COMARCH

The Future is Here:

Business 4.0, IoT-driven Healthcare, 5G Services & Other

Predictions for the Telecom Industry in 2021

Acceleration in 5G Infrastructure Rollouts

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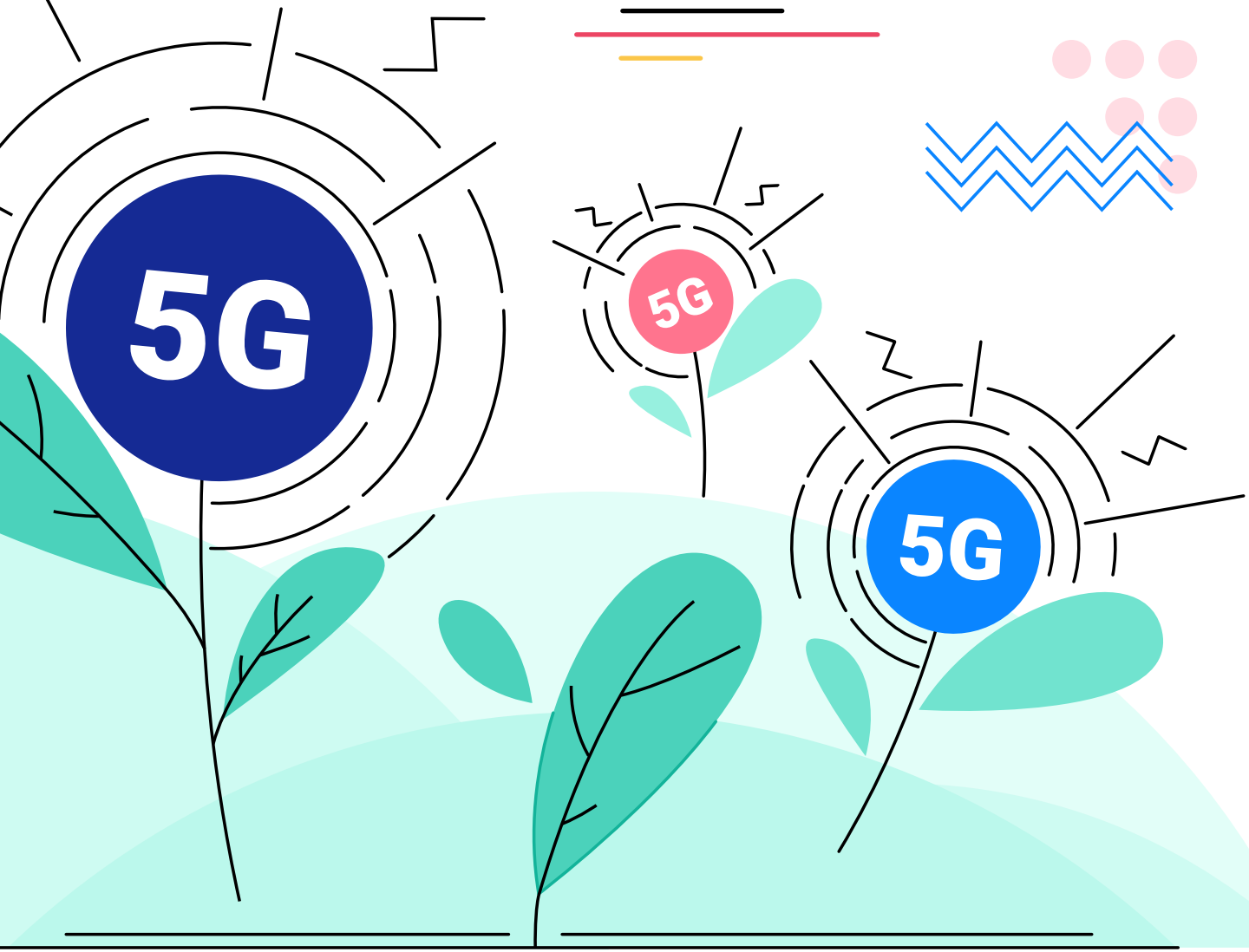

On one hand, restrictions imposed as a result of the COVID-19 pandemic have slowed down the progress of 5G. On the other hand, the crisis has demonstrated the real importance of digitization in our economy and daily lives. **If 5G infrastructure had already been in place, the impact of the pandemic on the market could have been much less painful**.

