

process automation:

an
**evolutionary
approach**

to digital transformation

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contents

- 03** The big picture
- 07** Section 1: Process automation in the telecom operations world
- 12** Section 2: Process automation in the RPA world
- 16** Section 3: How can ODA & RPA coexist?
- 21** Section 4: Make it happen – Strategies for process automation
- 24** **Additional feature:** Digital evolution - An evolutionary approach to successful digital transformation
- 28** **Additional resources**

We hope you enjoy the report and, most importantly, will 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 big picture

Process automation is central to both digital transformation and digital evolution, putting it at the heart of a debate over whether fully reimagining processes, systems and architectures is at odds with evolving existing processes for tactical gain. The answer is important because it shapes how far and how quickly communications service providers (CSPs) can go in achieving fundamental change.

The debate between digital transformation and digital evolution exists partly because of the need to reconcile strategic and tactical objectives. Operations teams typically focus on strategic transformational goals, such as reducing the cost of maintaining legacy systems, gaining business agility, leveraging cloud economics and improving customer experience (CX). An API-first architecture can help them align objectives, systems and processes and enable integration to deliver zero-touch automation, lower procurement costs and much greater agility.

Employees in finance, marketing, contact centers and retail stores, meanwhile, typically have short-term objectives. Robotic process automation (RPA) can make their day-to-day jobs easier by ending repetitive logins and manual tasks, often in concert with machine learning (ML) and AI. It can also orchestrate dependencies, facilitate legacy integration and create common views of disparate data.

The concern for operations architects is that RPA can create a parallel integration architecture that does not align with the transformation plan. Nonetheless, RPA's ability to quickly deliver better CX makes its use compelling.

"It's all about the customer and customer experience," says Richard Scoggins, MDD Alliances, Accenture. "Anything that touches the client - those are the areas for automation and continuous improvement."

Automating CX

[TM Forum's 2020 Customer Experience \(CX\) survey](#) found that more than 75% of CSP respondents view robotic process automation (RPA) as playing a leading or supporting role in their CX within two to three years (see graphic). Similarly, more than 90% said that AI and/or machine learning would play leading or supporting roles. [Gartner projects nearly 20% growth](#) in the worldwide RPA market in 2021, and it expects 90% of large organizations to adopt RPA "in some form" by 2022.



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Do the ODA and RPA conflict?

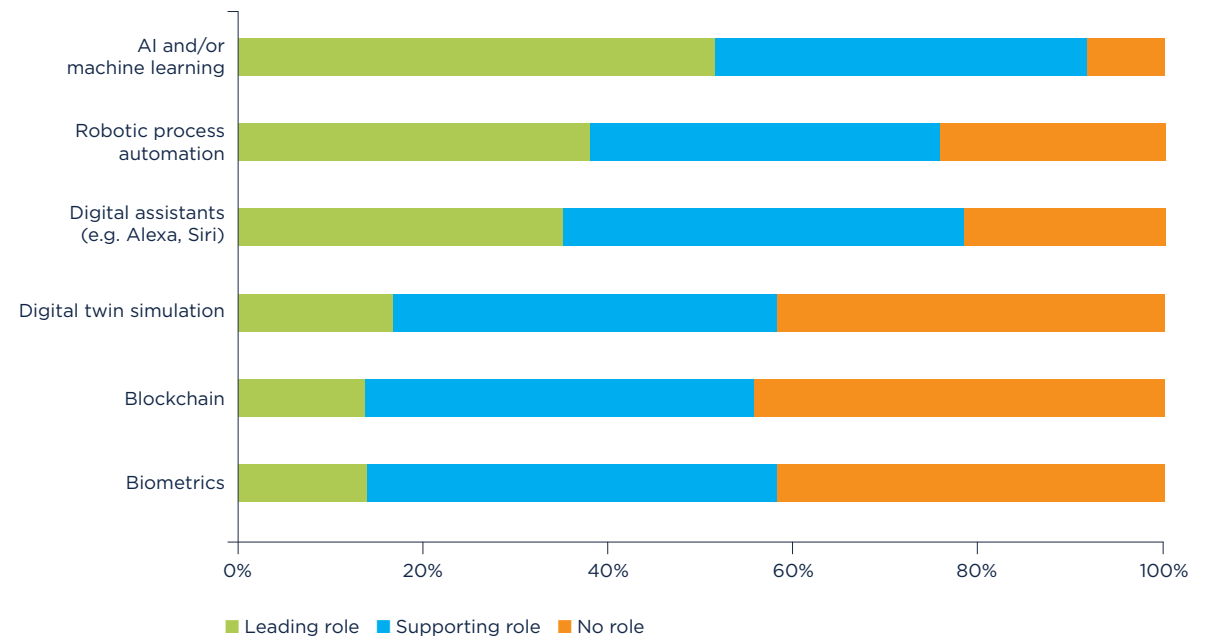
TM Forum members have been working to define operations and business processes to make widespread Open API adoption possible. [The Open Digital Architecture \(ODA\)](#), part of the Open Digital Framework (see page 29), provides standards and best practices to help CSPs increase automation and intelligence not only in networks, but also in operations.

The ODA is a component-based approach that enables CSPs to evolve to a fully automated, cloud native operations environment that relies on analytics and AI to deliver zero-touch services. ODA defines standardized, interoperable software components organized into loosely coupled domains. These components expose business services through Open APIs, which are built on a common data model. Importantly, the ODA provides machine-readable assets and software code, including a reference implementation and test environment.

Not every CSP, however, has a well-defined transformation plan, which requires time, effort, and new skills and technology to execute. Viewed through a financial lens, making fast incremental changes using minimal technical resources to deliver measurable improvements against target KPIs is appealing.

