ERICSSON

INFRASTRUCTURE READINESS

The crucial role of network infrastructure in enabling seamless streaming

TRAFFIC BOOM

What is seamless streaming?

Rapid broadband uptake combined with new services and mobile devices has transformed the way we access and consume content. More and more, users choose to listen to music or watch video in real time, instead of downloading a file to their device. With internet videos and webcasts of live events, for example, there are no files to download – just a continuous stream of data. As streaming traffic intensifies, customer experience is crucial.

Operators and communication service providers (CSPs) need to deliver seamless streaming – the ability to easily stream content at all times and locations, to any device. At a time when 40 percent of users give up watching a video after 10 seconds of waiting, time-to-content and zero interruptions are what really matter.

Seamlessness should be viewed as an opportunity. Smart networks, new service offerings and efficient, adaptable management solutions can cut costs, increase performance and open new revenue streams.

When it comes to seamless streaming – we can provide the whole picture.

What this means for CSPs

Enabling seamless streaming begins with preparing network infrastructure to handle the data volume and range of services involved. To do this, service providers must consider two key things – time and location.

A mobile experience

A central part of the seamless experience is being able to go truly mobile. Service providers who are unable to deliver sufficient coverage and performance will find themselves at a competitive disadvantage. Consumer and enterprise behavior is what shapes the development of streaming. To remain competitive, operators must design their networks to ensure an excellent quality of service, regardless of where and what the user is streaming.

Increased coverage and capacity

Operators need to start by assessing which technology should go where, to ensure that white spots in coverage are filled in. Technological developments within heterogeneous networks have created solutions for when adding new macro cells is not feasible. Small cells, carrier Wi-Fi and radio dots can increase coverage and capacity in strategically important areas.

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A one access network

Network performance drives app coverage and user experience – the app experience. Bringing the optical fiber point-of-presence (FTTx) as close to users as possible is critical for network performance. Fiber is therefore being further deployed in existing mobile access networks. This opens up new business opportunities for connecting public buildings, enterprises and homes to create a converged one access network.

Live event support

On-demand viewing is quickly becoming the norm for online video consumption. However, the ability to do so at live events will continue to retain particular importance. It is here that streaming capabilities are tested to the extreme, with high concentrations of users in an arena connecting at the same time to share the experience. This brings the possible risk of overload, downtime and user frustration. Accommodating demand requires detailed network planning, deployment and real-time support.

Hour-by-hour configuration

Urban geographic population density varies considerably over the course of the day, particularly as people commute. This is clearly reflected in the level of mobile traffic. Many operators are adapting their parameter settings to manage traffic changes between weekdays and weekends. With automated network management and operation functions, it is possible to achieve dynamic configuration hourly. This would allow operators to allocate resources efficiently while ensuring that users receive excellent performance wherever they are.

Know your network

In order to effectively design and optimize their networks to create a seamless streaming experience, operators first need to know exactly what activity is taking place. Applying the appropriate KPIs and forecasting methods is crucial. By using advanced, automated solutions, operators can achieve seamless and continuous network assessment and optimization.

A STEADY STREAM

Approximately 70 percent of all cellular traffic is generated indoors

In all locations

Users are no longer satisfied by voice only. They now expect to be able to use mobile apps anywhere and at any time. This demand for a better app experience will continue to grow.

App coverage is defined as the percentage of locations with enough bandwidth to use the app. Typically it is lower for high data services. Improving app coverage is critical, as one in three users has stopped using an app due to poor coverage. This percentage increases to more than half in India and Brazil. Therefore, the goal is to secure high quality coverage for all types of apps.

Approximately 70 percent of all cellular traffic is generated indoors. This can make it challenging to provide sufficient coverage and quality of service, due to propagation losses affecting indoor locations. It is more difficult to serve these users by means of outdoor deployments.

The majority of customer complaints are generated by indoor users. Enterprise customers require a speed of 10 Mbps or higher throughout their buildings. There is therefore a strong need for solutions that provide indoor coverage. Securing resources for indoor capacity and coverage is considered a priority by many operators.

At all times

Whether sport, music or politics, all events share a common requirement for those attending – the ability to share their experience in the moment.

