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We hope you enjoy the report and, most importantly, find ways to use the ideas, concepts and recommendations detailed within. You can send your feedback to the editorial team at TM Forum via editor@tmforum.org







The telecoms landscape is dotted with incomplete and failed transformation initiatives. Even so, operators cannot afford to stop their transformation efforts as their revenues stagnate and the opportunities to create new growth narrow as hyperscalers dominate the IT infrastructure and services markets.

Some operators are launching greenfield digital brands in the hope that either they will be so successful that over time they can move functions (and customers) over to the new businesses, or they can learn lessons along the way that will inspire their transformations of legacy systems. The trouble is that operators cannot afford to wait: They need to transform their legacy IT systems now.

Communications service providers (CSPs) do not lack ideas or ambition when it comes to developing new products and services, but their IT functions are slowing their businesses down. IT is stopping them from reacting to new challenges and opportunities, and instead creates ever more 'technical debt' – that is, the implied cost of additional rework incurred by implementing solutions that do not meet all their needs.

Telefónica Group has operating companies across Europe and South America. After some failed or unfinished transformation journeys, it was clear that the mindset of "If at first you don't succeed, try, try again," needed to change to "If at first you don't succeed, try something different".

Read this report to find out how Telefónica evolved its approach, including:

- Its use of open architecture and APIs drawing on TM Forum assets
- Working with multiple vendors and a systems integrator instead of a single vendor
- Why it chose to transform the BSS for B2C and B2B customers at the same time
- Moving away from customization to configuration
- Engaging with vendors with new commercial and operational models



If at first you don't succeed, try something different.



section 1

how telefónica evolved its approach to BSS transformation



Telefónica operates telecoms networks across Europe and Latin America. Like many large operator groups, it now has a central technology function that helps to plan and deploy new systems and networks across its footprint. Previously Telefónica tended to engage with one single, large vendor for IT transformations. For its next-generation business support system (BSS), it shifted the emphasis to multi-vendor, disaggregated systems, and integration.

"For more than 10 years we have been doing transformation projects without always achieving all the targets we set at the beginning of each transformation, with failures in some cases which were useful to learn and evolve." This admission by Telefónica's Group Head of IT Architecture, Javier Garcia, may be unusual, but failed or unfinished transformation efforts are more the rule than the exception. This doesn't mean that telcos can afford to stop trying, for reasons outlined in The big picture.

Central technology function

Garcia explains, "Our thinking about how to do transformation has evolved in the last six or seven years. We started with one big, full stack from one of the big vendors for B2C [business to consumer] and B2B [business to business]. In some cases we got to finish [the transformations] and in some cases we didn't."

Now Telefónica Group's central technology function retains a reference model with a base architecture that is being deployed across all opcos, although commercial issues and priorities vary from country to country.

It draws on TM Forum's Open Digital Architecture (ODA – also see page 28), which is a blueprint for modular, cloud-based, open digital platforms that can be orchestrated using AI.

It has the support of telecoms operators and their technology partners, but there is no single formula for getting from today's legacy systems and architectures to an open digital architecture.

Interestingly, Garcia says that transformation proved more difficult in big opcos than smaller ones. This is due to two overarching factors: The larger number of functional demands in systems to continue supporting business-as-usual functions; and the need to change front-end systems at a different speed from the back end.

5G's impact on the BSS

The deployment of 5G networks – and the promise of new services such as network slicing and edge computing – is also changing operators' BSS requirements.



Telefónica started a group-wide transformation of the technology supporting its B2B lines of business back in 2018, but Garcia recognized that "we need to rethink a little". Changes now will be more specifically about how services are provisioned because of the changes and new functionalities in the network which rely on the rapid activation and deactivation of capabilities.

Telefónica's German subsidiary, Telefónica Deutschland, provides a good example of the group's new approach to transformation. Work started on designing a new BSS for both the B2B and B2C businesses in the second half of 2020, with a co-creation activity between Telefónica and the vendor partners from the very beginning. The implementation started in January 2021 and it is now close to delivering a minimum viable product for its B2B BSS stack.