“Telcos want to save money,” says Scoggins. “Now with ML, anything that a CSR [customer service representative] has to pull a screen up for can be automated. How many different logins does someone have to go through to answer a client’s question? If you take that down to one screen, you eliminate a bunch of

Role of technologies in CX in the next 2-3 years



TM Forum, 2021

calls that a CSR takes, reduce the cost and improve the CX because you answered the customer’s question more easily.”

However, using RPA to create a single view of the customer for their care agents, can mean “all you’re doing is treating the symptoms and not fixing the cause of the problem,” explains George Glass, CTO, TM Forum. Frequently, “you end up with process fragments and not a standard set of processes,” he says.

“Why not have a system that lets you design workflows as part of your APIs rather than having that live in RPA powered by bots?” asks Glass.

CSPs must consider whether to seek small wins now or big wins later, and understand how to do both.

What's inside?

This report examines the intersection of telco operations, digital transformation and RPA combined with AI. Our methodology leverages TM Forum survey data; interviews with experts from CSPs, their suppliers and TM Forum subject matter experts; and desk research regarding RPA and intelligent automation to explore differing approaches to business process automation and transformation, how they may conflict, and what steps CSPs can take to ensure they work together.

Read it to understand:

- Differences between transformational and evolutionary approaches to process automation
- How Open API-based architectures can deliver a zero-touch experience
- What a bot is and how CSPs are using RPA and intelligent automation to capture and automate customer-facing processes
- How architectures like ODA and technologies like RPA will need to co-exist within CSPs
- Why [the TM Forum Business Process Framework \(eTOM\)](#) may play a crucial role in training AIs to map and analyze operations and business processes
- What steps CSPs can take to manage bot integrations with legacy systems through digital transformation



CSPs must consider whether to seek small wins now or big wins later, and understand how to do both.

Process automation in the telecom operations world

Section 1

For telecom operations professionals, the quest for well-defined and aligned business processes that are automated end to end has been happening for at least 25 years. Framing today's process automation debate is the idea that our understanding of what constitutes a process is changing.

The [TM Forum Open Digital Architecture \(ODA\)](#) seeks to align systems and business processes, decompose processes and tasks according to a well-defined [Business Process Framework](#), and expose and integrate systems functions with [Open APIs](#). Rooted in digital transformation, this approach reimagines processes and replaces legacy systems rather than repairing or augmenting them.

"If you're just automating the existing process to improve it, you're using an approach that drags the old process forward," says George Glass, CTO, TM Forum. Digital transformation aims to help communications service providers (CSPs) move toward a zero-touch future where an operations process becomes an on-demand function, existing as an exception loop that asks humans for help to solve rare cases.

In the world of robotic process automation (RPA), by contrast, the starting point is the existing business process, with a focus on freeing humans from tedious interactions with systems. As RPA gains broader adoption, it's increasingly harnessing analytics to

capture processes based on key data points, analyze them and recommend improvements. Soon AI will enable the creation of new bots that can make improvements autonomously.

Easing integration & automating processes

Systems of differing vintage and origin cannot communicate without assistance. The TM Forum Business Process Framework sets out to bring order and a common language to CSPs' data and processes, deriving from an ongoing need to integrate new and legacy systems.

"The [Business Process Framework] is important from an integration point of view," says Luqman Shantal, CEO, Makman Consulting, because "even if you automate, if you do not use a process classification framework with common naming it would be difficult for APIs to understand each other, and interoperability would be very difficult."



If you're just automating the existing process to improve it, you're using an approach that drags the old process forward", says TM Forum's George Glass.

In the [processes document](#), each process has been broken down into its constituent parts with its dependencies defined along with its place in the process hierarchy. The Business Process Framework allows each part of a process to be identified, measured, and potentially automated. And because it is a process framework, it acts a guideline and provides a common language rather than specifying implementation.

“When you build a set of IT systems, encapsulate them and expose them as standard set of services, you have to link services together to build a customer experience or journey, and you can’t do things randomly,” explains Glass. “There’s a logic and a sequence to follow.” The Business Process Framework provides CSPs with a basis for that logic and sequencing.

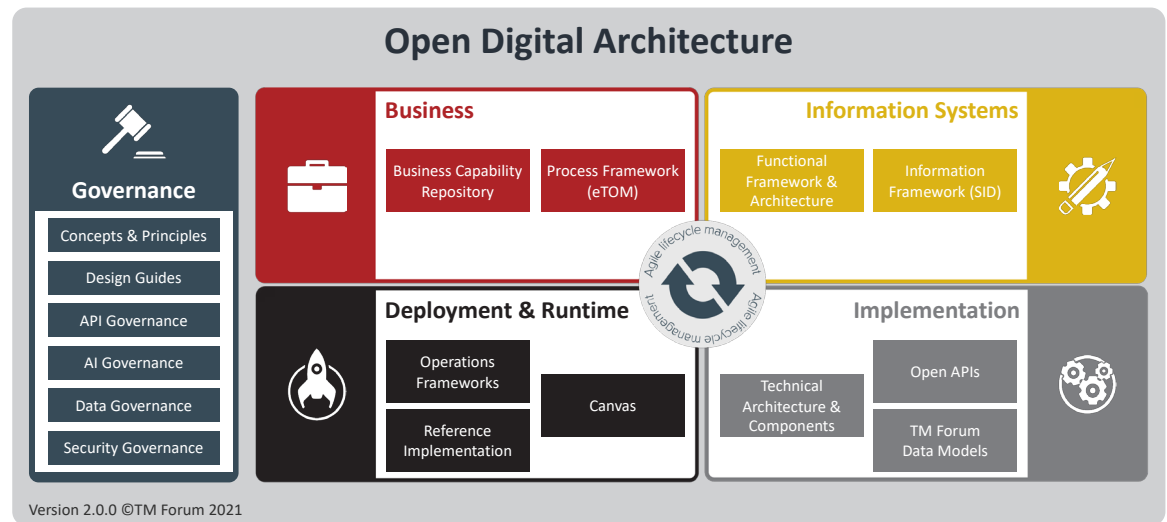
Understanding the processes

Examples of processes defined by the Business Process Framework include:

