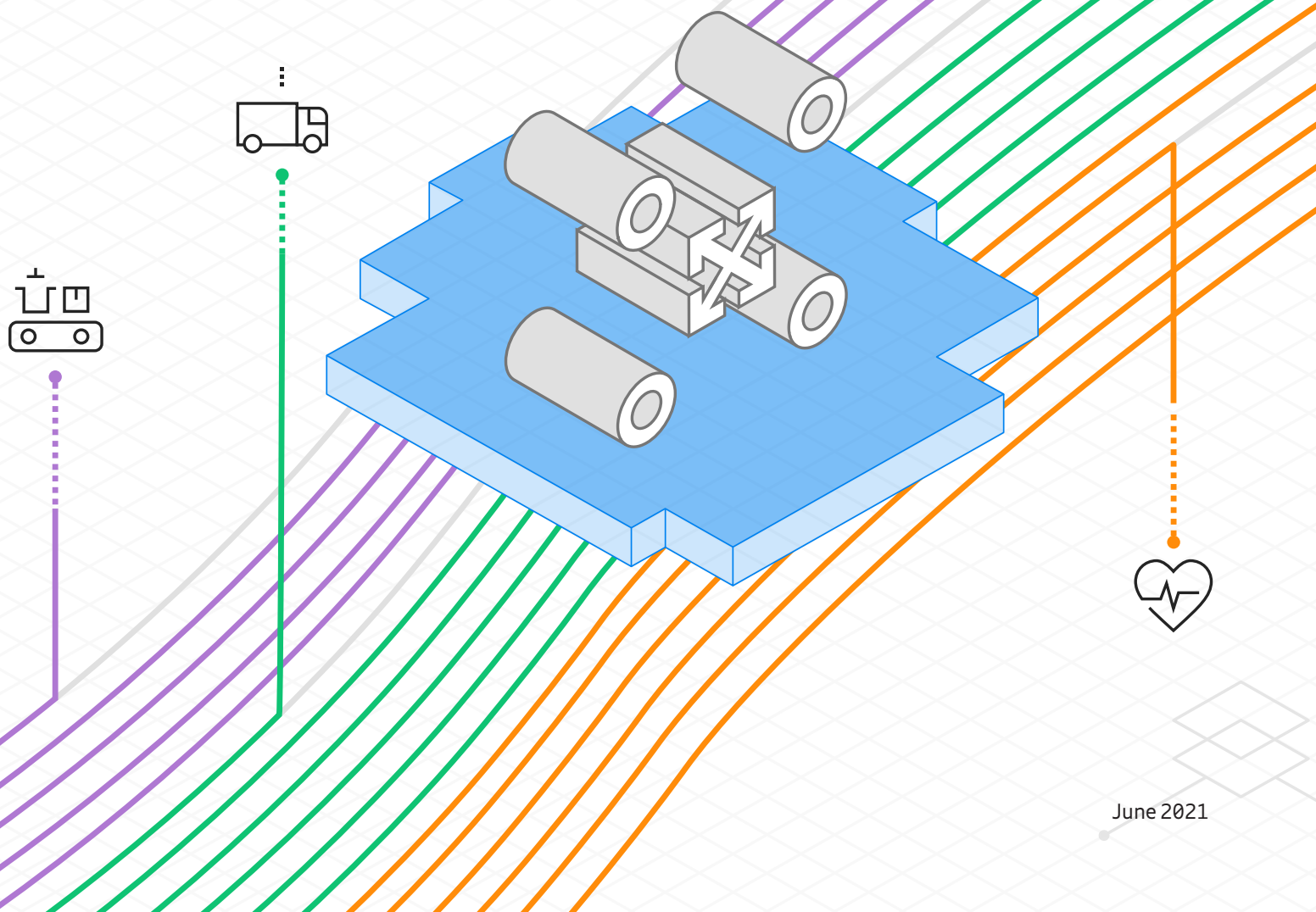




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# Enterprise growth with ordering and orchestration management

Accelerating business  
in a network slicing era



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# Executive summary

Opportunities for enterprise market growth are highly appealing. Addressing the capability gaps that exist within the business and operational support systems and viewing network slicing as a fundamental technical enabler are both crucial steps.

