The 5G Monetization Journey

Developing New Billing and Revenue Capabilities

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5G networks are presenting new opportunities for telecommunications companies to provide greater value to their customers. The possibilities cluster along two new lines of business: private networks and network services on a public network, each with their own unique monetization challenges. SAP® Billing and Revenue Innovation Management solutions help address both areas with the foundational capabilities of enterprise billing, revenue sharing, financial convergence, and data mediation.

Mixed Success in the Telecommunications Industry

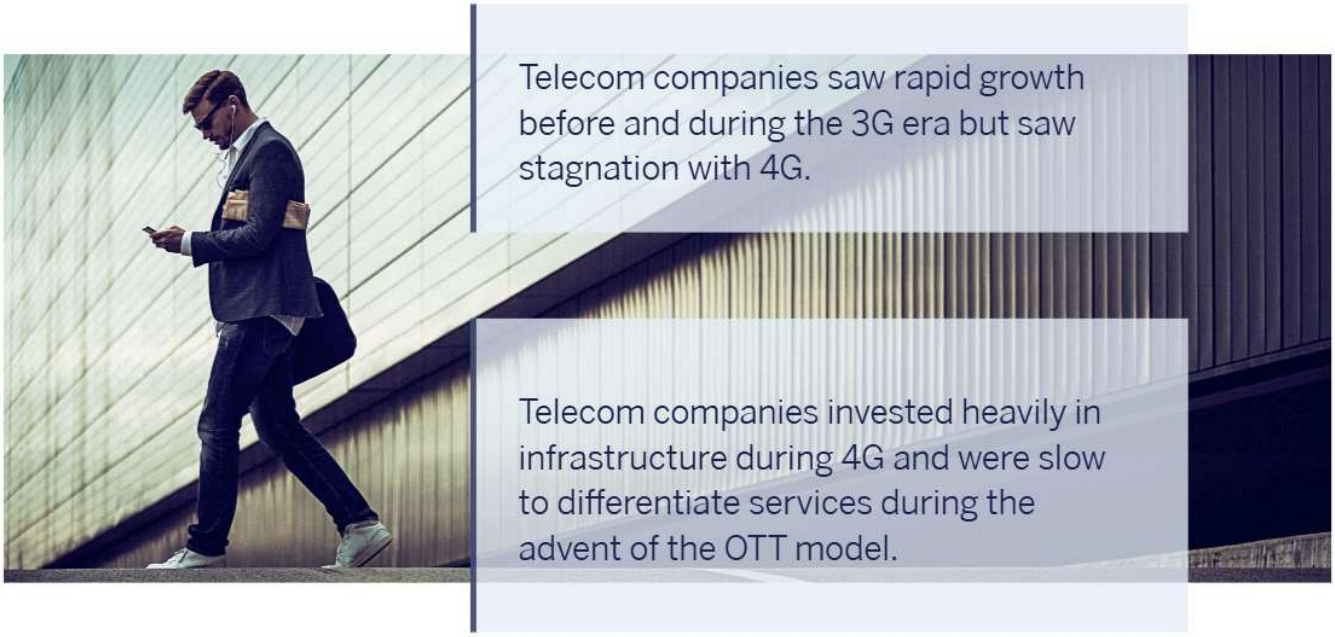
The path toward capturing value in the telecommunications industry has been a rocky one. Rapid growth before and during the 3G era was followed by stagnation with 4G, and many operators are still trying to find their way back to growth. The rollout of 5G presents a new chance to regain market share and increase revenue.

3G AND 4G HISTORY

Since its inception, the mobile telecommunications industry has experienced high growth, moving from analog technologies in the first generation to digital technologies in the second. This growth was driven in no small part by standardization, which drove down cost and brought mobile services within reach of the masses. A smooth transition to 3G continued to deliver growth for many years through data revenue, with smartphones, mobile apps, and social media as key contributors.

Telecom companies experienced a massive disruption with 4G that made over-the-top (OTT) delivery of multimedia content possible over the Internet. With OTT, service providers were able to bypass telecom companies and sell directly to consumers. Many telecom companies were unable to adequately differentiate their services, leading to lackluster results in effectively monetizing services around OTT.