- **Customer order handling** – accept and issue orders, determine feasibility pre-order, credit authorization, order issuance, order status and tracking, customer update on order activities and customer notification on order completion
- **Configure & activate resource** – configure and activate the specific resources allocated against an issued resource order
- **Diagnose service problem** – identify the root cause of the specific service problem

- **Repair/replace failed resource** – repair, reconfigure or replace the failed unit or specific resource; also reports successful restoration of normal operation or an unsuccessful attempt at restoration to Track & Manage Resource Trouble

The ODA leverages the Business Process Framework because “even in the ODA, you still need that taxonomy and architecture,” says Shantal. ODA helps CSPs align systems and processes to achieve API-based automation and integration.



At the time of writing, [61 CSPs worldwide cited](#) ODA as a “preferred requirement” in relevant RFPs (requests for proposal). “The ODA is transforming these end-to-end process flows to become cloud native-ready,” explains Shantal, which also “provides more relevant context than ever for RPA.”

Zero-touch automation

Many CSPs have an end goal of zero-touch automation for most operations and business processes. In zero-touch operations, “processes should be exception-based rather than part of the delivery,” says Harpreet Singh, Senior Digital Products Strategy Manager, TELUS.

Singh argues that processes often come about “because systems don’t talk to each other efficiently or don’t talk at all.” Aligning systems and processes with objectives can result in tremendous efficiencies like “50% reductions in interval times for complex services, which have traditionally taken months to deliver, by keeping communication between systems clean and efficient,” he says. He adds, however, that because many organizations can be strapped for capital, many projects remain unfunded. In contrast, RPA provides low implementation costs and high short-term operational benefits.

Transformation programs that aim for zero-touch automation typically plan to minimize and retire legacy systems. “It’s not just about making today’s processes better and quicker,” says Glass. “If you’re a telco trying to do digital transformation, then putting something that acts like an automated human across the top of a set of technically inadequate or inflexible legacy systems

means you’ve automated a constrained process and still have the inherent problems associated with your legacy systems.”

Nevertheless, RPA, AI and bot-based integration are on the rise, despite being based on legacy system processes. In the next section we will examine why and how so-called intelligent automation – a combination of RPA, AI and machine learning – differs from ODA. But first, let’s look at the role for humans in process automation.



Aligning systems and processes with objectives can result in tremendous efficiencies like “50% reductions in interval times for complex services, which have traditionally taken months to deliver,” says TELUS’ Harpreet Singh.

Where are people in the process?

Even though many processes depend on people, human factors can be the most overlooked aspect of process improvement, says Vicky Sleight, Global Director, Human Factor and Diverisity & Inclusion, TM Forum. “Processes should be inclusive and diverse, but we tend to think about people afterward, even though people are the up-front piece,” she says.

Sleight argues that as CSPs transform their processes by any method, they mostly do so within an ethical framework that addresses accountability as people work alongside bots and other new technologies, like AI. When AI is used for hiring, for example, it could be trained using a decade of historical data only to learn “a red-haired female has never been in that position,” Sleight explains. “The results are only as good as the data you put in, so someone must be accountable for that black box,” she says.

Many enterprises, including CSPs, “still have a mentality of ‘just let us buy the technology,’” says Makman Consulting’s Shantal. “They will focus on the boxes – it’s just that these new boxes are digital,” he says, adding that CSPs should focus more on human factors, like giving business units methodologies to follow, defining what their digital maturity goals should be, and allocating budget for process and human factors.

Sleight notes a key threat CEOs face is a lack of people skilled in new technologies. CSPs are struggling “not just to acquire them, but to have the right culture to keep them,” she says, explaining that overall, technical talent is moving away from telecom to pursue more lucrative or speculative opportunities in other markets. At the same time, the industry faces a looming retirement cliff.

CSPs need to “change the image of this industry and make it attractive,” Sleight says, which means creating the more inclusive type of culture where people are given “tools to determine some of their own destiny” and in which “[game changers](#)” are embraced rather than “run out of the business for being too disruptive.”



Processes should be inclusive and diverse, but we tend to think about people afterward, even though people are the up-front piece,” says TM Forum’s Vicky Sleight.

Section 2

**Process
automation in
the RPA world**

Robotic process automation (RPA) usually delivers incremental, tactical gains. Examples include minimizing truck rolls, increasing self-serve resolution, reducing problem resolution intervals, and increasing the accuracy and efficiency of order processes. RPA platforms typically use different forms of bots to interface with systems either by calling well-defined APIs, adapting to legacy interfaces, emulating human users or even [screen scraping](#). They are also moving beyond simple tasks to perform more complex processes that involve chains of orchestrated, asynchronous tasks, dependencies and decision points.

[Common RPA use cases](#) include:

- **Quote-to-cash automation** - bots extract information from a variety of applications, documents, and customer communications to automate order creation.
- **Data entry & transfer** - bots replace manual processes where users transfer CSV files to move data from legacy systems to other systems that need it.
- **Updating customer relationship management (CRM)** - CRM systems can demand much interaction logging, content updating and contact managing. Bots integrate email, call logs and other data to free users from mundane updates to CRM records.
- **Retrieving billing details** - a single customer's bill detail may live in multiple billing systems. Bots are used to retrieve and align disparate customer data to feed a contact center agent's consolidated view.
- **Resolving common customer problems** - many issues can be resolved with an equipment or connection restart, which a bot can automate from a self-serve interface.
- **Expanding self-service** - chatbots combined with RPA bots can extend self-serve beyond frequently asked questions to support functions like device activation, reporting lost or stolen devices, usage checks, payments, plan changes, and new orders.

