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Now Affordable: Managing the Tasks You've Dreamed of in Telco/IT Networks

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How many times have you come to the conclusion that deep analysis of the quality of service and potential problems in telecommunications/IT services could help make service delivery more efficient, flexible, better tailored to customer requirements, and less expensive for the customer and the communication services provider (CSP)? How often have you noted that the effects of failures and their impact on service delivery levels could have been avoided in a simple but, unfortunately, labor-intensive way? Why is the execution of a customer's order for a new service not carried out on the spot, and why do we not introduce services for a specific date and time, and a specific period?

The labor-intensive nature of the activities and the need for appropriately qualified employees from multiple technology domains who could implement the desired changes can cause such projects to be abandoned.

For vendor-agnostic umbrella systems, three technological phenomena needed to be in place: 1) maturity of data and command exchange standards and new control functions in telecom/IT systems; 2) the spread of function virtualization in telecommunications/IT systems to the level of operational relocation at the network element level; and 3) development of automation using artificial intelligence in the area of detection, recommendation and execution from the typical automation cycle.

CSPs naturally seek to take advantage of 5G technologies, which are expected to have a far more dynamic configuration, making diverse forms of services available, including fully automated ones within the IoT domain. CSPs are transforming from telcos to techcos as aggregators of services based on data access, with more and more non-technical factors determining the choices of

potential customers. Those providers who can deliver integrated services rather than just connectivity are winning.

A factor strongly coming to the fore is how the service provider impacts the planet with its activities. This is mainly about the financial aspect and electricity savings, but CSPs are increasingly advertising offers and influencing consumer choices by demonstrating how the source of the energy used can be planet friendly.

OSS umbrella systems have a considerable advantage over those provided by equipment vendors, as they are far more flexible, built with good knowledge of CSP needs in mind, and focused on achieving success. To achieve that success, however, they must draw on standards, interfaces, and APIs that allow them to leverage solutions for multiple vendors and more than one CSP. That's why the widespread adoption of 5G technology caused the emergence of new initiatives.

Network function virtualization is less of a concern for RAN subsystem components. Ultimately, an antenna with a transmitter must be somewhere where it will be "visible" to customer devices. Nonetheless, elements of other subsystems must also be located on sites in the immediate vicinity of 4G and 5G networks. High data rates and low latency for various services drive this necessity. It is especially required where transmission also takes place in a confined area, so it is a struggle to shorten transmission paths while freeing up the main buses to the system's core elements.

Energy consumption can be optimized in this way too, but the main reason for dynamic changes in network configuration is related to the requirements arising from peak load changing over time. The umbrella system's reconfiguration activities enable the network to dispose of existing resources flexibly without the need to keep them on standby for occasional use. Significant savings in capital expenditure (CAPEX) can be realized, and through the use of automated systems, optimization is achievable without an increase in operational expenditure (OPEX).

If there is a particularly favorable situation, it can also take advantage of the different daily, weekly, or other resource requirements to provide services to various customers. At the same time, the process does not require hiring additional people to analyze, plan, and execute such reconfigurations that are carried out continuously. The same analytical processes also make it possible to designate network functions that need to be expanded due to increasing utilization and new instances launched, reconstituting the reserve of operational resourcesThe emergence of artificial intelligence and machine learning as a form of work automation has radically changed the situation in the BSS and OSS space in the telecom and IT verticals. While the maturity of data and the spread of function virtualization are more like Enablers, the development of artificial intelligence-based automation is a Game Changer. Replacing human labor with the work of automated systems is a major change. Still, in the case of this solution, we are adding self-improvement of the way we work and keeping the knowledge of those ways permanently in the company's resources rather than the heads of experts who may choose a different career path.

With such benefits, it is easier to harmonize work in different areas, where previously we had to deal with more than one required expert. Work is carried out continuously, at an identical quality level, devoid of such factors as fatigue. At the same time, they can be performed much faster, more precisely, and more safely. What has so far been missing from systems such as SON is the ability to add an automatic variable factor in the form of best practices and priorities that determine how the system works at different times. In a highly competitive market such as telecom/IT services, this aspect is of significant importance. It is crucial to have varying priorities in continuous advertising and promotional campaigns, and to modify them once the campaign

comes to an end. This approach allows flexibility to cater to the changing needs of the customers over time, which may only be temporary. The new technologies, particularly 5G and beyond, put a far-reaching self-reliance on the use of telecommunications services by companies using such services in their business as a critical component of their service in another vertical. For example, a company producing structural components, such as in the automotive industry, communicates with individual robots through a private telecommunications network or slice. In such applications, there is a need to manage the telecommunications network without expertise, hire an expert, and rely on intuitive process control supervised by AI. With the relevant expertise inside the policies written by experts, only elements specific to a particular vertical are added, and the system takes action based on new priorities and best practices.

This is not the main topic of the article, but the rapid development of generative AI is worth addressing here. Its importance in processes is somewhat less, but it too can bring many conveniences and time-saving benefits in customer-artificial Intelligence cooperation. It can realize the dream of an intuitive interface that recognizes even complex commands, such as "generate me a typical slice," and translate it into a process. It can control documentation work, create documentation during corrective actions for postmortem reports, and translate specific system commands into content that non-experts can understand.

There are many applications of the technology discussed here, which can be used to create new services by utilizing existing resources. This includes complex services such as generating a slice with specific parameters or building services with set start and shutdown times, specified parameters, and within a defined area. This technology provides the benefit of responding to service requests immediately, at any time of the day. It also enables you to continuously optimize the usage of resources for executing services and make changes to service configurations without the customer's knowledge, which saves resources for other purposes. Switching to different resources or specific services impacted by equipment breakdowns is significantly faster and more affordable, especially when it involves sending a technician to a distant location. This approach minimizes the need for repairs, allows proactive operational reserve maintenance, and facilitates expansion efforts. Using such solutions brings the principles of vertical cooperation to a higher level, as t is possible to hand over the management of private networks or slices to their owners and CSP-controlled artificial intelligence. In addition, it is possible to introduce a labor-intensive process of optimizing energy consumption and adapting it to traffic forecasts in a given area during periods of lower demand for services, and even reducing energy consumption from fossil fuels in favor of renewable ones, which, image-wise, but also due to regulations, is becoming increasingly important. The days are coming when swarms of AI instances will be working on things we've always wanted to do but have always found too time-consuming, and tiring.