In fact, as prices for data bandwidth have plummeted with competition, telecom companies have had lower than anticipated returns from their capital investments in building out 4G networks. Furthermore, radical new business models have emerged from OTT delivery that are shutting out telecom companies, such as the platform business model used by app stores, ride-hailing apps, and food delivery apps.



Telecom companies saw rapid growth before and during the 3G era but saw stagnation with 4G.

Telecom companies invested heavily in infrastructure during 4G and were slow to differentiate services during the advent of the OTT model.

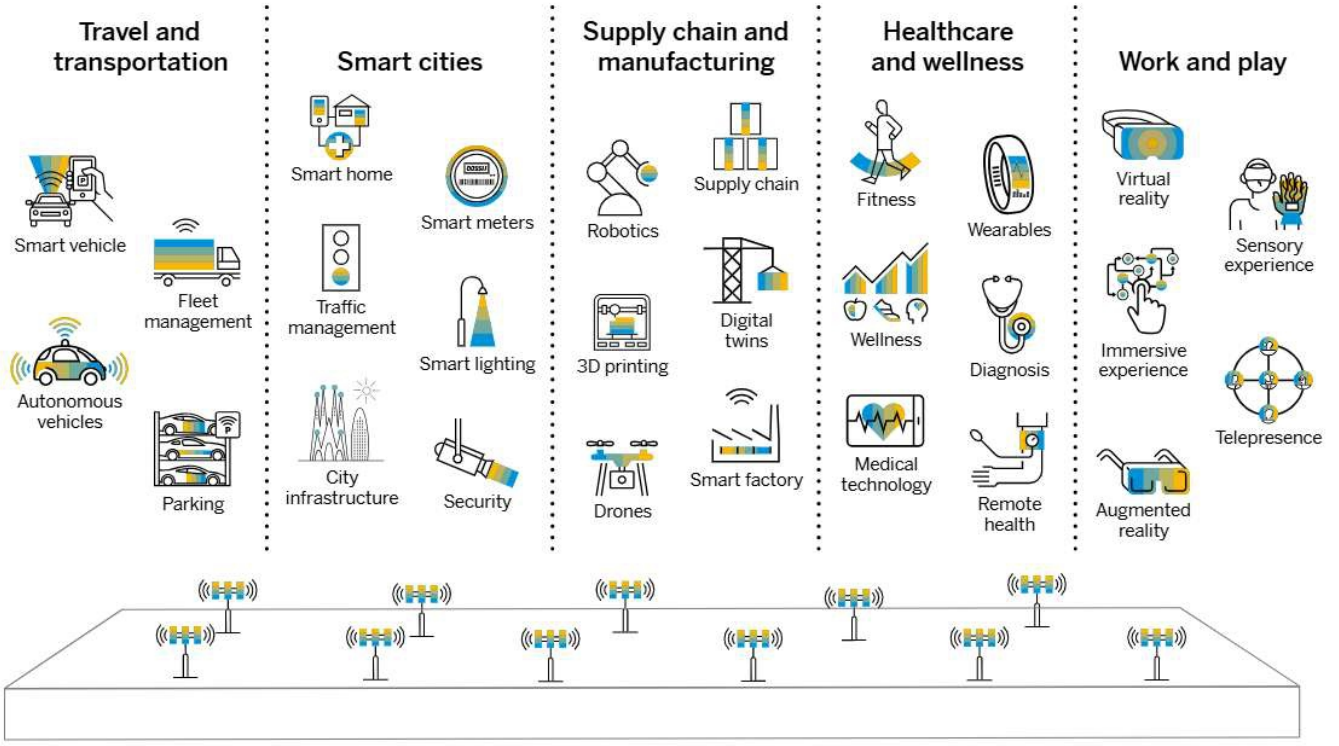
THE PROMISE OF 5G

When 5G first hit the market, its full potential did not become available overnight. 5G was initially released as a new radio technology in which user data is carried over radio networks to offer higher download speeds while keeping control functions within the 4G/LTE network. This makes sense from a network deployment perspective, but the technology primarily addressed the consumer market.