Bringing in the muscle

Rather than giving the whole project to a single vendor to deliver the software, hardware and systems integration, Telefónica brought in a systems integrator as the "muscle" to deliver the project. Some key suppliers of the main products for the transformation were Salesforce for its customer relationship management (CRM) systems, MATRIXX Software for online charging, and Compax for revenue management.

Telefónica's Garcia notes that working with these different partners required a "big effort" but the full-stack systems it had acquired in the past "were probably not as well integrated as [vendor partners] said they were." This new approach is now also followed in other Telefónica opcos, like Telefónica Brazil.

Telefónica Deutschland operates under the O2 brand in Germany and was the third largest operator when it acquired the fourth largest, E-Plus, in 2014. Telefónica Deutschland is a strong player in the mobile business and the market is evenly divided between the three, but it has a relatively small share of the fixed broadband market (see table below). It is addressing this through a 50:50 joint venture, called Unsere Grüne Glasfaser, formed in October 2020 with the private equity arm of insurance company Allianz.

The partners committed to investing €5 billion (\$5.79 billion) over six years to pass 2.2 million households with fiber in rural and semi-rural areas of Germany, on a wholesale basis. Roll-out began in March.

Telefónica Deutschland also lags some way behind the other two in the B2B stakes, although it is investing aggressively in 5G which it hopes will help close the gap.

The German telecoms market - connections and revenues by operator

2020	Deutsche Telekom	Vodafone Germany	O2 Germany
Mobile subscriptions	48,527,000	46,985,989	44,274,700
Fixed broadband subscriptions	14,118,000	10,918,000	2,261,100
Pay TV subscriptions	3,864,000	13,418,000	n/a*

2020	Deutsche Telekom	Vodafone Germany	O2 Germany
Mobile revenue (\$m)	9,243	6,466	7,690
Fixed revenue (\$m)	16,183	8,257	898

Note: *02 offers TV services since 2019. See Omdia World Information Series for latest datasets Source: Omdia 2021



rethinking the narrative - key architectural approaches and principles

section 2



Rather than building separate systems for consumer and enterprise BSS, Telefónica Deutschland decided to transform both stacks simultaneously. "It's a much bigger effort for the organization to do the two simultaneously," acknowledges Javier Garcia, Group Head of IT Architecture, but the company felt it was justified for a business as big and important as Telefónica Deutschland.

Online charging is a fundamental requirement for Telefónica in the new business support system (BSS) transformation, according to Fernando Diaz Barroso, Enterprise Architect at Telefónica with specific responsibility for online charging. He says, "Online charging is key to having a digital experience."

He continues: "As part of the Telefónica Group strategy, Telefónica is deploying one single online convergent charging system in all of its opcos and for all services – voice, data, messaging and digital products – and for all different accesses across fixed and mobile networks. Rather than the traditional division of prepaid and postpaid customers, Telefónica is evolving to a system and approach which is independent of the payment method. Customers simply decide how they want to pay.

"In Telefónica Deutschland, several charging systems will be consolidated in a convergent charging system provided by MATRIXX. This will provide real-time visibility and transparency of customer usage for all customer segments and the possibility of implementing B2B2X monetization models."

Online charging is foundational

For B2B customers, this online charging capability is a new but a key requirement for future services enabled by 5G Standalone networks. "We could have thousands of products, packages and price plans," says Diaz, "all of which need to be frequently updated." As such, the flexibility to implement new business or monetization models and to take them to the market quickly is fundamentally important.

Although Telefónica Deutschland transformed the BSS stack for business customers and consumers at the same time, that does not mean that every part of the BSS stack is replicated across the B2C and B2B businesses. "We decided which parts of the BSS should be common and which ones should not. Some requirements are very different, even when we have the same vendor," notes Garcia. As Salesforce is used in both the consumer and B2B stacks, it made sense to build capabilities that sit across the two.



Online charging is key to having a digital experience.