Using AI to capture processes

RPA is evolving to combine bots with machine learning and AI, delivering process automation and optimization that increase the capabilities of attended bots which help humans do a job and unattended bots which automate processes that do not rely on user interactions.

Various observation techniques – transaction logs, API calls, live look-ins on users, database queries, even keylogging and video analytics – are used to train machine learning engines to capture existing processes, which can be analyzed with AI. Once captured, the “intelligent automation” platform provides a basis for visualizing, managing, and improving captured business processes through RPA-based integration and automation.

Process capture inevitably includes process decomposition, which sets the stage for incremental automation to serve an individual business case. This form of decomposition is likely to reflect not a common structure like [the TM Forum Business Process Framework](#) (see Section 1) but rather what the RPA platform can see, impact and measure.

Business cases may address how stores can serve more customers, how efficiently refunds and credits are issued or how many people are freed up by automating a manual filing task. However, whether RPA usage aligns with operations architecture models is unlikely to be a major consideration.

“The people buying this are chief marketing officers and chief data officers,” says Richard Scoggins, MDD Alliances, Accenture. “They’re the ones taking the existing infrastructure and modifying it to provide predictive analytics.”

What’s a bot?

“A bot is a program that reads a string, does a computation, and prints a response,” says Russell Brand, CEO, Responsible Solutions Ltd. and Global Entrepreneur in Residence at the Founder Institute.

“In the old days bots might perform a simple pattern match, but now they do things that are more complicated,” he explains.

Bots have the following characteristics, according to Brand:

- They are relatively simple programs that are typically configured using no-code platforms.
- Bots are programmed to perform specific tasks by interacting with software systems.
- They can perform combinations of computations like pattern matching, a conversation tree, a simple decision engine, or an ML function.
- Bots may interact with other systems via APIs, legacy interfaces, or by user emulation and screen scraping.

A front-end framework can attach bots to chat, text or instant message systems as is often seen in CX implementations. A back-end framework can attach bots to databases or processes like ordering, billing and trouble ticketing.

From a short-term business perspective, the tactical approach makes sense. However, it has the potential to add wrinkles to long-term transformation plans, making it a concern to operations engineers and architects.

Operations engineers are wary of RPA bots

The move to zero-touch automation is coinciding with bots moving deeper into the telco back end. The danger is that bots may intertwine new process automation with back-end systems slated for change or retirement. In our interviews, most communications service providers (CSPs) said they use bot-based integration, but primarily for working with legacy systems and creating temporary workarounds.

Our research points to five primary reasons why bots can complicate integration:



Difficult to align automation with outcome -

“Often telco organizations do not have enough knowledge of the process, or the process is not even defined,” says Arnold Buddenberg, Enterprise Business & IT Digital Transformation Architect, Orange. “Then you can do RPA and automate, but the outcome is probably not a solution that solved the customer’s problem.”



Humans do more than you think - “The repetitive tasks are not as repetitive as you think they are,” Adrian Kempton, VP Architecture, TELUS explains. “People interpret things and solve problems. Humans aren’t doing as repetitive of a task as it’s made to sound.”



Creates new layers of legacy - “You are creating a new legacy that you have to manage with the RPA layer of your architecture,” says George Glass, CTO, TM Forum.



Conflicts with IT policies - “Based on the underlying system, bots can fail,” explains Harpreet Singh, Senior Digital Products Strategy Manager, TELUS. “For example, if the bot is screen scraping, we have policies which stop screen scraping,” he says.



Brittle & resistant to change - “(At BT) we put robots on top of our applications then delivered upgrades to the applications, and the robots stopped working,” Glass says.

Unpredictable misalignments with unintended outcomes make operations engineers unhappy. Yet bots are taking enterprise integration by storm and paying rapid dividends. Whether and how the two seemingly opposed approaches can coexist, and whether the Business Process Framework can provide guidelines to get there, is the focus of the next section.

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Section 3

How can ODA & RPA coexist?

No matter how hard large organizations try to homogenize their software landscape, new or shadow IT can crop up and cause disruption. Today, telco contact centers or finance departments increasingly are adopting cloud-based solutions. While operations architects are trying to answer long-term alignment, automation and OpEx questions, front-line business organizations are trying to improve customer experience metrics by cutting time and cost out of sales, care, human resources and other business processes. As a result, even communications service providers (CSPs) with a carefully planned digital transformation architecture may need to allow robotic process automation (RPA) bots.

Some experts believe bot-based automation can coexist with transformation based on the [TM Forum Open Digital Architecture \(ODA\)](#). “In my opinion, the most correct approach is a combination of both strategies,” says Flavio Reis, CTO, Lojas Renner S.A. and former CIO for cloud and cybersecurity with a large CSP based in Europe.

On one hand a CSP must “have an ‘API-ification’ strategy with a strong API first principle that can drive all new projects, technology selection and legacy modernization,” he says, adding that on the other hand, not all functions will use APIs to automate. This is where automation technologies like RPA which can integrate through APIs or user interfaces come in.

George Glass, CTO, TM Forum, advises caution. “I think there’s a time they can coexist, but it has to be managed very carefully,” he says. Glass suggests the following ways for CSPs to mesh ODA and RPA:

- **Control RPA introduction carefully** – “ODA and RPA will not live in separate worlds,” Glass explains, “but you’re doing per-solution design, per-system design, and bots are gluing that together.”
- **Treat bots as systems & applications** – “Bots have to become part of your systems inventory, just like your pricing engines and portals, and you have to put the same kind of rigor around them as you would around any BSS component,” he says.
- **Govern bots with strong change management** – “If RPA integrations are built on top of applications without system designers knowing, then when changes happen in the application, the bots may well stop working,” Glass says.



