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5G for business: a 2030 market compass

Setting a direction for 5G-powered B2B opportunities

October 2019

The journey to capture the value of 5G beyond mobile broadband starts now

The telecoms industry is a huge market in itself and it spurs the digitalization and growth of many other industries. However, service revenue growth for mobile communication service providers has been declining and is close to flat.

The combination of 5G and digitalization creates new opportunities for service providers to build and extend their businesses beyond connectivity, and presents a way to break the trend of a stagnant market. However, even if the rapidly changing 5G-IoT landscape offers enormous potential, it is complex and not without its challenges. Deciding on the best way forward requires a comprehensive understanding of issues surrounding the addressable markets, the driving forces and barriers for different industries to adopt 5G-enabled use cases.

We have analyzed this opportunity, and this report is an attempt to size and segment a range of markets that will open up in the coming decade. It updates and extends our previous research into the 5G business potential for service providers. We see it as a useful tool – or compass – for indicating where the market is heading. This study anticipates that by 2030 up to USD 700 billion of 5G-enabled, business-to-business value could be addressed by service providers.

But beyond the big numbers and insights in this report, one thing remains clear when I look at the data: the journey to build 5G business for the future starts now.

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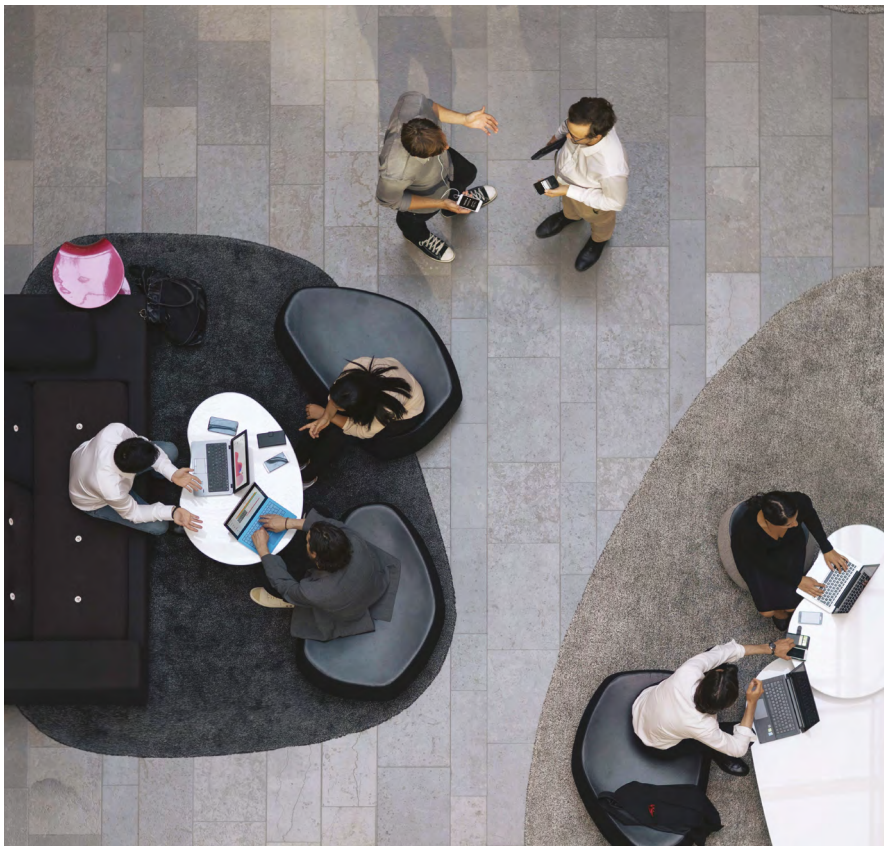
Senior Vice President and Head of Business Area Digital Services



The combination of 5G and digitalization is creating new opportunities for service providers

Methodology
In 2019, Ericsson, in partnership with Arthur D. Little, has undertaken an update of the data sets underpinning the 2018 report 'The guide to capturing the 5G industry digitalization business potential'. The projection has now been extended to 2030, but the model and logic for the analysis has remained intact. The model does not provide a sales forecast, but an analysis and aggregation of relevant revenues that, combined, constitute a maximum total addressable market. The methodology applied is a top-down estimation of what share of the total ICT industry digitalization revenues is addressable by service providers.

Use cases from 10 industries and 9 use case clusters have been closely reviewed across the world's different geographical markets. From these use cases, more than 200 have been selected for their characteristics of being 5G-enabled, meaning either significantly enhanced, or made at all possible to realize, by introducing 5G 3GPP technology. Use cases fulfilled by earlier standards or non-3GPP technologies have thus not qualified. As a final step, the addressable revenue potential has been specified for the different service provider roles of network developer, service enabler and service creator.

