



ERICSSON

INDUSTRY TRANSFORMATION IN THE NETWORKED SOCIETY

NETWORKED
SOCIETY



INTRODUCTION

In recent years, Ericsson has placed greater focus on the longer-term development of our industry and the future direction it will be heading in, through projects like Vision 2020 as well as our overall brand strategy. A key conclusion drawn from these efforts is that IT and telecoms are rapidly combining to transform all areas of life, affecting people, business and society.

Ericsson is addressing these new circumstances by expanding its position in the ICT industry, creating the concept of the **Networked Society** to ensure the company has a consistent, company-wide approach to the future and the possibilities this brings. This paper sets out the framework of the Networked Society and its implications.

THE NETWORKED SOCIETY

Megatrends such as urbanization, globalization, growing and aging populations, the rise of Asia and global climate change are impacting the way societies evolve. More importantly, the past 25 years have brought a digital age, an age of massive computing power, high-speed data access, mobile communication, and more recently, the cloud. People, enterprises, markets and societies are increasingly benefiting from real-time networking. Constant connectivity everywhere is a key foundation for future progress, and is also something taken for granted.

Mobile and digital technologies are expanding into more areas of society and business, and opportunities for fundamental innovation are emerging across industries, public services and in private life. Over the years ahead, technological advances and improved performance of ICT infrastructure will bring new ways for people to create, learn, produce and innovate so they can have a sustainable, positive impact on our world. We call this new emerging society – of which we have seen only the beginning – the Networked Society.

In the Networked Society, individuals, knowledge, relationships and information are networked for the benefit of people, business and society. It will bring about new ways of thinking and new experiences, as well as continuous transformation driven by collaboration and creativity – all of which is essential for problem solving, innovation and richer lives. In the Networked Society, most of the world's population will live in a culture of increased openness, sharing, collaboration and global self-organization. This will fundamentally change the way we innovate, collaborate, create sustainable goods and services, and govern. Once this social change begins, it cannot be reversed.

Communications and information technology will converge into a single “interaction infrastructure” critical for everyday life and for the continued innovation that builds prosperity in the Networked Society. Information will still be critical, but as input,

not output. This interaction infrastructure will be a flat, common infrastructure, largely invisible, with an inherent ability to provide the best performance for each purpose and situation. It will have seamless connectivity and will place no limitations on what can be done with different devices in various usage contexts. Services and content will deliver relevance, seamlessness, simplicity and comprehensive reach to everyone.

The network will serve as a common utility for all kinds of activities, as well as a foundation for innovation and transformation.

The world has undergone technological revolutions several times in the past, each bringing powerful clusters of dynamic new technologies, industries and products, along with their associated infrastructures. Once broadly accepted and adopted, new principles and tools become the natural basis for innovation, investment and the organization of activities, and bring long-term increases in productivity and development.

Technological breakthroughs – or sets of interrelated generic technologies – spread far beyond the sectors they originate in. Since the start of the Industrial Revolution in the late 18th century, there have been several such breakthroughs: examples include the age of oil, automobiles and mass production, combined with roads, ports, airports, universal electricity and analog telephones; as well as the age of information and telecommunications, combining cheap microelectronics, control instruments, software and computers with a new kind of infrastructure – digital communications and the internet.

Technological revolutions lead to new ways of thinking about techno-economic issues. Such transformations reach beyond the industry in question to society at large, and evolve to become the shared basic principles of the period. In the era of cars and mass production, the shared principles were related to mass production and mass markets,



economies of scale, standardization, centralization and hierarchies. In contrast, the guiding principles of the information age are decentralized integration, network structures, adaptability, agility, customization, knowledge as capital, clusters and economies of scope.

These game-changing technological revolutions have an impact on almost everything, from what we produce to how we produce it, to how we organize production, to the location of productive activity, to the infrastructure required, to laws and regulations.

