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1.0 Introduction to

Automation for Telecoms

1.1 What is automation?

Automation encompasses a wide range of tools and techniques, from simple scripting, Robotic Process Automation (RPA) bots, and vendor product functionality to more sophisticated solutions like orchestration and end-to-end process design encompassing Artificial Intelligence (AI) technologies.

At its core, automation is a hierarchy that spans from the most basic level to advanced business services, and so it is right that you will have a mix of technologies and tools which all come together harmoniously to address the biggest challenges and processes in your business.

Businesses must carefully consider the complexity of the processes they wish to automate, as you can automate anything. With that strategic hat on, it's often more important to identify what not to focus on, rather than what you 'can' do. This would include business processes in flux, poorly understood processes or those where key technical enablers are not in place.

To make the most of automation, it's important to ensure that automation efforts are both driven by the big goals of the business, and that you consider processes end-to-end. This means taking a holistic approach to analysing and optimising entire business processes.

This includes qualitative and quantitative assessments, integration considerations, and compliance adherence. In doing this, you will consider various task-based automations (often recognised as being performed by RPA or scripts) but which form part of a larger process.

"Intelligent decision-based automation is the only practical way of addressing the pressures and demands on CSPs to move into the future and achieve the significant improvements in speed, agility, customer experience, security, and operational efficiency.."



The automation landscape

A hierarchy helps focus your automation implementation effort, helping you to build systems and processes in a reusable and reconfigurable manner. It can be helpful to define our terms when talking about the automation hierarchy.

At We Are CORTEX, we define it as follows:



CORTEX

Strategic automation

Offers greatest potential for value and efficiency and customer experience.

Normally, these are long running, complex processes.

Examples:

Service Assurance, Lead-to-cash, Life Cycle Management.



CORTEX

Advanced automation

Can offer significant value, enriched customer experience. Will orchestrate sets of automations and task oriented solutions like RPA, scripts and vendor native automation.

Examples:

ITSM, Bulk SIM activation, Soft or Hard Cease, Closed Loop Automation, Order Decomposition, Data consistency.



CORTEX

Tactical automation

Tactical sometimes known as 'dumb' automation offers limited value and efficiency. This will be task or step level automation. Single movement or automation.

Examples:

Moving data from application to application, alerting teams to overdue items or activities.



1.2 Drivers of Automation for a CSP

The TM Forum eTOM and TAM frameworks clearly demonstrate the complexity of the applications and infrastructure that underpin CSPs' businesses. Indeed, the core objectives of the TM Forum's ODA and OpenAPI initiatives are to address these.

While considerable progress is being made with these initiatives CSPs are left with the double challenge of rapidly evolving technology advances and the reality that today OSS's and BSS's are siloed and require extensive, long duration and expensive customisation and integration efforts.*

Intelligent decision-based automation is the only practical way of addressing the pressures and demands on CSPs to move into the future and achieve the significant improvements in speed, agility, customer experience, security, and operational efficiency.

The following brief overviews of various automation drivers and focus areas highlight this.



Cyber security

Awareness of cybersecurity has reached unparalleled heights thanks to the clever application of automation. Automation plays a crucial role in implementing robust security measures, such as automated threat detection, password rotation, vulnerability management, firewall configuration management, and incident response. Machine speed, self healing compliance is a reality with end-to-end automation and orchestration techniques.



Revenue assurance

Incomplete data (late or missing, mis-filed), incorrect data, slow processes and mis-timed billing processes are just a few examples of where revenue assurance can benefit from automation. This is also an area where CSPs overpay for automation and need not.



'Automation is all about the journey of how you get to your final destination. And that's where you start.'

Eddie Watson

Operations Director, We Are CORTEX





^{*} Say goodbye to software customization
Author: Mark Newman, Chief Analyst Editor: Dawn Bushaus, Managing Editor. January 2020



Customer experience (CX)

The Customer is demanding and unrelenting. You must deliver best-in-class experiences or lose your customers. Automation enables telecoms providers to automate services such as service activation, network configuration, and fault detection. This helps companies to deliver a faster and more reliable service for customers.



Operational experience and efficiency

As a CSP, your business is naturally large and very complex. It is highly transactional meaning huge volumes of repetitive and time-consuming tasks, including service provisioning, service assurance, billing and revenue assurance, and customer service.

Automation can obviously help streamline any or all of these processes, reduce manual effort, risk, and cost; but also build consistency, increase speed, and improve customer experience. Automation can also release employees from mundane, short-term, low-value tasks to ones that are more strategic (both for CSP and individual) and high value.



Scalability and agility

With increasing demand for data and connectivity, as a CSP you need to scale the operations rapidly, and often at short notice. An enterprise-ready automation capability will allow you to deploy and manage network resources, provision new services, and handle spikes and loads in network traffic more efficiently.



Time-to-Value through rapid innovation

Automation enables rapid innovation and the realisation of ideas. It is critical that the automation is not subject to lots of ideas, all being applied in an uncontrolled way.

This is often where automation is a liability, not an asset or advantage. A true enterprise automation tool will give you a centre of excellence for automation. Offering a design and development testing environment, security controls and governance, you will more quickly be able to bring about automation and have the confidence to apply it. This is the quickest way to implementation and to deliver the value of your ideas.



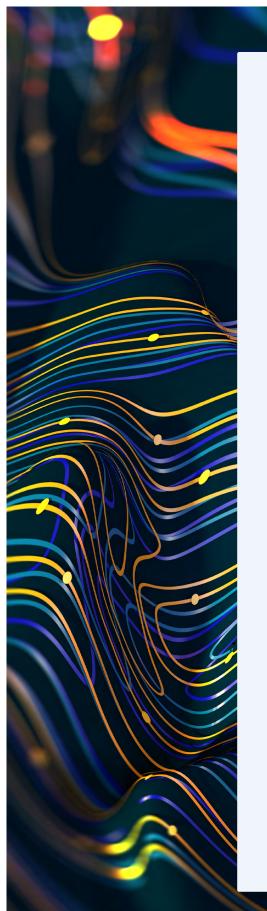
'Automation is all about the journey of how you get to your final destination. And that's where you start.'

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1.3 The challenges of automation

The 'art of the possible'

One common challenge in automation is that people often fail to grasp the full potential of the technology, or the 'art of the possible'. The implications of this failure can include reduced benefits to the organisation, as well as reduced agility.

