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TM Forum Open APIs:

Enabling a zero-integration API economy

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TM Forum Open APIs: Enabling a zero-integration API economy

The TM Forum Open API Program is a collaborative program driven by TM Forum members for the entire industry. We wish to sincerely thank all the companies and individuals who have contributed to the program. Join us!

Introduction

It wasn't long ago that application program interfaces (APIs) were largely limited to the technical domain, but as companies embrace digital transformation and begin to take a platform business model approach to building connected ecosystems, APIs are becoming a significant catalyst for business growth. McKinsey refers to APIs as "the connective tissue in today's ecosystems." Gartner agrees, stating that APIs are now critical to interconnecting "people, places, systems, data, things and algorithms…"

In short, APIs allow businesses to connect, forge profitable partnerships, monetize data and innovate. They also help businesses become a lot more efficient, both in terms of reducing operational and technology costs as well as the time it takes to get new products to market.

In 2016, TM Forum launched its Open API Program, which was collaboratively developed by service providers to be used internally to transform IT, increase operational agility and improve customer centricity, and externally to deliver a practical approach to seamless end-to-end management of complex digital services. Today, TM Forum's suite of 54 REST-based Open APIs have been deployed in 66 countries, with more than 770 member companies and 5,400 professionals downloading and using them.

Read this ebook to understand:

■ How telcos can participate in the open API economy
■ The different approaches to a platform business
■ How BT began a successful transformation strategy by deploying a single API
■ What the drivers and challenges are around API adoption
■ How platforms and APIs can improve customer centricity
■ Where TM Forum Open APIs have been deployed
■ How to determine return on investment for APIs
■ Strategies for adopting Open APIs

" APIs are now critical to interconnecting people, places, systems, data, things and algorithms… "

Chapter 1
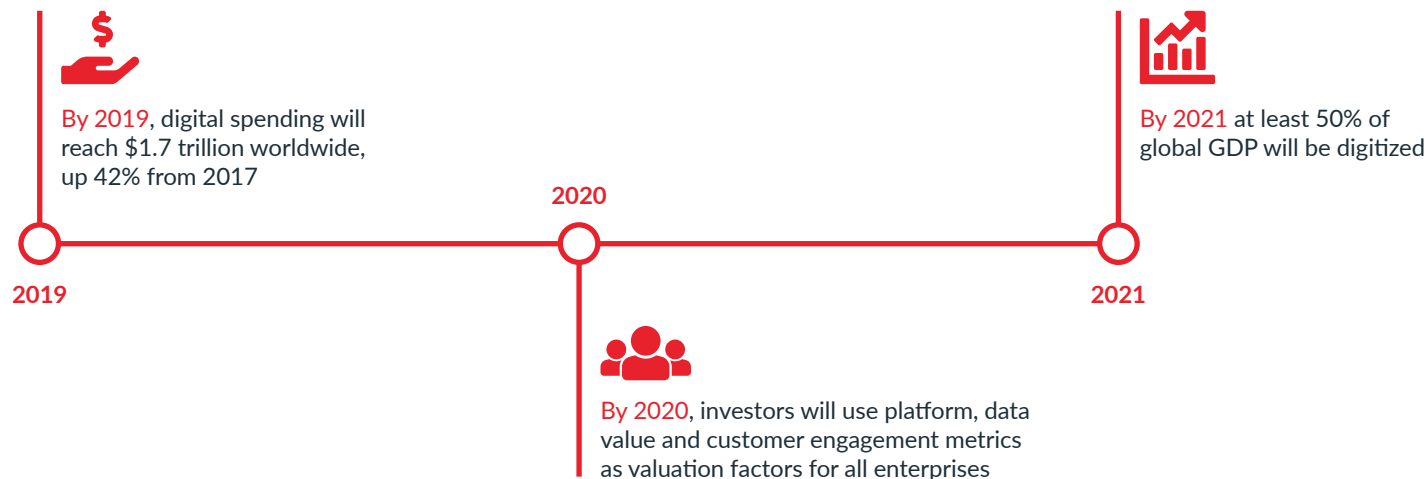
What is the Open API economy?

The power of the platform revolution and digital transformation cannot be underestimated, and APIs underpin all successful platform business models. Simply put, APIs are programming instructions that enable communication between software systems, and they are critical to enabling interconnectivity with external partners.

In her blog, *Welcome to the API Economy*, Gartner's Christy Pettey explains APIs like this: "[They] make it easier to integrate and connect people, places, systems, data, things and algorithms, create new user experiences, share data and information, authenticate people and things, enable transitions and algorithms, leverage third party algorithms, and create new products/services and business models."

APIs allow businesses to connect, forge profitable partnerships, monetize data and innovate. They help companies become a lot more efficient by reducing operational and technology costs, as well as the time it takes to get new products to market, and they are becoming increasingly important as digitalization increases.

Digitalization is the new normal

By 2019, digital spending will reach $1.7 trillion worldwide, up 42% from 2017

2020

By 2021 at least 50% of global GDP will be digitized

2019

2021

By 2020, investors will use platform, data value and customer engagement metrics as valuation factors for all enterprises

TM Forum, 2018 (source for data: IDC)

What's the role for CSPs?

The open API economy represents a $1.2 trillion opportunity in cumulative operating profit for communications service providers (CSPs), according to the World Economic Forum (WEF). The WEF stresses the role of telecom companies in helping other industries (media and entertainment, electricity, logistics, automotive and e-commerce) unlock the value of digitalization and sees CSPs as key enablers of the Fourth Industrial Revolution.

To realize the opportunity, CSPs must not only transform their own businesses digitally, but they also must embrace platforms as a new way of doing business. Accenture sees the platform revolution as the "most profound change in the global macroeconomic environment since the Industrial Revolution." Indeed, digital native tech companies such as Alibaba, Amazon, eBay, Facebook and Google have become billion-dollar companies by adopting digital platform strategies.

What is a platform?

CSPs are beginning to experiment with platforms but in different ways because the term 'platform' can have multiple meanings. A platform strategy can have two key elements that are related but discrete:

a *platform business model*, where rather than playing a direct role in the supply chain, companies build digital ecosystems or marketplaces connecting consumers with producers of goods and/or services, making it easy for them to do business (think, Airbnb, Amazon Marketplace, eBay and Uber)

OPEN APIs:
TURNING BUSINESS
STRATEGY INTO REALITY

OCTOBER 2016

PLATFORMS:
HOW TO JOIN THE
REVOLUTION

JANUARY 2017

For much more on how APIs make the platform revolution possible, see our ebooks *Open APIs: Turning business strategy into reality* and *Platforms: How to join the revolution*

an *infrastructure platform*, which supports an electronic marketplace and facilitates the digital business model (think, Amazon Web Services or Microsoft Azure)

The most successful platform businesses began with a platform business model in mind, so they purposely built their infrastructure to support such a model from the outset. CSPs, on the other hand, have established business models, and they must change their networks and support systems to support a platform business model.

Many CSPs are struggling to decide whether they should adopt platform business models and develop platform architectures, or whether they should focus simply on becoming best-in-class connectivity providers. For our recent *Digital Transformation Tracker 2 report*, we surveyed 178 CSPs from 105 unique companies operating in 59 countries, and 91 suppliers about what service providers should become. Nearly half said CSPs should aspire to become platform providers in one way or another.