Communications service providers can realize major revenue opportunities by becoming service enablers or service creators to an enterprise. Some of the more significant considerations for service providers are time to market (TTM) and costs attributed to incorporating services into an enterprise. New capabilities must be built to evolve into new roles in their ecosystem and bring new service innovation value. Undoubtedly, more automation by means of service fulfillment and the combination of capabilities from multiple domains when orchestrating services is essential.

Ericsson Ordering and Orchestration Manager offers tightly interlinked service ordering and orchestration components in the network and takes responsibility for the ordered service to be fulfilled quickly and efficiently by leveraging automation. It will grant service providers the ability to deliver competitive B2B/B2B2X offerings through service composition.

Additionally, the offering will require service flexibility and scale as enterprise services grow. Thanks to network slicing offering specific network characteristics, a fit-for-purpose virtual network combining network resources and the functionality to combine network resources, an

enterprise's key requirements and needs can be easily met.

We believe that in order to accelerate the journey to capture the promises of an enterprise, the combination of network slicing and an effective ordering and orchestration solution is needed. With Ericsson Ordering and Orchestration Manager and network slicing, service providers can claim the right position in the value chain by meeting the necessary demands, provide competitive enterprise offerings via a seamless ordering process and maintain consistent and fast service delivery to the benefit of any given enterprise.



Ericsson is enabling service providers to meet their key requirements with increasing ease

# Monetization beyond connectivity

With service providers accelerating their journey into the enterprise space, they can choose their role in this ecosystem and step into the enterprise game. Crucially, opportunities may disappear as quickly as they appear.

Due to huge opportunities for service providers, there has been a clear shift of focus in the market for introducing and scaling enterprise services. The excitement around 5G is drawing a significant number of players into the value chain, creating an ecosystem of influencers, vendors, partners, customers and competitors.

To truly tap into the monetization opportunities of 5G, consider looking beyond the traditional connectivity service. Service providers have a major presence today when it comes to network coverage, established customer relationships and deep knowledge of connectivity requirements. However, the opportunity to leverage the increasing need for optimizing connectivity while drawing in new revenues is likely a lower-level opportunity in the enterprise value chain.

The great opportunity for service providers is to become service enablers or service creators. Studies have revealed that leading service providers are already taking steps to move beyond connectivity.<sup>1</sup>

There is no single use case with regards to enterprise services that all service providers can jump on and make the big revenues from; service innovation and experimentation is required. Service providers hold many of the important capabilities and resources enabling many options for enterprise services, but not all. Being flexible enough to take advantage of opportunities promptly is most important of all.

A good starting point for service providers driving new value in the enterprise market is to identify and address some of the capability gaps that exist for them. A gap study provided by Ericsson outlines high-level capabilities that need to reach maturity for service providers to capture better enterprise market opportunities.<sup>2</sup> It concludes that gaps must be fulfilled in their business and operational capabilities. Furthermore, the study highlights the enterprise service requirements and emphasizes the ability to extend product offering capabilities by supporting different business and price models for new services.

To serve the enterprises, there are also strict service-level agreements (SLAs), translating into operational requirements that need to be fulfilled. For example, enterprises have specific needs for high-performance networks to support particular use cases, such as critical machine control. These use cases represent opportunities to accrue premium revenue wherein the operator can maintain the committed SLAs. In turn, these SLAs need to be backed up with the capabilities to consistently fulfill operational requirements. Fulfilling many of these requirements will only happen by having superior solutions that leverage automation and provide efficient orchestration and order fulfillment.

Addressing the enterprises' needs also raises the requirement for additional technical capabilities. New network capabilities, such as network slicing, present possibilities for business model innovation and new opportunities for service providers across a wide range of use cases.<sup>3</sup> End-to-end (E2E) network slicing enables new enterprise revenue opportunities for service providers by making it possible to create fit-for-purpose virtual networks with varying degrees of independence. It provides service flexibility and the ability to deliver services faster with high-level security, isolation and applicable characteristics to meet the contracted SLAs.

With the different capabilities in mind, it is also worth highlighting that many of the required capabilities will fall outside of what can be offered by the operational and business support systems and network slicing. Enterprises will therefore be expected to introduce and encourage the development of new internal skills and organizational practices in order to properly adapt to these changes as they progress.

