NTT DATA

Delivering the Monetization Agenda

Grow the Top Line, Cut the Bottom Line

1. Executive Summary

Telecom and network operators, including Communication Service Providers (CSPs) are facing a range of broadly similar challenges. These affect the bottom line in the following ways:

Traffic grows constantly year over year at around 30%, and the rise of new contents and services (high resolution video streaming, immersive applications, robotics, AR/VR, data transfer for IOT and AI applications, among others) means that demand will probably keep rising.
Increasing complexity in the network architecture (caused by the need for additional abstraction, control and orchestration layers, with disaggregation into smaller components) makes it difficult to reduce costs and achieve competitive advantage.

To address these challenges successfully, operators need to evolve their networks to make them more intelligent and autonomous, reducing their use of resources and energy, making the best use of scarce human resources and assets, while cutting fixed costs and driving better ROI.
CSPs are also urgently seeking to accelerate new service development to open up additional revenue streams, enhancing top line performance. Issues here include difficulties in developing and monetizing their investments in such areas as capacity, new service development or automation. In particular, there is a real challenge in finding new revenue and business opportunities that increase ROI and reduce Time To Revenue (TTR).

To address these challenges, operators need to transform their networks to make them more programable and dynamic. The goal is to enable API-based "as a Service" models, thereby reducing the risks, extending innovation ecosystems and permitting faster monetization of new services, whoever develops them.

Telecom operators need to adopt enabling technologies and methods to move forward in a controlled and measured way. In this paper we introduce some of the most urgent, high priority technology enablers and show how effective partnership can accelerate evolutionary change, reduce risk and ensure faster time to profit.

OPEX Efficiency
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Enabler 2: Automation, AI and Autonomous Working
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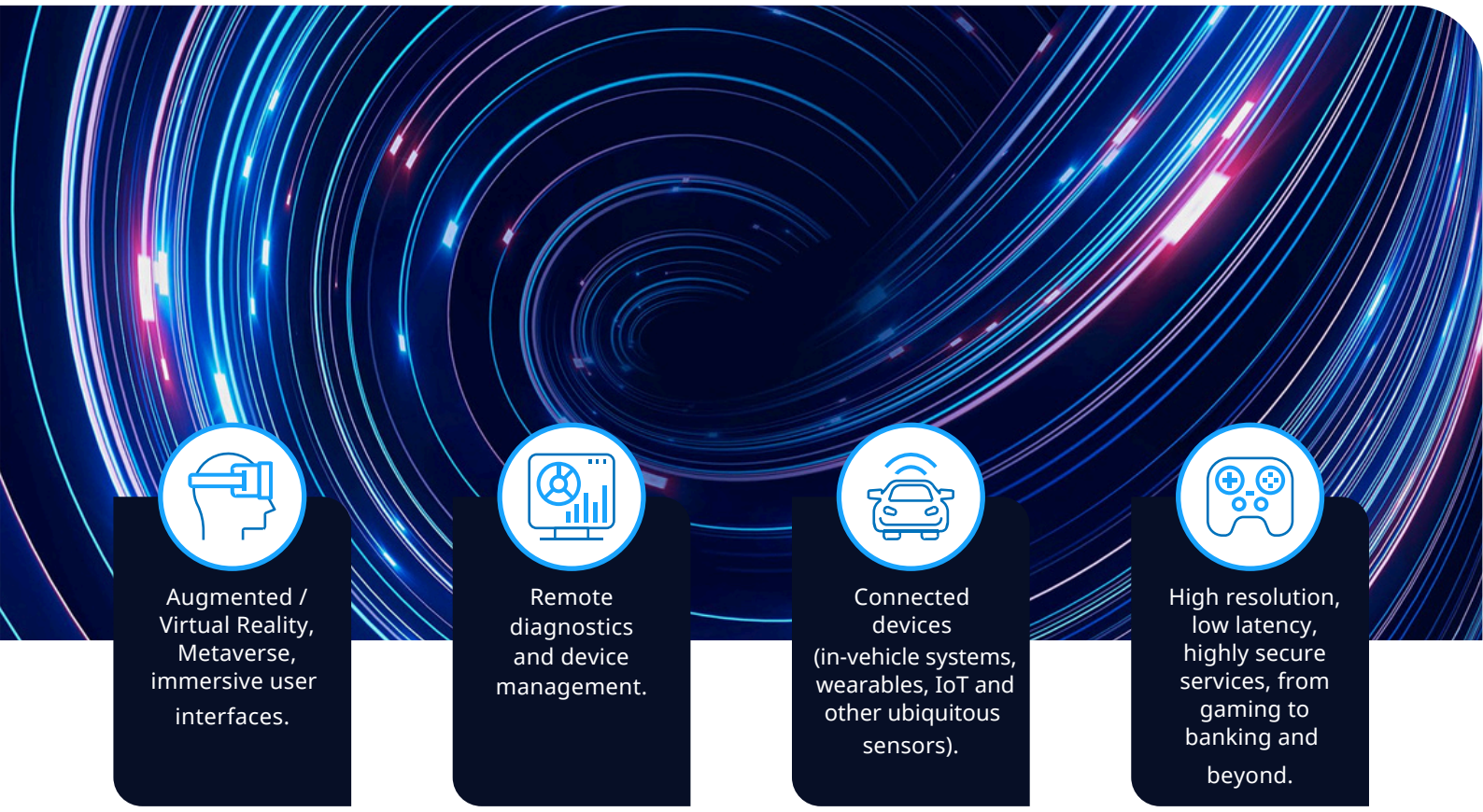
2. Industry Challenges Today

Today, most CSPs are facing similar issues.

