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The great potential of 5G ecosystems

Capturing the full potential of 5G by embracing industry convergence

More than two years after the 5G Action Plan of the EU was launched, European operators are more involved in 5G testing than ever before. This year, 114 trials have been reported in EU-28 countries¹, and by 2019, many European cities will start seeing wider 5G deployments. Even though large scale commercial deployments might only be realised after 2020, these developments are encouraging.

The high latency, speed and connections capacity of 5G bodes well for a number of application scenarios, quite unlike any other tech-driven disruption. As deployments increase and technological viability becomes evident, 5G will help accelerate collaboration between industries, allowing players to capture synergies from other industries. In particular, 5G brings significant opportunities for telecom companies, allowing them to bridge over to applications that were traditionally the domain of other industries.

Wider opportunities of 5G

Multiple applications ranging from enhanced mobile broadband, virtual reality, real-time translations, Internet of Things, intelligent manufacturing to critical services like connected medical devices and remote surgery will all become possible with 5G. Estimated benefits are huge - a study forecasting the socio-economic benefits of 5G estimated that in 2025, benefits from the introduction of 5G capabilities could reach 113.1 billion euros per year. Investments of approximately 56.6 billion euros are estimated, which will create 2.3 million jobs in Europe².

These benefits will come from four key sectors that will be the first users of 5G connectivity in Europe: automotive, health, transport and energy.

Each potential application could lead to a thriving ecosystem that will blur the traditional definitions of industries, and points towards a potential role for telecom companies.

Connected and automated mobility (CAM) It is clear that the potential of 5G is considerable. Take for example the connected and automated mobility (CAM) industry. Within the European 5G vertical strategy, Connected and Automated Driving (CAD) is considered a flagship use case for 5G deployment. Supported by the development and adoption of C-V2X (Cellular Vehicle-to-Everything)³, 5G will help in the creation of a new ecosystem around connected mobility. The CAM ecosystem would consist of multiple stakeholders, including, but not limited to, leading automotive and telecom companies in Europe and IC manufacturers.

Together these stakeholders could enable several service improvements, such as safety services, entertainment, home integration and autonomous driving; ultimately driving growth for all industries involved. The end result is expected to be promising. All new cars sold in the EU are already required to be connected in order to enable the emergency call service technology, eCall. This means that the share of sales of new cars connected to the Internet will be 100% from 2019. As a result, the connected service market in the EU will also grow rapidly – from 0.8 billion US dollars in 2017 to 16.7 billion US dollars by 2030⁴.

¹ European 5G observatory, European Commission

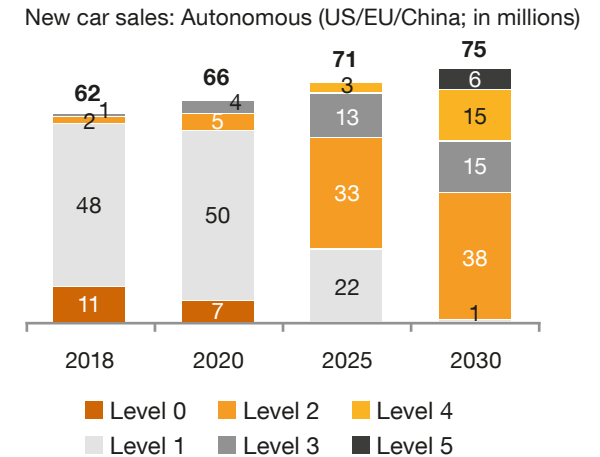
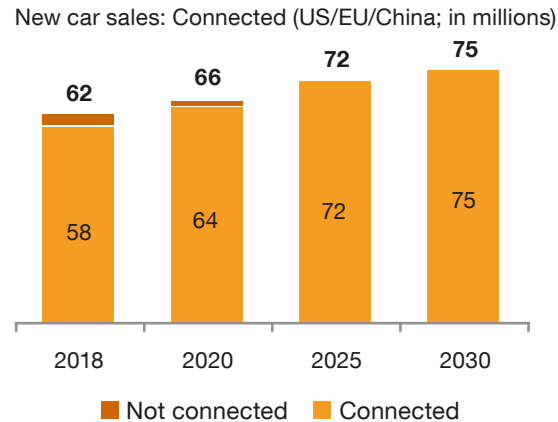
² European commission

³ C-V2X technology enables long-range, reliable communication between vehicles and infrastructure and other road users – literally everything. Enabled by the speed and latency of 5G networks, C-V2X is expected to be a critical step towards 5G for automotive applications.

⁴ PwC's Strategy& Digital Auto report 2018, easycy market model by PwC Autofacts



Figure 1 Global potential of the CAM ecosystem



- Legal pull for connected cars means 100% of new cars in the EU will be “connected” from 2019.