Technological revolutions usually encounter powerful resistance from established institutions and parties with vested interests. Adjusting the social and institutional environment in line with a technological revolution and its techno-economic paradigm can involve painful changes, often with disruptions to, and even destruction of, the creative process. In the same way, realizing the potential of the information and communication revolution requires revamping the structure of the production process, building new networks of institutions, transformation of regulatory frameworks and governance, and even radical changes to ideas and culture.

INDUSTRY TRANSFORMATION

– THE EMERGENCE OF A NEW LANDSCAPE

The evolution of new services and experiences is being made possible by the seamless convergence of information and communication technologies, such as broadband, mobility, smartphones and the cloud. This has opened the way for innovation from a variety of players (tech-savvy youngsters, small-scale entrepreneurs, established businesses and leading industry players from all sectors of society) making the most of ICT technology and widespread ICT skills to capture new value-creation opportunities. So far, this change has been most evident in the media and communications industries, and in the commerce and government sectors.

This development is set to continue, with the application of ICT services becoming a natural element of most processes and practices within business and society. The needs of consumers, patients, students, travelers, citizens and businesspeople will increasingly be met through digital interactions, and realized through ICT services. The value experienced will still be based on the underlying basic need – for consumable goods, health care, education, transportation, public services and others – but the way these needs are met will change, as will the current limitations on where and how.

Powerful mobile devices, data-network-connected computers, sensors, big data and analytics, and cloud-provided services are all examples of new ICT tools. Sensors, microprocessors and wireless technologies that once cost hundreds of US dollars are now available for as little as the cost of a cup of coffee. Cloud computing and the ubiquity of smartphones are also driving the adoption of new services, and regulation is forcing their uptake in some sectors such as the energy and automotive industries.

These are rapidly becoming fundamental, everyday resources for businesses, organizations and people.

Some of the changes resulting from the revolution taking place can have a particularly dramatic effect on industries. There are two basic ways in which ICT acts as a change agent across industries in the Networked Society:

Efficiency improvements. Existing value systems are based on structures for creating the end services by using technology in certain ways, manual labor input, information exchange, and so on. ICT can improve the efficiency of these structures fundamentally without changing the end services.

Service disruption. ICT can create entirely new services or radically change or displace old ones. Innovation enables the creation of new value and introduction of new services to the market. This may entail the emergence of new market roles.

As a result, many activities will be rationalized and/or replaced by new, smarter and more efficient ones, creating new waves of innovation in turn. We can also expect fundamentally new capabilities to emerge from connected things, ubiquitous information, big data analytics and digital interactions. This will further drive change in the way business is operated and organized, the way services and utilities are provided and the way people manage their daily lives.

From the ICT industry's perspective, we have already seen the start of a profound change to business models. The classical IT business model – centered on hardware, software and local implementations – is evolving into models based on the internet, apps and cloud services. Communication services, on the other hand, have expanded from the narrow application of telephony as a means for people to communicate with other people into a more general-purpose function – with broadband and data providing connectivity and a distribution layer for any kind of interaction between people, machines or other things.

With this transformation, it has become increasingly difficult to identify the boundaries between information, processing and connectivity because most meaningful services will require dynamic, intertwined utilization of all these capabilities. Significantly, people-to-people communication is now evolving to become part of entire collaborative or other applications.

We can see how industries are being reshaped and redefined by technological developments, society's changing needs and a more collaborative culture. Here we examine two industry segments with two plausible but fictitious scenarios based on real companies and developments.

Health care and wellness

Health has always had a central role in human history. Certain trends in modern society, however, are about to change the landscape:

1. continuing population increase and the gradual eradication of extreme poverty leading to greater demand for health services
2. an increasingly aging population, particularly in the developed world, and a shifting balance between old and young
3. advancements in medicine with treatments and drugs that promise to personalize care and cure an increasing number of diseases
4. active patients will inform themselves about their conditions and demand care, playing a greater role in their own treatment
5. the strain that health care puts on national economies and the moral conflicts of health care priorities
6. increased information transparency and a surge in patient power.