What we can expect in 2021, is more rapid 5G investment – and not only due to the desperate need for much further digitization of the economy. As governments face post-COVID recession, they will turn to investment, and one of the best solutions in such a crisis is to devote public funds to infrastructure. This has already proven to be successful in the past.

Investment in digitization and 5G infrastructure are among the main components of the European Union COVID-19 recovery plan. The same approach seems to be taken in non-EU countries. Governments may decide not only to spend money, but also to help in speeding up the process of creating regulations and executing actions.

A Time for AI to Blossom

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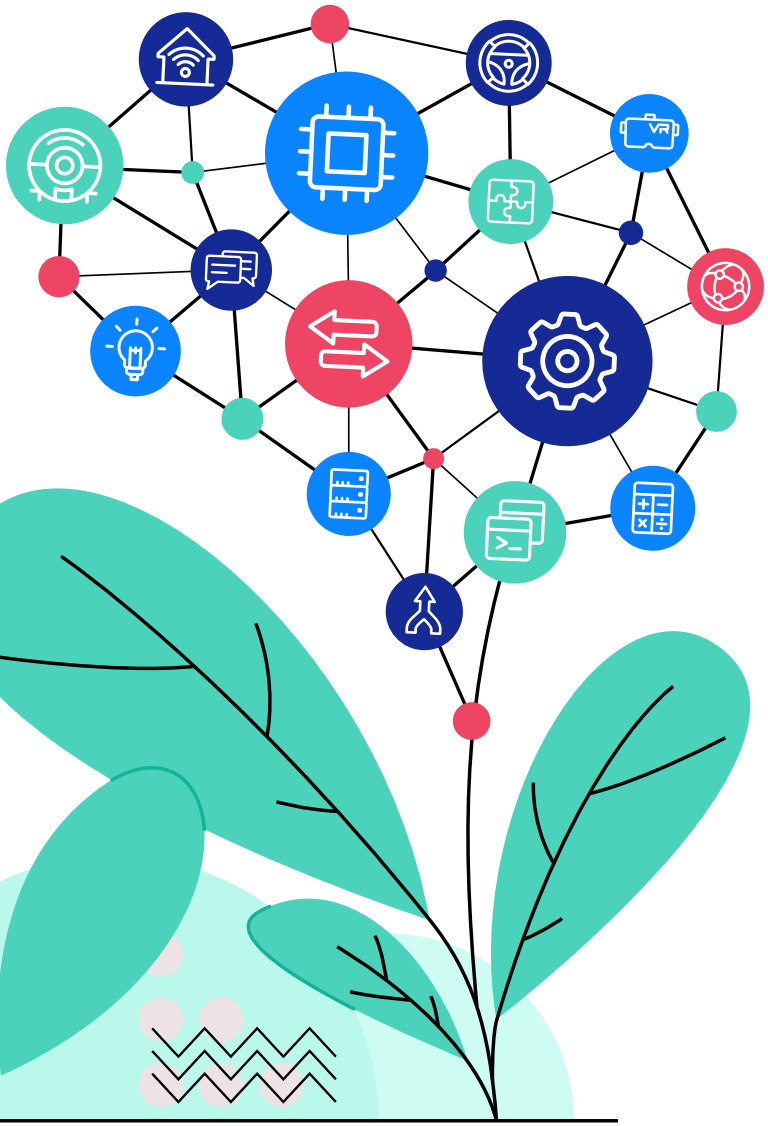

Many believe that artificial intelligence and machine learning will finally start reaching their potential in the telco industry within the next year. With 5G networks going strong, AI will be the real enabler of the technological revolution promised by 5G services. Operators are now fully aware of the real value of this technology, and understand that AI/ML are crucial in order to thrive, or even survive, in the 5G era.

Artificial intelligence and machine learning have the potential to revolutionize all aspects of the telecommunications industry in the coming years. Operators are aware of these exciting possibilities, but they need a little help in taking advantage of them. Many telecoms have already implemented, or are on their journey towards implementing, some sort of AI-driven solutions in their networks. The extent to which CSPs believe the technology can be used only proves how important it will be for them in the coming decade. The flexibility of the technology allows operators to utilize AI/ML in many versatile ways, encompassing OSS and BSS, customer experience, fraud management and network maintenance (planning, monitoring and optimization).