Introduction

As 5G networks are rolled out faster than expected, service providers need to identify which areas to prioritize for future growth.

By pursuing different strategies, ranging from a consumer focus to expanding into new enterprise opportunities, service providers primarily see benefits in 5G in two areas. The first is as a cost-effective technology to handle the ever-growing data traffic demand from consumers; the second as a possibility to break the declining average revenue per user trend by offering new advanced 5G services.

The development of the current scope of consumer-related service revenues is expected to remain close to stagnant at an annual growth rate of 0.75 percent through to 2030. In comparison, the global digitalization opportunity across industries that can be addressed by all ICT players is expected to grow at a completely different pace with a compound annual growth rate (CAGR) of close to 12 percent over the same time frame; see Figure 1.

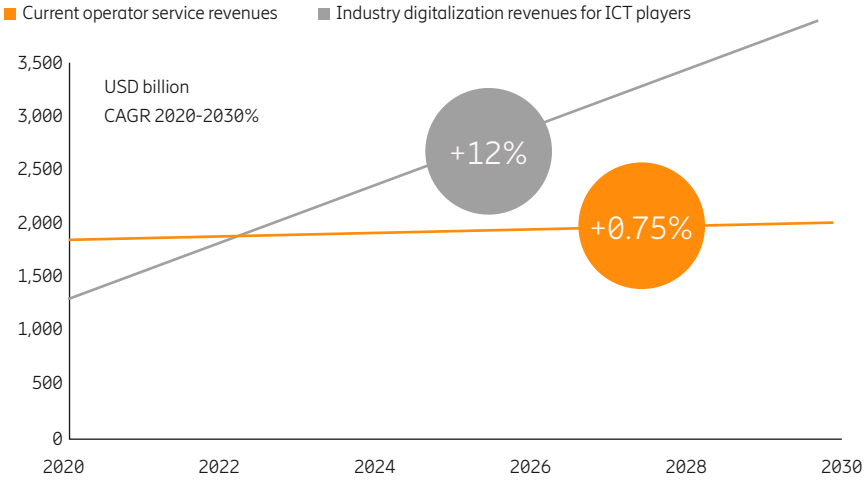
As this study reveals, a significant proportion of future investments across industries is expected to be driven by new and advanced services based on 5G technology. The real challenge for service providers is how to identify which new areas to prioritize, as the global digitalization opportunity grows.

Ericsson's previous research in this area has been refreshed with more recent data and insights, and the projection has been extended to 2030. The result is an updated digitalization revenue estimation with more well-defined industries. For example, in this study, public transportation only includes mass transit and not all types of transportation within a smart city.

Even if 5G networks are rolled out faster than expected, the expectations across industries are that the ramp-up of 5G-enabled use cases is likely to happen later than previously anticipated. This may appear to be a contradiction, but the main reason is that it has taken industries longer to move into more sophisticated digitalization use cases, as they are still pushing basic functionality. Much of this can be related to process-oriented hurdles and an industry's abilities to revamp required capabilities for deployments. Consequently, the growth projection of 5G-enabled revenue potential is slightly less aggressive than previously estimated.

From the overall perspective of service providers, there has not been a drastic change to our earlier expectations. That being said, the 5G investments, deployments and marketing efforts in most markets have been focused more on the consumer markets. This naturally has an impact on 5G enterprise market potential as well.

Figure 1: The service provider challenge



Source: Ericsson and Arthur D. Little

The service provider industry opportunity is confirmed to be significant but is expected later and to be somewhat differently distributed across industries. Healthcare now represents the largest addressable market, followed by manufacturing, energy and utilities, and automotive. All of the 10 industries considered here represent significant value pools, but all also present different barriers to entry. Deciding which segment to target, what role to take and which barriers to overcome presents key challenges for service providers preparing to address enterprise customers across industries. This study aims to support them on this journey.

5G fuels digital transformation across industries

Of the total projected value of digitalization that 5G will enable in 2030, almost half will be addressable by service providers.

The benefits of digitalization – that is, business transformation driven by advances in technologies and digital capabilities – are leading to massive investments across all industries. These investments are expected to increase year by year and to benefit ICT players worldwide. By 2030, the expected industry digitalization revenues for ICT players worldwide across all industries are expected to amount to around USD 3.8 trillion. The question for service providers is how much of this revenue enabled by 5G is addressable for them.