To serve the business market, the full potential of 5G needs to be available by deploying 5G stand-alone (SA) networks. By including both 5G radio network with 5G core, 5G SA networks can enable a wide range of use cases, such as those illustrated in Figure 1.

Telecom companies initially focused on offering 5G SA networks as private networks, pitched as alternatives to Wi-Fi networks or even wired local area networks (LANs). However, 5G SA networks are becoming increasingly available in public networks, leading to telecom companies offering application program interfaces (APIs) to unlock the value of these networks. The monetization opportunities for these two areas – private versus public networks – are quite different, as we discuss in the next section.

Figure 1: Use Cases for the 5G Platform



Unlocking the Monetization Opportunities of 5G

CHASING PRIVATE 5G NETWORK OPPORTUNITIES

For many telecom companies, the market for private networks is new territory, and selling private 5G networks as an alternative to Wi-Fi networks or cabled networks comes with challenges. Companies that do not understand the benefits of 5G are unwilling to swap out one private network technology for another without a compelling business case. Companies that **do** understand the benefits of 5G are often interested for reasons that are not the standard telecom sales pitches (such as security and reliability versus speed and latency). Furthermore, some countries make it easy for any company to purchase a private 5G license at nominal cost and build their own 5G network without relying on a telecom company.

Despite these obstacles, there are a number of use cases in which telecom companies can provide compelling value propositions to enterprise customers. Here are two examples:

- **Digital supply chain:** As goods are transported from a port to a warehouse, factory, and/or distribution center, communications must be available between public and private networks for seamless delivery. Telecom companies are best positioned to manage the complexity of these types of connectivity.
- **Airports:** Connectivity services are offered to the myriad of businesses operating within an airport. These businesses can in turn offer Internet connectivity to their own customers. Rating, policy, and overall network management can be quite complex, with traffic moving between the airport's private network, public network, and a variety of edge platforms. With the right tools, telecom companies are in an excellent position to manage this complexity.

CREATING PUBLIC 5G NETWORK OPPORTUNITIES

A private 5G network is deployed for a single customer, even if the network supports different tenants. Configuring applications for a private network is relatively straightforward since the network is used by a single customer. A public 5G network in contrast supports thousands of customers and traditionally could offer only a one-size-fits-all type of connectivity.

The GSMA Open Gateway initiative is becoming a game-changer for unleashing the monetization capabilities of 5G public networks. The initiative offers a framework of APIs for developers to gain universal access to telecom networks. Adopted by leading mobile network operators around the world, the APIs can create new network consumption and monetization models.

For example, an application provider can use the "Quality on Demand" API to request stable latency and high throughput for its application. Examples of other APIs that can be used to monetize 5G networks include "Carrier Billing – Check Out," "Device Location," and "SIM Swap."

