New ecosystems require standards and specialization

At its simplest, IoT is a digital view of the real world where data from devices and objects is transmitted for processing over a network (3GPP, Internet) using suitable software. The data is most likely processed on a cloud-based platform from which different views are created according to the intended purpose. Ericsson's Innovator Advisor Jarne Atsar says the IoT program opened many new perspectives to the operation of a traditional device supplier.

Ericsson Research has been studying communication between devices for years. In particular, it has studied short-range radio technologies while taking into account things like energy consumption from a data source through a network, different interfaces and protocols into a cloud.

In the IoT program, Ericsson did research together with universities and the Technical Research Centre of Finland (VTT). In collaboration with the participating companies, such as Elisa and TeliaSonera, the IoT market was studied more broadly than usual by doing things like evaluating new ecosystems and value chains. Many small and medium enterprises also participated in the program at various stages.

According to an estimate by the Gartner research company, there will be as many as 25 billion devices connected

mostly has a product and a node will take a back seat and be replaced by service business. And if you want to be a winner in services, it is obvious that partnerships will increase in value, as one has to create services that are as easy to use as possible."

Atsar doesn't believe anyone will be able to be an expert in every area of IoT anymore.

"Specialization will be needed, and partnerships and ecosystems will most likely be born through these specializations."

Capillary Data Fusion: Ericsson's way to make sense of the IoT-data

Ericsson has been creating a cloud-based data analytics and connectivity infrastructure called Capillary Data Fusion. When using a capillary network, all things at home, for example, can be securely connected, from coffeemakers and heating to sensors.

A capillary network uses short-range radio access to services, storage, and applications that are hosted in a cloud. The gateway is created through Wi-Fi or Bluetooth. Capillary Data Fusion is a way to create new services which use local data to make sense of the information.

"Part of the technology used in Capillary Data Fusion was developed during the

to a network in the world in 2020. The huge number of devices will change the ways of doing business.

"It is obvious that those devices will represent hundreds of fields of application from electrical grids to traffic, and of course everybody's home electronics. This wide array of applications opens up opportunities for new business models and even new roles in value chains. We may also presume that entirely new ecosystems will be born," says Jarne Atsar.

Atsar also says that the role of a traditional device supplier will change as well.

"It looks like the traditional idea of a device supplier that

Internet of Things program", says Jarne Atsar.

In the IoT program VTT and the Tampere University of Technology studied how software from different service providers was connected to become part of a cloud service that had been decentralized all the way to the gateway. They also studied how all IoT devices – even the smallest ones – could be controlled as large groups. This means that there is no need to separately configure each individual device, as one single command will be enough for all devices. These open source solutions were added to Capillary Gateway.

During the program, the eSIM concept was also analyzed. eSIM is a new standard promoted by network operators worldwide. Consumers can activate devices that use eSIM with the mobile network operator of their choice. An embedded SIM card need not be removed from a device anymore. The user can simply change the operator on the fly, and a new SIM will not be required.

"The eSIM adoption was studied in the program in collaboration with the Aalto University. eSIM is an essential standard that facilitates the commercial application of IoT. Expenses can be kept in check when huge numbers of people are no longer needed for things like changing SIM cards."

The IoT program uncovered a clear need to create common standards. Standards would lower the threshold for new companies to join in the development of a common field of application and business.

With the help of the IoT program, however, companies were able to develop and expand their ecosystems. Elisa's ecosystem network, for example, includes many companies. The ecosystem is based on the Elisa IoT service platform, on which companies can build their own IoT applications.

http://www.ericsson.com/res/
thecompany/docs/publications/
ericsson_review/2014/er-capil-
lary-networks.pdf

Elisa IoT – an open development and service platform

Elisa IoT is a service platform whose aim is to give companies easy keys for utilizing objects and the industrial Internet. It is a service platform on which it is easy to develop networking devices, applications or large industrial systems without heavy software development. The platform can also be easily integrated into client com-

"It is obvious that those devices will represent hundreds of fields of application from electrical grids to traffic, and of course everybody's home electronics. This wide array of applications opens up opportunities for new business models and even new roles in value chains. We may also presume that entirely new ecosystems will be born."