Social media is the predominant driver of network traffic at events. Attendees want to share their experiences in real time through pictures, videos and social media posts. Traffic is continuing to skyrocket as a greater number of spectators adapt to this behavior, supported by improving mobile broadband technology, devices, social applications and platforms. Certain events naturally lead to further participant interaction, such as real-time score updates, instant replays and statistics.

Live events are just one example of when operators must closely monitor user behavior in order to address their connectivity requirements. Streaming services are predictably used more often at certain times of day and particular locations, for example at transport hubs and during commuting hours, and residential areas in the evenings. Operators should therefore be able to detect and prevent disturbances that could lead to performance degradations.

ACHIEVING SEAMLESSNESS

Create a clear strategy

Providing a seamless streaming experience begins with reviewing the present state of the network. This entails exploring what services, devices and apps subscribers are actually using and the extent to which they are being used. These results will become the basis for determining relevant benchmarks and KPIs. Analyzing them will help to influence decisions on necessary areas for improvement and investment in order to maximize performance. This user-centric perspective allows operators to forecast the use of specific services, rather than just traffic, and to optimize their network elements accordingly.

Address the critical areas first

In order to find the best locations for new sites, the areas with the poorest user experience must first be identified.

With the majority of mobile data traffic moving indoors, a coordinated approach to the design criteria must be taken to find optimum solutions for indoor and outdoor environments, ensuring a seamless user performance across every scenario.

Small cells can help to deliver a high quality user experience everywhere, working alongside the macro network. When it comes to securing indoor performance, they can be a valuable differentiator. Figure 1 illustrates the phases of their deployment.

Figure 1: Phases of small cell deployment

SET THE STRATEGY

- Network plan to support business objectives

High level design

Strategic analysis

NETWORK COORDINATION

- Right and cost-efficient locations
- Macro layer adjustments
- Seamless outdoor – indoor experience

Small cell design

Network build

Network integration

CONTINUOUS EVOLUTION

- Self-Organizing Networks (SON)
- Complex operation and management
- Multiple technologies layers and scenarios

Small cell audit

Preemptive support

Small cell optimization

Never underestimate efficiency

When preparing network infrastructure to provide the desired streaming experience, it's important to consider the use of resources. Having efficient equipment means fewer resources are required and less time is needed for installation. Furthermore, ensuring automation and access to the right tools can streamline network deployment and optimization processes.