What should CSPs aspire to become?
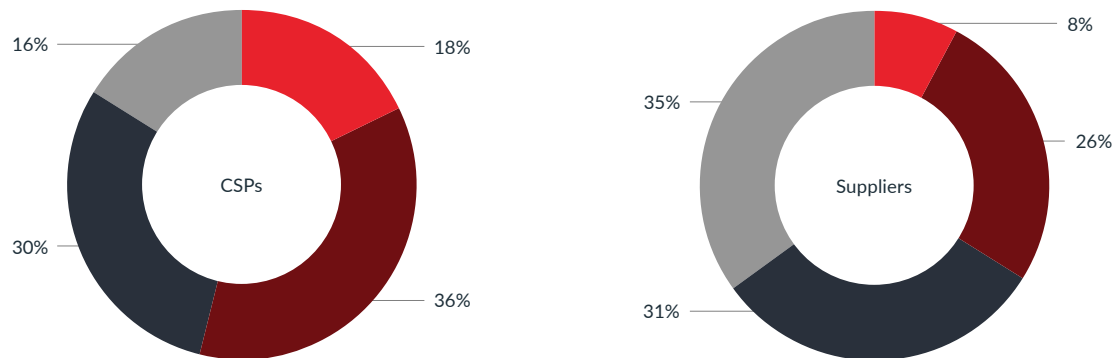
Legend:
- ■ Best-in-class connectivity providers (fixed, mobile, IoT)
- ■ Multi-pay (fixed, mobile, TV, broadband) operators that partner with internet companies and other digital service providers
- ■ Full digital service providers offering a rang of services, somtimes in competition with players such as Google and Apple
- ■ Platform providers working with partners to bring their services to market

TM Forum, 2018

Today, only a few CSPs are embracing platform business models to compete directly with over-the-top (OTT) players. Turkcell and VEON are examples, although each company is taking a different approach.

Turkcell creates its own platform services
Turkcell is developing its own digital messaging, music, TV, content and cloud services to compete directly with companies like Facebook and Netflix, and the telco is seeing some impressive results. It's core app has been downloaded 86 million times, making it the second largest app player in the Turkish market.

Turkcell's platform strategy pays off in 2017

40%
biannual growth in group revenue

5.1%
increase in revenue from data and digital services

Lowest
mobile churn rate for the past decade

1.5 million
new customers

23%
annual revenue growth

TM Forum, 2018 (source for data: Turkcell)

Turkcell CEO Kaan Terzioglu believes CSPs can compete with OTTs directly by providing better quality of service as well as differentiating on security and easy of payment. The company does, however, partner with third parties and exposes their capabilities through a suite of open APIs to provide additional services.

VEON partners for consumer platform
Whereas Turkcell created its own digital services to rival OTTs, VEON (formerly VimpleCom) has created a digital platform that aggregates services provided by partners such as Getty Images, Fashion TV, Vogue and Wired. The company followed in the footsteps of Chinese messaging and social media app Wechat by creating a single app that not only offers messaging, but also services like taxi hailing, media content and shopping, all provided by partners.

VEON doesn't allow exclusivity – competing businesses can join the company's platform – so it is up to the customer to choose. VEON can also make recommendations using artificial intelligence and customers' preferences. Like WeChat, the app is free to download, and messaging and voice calling through the app are free even when the subscriber is out of credit. Customers are not charged data for using the service, but VEON earns revenue through agreements with its partners.

VEON's platform realizes early success

Available
in 5 markets

200
partners

No. 1 free app
Since launching in October 2017 in Pakistan, the app is the No. 1 free app on Google Play and has been downloaded 1.5 million times

TM Forum, 2018 (source for data: VEON)

Developing platform architectures

While only a small number of CSPs are providing consumer platforms, many more are adopting platform architectures as part of their digital transformation strategies. This includes taking a microservices approach to IT and networking, which means breaking large, monolithic software applications and network functions down into smaller, reusable components that can be accessed through open APIs. Doing this reduces capital and operational costs, and provides new opportunities for revenue.

In its white paper *What it really takes to capture the value of APIs*, McKinsey refers to APIs as "the connective tissue in today's ecosystems." As an example, the consultancy cites a bank which created a library of standard APIs that software developers could use for a wide variety of data-access tasks rather than having to figure out the process each time. In this instance, using APIs reduced traditional product development IT costs by 41% and led to a 12-fold increase in new releases. Telcos are beginning to realize similar benefits.

BT's platform architecture starts with a single API

BT has adopted a platform strategy that began with a single API, a "managed technical availability API" used within the UK by BT and every other communication provider to check the technical availability of services at the customer's premises.

"That was the start of our platform-based approach – a single API that was actually wrapping our legacy applications and exposing, in a consistent and coherent manner, a set of services to other communications providers," explains George Glass, Chief Systems Architect, BT. "As we developed our architecture, we actually applied the platform-based model right across our entire IT estate, which at that point in time came to about four and a half thousand systems. Each and every one was mapped to only one platform, and then we actually took the decision to transform our business using the platform-based approach."

This has allowed BT to reduce the total number of IT systems from 4,500 to fewer than 2,000 today, with a goal of getting down to just 700 systems.

Watch George Glass explain how BT developed its platform strategy using TM Forum Frameworx and Open APIs
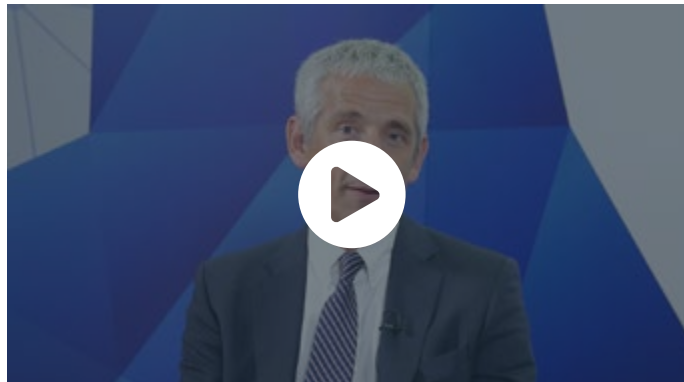
Vodafone uses APIs for Ocean strategy

Vodafone is also adopting a company-wide platform approach that uses TM Forum Open APIs to expose resource-facing and customer facing services as part of its transformation project called Vodafone Ocean. The idea is to take a "black box" approach, so that what's inside the platform can be vendor- or operator-specific, which allows for innovation that can set companies apart competitively. Vodafone is using a three-pronged approach that focuses on agility, customer experience and efficiency.

Vodafone's layered architecture

Customer Management: Manages the commercial relationship with customers (orders, CRM, billing)

Service Management: Manages end-to-end customer-facing services built by service-chaning multiple technical components (resource-facing services)

Resource Management: Management and orchestration of component services (resource-facing services) from each technology domain

TM Forum, 2018 (source for data: Vodafone)

To learn more about Vodafone Ocean and how the company is using TM Forum's Open APIs, please read **this case study**

Chapter 2

CSP adoption of Open APIs – What are the drivers and challenges?

