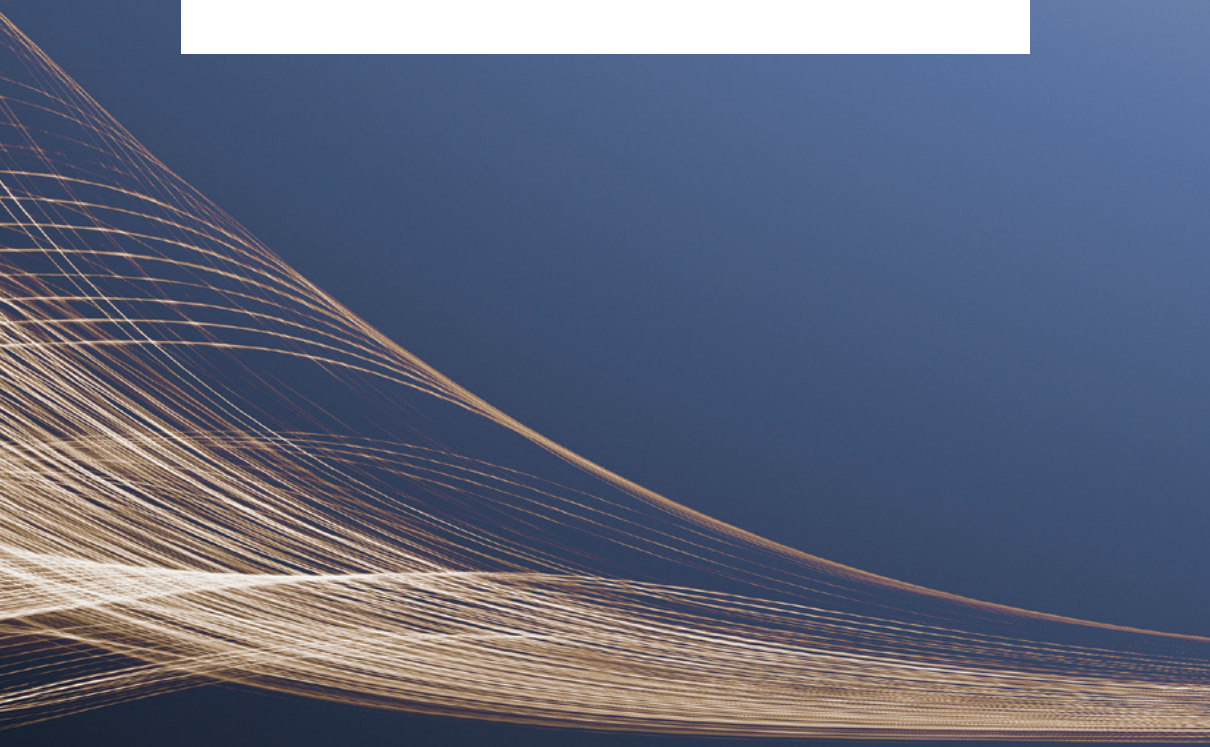
CONNECTING THE EVERYDAY

HOW THE INTERNET OF THINGS IS RESHAPING OUR WORLD



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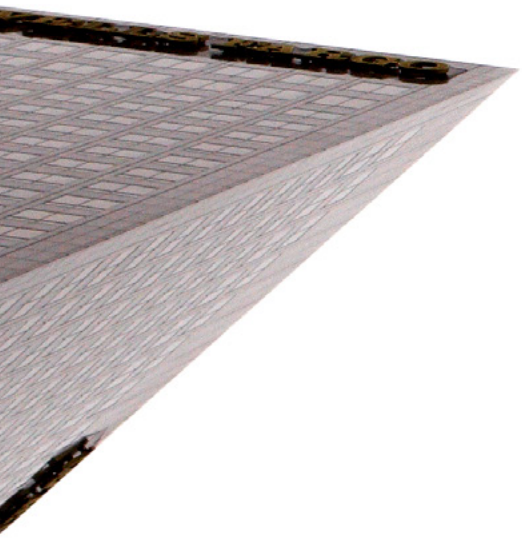
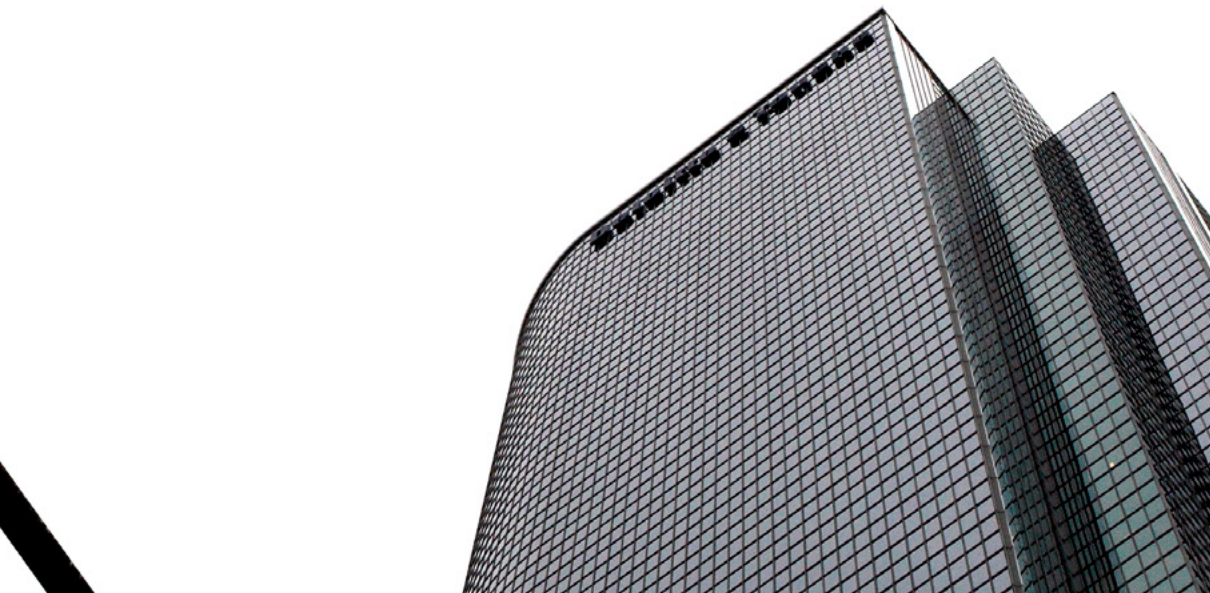
CONTENT