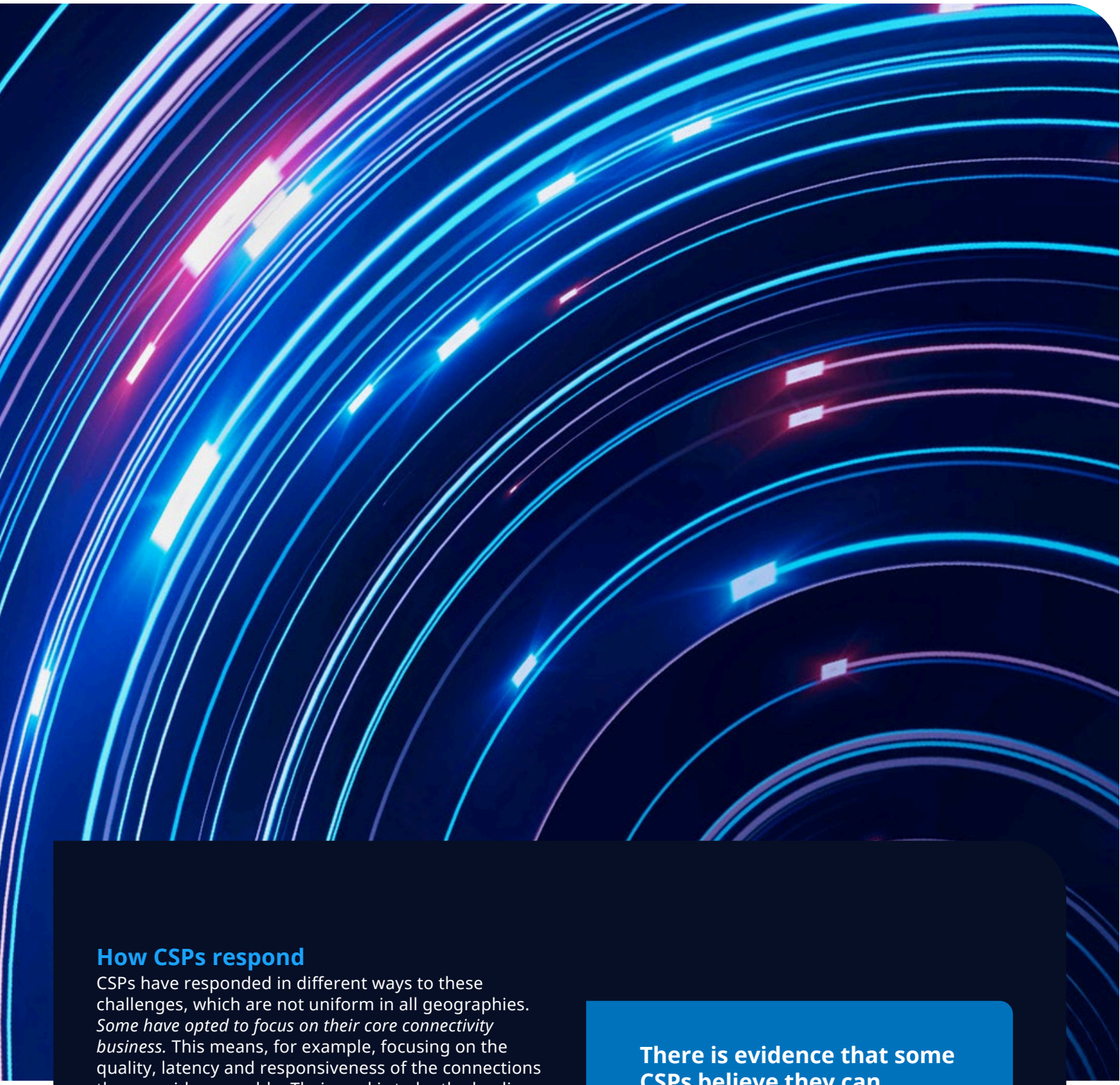
The most urgent challenges

Traffic volumes are rising relentlessly, driven by growth in video from Over-the-Top streaming services, gaming and social networks. This trend will probably accelerate in the future, due to growth in use of new technologies, including:



- Augmented / Virtual Reality, Metaverse, immersive user interfaces.
- Remote diagnostics and device management.
- Connected devices (in-vehicle systems, wearables, IoT and other ubiquitous sensors).
- High resolution, low latency, highly secure services, from gaming to banking and beyond.