Two years ago, TM Forum launched its Open API Program, creating a suite of standard REST-based APIs to enable rapid, repeatable and flexible integration of software systems. Using Open APIs, CSPs can easily create, build and manage complex, innovative services.

The Forum's Open APIs are technology agnostic and can be used and have been proven for use in any digital services scenario from enabling the internet of things and smart cities to onboarding virtual network functions and developing next-generation operational and business support systems (OSS/BSS). Recently, the Forum announced a partnership agreement with the Linux Foundation to license the Open APIs under the Apache 2.0 License terms and conditions, which allows them to be shared across the entire Linux Foundation community for use in its open source projects such as the Open Network Automation Platform (ONAP).

" TM Forum Open APIs are technology agnostic and can be used in any digital services scenario. "

TM Forum Open APIs at a glance
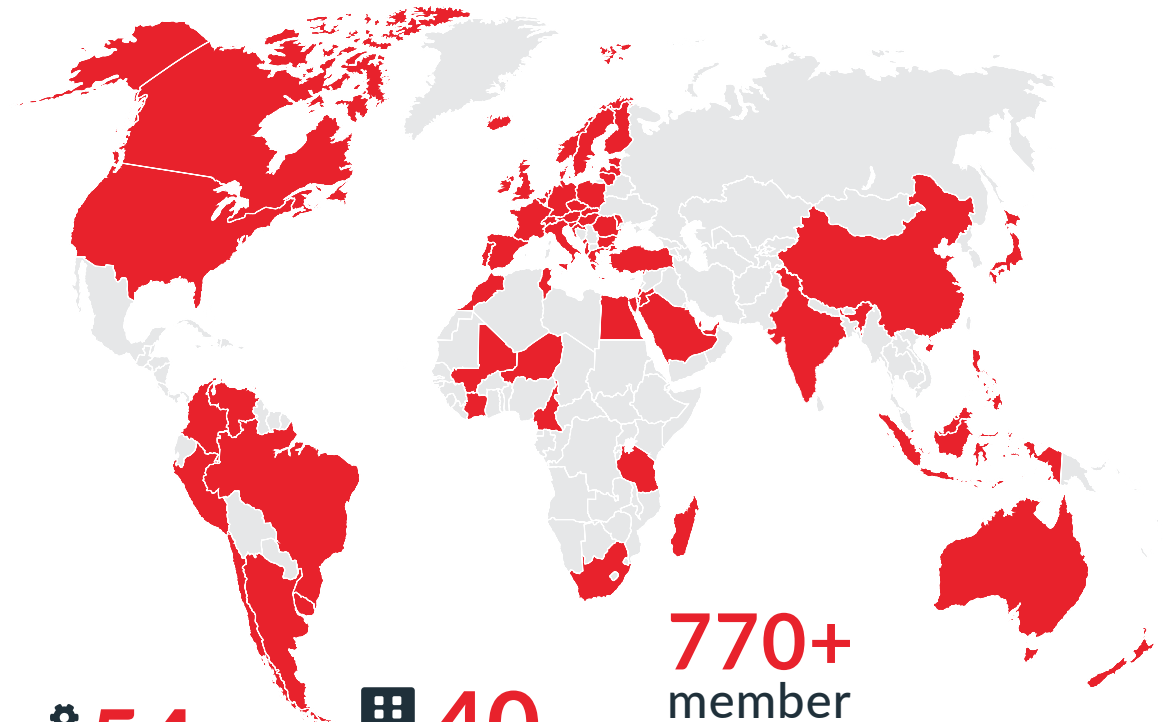
54
Open API
specifications
deployed in
66 countries
globally

40
member
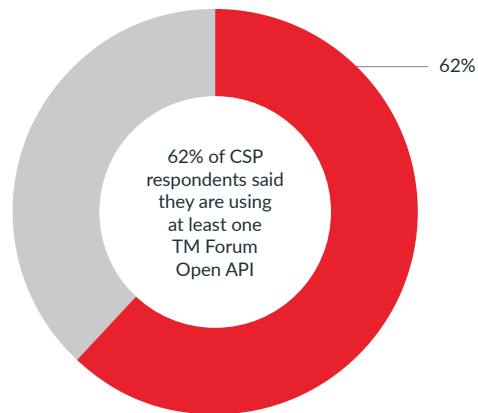companies
signed up to the
Open API
Manifesto

770+
member
companies
and **5,400+**
professionals
downloading
and using
the APIs

21,000+
community
professionals

TM Forum, 2018

Who's using the APIs?

For this report we surveyed 53 CSP and 60 supplier executives about their use of TM Forum Open APIs. It's significant and quite encouraging that operators are now using the Open APIs in 66 countries around the world, with 62% of CSP respondents saying they are using at least one of the Open APIs and 18% using 10 or more.
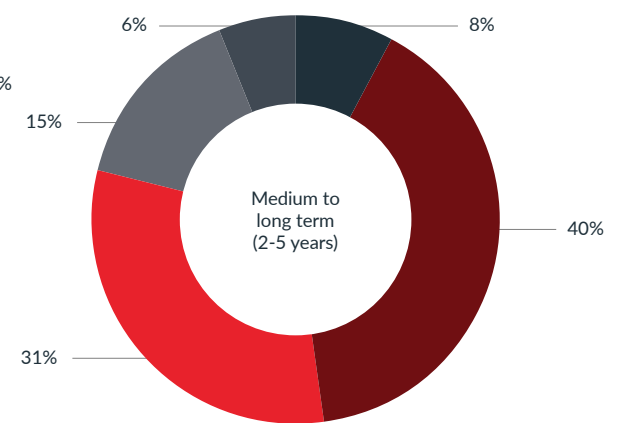
A full 98% of suppliers said they believe the Open APIs are "good for business," and they are optimistic about their CSP customers adopting the APIs, especially in the medium to long term (see graphic below). This projected shift over time isn't surprising, given that most CSPs' transformation programs are in their infancy. According to our *Digital Transformation Tracker 2* (DTT 2) survey, conducted late last year, telco transformation programs typically take five to seven years to complete, and nearly 70% of respondents said they were either still in the planning process or in the early stages of implementation. We'll discuss supplier adoption more in the next chapter.

CSP deployment of Open APIs

62%

62% of CSP respondents said they are using at least one TM Forum Open API

TM Forum, 2018

Supplier optimism about CSP adoption of Open APIs

■ Very optimistic ■ Reasonably optimistic ■ Neither optimistic nor pessimistic ■ Reasonably pessimistic ■ Very pessimistic

Short term
(1-2 years)

31%
4%
16%
49%

Medium to
long term
(2-5 years)

8%
6%
15%
40%
31%
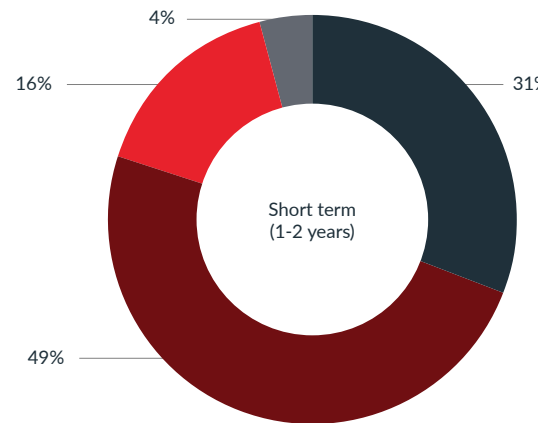
TM Forum, 2018

" A full 98% of suppliers said they believe the Open APIs are 'good for business'. "

Why are CSPs using Open APIs?

