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Automation at scale

Getting ready for
Level 4 automation

Part 2:
Consolidating, simplifying and optimising the OSS
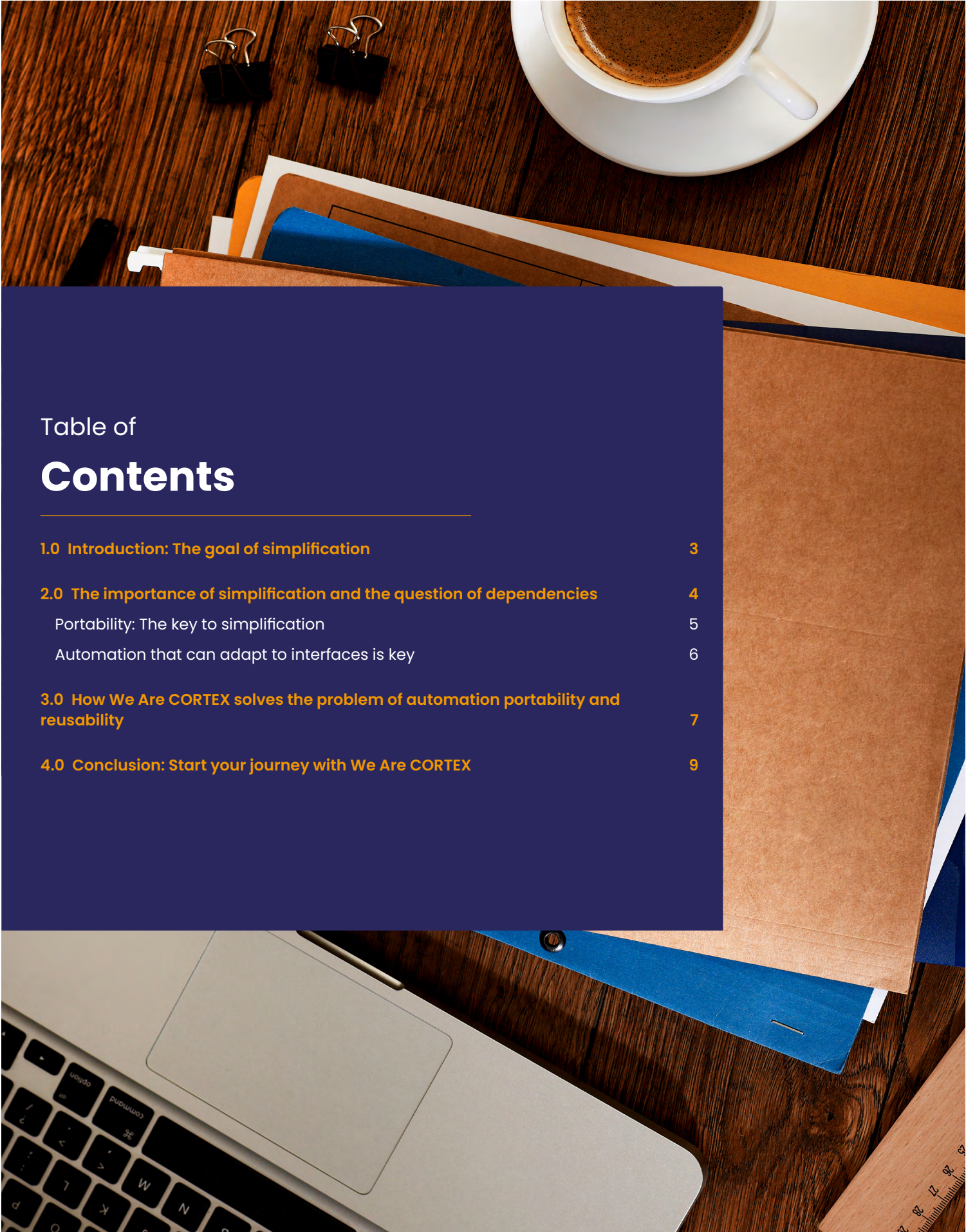
Table of
Contents

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Introduction

The goal of simplification

In Part 1 of this three-paper series, we outlined the first step of our proven automation transformation model – Consolidation – which we have used extensively with many operators. In this, Part 2, we'll explore Simplification:

- Consolidation
- **Simplification**
- Optimisation

As we know from our experience in automating business processes, most operators are faced with an array of legacy systems and solutions that continue to perform essential network and operational tasks.

The first stage — Consolidation — encompasses the process of integrating legacy platforms and silos into the automation framework, increasing their utility and ensuring that their strategic value is enhanced. This first step is crucial (see Part 1).