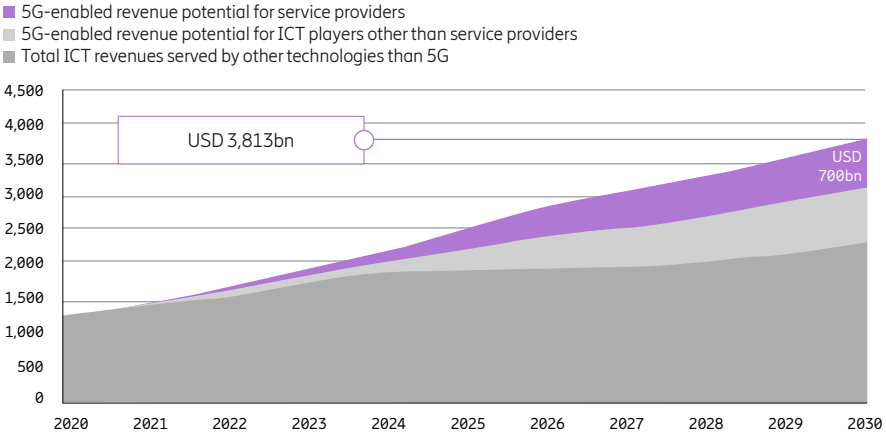
The 10 industries examined in this study are: manufacturing, energy and utilities, public safety, healthcare, public transport, media and entertainment, automotive, financial services, retail, and agriculture. Investments driven by the value 5G is providing across these industries is expected to be around USD 1.5 trillion in 2030. But not all of this is expected to be addressable by service providers, as the ability to take a role in the value chain will differ by industry and be subject to the speed of disruption, geographic relevance and the complexity of applications that the addressed use cases entail.

As service providers work to move up the value chain, the ability to address any specific market will be reduced due to increased competition from IT vendors, many of which already have established roles within different industries. Still there is a significant potential for service providers to go after new revenue within the industry verticals. The total value of the global addressable 5G-enabled market for service providers across the 10 industries is projected to be USD 700 billion in 2030, beyond mobile broadband.

Service providers may find new sources of revenue in various B2B2X opportunities, given that 5G excels in many key technology areas, such as peak speeds, latency and positioning accuracy to mention a few. Many industry use case applications can be created or enhanced by 5G. A shift in the value chain is therefore possible, with service providers able to address many new vertical use cases driven by the business transformation that new advanced technologies such as 5G, AI and IoT will bring.

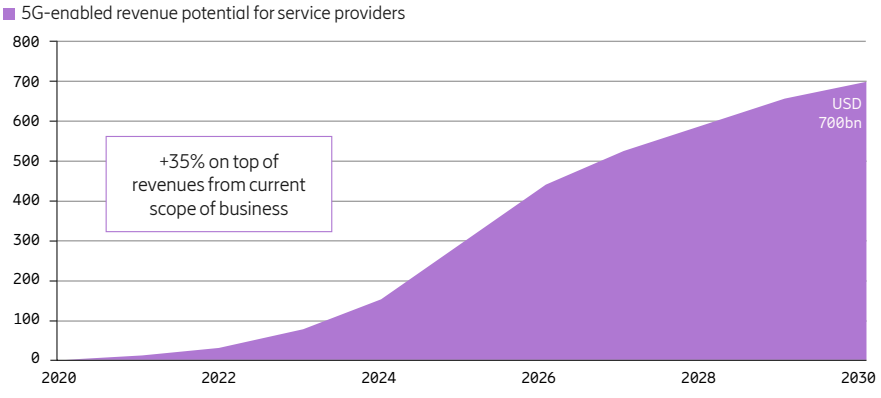
Figure 3 shows that the addressable market for service providers is expected to increase at a CAGR of 50 percent up to 2026, after which the growth will slow, but still be significant. This indicates that the probability of being successful in capturing parts of this potential is higher in the next 5–7 years when roles and market shares are established, rather than in later years. Addressing these opportunities could enable service providers to unlock additional revenue streams, collectively representing up to 35 percent of service providers' expected revenue from the current scope of business by 2030.

Figure 2: Of the total ICT revenue expected in 2030, up to 18 percent of the 5G-enabled opportunity is addressable by service providers