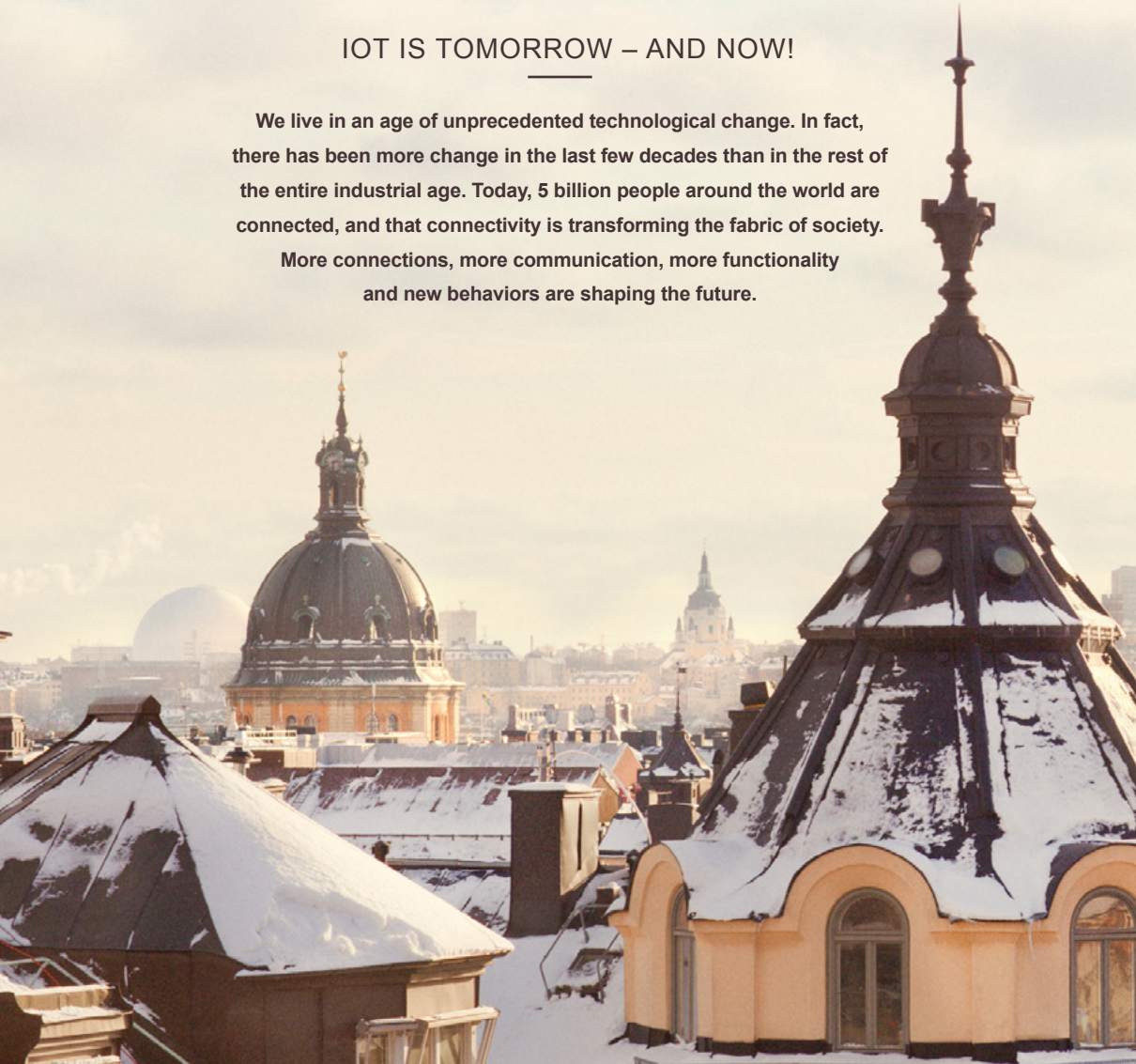




01

IOT IS TOMORROW – AND NOW!

We live in an age of unprecedented technological change. In fact, there has been more change in the last few decades than in the rest of the entire industrial age. Today, 5 billion people around the world are connected, and that connectivity is transforming the fabric of society. More connections, more communication, more functionality and new behaviors are shaping the future.



We've only had the internet since 1991, and already it has transformed the way we do almost everything – from business to dating. Now, the Internet of Things (IoT) is set to take things to a new level.

It's hard to overestimate the importance of IoT – the global potential is around USD 14 trillion, and IoT is expected to be 50 times bigger than the Internet in the next few years!

IoT is already having a major personal, social and business impact. It enables radical innovations and new services that transform businesses or entire industries.

Devices that did not exist a few years ago are now used on a daily basis because they make our life easier and more fun. From smart bands to track our training, to connected cars that become part of intelligent transport solutions. As products get smarter and more connected, we get more relevant information on which to base decisions.

This is just the beginning. But if you want to be part of it, the time to act is now.

IoT revenues in the Nordics: €12 billion by 2020

02

CONNECTIVITY EVOLVES

IoT development is an evolution rather than an overnight transformation. Today we are exploring the possibilities. Tomorrow it will be part of the fabric of our society.

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Car manufacturers
carrying out pilots f
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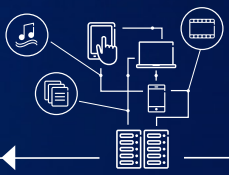
ICT HAS TRANSFORMED OUR LIVES

In the Networked Society, even more places, people and things will be connected.

WHAT IS THE INTERNET OF THINGS?

A development of the internet in which everyday objects have network connectivity.

