Firms) concludes that these services are most definitely lucrative for traditional manufacturers. Considering the example of a papermaking machine, they note that the sale of the machine itself generates a margin of around one to three percent, while selling a related service yields five to ten times as much. The ratio is much the same for the sale of rail cars versus related mobility and maintenance services.

For "Old Economy" companies, the mere prospect of remaking traditional products into smart and connected ones is daunting. (My own company, for example, the Bosch Group, produces over half a million things each day across more than 1,500 product categories.) But embedding them into a services-based business model is much more fundamentally challenging. The new models have major impacts on processes at the corporate center such as product management and production and sales planning. And given the dynamism of the net, the innovations will have to come more quickly. In short order at Bosch we have founded Bosch Software Innovations as a new software and systems unit; launched an electromobility service in Singapore; introduced cloud-based security products; an IP-enabled Bosch security camera , and provided customers with an iPhone app for remote access to heating systems. (We also demonstrated ideas about the near-future of networked living at the Consumer Electronics Show (CES) in Las Vegas.)

In many and diverse sectors of the global economy, new web-based business models being hatched for the Internet of Things are bringing together market players who previously had no business dealings with each other. Through partnerships and acquisitions, Old Economy and New Economy (software based) companies are combining complementary strengths so they can move quickly into vast spaces of "blue ocean." In real time they are having to sort out how they will coordinate their business development efforts with customers and interfaces with other stakeholders.

What we have, then, is a competitive arena full of Old and New Economy companies, all jostling for position and attempting to shape the future. Long-standing producers in traditional industrial fields — whether they make coffee machines, cars, air conditioners, home gym equipment, or shoes — are suddenly not only competing with companies of their own breed; they are also confronting players the likes of which they have never faced before.

Most know that their strategy going forward will have to balance two imperatives. They have to protect the turf they already own — today's product business — while pursuing growth through service offerings that leverage the fact that the product is in place to offer a richer overall value proposition to customers. (What no traditional manufacturer should conclude is that the Internet of Things is a threat that must be fought off in order to preserve the value of the manufactured product and safeguard the capital tied up in production facilities.) Given the reality of limited resources, this lands many traditional product companies at a crossroads. Every new investment they make can go either to strengthening their product-centric facilities, supply chains, human resources, and brands, or to stretching them into the new territory of higher-margin services. The wisest course, most find, is to make investments in both directions, looking to achieve that magic balance that maximizes margins.

As a result, not only in the marketplace but also within firms, completely contrasting business practices, corporate structures, and cultures are crashing into each other. And indeed, for the Internet of Things to fully emerge, they must collide.

As the New Economy and Old Economy galaxies clash, people tend to anticipate that one will destroy the other — and many would observe that the greater momentum is on the New Economy side. Certainly, many differences will need to be overcome before the Old Economy and the New Economy fit together. (Controlled systems on the one hand are opposed by open communities on the other. One keeps a vigilant eye on scant resources, whereas the other in essence gives its services away for free.) But most likely, the two galaxies will morph — as the Milky Way and Andromeda are expected to do: a new system with new dynamics will be created. In the dance around new centers of gravity, new solar systems of partnership will be formed. The question for you is: in this new cyber-physical galaxy, will your company become a new sun, a planet, a minor moon — or be reduced to stardust?

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