On the other hand, the product catalog has some specific requirements for B2B that are not needed for B2C, hence Telefónica migrated to two commercial catalogs, one for B2B and one for B2C, plus a technical catalog. This represents a radical simplification from the previous architecture where there was one catalog per stack and one in each of the charging systems.

Decoupling the "commercial" and "technical" functions within the BSS stacks has been a foundational requirement, states Garcia, to give the lines of business the freedom and agility to address market challenges and opportunities with new services and new pricing models.

Becoming cloud native

The journey towards cloud native is an important part of Telefonica's transformation. Garcia notes that Telefónica Deutschland was already ahead of many other opcos in the group in terms of its experience of and maturity in public cloud options with previous agreements with Amazon Web Services (AWS). Telefónica Group now has strong agreements in place with Microsoft Azure, AWS and Google Cloud.

The virtualization of charging had been underway for several years. For the new online charging system provided by MATRIXX, "We wanted the possibility of using any [cloud] options for its deployment," says Diaz. This could include private cloud using VMware and OpenStack or any public cloud.

All three of Telefónica's main suppliers are either advanced in cloud technology (MATRIXX and Compax) or deliver services from their own cloud (Salesforce).

This expertise has been crucial to Telefónica's transformation, notes Garcia. With Telefónica using several different public cloud services - Salesforce, Microsoft Azure, AWS and Google - securing applications across different clouds has been an important part of the company's transformation.

The deployment of open APIs is an increasingly important consideration for Telefónica too. "We have a specific stream in all transformation projects focused on integration," says Garcia. In some other parts of the business "we probably need to push the vendors a little bit more [to support open APIs], but I think that we're in a much more mature API ecosystem than we were a few years ago, because everyone realizes that this is the way forward."

As an illustration of the value of open APIs, Garcia points to the fact that the data models of Telefónica, Salesforce, MATRIXX and Compax are all a little different, but with the right APIs they can all be integrated (see panel right).

New vendors, new approaches, new skills

Adopting Agile ways of working has been a long-held aspiration for many CSPs, but it has brought mixed success. Many CSPs talk about agile hybrid development, yet in practice agile development has tended to focus on the development of new capabilities and applications not the modernization of existing systems. Also, it has typically only involved in-house development teams rather than projects that depend on third-party vendors.

TM Forum's Open APIs

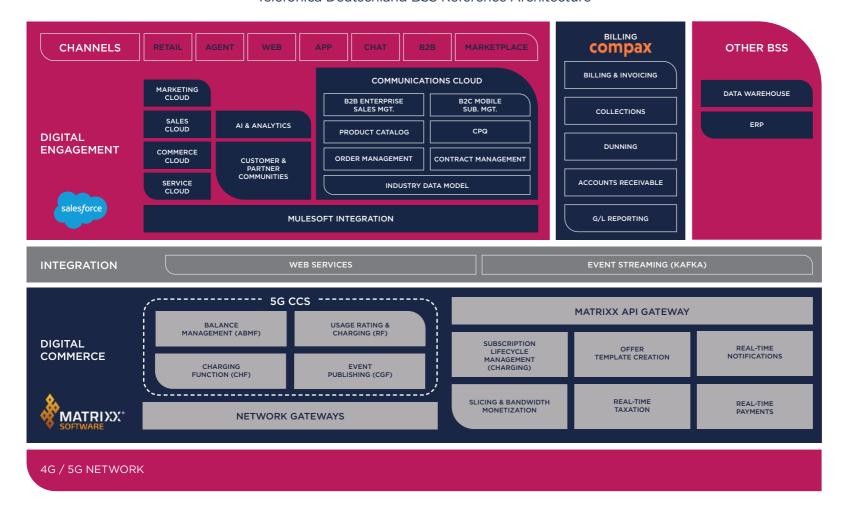
Telefónica has been a trailblazer in the development and use of TM Forum's Open APIs from the start - and one of the original operator signatories of the Open API Manifesto in 2016. Now the Forum's suite of more than 60 REST-based Open APIs are all tried, tested and de-risked by its collaboration community, and evolved and added to by Catalyst proof of concept projects.

