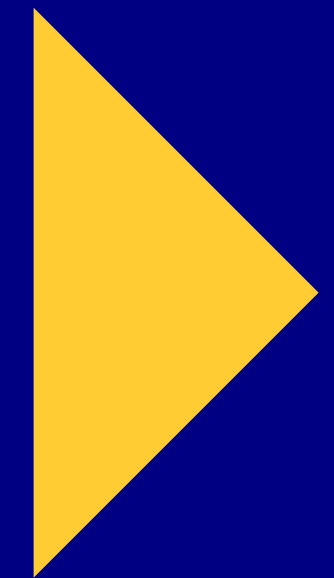




# Ericsson Technology Review



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## Ericsson and the future of telecommunications

Charting the future of innovation

# Ericsson and the future of telecommunications

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In 2024, Ericsson Technology Review is celebrating 100 years of showcasing technology breakthroughs and innovations driven by continuous advances in engineering sciences and information and communications technology. What does this wealth of knowledge and experience tell us about what to expect in the next 100 years?



**“The best way to predict the future is to create it.” This powerful sentiment, often attributed to Abraham Lincoln, reflects the heart of the Ericsson culture: our mission is to innovate and shape the future.**

The astounding pace of innovation that we have become accustomed to today would have been unimaginable in 1924. It took decades before 19th- and 20th-century technology developments such as electricity, cars, telephony and computers had a real business and economic impact, and at least a decade longer before they had any significant social and cultural impacts. In the 21st century, by contrast, the step from technology development to business and social impact has tended to happen within a decade. The introduction and adoption of smartphones is the best example of this. While it took 100 years to connect 1 million places using fixed telephones, it took less than 10 years to connect 1 billion smartphones using mobile communication networks.

Social media platforms and virtual global marketplaces such as app stores are playing a major role in speeding up the dissemination of technology innovation. For example, it is estimated that the generative artificial intelligence (AI) tool ChatGPT took only two months to reach 100 million users, setting the record for the fastest user-base growth in history [1]. Looking ahead, analysts predict an even faster pace for new technologies and business models to reach mass markets.

## **Ericsson’s innovation engine – built to last**

For more than a century, Ericsson has worked tirelessly to create a culture of innovation through technology leadership. Reaching and maintaining a position as an influential actor in the ecosystem requires that we constantly challenge the status quo and push the technology frontier in both the short and long term. Innovation is critical at all steps of the research and development (R&D) process. Ericsson invests sizeable resources in technology foresight – but also in predicting the likely development of economic, social and lifestyle trends, as well as changes to the geopolitical landscape, social media and sustainability goals.

At Ericsson, we are committed to building and sustaining a robust innovation engine that will last for centuries to come. The circle in **Figure 1** visualizes our approach.

A diverse global R&D footprint is an essential component of our strategy, which is why Ericsson’s tens of thousands of R&D employees are strategically based at major technology hubs all around the globe. With this approach, we have access to the best talent in the world, as well as a wealth of local knowledge, new insights and fresh ideas. Our global R&D footprint also provides ample opportunity for research collaborations with leading global centers of excellence in both academia and industry.

## **Our approach to inventing for the future**

Ericsson has always focused on finding new ways to transcend physical space and connect people, which has inevitably led to disruption. Our core business has shifted several times – from repairing phones to developing fixed



**Figure 1:** Key components of Ericsson's innovation engine

telephony, for example, to developing fixed telephony systems and switchboards, before progressing to mobile networks, mobile phones and mobile broadband. The app economy ultimately emerged from the possibilities of 4G in combination with the smartphone, which eventually led to the smartphone becoming a kind of remote control for modern life, providing users with a vast array of services available at the tap or swipe of a finger, wherever you are.

As we work to define the next generation of mobile networks, we have our sights set on a disruptive vision of programmable intelligent networks that offer tailored network services to match the needs of the world. The sweet spot is where technology meets market demand with viable

business models – that's where the magic happens. To secure a profitable future in the century to come, we know that we must be willing to transform ourselves again and again, allowing the seeds of the next core business to disrupt the core business of today.