It builds on machine-to-machine (M2M) where objects communicate vertically. Information is transported through the internet from devices to servers, where it is analyzed.



WHAT CHANGES WILL THIS BRING?

are
for
ing IoT.
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Social media enables users to communicate with companies, facilitating collaboration.

IoT has an estimated market value of **USD 1.9 TRILLION by 2020.**

BIG DATA ANALYSIS

By combining M2M and IoT info in a big data environment, it can be analyzed alongside other data.

By looking at the full picture, we can convert data into intelligence, and intelligence into insight.

Data

Insight

Intelligence

In this way, we can understand the impact of connectivity.

WHY WORK WITH A PARTNER?

With a partner, you can bring together:

IT Business Networks

And identify new business opportunities for customers.

The ability to connect these areas is what helps customers stay ahead.

Exploring

75%

of companies across industries are already exploring the IoT

Using

95%

expect their companies to be using the IoT in three years' time

Impact

94%

believe that IoT will have some impact on markets and industries over the next three years

The trend towards new and more advanced IoT services is expected to continue through 2018 and beyond. This development is happening in three distinct waves:

1 Enabling remote control of devices, such as checking that the front door is locked or retrieving the position of moving objects.

2 Enabling innovative services and improved productivity when large amounts of data are collected and processed. For example, IoT and big-data analytics will enable more efficient clinical research for pharmaceutical companies, and insurance companies can now offer individualized premiums to their customers with user-based insurance.

3 Still on the horizon is a third wave, in which IoT will become increasingly vital and seamlessly integrated into the most critical systems of society, from remote medical treatment to autonomous transport and smart cities.

So far, the key IoT developments have been about technology and cost. Today's technology can fit into even very small products. Cloud solutions, faster processing speeds, big data and data analytics, have allowed companies to benefit from real-time data collected from the physical environment. Decreasing component costs and cheaper data collection methods have altered the cost-benefit model, making IoT solutions feasible on a much wider scale. Together, these drivers lay the foundation for fast-paced continued development of novel products and services.

IoT is not just a natural evolution of the current internet. At its most profound level, it is about the convergence of the physical and the virtual, of manufacturer and consumer, and of tiny hardware components and large-scale, cloud-based. These convergences create possibilities that did not exist before.

The future is already here

There is a great deal of discussion about the potential of IoT, and broad agreement that it will be the next major step in the ongoing transformation of business and industry. Analysts predict that IoT may soon be 50 times bigger than the internet and connect 10 times more devices than mobile technology. Ericsson anticipates there will be 26 billion connected devices by 2020.

Cisco estimates that IoT could increase global GDP by USD 19 trillion cumulatively by 2020, while MGI estimates an economic impact between three and six trillion USD annually by 2025.

Between 2014 and 2015, revenues and connected devices in the Nordics increased by 22% and 16% respectively. The explosion of demand for consumer gadgets is reflected in €500 million worth of growth. This accounts for half of the growth in total IoT revenues in the Nordics during 2014-2015. The increase in the number of connected devices was to a large degree driven by connected buildings, which accounted for over 40% of the total increase. The key growth areas were building security and automation.

IoT revenues in the Nordics are expected to increase by 17% per year, reaching €12 billion by 2020. Connected people is the fastest-growing sector, with over 40% revenue growth per year. Half of that growth is expected to come from home health care. Assisted living, tracking applications and remote monitoring are other strong growth areas. Connected vehicles is the second fastest-growing segment, with almost 30% annual revenue growth. This is to a large extent driven by stolen vehicle recovery and vehicle navigation. Connected industrial processes is growing at 20% per year, highlighting the uptake of industrial internet solutions.

Connectivity

$1.9 Trillion

Predicted value-add of IoT across sectors in 2020

Case

Elektrilevi: Energizing Estonia

Ericsson is currently deploying a smart-metering network in Estonia in partnership with leading energy distributor Elektrilevi, and consumers are starting to enjoy the benefits.

In August 2012, Elektrilevi, the major Estonian electricity distribution network operator, signed a contract with Ericsson for the supply, deployment, systems integration and running of a smart-metering network.

As part of the deal, Ericsson is providing a turn-key solution to replace all Elektrilevi electricity meters with more than 625,000 remotely readable smart meters. The agreement also includes the implementation of a central automatic meter-reading system (AMR) for data gathering and integration to Elektrilevi systems, as well as AMR managed services during the rollout period.

Elektrilevi stands to gain a lot from the solution, such as reduced costs and risk, improved network operation and maintenance, regulatory compliance (in EU and Estonia), and improved customer satisfaction. And because the smart grid provides Elektrilevi with data from each and every connection point, they are able to meet their customer's needs on a much more individualized level than before.

The project is now halfway through, with roughly 300,000 meters installed. Elektrilevi's consumers are starting to enjoy the benefits of the smart-meter solution, such as more accurate and timely billing, shorter outages, and improved possibilities to reduce their power consumption.

03

SO WHAT IS IOT REALLY?

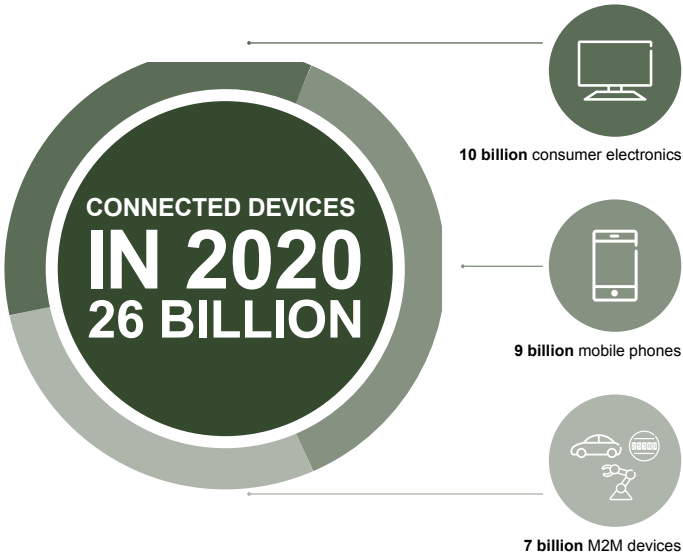
The Internet of Things is the growing worldwide network of objects with sensors, software and connectivity built in. It's really all about the connections. Connected devices form clusters. These combine into systems, and then into systems of systems.