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■ **Be aware that bots may become legacy extensions**

- a bot in a contact center might hit a legacy business support system (BSS) 500 times a day to free an agent from a repetitive task. As a result, that bot-based automation becomes an extension of the legacy platform and must be governed to deal with any change in the process or retirement of the legacy BSS.

Glass also encourages CSPs relying on RPA-based approaches to integration to consider whether upgrading systems or APIs would be a better option “than sticking a robot on top because your system is missing something.”

AI can help

If CSPs decide to use RPA at scale, a reference architecture such as the ODA or the [Business Process Framework](#) can be helpful in providing context for AI technology to map and understand telecom business processes and how to align and improve them. “At scale, how could organizations use RPA without an architecture?” asks Luqman Shantal, CEO, Makman Consulting. “There’s no better architecture than [the Business Process Framework].”

If CSPs begin to use AI to capture and analyze live processes, then training them to understand common language and definitions first can provide a path to merge the ODA and RPA worlds.

It may be necessary to consider whether an AI’s neural network is a black box or whether it should include “domain knowledge and terminology,” says Dr. Mark Mortensen, Principal Analyst, ACG Research (see panel).

Expert’s view on AI

Dr. Mortensen is a telecom operations expert and physicist turned software maven. We asked him more about AI and its role in telecom operations.

AI is an expansive term. What does it usually mean?

“When most people talk AI they’re talking about neural nets, though there are a dozen other AI technologies. Neural nets are things like [IBM Watson](#) and they are good at classifying things. You run a whole load of use cases through the AI and figure out all the classifications, and then sort out the probabilities. It then becomes a giant decision tree. That makes them very good at diagnosis.”

Do neural net AIs know anything other than what they’re taught?

“The neural net doesn’t know anything about anything. All it’s really doing is connecting the dots within this neural net based on whatever it is trained with. It’s not an intelligent system at all but is able to mimic one. If you train the AI well enough, you can get it to mimic some pretty sophisticated things. If you showed it all the Monet paintings, you could probably end up with something that looks like a Monet.”

You mentioned that today’s AIs don’t know anything. Can something like the TM Forum Business Process Framework help train a future wave of smarter AI?

“The biggest use of eTOM and ITIL is to provide the common lexicon. It wasn’t that important when we had separate systems. It became important when we hooked systems together. The same thing will happen with AIs when they start overlapping and conflicting. Users need a way to wrangle them and to resolve disputes, so AIs will need to have a lot more knowledge of the domain. They cannot continue to be ignorant machines in the next 5 to 10 years.”



“I suspect it will be a useful thing to do,” he says. “To do a better job in the future, we are going to have to build in a framework...and train it with the data.”

He adds that “AI wranglers” – bots or other code designed to “keep the herd moving in the right direction” – may also become necessary to govern and ringfence AI’s actions and provide visibility into their training and decision-making.

“We will end up wanting to do that as we will start demanding explanation AIs,” Mortensen says. AI technology needs to understand the process and right terminology to describe, diagnose and communicate what is happening.

Continuous change will also come into play for processes. “When you introduce ML and AI to your process automation, you must understand your processes won’t be static,” warns Shantal. Consider a CSP that is monitoring a network for faults but moving to zero-touch operations. Normally, alarms are diagnosed, service impact is determined, and customers are notified after the fact. In a zero-touch world, however, CSPs “detect the anomaly and repair the event before anyone needs to be contacted, so we need to change the process from alert at fault to alert only if zero-touch can’t fix the problem,” he explains.

Proving the intelligent automation concept

Automating network alerts and corrections is a common focus area for CSPs. TM Forum’s recent [Digital Transformation Tracker 5](#) shows that 65% of CSP respondents consider operational efficiency a key driver

of digital transformation, while 68% say digitalization of operations has become a higher priority because of the COVID-19 pandemic. An ongoing TM Forum Catalyst proof of concept involving BT and Vodafone addressed this directly using a combination of [TM Forum Open APIs](#) and RPA.

The [Automating service problem management business operations using the TM Forum Network-as-a-Service APIs](#) project created a software wrapper around a CSP’s legacy business operations and IT stack to enable integration with the [TM Forum Network-as-a-Service API Component Suite](#). This wrapper is an intelligent automation platform (think RPA plus AI) that can act as a flexible adapter to connect the legacy world to the ODA world.

The Catalyst directly addresses three types of failure relating to multi-party IoT services:

- **Directly connected device failure** – the fault happens on the primary CSP’s or customer’s site.
- **Last mile connectivity failure** – the fault occurs in the last mile connectivity provided by a second CSP’s infrastructure.
- **Interconnect failure** – the failure happens where two CSPs interconnect and could impact many customers.

For each scenario, the project has shown how three different CSPs underpinning an IoT service can use the NaaS APIs to collaborate around these service management events. Rapid information sharing is critical to solve problems fast and to provide granular visibility into a problem and its source to all parties.



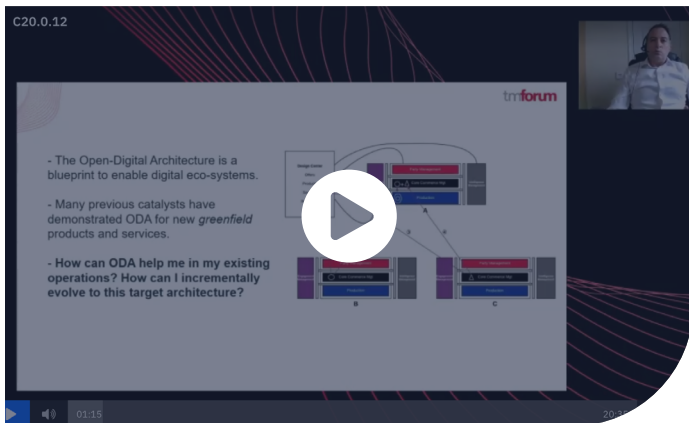
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The combination of RPA technology and Open APIs, in this example, enables legacy systems to support the kinds of transitions CSPs frequently make as they prepare to retire their legacy IT, albeit over time. Even if a CSP's long term goal is to achieve zero-touch operations, this project shows how to accomplish this while still leveraging RPA to create more intelligent service management.