CSPs are using Open APIs to improve business agility, reduce costs and simplify IT. The graphic below shows the percentage of operators who rated each of the drivers we suggested as 'very important'. The results align closely with the results of the DTT 2 survey, with the exception of customer centricity which scored as the most important driver for digital transformation.

'Very important' drivers for adopting Open APIs

Driver	Percentage
Business agility (speed, partnerships, new business models)	63%
Simplification of IT	51%
Operational efficiency/cost reduction	50%
Growth opportunities (in new and current markets)	45%
Improving customer experience and creating omnichannel	43%
Compliance with company API mandate	37%
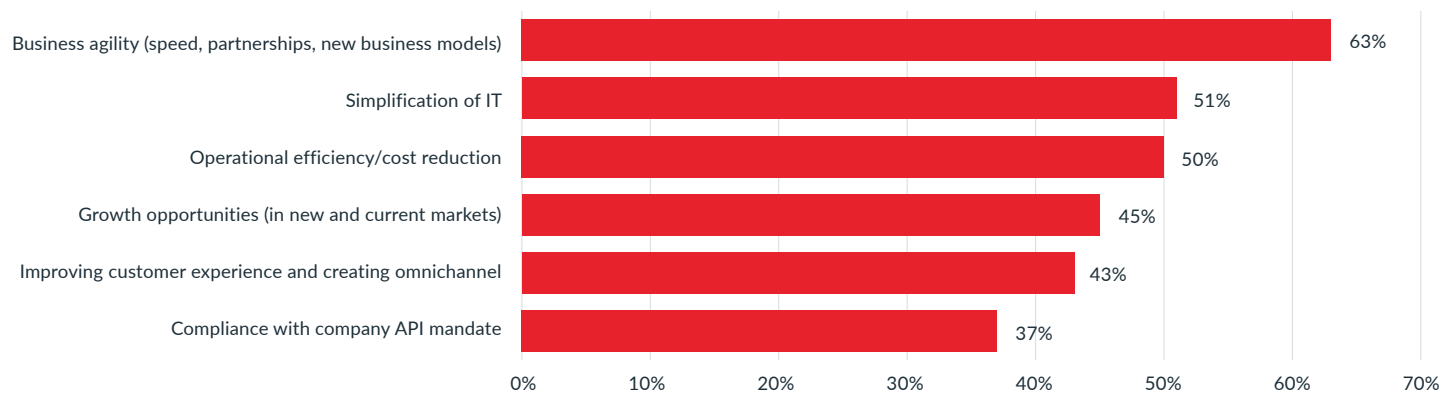
TM Forum, 2018

" CSPs are using Open APIs to improve business agility, reduce costs and simplify IT. "

Comparison of 'very important' drivers for digital transformation

■ DTT2 ■ DTT1

Driver	DTT2	DTT1
Stronger customer relationships/intimacy/brand	82%	67%
Business agility (speed partnerships, new business models)	69%	61%
Operational efficiency/cost reduction	65%	54%
Product/service innovation	56%	46%
Growth opportunities (in new and current markets)	50%	44%
The potential of new technologies	42%	35%
Regulatory and compliance requirements	27%	23%
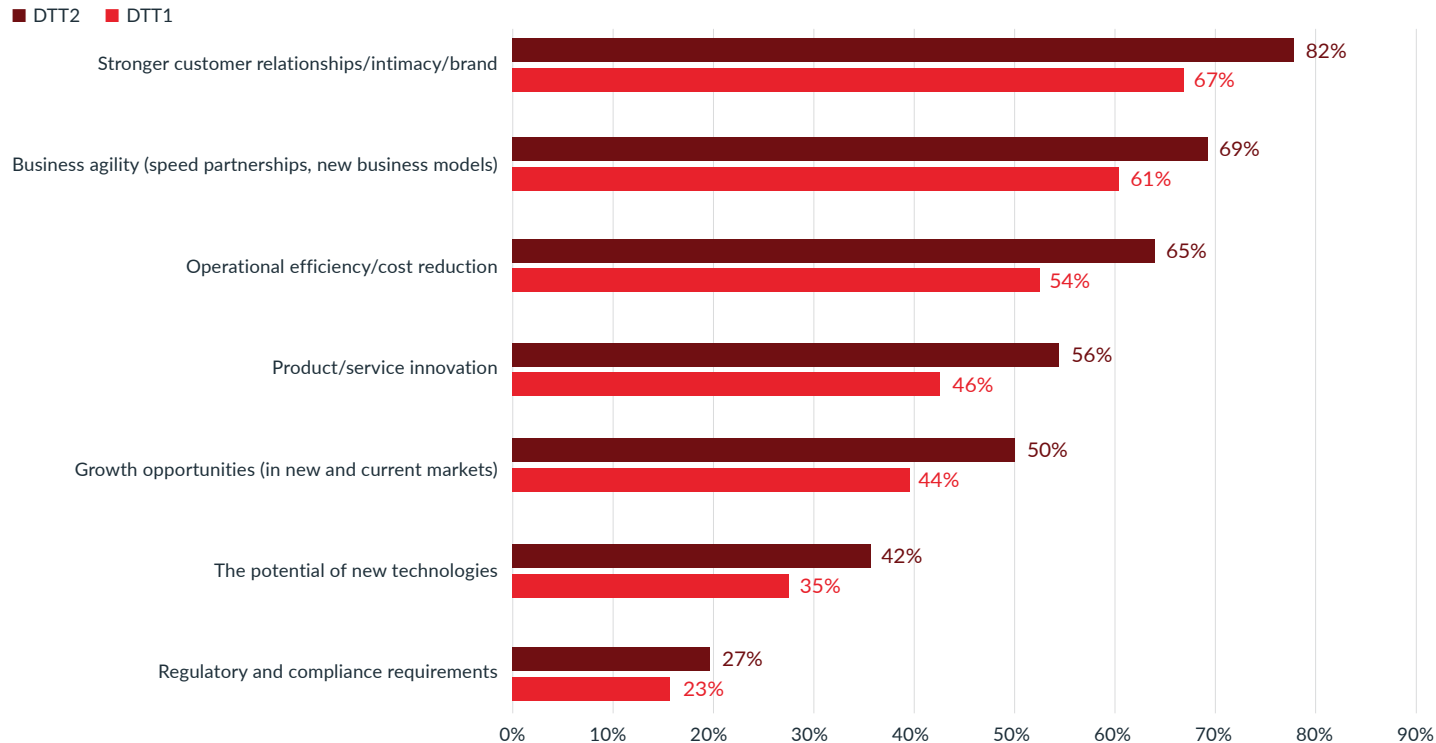
TM Forum, 2018

Using platforms and APIs to improve customer centricity

It's important for CSPs to realize that using an API-enabled platform approach can dramatically improve customer experience. MyRepublic is a good example. A few years ago, the company was in the enviable position of being able to develop its OSS/BSS from scratch, so the company opted to take a platform-based approach and use APIs to allow third-party access.

