

# ENHANCING THE EVENT EXPERIENCE

EXTRACT FROM THE  
ERICSSON MOBILITY REPORT

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Data from recent international sporting events illustrates spectators' growing use of mobile services during competitions. Operators now plan to use 5G technologies to showcase enhanced spectator experience at upcoming events, such as at the 2018 sports event in Pyeongchang, South Korea, and the 2020 sports event in Tokyo. Large events present an opportunity for operators and organizers to provide visitors with additional digital services throughout the entire experience

Event organizers and operators can further extend and enhance the spectator experience through ever more engaging content. Examples include video integrated with real-time data, historic event data, sports performance data, live event replays, event highlights, interactive statistics, event-related social media and exclusive behind-the-scenes content, such as press conferences and interviews.

## Rising mobile data traffic at large events

At the 2016 sports event in Rio, four times more mobile data traffic was carried by networks in and around the event arenas than at the 2012 event in London. Data from another recent major event, the world championships

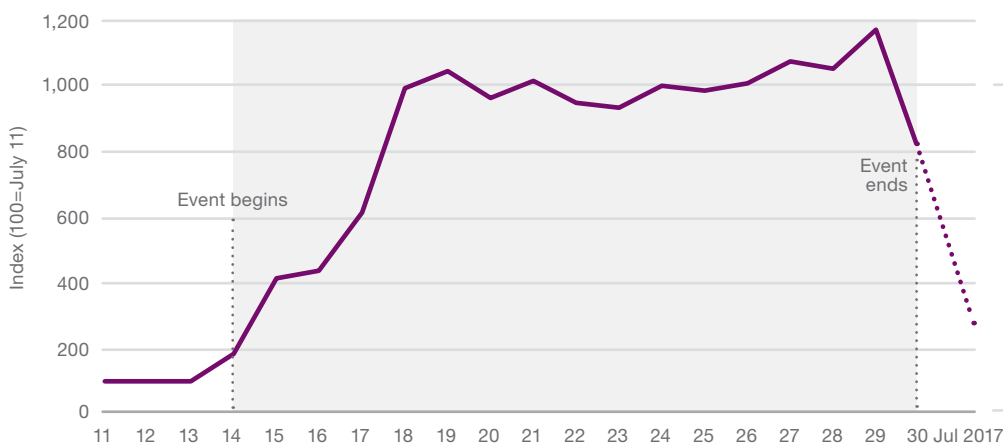
for aquatic sports in Hungary in 2017, shows that daily mobile data traffic in areas associated with the event was as high as 10 times normal volumes. At the Rio event, the increase in traffic can be explained by a combination of better network capabilities and a general rise in consumers' use of digital services.

Increased usage of digital services, such as social media and video content, in and around an event, as well as the demands posed by new types of services, will create challenges for operators. To meet raised user expectations, operators will need to effectively prepare networks before the event and then manage network performance in real time during the event.

## Shift in spectators' usage of mobile data services

Growth in mobile traffic at events can be attributed to changes in user behavior, especially among younger people. When the mobile data usage trend began, spectators were mainly using mobile devices to post selfies, make phone calls and use text services. Now spectators mainly share or stream live videos and engage with social networks. In addition, as spectators increasingly create their own content, a rise in uplink data traffic volume has occurred. For example, during the 2016 Rio event, the uplink data traffic share was as high as 33 percent of total traffic in and around the event arenas. This is significantly higher than normal.