Using traditional models to tackle these trends will put enormous demands on finances, the availability of educated personnel, care facilities and conflict resolutions between rich/poor and old/young.

Not all these demands can be met through an increased use of ICT in health care, but there are many opportunities for both improved efficiency and reduced service disruption. Here are two examples:

Disruption scenario – Wellness4U

Wellness4U started as an ordinary gymnasium, with facilities for physical exercise and training. Gradually, it started to give its customers advice, not only about training, but also about what to eat, what to do in between visits to the exercise facilities, and the health signals they should be aware of. It started providing blood pressure measurements and weight

profiling, including body fat distribution. With customers appreciating the increasingly holistic view of their health, the company soon started collaborating with a general physician, referring customers who needed medical treatment. Customers were then given the option of using apps and sensors to monitor and report physical activities and food intake continuously through wireless access. Data was sent online in real time to a personal wellness profile program accessible by the customer and the physician, who was now employed by Wellness4U. The system would send a report at the end of the day (or any other time interval) to a portable device. At other regular intervals (often when the customer visited the gym), the physician and customer would carry out a status check together. Weight loss/gain and exercise programs tailored for the individual, along with continuous monitoring of measures such as medication, exercise or diet changes, would allow for fine-tuning and significantly better results.

Through agreements with public health-care providers and employers with rehabilitation requirements, Wellness4U programs could be given as prescriptions, providing cost relief for the customer. This broadened the customer segments beyond those who signed up on their own initiative. With the customer's consent, monitoring systems were integrated into the health and insurance systems, providing an overview of the individual's overall health status.

Online education and information sites giving recommendations on home exercises, diets, medical issues and psychological factors were developed and integrated with the customer's personal profile, minimizing the amount of generic information and making the sites more attractive and relevant.

Customers could order specific food and ingredients for home delivery. Facebook and other social media groups linking people with common interests, ailments and ambitions were formed, allowing members to share ideas, accomplishments and setbacks. The activities of group members could be followed in real time, with displays of collective energy consumption, heart rate and physical activity level. Competitions were arranged between individuals and groups in different classes.

Parameters included weight loss, blood pressure reductions without medication, muscle mass increase and blood fat reductions.

Inspired by: Microsoft HealthVault health app, SATS gym



Efficiency scenario – digital hospital

The digital hospital concept has become a reality in several countries in recent years. The need to provide better health care while controlling costs is pushing hospitals to deploy high-performance information and communication systems and associated digital solutions.

The digital hospital is designed to meet several objectives: providing access to health care for everyone; guaranteeing continuity in care between hospitals and clinics; and improving medical practices and governance in both public and private facilities.

The ICT sector has been supporting the digital transformation of health care centers around the world for more than 15 years. The computerization of health care services and systems, the networking of patients and health professionals, and the remote control of medical systems and telemedicine services all require a way to deploy, transport, host and integrate medical data and images reliably and securely – 24 hours a day, seven days a week.

In the short term, the digital hospital responds to the need for efficiency in terms of health care and cost

control by accelerating the reorganization of its systems.

In the medium term, the digital tools used to provide mobile services will revolutionize access to health care and medical practices. Exchanges of information between the hospital and clinic will be strengthened, thanks in particular to the sharing of medical data.

By supporting change and becoming involved with the developments of new systems, health care professionals can help to ensure the introduction of the best possible system features to support their work. The main beneficiary, however, will always be the patient, who will get better treatment, follow-up and quality of life.

Inspired by: Orange, AT&T, RxEye

Travel and transportation

With increased globalization and urbanization, travel and transportation are becoming global issues in terms of both economic efficiency and sustainability. Transportation is largely carried out using technologies (cars, buses, trains and aircraft) that have been around for at least 100 years. There have

been major improvements over the years, but the basic technologies are largely the same, and there are no obvious new transport technologies on the horizon. Under these circumstances, improvements have to focus on reducing the need for transport and improving efficiency. The pain points include:

1. How can dematerialization be accelerated, substituting digital transport for physical?
2. How can we increase the efficiency of the transportation of goods and people by improving packaging, routing and vehicle size?
3. How can societal structures reduce the need for transportation in work, leisure and material flows, for instance?

