

“You better start swimmin’ or you’ll sink like a stone,” sang Bob Dylan more than 50 years ago. If anything, the times are changing even faster today, and only the fastest swimmers will survive.

The times, they are a-changin’



Jan Höller

At Ericsson corporate headquarters in Stockholm, the receptionist is using not one, but three, Samsung mobile phones. Just a few years ago, they would of course have been Sony Ericsson units. What happened?

“Oh, we don’t do those anymore,” says Jan Höller, research fellow for the Internet of Things (IoT) at Ericsson.

That was fast.

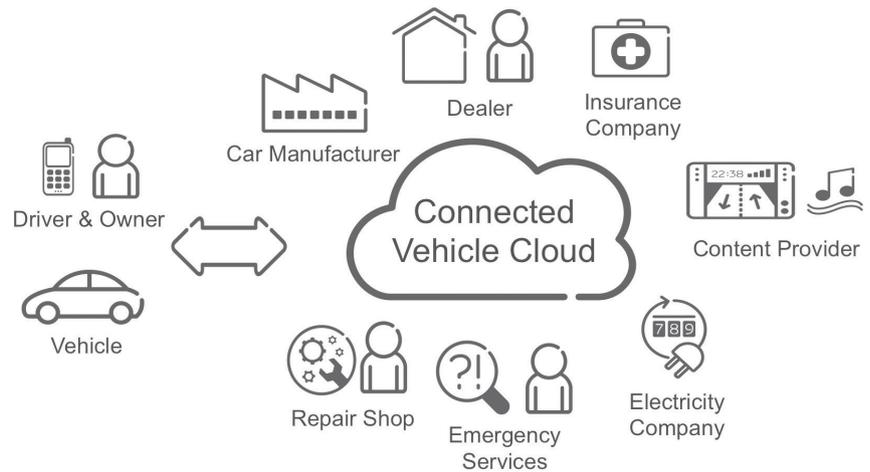
So what does Ericsson do now? It’s still mobile telephony, just not with the phones themselves. “We have over one billion mobile end users that we manage on behalf of our customers, the mobile operators,” Höller says, ticking off operational centers around the world, in the Americas, Europe, and Asia. Even though mobile communications products and services constitute the bulk of Ericsson’s business, their focus is shifting, to the networked society.

“I have been working with IoT for 12 years, he continues. “First we started connecting people with each other. Then we said, ‘Lets see if we can connect other things.’ Now our goal is making machines first class citizens on the internet, on a par with human users.”

In Höller’s world, connectivity is more an enabler, an important infrastructure service like running water and electricity “Cheap chips are making connectivity and computing more accessible,” he explains. “We are shifting from inanimate physical infrastructures to a world with connected embedded sensing and intelligence in everything. This creates a wealth of data, and it is this wealth that is fueling the digital transformation that we are seeing today.”

Exposing data

So how to know who needs what data? “The strategy must be to expose



Connected Vehicle Cloud as a digital marketplace of data and information

as much data as possible, and to make that data understandable by computers, what we call ‘semantic interoperability’. We open up this wealth of data to expanded use and see what people and organisations want to do with it, of course making sure that privacy is protected and access to data is authorized and secure.”

When Jan first started to pitch this concept to his people at Ericsson, he liked the term ‘data broker’ for the interface between raw, harvested data and its consumers. “We were collecting data from different sensors and feeding it to a ‘broker’ in order to expand exposure to the market. Now we liken it more to a factory, producing all kinds of items for the consumer to choose from, both simple data and rich insights.”

With the advent of 5G, wireless infrastructure is more suitable for industrial use. Infrastructure is increasingly distributed as well. “Not all data processing needs to be centralized. Some can be handled in a distributed environment,” Jan says. “The idea is to bring analytics to the data, not just feed data to analytics in the big centres.”

Driving forces

Though the maritime and aviation industries are also making progress in the field, he offers the automobile industry’s use of distributed data collection as an example. Ericsson is currently involved in a brokering-type project with Volvo. “We have developed the connected vehicle cloud, or CVC. This can broker in-vehicle infotainment, engine data, and more. Each car is connected to the entire infrastructure, via the Cloud, which also gives them global connectivity.”

Car manufacturers have been harvesting data from their automobiles for years, improving knowledge of vehicle performance. Car owners in turn benefited from improved service and design. But with greater diversity and accessibility, the number of uses for this data is growing. For example, Höller relates that insurance companies now track data from cars, in order to tailor their offerings to the individual driver’s habits – good and bad.

The utilities industry is another that Höller sees transforming. Sensors in smart buildings and energy-plus houses monitor consumption and sell

excess power generated from solar panels or other sources back to the grid. Regulations are driving installation of smart meters in homes, impacting consumption, but also giving utility and energy companies inside information on consumer behaviour. “Even through it seems overwhelming already, this is just the beginning,” Höller maintains.

Get on the grid

“The main point is, we need to be able to connect everybody and everything. Connectivity exposes data, and that enables value to be created, because value comes from what you do with the data,” Höller states.

One example of a hyper-connected player is Google. But why would a software company be interested in driverless cars? “It probably started off as a fun project, with robotics and AI, but it has proven to be a good way to stay at the hub of digital development,” Höller observes, “and they can apply that knowledge to other uses.”

Meanwhile, Google’s driverless cars are outrunning legislation, already sharing the streets with human drivers, and even crashing into the occasional

bus. So why aren't people more alarmed? Jan offers a key observation on human nature, one that is certainly a factor in the rapid adoption of digital technology in general: "If it is useful enough, we will take the risk. If the potential benefits outweigh the risks, we will try it."