<sup>1</sup> Ericsson, "Capturing business opportunities beyond mobile broadband" (2020)

<sup>2</sup> Ericsson, (2020)

<sup>3</sup> Ericsson, "The essential building blocks of E2E network slicing" (2021)

# Considerations and needs to accelerate profitable enterprise business

The enterprise market is an attractive opportunity which is also distinguished by greater complexity that brings common considerations into focus. Additionally, service providers need ways to gain momentum by meeting enterprise requirements.

## Considerations

- TTM: It currently takes too long to bring new services to market. The enterprise segment's expectations of fast delivery and activation are higher than ever and steadily increasing.
- Competition: Specialist and niche service providers are faster, cheaper and web-based, creating competition and struggle for other players to keep up (mainly retail). Service providers need to move into the market quickly if they want to compete.
- Slow time to quote: Service providers risk losing out on lucrative opportunities as a result of being slow; enterprises are dependent on services that enable their business.
- Complexity and high costs: Introducing and scaling enterprise services necessitates greater network complexity. Additionally, enterprise services often have far more commercial and network requirements and the service can bring new technologies and architectures as part of the requirements, making it far more challenging to fulfill SLAs. Without the right capabilities to manage and simplify this complexity, costs will be prohibitive.

## Needs

- For orders to happen within minutes and to reduce manual interventions, service providers need more automation via service fulfillment and orchestration. This will ultimately enable them to be more responsive to the market with regards to service demands and requirements.
- Service providers need to better control costs. New service innovation and cost to market is currently high, resulting in margins that are uncomfortably tight.
- There is a need for an order management (OM) function that is less error prone. Orchestration and visibility of order flows should drive this improvement.
- Service providers' organizational structure, network and systems are arranged into domains, both to provide clear responsibilities and for historical reasons. However, there is a need to seamlessly combine and orchestrate capabilities from multiple domains to deliver the overall enterprise service. This goes beyond bundling into an environment where an orchestrator needs to understand the service topology and interdependencies between multiple parts of the value chain.
- Customer experience expectations have changed radically in the last few years. Service providers' legacy OM systems were developed in an age where customer experience was lower. The ordering and configuring process of services need to offer a consistent experience. This goes for both new services (such as IoT) and traditional connectivity services. Service providers need systems that can manage multiple ordering processes with ease.

# Manage new capabilities with Ericsson Ordering and Orchestration Manager

The aforementioned considerations and needs impact the service management layer. This calls for a common solution that both provides for and connects the business and operational system components.

Ericsson Ordering and Orchestration Manager is a single automated service ordering and orchestration solution. It enables service providers to leverage modern business and operational support systems for new service opportunities. The solution combines features from the Ericsson order, catalog and orchestration portfolio. Its primary use case involves service orders being received from the commercial layer and orchestrated across multiple different domains.

It offers tightly interlinked service ordering and orchestration components in the network, taking responsibility for the order to be fulfilled by effectively exchanging data between the network components. Together, the components comprise a fully rounded solution, ready to take responsibility for the delivery of service for an enterprise.

## The value of Ericsson Ordering and Orchestration Manager

Ericsson Ordering and Orchestration Manager is a modular solution with guaranteed responsibility for service delivery. Built to exchange data between solution components to maximize performance, the solution combines service ordering and orchestration in a way that is fundamental for service providers during delivery of service for an enterprise.

Through understanding the intent of requirements, the solution transforms

traditional siloed service ordering and fulfillment processes into a dynamic E2E service enabler that is ready to compose advanced competitive B2B/B2B2X offerings such as edge/hyperscale cloud providers (HCP) and software-defined networking (SD-WAN) services.

Ericsson Ordering and Orchestration Manager enables service providers to easily define customer services that are composed from multiple network domains, including external partners such as HCPs.

All aspects of the service implementation can be defined easily in a graphical environment, including the topology, configuration of underlying domain services, assurance profiles and closed-loop remediation policies. The service definition is published in TMF SID-based form via TMF Open APIs for consumption by commercial management systems.

The solution takes responsibility for the service by:

1. validating the service availability with the network resources from the domains applicable to that service to ensure service orders can be fulfilled.
2. automatically determining the workflow from the defined service structure.
3. delivering the service to an enterprise without interruption or failure, guaranteeing an accurate and consistent order delivery. This results in a seamless customer experience from the minute the service is ordered and then sold.