- In the EU, ~25% of new cars will have level 4/5 automation in 2030 (assuming tech will allow level 4/5 adoption from 2028 and regulation is in place)

Source: PwC’s strategy& Digital Auto report 2018, eassy market model by PwC autofacts

Autonomous cars are expected to see high growth as well. By 2030, approximately 25% of all new cars in the EU will have level 4/5 automation.

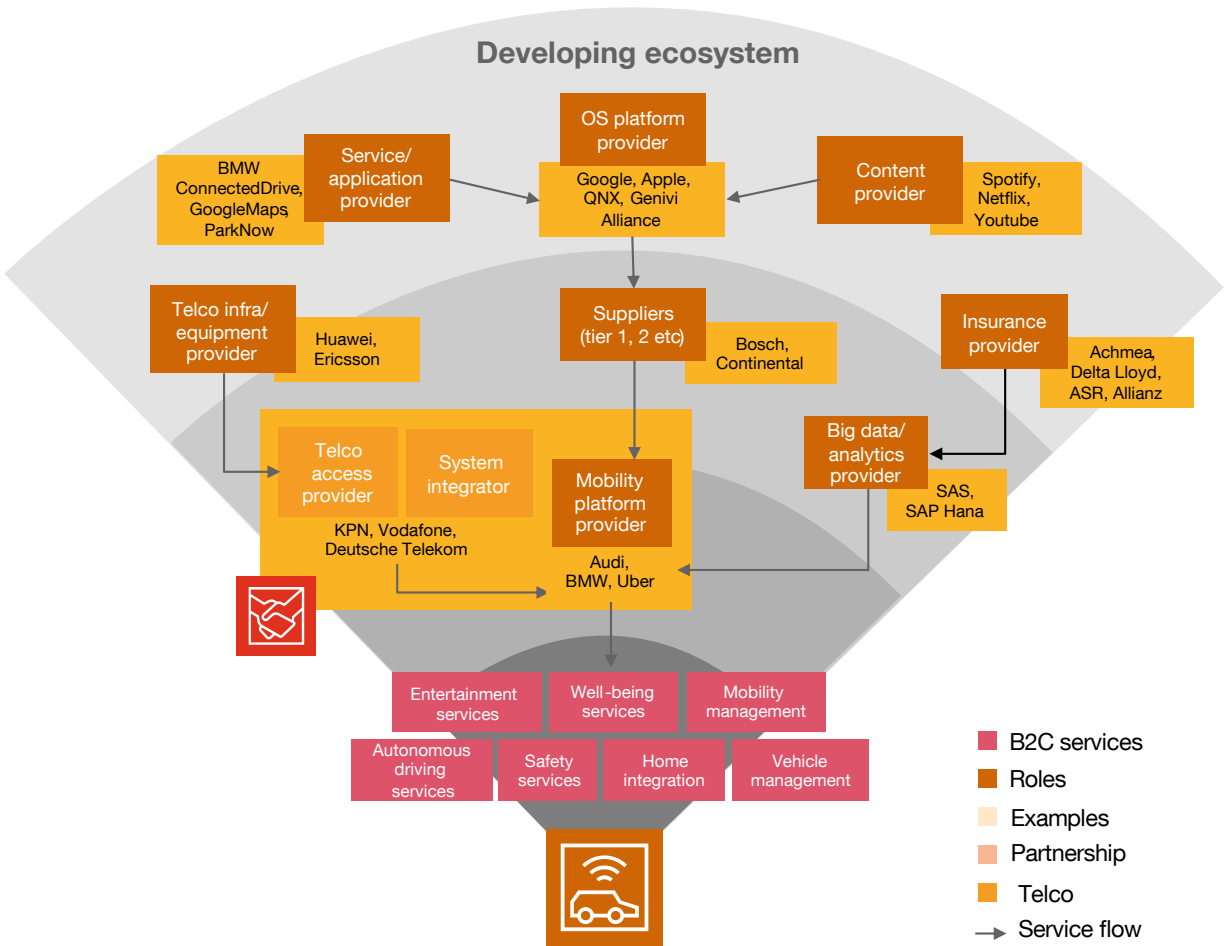
Convergence of industries

It is important to note that much of this growth will not be possible without the convergence of industries, i.e. bringing the competitive advantages of multiple industries together – in this case primarily automotive and telecom, but also technology, media and entertainment, and the insurance industries.

Each of these industries will need to deliver some main elements needed for the ecosystem to flourish. For the CAM industry in particular, 5G will be a critical factor that unlocks the growth in the ecosystem – signalling the vital role of telecom players in its development.