In order to reap the rewards of the promises of 5G services, operators need to take advantage of the benefits of AI/ML, including:

- **Dynamic provisioning of services**
- **Multi-dimensional customer views**
- **Pattern creation and automatic recommendations, with the ability to provide auto-responses**
- **Intelligent fraud management that includes predictive and preventive maintenance**
- **Enhanced, streamlined customer experience with targeted product/service auto-suggestions**
- **Organizing and structuring key data out of the vast sea of available information**

…and 2021 is believed to be the year that pervasive AI will finally blossom.

Moving to the Edge

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Edge computing is yet another thing that communication/digital service providers must take into account if they want to implement 5G services and IoT technologies successfully.

The concept of moving cloud solutions closer to the place where customers are located was born due to the expected increase in data volume and the need to eliminate latency in data delivery, and it is expected to blossom in 2021. This means, to a large extent, the relocation of server rooms (IT hardware) to locations where so far only transmission equipment (telco) was located.

This relocation makes it necessary to accelerate and strengthen integration of device management tools from both domains (IT and telco) into one system. It is a market that has been operating in niches so far. But, in order for operators to benefit from the promise of 5G and fulfill customer wishes, they'll need to incorporate edge computing into the revolution. This is why it is crucial for communication service providers to start and intensify the processes as soon as possible, taking into consideration that IT and telco are two very specific sectors with very different tools that often rely on different standardizations, and that merging them will not be trivial.

Setting Standards as a Must

Another important part of getting ready for 5G services and AI/ML-driven automation is going into the process of system standardization and unification.

Although 5G automation enables the creation of many innovative services and products such as autonomous cars, smart homes and smart cities, for them to work "intelligently", systems need to be standards-based and unified. In addition, operators' software and data sources must be centralized, so that the communication between systems, infrastructures and equipment will be flawless. Only then will communication/digital service providers be able to provision truly automatic solutions that work, analyze and heal on their own.

These changes will also have a significant effect on the vendor market. Unified, standards-based solutions will allow telecoms to improve cost-effectiveness and easily build full-scale solutions using components from various suppliers.

Subscription Models Conquering the Telco Market

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Progressive digitization and the flood of subscription-based offers has reached the telecom market, forcing it to change methods of service provision. Following the example of VAS providers, telecoms all around the globe have already started to provide products and services based on subscription models.

In order to attract digital customers and fulfill their needs on an over-crowded market, operators must offer easy hop-on/hop-off services. These have many advantages over their traditional counterparts, including benefits such as:

- **Full control of spending – customers pay only for the services that they need**
- **Easy online purchasing – no need to visit a store**
- **Swift provisioning of new services – in almost real time**
- **Greater personalization – users choose which services/products they need**

The COVID-19 pandemic has led to an acceleration of pace in many services and products in telco and IT, and bringing subscriptions models to life is one of them. This is why 2021 is thought to be the year in which such an approach will conquer the market.

Digital Sales Boom

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The year 2020 and the pandemic outbreak changed the way we live, and taught us to carry out everyday tasks in a slightly different way than before. Suddenly, **everyone turned online** for shopping, ordering food, studying, working, spending time with close ones, etc. The industries that were ready for this kind of digital transformation coped quite well with the new situation. **Unfortunately, not all telecoms were fully prepared for 100% digital customer service**.

However, CSPs with some e-commerce and self-service tools in place, as well as those who had overslept a bit, understood how important this area is and the need for further investments. They also knew what savings and benefits it brings to customers and operators.

The year 2021 will therefore be a time of improved capabilities of digital sales channels, including Internet portals and, to a greater extent than before, applications. With their exemplary UX, the latter allow users to complete all tasks even faster. So, we can expect customer service to become fully automated, even robotic (including the use of chatbots or the support of AI/ML technologies). Automation and very careful design of all processes in contact with the customer will finally become an element of building a competitive advantage. So, if an operator is not ready for the digital revolution in 2021, its market share will start to decline rapidly in favor of those competitors who have already carried it out.

The Rise of Industry 4.0 and the Emergence of Business 4.0

2021 will also be a year in which the promises of Industry 4.0 will be fulfilled. Thanks to 5G networks and pervasive AI, we'll finally reach the fourth Industrial Revolution. Along with the long-awaited industrial changes, business ones will come, and in 2021 we will be talking much more about Business 4.0.

Business 4.0 will be a new business model that emerges from Industry 4.0. In this concept, where everything is connected, businesses will have to be more unified as well. It is not only about utilizing new technologies, such as the IoT, 5G, AI, ML, etc. – it's about bringing a new business model to life. This business model will be all about cooperation and togetherness.