There is huge potential in the data that devices collect and share. However, data only becomes meaningful when it can be effectively interpreted and acted upon—big data demands big analysis capabilities and action orientation.

Smart devices can be found in everything from industrial systems to hospitals, houses and transportation systems. Modern cars integrate more than 100 processors. Today, these devices have limited connectivity, but that is rapidly changing.

IoT vs M2M

M2M (machine-to-machine communication) is when one or more machines or devices communicate with each other for a particular purpose. IoT takes things a step further, with multiple devices connected to the internet and to each other. These wider connections create new possibilities and greater value.



The Internet of Things is the idea of connecting every device on the planet with every other device.

“IoT is an industrial revolution, and these are defining years. The ability to embrace new technologies will decide the digital leaders of tomorrow.”

Connected things

Connected things are at the heart of the IoT revolution. An apparently simple product such as a weighing scale or a salad bar might now have complex systems that include hardware and software, sensors, microprocessors, data handling and storage.

When these things connect and share data, they create a whole that is much greater than the sum of its parts. The potential for value creation goes far beyond the capabilities of the basic products.

Connected things can get to know our habits and can predict our patterns. They can accurately adapt and respond to our needs without us having to tell them to. And they can join forces with other types of products in order to create even deeper impact on life and business.

What is a connected thing?

Connected vehicles includes machines (regardless of modus, i.e. road, air, rail, water), that transports passengers or cargo.

Connected people includes humans or living animals, e.g. tracking of people’s geographical position, activity and measurement of bio markers.

Connected consumer gadgets includes electronic equipment intended for entertainment, communications and leisure, e.g. cameras, TVs, white goods.

Connected money includes devices for payment and related services, e.g. vending machines, points-of-sale.

Connected buildings includes physical structures used as homes, office or a public facility.

Connected industrial processes is defined as part of a larger commercial process e.g. machinery

Connected infrastructure includes physical objects optimized for public needs or regulated demands e.g. energy optimization.

What can connected things do?

The capabilities of smart, connected products can be grouped into four areas: monitoring, control, optimization, and autonomy. Each builds on the preceding one; to have control capability, for example, a product must have monitoring capability.

The real potential of IoT is realized when things become systems and super-systems.

What could it all mean?

The effects will be widespread and will impact individuals and businesses at many levels. Businesses will have enormous opportunities to automate, optimize and personalize processes and services.

- A traveler books a journey that involves travel by taxi, train and airplane. All forms of transport are coordinated in real time, accounting for factors such as traffic delays, and the traveler's preferences are known at every stage.

- A doctor retains full view of a patient's condition after discharge from hospital, receiving information in real time. The patient's pill dispenser informs the doctor about whether the patient is taking prescribed medication according to schedule.

- A large farm automates its operations, timing key activities to perfection based on information from climate and soil sensors.

- You're on your way to a meeting. Your car has access to your calendar and already knows the best route to take. If traffic is heavy, your car might send a text to the other party notifying them that you will be late.

1 Monitoring

Sensors and external data sources enable the comprehensive monitoring of:
- the product's condition
- the external environment
- the products operation and usage

Monitoring also enables alerts and notifications of changes

2 Control

Software embedded in the product or in the product cloud enables:
- Control of product functions
- Personalization of the user experience

3 Optimization

Monitoring and control capabilities enable algorithms that optimize the product operation and use in order to:
- Enhance product performance
- Allow predictive diagnostics, service and repair

4 Autonomy

Combining monitoring, control and optimization allows:
- Autonomous product operation
- Self-coordination of operation with other products and systems
- Autonomous product enhancement and presonalization
- Self-diagnosis and service

04

WHERE IS YOUR BUSINESS HEADING?

A new commercial landscape is emerging
– and the old maps no longer apply.

Navigating in unfamiliar territory is always a tricky business. It's important to build a real understanding of how the land lies. It's easy to think that adding a connected dimension to a product will give it a simple advantage, but this may not be the case. A company moving into connected products might need to reorganize its internal structure and processes. It might also need to forge partnerships with industries it has not worked with before. In addition, it will likely have to implement new technology systems and business models, with all the complex demands that go with that.

The effects carry on through to the way the company creates value and competes. Going IoT is not simply a case of adding on to an existing product – it often means a completely new approach in everything from product development and manufacturing to business processes and customer relationship management.

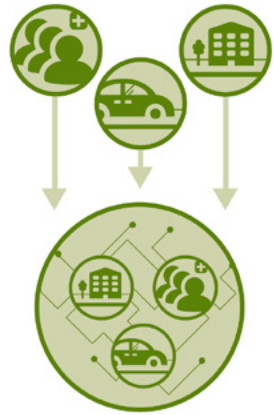
New ecosystems

One of the biggest changes in the IoT business landscape is the shift towards new ecosystems. As mentioned, the potential of IoT is increased by communication and sharing. That creates new opportunities, as well as new challenges and competitive threats. Business models have to change as a result.

One result of connectivity is that a formerly standalone product may become part of a wider system of connected products. And that system may itself become part of an even greater connected complex – a system of systems.

Companies can find themselves competing in a wider arena than they may have expected. For example, a manufacturer of medical devices may find itself competing not just other device makers, but also with companies in the much wider sector of hospital management systems. Or a tractor manufacturer may end up competing in the wider farm automation sector.

Previously separated ecosystems are converging into a fully integrated system – the connected society.



New business models are leading to unexpected partnerships, and new roles for the partners.

The convergence of previously separate ecosystems will also create cross-industry partnerships that would not have been considered in the past. The parties involved bring different skills and resources, enabling them to do more than they could alone.

New roles are being carved out in this changing landscape. Three key roles we have identified are lead users, enablers and innovators. Understanding these roles is essential when choosing partners.