"Our vision is to create a strong ecosystem in the telecommunications space, and a strong ecosystem requires a unified platform," **says** Eugene Yeo, Group CIO, MyRepublic. "To achieve this, we have embarked on a path that is quite different from the traditional operators – we have built the entire IT stack ourselves, for example, our billing system, customer management system, orchestration, etc. This makes it very easy for us to

integrate with third parties by providing an API to our third-party vendors."

MyRepublic used this approach to create a fully automated order-to-cash system based on principles from TM Forum's Zero-touch Orchestration, Operations and Management (ZOOM) project. The results of the transformation project were impressive:

+60%
of orders fulfilled automatically

94% ☻☻☻
improvement in customer satisfaction

65% ✆
reduction in inbound calls relating to order fulfilment

7x increase
in order-desk efficiency

You can learn more about MyRepublic's transformation by reading this case study and watching the video below:

Watch Eugene Yeo explain how MyRepublic is automating operational processes using a platform-based approach

" Our vision is to create a strong ecosystem in the telecommunications space, and a strong ecosystem requires a unified platform. "

Eugene Yeo, Group CIO, MyRepublic

Orange uses Open APIs to become a digital service provider

For the past several years, Orange Group, which provides mobile services to 269 million subscribers in 29 countries, has been using the Forum's Open APIs to transform into a digital service provider and enabler. The APIs are already used for a significant number of the company's internal APIs and will soon be used for some external APIs such as product ordering for internet players.

Orange Group's API program has two primary focuses: API transformation and improving developer channels. API transformation aims to change the mindset and culture within each Orange operating company and to help projects expose and consume APIs.

"We are trying to help countries understand the power of APIs, how they can help to deliver better customer experience, better time to market…and, also, how it can help us partner and create new opportunities," says Laurent Leboucher, VP, Architecture, Enablers and Security, Orange Group.

Orange views both internal and external developers as customers. Today the company has more than 150 shared internal APIs and 48 external. Already a few thousand developers (external and internal) are using at least one API per month, and to make it easier for all developers, the company offers easy-to-use tools such as a web portal for internal use and external use (developer.orange.com).
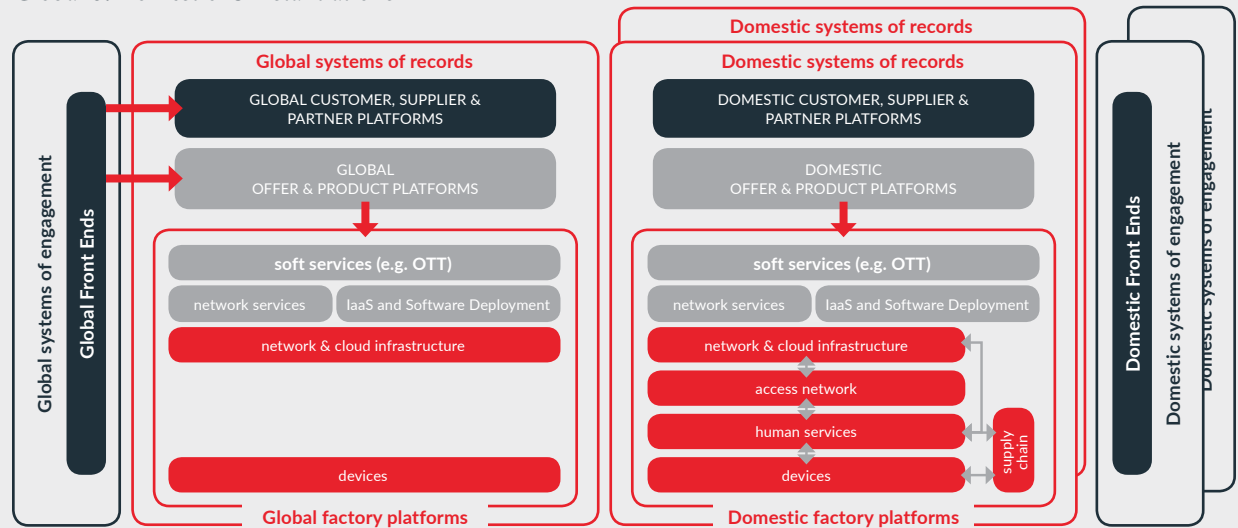
Reducing integration

Orange has a goal of "zero integration," which means moving to self-service APIs (both internally and externally). Other goals are to accelerate API adoption and support short- and long-term transformation of Orange's ITN (Information Technologies and Networks) architecture by leveraging API standards.

"Since we have moved to the Open APIs, people have started to understand why they're so important," Leboucher says. "Contributing to and leveraging TM Forum standards used by our peers and competitors is much more efficient than trying to develop our own internal standards. For our operational IT teams, this was an important criterion in their decision process."

Supporting ITN transformation

Below is a graphic depicting the company's global and local IT systems and how they interact.

Orange operates as a federation of national operating companies with local IT teams in every country. These teams operate autonomously with corporate labs to support them, so technical and IT governance must be clear, according to Leboucher. Orange Group identifies what should be local and global: Front ends and customer management platforms are examples of local solutions, while services and offer and product platforms can be shared across operating companies.

Global & Domestic IS instantiations

Orange Group

All the main blocks shown in the diagram must interoperate, and Orange uses TM Forum Open APIs and Frameworx to manage this at scale. In essence, the company has developed its own open digital architecture using TM Forum tools. (See this article for more about the TM Forum Open Digital Architecture.)

At the top of the layered stack in blue are party platforms, which are for customer engagement. Below sit offer and product platforms, which contain all the processes related to configuration of offers, rating and ordering. Beneath that layer are customer facing services (including network services and application services), running on a distributed cloud infrastructure as a service.

"You can see that those two layers are very independent and decoupled from each other, which means the same products can be provided to different customers segments," Leboucher explains. "We need this strong decoupling."

How the Open APIs help

All of Orange's platforms use the same underlying infrastructure, and TM Forum Open APIs explain how services are mapped.