Powerful capabilities – automation is fraught with missed potential to leverage feature, function capability inside their existing technologies. Similarly, just because a tool has a feature, it does not mean you must use it. Do you use RPA here, a script or an orchestration tool incorporating RPA, scripts, and other automations you already have in place.

The most important aspect of implementing advanced automation is to ensure this is driven by business need. The core objectives should be defined by the business without consideration of technology. This should also not be constrained by stakeholders' assumptions on the feasibility or how the automation will be achieved. This pure business focus avoids the pitfalls of:

- 1. Ownership: Automation initiatives should be owned by the business with IT as essential stakeholders and enablers. This ensures focus on the big picture and strategic objectives being driven by the dynamics of the business.
- 2. **Design:** Automation must be designed around the business need not functional capabilities of technologies. When business automations are adjusted and designed around technologies, it not only constrains thinking and benefits, but also distorts the strategic focus and puts strains on business operations.
- 3. Assumptions: Too often stakeholders will make decisions on what processes can be automated or not based on their perspective of what is achievable. The focus must be on what is required to achieve the business objective and the realisable benefits. Only once these have been defined.



Transformative automation

By this we mean automation that addresses end-to-end business operations, not isolated task or process automation.

Failure is the default result for "big bang" transformative automation initiatives. This was the underpinning driver behind the creation and subsequent success of Agile execution methodology. The timelines for achieving these kinds of ambitious initiatives ignore the dynamics of business reality. Business changes and adapts at a faster rate than a big bang approach can achieve. Even if they reach completion, they are most often the best solution for yesterday's problems.

Enterprise ready automation

Beware! Allowing lots of uncontrolled automation is a business-critical hazard! A core challenge for enterprise scale automation is coherently managing deployed automations. This requirement extends well beyond just version control.

For enterprise-wide automation it is essential that the following aspects need to be considered:

- Version management: Of note here relates to low/no code platforms where visualisation is key. This should also permit simultaneous deployment in production environments of different versions of an automation.
- **2. Role based access control (RBAC):** Capable platforms for developers, automations, and consumers (end users).
- Developer communities: Repositories and visibility should enable multi-developer working, contributions and management of automations in a frictionless manner.
- 4. Modularisation and re-usability: Automations must be able to be managed in a modular fashion that enables them to be linked together to create powerful end-to-end orchestrations. Parameterisation of automations also enhances the ability to reuse automations across different departments, business units and businesses.





Exception handling

Automation can only be successful if people trust it and the benefits are demonstrable. The best way of achieving this is to start with automating core scenarios in a specific focus area. This approach enables focus on achieving the highest success possible with the automated scenarios. This can only be achieved with reliable and consistent exception handling capabilities and embedded in the automation design.

This needs to catch exceptions at a granular level and hand them off to operators in a known state with as much information as possible permitting efficient manual completion. Correctly implemented, this quickly builds trust and confidence while also clearly demonstrating the benefits of the automation. The bulk of the volume should be handled by the automation with the minority requiring manual activities and this "mopping up" of exceptions is much more efficient due to the enrichment provided in the handoff. Incremental improvements and extensions of the automations demonstrably reduce the manual volumes and make the benefits tangible.

Organisation and people

Analysts and consultants are unanimous that the biggest challenges automation faces are not technical- they are people and process. The people aspect includes broad aspects across the whole business and business operations. Key things to address are:

- Executive sponsorship and vision: Transformative automation must be visibly driven by an executive and strategic directive towards a clearly articulated vision.
- 2. Organisational readiness: The business operations must be adjusted to cater for the migration to increased automation. This not only includes clear identification of roles and responsibilities but also how the automations will be identified, designed, implemented, and supported. Skills, career, and manning must also be clear.
- 3. Stakeholder involvement: The involvement of all stakeholders in automation initiatives is central to success. It brings all skills, people, and knowledge to the table. This minimises process, technical and people risks and is central to addressing cultural adjustment.
- 4. Cultural readiness: Vested interests, resistance to change and fear of job loss are major impediments to automation. All the above contribute to creating an environment where automation can be successful.





Processes

There is nothing quite so effective as an automation initiative to expose poorly defined or understood processes. Even where businesses have diligently documented business processes, they can uncover significant gaps and variances when looking to automate these. The root causes are clear, people are innovative and adaptable so they will make processes work because it is their job. They also adapt incrementally and seamlessly to the dynamics of changing business needs, personnel, and circumstances. Reality diverges from a documented business process from the moment it is published. When automating, it is always prudent to re-evaluate business processes in depth as part of the "as-is" capture and stakeholder sessions.

Knowledge gap

Too often businesses will introduce automation or automation capability without fully understanding their processes, leading to either failure or material operational issues. Automation accelerates, multiplies, or amplifies "the good" but also "the bad". Automation can damage your business so quickly and so profoundly, that great caution must be observed when introducing it. Each organisation must balance how to achieve this caution, without being so risk adverse to harm progress and innovation

The Good, the bad and the ugly

Another common challenge in automation is what is known as "The good, the bad, and the ugly." It refers to your candidates for automation. What processes should you pick? The "good" refers to clean and repeatable processes that are easy to automate. The "bad" refers to processes that are less clean and less repeatable but can still be automated. Finally, "the ugly" refers to unstructured processes that are difficult or which will be more than incredibly challenging to automate.

Surveys have shown that businesses may struggle with automation for a variety of reasons, including a lack of understanding of the process they are attempting to automate. To ensure successful automation, businesses must understand their processes thoroughly and identify specific benefits (for example ROI). *

*https://www.forbes.com/sites/forbestechcouncil/2021/10/12/why-process-automation-initiatives-fail-and-how-yours-can-succeed





1.4 Importance of automation

For a CSP, automation is important for a number of ways. These include:

Process cycle time reduction

Automation plays a vital role in reducing the time it takes to complete tasks or processes, enhancing efficiency and responsiveness across a CSP.

Process unit cost reduction

Automation can lower the cost of producing goods or delivering services, contributing to improved competitiveness and profitability.

Reduction/elimination of Full-Time Equivalent (FTE)

Through automation, organisations can reduce or eliminate the need for additional full-time employees, leading to potential cost savings and resource allocation efficiency.

Increase in capacity

Automation enables organisations to scale operations, accommodating higher workloads and capability expansion without proportionally increasing human labour.