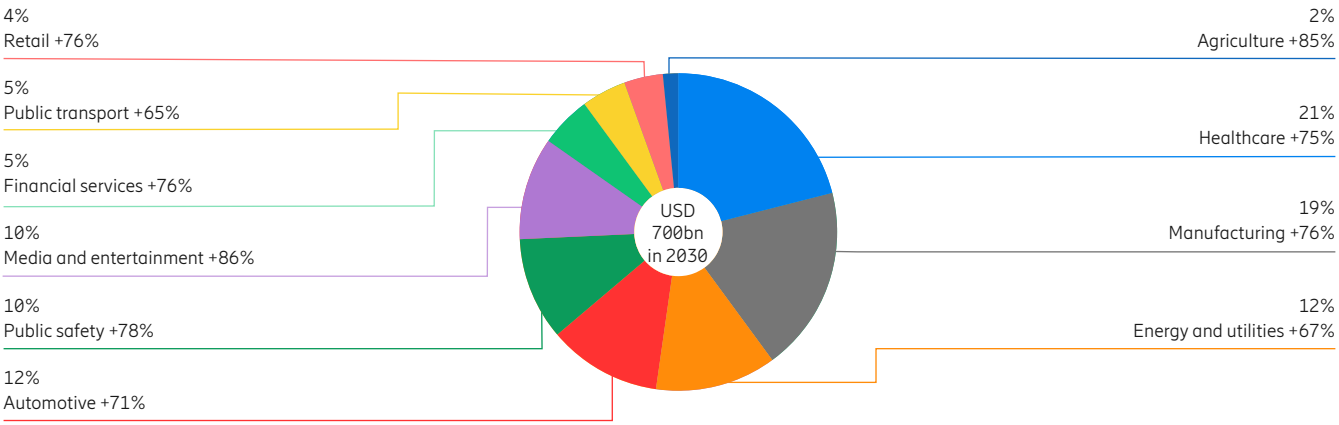
Source: Ericsson and Arthur D. Little

Figure 3: Opportunity for service providers to grab shares early



Source: Ericsson and Arthur D. Little

Figure 4: Share and growth rate for global total 5G-enabled B2B opportunity for service providers



Global service creator, 5G for business addressable market, 2030 share, 2020–2030 CAGR

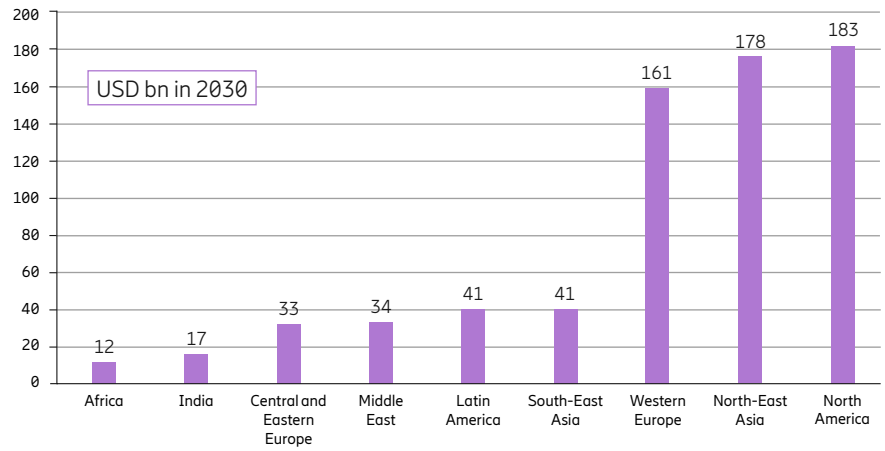
Source: Ericsson and Arthur D. Little

However, it is not possible for all service providers to pursue all the opportunities across these industries. The market data presented herein should instead provide an indication of where the value pools are, and be used as a compass for setting the direction for strategic planning and activities to capture parts of this opportunity in the coming years.

Looking at this opportunity from an industry perspective gives us further insights into the relationship between the different value pools. In Figure 4, the 5G-enabled opportunity for service providers is split by industry. Even if some of the industries seemingly have larger shares of the revenue potential, it is far from the only thing that matters for service providers when deciding to address a certain industry. Evaluating factors, including competition, scope and scale effects, as well as risks and expected returns, is key to estimating the business potential. In the following pages, these industries are examined in more detail to give a better understanding of the driving forces and barriers. In addition, the role in the value chain that a service provider tries to take will matter greatly.

Different roles face different challenges, as addressing an industry with primarily connectivity solutions cannot be directly compared to addressing the same industry through new services and applications to capture a larger part of the industry players' spend. This is further discussed later in this report. Another dimension is the distribution of the expected spend across geographies. As illustrated in Figure 5, most opportunities for service providers over the coming decade will be in North-East Asia, Western Europe and North America. This is also where we currently find the most activities being explored.

Figure 5: Regional split of the total service provider 5G-enabled B2B opportunity across 10 industries



Source: Ericsson and Arthur D. Little

Industry trends, drivers and barriers

With 5G deployments underway across most geographies, there are now more specific insights available.

As with any major technology shift, the ICT industry at large has come to learn more over time. In summary, there is a higher earlier potential and focus in consumer market (B2C) 5G services than previously projected, along with a confirmed but later adoption of industry (B2B) use cases. The reasons for this adjustment over time are found in widely adopted scope adjustments, and in more evolved perspectives on technical competence levels, organizational barriers and the inertia and regulations surrounding replacement cycles of legacy systems. However, a comprehensive overview of insights into B2B 5G growth requires a per-industry lens, examining recent trends and drivers, as well as barriers for service providers to address them. In this section we will look at these across each of the 10 studied industries. Across all, the scope applied in this study is elaborated. It is worth noticing here that any category excluded may still contain addressable 5G use cases, indicating that the total industry could be larger than outlined here.