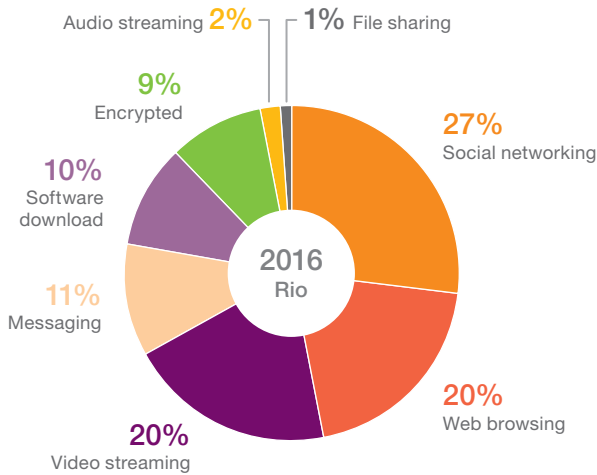
Daily mobile data traffic level at the world championships for aquatic sports in Hungary in 2017



Source: Ericsson (July 14–30, 2017)

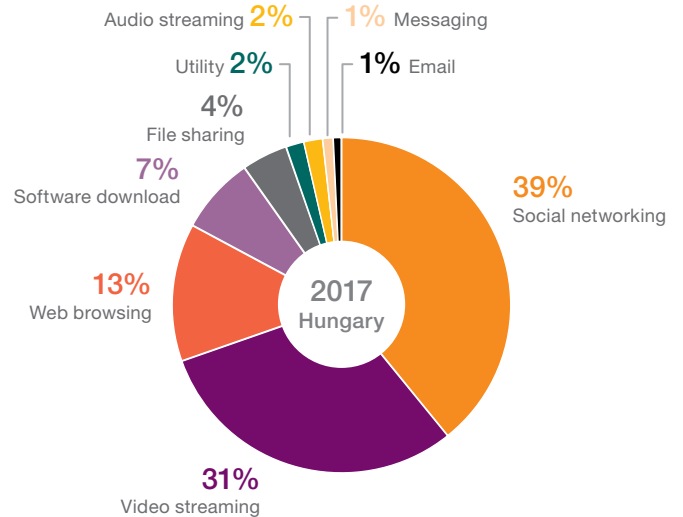
Base: Network measurements from more than 400 radio cells associated with the event in Hungary, including cells deployed in the area only for the event

**App category share of traffic for the top 15 apps at the 2016 Rio sports event**



Source: Brazilian operator network measurements (August 5–21, 2016)  
 Note: Top 15 apps by share of total traffic, used in and around the event

**App category share of traffic for the top 15 apps at the Hungary world championships for aquatic sports in 2017**



Source: Ericsson network measurements (July 14–30, 2017)  
 Base: Android OS device network measurements from more than 400 radio cells associated with the event, including cells deployed in the area only for the event  
 Note: Top 15 apps by share of total traffic, used in and around the event

**Social networking, video streaming and web browsing dominate**

At the 2016 sports event in Rio, network measurements of different app categories' share of traffic for the top 15 apps used show that social networking, video streaming and web browsing dominated. Messaging was also prominent – presumably due to posting of pictures and videos.

At the world championships for aquatic sports in Hungary in 2017, there was a similar distribution. However, the social networking and video streaming categories were even more dominant.

The different app categories' share of traffic at both events can be seen in the graphs above.

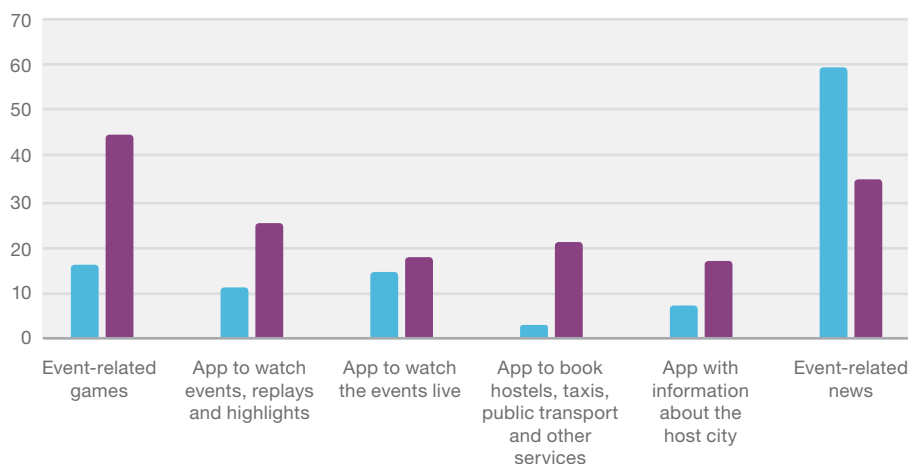
**Connected venues and the role of event-related apps**