Together with edge computing and M2M/IoT connectivity, Business 4.0 is going to revolutionize the way communication/digital service providers work with each other and their partners. With highly distributed infrastructure, multiple devices and networks, businesses will have to cooperate more closely than ever – not to mention more securely.

So, what will be very important in 2021 and beyond, and what communication/digital service providers should consider, is how to place themselves and thrive in a very distributed, divided and complicated environment, an environment in which everything is and must remain inter-connected.

IoT Becoming Established in the Medical Sector

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COVID-19, like nothing else before, has proven that there's a need for further developments in the IoT healthcare space. During the pandemic, it has become obvious that what the healthcare sector needs are solutions that can provide patients with good online and remote care. Telemedicine and telediagnostics have been gaining importance for months, implemented by ever more public and private organizations all around the world. But that's not everything.

The pandemic has also shown that there's a big problem with resource management within hospitals and other medical facilities, especially during critical situations such as the COVID-19 outbreak. Intelligent, IoT-driven real-time monitoring can help the medical sector with managing, for example, vaccine supplies, information about vacant beds, and nearest testing points and their occupancy.

These IoT solutions can, and probably will, help fight the current pandemic, but also provide a good basis for any future crisis.

eSIM Going Mainstream

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Another technology which will predictably gain momentum is eSIM. While the standard has been well-known for a few years now, it still hasn't been adopted by many national operators.

Why? Well, the onboarding process isn't often as smooth as in the case of traditional SIMs, and many telcos haven't yet set up the additional processes that are required to properly handle post-sales customer cases such as swapping devices or porting with eSIM. But this is about to change as, finally, the implementation process has caught up with the technology.

What's more, we expect 2021 to be the year of broader popularization of eSIM-only services, which will be provided by various niche players. So far, only few Tier-1 global telecoms have taken this opportunity, as they probably prefer maintain the status quo and continue with the long-standing roaming business models. But simplified onboarding and the removal of technical barriers will make customers keen to switch to niche operators and save money, not least because such operators will be able to offer far lower tariffs.

Security's the Key

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Security and cyber-security in particular have been hot topics in context of 5G networks. **What COVID-19 has shown, is that even very a conservative approach, which assumed that if you don't open your system, you'll be safe, no longer applies.**

The pandemic has forced many businesses to go remote, and those who counted on security provided by physical walls faced a real challenge. Even system administrators were forced to start working remotely.

Companies that had already invested heavily in security before COVID-19, those who assumed that working from the office should be equally well protected as remote workingly, turned out to be best prepared for the unexpected change of balance in favor of remote working. This teaches us to respect network architecture. It proves that the strategy, which assumed sacrificing openness of architecture as a price worth paying, is wrong. **Closed architecture doesn't guarantee security, as there is no real security on the "inside". Openness of the architecture doesn't have to be a compromise between security and flexibility as potential threads can come from any direction**.

Once secure within themselves, **CSPs can offer their customers security as a service. This will be especially important in light of the growing awareness that security must be in place for any business - even a small one**.

Open RAN to Get Bigger when Hyperscalers Join the Game

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Despite initial skepticism, open RAN is getting traction. **Major, traditional RAN vendors, who may have perceived the technology as targeted at breaking their monopoly, have joined open RAN-related initiatives**. It may be a case of "if you can beat them, join them", but it definitely proves that open RAN can't be ignored.

We can also notice another big changer in favor of open RAN, and this is the involvement of big public cloud providers/hyperscalers. **Many CSPs have realized that they can't compete with cloud providers in building edge computing solutions**, which are perceived as crucial if 5G is to play its transformation role. So, in 2020, there were announcements of alliances between CSPs and hyperscalers. As the latter get involved, we may expect that their ambitions will be much higher than just playing the role of blade operators.

Open RAN seems very attractive, not only as a way to break the monopoly of traditional RAN providers, but also as a technology enabling much easier ingestion of AI/ML algorithms into RAN. The ability to translate a network into smart fabric is also attractive for the operators, even those who are more conservative and convinced that open RAN is good just for limited UC.

And once the snowball starts rolling, it can get only bigger.

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Since 1993, Comarch's specialist telecommunications business unit has worked with some of the biggest telecoms companies in the world to transform their business operations. Our industry-recognized telco OSS and BSS products help telecoms companies streamline their business processes and simplify their systems to increase business efficiency and revenue, as well as to improve the customer experience and help telcos bring innovative services to market. Comarch's customers in telecommunications include Telefónica, Deutsche Telekom, Vodafone, KPN and Orange.

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