Find out how they can help you - download How to lead in the Open API economy:



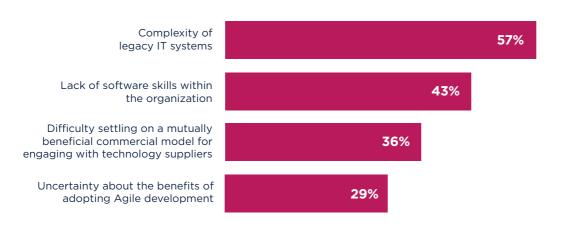


Telefónica Deutschland BSS Reference Architecture





Biggest challenges to adopting Agile software development



TM Forum 2020: Digital Transformation Tracker 4 - The culture wars of transformation

Fritz Thimler, SVP International Business at Compax Group, reckons it is possible to deliver BSS transformation projects using Agile ways of working as long as both the operator and vendor adopt the right approaches. He explains, "[To work] it needs a customer that understands Agile...there is a responsibility on [the] customer side. They need to focus on what is important and to understand that wasting time by slow decision-making costs money."

Traditional CSP procurement processes based on the use of the RFP can slow procurement. A vendor with experience in Agile can work with CSP customers to help determine the costs of working together. In this way they can align with rigid procurement processes by estimating sprint velocity – that is, the amount of work that an Agile

vendor-CSP team can handle - and use it to inform how many sprints are necessary for a scrum team to complete a particular project.

Thimler describes Compax's approach as a hybrid commercial model because the company is prepared to give customers a certain level of insurance: It creates a budget based on its Agile cost estimates and commits to delivering certain capabilities within that budget. On occasion, when a client asks for something beyond the agreed scope, the budget must be revisited. Thimler recognizes that not all customers are ready to procure this way, and at times Compax has turned down business because a customer has requested a fixed-price proposal.



[To work] it needs a customer that understands Agile... there is a responsibility on [the] customer side. They need to focus on what is important and to understand that wasting time by slow decision-making costs money.



Configuring different business models

One of the guiding principles of Telefónica's new approach to transformation is to use less customization and more configuration. Garcia says, "We have selected vendors with a clear roadmap. We want to leverage those roadmaps as much as possible to avoid customization. Otherwise, we spend a lot of money [on customization] and we miss out on the evolution of the products."

Jennifer Kyriakakis, MATRIXX's Founder and Chief Marketing Officer (CMO), stresses that MATRIXX uses a software-as-a-service (SaaS) commercial model but is a product company that does not derive revenues from services.

MATRIXX allows customers to control how they use the software by providing training, after which customers are completely autonomous and able to make all the changes they need to configure new services. "They're not dependent on MATRIXX to actually deliver any new capabilities or functionalities," she notes.

Buying out of the box

"Every time someone buys something from Salesforce, they are buying it because it's out of the box – it's configuration only," explains Oisín O'Connor, Industry GTM Leader for Communications at Salesforce. He adds: "It's aligned to TM Forum standards and delivers a great experience. They will be able to run it themselves; they can access people to train them on the platform because we have a whole ecosystem.

"That's very different from 10 years ago when every deployment was highly customized. That only-for-us thinking has disappeared."

Implications for Telefónica

These different approaches have big implications for Telefónica too. Moving from engaging with one large, full-stack vendor to working with several vendors and a dedicated systems integrator meant putting in place a dedicated program to create new teams with new skills.

It also recognizes that it needs to spend more time working on how to leverage the greater flexibility it has gained and the options of more Agile software development.

Garcia acknowledges that the IT function in Telefónica generally has a bigger role to play, beyond managing vendor relationships. It has a steering committee with a remit of deciding how best to engage with and leverage vendors' capabilities.

He comments, "With having different vendors we have more touch points to press when it comes to maneuvering...during the implementation of the transformation program and there are more alternatives to find the right solution."



We have selected vendors with a clear roadmap. We want to leverage those roadmaps as much as possible to avoid customization.