Horizontal Elisa IoT™ Model
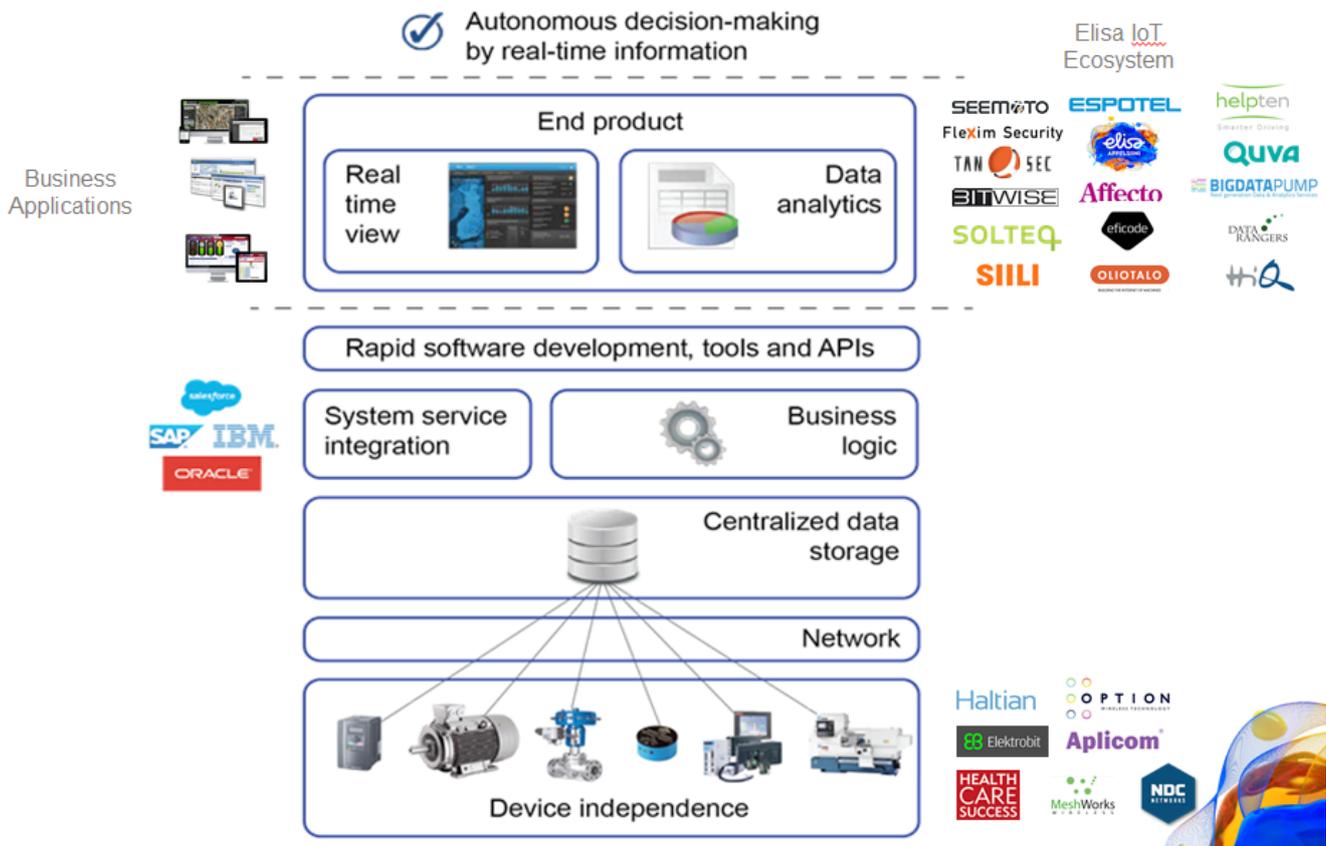
Elisa's platform makes it possible to monitor and analyse data through IoT solutions. This may result in the development of completely new business models for service businesses. For example, car rental businesses or insurance companies could award customers discounts based on their driving habits, once vehicle use and drivers can be monitored and analysed. Customers have a single unified view of the network equipment and reporting. Service provider access can be restricted to the devices that the service provider is responsible for.

panies' existing background systems.

One of the specialties of the platform is that instead of a closed system, Elisa has sought to build an open and developing ecosystem network whose member companies can support each other and improve the functionality and capability of the entire platform.

"Diversity is an important advantage for us. We've been able to get device manufacturers, programmers, analytics and visualists to join our ecosystem. Together we seek to cover all our customers' needs and areas, which wouldn't be possible with complex systems," says Elisa's Partner Manager **Taru Myllymäki**.

Elisa IoT is a platform that is open in every direction and offers interfaces for connecting devices (sensors, frequency changers, electric motors), software de-

velopment (API interfaces), utilization of business systems (SAP, SalesForce, etc.), big data analytics as well as the real-time visualization of data. The system will take care of data collection, safe storage and analysis easily for the client, so that instead of building heavy background systems, everyone can concentrate on implementing their own business idea.

Lowering the starting threshold of IoT development significantly speeds up the conversion of ideas into actual business. In the final of the Elisa IoT Innovation Challenge contest at the Slush 2015 event, the top three participants had only a total of 12 weeks to convert a business idea into a functional implementation.

The winner of the contest, Foller, used this time to develop a dynamic system monitoring the freshness of food, which can be used to significantly reduce the amount of food waste at restaurants and stores. The service is already being piloted at the Sis. Deli cafeteria chain.

"The greatest advantages of our service come from the combination of the ecosystem and exceptional agility. The platform enables fast product and service development, which means cost-efficient advancement towards new business. Elisa's background as an operator guarantees the continuity of the new digital business as

well as excellent information security. We are also able to offer around-the-clock monitoring and support processes as a service," Myllymäki explains.

Unlike in traditional software development, with Elisa IoT a business idea can be tested in a real environment as quickly as within a few days, as prototype development can be done also using entirely codeless tools. Myllymäki says that by combining data from different sources, processes can be significantly improved and made more efficient.

"The constant collection of data and its analysis enabled by IoT enable entirely new business models that challenge the traditional market logic. For example, by monitoring the engine data from cars during driving along with error messages, car repair shops could proactively invite their customers for maintenance before the problems get more severe. With constant data, they could also speed up their service by ordering the needed spare parts in advance," Myllymäki envisions.

https://oma.elisa.fi/yrityksille/info/tuotteet-ja-palvelut/tuotteet/elisa-iot

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