And as the software inevitably becomes more reliable, Höller believes, such fictitious creations as robot taxis will not be science fiction much longer. "I recently read a foresight report by the Imperial College of London, predicting that some cities are likely to ban human drivers as early as the 2030s."

In another example of software saturation, Google recently bought Nest, makers of a learning, interactive thermostat. "The thermostat itself is not the most accurate on the market," Jan says, "but the unit allows Google to learn more about what happens in the running of the home. And it doesn't hurt that it looks good on the wall."

In other words, the real benefit of being connected may appear where you least expect it. "I was in a project that helped an ice cream company streamline their delivery service by simply monitoring the number of times the ice cream bin lid was raised. This allowed them to make more efficient deliveries, but then they saw that sales were going up. The reason was that items were kept in stock, so they sold more. The benefit from this unexpected side effect was in fact greater than the gain originally targeted from more efficient deliveries."

Protecting assets – and lives

If exposing data makes good things happen, it also implies responsibility. The recent dispute between Apple and the FBI, where Apple refused to grant access to a suspected terrorist's

iPhone, offers a case in point. "Apple has simply decided that the customer comes first," says Höller.

"When data exposure explodes, consumer protection becomes of the utmost importance. The more we rely on software, the more vulnerable we are, and data needs to be secured. Privacy and integrity are important, but security becomes paramount when you start to connect things," Höller points out.

The way to build secure software, Jan Höller believes, is to develop and design products with security built in from the start. "Security cannot be retrofitted. It has to be in the foundation. We have to secure every entry point, and we can't rely on legislation to ensure security, because it will always be lagging behind. Security technology is there, we just have to know how to apply it."

The Apple-FBI case also raises the question of how much power states have in regulating market freedoms. "We have a very liberal society in Scandinavia. Individual rights and private information are strongly protected," Höller points out. "But what if the political climate changes?"

Nonetheless, he maintains, "Opening up is not something we can, or want to stop. What we can do is create an awareness of becoming dependent on something we will not be able to control. We don't really know where it's going, but we can monitor developments." Höller offers the analogy of a built-in smoke detector in society: "Just a device that will set off the alarm if something starts going wrong."

Are we there yet?

So what is Jan Höller's time frame? When will everybody and everything be connected? "The technology is available. It will only take a few years' time to embed it in virtually everything.



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Ericsson offices, Stockholm

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And Big Data already exists. The technology is there for the first wave of deep penetration, so it just depends on the pace of uptake in the different sectors.”

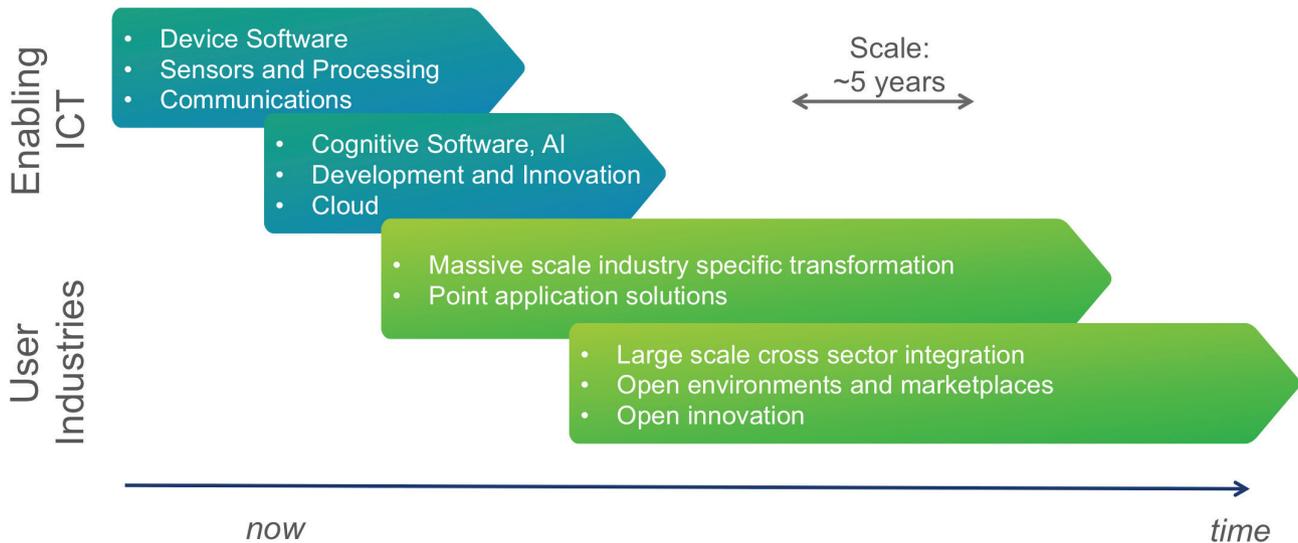
Right now, he points out, the wave of change is consumer driven. Revolutionising the heavier communications infrastructure takes longer. “I tell people around five years for the technology to mature, and 10-15 years for a broader implementation across different sectors.”

One key driver in this transformation: “Everyone is competing against each other. IBM has already transformed to a software company, and Ericsson has also come far in transitioning into software. Manufacturers like ABB are becoming software com-

panies. These are now competitors in a space where they never thought they would be competing, and we are all targeting the connected industries in the digital transformation.”

As the competition heats up, something’s got to give, but for now, Jan Höller believes there is room for everyone. At least for those who embrace the challenge of being prepared for the unknown:

“I was presenting at an ABB symposium recently, and they asked me to give advice on how to be prepared for what is coming. I told them, ‘just pour sensors into everything you make’. Don’t try to justify it today. At some point in the future, you will need all the data you can get your hands on.”



Evolution of enabling technologies and industry uptake