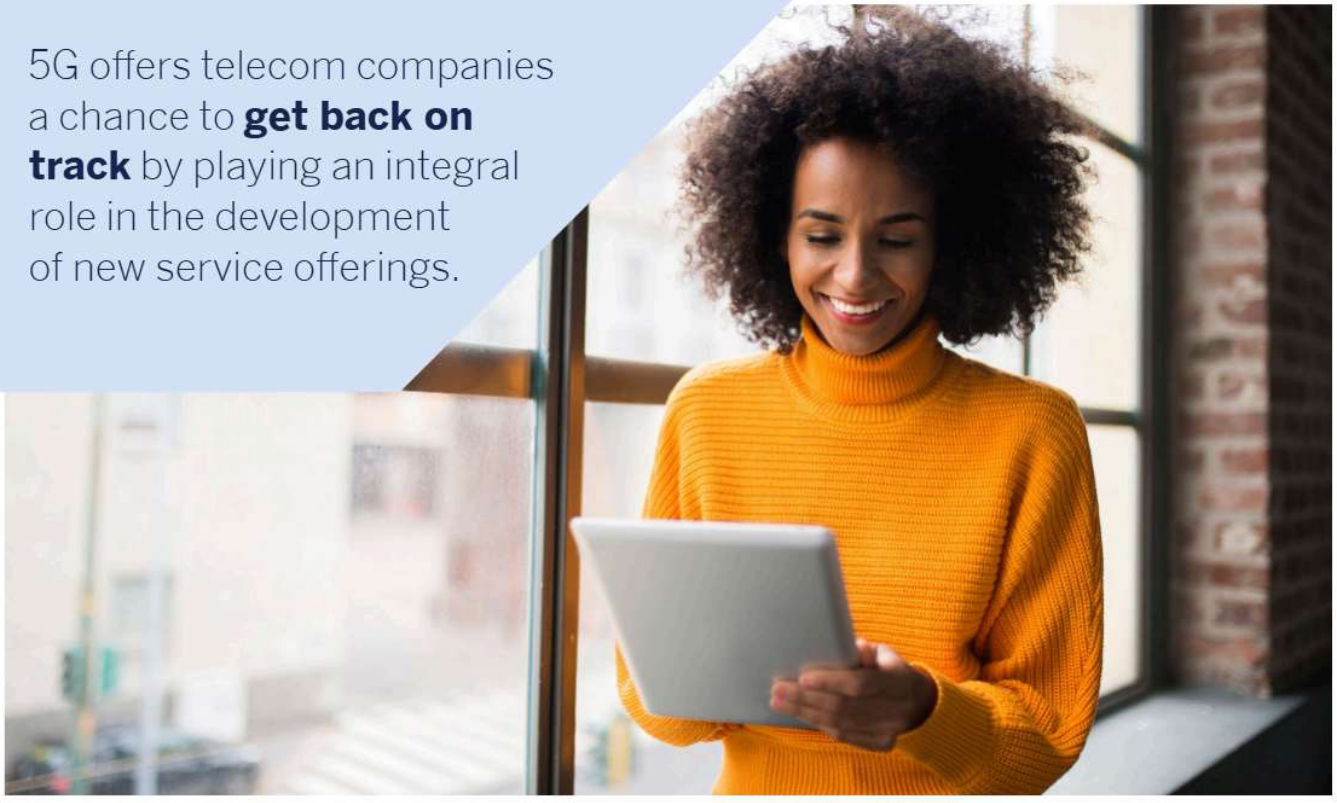
There are numerous ways in which a telecom company can rate and charge for these types of services. For example, rating and charging can be done on an ad hoc basis, even if a customer is on a postpaid contract. Telecom companies can make these APIs available not just to their direct customers but also to aggregators who can present network API access as a gateway into a mobile network represented by these operators.

CONVERGENCE OF BUSINESS MODELS TO B2B2X

To fully take advantage of the monetization opportunities from 5G technology, telecom companies must look at the business models that they are supporting for their customers. The new technology is leading to a convergence of three existing business models being served by the telecom industry, which include:

- **B2X model:** This is when a business delivers services to any number of clients through simple subscription and usage models. This model has evolved to include ecosystems of diverse partners, such as app developers, content providers, and device suppliers.
- **Carrier billing model:** This is when a telecom company acts as a payment provider so that a subscriber pays for services that are delivered by third-party app developers and merchants through direct-carrier billing and mobile wallets.
- **Wholesale model:** This model continues to evolve as operators share the capital outlay required to create 5G networks and build network-sharing relationships and partnerships with mobile virtual network operators.