Role	Description	Example
Lead Users	Lead users are the customers that adopt new technology before others, leading the way in their respective industry.	New hospitals and county councils in the Nordics are pushing IoT innovations with demands on interoperability in tendering of medical technology solutions and digital services.
Enablers	Enablers are companies that ensure provisioning, installation, sercurity and connectivity for IoT services.	Telecom operators collaborate to ensure cross-border functionality necessary for service development in for example the connected car market.
Innovators	Innovators are entrepreneurs and technology focused companies that develop new IoT applications and devices.	New services and applications can be seen in both innovative startups and leading listed companies in all sectors from smart consumer products for finding that lost key, or monitoring health and fitness to IoT-based industrial solutions for optimized productivity.

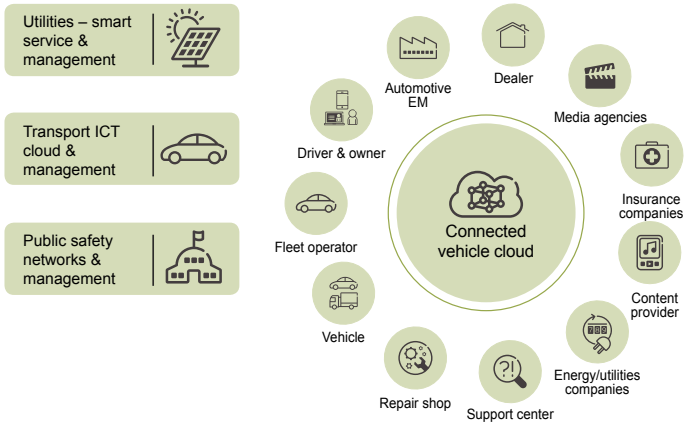
Making the connection

Let's take connected vehicles as an example. The car goes from being a standalone object to being part of a system. Today, vehicle connectivity typically links the car with related services such as traffic and navigation, as well as software upgrades and certain control options. There is greater potential, though. For example, data about how the car is driven can be collected and used to set insurance premiums based on actual driving behavior.

But the biggest opportunities occur as the context widens. Ultimately, the car can become part of a regional intelligent transport system, which can make life easier for the individual, reduce accidents, solve problems such as congestion and minimize environmental impact.

So the real potential of connected vehicles will only be reached when they start to communicate with each other, with street lamps, with traffic signs and even with the road itself.

Unlocking the potential of IoT – creating entirely new ecosystems



Connectivity can actually enable a car to get better as it gets older, with the possibility of adding new features and functions.

Case

Maersk Line: A new wave of efficiency

Today, over 90% of all cargo is delivered by sea. Maersk Line is the world's biggest container shipping line, with some 550 vessels transporting 17 million containers per year and making 33,000 port calls. Seeking a way to improve shipping processes, the company began a partnership with Ericsson in 2011.

The Remote Container Management Program aimed to connect the entire Maersk Line fleet, resulting in the building of the world's largest floating mobile network. Some 400 vessels are now online.

The program enables Maersk Line to optimize routes, minimize port time and achieve substantial fuel savings. Perhaps the greatest advantage is the ability to monitor the fleet in real time. If an incident should occur, the company can intervene immediately to make corrective actions.

It gives a high degree of control over each step of the journey, and the data collected enables the company to innovate in key areas such as efficient delivery of cargo, environmentally friendly processes and adaptability to unpredictable conditions at sea.

In addition, Ericsson's Connected Vessel offering enables high-quality ship-to-shore VoIP and email communications for personnel onboard vessels.


MAERSK
BROMMA

05

THE ECONOMICS OF IOT

Digital technologies have had a major effect on the global economy. Established players in most industries face competition from new actors who apply the power of ICT to reshape the way they deliver goods and services to end users.

Although digital disruption is still a relatively new phenomenon, it is possible to gain insight into the emerging economics of the connected society.

In 2005, critical thresholds were simultaneously crossed in the various parts of the technology value chain. Initially, only ICT companies themselves felt the most dramatic impacts of these thresholds being crossed. But technology soon began tearing down more entrenched barriers between people, industries and systems. A connected society was born, where technology plays a fundamental role in the development of economy and society.

Over the next few years, however, this new level of connectivity combined with the results of a heavily financialized economic system to create a challenge not just to the established structure of the technology industry, but also to the very foundations of our economic system as it has been understood since the beginning of the last century.

We can make three important conclusions:

- The nature of products and services has undergone a fundamental change
- Computational capacity is a new asset class for companies
- ICT is instrumental in restructuring global economics, for example in rebalancing the spread of product and service development between global and local

We are at the beginning of a new industrial revolution, and IoT will play an increasingly important role in creating value in the markets of the future.

Uber changed the game for taxi services with an operating model based entirely around mobile apps. Airbnb turned spare rooms into competition for the hotel business. Disruption is becoming the new normal.

Seven differentiating characteristics of IoT leaders

Relatively mature companies with IoT as part of their business model have been found to exhibit seven distinct characteristics:

1 Digitally reimagine their business and produce substantial value for customers – not just for themselves.

2 Deliver value through new business models, product and service offerings, product bundles and data.

3 More likely to see the breakthrough potential of the Internet of Things in getting the truth on how their products and services are performing in the market and how these are being consumed.

4 Organize themselves to act rapidly based on this performance and customer usage data.

5 Better at dealing with internal resistance to hearing the truth that IoT technologies reveal about product and service performance.

6 Make IoT reliable in the field, especially to reduce the risks of security breaches.

7 Make small test investments before making broader and bigger ones.

Source: Tata Consultancy Services

Case

Telia Sense: Tomorrow's car is any car

In 2015, Telia Company introduced Telia Sense – a cloud-based solution that enables high-end car features for the cars of today and tomorrow.

The solution combines an app and hardware installed in the car. It gives car owners access to existing and coming smart features and upgrades, simplifying everyday car ownership.

The really unique aspect of the solution is the service collaboration with partners from the automotive and insurance industries. Through this, Telia Sense can deliver a combination of car control functionality, connectivity and value-added services that are relevant for the car owner.