## Business benefits

- Automation of traditionally manually-performed tasks enables faster service launch and deployment, reducing operational complexity and costs.
- Orchestration enables consistent order, validation and fulfillment processes, reducing order fallouts and improving order-to-cash.
- Orchestration enables multi-domain and HCP service composition, increasing service provider flexibility and enabling new revenue opportunities.
- Standard and multi-vendor compliancy enables easy integration to an existing stack, reducing integration costs.

Figure 1: Ericsson Ordering and Orchestration Manager as part of the service management layer

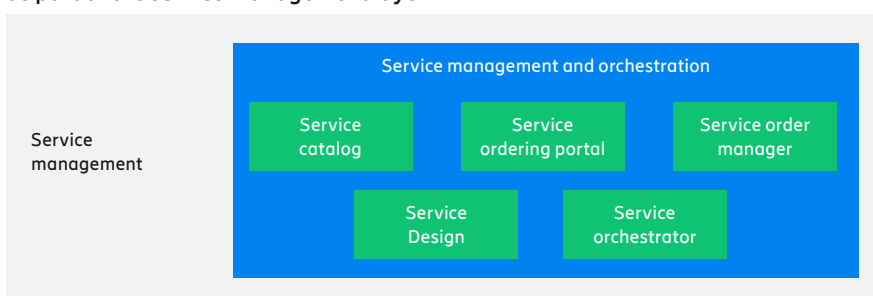
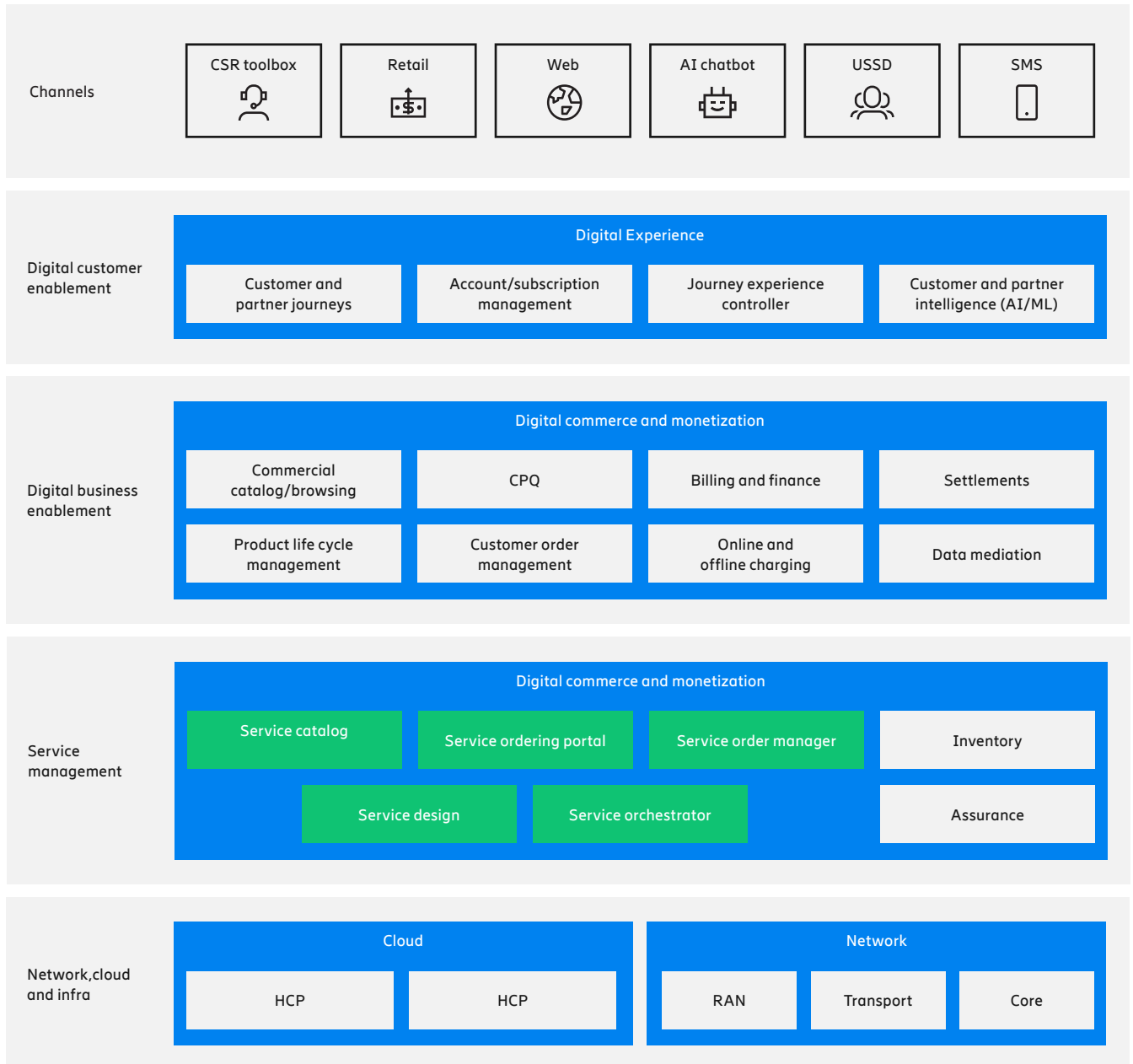
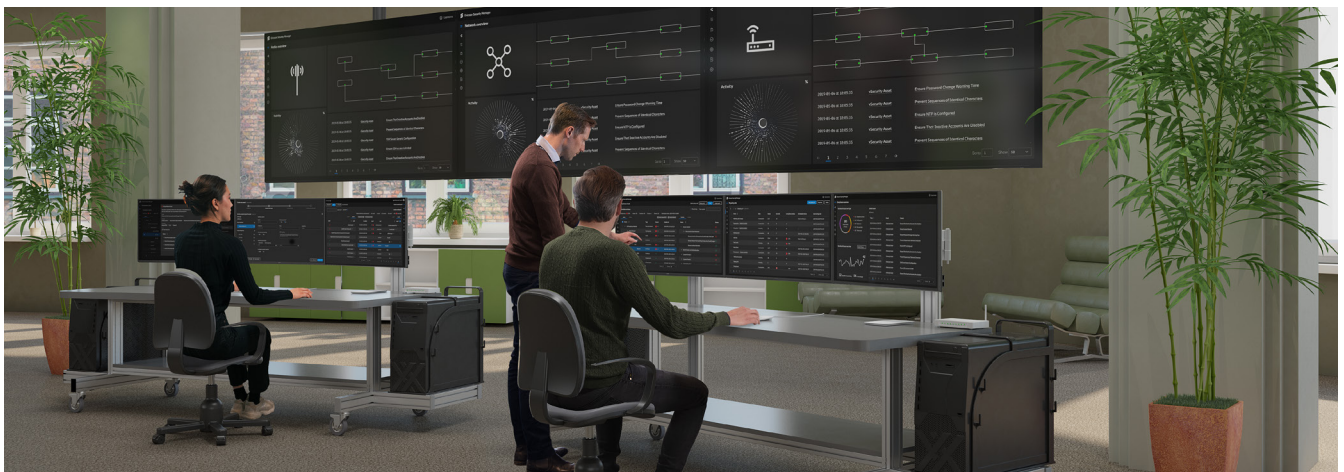