Otherwise, we spend a lot of money [on customization] and we miss out on the evolution of the products.



He points out that it is still early days in terms of judging the success of its new approach to transformation and the relationship with its vendors, but the signs are promising.

Success will be based on whether the new IT organization meets its technical, commercial and financial key performance indicators (KPIs). These include a reduced cost run-rate resulting from moving applications and workloads to the cloud, and reduced time to market for new products and services – for example, the launch of stronger multi-play services.

What next for Telefónica's transformation?

As the BSS transformation progresses, Telefónica will turn its attention to its OSS. In some Opcos, there are already projects to transform OSS, while others, like Telefónica Deutschland, will turn their attention to the OSS once BSS transformation is delivering its first results.

Work is underway at group level on what Telefónica calls FAST OSS – as Enrique Blanco, Group CTIO, <u>explained in a recent interview</u>. He noted, "OSS is much more complex to solve. It is one of the most significant pieces of this extraordinary puzzle."



OSS is much more complex to solve. It is one of the most significant pieces of this extraordinary puzzle.



section 3

telefónica sets the pace – where are the other operators?

15



The potential of 5G is clearly driving some of the new functionality that CSPs are requesting in their new enterprise BSS systems. But this is by no means the only driver for transformation. "We've supported customers for decades in maximizing their profit margins and securing their customer base," says Thimler at Compax. "The difference now is they need their time to market to be even faster. Compax and MATRIXX are leveraging an integration that allows a fast deployment of pricing and product changes. Prebuilt workflows, open architecture and simplification reduce the impact felt across systems and accelerate the changes."

Why cloud native is essential

Based on Thimler's comments, a cloud native approach to digital transformation is essential, if only to allow operators to fulfill the basic functions of being able to launch, tweak and retire traditional telecoms products as and when they decide the time is right.

Few operators are as far along the journey to becoming cloud native as Telefónica. "On a scale of one to 10, with one being at the very start of the cloud journey and 10 being at the end of it, we are still at the lower end of the range," comments Dan Ford, SVP and General Manager for Communications and Media at Salesforce.

He thinks the speed of transformation and cloud adoption is on the cusp of change, saying, "There are enough proof points out there of operators embracing cloud and cloud native BSS applications. Covid-19 accelerated that and the activity of hyperscalers in the drive to edge cloud has really woken up operators to

the need for change if they want to behave as an equal partner in this ecosystem."

Ford cites the examples of Telstra which recently launched its T25 vision and strategy aimed at leading the Australian telecoms market by simplifying its operations and product set, improving customer experience and reducing its cost base. And Lumen (formerly CenturyLink) in the U.S. is driving transformation in a bid to deliver differentiated experience to its customers.

Reducing complexity is a winner

Reducing complexity is also an argument that transformation fans seem to be winning, reckons Ford. "The challenge that we see on a daily basis with our CSP customers is decades and decades and decades of product complexity and bloated product catalogs," he says. "I recall a conversation I had a couple of years ago with [BT's Group CTIO] Howard Watson and my former colleague and CEO of Vlocity, David Schmaier.



"He was kind of shaking his head and saying 'We're the poster child for complexity; we have a million SKUs in our product catalog'." A stock keeping unit or SKU is a unique set of numbers and letters used to identify, locate and track a product internally.

Moving down the lines of command

Compax's Thimler reckons that, at long last, senior management is mandating simplification as part of transformation projects. Indeed, one of Philip Jansen's first goals as CEO of BT Group in February 2019 was to radically simplify the business and the SIMPLIFY program was set up. BT describes it as one of the largest and most ambitious business and IT transformations ever undertaken.

Thimler thinks there are two reasons that simplification is a priority for the business. The first is cost: The costs associated with multi-year transformation projects that tend to fail are immense. The second is because IT organizations now want to get a minimum viable product (MVP) for a new system within three to six months and this is not possible without massive simplification.

Both Ford and MATRIXX's Kyriakakis cite how Telstra completed a massive simplification process. At one time the Australian operator had 1,800 consumer calling plans supported by 50 different systems. The massive simplification process enabled Telstra to eradicate its billing systems altogether and adopt a hybrid post-paid/prepaid model which means it no longer needs to create bills.