Initial features include car diagnostics, pro-active car maintenance, tailored car insurance and an onboard 4G Wi-Fi hotspot.

Telia Sense can be installed in older as well as newer cars, giving them access to advanced connectivity features normally only associated with top-of-the-range vehicles.

Advances in connected cars, smart homes and digital health are key drivers for IoT market growth. The connected car segment in the Nordics is expected to grow from €0.2 billion in 2012 to €1.8 billion in 2017.

06

WHY NOW? IOT DRIVING FORCES

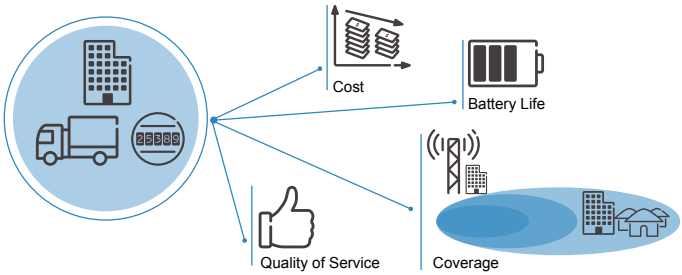
The uptake of IoT is motivated by the need to increase efficiency, develop business, increase safety and improve sustainability. Businesses are increasingly realizing the opportunities in product and service innovation, improved customer insights and customer relevancy, and in creating more efficient, real-time operations.

Clear business benefits are compounded by consumer demand. Consumers increasingly expect to be able to access all aspects of their lives anytime, anywhere, on any device. For example, a recent Ericsson Consumer Lab survey showed that close to 70% of smartphone owners today want interactivity and control for utilities, transportation and health care services.

But while the business case is clear, technological maturity is also a major driving force. Two key factors are:

- Devices: Improvements in miniaturization and processing power
- Connectivity: Fast, consistent and affordable always-on connectivity

The number of connected devices is growing continuously, but there are several other aspects that influence mass market adoption of IoT. Three key challenges are: device cost, battery life and deep indoor coverage, for example to reach devices located deep in basements.



Keys to IoT adoption: price, battery life and coverage of devices.

Connectivity and networks drive IoT

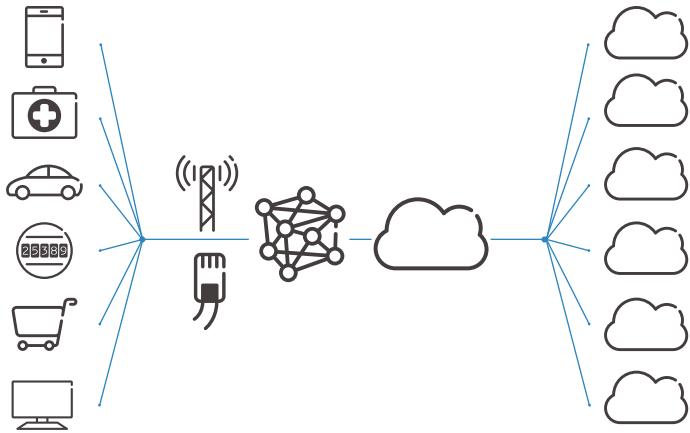
Advances in wireless technology have enabled cost-efficient and ubiquitous connectivity. Around 17% of connected things in the Nordic region are connected to mobile networks, including 2G, 3G and 4G. This is significantly higher than the 9% global average.

The share of mobile connectivity for connected things is expected to reach 20% by 2018 in the Nordic region, compared to 13% worldwide. One reason for this expected increase is that traditional mobile technology solves data access issues, protecting information from third-party access. Ref: Connected Things Report

For example, it is easier and more flexible for a waste disposal company to deploy connected trash cans and containers using their own mobile-based connectivity than configuring access through the customer's wireless LAN. Going forward, the number of things using multiple forms of connectivity is expected to increase, enabling connected devices to seamlessly roam between Bluetooth, broadband-connected Wi-Fi and mobile data connections.

Low-power technologies are another important aspect, as IoT devices often need to operate for extended periods without access to a power supply.

5G will deliver on much of the potential of IoT, enabling applications such as remote machine control with no lag.



5G provides dedicated network slices for different applications

5G is one of the developments that will help take IoT to the next level. By 2018, we expect 5G to start rolling out to operator networks. IoT applications will be a big part of 5G. The networks will be multipurpose and will support different virtual networks with different characteristics through network slicing – where an application such as remote water metering will have a dedicated network slice. Using a common infrastructure will stimulate new business models by removing the need for separate infrastructure investment for different verticals.

Some of the key emerging applications for IoT, such as remote operation of machinery and intelligent transportation, require new types of connectivity. 5G, with its efficient network slicing and extremely low latency, will be an important driver for the next chapter of IoT possibilities.

Networks will need to provide connectivity in a way that is both highly scalable and programmable – in terms of speed, capacity, security, reliability, availability, latency and impact on battery life. Traditional cellular networks and their one-size-fits-all approach therefore need to be adapted so that future demands, many different subscriber types and varying app usage can be handled efficiently.

To meet the needs of such widely varied use cases, 5G systems will be built with technologies that use logical instead of physical resources, and which enable operators to provide networks on an as-a-service basis: the network slice.

While the concept of network slices is not new, the wide range of use cases and tougher requirements that future networks will need to support suggest that network slices in the context of 5G will be defined on a whole new level – as networks on demand.

IoT – A big part of 5G

- Broadband experience everywhere, anytime
- Media everywhere
- Smart vehicles transport & infrastructure
- Critical control of remote devices
- Interaction human-IoT

Network-as-a-Service becomes possible with 5G.

Case

Smartly: Connecting Norwegian homes

The Norwegian Water Resources and Energy Directorate has decided that all electricity meters should be replaced with smart meters by 2019. Norwegian utility provider Lyse saw this decision as an opportunity to offer something extra to make the installment of a smart meter more attractive to their customers. The result was the 2013 launch of connected smart home appliances under the brand Smartly.