Understand and address user expectations

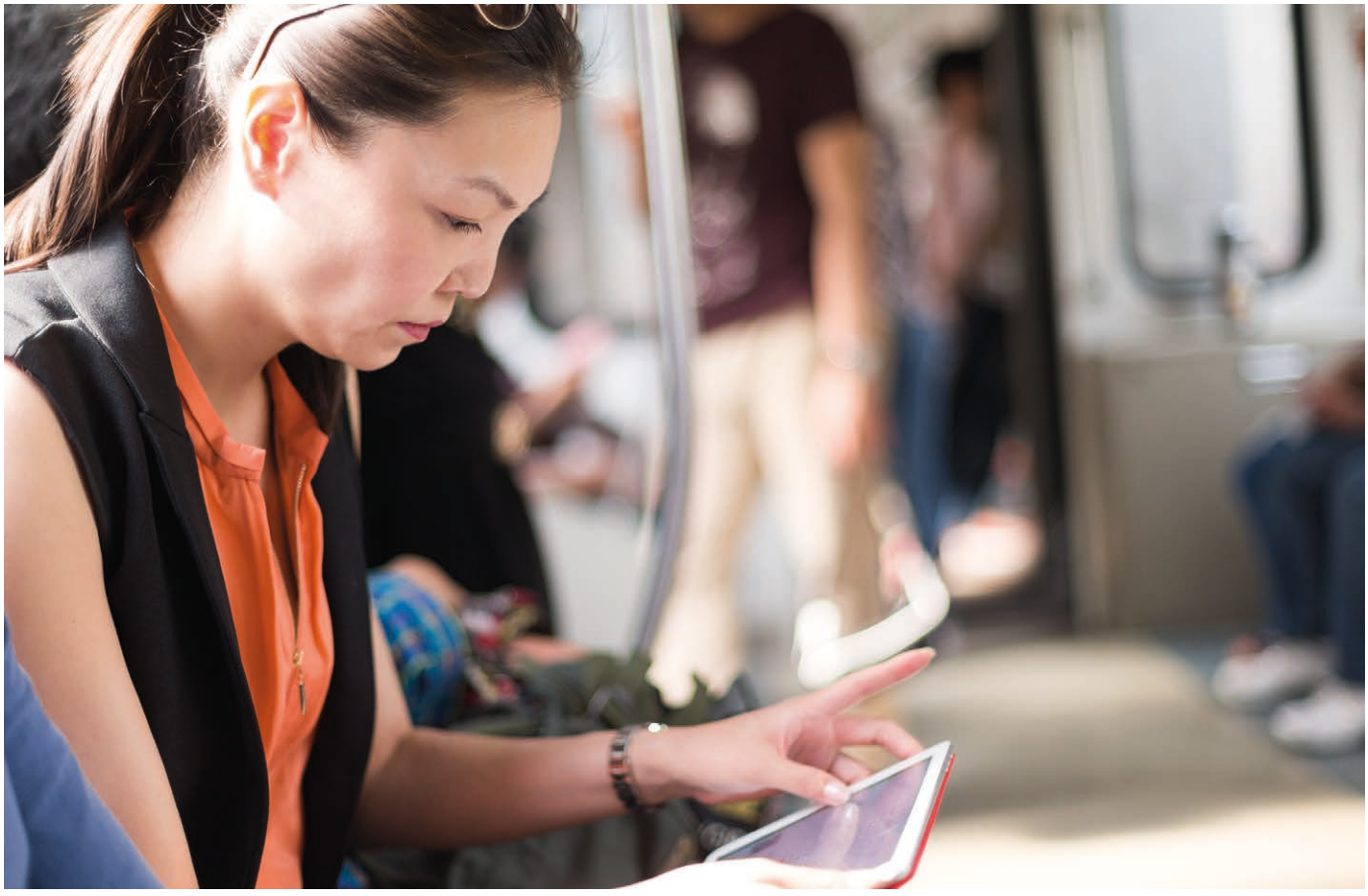
The need to ensure a high standard of network reliability, quality and speed is greater than ever. Users expect their mobile services to work consistently well, regardless of whether there are lots of other subscribers accessing these services simultaneously. This demand pushes the limits of the network. It is important to set the right end-to-end service KPIs in order to constantly monitor and maintain the experience.

It is important to set the right end-to-end service KPIs

Transform challenges into opportunities

Operators can transform the challenges associated with network traffic demands into valuable opportunities to grow loyalty and revenue. Providing the best possible user experience will showcase the operator's strengths and capabilities – differentiating their brand. It is very important to publicly promote the fact that network and operational changes are being made to improve performance.

Beyond the additional revenue tied to increased mobile broadband traffic, there is further opportunity to engage users at events by addressing their desire to share experiences via video or dedicated apps.