Consolidation enables operators to apply automation to their existing infrastructure. In turn, this allows them to profit from automation before radical transformation. It provides significant efficiency and productivity gains to legacy systems and processes, without wholesale transformation, while laying the foundation for the extension of automation to all other areas of operation.

But the next goal is Simplification – of course, where possible. While a greenfield situation would be ideal, for most operators this is far from the reality. Different systems, processes, third-party and legacy solutions have built over decades, which creates complexity and makes the automation journey appear daunting. But this does not have to be the case.

Stage 2 – **Simplification** – initiates the process of automation transformation through the retirement of existing assets and/or replacing them with new solutions. While this is desirable, a valid concern is how this impacts existing automations that have been implemented in Stage 1. Is it a case of throwing the baby out with the bath water? The answer is 'No'. Simplification is just the next crucial step on the automation journey.

In this paper, we'll show that nothing implemented in Stage 1 needs to be wasted. Automations can be reused, protecting investments, while providing a crucial fabric that will ease the deployment of new automated solutions across the board.

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The importance of simplification
and the question of dependencies

Today's networks are a complex mix of old and new generation technologies. On the mobile side, we now have 5G SA, as well as private networks and network slicing which add further complexity to an already intricately linked landscape.

Similarly, any operator with a fixed line base may be encumbered with copper infrastructure, alongside their fibre investments. They will also be running multiple generations of technologies and have a diverse operational stack. In this scenario, Simplification means the reduction of such complexity throughout the network and the operational systems that support it. This complexity can be a result of natural evolution but can also result from M&A activities. If an operator acquires another, they will likely run the separate OSS and BSS estates in parallel. Bringing these together takes time.

A common example is the network inventory platform. For inventory, what matters is the understanding of each asset's relationship to another and how they must be arranged to enable delivery of a service, end-to-end.

Inventory management is complex and dynamic – which is why many operators have ended up running multiple inventory platforms for each of their networks, domains and customer bases, often with overlapping information.

This means that resource duplication is another source of complexity – systems that essentially perform the same function, but which are dedicated to specific services or segments.

Again, just as many operators run multiple inventory systems, many more run many billing platforms. One for B2B mobile, one for consumer mobile, one for fixed residential broadband, and so on.

Most operators, then, have overly complex networks, with elements that are already clearly marked for retirement – simplification can be a natural process, but there are other drivers that can accelerate the task.

For example:

- End-of-life notifications / End-of-support windows
  - Do you replace with another solution, from a different vendor, or do you instead seek to converge with other platforms?

- Operational cost reduction
  - Reducing the number of silos that consume resources and which require additional oversight

- Securing a single pane of glass view
  - Combining information into unified portals

- Transformational activities that expose resource duplication that has been masked
  - Migrating to a new CRM that could accommodate multiple datasets

Whatever triggers the initiative, simplification should result in the removal of one or more systems. In addition, there is an important area to address before taking action: securing a clear understanding of any dependencies that relate to the system in question. Has it been integrated with any other platforms?

Following Step 1 in this process, the system could already have been integrated into an automation flow, thanks to the integration points possible with a solution such as CORTEX. As such, this would mean that the integrations for the automation need to be adjusted – redirected to the new system. This process is simplified by the We Are CORTEX model. The bottom line is that any retirement or consolidation activity must not impact an existing automation, so that the redundant or legacy solution can be removed without disruption to the operational flows and processes. In other words, simplification requires portability.

Portability: The key to simplification

Having invested in the automation of a process or workflow, it's essential that this investment delivers over time, so that capital is used efficiently. Key to this is reuse of automations, which is achieved through portability.

Portability means that an automation – for example, for managing traffic capacity and overflows – can be decoupled from one solution and moved to another, when the legacy system, process, or solution is replaced or retired. Automation refers to the workflow or process required for managing a task without human intervention. It must be agnostic to the underlying interfaces with which it interacts.

All automations require integration with underlying interfaces. These interfaces include protocols that may be publicly specified or specific to a particular vendor. They enable control and interaction with the systems from which they are transmitted, and the collection of reporting information, such as status and capacity.

For an automation to function, all relevant interfaces need to be considered for the process in question. However, it's essential that the logic of the automation is independent from these interfaces. With CORTEX, that's always the case.

Let's consider one simple example. If an operator wishes to automate activation of a new connection for a customer, the process will involve several tasks.

For example:

- Creation of a new account, or checking an existing customer account

- Allocating a service (or services) to that customer

- Locating the nearest resource available in the fibre network

- Checking the path from the resource to the customer property

- Verifying the availability and status of the required resources

- Activating the resources, if available

- Enabling billing to begin when the service has been activated

This series of events involves multiple platforms and processes – from the billing and CRM systems to the online ordering portal, and the entities in the Gigabit Passive Optical Network (GPON).