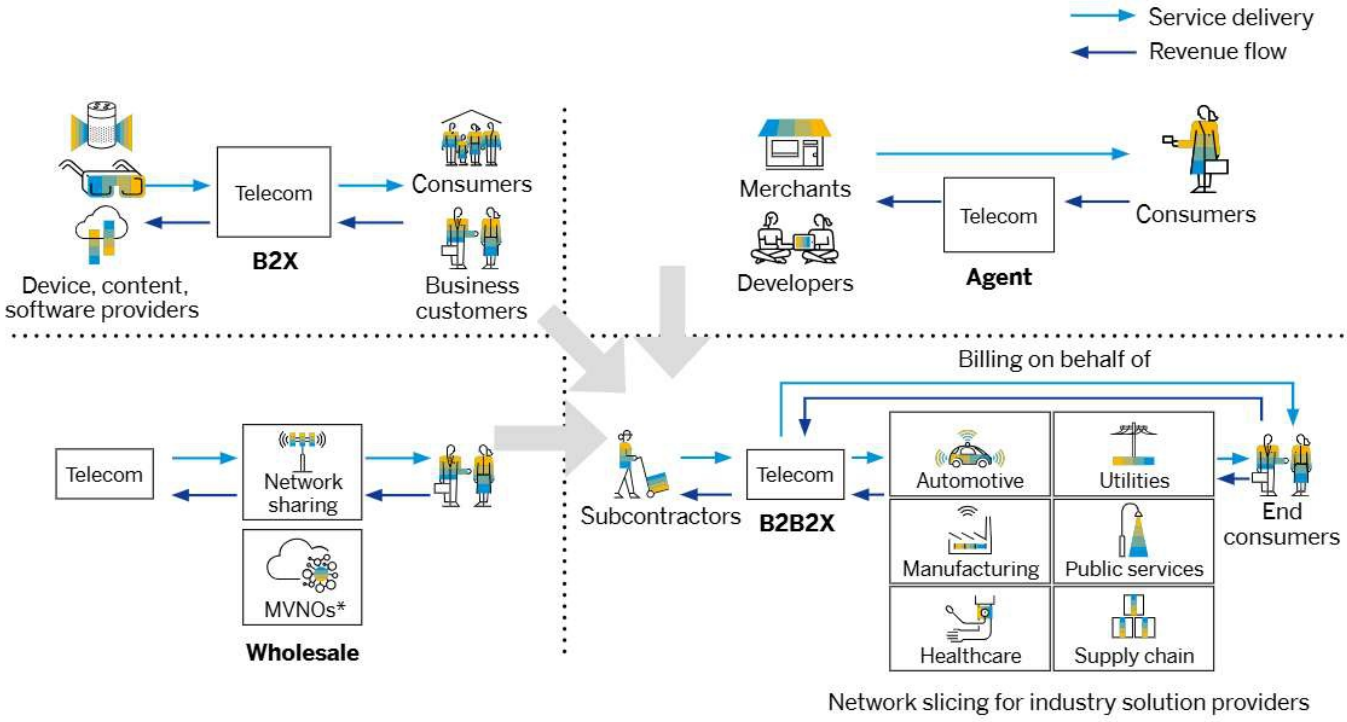
5G offers telecom companies a chance to **get back on track** by playing an integral role in the development of new service offerings.



The biggest opportunity lies in **B2B2X**, which involves convergence of the existing three business models into a single, powerful offering, as illustrated in Figure 2. This emerging paradigm incorporates all the elements of B2X into delivery of services by one business to another, which in turn delivers to any number of clients.

While at first glance this may resemble the OTT model, telecom companies play a more prominent role in the B2B2X schema due to its dependence on network slices with properties that must meet very specific requirements. In fact, the GSMA Open Gateway initiative provides the "Carrier Billing – Check Out" API in which online merchants can purchase third-party digital goods and request payment using a telecom company's billing system.

Figure 2: The B2B2X Opportunity



* Mobile virtual network operators

Four Key Capabilities for Delivery of 5G B2B2X

There are four required capabilities to support B2B2X within the context of 5G: enterprise billing, revenue sharing, financial convergence, and data mediation capabilities (see Figure 3).

ENTERPRISE BILLING

Enterprise billing is the means to manage revenue from services delivered to industry solution providers. It lets you bill for business solutions and business outcomes that are tailored to specific industries and may feature bundling of hardware, software, support, and services, including those from third parties.