This type of practical improvement, which moves a CSP's business and customer experience forward, demonstrates how RPA and intelligent automation can coexist by playing complementary roles within the context of an Open API-based architecture transformation.

In the final section, we offer advice to help CSPs combine digital evolution and digital transformation.

Watch the video to learn more about the Catalyst:



Section 4

Make it happen
– Strategies
for process
automation

Digital transformation where processes, systems and architectures are fully reimaged and realigned may well include the process of digital evolution, which aims to deliver process automation tactically for incremental gains in customer experience (CX) and reduction of costs. Many communications service providers (CSPs) must balance the rigor demanded by operations engineers with immediate business needs to meet their goals. There are several key takeaways to help CSPs navigate this complex intersection of automation and integration:



Focus on processes

Processes are the lifeblood of a business because they define how a company operates, interacts and serves its customers. CSPs may struggle to capture and map day-to-day processes but both digital transformation and digital evolution approaches require a strong understanding of what today's processes are and how they ought to be improved or reimaged.



Leverage the Business Process Framework

Process automation typically involves integration across multiple systems and needs to follow a plan. A process classification framework with common naming lets APIs understand each other and enables interoperability. Telecom operations processes are well understood and defined in [the TM Forum Business Process Framework](#), so CSPs should use it as a tool for transformation and evolution.



Align systems, processes & objectives

Aligning systems and processes with objectives is necessary to deliver large-scale efficiencies. Integration approaches that skip alignment tend to create small-scale and often unsustainable results.



Make processes inclusive for people

A key concern for CSPs is the scarcity of technical skills. Talented candidates may choose industries they perceive as more lucrative and innovative. As CSPs reimagine processes, they should emphasize cultural change to help them attract diverse talent. This includes adopting [Agile](#) work practices and fostering an environment where disruptive and innovative employees can flourish.



Govern bots deliberately

Bots “must become part of (a CSP’s) systems inventory, just like pricing engines and portals, and you have to put the same kind of rigor around them as you would around any BSS,” says TM Forum CTO George Glass. He explains that if bots are involved in integration and process automation, they should be considered systems and governed with strong change management. If systems changes are not communicated clearly, “the bots may well stop working,” he says.



Add expertise to AI platforms

As machine learning and AI platforms come into wider use for capturing and automating processes, their neural networks need to be enhanced with more domain expertise. Training AI platforms to understand and describe processes in terms used by the Business Process Framework will also help provide visibility into their decision-making.



Stay on the API plan, but get the job done

“Where we had APIs, we used APIs, and where we didn’t, we used the integration capabilities of the RPA/IPA tools,” says Flavio Reis, CTO, Lojas Renner S.A. and former CIO for cloud and cybersecurity at a large CSP. The key advantage of bots, he says, is very rapid results, though “that doesn’t stop you from maintaining your ‘API-ification’ strategy and evolving to a ‘cleaner’ solution from the traditional architecture point of view.”



Plan for processes that change

As AI and machine learning become more involved in process automation, “you must understand your processes won’t be static,” warns Luqman Shantal, CEO, Makman Consulting. Whether bots are improving processes autonomously, or a CSP is pursuing zero-touch automation with Open APIs, the concepts of self-learning and continuous improvement come into play. The benefit is that they will be more responsive to business, technical and CX issues. The challenge is that it will become more important to model, visualize, define and govern processes for an ever-changing end state.



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Digital Evolution - An evolutionary approach to successful digital transformation



What is clear is the imperative to transform operations to support a digital approach to the customer journey and automate supporting services to ensure accurate, high velocity, 24x7 operations to gain competitive edge.

Most organisations are not lucky enough to be operating a green field of technology, and those that have tried a step transformation to digital operations have lost competitive edge due to fragmentation of their operations leaving their digital portfolio in isolated market niches. A historic study by consultancy.eu found that “more than seven out of ten European organisations are struggling”.

Competing Challenges

The continually shifting tides of demand and the shifting sands of technology tear at the preconceived visions of digital transformation projects. CSP's must be more agile; digital operations, digital customer journeys, and digital products evolve as the journey to digital operations progresses. It is not possible to define an end state vision based on existing operations, as J. P. Morgan was famously quoted “Go as far as you can see; when you get there, you'll be able to see farther.”

Digital Transformation Dilemma

Automating service operations, digitalising the customer journey, and introducing more competitive products and services all compete to take the lead in digital transformation. Reality

is that none of these items can be frozen while another takes precedence. Research conducted by - Forrester shows 74% of Digital Transformation projects fail.

Tactical automation projects that bring incremental benefits to individual tasks and business lines can appear attractive in the face of high-risk digital transformation projects. Automating simple tasks on existing business systems may give a quick return to satisfy a strategic mandate to automate, but it merely entrenches legacy systems and strangles the development of competitive edge in the business.

Using these techniques to build more advanced automation such as process automation or digital services creates impenetrable islands of fragile automation which rapidly descend into the maintenance hell of long change cycles and increasing cost. This prevents innovation in the very services and products needed to adopt new technologies and compete in the digital marketplace.

This leaves a dilemma digital transformation or process automation.