The inventory system is central to this. So, when the automation is created, it's essential to consider the APIs linked to the inventory platform, to the billing solution, the CRM platform, and so on.

While this at first might seem complex, it's actually quite simple based on the following guiding principle:

"When a customer orders a new fibre connection from the online portal, immediately check that we can deliver. If we can, allocate resources, ship the router, notify the customer, activate the link, begin billing…"

This depends on understanding the actions that must take place in the workflow and their order, the processes required, and the dependencies between them – such that successful completion of one action triggers the next in the logical sequence, so that the workflow can be completed. Exceptions also need to be handled – if there is no local connection to the property, or if a new account needs to be created, then the workflow will extend to the activities that these tasks demand.

Let's consider the billing system simplification to which we referred earlier. An operator with multiple billing platforms will, eventually, seek to converge these, perhaps combining the consumer broadband billing solution with the consumer mobile platform. In this case, the API from the billing platform to be retired to the automation process will change and the automation will cease to operate.

Similarly, if the GPON network is changed, then the interfaces exposed by the OLT (Optical Line Terminal) and ONT (Optical Network Terminal) – which are key devices that provide high-speed access to end users – may also change, because a different vendor may have a different way of providing access to the required functionality.

Automation that can adapt to interfaces is key

However, the automation *process* remains the same – so rather than rebuilding the automation when one of the underlying components changes, all that is required is adaptation to the new interface presented. This is the concept of reusability and portability, which means that no existing automation need be thrown out when things change.

In essence, any automation can simply be ported to the new solutions as they are deployed without disrupting the overall logic of the automation flow. The automation can be changed from underneath — at the integration layer — without impacting the logic above, which can remain unchanged. Simplification proceeds by adapting the lower layer, not the process.

However, an automation should also be extensible. If the operator then decides to offer an IPTV service over their network, they can add activation and control features to the portfolio of services that can be selected by customers – and billed each month as part of an extended subscription, using the now combined billing platform. The new service can be tightly integrated with others (preventing, for example, a customer without the necessary connectivity plan from being able to purchase a service that is dependent on it).

But the point is that, if the operator decides to retire a platform and migrate customers or services to another (new or existing), the relevant interfaces can be added without impacting the automation that has already been established because the logic of the workflows remain constant.

Of course, the problem concerns the interfaces that are in question. While many vendors are adopting open standards, there are still many systems that support legacy or proprietary interfaces.

For the foreseeable future, it's essential that automations can embrace this heritage. It means that operators need an automation partner that can support the widest number of such interfaces and easily adapt to new ones as they emerge through standardisation or other processes.
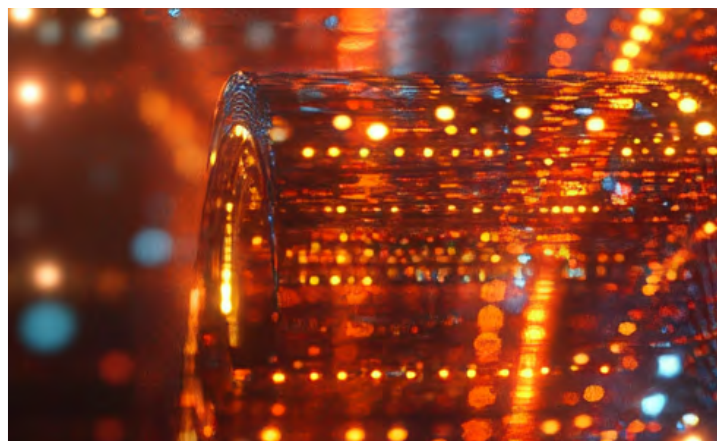
CORTEX enables automation at the workflow, process and hyper level. It provides a pathway to hyperautomation, via graceful implementation of discrete automations – and the joining together and orchestration of these to span different processes.

How We Are CORTEX solves the problem

# of automation portability and reusability

Put simply, everything that has been automated already can be retained and adapted quickly and easily. Each automation will include the processes and IP that have been decoupled and distilled from your legacy processes, the improved decision-making models that this has led to, and the automations and agents that have been developed to integrate the legacy processes and solutions.

The We Are CORTEX automation platform is highly flexible. It uses process microservices, which are atomic and reusable in nature and which enable each set of interfaces / data outputs to be connected. Purpose built for telco, it comes with more than 200 pre-built Function Blocks, which provide discrete functions that can be connected as needed. This naturally leads to portability and reusability.