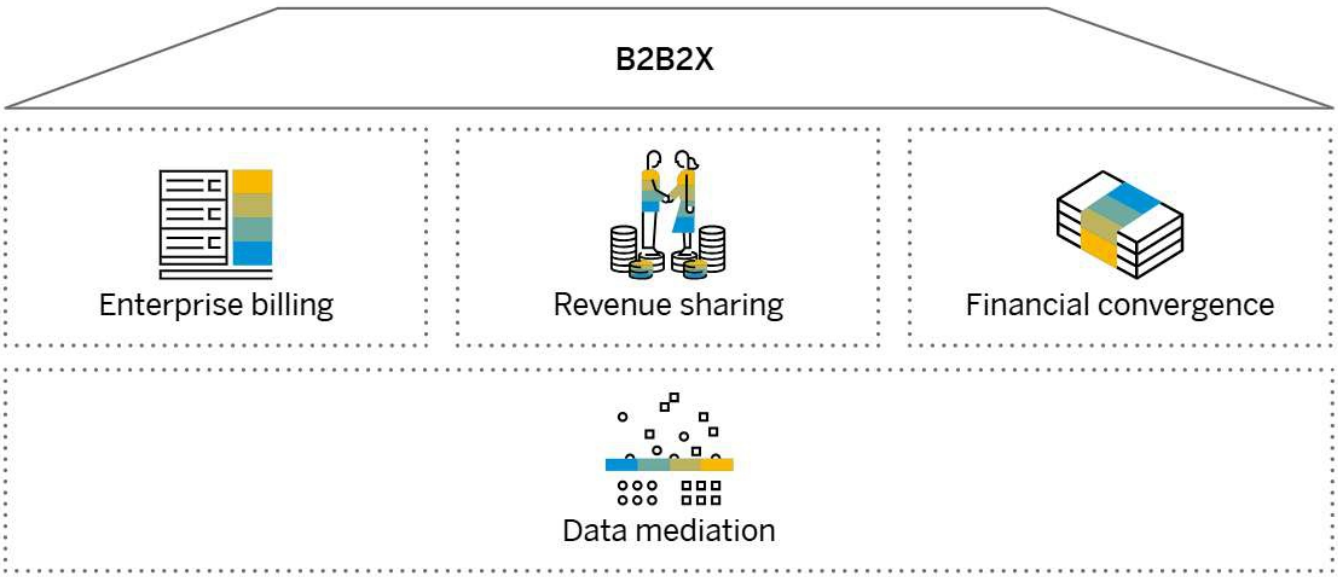
The services subject to special enterprise billing may have value-based KPIs, metrics, and the means to provide service credits for cases in which service-level agreements are not met.

You must be able to map billing structures into customer organizational structures using customer hierarchies and master agreements. A self-service portal should enable customers to initiate contract changes as well as access analytics and reports on employee spend.

REVENUE SHARING

Well-conceived schemes for partner revenue sharing and settlement are essential in complex ecosystems of companies joining forces to deliver services. Your collaborators may be platform partners, content providers, app developers, advertisers – or even local government authorities, in the case of public services. Partner settlements will need to accommodate commissioning and back-to-back service delivery as well.

Figure 3: Four Essential Functionalities for 5G B2B2X



FINANCIAL CONVERGENCE

Coexistence with existing legacy services and systems is key to ensuring both feasibility and viability. Delivering capabilities with a short lead time and avoiding large-scale overhaul of billing systems can mean the difference between success and failure. You may decide to maintain a 360-degree view of customer and partner financials by converging on a single subledger to manage both receivables and payables, along with the corresponding collections and payments. Or you may go a step further by instituting full invoice convergence to ensure presentation of a single customer invoice with all charges consolidated. You may even need to cater to multiple convergence strategies concurrently.