Figure 2: E2E portfolio stack from Ericsson

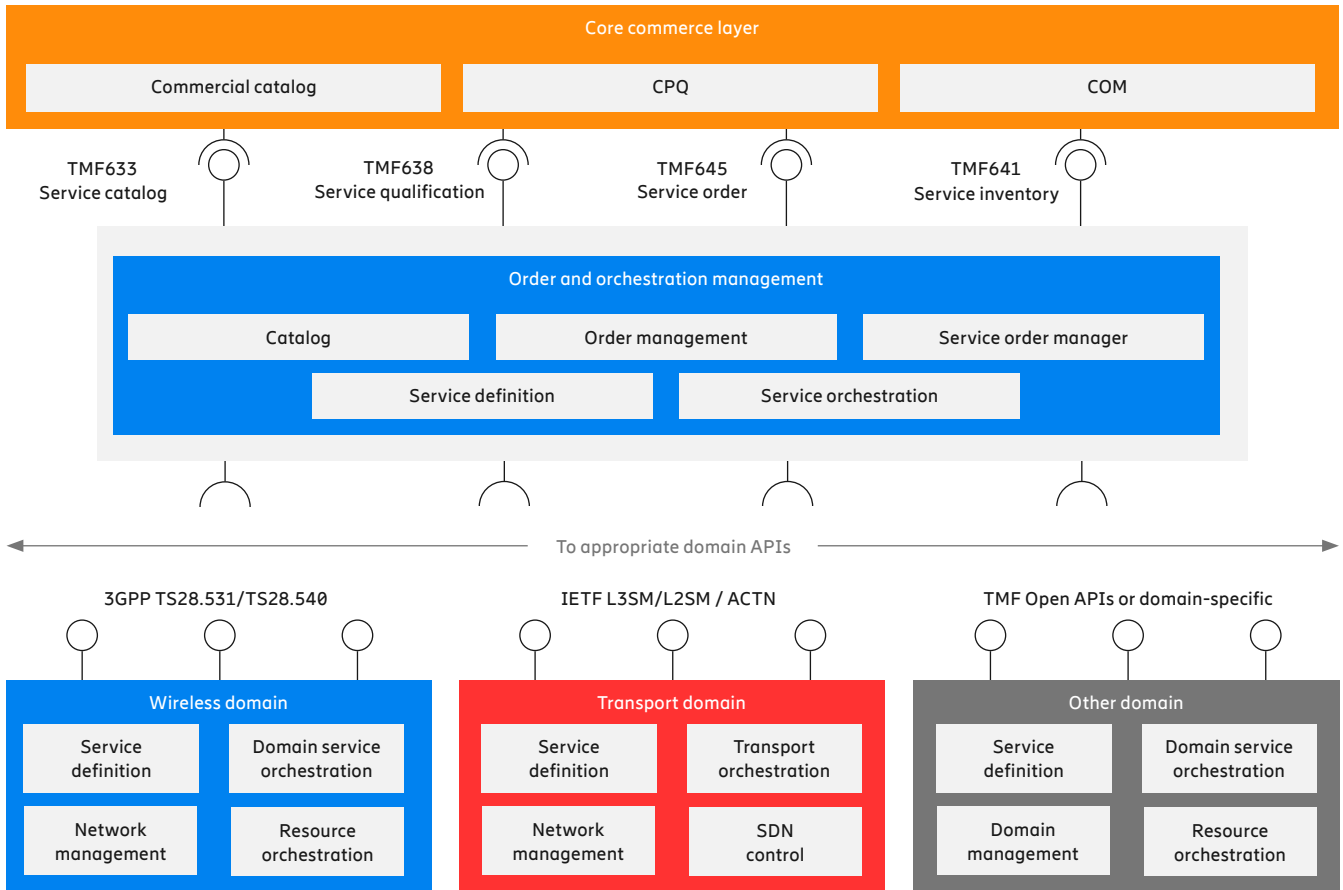


The Ericsson Ordering and Orchestration Manager components interoperate seamlessly with existing stack, assurance, inventory, orchestration, activation and revenue management.



Service providers need key capabilities in their operations and businesses efforts to enable enterprises

Figure 3: Ericsson Ordering and Orchestration Manager



Ericsson Ordering and Orchestration Manager can be integrated with the service providers' existing stack, with respect to the northbound and southbound layers, by leveraging standard and multi-vendor compliancy. It enables service composition via the open APIs.

### How it works

Ericsson Ordering and Orchestration Manager handles long-running orders, life cycle of orders, rollback of orders, escalations, dispatching and notifications to northbound and southbound systems and order failure. It allows submission of bulk orders as part of an overall service delivery project and organizes and sorts them accordingly.

It is a highly automated solution — service order automation, automatic service specification publication from a

single service catalog and orchestration of the ordering and fulfillment process enables orders to be fulfilled in real-time. The solution is intent-driven and transforms traditional siloed processes into dynamic service processes. The orchestrator defines the process based on the service definition in the catalog. It enables services to be ordered using a TM Forum SID-based model and APIs, then instantiated using TOSCA-based declarative templates that define the structure of the resources providing the service.

Ericsson Ordering and Orchestration Manager is built on cloud native and microservice design principles that allow selective software upgrades to function more easily on the live network with minimal disruption. The microservices can be automatically scaled and upgraded in live operation. Compared to older designs, this makes it possible for service providers to test, deploy and scale at speed. It interoperates seamlessly with the existing stack — inventory, assurance, activation, orchestration and revenue management.