Together with smart meters, the Smartly product line enables Lyse customers to save time and reduce costs, for example by keeping heating to a minimum while away from the house. Entertainment and triple play are also integrated parts of the offering, improving its attractiveness and convenience in cutomers' eyes.

With the Smartly product range, Lyse has expanded into new segments of the market. The product offering now includes home security applications like smoke and fire detectors as well as security alarms. Lyse has recently formed a partnership with Danish NorDan to provide a series of smart doors and windows that customers can lock remotely, as well as setting up standards for other companies to have their products "Smartly-certified", ensuring interoperability.

With a significantly higher proportion of smart home appliances installed, heating control alone allows consumers to reduce their energy consumption by up to 20 % according to Lyse. The new smart home products will also make life more convenient by enabling new types of IoT-based services including checking that appliances are functioning, that the water and heating are turned off/down when away, or ensuring that the kids have gone to bed properly.

07

IOT TECHNOLOGY DEMANDS

Connected products demand a new, multilayered technology infrastructure that is centered around connectivity. A planned connected product always needs to be considered in relation to the wider systems needed to enable and support it.

The need to monitor remotely and control things is not new. But the traditional approach is to look at your problem, then build a solution that solves that single problem. Deploying the device. Building the network. Building the application. This has resulted in vertical, problem-specific solutions. And with each different industry solving its own technology needs, there is widespread technology fragmentation, with many different legacy and proprietary technologies in use.

IoT, on the other hand, demands broader, “horizontal” solutions and technology consolidation, with standardized technology for devices, networks and software.

Intelligent software

Communications infrastructure

Embedded devices

Breaking down the silos: IoT demands horizontal thinking.

Case

Zero site: A brighter urban future

Urbanization is a fact of life. City populations are currently increasing by 7,500 people every hour, putting a huge strain on space and resources. One of which is mobile broadband. Mobile data traffic is expected to grow 10 times by 2019. In order to facilitate this massive increase, the mobile networks in cities need to be densified. But new sites are both costly and difficult to acquire.

The Ericsson Zero Site solution is designed to make streets safer and mobile communication easier by merging wireless connectivity with energy-efficient lighting. Ericsson Zero Site turns streetlight poles into digital real estate. Developed in collaboration with Philips, the Zero Site smart pole integrates energy-efficient lighting with a small cell solution. This opens up millions of new site locations for operators, and provides cities with energy-efficient LED lighting. For citizens, it means safer, well-lit streets combined with an enhanced mobile user experience.

New, sustainable ways of enabling the networked society are needed. And with millions of light posts as potential new locations, the Ericsson Zero Site is a game changer.

The modular nature of the solution allows further innovative applications to be housed in and on the smart pole. These include car power-charging systems, parking meters, city maps, advertising boards, environmental sensors and surveillance equipment.

The Zero Site also accelerates the payback time for the establishment of city infrastructure, by making the up-front costs of installing and managing systems more affordable, thus reducing the strain on municipal budgets.

08

CAPTURING THE OPPORTUNITIES

Businesses have seen the potential and are stepping up their responses. Every month, hundreds of hopeful new IoT-related projects are developed and funded.

In the Connected Building segment, Google's acquisition of smart homes company Nest Labs has been initially successful. For example, Nest Labs recently signed a major deal with Irish energy producer Electric Ireland. To secure future innovation power there is also an increasing trend towards forming regional innovation hubs for IoT innovations such as Mobile Heights (MHC) in Sweden, bringing together industry, academia and public-sector institutions. MHC recently attracted Apple when locating its new development center in Lund.

To seize IoT opportunities, significant business innovation in IoT services is taking place in companies in all industries. A recent study by Vodafone estimated that more than 20 % of executives already had IoT-related offerings in place, and close to 60 % planned to have them within the next two years. Third parties are also realizing opportunities in developing new services through using data from connected devices.

The Pebble smartwatch broke the Kickstarter funding record in 2013. By the end of 2014, over 1 million units had been sold.

From data to insight

Another critical factor, is the capacity to make data meaningful. Many IoT deployments will generate enormous amounts of data. For example, a jumbo jet can create 640 terabytes of data during a journey across the Atlantic Ocean. But it is not the generation and storage of this data set that will create value for the jet manufacturer or airline – it is the process of turning the data into meaningful information through analytics to support complex decision-making.

Moving into a more connected world, analytics will be a key differentiator, and analytics insights will be used more within top-performing organizations, both for future strategies and for effective operations.

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GET STARTED!

Think big. Start small.

If you're curious about the benefits IoT could bring to your business, the best approach is to test it in practice. Start on a smaller scale and experiment to get the formula right.

Here's our checklist for getting off to a good start:

1. Look at challenges and opportunities, and choose partners with expertise in relevant areas – remember that no one can do it alone.
2. Pick one or several areas to make a start.
3. Experiment with real-time data from your business. Analyze it to start building your case.
4. Move to a proof of concept on a slightly larger scale.
5. Expand and/or find new areas of the business in which to incorporate IoT.

Think inside the box: M2M in a Box by Telia Company

M2M in a Box is one of the easiest ways to get IoT off the ground with minimal investment. It's a pre-configured, fully-integrated enterprise solution backed by a powerful cloud solution.

Everything you need is in the box, including modules with sensors for monitoring temperature, humidity, geo-location, movement, vibration, battery level and signal strength.

The business possibilities are endless:

- Protect valuable assets against theft. Monitor transport conditions or handling of sensitive cargos.
- Geofence equipment or assets. Track your delivery vehicles.
- Monitor temperature and humidity. Safeguard refrigerated deliveries.
- Keep buildings and stock healthy.