Digital Evolution

Digital evolution is about embracing the dilemma of high-risk strategic transformation and limited potential of tactical automation. It is about finding a middle ground, recognising that tactical automation, and existing business systems are

the building blocks of the digital future. It is about formulating an agile transformation strategy that does not have an end goal, but a do now, do next, and do later progression of goals with respectively lower resolution.

It is not unusual for CSP's that have followed the digital evolution path to find unexpected secondary benefits because of the agile approach to the following phases.



The continually shifting tides of demand and the shifting sands of technology tear at the preconceived visions of digital transformation projects.

Digital Evolution - An evolutionary approach to successful digital transformation



The international connectivity arm of a digital connectivity provider found that automating the provisioning of client orders not only enabled the expected 24x7 operation, and a reduction in service personnel in the first phase but enabled a move from tens of suppliers to 100's of suppliers, due to the non-linear scaling of digitalised operations which reduced costs by more than 10%. A net gain of nearly \$200M on an original business case for \$2M in cost savings.

Technology last

An unnecessary focus on the initial selection of automation tools at the expense of the strategies and methods inhibits organisations realising long term value. To embrace digital evolution is to change the mindset driving transformation.

In our experience success must consider:

Vision: Development of a multi-phase vision of the future which embraces agility from both internal and external forces at each phase. Recognising that digital transformation will fundamentally transform the priorities of the business, it will bring unexpected benefits, and unusual impacts, which are usually opportunities.

Strategy: De-coupling operational process automation, and digital engagement from the automated tasks and functions provided by underlying enterprise systems enables greater agility in change and eliminates the immediate

need for enterprise application overhaul. With the right technology and method choice, this approach integrates the residual successful fragments of those failed digital transformation programs and embrace the underdeveloped tactical automation projects.

Method: The methods must embrace change. Our research points to an optimal iterative cycle of evolution of 3 months with a 4–6-week cycle of production change. Yes, in production, it is critical when operating at the process layer that the machine capabilities recognise that change constantly happens in production; where technology, product, and regulatory change are just a few examples that need a rapid response. Successful digital operations will scale fast.

Specialised skills, tools or open-source software will increase to make automations redundant and ultimately self-defeating. Enabling business users to be able to manifest small and incremental changes to process, and services is critical. Getting automated in not enough, you must think about staying automated.

A large South African operator has used the Cortex Design Sprint service to give shape to their future vision by assessing a range of candidate automation projects. Each project is assessed across a variety of metrics: alignment to organisation vision; in-house knowledge of process detail; availability and accessibility of

third-party applications; implementation timelines; and implementation costs. This allows them to define an immediate automation implementation roadmap, providing a framework for continuing their digital operations journey after the initial phase.

Technologies

96% of projects using these strategies and methods are successful, however they do have significant and specific demands of the technologies.

Moving work from people to machines requires the technology to emulate the observation, orientation, decisioning and acting (OODA) skills of people. In addition, it must be able to integrate digital capabilities such as 24x7 operation, non-linear scalability, and digital user interfacing alongside cognitive and advancing AI capabilities. The machine equivalent of OODA is the SADA model: Sense, Analyse, Decide, Act. This is complex set of skills for even an advanced software developer to master, and even then, the most agile software stack is orders of magnitude slower to change than the business needs from digital agility.

Digital Evolution - An evolutionary approach to successful digital transformation



The journey will always start with the current enterprise systems and their layered tactical automations. These technologies are typically neither flexible enough, adaptable enough or agile enough to support a digital evolution journey.

The strategy of decoupling the lifecycle of the enterprise systems and the organisations processes, allows these to evolve independently. If the chosen technology stack can support this decoupling effectively, it will accelerate the evolution of enterprise applications, enable increased agility in operations, and potentially enable a more diverse portfolio of applications and services.

The first phase will always embrace man-machine collaboration with a human in the loop. The approach of capturing what you know, will inevitably mean automating fragments of processes that will be connected by manual steps or workflow at the start. This will help mature the digital operations. Even in the most advanced evolution, people will still be required for novel, creative or personal tasks and decisions.

What should companies consider when planning their digital evolution technology to achieve automation agility?

The criteria we believe are important are:

- An integrated platform that supports the full SADA model cycle with a well-formed dynamic user interface to instantiate communications, escalations and interventions alongside classic workflow for users.
- A natural, easy-to-use, visual non-coding authoring interface that enables business users and process experts to collaborate in delivering digital operations and rapidly evolve their digital operations on demand.
- An agile integration layer that de-couples the use and management of interfacing with well-behaved and badly behaved enterprise systems, services, communications and most critically users.
- An integrated role-based access control for authors, end users, and managers to enforce hierarchical governance so that the appropriate users have the rights to create, view, modify or use the captured functions, tasks, processes, and services to eliminate the risk and impact of changes.
- A ready to use set of visual building blocks and repository of reusable process fragments which can be rapidly stitched together by citizen developers to form new digital services, processes, tasks, functions, and integrations.
- Embedded testing and debugging environment to allow swift validation of designs, deployments, and changes
- In-built version and release management, to manage operational change and ensure clarity of which automations are in production, with the ability to roll-backwards and roll-forward as required.
- An integrated single platform with the enterprise scalability to operate multi-location, multi-country, geo-resilient and high availability configurations to execute all automation, irrespective of the complexity, the frequency, or the organisational responsibility.
- A simple cost model that encourages more automation based on value. It encourages a balance in responsibilities between manual and machine based operations and drives innovation.

Digital Evolution - An evolutionary approach to successful digital transformation



An Evolutionary Framework Success:

At a large European telco, Cortex Intelligent Automation is being used to deliver dark NOC functionality, managing over 13,000 network nodes and more than 80 million events per month. But more impressively, perhaps, is the fact that the Cortex platform has been managing the network for more than 20 years.