An example of the Open APIs in action is the myOrange app, a mobile app that customers can use to manage all their interactions with their mobile operator such as upgrading service or monitoring data usage. The app uses APIs based on the Forum's Product Catalog, Product Ordering, Product Inventory, Usage Consumption, and OMA SMS APIs. Countries deploying the app are

Key TM Forum Open APIs supporting ITN transformation, mapped onto Orange Enterprise Architecture essential "blocks"

Orange Group
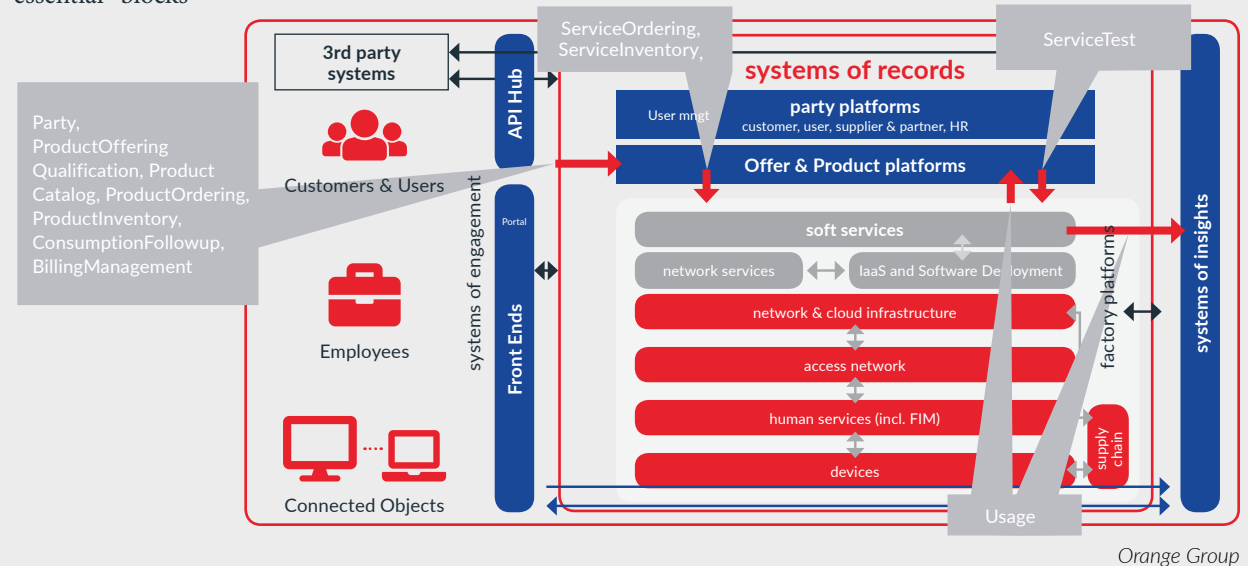
requested to expose these APIs. They are being used in one country today with four to follow.

Delivering end-to-end, SDN-enabled services quickly

Orange's Easy Go Network allows enterprises to instantly provision virtual network functions (VNFs) like virtual firewalls for branch offices with full digital self-service ordering, customer care and reporting functions via a user-friendly portal. The company is leveraging work MEF and TM Forum have been doing on MEF's LSO (Lifecycle Service Orchestration) Sonata, which defines the reference point supporting management and operational interactions between CSPs and their partners for processes such as ordering, provisioning, service

assurance and billing, to integrate with other operators for multi-operator, end-to-end connectivity services.

In addition, Orange has decided to use ONAP for management and control of its network and has implemented some of the Forum's APIs within ONAP. Leboucher says he hopes that with the next release they will be ready to expose APIs, the first being service ordering.

Ultimately, Orange plans to use the Open APIs to develop new business opportunities with partners. The company is already using the Product Ordering API with internet players and social networks to stimulate mobile data usage and increase average revenue per user.
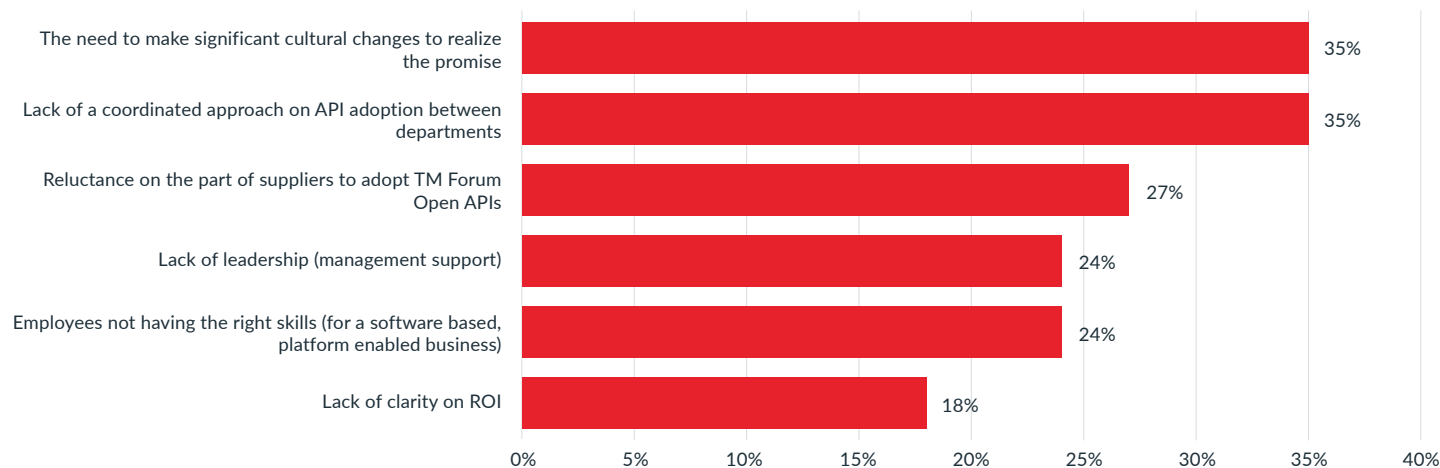
What are the challenges?

As part of our survey, we asked CSPs what the biggest inhibitors are to deploying TM Forum Open APIs and about the quantifiable metrics they use to illustrate the return on investment for API adoption. These are critical questions for operators to ask when developing an API adoption strategy.

The biggest obstacles to API adoption are the need for significant cultural change, lack of coordination between departments and lack of software skills. The graphic below shows the percentage of operators who rated each of the

challenges we suggested as 'very important'.

Again, this reinforces the results of the DTT 2 survey, which found that culture is the biggest obstacle to digital transformation. In that survey, half of all CSP respondents acknowledged that CSPs are hierarchical and less than 15% said their companies are innovative. This is significant, because until CSPs do away with hierarchies and devolve decision-making, they will be unable to take risks and be innovative in the way that digital native companies like Amazon and Google are.

'Very serious' challenges to adopting Open APIs

Challenge	Percentage
The need to make significant cultural changes to realize the promise	35%
Lack of a coordinated approach on API adoption between departments	35%
Reluctance on the part of suppliers to adopt TM Forum Open APIs	27%
Lack of leadership (management support)	24%
Employees not having the right skills (for a software based, platform enabled business)	24%
Lack of clarity on ROI	18%

TM Forum, 2018

"The biggest obstacles to API adoption are the need for significant cultural change, lack of coordination between departments and lack of software skills."
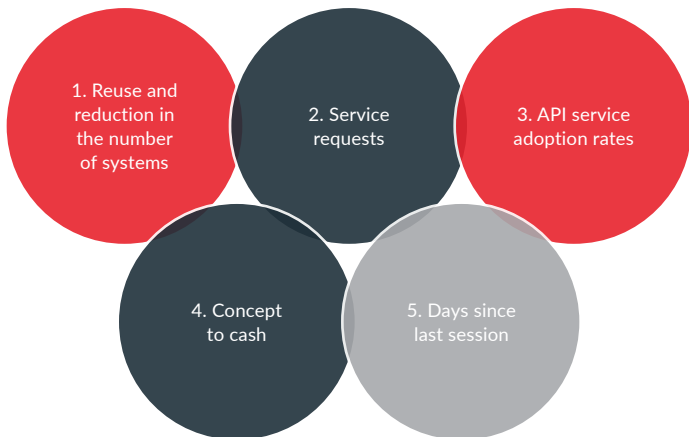
How to determine ROI for APIs?