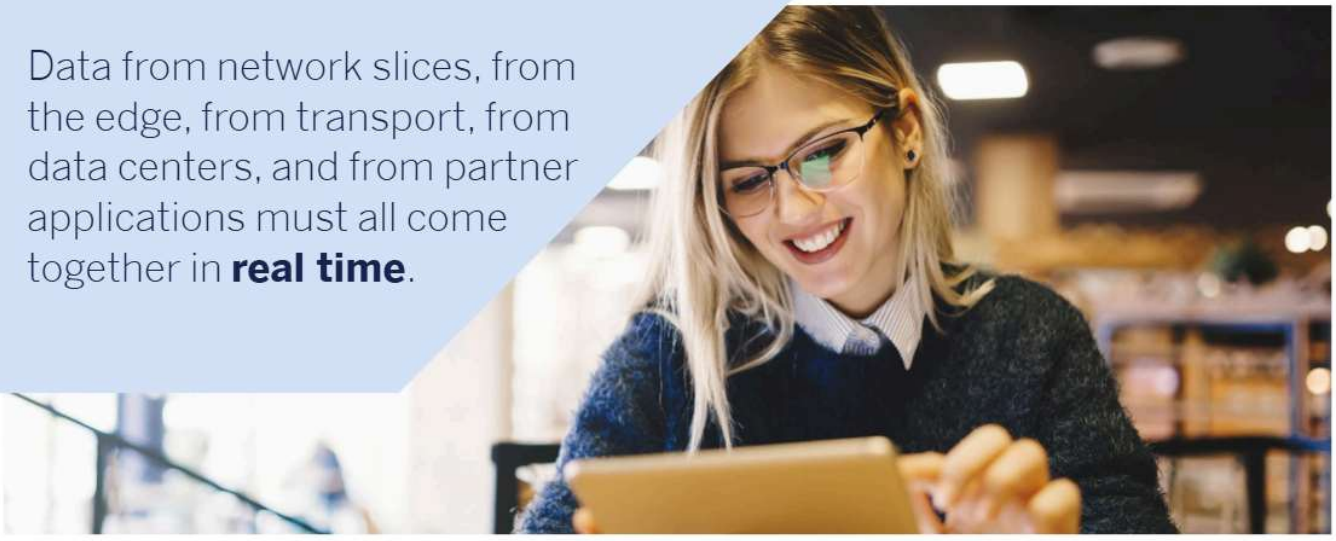
DATA MEDIATION

Data mediation, which helps you make business sense of your operational and transactional data, is the underlying capability required for the other three functionalities critical to 5G. Data mediation means picking needles out of haystacks by processing massive volumes of data from various sources in different formats and with complex dependencies. Data from disparate network slices, from the edge, from transport, from central data centers, and from partner applications and APIs contributes to the derivation of the parameters required for billing and settlement. And this data must all come together in real time.

Crucial capabilities for data mediation in the telecommunications industry include:

- Handling a variety of slice parameters
- Tracking the lifecycle of all network slice instances
- Managing users who connect to multiple slices or switch between slices
- Collecting and correlating data from disparate layers
- Providing support for new 3GPP serviced-based APIs using HTTP/2
- Deploying within a Kubernetes cluster on the edge