In that time, there have been multiple major evolutions in the network technology (for example, from TDM to IP/MPLS), in the network architecture (e.g., the introduction of IMS, soft-switching and SD-WAN functionality), and in the company organisational structure; in addition, there have been myriad small changes, for example, in the deployment of new firmware versions, and in the changes in responsibility of individuals.

Throughout this period, by establishing a Cortex Centre of Excellence, the customer has ensured that they are agile enough to evolve the automation themselves, in response to the changes, with no recourse to the original vendor, or a third-party SI. This enables them to be more responsive to change and ensures that the automation remains current and delivering business value over the long term.

In summary, it's clear that the classic view of "digital transformation" is a misguided and that the benefit of tactical automation rapidly diminishes.

For organisations wishing to digitalise their operations, the journey is more important than the destination. Not only will the eventual destination not look like how they imagined it at the start, but it probably won't even look like how they imagined it in the middle either.

To succeed, organisations will need to move away from "digital transformation" and towards "digital evolution" – ensuring that they have a common vision for a future operating model, with the right strategies and methods to develop, deploy, operate, and crucially evolve their digital operations, and that they select automation tools that operate as a platform for digital evolution.

With the latest release of Cortex, "Cortex Evolution", we are closer than ever to the true Digital Evolution platform to rapidly migrate and sustain digital operations.

[Find out how Cortex delivers Digital Evolution for telecommunications or start the conversation today.](#)



To embrace digital evolution is to change the mindset driving transformation.

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 AI. 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

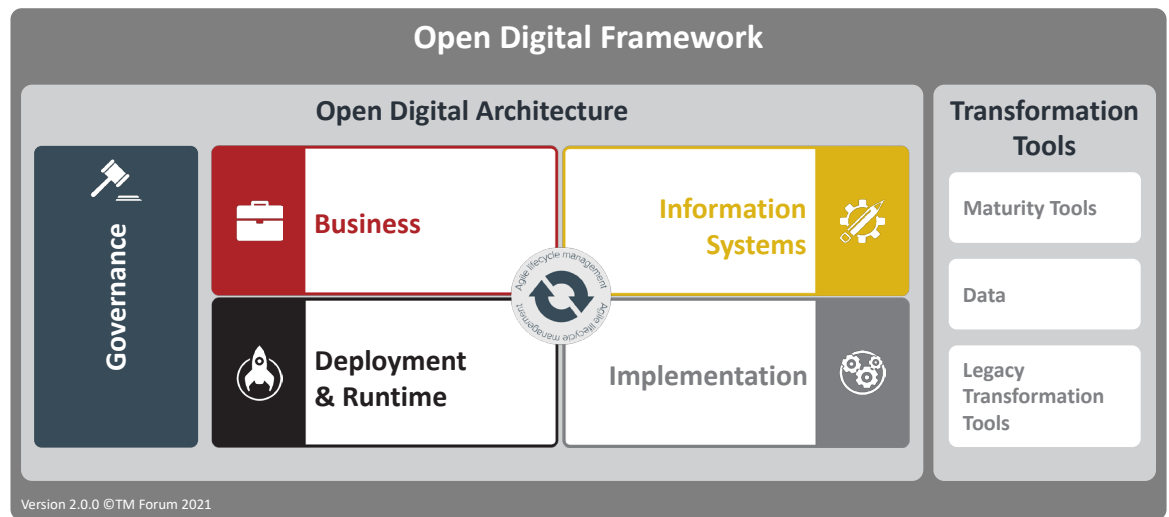
The framework comprises TM Forum's Open Digital Architecture (ODA), together with tools, models and data that guide the transformation to ODA from legacy IT systems and operations.

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 AI

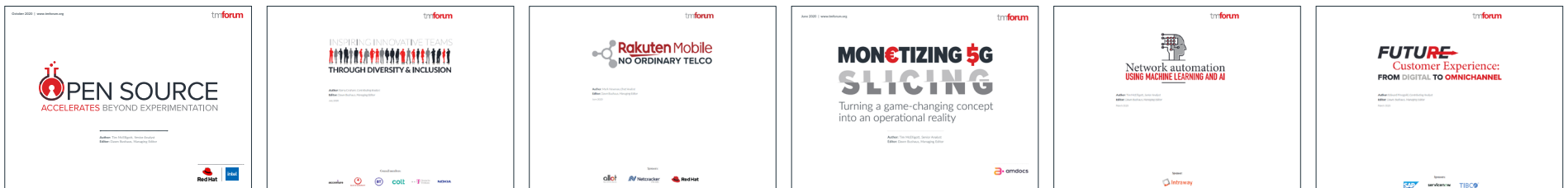
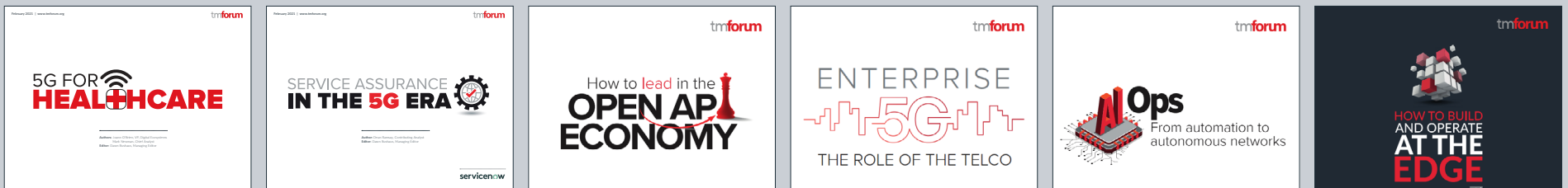
Goals of the Open Digital Framework

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](#).

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TM Forum's Collaboration Community,
please contact **George Glass**