Healthcare: Significant opportunity with historical barriers

Recent research indicates there has been a strong digital healthcare evolution with new digital solutions being realized every year. The industry sees an exploding mHealth market and entire healthcare systems that are becoming digitalized and connected. Wider adoption of applications based on wearables now coincides with increasing decentralization in the industry, in turn driven by a combination of aging populations and demands for increased efficiencies. With the operator 5G addressable market expected to be USD 147 billion in 2030, the first 5G use cases have already successfully been implemented in hospitals. In China, an increasing number of medical institutions are collaborating with telecom companies to seek breakthroughs in telemedicine. Moreover, in a recent global survey, 42 percent of healthcare providers claim to have firm plans for 5G deployments. But balancing this surge, the healthcare industry has historically been slower at adapting to new technologies than other industries. Regulatory boundaries, traditional infrastructure and risks connected with changing suppliers all present challenges to service providers to succeed in this industry.

Categories	Scope of study
mHealth	✓
eHealth	✓
Hospitals	✓

Manufacturing: Increased caution and industrial production demands

The manufacturing industry presents a significant service provider addressable 5G-enabled market, estimated to be USD 132 billion in 2030 with an impressive CAGR of 75 percent over 2020–2030. The industry needs to meet the demand from a globally diverse and demanding customer base, while managing increasingly complex portfolios. This drives the need for running flexible production, to accommodate rapid changes to the production environment. 5G offers reliable connectivity without cumbersome and costly cabling, and enables a factory set-up with two-way communication between machines and workers in a modular and flexible setting. Other use cases, such as collaborative robots requiring ultra-low latency for safe human-robot collaboration, AR/VR and remote operations through digital twins, are also anticipated to drive 5G investments. Still, investments relating to 5G are now expected to come later than previously projected. Initiatives such as Industry 4.0 now frequently focus on optimization to minimize overall production downtime, and there is uncertainty as to what technologies and use cases to bet on. As a result, cables are often still used to achieve stable connections, and there is prolonged use of Wi-Fi for connectivity. Across manufacturing, investments in fixed assets are typically calculated with a 20-year lifetime, resulting in long investment cycles for machinery and equipment. Consequently, most industrial 5G use cases will be implemented in existing industrial production sites, increasing the complexity considerably.

Categories	Scope of study
Factories	✓
Mining	✗
Utility	✗

The automotive industry is anticipating growth in accordance with previous analysis, with connected and autonomous cars the main drivers of technology

Energy and utilities: Growth expected in power generation, oil and gas

Energy and utilities include power generation and the oil and gas industry, but smart buildings and smart city infrastructure are now excluded from the 5G-enabled industry revenue scope. As these areas are becoming increasingly well-defined by themselves, there is an awareness that their market structure and value chain set-up differ significantly. The result of this redefined scope is a more moderate projection, further impacted by concerns over the ability to have a new 5G network to deliver reliable and resilient bandwidth and mitigate cyber threats to the power distribution grid. Many energy and utility companies are therefore reluctant to test new technologies. Nevertheless, high growth is still expected in the power generation, oil and gas sectors. The 5G service provider addressable market is projected to be USD 86 billion in 2030 following a 76 percent CAGR over 2020–2030. Use cases such as smart meters and smart grids are already being deployed, but the main drivers for 5G adoption are real-time operations and monitoring of distributed energy resources (e.g. digital twins), as well as enablement of secure and quality services not achievable by other technologies.

Categories	Scope of study
Power generation	✓
Oil and gas	✓
Smart buildings	✗
Smart city infrastructure	✗
Mining	✗
Energy traders	✗

Automotive: Connectivity and autonomous solid drivers

The 5G-enabled potential for the automotive industry is expected to reach an addressable market for service providers of up to USD 81 billion in 2030, with a high CAGR of 76 percent from 2020–2030. The industry is anticipating growth in accordance with previous analysis. Connected and autonomous cars are the main drivers of technology. Two years ago, it was anticipated that all new cars sold in 2025 would be connected to the internet, and some manufacturers have announced even more aggressive plans.One car manufacturer announced that 90 percent of their cars sold globally and 100 percent of the cars sold in the US in 2020 will be connected to the internet. 5G-enabled revenues are expected to grow rapidly with a CAGR of 137 percent over 2020–2026. Meanwhile, autonomous car commercialization has slowed due to recent accidents increasing safety concerns. Moreover, network coverage limitations and concerns related to data privacy and cyber security are still challenges to be overcome to fully appreciate the value potential. In this context, it is recognized that 5G could enable the low latency and reliability required for safe operations.