We gave CSPs five metrics for quantifying the ROI for API adoption and asked which ones they use most often. They include:

- API adoption rates – the rate of uptake of the services exposed
- Concept to cash – the amount of time it takes to go from concept through design, development and deployment to when a product is realizing new revenue for the business (the shorter the duration, the more agile the organization is)
- Days since last session – a measure of the regularity of use of an API

- Reuse and reduction in the number of systems – refers to the simplification of systems (by designing an architecture to maximize reuse and reduce the overall number of systems, the cost of running the entire estate is significantly reduced)
- Service requests – the API services an organization offers to developers or end users via a catalog

Surprisingly, concept to cash ranked low, with results from our survey showing that most CSPs are starting with an internal, inward-looking approach to APIs. They are adopting them as part of a digital transformation strategy to reduce costs and simplify IT. The good news is, however, that the application of the TM Forum Open APIs for internal purposes also positions the operator to reap the rewards of externalizing capabiliites and monetizing them in new markets, as well as onboarding new, smaller companies as part of a merger and aquisition strategy.

Ranking the top metrics for measuring API ROI

1. Reuse and reduction in the number of systems
2. Service requests
3. API service adoption rates
4. Concept to cash
5. Days since last session

TM Forum, 2018

Chapter 3

Assessing supplier adoption of Open APIs

" TM Forum Open APIs are now a very concrete reality in our IT transformations throughout Orange Group. They are no longer an option. We definitely need our vendor partners to embrace the same APIs and get their solutions certified. "

Laurent Leboucher, VP, Architecture, Enablers and Security, Orange Group

Orange Group was among the first communications service providers (CSPs) to sign TM Forum's Open API Manifesto, pledging to adopt the APIs as a foundational component of their IT architectures, to promote global adoption of the API suite by their partners, and to expect technology vendors and systems integrators to support these APIs in their products and cloud-based services. To date 12 CSPs and 27 technology suppliers have signed the manifesto.

Companies that have signed the TM Forum Open API Manifesto

Setting a baseline

Our goal in surveying CSPs and suppliers about the Open APIs was to set a baseline for assessing adoption. With this report as a starting point, we will continue to survey members periodically to update deployment status and find out how operators are using the APIs.

CSPs like BT, Orange, Vodafone and others are pushing their suppliers to adopt the Open APIs – 44% of supplier respondents said they have received a request for proposal from a CSP requesting use of the TM Forum Open APIs. When asked how many times this request had been made, 71% responded 'more than once', which is certainly encouraging.

Vendors do, however, still have a long way to go, as many are still only experimenting with the Open APIs or are deploying in a small area of their portfolio.

Status of suppliers' Open API deployment?

■ Not planning to deploy   ■ Experimenting   ■ Deployed in a small area of our portfolio   ■ Deployed in the majority of our portfolio
■ Deployed across our entire portfolio

Today
8%
41%
39%
6%
6%

In 3 years
4%
8%
38%
35%
15%

TM Forum, 2018

24
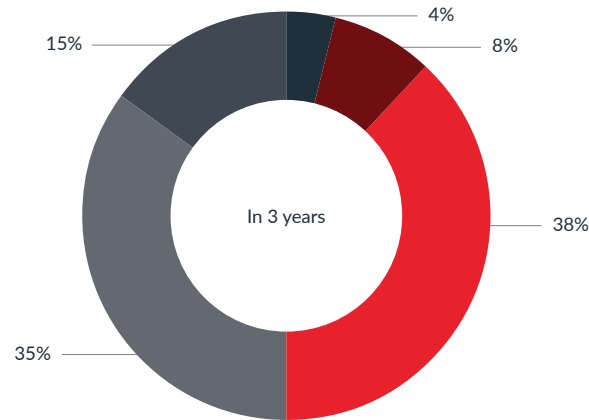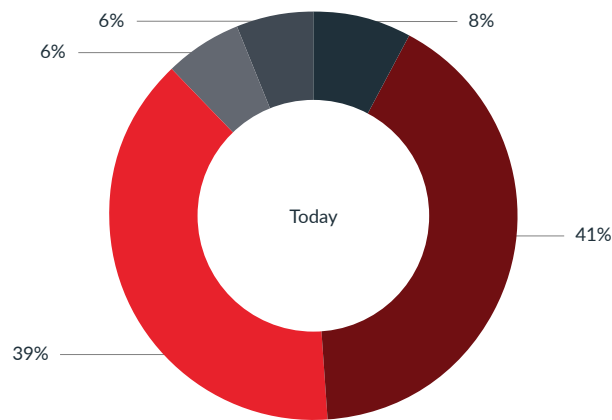
Discrepancy among results

The fact that suppliers expect API deployment in the majority of their portfolios to increase nearly five-fold in three years. This is also encouraging and a clear sign of support among the vendor community, but there does seem to be some miscommunication between CSPs and suppliers. As we noted in Chapter 2, CSPs ranked reluctance on the part of suppliers to adopt TM Forum Open APIs among their top three inhibitors to adoption (see page 20), but when we asked suppliers the same question, the No. 1 obstacle was lack of requests from customers to use TM Forum Open APIs.