A BSS that is fit for 5G

The urgent need for a BSS that can truly leverage the capabilities of 5G is often the catalyst for a new cloud native approach to transformation. When it comes to new, 5G-ready requirements, they tend to fall into three buckets:

- 1. Wanting to deliver differentiated connectivity using capabilities such as edge computing and network slicing.
- **2.** Bundling new services delivered by the operator or its partners with core connectivity products.
- **3.** Providing a real-time, digital experience to customers and in some cases, the ability to manage the services they receive themselves.



The urgent need for a BSS that can truly leverage the capabilities of 5G is often the catalyst for a new cloud native approach to transformation.



Yet at the same time simplification has become a prime mantra for operators and how they need to manage their legacy communications and connectivity businesses, 5G takes them into a new era of complexity. As outlined above, it involves delivering differentiated network experiences to different categories of users and bundling services on top of this connectivity. The only way to do this, at scale, is with a high degree of automation.

Automation is foundational

New online charging systems that allow customers to order 5G network services with service level agreements (SLAs) they can change as required are fundamental to this automation. "If you don't have the charging piece in that orchestration layer, then how can you deliver a specific SLA to a customer and monetize it?," asks MATRIXX's Kyriakakis.

When it comes to the first two sets of requirements listed above, ambitions vary, based on the visions that operators have around 5G and the broader ICT services market. "The operators that are on the forward-thinking side, and the ones that are rolling out 5G standalone (SA) systems sooner rather than later, tend to be the ones that have large enterprise businesses already," says Kyriakakis.

She adds, "Their requirements are richer and more complex. They want a single monetization layer and they want to flow everything through it. So that's not just 5G network traffic, it is also edge compute, storage and cloud services. And they want to monetize API calls."

In other words, these operators want BSS systems that allow them, for example, to look at the data that's coming through edge applications and to link this data to business outcomes that they can build new pricing models around.

Other operators, for example challenger brands whose market is more on the small- and medium-sized enterprise segment, are more focused on automation and providing customers with a better digital experience, Kyriakakis states.

Building for uncertainty

In reality, business models for 5G-enabled services, and the role that telecoms operators will play, are still unclear. Operators need to put in place new systems and capabilities that give them the necessary flexibility and scalability to seize on growth opportunities as they arise.

Chris Gibson, VP of Product Management at MATRIXX, reckons that uncertainty is something that telecoms operators now need to live with because it sits at the very core of the future ICT services market.

He says: "It's less about when will things become more certain and more about how we deal with uncertainty in a way that will minimize risk. And of course, there's an industry that's dealt with that already – the software industry...and that's how start-ups work."



Forward-thinking operators want a single monetization layer and they want to flow everything through it. So that's not just 5G network traffic, it is also edge compute, storage and cloud services. And they want to monetize API calls.



Companies address this, according to Gibson, "By transforming their software development style from a sort of certain waterfall, where you have all your requirements upfront, into an Agile methodology where you pivot. That's what telecoms needs to do."

Putting in place a flexible product catalog which "allows you to try lots of things at volume" is going to be crucial to this software-company mindset Salesforce's Ford says.

Responsive (real-time), flexible experiences

The term "real-time" is often used like punctuation and frequently misunderstood. A good example is that the often-quoted need for real-time capabilities in future BSS systems really is more about system responsiveness than real-time *per se*.

Responsiveness is key in the context of network slicing and dynamic pricing as a strategy. If operators are to realize their vision of offering differentiated, dynamic products and price plans for access to different network resources and elements with variable SLAs – and to monetize this flexibility – their systems must be responsive.

The concept of responsiveness also sits within the broader category of flexibility. Ford at Salesforce says telcos need to move away from a core mindset of product cycles which are measured in years rather than days or weeks.