Categories	Scope of study
Connected and automated cars	✓
In-car entertainment	✓

Public safety: Infrastructure focus modifies the outlook

Fast and reliable connection is key in public safety, where seconds of disruption can have huge consequences. Increased tension between countries worldwide, more public disasters and a greater focus on collecting and leveraging shared data and intelligence are all contributing to the high CAGR of 152 percent over 2020–2026. Investments in this space are mainly driven by the need for modernization of Land Mobile Radio (LMR). However, the projection has been reduced, following an updated and widely adopted scope focusing on specific public safety functions, rather than covering the broader definition of security in a smart city, which includes segments such as data security within public administration. Additionally, the public safety market is impacted by increasing demands on keeping infrastructure protected and stable, which has slowed the adoption of new technologies. Nevertheless, the projected 5G public safety opportunity for service providers is USD 73 billion in 2030 with a CAGR of 67 percent over 2020–2030.

Categories	Scope of study
Public surveillance	✓
Public safety (e.g. police)	✓
Security systems and solutions (for public sector)	✗
Data/cyber security generally	✗

Public transport's adjusted scope results in an attenuated operator 5G revenue potential of USD 32 billion by 2030

Media and entertainment: Streaming precedes e-sport and interactive events

The global media and entertainment industry for B2B2X has a significant operator revenue potential estimated at USD 73 billion in 2030 with a CAGR of 64 percent over 2020–2030. Growth is driven by enhanced entertainment solutions using VR and AR, especially in e-sports which demands responsiveness and high resolution. The e-sports market is growing rapidly, having doubled in size over the last two to three years. For conventional sports and other entertainment such as concerts, 5G can enable streaming of events uninterrupted to a wide audience and leverage virtual reality to enable new remote participation experiences. In this area, some 5G use case pilots are being implemented, e.g. Barcelona's stadium was announced to be the world's first stadium with a dedicated 5G network in February 2019.

Categories	Scope of study
Gaming	✓
Media	✓
Advertising	✓
Venues	✓
In-car entertainment	✗
Business-to-consumers	✗

Financial services: Cyber security and blockchain stable 5G opportunities

The service provider addressable 5G-enabled financial services market is estimated to maintain its previously expected momentum and reach USD 37 billion in 2030. One driver to monetize 5G is within the advancements of blockchain due to its use in fast and reliable transaction, clearing and settling processes. The financial sector accounts for about 60 percent of total blockchain market value, with banks collaborating with software companies to develop the technology for reliable financial services, such as investing in blockchain-powered exchanges between businesses and other stakeholders. However, the 5G potential is mainly within cyber security, which reduces the speed of digitalization within financial services, as reliability and trust are essential for all transactions. It is becoming a business priority and increasingly vital to act upon. This constitutes a key driver for 5G-enabled use cases, where security is of utmost importance. For instance, as latency and quick response are critical aspects of fraud detection, there have been developments such as an AI-powered fraud detection service with response times under two seconds. At the same time, the growing concern of cyber security is forcing the industry to constantly rethink its technological investments.

Categories	Scope of study
Banking	✓
Insurance	✓
Securities	✓
Real estate	✗

Public transport: Mass transit focus resets the 5G potential

Urbanization continues, contributing to congestion and other environmental challenges. The development of public transport is driven by an increased climate focus. One significant growth area is related to interactive passenger information, such as trip planners and smart screens, while another area of use cases includes smart ticketing systems. The current scope covered in the analysis is limited to public transport including mass transit, excluding private mass transit and the broader area of transportation solutions within a smart city. This used to include transportation of goods, directly or partly enabled by investments made in smart city mobility initiatives. The adjusted scope results in an attenuated operator 5G revenue potential of USD 32 billion by 2030.

Categories	Scope of study
Public mass transit	✓
Private mass transit	✗
Transport of goods	✗
Airports	✗
Ports and marine	✗

Retail: Tracking and analytics followed by mixed reality

In retail, key value drivers for 5G include various mixed reality applications and enhanced delivery services using drones. Neither are expected to reach mass adoption in the early years of 5G but will drive revenue growth over the longer perspective to 2030. However, only a few large retail chains may have the means to implement such use cases on a large scale, thus limiting the market potential. A wider driver for digitalization is customer and asset tracking and analytics. Retail Financial Integration, personalized marketing, social shopping and AI applications are all envisioned to improve shopping experience. Retailers have also started to actively experiment with experience as a powerful tool to win and retain customers, e.g. by hyper-personalization. The evolution of these use cases is now deemed to be less dependent on 5G technology, thus contributing to a lesser degree to the 2030 revenue potential of USD 28 billion.