Increase in agility

Embracing automation fosters a more agile business environment, allowing CSPs to quickly adapt to changing market conditions and customer demands.

Increase in accuracy/quality

Automation enhances precision and consistency in tasks, leading to higher quality outputs and reduced error rates.

Increase in predictability

Automation brings greater predictability to processes, helping organisations better forecast outcomes and make informed decisions. This can increase their reliability and competitiveness.

"Robotic Process Automation (RPA) is a form of automation used by CSPs, amongst many business types, to automate point-to-point interactions.
RPA is simple; including its deployment and the likely uses. The key advantage of RPA is that it normally offers a quicker return on investment than end-to-end process automation."

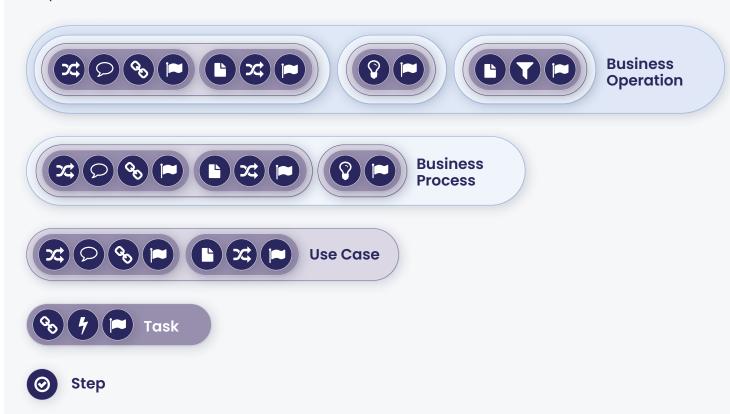


2.0 An Overview of Automation Technologies

in Telecoms

2.1 The automation hierarchy

The hierarchy of automation technologies can be broken down into several layers. In understanding this hierarchy, businesses can identify which layers they need to focus on to streamline their processes and improve their bottom line.



We Are CORTEX Automation Hierarchy Explained:



Business Operation

A conceptual grouping of business processes

Business Process

A candidate for business orchestration and process automation. A set of related use cases that deliver a well-defined objective; may be shared by many business operations.

Use Case

A candidate for business-grade automation. Defined as a set of tasks in sequences that complete a well-defined objective; may be shared by many business processes.

Task

A set of steps or activities that when completed in sequence, complete a simple outcome.

Step

An individual aspect of a task.

2.2 Technologies in automation

The table below demonstrates the range of processes and tools, which a CSP can employ when looking to develop their automation capabilities. Consideration should be given to understanding the processes fully to ensure the correct technology is being deployed.

CORTEX

Technologies in Automation

Complex Processes

(will include back-end integrations)

Tactical Options

- Data Integrity & Assurance
- Revenue Assurance
- Tools
- Orchestration & Adv. Automation

Strategic Options

- Service Assurance
- Life Cycle Management
- Cyber Security Compliance
- Orchestration

Simple Processes

(may include API use)

Tactical Options

- Customer Self-Healing Toolkits
- Scripting, RPA
- Tools
- Password Policy Management

Strategic Options

- Fault Management
- Energy Use Mitigation Application
- Infrastructure Management
- Tools
- Scripting, RPA Platforms

Tasks

(UI Centric)

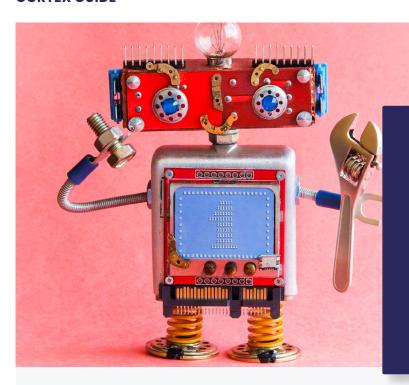
Tactical Options

- File Transfers
- Desktop Automations
- Tools
- RPA, Simple Scripts, Macros

Strategic Options

- Fault Management
- Tools
- Vendor Native Automations
- In-platform Workflow





'Select something which has a sweet spot with the lowest cultural and political resistance, possibly the fewest tools, the best known process, or balanced against the biggest and the quickest benefit.'

Eddie Watson

Operations Director, We Are CORTEX

2.3 Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is a form of automation used by CSPs, amongst many business types, to automate point-to-point interactions. RPA is simple; including its deployment and the likely uses. The key advantage of RPA is that it normally offers a quicker return on investment than end-to-end process automation.

Easy to understand, to use and to deploy, it is an ideal solution for the simplest lower-level tasks that require automation. It is often used for data entry or data retrieval operations. It is used for task based activities where there's a short-term need to automate interactions.

Later, as your needs grow and mature, as well as increase, existing RPA can be incorporated as part of an integration strategy. This should be adopted and defined as:

- API first
- Command Line
- RPA
- Manual swivel chair if all else fails

If you have opted for an enterprise automation capability, it should be possible to take the RPA work you do and include it the overall process designs.

However, RPA does also have limitations. It interacts with systems almost as if it were a human. This embeds technical debt into the process automation, with little opportunity to vastly increase speed with this approach. RPA is unlikely to be improved iteratively. While it is often thought of as a 'set and forget' technology, organisations are continually needing to tweak their RPA implementations for reasons such as screen colour change, field position on screens changing and screen sizing changing.

Sadly, RPA solutions are not often documented. Consequently, when a business starts to overhaul processes strategically, RPA becomes a weak point in the process, thus defeating its original value, and sometimes having a net effect of costing more, or creating more weakness than the original processes it replaced. This can make it difficult for a CSP to advance automation processes later. RPA does have a quick ROI, but it is often more expensive, and can be wasteful.





2.4 Process automation and RPA - when is it best to use RPA?

RPA and process automation complement each other and can provide an advanced automation capability.

Process automation adds significant value to RPA, and releases much of the risk referred to earlier when RPA is used standalone. It is used to orchestrate an end-toend process, collecting data from other systems or people, making decisions about when an RPA process should be invoked, and passing the data to that RPA. Making RPA context sensitive, or intelligent, is not only more effective from a results perspective, but often reduces the cost of running RPA.

RPA software is often triggered by the number of executions or transactions it performs. In other words, how often you ask it to run, every few minutes, every hour, every day, or every week. It will then run irrespective of whether it needs to. For example, RPA is used to transport data from System A to System B. The data may be incomplete, incorrect, or midprocess.