In terms of data traffic volume, the usage of event-related apps in and around the arenas at the 2014 international football tournament and the 2016 sports event in Rio was insignificant. However, the interest in downloading and using an app related to the event (with the exception of event news) increased in 2016. This rise in interest can likely be attributed to the wider range of apps available

at the sports event in Rio, as well as a general increase in the use of digital services among event visitors.

Despite this increased interest, only around 25 percent of the interviewees at both the 2014 international football tournament and the 2016 sports event in Rio downloaded event-related apps. One reason for this could be limited investments in apps. However, those who did download event-related apps downloaded more of them in Rio, in comparison to those who downloaded event-related apps at the 2014 football tournament.

**Comparison of event-related apps downloaded (percent)**



Source: Ericsson ConsumerLab (2016)  
 Base: Smartphone internet users aged 15–60, watching the events in and around the main arenas.  
 Of the interviewees, 25 percent downloaded event-related apps

## Extending the event experience with digitalized services

Recent consumer research shows that the event experience starts long before the actual event and continues after it.<sup>1</sup> There is the opportunity for event organizers and operators to extend and enhance the visitor experience by addressing more of visitors' needs with innovative, digitalized services. Most of the identified event-related needs for visitors, displayed to the right, are still at a low level of digitalization. The most digitalized areas are information and ticketing, as well as socializing.

The most important need for spectators is the overall live event experience, including factors such as event atmosphere and feelings of excitement, relaxation and closeness to the event activities. Augmented reality (AR), virtual reality (VR) and mixed reality (MR) technologies have the potential to enhance visitors' and remote spectators' experience of events, making them available in new ways, for example, as an on-demand service. The related development of 3D and 360-degree content is driving an emerging trend to "interact with the event", immersing people in the action, wherever they are in the world.

Connected venues and arenas – supported by 4G and 5G technology – will cater for visitors' needs for more digitalized services and immersive experiences at any event. The opportunity to transform event experiences with new digitalized services will also be relevant to large one-off arrangements such as those major events described in this article.

### 5G will transform the event experience

Initially, 4G systems are expected to continue to play an important role in supporting event visitors with mobile connectivity and services,

## The most important event-related needs for visitors

### 1. Event experience:

There is a great atmosphere at the event, and it is both exciting and relaxing, priceworthy and welcoming. The experience should be immersive.



### 2. Environment and safety:

There is confidence and a feeling of safety and security in the arena. The arena should also be clean.



### 3. Information and ticketing:

There is a smooth ticketing process and it is easy to get information about the event.



### 4. Belonging:

The event creates a sense of community and of being part of the crowd – for example, through traditions related to the specific event.



### 5. Food and drink:

There is a satisfactory selection of places to get food and drinks, as well as reasonable prices and a range of options.



### 6. Accessibility:

It is easy to get to the arena and queues for toilets and restaurants, for example, are of an acceptable length.



### 7. Socializing:

It is easy to find, mingle and socialize with friends and family at the arena.



### 8. Individual needs:

The event is adapted to individual needs, and provides the possibility for visitors to efficiently do different things, depending on personal preference.



Source: Ericsson ConsumerLab, Connected Venues (2017)  
Base: Large arena visitors in the UK

both outdoors and indoors. Enabled by functionality such as carrier aggregation and 4x4 Multiple Input Multiple Output (MIMO), as well as higher modulation techniques, these 4G systems are capable of providing Gigabit per second download speeds.