Categories	Scope of study
eCommerce	✓
Physical stores	✗
Hospitality	✗
Restaurants	✗
Travel agencies	✗

Agriculture: Holistic approach confirms growth

The main driver for digitalization growth in the agriculture industry is the need for environment-friendly solutions aimed at resource optimization. A key use case is real-time data analytics and forecasting to optimize operational resources. Automation and remote control of farms are also use cases with great potential to meet challenges related to increasing need for cost-efficient production. To fully leverage the value of remote control, the large throughput and low latency enabled by 5G are needed. Digitalization investments are projected later than previously expected. A main barrier is resistance to disruptive technology on the farmers' equipment market due to fear of cannibalization of the few existing products. Low margins in agriculture will also continue to impact the pace and scale of long-term technology investments. The combined outlook of 5G-enabled services catered for by service providers sum up to a global addressable market of USD 11 billion in 2030.

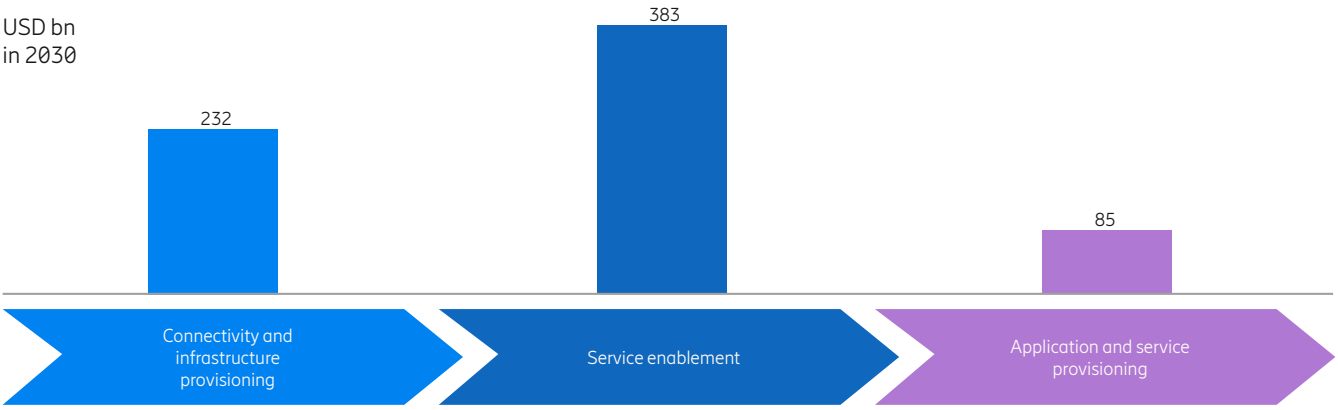
Categories	Scope of study
Farming and livestock	✓
Forestry	✗
Fishing and hunting	✗

Navigating the addressable market – where in the value chain to play

Balancing strengths, potential and competition, there is significant opportunity for service providers to expand into the service enablement layer.

In this study, the addressable market for service providers has been broken down into three key value chain steps: connectivity and infrastructure provisioning; service enablement; and application and service provisioning. Figure 6 shows the potential annual revenues by 2030, and the share addressable by service providers.

Figure 6: Significant potential for operators to expand into the service enablement layer



Source: Ericsson and Arthur D. Little

Roles in the value chain

Service providers will address the opportunities that 5G provides across industries in different ways, or roles. They may do this differently per industry or opportunity and the role descriptions indicate where in the value chain opportunities reside. Below we describe the key traits of each role and the additional opportunity they address.

The Network Developer role focuses on implementing and operating network infrastructure, including access, core and transport, and applies IT enablers to support consumers and businesses with tailored connectivity solutions that maximize the power of digitalization. Service providers will likely see this as critical to success, as it is very close to their current core business. Here we find things like providing the network infrastructure, network operations and maintenance, as well as provisioning of connectivity services (e.g. providing SIM cards). The addressable market of the network developer role, addressing connectivity and infrastructure provisioning, can reach up to USD 232 billion globally.

The Service Enabler role shows the biggest growth opportunity for service providers and includes providing digital platforms on which businesses can configure and integrate value-enhancing digital capabilities into their processes. Included in the assessment of this role are service platforms, system integration and content management. Sitting between connectivity and applications, service enablement provides the means to free developers from needing low-level data structure information, for the more traditional OSS and BSS APIs and also for the emerging Massive IoT APIs. There is a real opportunity for service providers to use their OSS/BSS to extend their reach far beyond traditional offerings. It is likely that any service provider that addresses the enablement part for industries will also address the connectivity part. Therefore, the service enabler role also includes the opportunities provided by the network developer role, and the combined addressable market can reach up to USD 615 billion globally.

The Service Creator role encompasses the creation of new digital services and collaborates beyond telecoms to establish digital value systems, in addition to providing digital platforms and infrastructure services. It includes service provisioning, service delivery and end-user applications. Addressing this is likely a stretch for many service providers, but for certain use cases and industries it may still be an opportunity to address, even if the competition from other ICT players will be fiercer. The combined opportunity for all three value chain roles is expected to reach USD 700 billion annually by 2030.