The RPA estate has a limited capacity, determined by purchased licences and available bot executers.

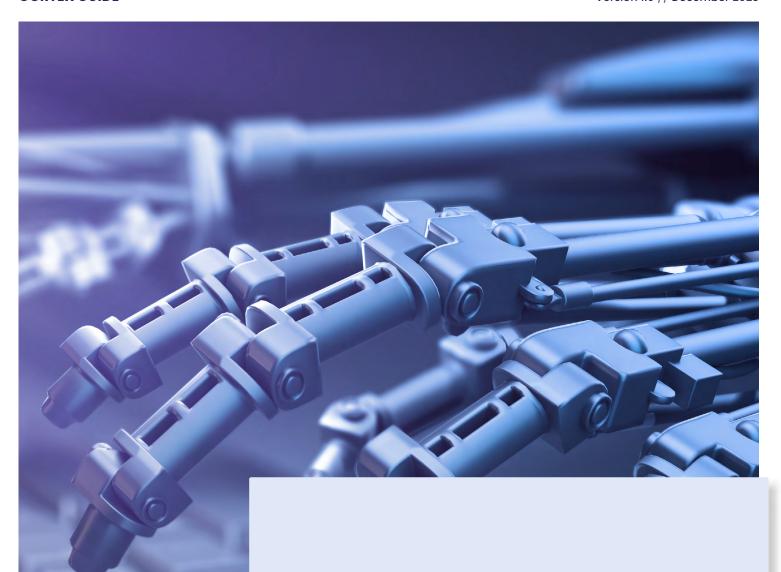
Running a bot like this not only uses up a licence, but it also prevents another bot - which may have a higher priority and/or have all clean data and/or deliver bigger benefit - from running at that time.

CORTEX can be used to improve the efficiency and effectiveness of the bot environment, by ensuring bots are more likely to be executed successfully first time round. CORTEX can also manage jeopardy, so that if the bot doesn't start/complete within a certain timeframe, CORTEX can re-prioritise it, or can escalate for manual intervention.

Process automation can further enhance RPA by enabling complex decision-based end-to-end processes and coordinating less context aware task automations into a sequence that delivers value. This results in a higher capability, return on investment, and advanced automation.

"Al is a massive area which covers a vast spectrum of technologies and capabilities. We acknowledge and understand that there is a huge demand for Al across businesses."





2.5 Al and automation

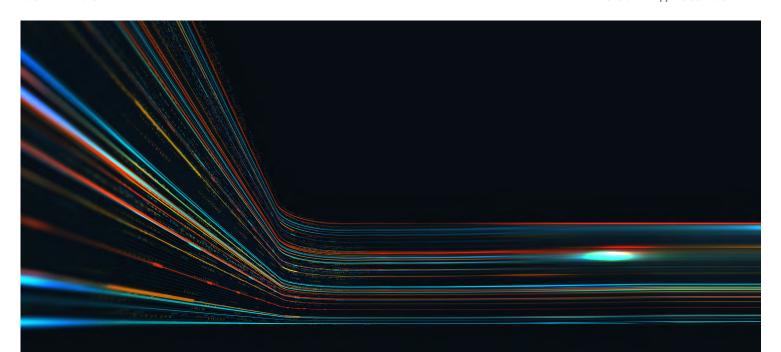
Al is a massive area which covers a vast spectrum of technologies and capabilities. We acknowledge and understand that there is a huge demand for Al across businesses.

However, this is often in advance of the reality curve for what can be achieved. Aspects of AI are currently being applied successfully in silos, and we expect this to continue.

It's important to understand that in many cases, you can only use AI if you have proper foundational automation in place. This is because you need exceptionally coherent and accurate data sets to be able to apply analytical AI successfully.

As a wide ranging topic, classed by many as a future trend, this is something we intend to cover in more detail in our Expert's Automation Guide.





3.0 What can

CORTEX Offer?

CORTEX can help a client with RPA installed by orchestrating end-to-end processes and managing the activities that happen before and after the RPA is invoked. It can collect and validate data, make decisions on when to invoke the RPA bot, pass data to the bot, monitor its progress, and collect the data after completion for downstream decision making. Our process can also monitor the bot for failure and take appropriate action.

CORTEX prioritises RPA to make sure it is invoked correctly.
The ability to sequence bots and activities according to the precursors and successes is an intelligent capability that is essential in a CSP when data errors can be catastrophic. For example, billing errors have implications on revenue assurance, customer satisfaction, contact centre workloads and reputational damage.

Each of these will have further downstream impacts for you.

Process Automation is necessary, and RPA is part of the answer, just not all of it. Use RPA as part of a wider process automation strategy so it is complemented by advanced Automation capabilities. "Zero Touch Automation
refers to the end-to-end
automation of a specific part
of a company's business,
such as service provisioning,
service assurance, billing,
shipping, and resource
management. Achieving
Zero Touch Automation
means that processes are
automated without any human
involvement, except potentially
in submitting the initial
request."



4.0 Where to

Change Gear?

Ultimately, the decision to move up the automation hierarchy depends on the specific needs and goals of your organisation. This is typically when you need to automate and orchestrate more complex decision-based, end-to-end processes; usually involving coordinating less context aware task automations into a sequence that delivers value from end to end. Process automation (seen in Layer 4 in the Hierarchy diagram) can help achieve this by talking directly to devices and orchestrating the entire process. Moving up the automation hierarchy increases capability and return on investment.

Automation missions

You may hear that the organisation has an automation mission such as Zero Touch Automation, or self-healing networks. These are often a trigger to change gear from RPA and tactical automations to adopt advanced automation or orchestration, but what are these missions?

Zero Touch Automation (ZTA)

Zero Touch Automation refers to the end-to-end automation of a specific part of a company's business, such as service provisioning, service assurance, billing, shipping, and resource management.

Achieving Zero Touch Automation means that processes are automated without any human involvement, except potentially in submitting the initial request. Getting to ZTA, particularly for some complex, customerfacing areas is not achieved in one step, but in phases. It is prudent to adjust whilst maintaining some human interaction. This interaction may be necessary, or simply preferred.

While ZTA is certainly achievable today, it may not be suitable for all parts of a business. For example, would you allow machine speed automated changes to be applied to a live production network?

Self-healing network automation

Like ZTA this is an achievable level of Automation but not across an entire 'Network Operator'. Careful consideration should be given to the application of a self-healing network.