# Manage complexity for enterprise services

To manage the combinations of legacy and new resource infrastructure working together and multiple domains coalescing to support various services, the technical requirements for the service can be complex and therefore must be addressed.

Enterprise services are expected to be built upon virtualization and combinations of multiple network capabilities (RAN, core, transport, cloud domain etc.) rather than creating services based on single siloed network domains. Looking beyond traditional services such as voice – like SD-WAN and enterprise security services – is creating a new level of complexity by adding network and commercial requirements attributed to the service. Additionally, network requirements and commercial aspects can be different for different enterprise customers. Nevertheless, these services need to be accommodated and managed together as they can gradually become multiple services for many different enterprise customers.

Service providers must optimize operations to ensure delivery of various services and secure faster TTM at the right operational costs. With network slicing making it possible to create fit-for-purpose virtual networks, and Ericsson Ordering and Orchestration Manager providing the service composition and order fulfillment, certain complex requirements are simplified to the great benefit of any given enterprise.

## Service orchestration enables network slicing at scale

E2E service orchestration is an increasingly central topic within 5G services discussions. In the world of 5G and virtualized communications infrastructure, it is of paramount importance for service providers to orchestrate resources across multiple domains to provide game-changing new services over network slices.

A promising aspect of 5G in the enterprise space is its capacity to handle scale. This goes beyond the suites of 10 or 20 virtualized network functions (VNF) types – typical to service providers in recent years (in proof-of-concept trials or even in early commercial usage) – with unlimited types of VNFs, billions of dynamic transactions and last-mile

connectivity provided over radically new RAN archetypes. An orchestrator will need to manage multiple network slices built up by network functions at scale, supporting the services for an enterprise as they grow.

In this future state, at-scale management, control and optimization is required E2E to automatically provide service-appropriate network slice characteristics that can last for days at a time. Additionally, all the required network domains need to be orchestrated by a master controller to bring up the service, control its performance while in use and then virtually dismantle those components, all in a fully automated approach. While this sounds futuristic, this is exactly what is required if service providers are to correctly monetize digital services delivered over 5G network slices.

## Unleash the full potential of Ericsson Ordering and Orchestration Manager and network slicing

Recognizing the full potential of Ericsson Ordering and Orchestration Manager with network slicing becomes quite clear when following the automated steps from release of order to order fulfillment of enterprise service offerings. So, let's explore a case step by step.

When a network slice that is part of an enterprise product offering is ordered through a conventional or digital channel, one of the first stages following this is for the service order manager to process its logic and requirements and checks feasibility through the orchestrator. Commercial order management uses standard TM Forum APIs to submit the service qualification to the Ordering and Orchestration Manager and then sends the service order to the Ordering and Orchestration Manager. The tight interlink between order and orchestration is essential as it can add visibility into the requirements needed to fulfill the service.

The service order manager then decomposes the network slicing service by splitting the order into one or several

technical service orders based on input from the service catalog, then sends these to the orchestrator. The service is built up by a TOSCA template that contains components from several domains. The orchestrator combines these multiple domain services to create a composite service that meets the requirements specified in the order. This enables management of services by orchestrating capabilities from multiple domains and allows complex enterprise offerings to be built flexibly from multiple services.

Service providers will be able to define and deliver services composed from multiple network domains and provide enterprise offerings that would be supported by complex value chains and partner ecosystems, for example via HCPs and enterprise edge clouds. These can be critical requirements of many advanced competitive B2B/B2B2X enterprise product offerings and are a necessity for service providers to truly take on the role of service provider or service creator in the value chain.

The order is then provisioned by the orchestrator and activated to finally confirm order fulfillment to the commercial order management, assuring the order has been provisioned.

Ericsson Ordering and Orchestration Manager can rapidly process an order as part of an enterprise offering, with or without the network slice in mind. This supports the ability to offer a fast, consistent and seamless delivery of order experience to an enterprise by leveraging automation and service composition, eliminating manual intervention and human error. To design and deliver these tailored offerings with flexibility and at scale, network slicing will be of importance with a fit-for-purpose virtual network able to adapt to the requirements. Together, the Ericsson Ordering and Orchestration Manager and network slicing will support competitive offerings for various enterprise use cases.



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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