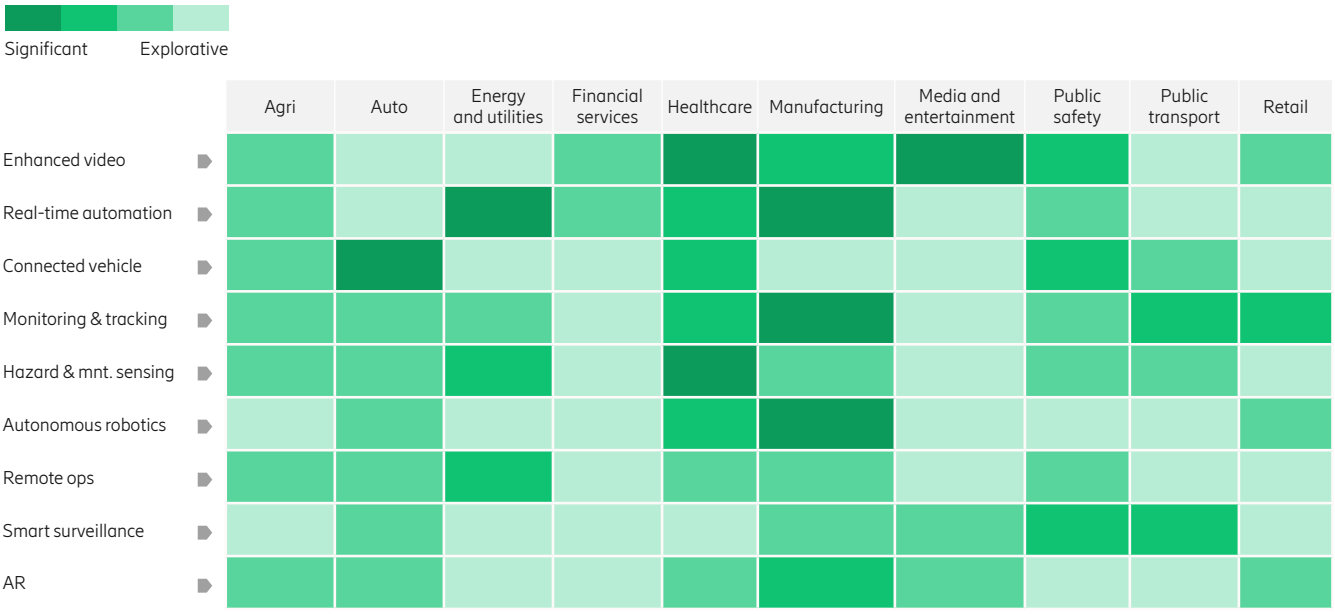
Leveraging the power of use case clusters

Addressing industries separately and looking at one use case at a time may not be the optimal way to create the synergies needed to be cost-competitive when entering a new market.

To pursue ways of achieving the synergies required, we have grouped use cases with similar attributes together, to examine the opportunities also by use case type – or cluster – rather than only by industry. Nine use case clusters cover around 90 percent of the market opportunity for service providers. In strategic terms, the clusters represent ways to capture economies of scope.

Figure 7 shows the mapping of the segments of addressable opportunity across industry segments on the horizontal axis, and application-based clusters on the vertical axis. With color indicating the size of the opportunity, these segments build up the total 5G-enabled revenue potential for service providers.

Figure 7: 5G-enabled industry digitalization addressable opportunity (telco global service creator role)



Source: Ericsson and Arthur D. Little

The matrix outlines the global relative addressable revenue potential for the service creator role. Enhanced video services emerge as the greatest opportunity, standing at up to 17 percent of the total value and equating to up to USD 118 billion by 2030. Significant value is also offered by real-time automation, at up to USD 107 billion, and connected vehicles at up to USD 89 billion.

However, the size of the revenue potential is just one key indicator of what to address to achieve growth in the 5G for business domain. As outlined in the previous sections, the mix of drivers and barriers vary across industries. The revenue potential and ways of mitigating risks must be assessed together, and the way forward is often to focus on a single or limited set of use case clusters. This way, there is a high proportion of reuse towards other vertical segments, and realistic synergies are more likely achieved.

Applying a lens of clusters instills the focus needed to move forward and capture a part of the revenue potential. Start your journey now, to capture the value of 5G beyond mobile broadband tomorrow.

Learn more
As 5G becomes increasingly integral to industrial businesses, there is a clear rise in service provider opportunities for new 5G-enabled revenues. To capture a share of the 5G business potential, service providers need to consider what role in the value chain to take, what industry or use case cluster to address, as well as getting the right go-to-market models and organizational adaptation in place. To learn more, please contact your Ericsson representative or visit ericsson.com/5g/5g-for-business

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

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