Self-healing networks rely on knowing how to identify and then respond to every issue that could occur. Programmatically, this is a lot of design and build, but it clearly has material long term value to your organisation. The best use cases today are for Life-Cycle Management of inventory, Cyber-compliance of IT or Network Operations elements; areas of your operation which are large, but well-understood.

"For a CSP, clean data is hard to achieve owed to the volume of data generally, so leveraging Automation to achieve less cluttered data to see the business differently will improve analysis and enable better decisions."



5.0 Automating

Network Operations

5.1 Performance monitoring and optimisation

In Network Operation Centres, staff are often overwhelmed with the amount of data they must process, leading to noise and difficulty in identifying and prioritising genuine problems that affect services, customer experience or revenues. Process automation can help by aggregating and correlating events to reduce noise and allowing staff to focus on real issues. It should be emphasised that this is only the first step of a journey towards Service Assurance ZTA; and it is one that many operators will have already taken (or at least, will believe they have already taken).

Automation also captures business memory and moves towards best practices and standardised or regularised operations. This is a virtuous circle journey; as more activities are moved from human to automation, humans will have more time available to work on more important or complex issues.

It can also rapidly enrich data sets and distil a series of events to a root cause, improving Mean Time To Repair or Resolve (MTTR) and helping clean the data in ways which allows for identification of net new scenarios.

For a CSP, clean data is hard to achieve owed to the volume of data generally, so leveraging automation to achieve less cluttered data to see the business differently will improve analysis and enable better decisions. Once the approved response to a root cause is known, the automation will reliably perform that the next time the root cause is seen, whether it's in one hour or one year; there is no delay in recalling how to respond to it, and no mistakes in misremembering how to respond to it. In turn, this will lead to increased overall efficiency, lower risk, and a leaner organisation.

Use case

Service assurance



A major CSP faced challenges with prolonged fault resolution times (MTTR), a backlog of alarms, and overstaffed NOCs.

They engaged the We Are CORTEX team to develop an automation solution. CORTEX integrated with the Network Management System (NMS) to validate, classify, enrich root cause analysis, and automate alarm resolution, reducing MTTR by 40% and cutting trouble tickets in half by identifying false and duplicate alarms.

This enabled the reassignment of 30 FTEs from NOC to customer facing roles and new product development, resulting in improved employee experience and increased revenue within a six month timeframe.

Read our service assurance use case **HERE**



Use case

OLO network traffic management



A Communication Service Provider (CSP) faced challenges in optimising their international voice network services while minimising costs.

Their ticket-based model overwhelmed engineers with queues of tickets, and existing automation couldn't handle stuttering connections and complex alarm correlation.

To address this, an automation initiative was launched with the goal of achieving zero-touch routing changes based on traffic alarms. CORTEX was chosen to assist the internal automation team.

Read our OLO network traffic management use case **HERE**

The solution implemented three stages: fault identification, user-approved mitigation actions, and fully automated fault resolution. As a result, the CSP significantly reduced diagnosis time, streamlined incident response times from 30 minutes to seconds, and achieved automated fault resolution, allowing engineers to focus on higher-value tasks and improving customer satisfaction.

5.2 Routine tasks and compliance

Use case

Routine maintenance



A Communication Service Provider (CSP) faced challenges with monthly maintenance checks that led to network issues, extended downtime, and a negative impact on their engineering team's work-life balance.

Over 25,000 monthly checks on numerous devices were conducted inefficiently, causing frustration among the team who often worked long hours, including nights and weekends.

To address these challenges, an automation initiative was launched with CORTEX, reducing downtime by 10%, increasing compliance by 90%, and allowing engineers to work more efficiently within four months.

Read our routine maintenance use case **HERE**



Use case

System access management



A major UK operator serving a vast call centre faced SLA challenges due to high employee turnover.

CORTEX was deployed to automate Starter, Leaver, and Mover (SLAM) processes, integrating with HR and IT systems. This automation significantly accelerated request processing, with over 80% of HR requests fully automated within a year.

CORTEX handled 500+ change requests daily, reducing processing time from five days to under two minutes for exceptions. After 18 months, SLAM accuracy exceeded 90%, ensuring SLA compliance despite evolving requirements.

Read our system access management use case **HERE**

Use case

Configuration compliance checks



A large CSP faced extended Mean Time To Resolve (MTTR) issues, causing repeated SLA breaches due to the inability to perform 10 million compliance checks on 150,000 devices across nine networks.

Implementing CORTEX, they achieved a 90% compliance increase, saved four FTEs by reducing manual intervention, and reduced MTTR from 24 hours to machine speed resolution.

This transformation was accomplished in just four months.

Read our configuration compliance checks use case **HERE**



6.0 Automating

Customer Support

There is a drive towards providing an omni-channel approach to customer interactions in the telco industry. This is where customers can use multiple channels to contact the organisation and receive a consistent level of service. For example, they could report a service fault via an online web portal, using an app on their mobile phone, by calling a customer support desk, or by going to a retail outlet. Irrespective of how the fault is reported, they would expect it to be recorded, tracked, and resolved at the same speed.

A customer with an issue wants it resolved as quickly and as easily as possible. There is an ever growing appetite for self-service too. Equipping your business to be able to offer a range of highly effective self-service capabilities, or equipping agents to be '1st time fixers' a high percentage of the time will lead to increased customer satisfaction and retention. The key here is having a single, consistent back office process that is, or can be invoked by (as in the example above) the company's web store, the customer service agent, and the in-store personnel.

CSPs need to separate out the back office process from the customer interaction but must also recognise that both affect CX. This separation allows you to change the process as and when needed without necessarily changing all or any of the front end customer interaction channels.

Automation tools here are not necessarily just RPA and advanced automation tools, but they also include chatbots (manned or unmanned) and (Interactive Voice Response Systems (IVRS) which provide different channels for customers to contact the operator. Traditionally, these are accessed via web sites/portals, email, SMS, social media, and visits to stores with booths or service centres.

The secret to success here, is designing highly re-usable automation assets that no matter who accesses them or how they do so, the tools help you progress issues through to successful resolution. For example, automation to validate service status can be used in at least three different scenarios: prior to initial service delivery to the customer to validate that the service is working as expected; by the customer via a web portal or mobile app as part of their issue diagnosis if they experience a problem; by a customer service agent when a customer calls to report a fault. Building an automation for faults that can be built once, but used in a variety of interfaces with the customer gives you significant advantages. You offer a consistent experience to customers, regardless of how they choose to engage, and you do not create a myriad of complex solutions all addressing the same issue. This saves you time and money.