In the near future, 5G technology will have the capability to transform the experience for spectators and will enable many of the services discussed in this article on a large scale. Functionality such as Massive MIMO introduces new technology that

significantly increases the efficiency in which data is provided to end users over the available spectrum, thereby significantly increasing system capacity. This allows for very high capacity networks to serve the data traffic demands at event arenas and surrounding areas. A first version<sup>2</sup> of 5G specifications (3GPP Release 15) is to be completed by 3GPP by the end of 2017 to enable large-scale trials and deployments starting in 2019. Even so, early 5G trials have already progressed far enough to provide Gigabit speeds in real-world environments.

<sup>1</sup> Ericsson ConsumerLab, interviews with large venue visitors in the UK (May 2017)

<sup>2</sup> The first version of 3GPP Release 15 will be a non-standalone version of New Radio (NR), which relies on LTE for some of its basic functionality, followed by a finalized version in June 2018 that will include standalone support

## 5G showcases expected at major upcoming sports events

It is anticipated that 5G technology and services will be showcased at upcoming major sports events, such as the 2018 sports event in Pyeongchang, South Korea, the 2018 international football tournament in Russia and the 2020 sports event in Tokyo. In South Korea, a pre-commercial 5G system will be used to provide 5G-like experiences, and the event organizers and operators are making investments in a range of different event-related apps.

Operators are at various stages in terms of planning the types of 5G services they will deploy at the upcoming major sports events. Among other things, the availability of 5G devices in sufficient volumes and their form factors are expected to have a significant impact on the types of applications and services that will be launched, as well as whether usage will go beyond a select number of VIP visitors and event organizers. Based on current industry initiatives and ongoing 5G trials, it is highly likely that some of the anticipated services will include AR and VR-based applications.

## Enhancing the digital experience with new types of applications and immersive content

AR and VR are expected to constitute a significant proportion of the 5G showcases at upcoming major sports events. Use cases range from ultra-high definition (UHD)<sup>3</sup> live video streaming to a fully virtualized experience. As well as enhancing the experience at the event itself, the technology could extend the digital experience to remote fans by providing immersive content – allowing them to hear and see the real-time action, almost as if they were there themselves.

## Ensuring good network quality during events

The digitalization trend creates the potential for operators and event organizers to provide ever better content at events. However, as spectators continue to consume more data and demand more digital services, preparatory actions are required to ensure a good network experience, and to meet the expectations for connectivity and performance throughout the whole event period. To achieve this,

network flexibility and scalability are important factors, as dynamic event traffic will vary greatly over time depending on service type, usage scenario and event schedules.

To optimize network performance in real time, following adaption to traffic forecasts, network parameters should be actively changed during the event to increase the quality and capacity of the system. Proactive network monitoring and optimization, feature activation and software upgrades are required prior to the event, and then in real time during the event. With the right network design, optimization and real-time support, operators will be able to handle expected traffic demand.

At future events and connected venues, with high traffic density and increasing use of demanding services such as AR and VR, proactive management and automation will be essential to meet committed service levels. This will be supported through centralized intelligence and analytics, with support from expert systems and machine-learning technologies for network monitoring and dynamic optimization.

### A range of services may be included in 5G showcases, allowing venue visitors to turn from spectators into participants and enabling them to:

- > Watch events from different viewpoints with interactive control
- > Access multiple cameras filming an object to achieve a 3D view
- > Experience sports activity from the perspective of the athlete via mini-cameras
- > Enjoy an in-stadium experience outside the venue through haptic or tactile feedback
- > View live holographic projections of athletes
- > Integrate supplementary content into their live streams
- > See athlete, event or venue statistics superimposed on their device display
- > Analyze and display performance data through sensors embedded in sports equipment
- > Receive real-time information on factors such as the speed and location of a ball
- > View overlay and substitution content, for example, explaining rules, giving more details and personalizing the experience



<sup>3</sup> 4K/8K video

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