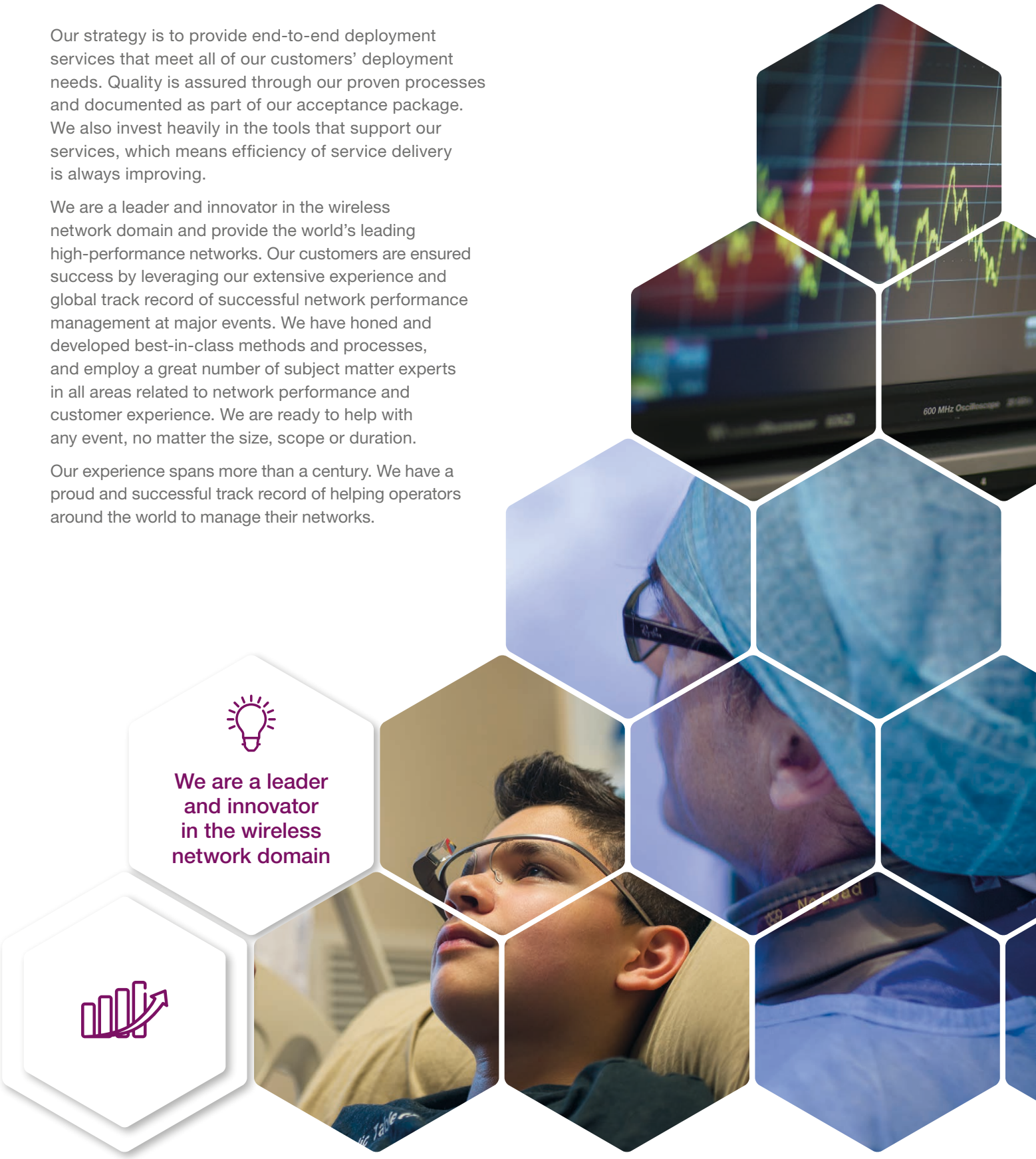


IN SAFE HANDS

Our strategy is to provide end-to-end deployment services that meet all of our customers' deployment needs. Quality is assured through our proven processes and documented as part of our acceptance package. We also invest heavily in the tools that support our services, which means efficiency of service delivery is always improving.

We are a leader and innovator in the wireless network domain and provide the world's leading high-performance networks. Our customers are ensured success by leveraging our extensive experience and global track record of successful network performance management at major events. We have honed and developed best-in-class methods and processes, and employ a great number of subject matter experts in all areas related to network performance and customer experience. We are ready to help with any event, no matter the size, scope or duration.

Our experience spans more than a century. We have a proud and successful track record of helping operators around the world to manage their networks.



We are a leader and innovator in the wireless network domain

Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, business and society to fulfill their potential and create a more sustainable future.

Our services, software and infrastructure – especially in mobility, broadband and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities.

With approximately 115,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership. We support networks that connect more than 2.5 billion subscribers. Forty percent of the world's mobile traffic is carried over Ericsson networks. And our investments in research and development ensure that our solutions – and our customers – stay in front.

Founded in 1876, Ericsson has its headquarters in Stockholm, Sweden. Net sales in 2014 were SEK 228.0 billion (USD 33.1 billion). Ericsson is listed on NASDAQ OMX stock exchange in Stockholm and the NASDAQ in New York.

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