"Building an Automation for faults that can be built once, but used in a variety of interfaces with the customer gives you significant advantages. You offer a consistent experience to customers, regardless of how they choose to engage, and you do not create a myriad of complex solutions all addressing the same issue. This saves you time and money."



Use case

Customer service testing



We Are CORTEX, were presented with a challenge from an operator clientto reduce the workload on their Network Operations Centre (NOC) and empower their customers to independently verify the status of their services.

The objectives were clear: create an automation solution that would enable customers to check service status and provide diagnostic data to the IT Service Management (ITSM) solution, leveraging CORTEX for seamless correlation and troubleshooting. CORTEX performs service specific tests immediately after network service activation.

These tests are accessible to customers via a self-service portal, giving them the control to manage their own fault resolution. This initiative significantly alleviated the NOC's workload, offering customers are responsive service experience.

Read our customer service testing use case **HERE**

Use case

1st line support testing



We Are CORTEX partnered with a leading operator to develop a three part automation solution to swiftly diagnose customer issues, particularly in IPTV and IPVPN services. Identifying these problems took a considerable amount of time.

The solution encompassed testing, diagnosis, and remediation, automatically resolving issues, or escalating them when necessary. Customers were empowered with self-service tools for fault resolution, resulting in a 40% reduction in Mean Time to Resolution (MTTR), a 95% reduction in agent call handling times, and an 80% increase in right-first-time issue resolutions.

This comprehensive implementation, delivered these impressive results in just six months, enhancing both customer experiences and operational efficiency.

Read our 1st line support testing use case **HERE**



7.0 Automating

Billing & Revenue Management

7.1 Billing and invoicing

CSPs need to ensure that they can bill their customers accurately, securely, and efficiently, as this is the core of their revenue stream. The impacts of not doing so are not only important to the customer experience, and everything that goes with this, but also to the compliance of the business and onwards to the confidence of shareholders and the stock markets on which some trade.

This is a huge, but necessary undertaking and cannot be efficiently or accurately achieved without automation. The billing process is complex, and CSPs leverage automation solutions to improve accuracy, move data between network readings, data lakes, to ERPs, resellers, other licensed operators and many more. Efficient, error free automation for billing and revenue management is a survival requirement.

Automated billing and invoicing

CSPs can automate the sequence and pace of events needed for accurate billing and revenue management. Automation not only deals with accuracy and speed of existing customer data, but also reduces Time to Revenue and Time to Value. Lead-to-Cash processes for a CSP historically took days or weeks. To be competitive, automation has iterated these processes from weeks to just seconds. This speed of delivery today is the difference between increased ARPU, a new customer and a happy customer, and a cancellation during the cool-off, compensation, and superfluous costs.

Speed is not the only factor. Quality also counts!

Automation can also help a CSP test their service(s) before handing them over to customers. This testing ensures that the services are functioning correctly and meet the customer's requirements, ensuring quick adoption, satisfied customers which in turn reduces the potential for problems in the billing process. This highlights how interconnected widely different business operations can be.

"CSPs can use automation to assist with fraud detection and prevention across the billing cycle. This can include real-time monitoring and rule-based alerts which trigger when specific billing patterns or anomalies are detected."





"In certain domains, achieving complete automation may not always be the ideal solution. It becomes necessary to involve human expertise and governance to ensure the appropriate actions are taken at the right time. Combining human interaction with machine interfaces when dealing with significant or important customers proves crucial and invaluable."

Eddie Watson

Operations Director, We Are CORTEX

Fraud detection and prevention

CSPs can use automation to assist with fraud detection and prevention across the billing cycle. This can include real time monitoring and rule based alerts which trigger when specific billing patterns or anomalies are detected. Investigations can be streamlined by automatically collecting and analysing relevant data. In addition, CORTEX can autonomously respond to such events, including notifying customers, service managers, and law enforcement agencies; initiating usage tracking; or limiting or denying service.

Revenue assurance and optimisation

Automation can assist CSPs in the accuracy of their revenue management. In addition, automation allows CSPs to ensure that everything that was provisioned for the customer when they joined the network is taken out when they leave, optimising and managing costs. Where CPE or other physical equipment was provided to the customer, tracking, and guaranteeing its return status correctly can help the CSP conform to its "green chain" regulatory requirements (such as WEEE).

Subscriber life cycle management automation

Life cycle management is also an essential aspect of revenue management, where services are created, amended, and ceased.

Automation can help track these changes and make sure that resources are changed appropriately. Without tracking and managing these changes carefully, CSPs may end up with unused configurations in their network which can clog up the system and increase risk.





7.2 Additional considerations

Human-in-the-Loop

The 'Human-in-the-Loop' approach to automating billing for CSPs recognises that while automation can greatly improve efficiency, there may be cases where human judgement is necessary to ensure accuracy and fairness in the billing process.

This can include instances such as:

- Nervousness surrounding automation in billing. 'Can we trust the computer to do that?'
- Complex billing situations, for example custom billing agreements.
 The more complex a billing condition is, the more you need to check it the first time or two it is issued. Human-in-the-Loop needs to be retired after a few cycles of consistent, as expected performance though.
- · Disputes or discrepancies.

To address this, the right automated technology will run these processes, and present them to an operator, who can then go through and validate or action fundamental changes. This usually leads to the human becoming comfortable with automated validation quickly.

Too much testing

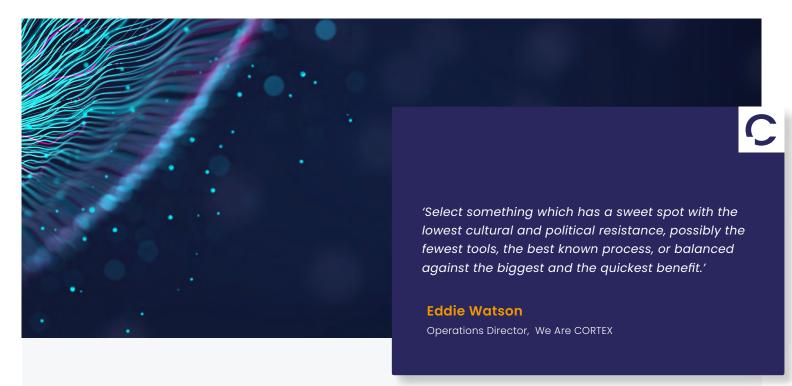
Billing automation is at the core of a CSPs' revenue engine, making it a critical part of their business. As a result, CSPs must extensively test the automation before rollout to ensure it works correctly. Human-in-the-Loop helps here by offering a sign off step as part of testing the automation.