He comments, "When you look at hyperscalers, they are constantly tracking and monitoring how consumers are interacting with their services and looking for new business opportunities – and all this gets back to that product catalog. In this era of 5G, everybody's still looking for the killer use case. The fact is that there probably isn't one but there are going to be maybe a thousand very targeted use cases."



In this era of 5G, everybody's still looking for the killer use case. The fact is that there probably isn't one but there are going to be maybe a thousand very targeted use cases.



section 4

make it happen strategies for a successful BSS transformation



The era of awarding contracts to one single vendor for full-stack BSS transformations is drawing to a close. Today's CSPs want to evolve to modular, open architectures that give them the flexibility to reuse software and applications in different parts of their business and to swap in and swap out different products and solutions as and when the market, or their business, dictates.



Consider disaggregated, multi-vendor solutions

Start with a base reference architecture, such as TM Forum's <u>Open Digital Architecture (ODA)</u> which is constantly being evolved through collaboration between operators and vendors – Forum members – from all over the world. It provides a blueprint to help communications service providers to:

- succeed in multi-vendor environments.
- exploit the flexibility of being cloud native, including scalability
- lower the cost of automation for operations
- support flexible business models
- gain business agility
- become "ecosystem-capable".



APIs underpin open architectures and platform models

Open APIs enable ecosystem partners' different data models to be integrated in a pragmatic, secure and controlled way. The magic of APIs is unleashed by their reuse at every opportunity, in a consistent way. See TM Forum's suite of more than 60 REST-based Open APIs and read this report to understand how they are being deployed globally by vendors and CSPs.

Also see How to lead in the Open API economy.

Watch this video to see Enrique Blanco, Global CTIO at Telefónica explain why his company endorses TM Forum's ODA and is participating in its on-going evolution:



Read Open Digital Architecture (ODA) - introducing ODA:







Configuration, not customization is the key

APIs are also foundational to configuration instead of customization, which ultimately creates cost and delay, and inhibits agility. As the examples of MATRIXX Software, Compax and Salesforce in the Telefónica Deutschland case study show, out of the box products that can be rapidly configured – by the operator – to support the services they need can be a successful approach.



Online charging is foundational to providing digital experiences

A single convergent charging system within the orchestration layer that charges for all kinds of services brings unprecedented business agility. This simplification overcomes the nightmare that most operators are struggling with now – thousands and thousands of products, packages and price plans that can take months to update and so stymy efforts to get new products or monetization models to market quickly.

Remember that monetizing 5G is about much more than charging for network traffic, it also involves networking slicing (to agreed service level agreements), edge compute, storage, cloud services, and API calls. This means the online charging engine needs to be able to run on any kind of cloud infrastructure, from private cloud with VMware and OpenStack to public cloud.

Put another way, operators need BSS systems that can link applications and performance to business outcomes to which they can attach a price. Responsiveness (don't get too hung up on real time) is key to offering differentiated, dynamic products and price plans.



Divorce product catalogs from individual stacks and charging systems

Previously, Telefónica had one product catalog per stack and one in every charging system. Before its transformation, Telstra had 1,800 consumer calling plans supported by 50 different systems. Operators' catalogs are typically associated with product cycles that can be measured in years. Hyperscalers constantly track how customers are engaging with their products and services, which triggers new business opportunities quickly fed back into the product catalog. There is not going to be a single killer app so much as thousands of precisely targeted use cases, some of which will have a very short window.



Hyperscalers constantly track how customers are engaging with their products and services, which triggers new business opportunities.

About Compax



Compax's BSS solution recognizes the market's need to pivot its customer and revenue management quickly. Its cloud-based Digital BSS System is a game changer for clients who need to support multiple lines of business (B2C, B2B, B2B2X). Known for our practical engineering and rapid, agile-based BSS deployment, 70-80% of Compax's customer base is in the Telecommunications sector along with clients in the Digital Media, Public Administration, Insurance, and Transportation industries. Founded in 1994, Compax operates across the globe with 475+ employees in Europe, Taiwan, South Korea, and United States of America.



