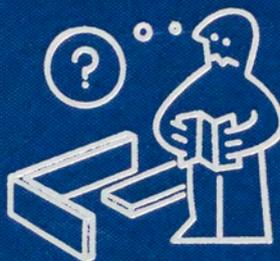


INNOVATION THE SWEDISH WAY

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MAX STRÖM

One step ahead

MOBILE BROADBAND

There's a maxim that every new form of communication is a blend of two earlier forms. One example of this is mobile telephones, which came about when radio met landlines. Then the real revolution came when mobile phones met the internet. Without the Swedish zeal for standardisation and Ericsson's capacity for innovation, though, the telecom industry's 'mobile miracle' wouldn't have worked.

In the early years of mobile telephony, the world was a patchwork of national and regional systems. These divisions were an obstacle to the development of new and internationally, compatible systems. One clear example of the barriers that existed was the ban on transporting radio transmitters across national borders. So, in addition to numerous technical incompatibilities, it was actually illegal to take a mobile phone to another country.

The European Commission called for a European standard that would allow consumers to use their mobile phones everywhere in the internal market. That prompted something of a war between competing technologies, with various countries and companies pressing for the adoption of their own specification as the continental standard. Ericsson's proposal was deemed to be superior, and not just because of its greater range. The Swedish company's concept aimed for full mobile coverage, including in remote forests. One side benefit for the more densely populated areas of Europe was that Ericsson's technology required fewer cellular base stations, making it easier to implement.

Following the selection of a technical specification based on Ericsson's proposal, a standard was launched in 1992 across Europe under the name GSM, which stands for Global System for Mobile communications. That marked the mobile system's move from radio technology to digital.

GSM, also known as 2G, expanded even faster than expected. Market forces made it an increasingly dominant standard. That was a major triumph for Ericsson. For the company's engineers, though, it was clear that within just a few years, the network would be so saturated that sales of mobile base stations would dry up. They started to experiment with increased bandwidth as a possible way to expand the

When Ericsson started experimenting with increased bandwidth for mobile telephony in the 1990s, it had no idea what it would later be used for. It would still be many years before people started using mobile phones for purposes other than making phone calls.



market. The internet was not in widespread use yet, and the people at Ericsson could only speculate about possible uses for mobile broadband. They thought the internet ought to be available wherever people could talk on their mobile phones.

The new digital technology made it possible for designers to shrink mobile phones to pocket size. Mobile ownership started to explode around the turn of the millennium, aided by falling acquisition and running costs. Mobiles were increasingly seen as communication tools for more than just voice calls, as people started sending text messages (also known as SMS, which stands for 'short message service') and soon accessing the internet and email.

The expansion of mobile data traffic required the adoption of standardised technology to ensure international operability. Another battle for supremacy broke out among telecoms giants, this time for mobile broadband standards.

Ericsson had an advantage after having worked on this issue for years and emerged victorious once more. Its solution, originally called WCDMA (not exactly a name that tripped off the tongue), later came to be known as 3G. The international telecom consortia decided that if the new standard was to be implemented globally, all patents required to fulfil the standard had to be available to all members in exchange for a limited fee.

While 3G technology was still under development before the turn of the millennium, it started to become clear that the internet would come to dominate mobile communications. Ericsson came up with some additional features that would enable the new 3G network to handle expanded data traffic. Some outside observers thought the extra investment was wasted. One American analyst declared that nobody will ever want to watch videos on a phone.

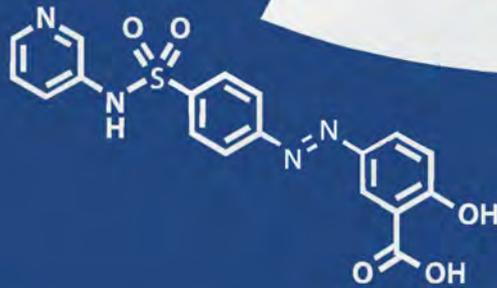
As mobile broadband data traffic exploded, around a decade after Ericsson had started developing the technology, the bandwidth was already in place. New iPhone and Android models were taking the world by storm, and they needed mobile broadband. By 2009, two years after the launch of the original iPhone, the global network carried more data than voice traffic.

Today, seven billion users around the world can count on global compatibility for mobile phones and mobile data traffic, which is the result of Swedish innovation, international agreements and global standards.

Following on from 4G, mobile networks are now being upgraded to 5G, still based on Ericsson's standards. Data traffic is expected to grow by several thousand per cent, and bandwidth will be needed for video calls, video and music streaming as well as robots, self-driving vehicles and many more gadgets for the smart home – functionalities that require lightning-fast data transfer across the mobile network.

As base stations have shrunk in size, their capacity has increased almost beyond comprehension. The new 5G network is expected to handle up to a million devices per square kilometre.





No other country has produced as many revolutionary innovations per capita as Sweden. This is the story of 50 of these Swedish ideas, discoveries and inventions that have changed the world.