Once you have built the logical workflow, all that needs to change are the underlying integrations with the platforms concerned – it enables simplification, by design.

Consider a cross-domain, enterprise-wide process, such as enabling zero-touch deployment and on-going performance assurance for different services

provided to an individual customer. This process will be made up of multiple workflows. Each workflow addresses a specific step or task in that broader process.

Essentially, the logic for automation is composed from how these reusable function blocks are assembled and interconnected. This is entirely separate from the underlying interfaces and protocols to which they are linked, which means they can be adapted quickly and easily even when the process is retired or amended – it's merely a question of ensuring adaptation to the specific interfaces.

In the context of simplifying the OSS domain, for example, CORTEX offers a future-proof framework for automation that maximises

use of IP and assets that have been developed to support the automation flows. This framework includes scripts that define logical flows and processes, as well RPA bots (Robotic Process Automation). These can also be linked to enable hyperautomation, by which we mean the integrated and orchestrated automation of an entire cross-domain business processes.

CORTEX enables automation at the workflow, process and hyper level. It provides a pathway to hyperautomation, via graceful implementation of discrete automations – and the joining together and orchestration of these to span different processes. You can start with a simple task, such as automating the response to selected network alarms and triggers, and move on, joining

these together to form seamless, integrated processes.

So, if we want to address the issue of multiple inventory platforms and consolidate into fewer systems, and we have already automated the processes by which we check records in each, poll them to request resource status and availability, and so on, we can retain the existing automation but simply change the integration to the platforms concerned. This can also cover the export and import of data from a legacy platform to be retired to the new platform.

But automation isn't just about fulfilling a task in a workflow. With CORTEX, safety checks and audits can be built in, covering maintenance activities, active health checks and intelligence, context-rich incident triage and prioritisation, and so on. These are operational activities that persist during service and equipment lifecycles – the fibre connection order, delivery and activation flow may have been completed, but the link must be managed during service, so these additional tasks

can be added as new workflows, or to customer care routines.

CORTEX also supports operational and strategic evolution. For example, the benefits automation brings help to drive agility and efficiency through the automated on/off-boarding of devices that are integrated into asset repositories and inventories. As a result, when fibre connection requested is activated for the customer, it then becomes a resource that is available for other services. Similarly, if an active device is undergoing maintenance, then alerts from this device (which in normal operations would require triage and resolution) can be ignored, because the state of the device is outside the scope of normal operations.

When it is returned to service, or upgraded, then checks on that device or resource can automatically be triggered – so simplification is not just the fact that the automation can be preserved should the devices or resources change, it's also about reducing the overhead

for operating and ensuring their ongoing health by combining such tasks into the automation flow.

This also contributes to other operational objectives, such as enhancing Site Reliability Engineering (SRE). The low code and re-usability foundation of CORTEX enables collaborative multi-skilled teams to continuously improve the performance and reliability of the networks under management – SRE refers to efforts to maintain and enhance the reliability and stability of production systems.

Any automation must contribute to this goal, even while the production systems are changed – which means that the network evolution will not disrupt achievements and KPIs for SRE initiatives.

We Are CORTEX can help you take that journey one step at a time, incrementally, minimising risk and disruption, and enabling reuse of all implemented automations. To find out more, contact us to discuss your requirements.

Conclusion

Start your journey with We Are CORTEX

CORTEX offers reusability that enables network and operational simplification – but in a way that's fully aligned with other initiatives and activities. It's reusable, adaptable, and flexible. Nothing needs to be thrown away. It is a low-risk approach that also offers incrementally extensible capabilities – which means that new processes can easily be integrated into the automation flows.

It's also an accelerator for time to value and optimisation, facilitating simplification – whether for consolidating different billing systems, aligning output and removing anomalies from different BSS platforms, converging inventory or managing an evolving transport and access network — and so many other cross-domain processes.

Step 2 — Simplification — follows Step 1 — Consolidation — which is enabled by using the right tools from the outset. CORTEX supports the integration of legacy systems and processes, as well as enabling reusability and future-proof automation and then on to cross-domain hyperautomation.

Every task can be automated, reused when things change (with new functionality delivered by vendor updates, as well as API evolution towards new, common standards), and integrated into a broader cross-domain hyperautomation.

Many operators and service providers are already aiming for Level 4 and 5 hyperautomation (according to TM Forum's autonomous networks model). At first, this might seem a complex, daunting and revolutionary journey. It's not.

We Are CORTEX can help you take that journey one step at a time, incrementally, minimising risk and disruption, and enabling reuse of all implemented automations. To find out more, contact us to discuss your requirements.

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