Compax & MATRIXX are leveraging an integration that allows a fast deployment of pricing and product changes. Prebuilt workflows, open architecture and simplification reduce the impact felt across systems and accelerate the changes.



Fritz Thimler, VP International Business, Compax



About MATRIXX Software

MATRIXX Software is the global leader in 5G monetization for the communications industry. Serving many of the world's largest operator groups, regional carriers, and emerging digital service providers, MATRIXX delivers a cloud native digital commerce solution that enables unmatched commercial and operational agility.

Unifying IT & networks, MATRIXX delivers a network-grade converged charging system (CCS) enabling efficient hyper-scaling of infrastructure to support consumer services, wholesale and enterprise marketplaces.

Through its relentless commitment to product excellence and customer success, MATRIXX empowers businesses to harness network assets and business agility to succeed at web scale.



New online charging systems that allow customers to order 5G network services with service level agreements (SLAs) they can change as required are fundamental to this automation. If vou don't have the charging piece in that orchestration layer, then how can you deliver a specific SLA to a customer and monetize it?



Jennifer Kyriakakis, Founder & CMO, MATRIXX Software



About Salesforce for Communications

Salesforce for Communications, which includes Communications Cloud, unifies all aspects of a Communications organization onto a single, scalable platform that delivers fast, modular, agile, and differentiated experiences.

Communications Cloud, an industry-specific product suite built in alignment with TM Forum industry standards that transforms the B2C, B2B and wholesale customer experience, accelerates digital channel adoption, reduces product launch cycles and streamlines order capture, fulfillment and delivery.



Reducing complexity is the key to moving the dial on agility, and our customers who have simplified their bloated product catalogs have seen the greatest return on investment.



Dan Ford, SVP & GM, Communications & Media, Salesforce



tm forum open digital framework



A blueprint for intelligent operations fit for the 5G era

The TM Forum Open Digital Framework provides a migration path from legacy IT systems and processes to modular, cloud native software orchestrated using Al. The framework comprises tools, code, knowledge and standards (machine-readable assets, not just documents). It is delivering business value for TM Forum members today, accelerating concept-to-cash, eliminating IT and network costs, and enhancing digital customer experience. Developed by TM Forum members through our Collaboration Community and Catalyst proofs of concept and building on TM Forum's established standards, the Open Digital Framework is being used by leading service providers and software companies worldwide.

Core elements of the Open Digital Framework

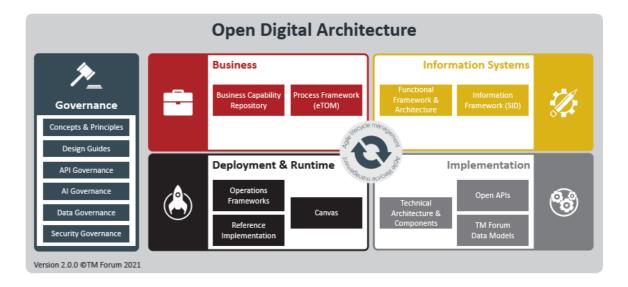
The framework comprises TM Forum's Open Digital Architecture (ODA), together with tools, models and data that guide the transformation to ODA from legacy IT systems and operations.

Open Digital Architecture

- Architecture framework, common language and design principles
- Open APIs exposing business services
- Standardized software components
- Reference implementation and test environment

Transformation tools

- Guides to navigate digital transformation
- Tools to support the migration from legacy architecture to ODA



Maturity tools & data

- Maturity models and readiness checks to baseline digital capabilities
- Data for benchmarking progress and training Al

Goals of the Open Digital Framework

The Open Digital Framework aims to transform business agility (accelerating concept-to-cash from 18 months to 18 days), enable simpler IT solutions that are easier and cheaper to deploy, integrate and upgrade, and to establish a standardized software model and market which benefits all parties (service providers, vendors and systems integrators).

Learn more about collaboration

If you would like to learn more about the project or how to get involved in the TM Forum Collaboration Community, please contact George Glass.

































































meet the research & media team

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To learn more about TM Forum's Open Digital Architecture, please contact **George Glass**