Be mindful that testing should be a 'Goldilocks process'; not too much, not too little – it needs to be just right. Too much testing delays the implementation of automation, thus undoing some of the value, and too little leaves you exposed to potential errors of un-trapped issues, which is equally unhelpful.

Therefore, CSPs need to balance testing automation and implementing it quickly. Human-in-the-Loop is a guardrail which can be put in place to support of sensitive business processes. Ultimately, it is a judgment call for CSPs to determine when it is safe to implement or initiate automation.







8.0 Future Trends in

Telecoms Automation

There are some key trends that are shaping the future of Automation.



5G, 6G and Beyond: Network slicing and orchestration

As we move into the era of 5G and beyond, the concept of network slicing and orchestration will take centre stage. This will allow for the dynamic creation of multiple virtual networks within a single physical infrastructure, catering to diverse user requirements. Telcos will be able to use automation to efficiently manage and optimise these network slices, providing enhanced flexibility, scalability, and personalised services.



Edge computing and IoT automation

The proliferation of Internet of Things (IoT) devices and the demand for real time data processing are driving the need for edge computing and IoT automation. By bringing computing resources closer to the edge of the network, telecom providers can enable faster data analysis, reduced latency, and improved overall performance. Automation plays a crucial role in managing and securing these distributed edge environments, ensuring seamless connectivity and efficient data processing.



Cloud and change management

The cloud enables scalable infrastructure, cost optimisation, and rapid service deployment. Automation facilitates smooth migration, seamless integration, and agile management of cloud-based services, empowering telcos to embrace the benefits of cloud computing while adapting to evolving business needs.

Will CSPs ever really adopt public cloud? This is a topic for another eBook.







Software-Defined Networking

Software-Defined Networking (SDN) is revolutionising network management by decoupling network control and forwarding functions. With SDN, CSPs can gain centralised control and programmability, simplify network management, improve resource utilisation, and enable dynamic service provisioning.

Automation plays a pivotal role in orchestrating and automating SDN based networks, enhancing efficiency, agility, and scalability.



Legislation and compliance

Legislations such as the Telecoms Security Act are coming in to force to ensure networks and services are properly secured against ever more advanced cyber attacks. With Telecoms services recognised as critical national infrastructure – just like energy, transport, and healthcare – the Act seeks to maintain service continuity. It compels telecoms companies running public networks and services to implement an array of security proposals with a key focus on the use of automation to achieve this.



International roaming standards

The GSMA has launched its new RAEX schemas, now fully digital with APIs, which includes specifications for the technologies used to manage roaming, such as systems for SIM card provisioning, billing, HLR/ HSS, VLR, SMS and other forms of interconnectivity. These solutions enable seamless connectivity, predictable service quality and reliable billing for roaming subscribers. For example, the ability to ingest IR.21 data in real time – direct from RAEX – and then automate and orchestrate its delivery across all your systems simultaneously eliminates the need for lengthy and error prone manual efforts.



9.0 Automation Implementation

Challenges Facing CSPs

Implementing automation for CSPs can present several challenges. Here are some of the key challenges:

Data management and integration

CSPs deal with vast amounts of data from various sources, including customer information, network logs, billing data, and service records. Integrating and consolidating this data from disparate sources into a unified format for automation can be a significant challenge. Data quality, data mapping, data synchronisation, and data privacy concerns need to be addressed during the integration process.

Security and compliance

Automation introduces new risks and vulnerabilities that can impact the security and compliance of CSPs. Protecting sensitive customer data, securing network infrastructure, and adhering to regulatory requirements such as data privacy laws are critical considerations. Robust security measures, access controls and encryption are essential to mitigate these challenges.

Automation in CSPs often involves integrating and orchestrating various systems, platforms, and networks. This complexity can arise due to the heterogeneity of legacy systems, diverse technology stacks, and different protocols used across the CSP infrastructure. Ensuring seamless interoperability and data flow between these systems can be a challenge.

Cost and ROI

Initial implementation costs, infrastructure upgrades, and training needed for automation can be a challenge for CSPs. It's essential to assess the ROI and long-term cost savings of automation initiatives to justify the initial investment and ensure financial viability.

Scalability and flexibility

CSPs operate in a dynamic and evolving industry where new services, technologies, and customer demands emerge rapidly. Automation solutions need to be scalable and flexible enough to accommodate these changing requirements and increasing workloads, without compromising performance. Ensuring that automation can adapt to future technological advancements and industry trends is essential.

Change management

Implementing automation often requires significant changes in processes, workflows, and organisational structures. Proper change management strategies, communication that identifies automation as being a positive potential force in the business, as well as key training programs are crucial to address these challenges and ensure smooth adoption of automation.

'It's important to demonstrate that Automation can be a positive force in your business, generating benefits as quickly as possible.'

Eddie Watson

Operations Director, We Are CORTEX



9.1 Best Practices for Successful Automation Implementation

Introducing automation in a CSP environment involves a systematic approach to ensure seamless integration and optimal results. Here are some best practices:



Define clear objectives

Clearly define the objectives and outcomes you want to achieve through automation. Identify specific areas where automation can have the most significant impact, such as network provisioning, customer service, or billing processes.



Monitor and optimise

Regularly monitor automated processes, collect relevant data, and analyse performance metrics. Identify areas for improvement and optimisation and refine automation workflows to drive further efficiencies and outcomes.



Security and compliance

Automation should be built with strong security measures to protect sensitive data and networks. Robust security protocols should be incorporated to ensure compliance with regulatory requirements on data privacy and cyber security.



Adopt robust automation tools

Invest in robust automation tools and platforms that can handle complex telecom workflows, not just the simple tasks. These solutions should include scalability, flexibility, and integration capabilities to streamline operations across various systems and processes.



Prioritise automation opportunities

Prioritise automation opportunities based on their potential business impact and feasibility. Start with quick wins that provide immediate benefits and demonstrate the value of automation to stakeholders.