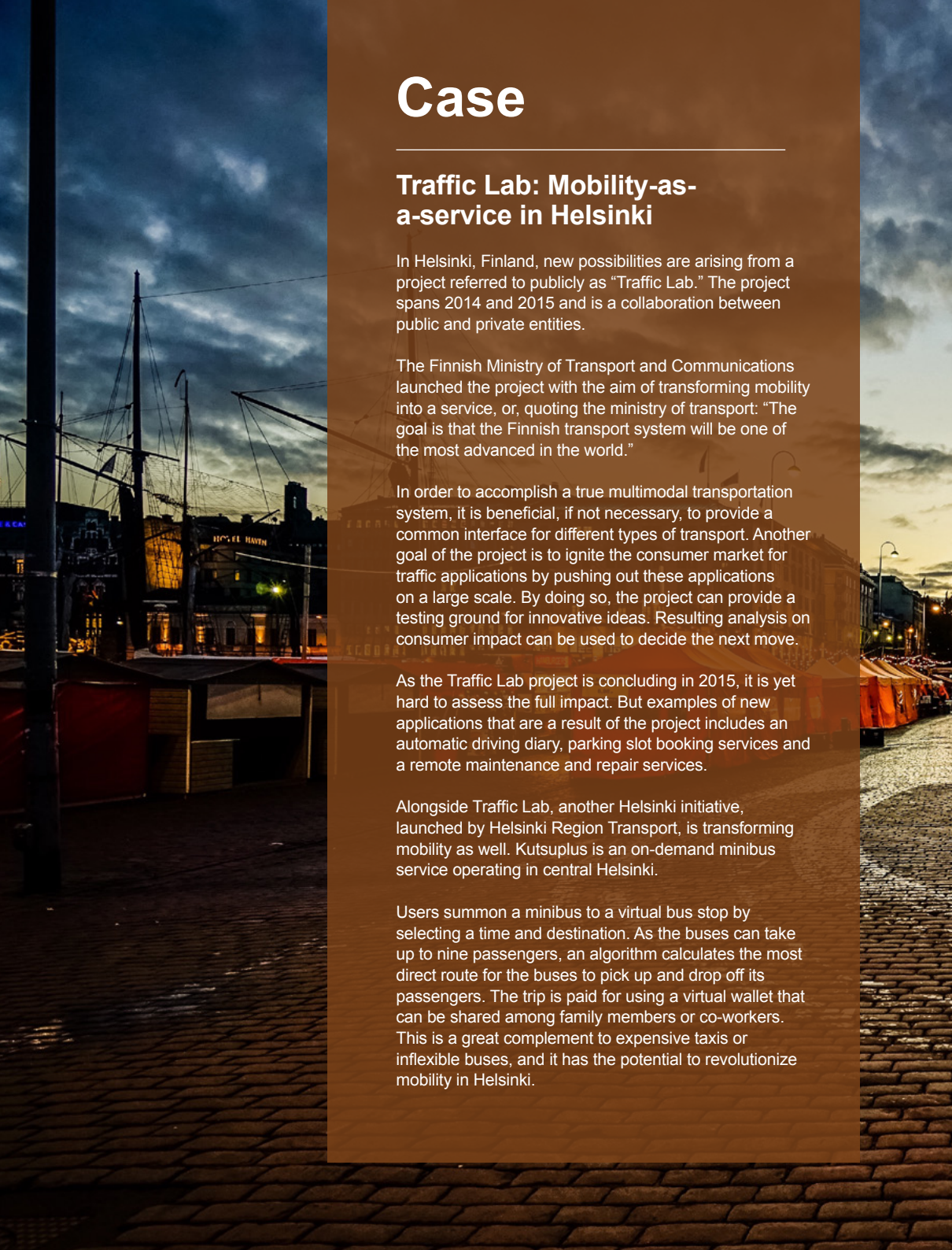
Just open the box and place your modules where you want them. Now you're up and running with IoT.

M2M in a Box is a great way to gain experience with sensor data, analytics, dashboards and alerts. And it's easy to scale up and customize when you want to ramp up your IoT usage.

The user-friendly web portal gives a clear overview and full control over functionality, including:

- Sensor control and rule management
- Geofences, events & alarms
- Reports and statistics
- Diagnostic tools

Learn more at:
iot.teliacompany.com/en/m2minabox



Case

Traffic Lab: Mobility-as-a-service in Helsinki

In Helsinki, Finland, new possibilities are arising from a project referred to publicly as “Traffic Lab.” The project spans 2014 and 2015 and is a collaboration between public and private entities.

The Finnish Ministry of Transport and Communications launched the project with the aim of transforming mobility into a service, or, quoting the ministry of transport: “The goal is that the Finnish transport system will be one of the most advanced in the world.”

In order to accomplish a true multimodal transportation system, it is beneficial, if not necessary, to provide a common interface for different types of transport. Another goal of the project is to ignite the consumer market for traffic applications by pushing out these applications on a large scale. By doing so, the project can provide a testing ground for innovative ideas. Resulting analysis on consumer impact can be used to decide the next move.

As the Traffic Lab project is concluding in 2015, it is yet hard to assess the full impact. But examples of new applications that are a result of the project includes an automatic driving diary, parking slot booking services and a remote maintenance and repair services.

Alongside Traffic Lab, another Helsinki initiative, launched by Helsinki Region Transport, is transforming mobility as well. Kutsuplus is an on-demand minibus service operating in central Helsinki.

Users summon a minibus to a virtual bus stop by selecting a time and destination. As the buses can take up to nine passengers, an algorithm calculates the most direct route for the buses to pick up and drop off its passengers. The trip is paid for using a virtual wallet that can be shared among family members or co-workers. This is a great complement to expensive taxis or inflexible buses, and it has the potential to revolutionize mobility in Helsinki.

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WILL YOU BE PART OF THE TRANSFORMATION?

IoT will soon be a key to success for every industry. It's a massive opportunity that most companies cannot afford to ignore.

Whatever your business, IoT can play a key role in securing long-term competitiveness. It can help you refine services, reach new markets, boost efficiency and reduce costs.

IoT is already transforming business for many companies. The time to act is now in order to take advantage of the possibilities and not be left behind by the new ways of doing business. Partnerships and new business models take time to build and refine.

Fortunately, it's possible to start exploring IoT with only minimal investment. So if you're wondering what IoT could mean for you, try it out and see for yourself.

IoT is the future. It's here. And it's now.

> **"First came the industrial revolution. Then the internet. Now it's time to gear up for a really big change."**

- Hans Dahlberg, Vice President Global IoT Solutions at Telia