Disruption scenario – SelfDrive

SelfDrive originated in a classic car-rental business. With excellent fleet and facility management, the company was a pioneer in the market for car pools. Launched in 2003, SelfDrive offered a flexible and affordable car service, with “just take it, drive it, park it – simple and straightforward” as its core proposition. The service uses a simple per-minute, per-hour or per-day tariff scheme, with bookings and searches for the nearest vehicle carried out using online services and smartphone applications. After some initial teething problems, the service was well received, with rapid growth, particularly in major cities. The company is also highly regarded for helping communities to reach local, regional and national targets in areas such as emissions reduction, air quality improvements and public-transport support.

Through the international network of car pool communities, SelfDrive has played a leading role in developing car-pool collaboration, becoming an industry power in research into the next generation of vehicles and demands for business support systems. With the 2014 introduction of the self-driving car, SelfDrive will move into the next phase in the evolution of its market and business. The conversion

of the car into a service will be complete once the user is no longer required to be in the driver’s seat. The new generation of self-driving-car pools will bring even more value to the service: a driver’s license will no longer be required, and time in the car will be spent more productively than when driving. The new fleet will also be safer, have greater utilization levels and – with entirely electrically powered vehicles – a reduced environmental impact.

Inspired by: Car2Go, Autolib’, Google Cars, AT&T, Ford Motors

Efficiency scenario – Roadco

Intelligent road infrastructure is increasingly being taken into service by road authorities and operators around the world. As part of public-private partnerships, Roadco has developed inter-urban expressways in many countries. In the latest project, a centralized platform controls and manages 60km of road with four tunnels and a range of field devices in place along the expressways. Benefits include improved user safety and security, and more efficient maintenance.

The solution also provides real-time information on traffic conditions, allowing local authorities to respond rapidly in a coordinated manner to any adverse weather or incidents on the expressway in accordance with preprogrammed action plans. Motorists can, in turn, make use of this information in real time to select the best route.

Additional benefits from the project, which began in September 2010, have included a reduction in the number of accidents, travel times within city limits and fuel consumption. This has led to a decrease in pollutants and improvement in air quality, and helped to create a safer and more pleasant environment. Future projects will include new technologies, including car-to-car communication.

Inspired by: Televant

ICT IS ENABLING CHANGE

As a consequence of these changes (caused by the rapid development of technology and business models within IT and communications), it is increasingly appropriate to describe IT and communication services as combined ICT services rather than as separate ones. ICT services provide more efficient ways for people, businesses and society to carry out basic functions. The pervasive nature of ICT and continued technology development will provide businesses and organizations with new services to enable improved value creation, better innovation and richer customer interactions in addition to improved basic functionality.

The enabling services provided by ICT address specific, common needs, and in the future, they will also address completely new, currently unknown needs arising from technological and behavioral changes. Search is one example of a new need: before the age of digital information and the internet, nobody used a search service; now it is an integral part of everyday life.

What makes the future particularly interesting is the fact that information and communication

technologies – the marriage of which is embodied in the smartphone – are general-purpose technologies. They have the potential to reshape economies and boost productivity across all sectors and industries, just like electricity or the automobile.

Such transformations are about far more than simple technical innovation, however. They often require the complete reshaping of infrastructure environments, of business models, and of cultural norms. Humanity has been busy taming and repurposing electricity for more than a century. Before the automobile could change the structure of cities and production chains, numerous refinements were required: the mass production of affordable automobile and truck models, the creation of nationwide road networks (which required a huge amount of legal and cultural innovation) and accompanying energy-supply networks, the relocation of metropolitan building stocks, and the development of remarkable new business models such as just-in-time production and container shipping.

ICT will continue this process. Just imagine the possibilities.