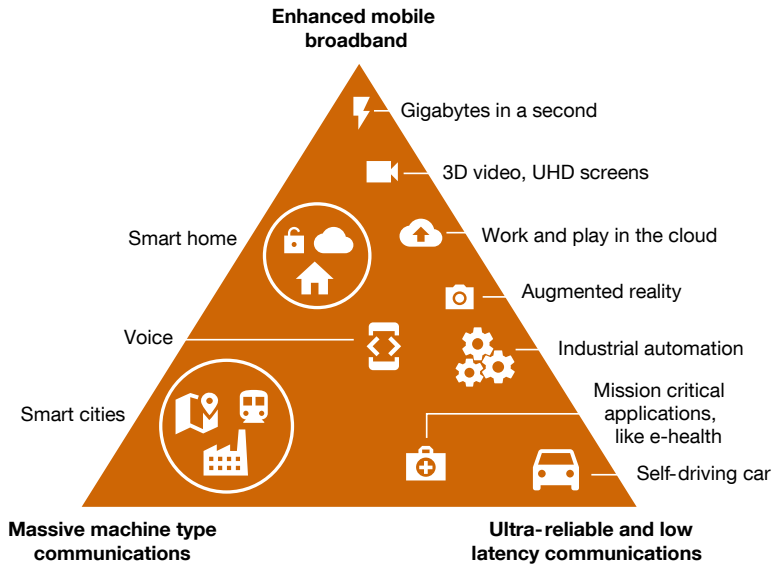
Yet, the 5G opportunity is not limited to connected cars. Other ecosystems will follow, like e-health, smart cities, augmented reality, and industrial automation – each bringing comparable opportunities for companies. Yet, none will be without challenges.

Figure 2 The connected car ecosystem

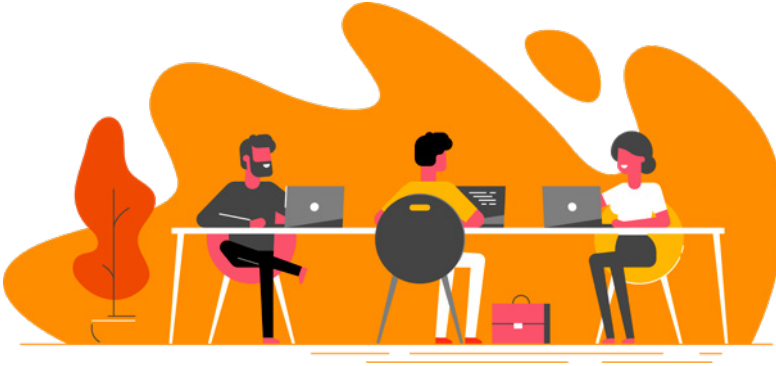


The connected service market is expected to grow from USD 0.8 billion in 2017 to USD 16.7 billion by 2030.

Figure 3 Usage scenarios and potential new ecosystems



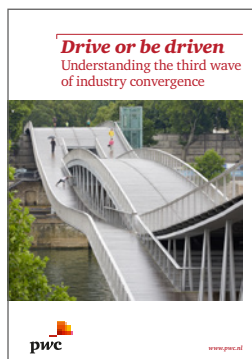
Source: International Telecommunications Union (ITU)