Supplier ranking of 'very' serious challenges to Open API deployment

1. Lack of requests from customers to use Open APIs

2. Lack of clarity on ROI

3. Not included in our product roadmap early enough

4. Relevant APIs not yet available

5. Worries/threats around quality of service

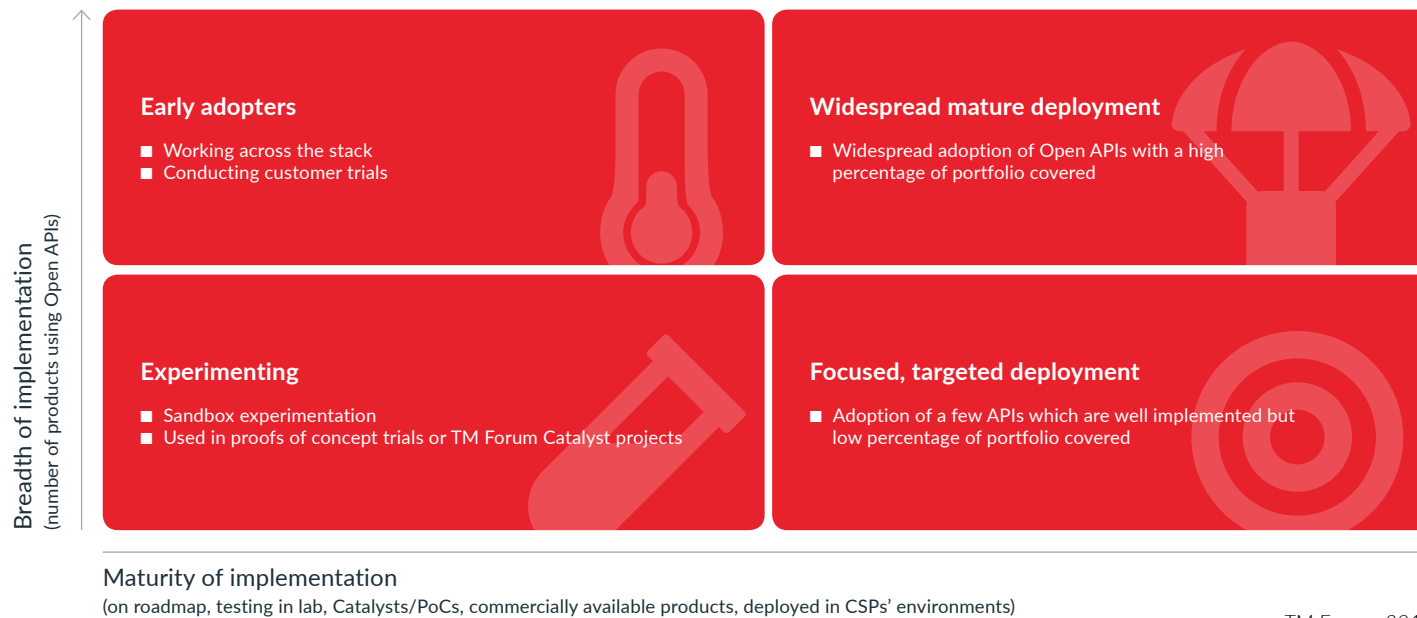6. Being developed separately from product roadmap

TM Forum, 2018

" 88% of suppliers aim to have Open APIs in their products three years from now. "

Introducing the Open API Vendor Adoption Assessment

CSPs have said they want a tool for comparing vendor implementation of TM Forum Open APIs, so we are introducing the TM Forum Open API Vendor Adoption Assessment. For suppliers that want to participate, we will assess the maturity and breadth of Open API implementation in product portfolios. The goal is to offer an independent and fair assessment of individual vendors' Open API adoption, which will help CSPs accurately evaluate all suppliers large and small.

TM Forum Open API Vendor Adoption Assessment

Breadth of implementation (number of products using Open APIs)

Early adopters
- Working across the stack
- Conducting customer trials

Widespread mature deployment
- Widespread adoption of Open APIs with a high percentage of portfolio covered

Experimenting
- Sandbox experimentation
- Used in proofs of concept trials or TM Forum Catalyst projects

Focused, targeted deployment
- Adoption of a few APIs which are well implemented but low percentage of portfolio covered

Maturity of implementation
(on roadmap, testing in lab, Catalysts/PoCs, commercially available products, deployed in CSPs' environments)

TM Forum, 2018

" The goal is to offer an independent and fair assessment of individual vendors' Open API adoption. "

The assessment tool evaluates maturity of Open API adoption ranging from presence on a product roadmap to lab and proof-of-concept trials, to commercially available products, to deployment in a CSP environment. It also evaluates breadth of deployment, meaning the percentage of the suppliers' products using the Open APIs. Upon completion of the assessment, TM Forum will place the supplier in one of four categories:

Experimenting – suppliers have completed some testing of Open APIs but have not fully incorporated them into products and services; they may have experimented with Open APIs in a sandbox environment, in TM Forum's Open API Lab or as part of a TM Forum Catalyst proof-of-concept project

Early adopters – suppliers have incorporated Open APIs in some products and services and have conducted at least one customer trial

Focused, targeted deployment – suppliers have implemented a small number of Open APIs across their portfolio; maturity is advanced but the number of APIs used only covers a small area of their product portfolio

Widespread mature deployment – suppliers have implemented several Open APIs in a significant percentage of their product portfolio and products are widely deployed in CSPs' environments

TM Forum will launch the first Open API Vendor Adoption Assessment at the end of 2018. We also are developing a CSP Adoption Assessment, which will be introduced in 2019. To find out how your company can participate in the assessments, please contact Joann O'Brien, VP, APIs & Ecosystems at jobrien@tmforum.org.

What's next for Open APIs?
TM Forum's Open APIs are leading the way in enabling seamless interoperability across all services and markets. Even with early deployments in 66 countries, we feel the industry uptake is still in its infancy.

All B2B open digital systems and services can be managed more effectively by leveraging TM Forum's Open APIs. While we continue this drive to the industry, we are also building new API component suites to show how the APIs can be used together to meet specific business challenges. These will provide a single voice to vendors on the needs of service providers and make it easier for them to respond and meet those needs.

We are also focusing on building the TM Forum Open API Lab which is available today for Catalyst projects. The lab provides a shared environment to accelerate innovation. It exposes TM Forum Open APIs and many other open source technologies. The next stage of the lab is to build and expose microservices for the API component suites allowing members can test against if they wish. Future opportunities expose conformant solutions for exploration and innovation.

The TM Forum Open API Lab is becoming the central place for live innovation across ecosystems, enabling rapid prototyping with industry partners, building on best in breadth solutions, open source technologies and Forum Open APIs.

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Make it happen – Strategies for adopting Open APIs

For CSPs, adopting TM Forum's Open APIs can increase business and operational agility, reduce operating costs, improve customer centricity and increase revenue, and suppliers must incorporate them into their products and services if they want to continue to do business with CSP customers. Following are steps CSPs should take:

Define a clear vision
CSP leadership must articulate a clear vision for digital transformation. This includes determining the role for platform business models and platform architecture. The success of a clearly communicated strategy can be seen in the rise of Amazon as a platform business when Jeff Bezos clearly communicated his mandate that all teams will expose their data and functionality through service interfaces.

Change company culture
A cultural shift needs to take place within CSPs if they are going to successfully transform and embrace a new platform business model approach. Again, this needs to start with vision and leadership. Organizational structure must be simplified and silos eliminated, and employees need to be able to take risks and be empowered to innovate.

Urgently address the skills gap
CSPs must re-train employees and recruit people who understand digital technologies and software-based business models. Software developers are in high demand, so operators must find ways to attract them. This can include strengthening brands and offering innovative compensation packages

Consider the customer
Improving customer experience is the No. 1 driver for digital transformation. An operator's API strategy should reflect this. APIs can help resolve long-standing customer pain points, such as user authentication, credit approvals or billing and charging, and deliver value quickly.

Deploy APIs based on demand
CSPs need to ensure they understand where to apply their APIs and ensure they are demand-driven. APIs should not be created simply for the sake of creating them. It is far better to start off small and have a set of functioning Open APIs that are delivering value, rather than developing a large set exposing capabilities that aren't needed.

Get started
CSPs can start small with their API program and achieve tremendous success as BT has, for example. The company's platform strategy began with a single API. Over the past several years, the company has been dividing its IT architectures into platforms that are accessible through open APIs, and reducing the total number of IT systems from 4,500 to fewer than 2,000 today.

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The TM Forum **Open API Program** is a collaborative program driven
by TM Forum members. The leaders of the group are pictured here.
We wish to sincerely thank all the companies and individuals who
have contributed. **Join the team to shape the API economy!**

Contact Joann O'Brien via **jobrien@tmforum.org**.