Implement orchestration and integration

Almost all automation in a CSP will involve multiple systems, and advanced automation and orchestration will also include multiple processes. Orchestration and integration frameworks should be implemented that enable seamless communication and coordination between different systems, platforms, and applications.



Conduct process assessment

Evaluate existing processes to identify bottlenecks, repetitive tasks, and areas that can benefit from automation. Understand the end-to-end workflow and determine which processes are prime candidates for automation.



Change management and collaboration

Successful automation requires collaboration and buy-in from various stakeholders across the organisation. Foster a culture of collaboration, provide training, and support, and engage employees in the automation journey.



10.0 The

CORTEX Approach

10.1 Recurring technical design sprints

When it comes to deploying any complex technology, its critical it is done sympathetically, thoughtfully, and always with the business objectives and value propositions front and centre of the programme or project.

Design sprints – Where the magic really happens!

The We Are CORTEX approach treats design sprints as the key stone of success. Importantly, it is not a one time process either. It is a recurring process. As different areas of the business undergo automation, new design sprints are conducted to assess and prioritise implementation in those specific areas. Our approach ensures a structured and continuous approach to identifying and implementing the most effective automation solutions.

The design sprint is a structured and collaborative approach used to assess and prioritise implementation of automation use cases in the telecoms industry. It involves bringing together the customer stakeholder group to ask critical questions and identify potential challenges and benefits associated with the proposed use cases.

During a design sprint, the focus is not only on the technical aspects but also on aligning with the strategic vision and evaluating the business value and return on investment (ROI). The process aims to identify two or three impactful use cases that can deliver fast and tangible benefits to the automation project.

By combining business and technology considerations, the design sprint provides a comprehensive framework for evaluating automation use cases, enabling informed decision-making, and increasing the chances of successful implementation aligned with strategic objectives.



10.2 Developing Skills with Our Acceleration Programme

How does a design sprint fit?

Design sprints are not the whole way of working. They are part of a bigger process. Design sprints should be part of a programme of work which ends in testing, training, and continuous improvement.

The CORTEX Acceleration
Programme offers organisations
transitioning from design
sprints and delivery to selfsufficiency in automation. CORTEX
programmes can start with basic
task automation but always
lead to advanced automation,
complemented by the necessary
support and success teams
to provide on-going access to
expertise.

Enablement programmes provide teams with skills, frameworks, and best practices to design, develop, test, deploy, and operate automation activities in an agile and responsive manner. The programmes go beyond tool proficiency, focusing on real-world delivery experience and guiding teams in applying automation effectively within their specific business context.

This allows organisations to advance their automation capabilities. Teams receive guidance and expertise to optimise their automation processes, considering factors such as algorithm structuring, human involvement, iterative development, and data management.

The programme emphasises practical application and real world scenarios, allowing teams to build automation solutions tailored to their business needs. CORTEX experts provide ongoing support, sharing best practices in design, development, and testing. As teams gain proficiency, they become self-reliant.



'The ideal Automation solution should be relatively straightforward to implement, yet serve as a foundation for future growth and evolution.'

Stephen Connor

Head of Pre-Sales and Telco Domain, We Are CORTEX







10.3 Supporting self- enablement for your automation journey

Self enablement in automation is about empowering CSPs to take control of their automation journey and reap its benefits.

It goes beyond implementing tools and focuses on guiding organisations through the entire value chain. This reduces dependence on external parties while enhancing operational efficiency.

We Are CORTEX supports the development of your business' internal automation capability.

By providing training and support, many of our customers have moved through the maturity curve and are able to be largely self-sufficient with respect to automating their business processes.

10.4 'Human-in-the-Loop' involvement

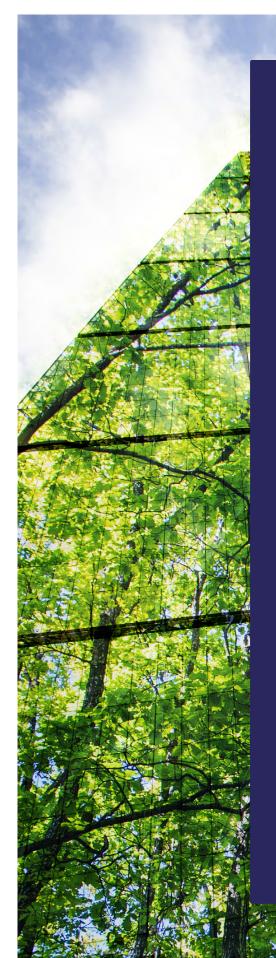
Human-in-the-Loop acknowledges that while automation there is still a need for human involvement and oversight to ensure trust and accuracy when making changes to an operational network.

CORTEX allows this by emphasising the involvement of human operators who possess domain expertise and contextual understanding.

This allows them to assess and interpret the automation generated insights before executing any changes on the live network.

In this way, the Human-in-the-Loop concept enables a balance between leveraging automation capabilities and retaining human judgment and decision-making in critical CSP operations. "The CORTEX Acceleration
Programme offers
organisations transitioning from
design sprints and delivery to
self-sufficiency in automation.
CORTEX programmes can start
with basic task automation
but always lead to advanced
automation, complemented
by the necessary support and
success teams to provide ongoing access to expertise."





11.0 Conclusion

Automation is not a nice to have - it is a tool for survival for the modern CSP. If you are reading this eBook, you will already have acknowledged some of the content as already understood.

Hopefully, we have provided some new ideas or areas for discussion, and we would be delighted to discuss those with you.

The key conclusions we would like you to take away are:

- Automation is a spectrum of tools, but also of processes. Simple tools solve simple problems. Simple problems have very quick, but limited ROI. These same tools can get lost in your business and sometimes become the problem not the solution.
- Meaningful ROI comes from well-aligned, strategic change and automation. It is less easy to define, longer to deploy, but is transformational.
- Automation has shifted your business already. If you are doing it
 well, you are keeping up rather than necessarily getting ahead.
 If you are not doing it well, arguably you are regressing. Like
 many who have gone before you, if you are not on a journey, and
 trying to evolve quickly enough already, you could be the next
 Blockbuster, Polaroid, or Compaq.

Hopefully, we have inspired some new ways of thinking about automation that could benefit your CSP.

Cleary, there is more that could be said, and your CSP will have specific automation requirements. We would be delighted to discuss these in more detail with you and help your automation journey.

Get in touch to start a discussion today!

Thanks for reading.





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