Potential (and downside) for the telecom industry

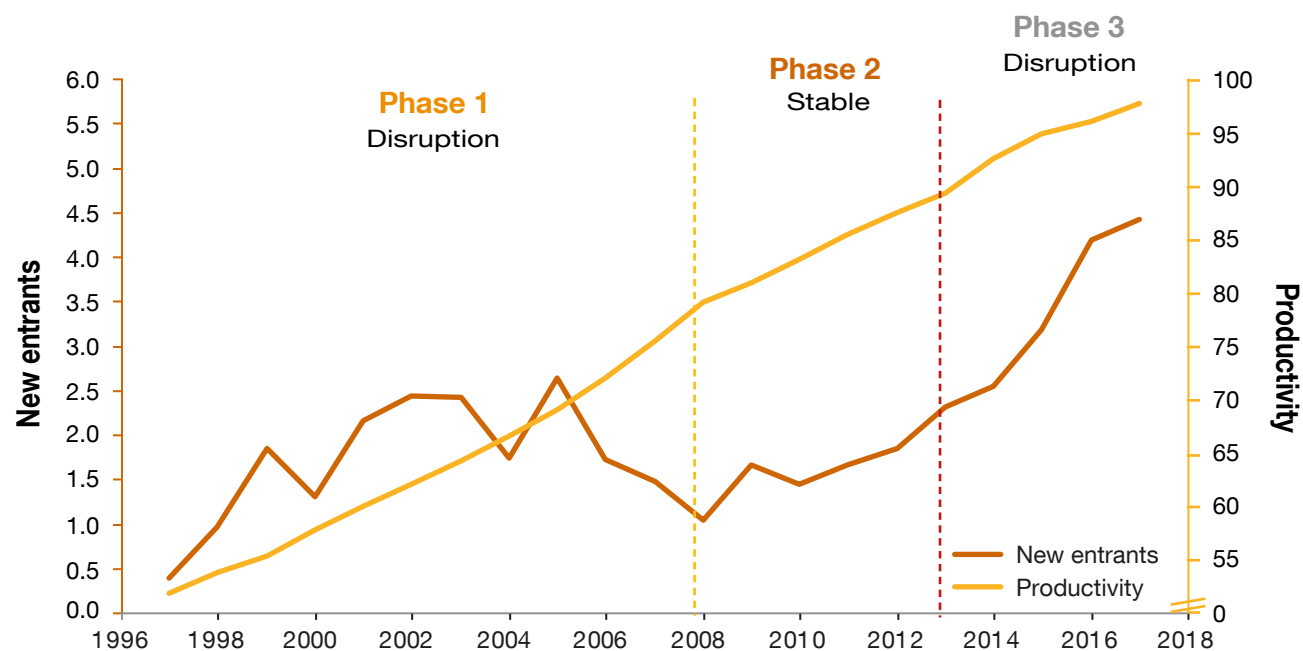
Even though telcos are vital in the 5G ecosystem, value extraction from 5G can be particularly challenging for them. 5G acts as an enabler for the most part, while the actual disruptions happen in a multitude of other industries. This mandates most, if not all, offerings to be partnership-driven, making it more challenging for telecom companies to monetise effectively. If these partnerships and resultant ecosystems do not work together optimally, not only the growth of telecom will be curtailed, but there will also be further reaching consequences for the industry as a whole.

A recent [study](#) by PwC⁵ analyses several industries to assess the impact of convergence on the economic dynamics of industries. The study finds that the last time the TMT industry was faced with blending of value propositions between multiple industries (during the first



wave of industry convergence in the early 2000s), it also saw a sharp and persistent rise in productivity, which was largely immune to slowdowns in economic conditions. This helped the TMT industry maintain its productivity levels through the economic slowdown of 2008 and beyond. The study hypothesises that industries need new entrants, or companies from unrelated industries to help push

Figure 4 New entrant driven disruption in the TMT industry⁶



its traditional boundaries and extract maximum possible value from a phase of disruption.

These findings are particularly relevant in the context of 5G-driven disruption. If the same level of industry convergence is not achieved during this phase, telecom companies might be looking at productivity losses, in addition to the more obvious revenue losses.

On the flipside, embracing the ecosystem approach could insulate the performance of industries in times of inevitable economic slowdowns.

⁵ PwC 2018, Drive or be driven: Understanding the third wave of industry convergence

⁶ New entrant driven disruption refers to the extent to which “new entrants” or companies from unrelated industries merged with the TMT industry (through M&A, minority investments etc.)

Here are some key considerations for telecom players as we move towards the future of 5G ecosystems:

- **Increase focus on value added, not just connectivity**

As is clear from the challenges of monetising data use, 5G connectivity alone will not be enough to sustain margins. The value of 5G lies in its ecosystems, and it will be vital for operators to develop value added services for, and with, the vertical industries in the ecosystems. With several technical trials already underway, operators must now invest in developing use cases along with its supporting infrastructure to take the services to market.

- **Develop and strengthen partnerships with vertical industry players**

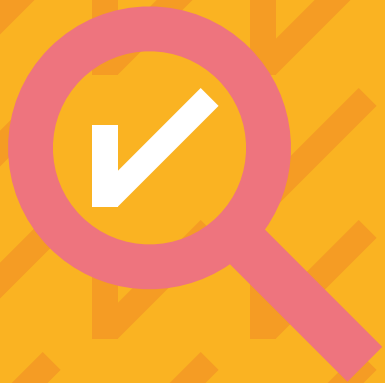
In order to extract maximum value from the 5G disruptive wave, telecom incumbents need to be the drivers of cross-industry collaborations, and not just passive participants. They need to invest consistently in developing partnerships with industry players, such as leading healthcare players in Europe, to be able to successfully monetise 5G applications in the e-health ecosystem.

At the very least, operators need to work with software companies, equipment makers, and handset makers to kickstart commercial scale deployments. While this will remain a prerequisite for success, it will also isolate the industry leaders from the rest of the pack.

- **Focus on a viable infrastructure model**

Considering the diversity and unpredictability in the uptake of 5G use cases, operators will need to invest heavily in multiple areas including spectrum, transmission and radio access network infrastructure. While evolving in stages with LTE works as a gradual investment strategy, at some point 5G investments will need to pick up pace and continue driving demand. This will likely be before commercial viability is fully realised, so players need to come up with investment models and timing that are balanced and lend themselves to preserving operator margins.





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