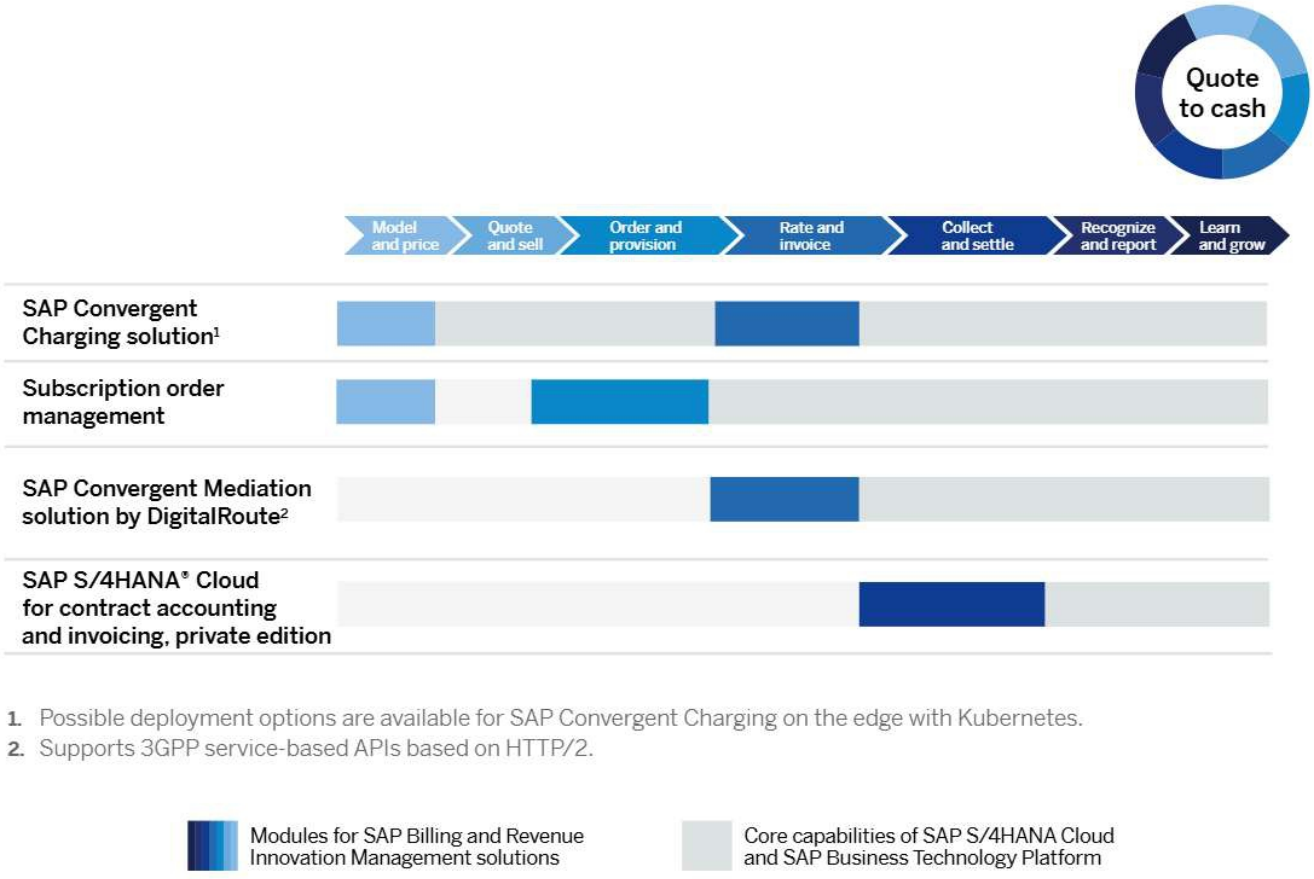
Data from network slices, from the edge, from transport, from data centers, and from partner applications must all come together in **real time**.



SAP Billing and Revenue Innovation Management

SAP Billing and Revenue Innovation Management solutions, part of SAP solutions for quote-to-cash management, enable the capabilities required for 5G business models that incorporate B2B2X, as illustrated in Figure 4.

Figure 4: Features and Benefits of SAP Billing and Revenue Innovation Management Solutions



1. Possible deployment options are available for SAP Convergent Charging on the edge with Kubernetes.
2. Supports 3GPP service-based APIs based on HTTP/2.

SCALABILITY AND FLEXIBILITY

SAP Billing and Revenue Innovation Management solutions offer telecom companies the agility to move among ever-changing business models and the scalability to expand rapidly from small trials to massive multibillion volumes. The solutions let you share revenue across ecosystems of partners and provide transaction-level traceability to help eliminate revenue leakage while delivering an excellent customer experience.

SAP Billing and Revenue Innovation Management solutions are used by some of the world's largest operators and OTT providers to address billing and revenue management requirements for highly complex business models. The solutions take advantage of the latest technology from SAP S/4HANA running on our in-memory SAP HANA® database.

5G-READY SOLUTIONS FOR TODAY AND TOMORROW

The 5G monetization journey entails navigating a challenging, sometimes uncertain environment. But having the right solution in place helps ensure that you do not hit the shoals. With SAP Billing and Revenue Innovation Management solutions, you can prepare to address the principal 5G use cases associated with industry solutions. The solutions help you manage enterprise billing, revenue sharing, financial convergence, and data mediation with ease. Even if you have not yet started on your journey, SAP Billing and Revenue Innovation Management solutions can help you work with your current 4G technology to position yourself for entry into the promising new era of 5G.

LEARN MORE

Find out more about 5G monetization opportunities in telecommunications by talking with your SAP representative. And visit us **online** for more information on SAP Billing and Revenue Innovation Management solutions.

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