But how do you merge business with technology and make the most of the opportunity? At Ericsson, we believe that it is in the interplay between the adoption of evolved technology capabilities and new combinatorial effects that potential business disruptions can be identified. These are typical system-level innovations that can change established business models and potentially even the roles in the industry ecosystem. All of this provides us with important

information about which ICT applications or types of network traffic we can expect in future networks.

As we innovate for 6G, sustainability and digitalization serve as critical pillars. Strong industry momentum in areas such as automation, electrification and immersive experiences will also be important drivers of the requirements of future networks. Concurrently, advancements in AI, cloud, computing and connectivity will be instrumental in unlocking future network capabilities.

Evolution toward the next generation of the internet, in which digital content will interact with the physical world, will profoundly change how human communication needs can be addressed, and is therefore likely to lead to business innovation with the potential to disrupt the ICT ecosystem. On top of providing immersive communication capabilities, it is expected that the next generation of mobile systems will also incorporate Integrated Sensing and Communication (ISAC), which allows reflections of transmitted radio signals to be received in the network and processed to yield spatial knowledge of the physical surroundings [2].

### Likely innovation areas in the next few decades

Our century-long experience in the telecommunications space has taught us that the technologies that are most likely to have a big impact decades from now are probably already a decade or two old in R&D terms. One emerging example of this may be quantum computing, which has been a subject of academic research for many years.

Looking ahead toward the second half of this century, we expect to see convergence across a multitude of technology disciplines including electronics, photonics, nanotechnology,

biotechnology, biomedicine, cognition and communication technologies. Rather than converging at component and system level as technologies do today, however, future convergence will happen at the molecular and atomic level, generating an enormous innovation potential to improve society and human lives. Plants, for example, could be integrated with processing capabilities, sensors and actuators to optimize capabilities such as photosynthesis. Quantum communication capabilities could be used to enable plants to communicate their needs to humans or AI bots.

### Innovation for the next century – reaching beyond the possible

World-leading innovators must visualize beyond the predictable. 100 years ago, it would have seemed impossible to visit your bank using a device so small it can fit in your pocket. And yet, much of what was physical matter yesterday has become digital today. In the next few decades, we expect that it will be possible to digitalize all five of the human senses, moving beyond sight and sound to include touch, taste and smell.

At some later point in the century ahead, humankind will almost certainly figure out how to break through an even more farfetched-sounding frontier. Wouldn't it be thrilling if, for example, we could take the first steps toward teleportation by enabling communication to transfer matter from one point to another? Today, with no physical theories for how to transcend time and physical space, it seems impossible. But at Ericsson, more than 100 years of groundbreaking innovations have taught us never to let the word impossible stand in our way.

## The authors

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### References

1. Reuters, ChatGPT sets record for fastest-growing user base, February 2, 2023, Hu, K [↗](#)
2. Ericsson blog, Joint communication and sensing in 6G networks, October 25, 2021, Andersson Y, H [↗](#)

### Further reading

- Ericsson, Our view on a shared vision [↗](#)
- Ericsson Technology Review, Networking trends 2023: Building the platform for next-level digitalization [↗](#)
- Ericsson Technology Review, The history of mobile internet: the technology transformation that changed the lives of billions [↗](#)
- Ericsson Technology Review, The importance of ICT in society – Ericsson Technology Review and 100 years of innovation [↗](#)
- Ericsson research paper, Historical development of ICT footprints [↗](#)
- Ericsson white paper, 6G spectrum – enabling the future mobile life beyond 2030 [↗](#)
- Ericsson blog, AI in telecom: past, present and future [↗](#)
- Ericsson white paper, building trustworthiness into future mobile networks [↗](#)
- Ericsson, Future technologies for an intelligent society [↗](#)