Customer expectations are higher than ever, and still rising. Users expect access to huge quantities of data, enabling advanced services, unlimited storage, powerful devices and excellent, increasingly personalized customer service. Consumers, especially, expect these benefits to be delivered without major price rises, and customer loyalty is hard to maintain.
Value capture is another challenge as today, over the top providers capture most of the revenues, margins and market value out of the digital services enabled by a high-quality telecom network.



How CSPs respond

CSPs have responded in different ways to these challenges, which are not uniform in all geographies. *Some have opted to focus on their core connectivity business.* This means, for example, focusing on the quality, latency and responsiveness of the connections they provide or enable. Their goal is to be the leading connectivity provider in this field, with high satisfaction levels and strong adoption by business and entertainment users that wish to deliver assured connectivity for high value services.

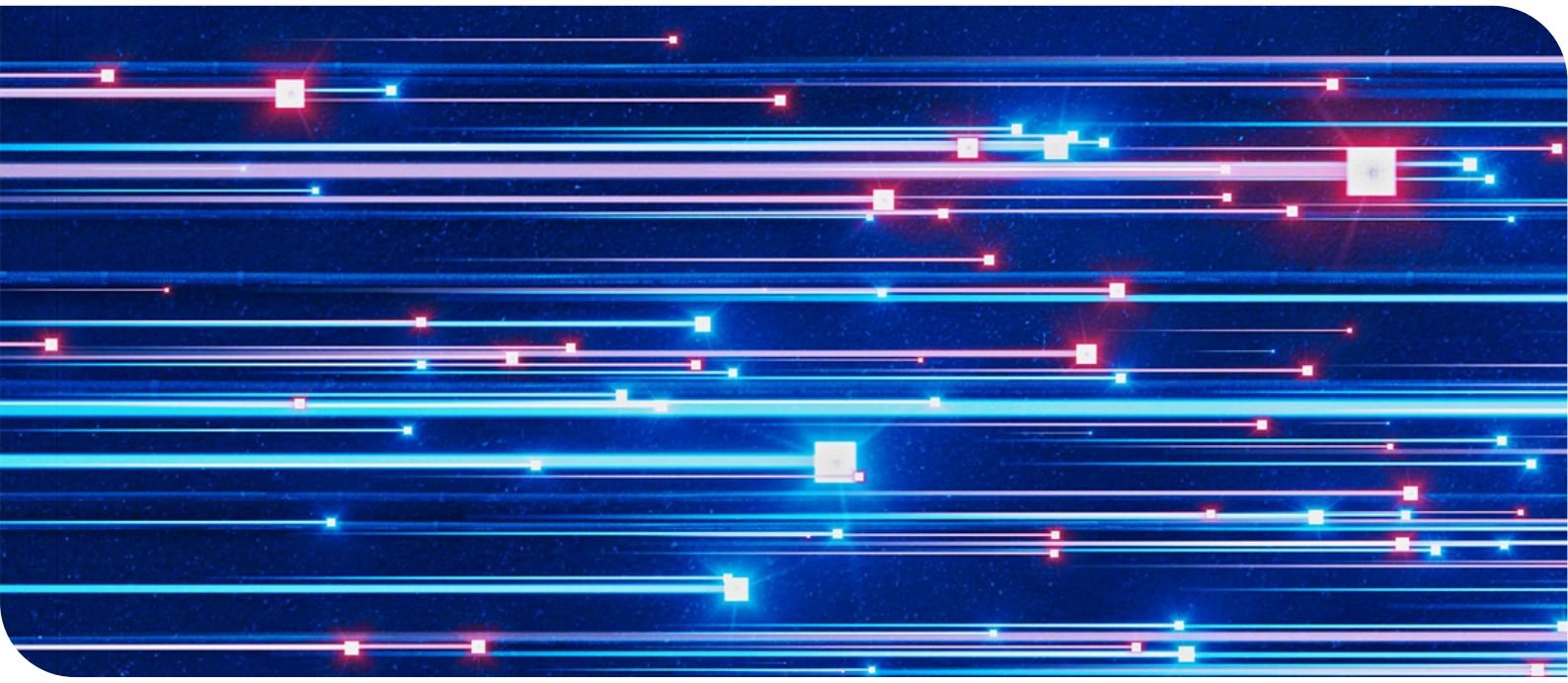
There is evidence that some CSPs believe they can achieve margin growth of up to 3% through such strategy.

Some have decided to focus even more strongly: for example, as providers of physical base stations and towers, together with the engineering, security, energy and service requirements that go with this. *Other CSPs, however, are urgently exploring options for steady, long-term growth leveraging new technologies to enter new business and service models.* Given the scope and scale of technology-driven change, this will require transformational development of their own infrastructures, processes and methods.

The search for enabling technologies

Ambitious CSPs will need a long-term plan for evolutionary change, based on a clear strategic vision, enabling them to set goals and priorities for the coming years. Future networks will be more ***autonomous*** (with data-driven and AI-assisted operations), more ***programable*** (dynamically adaptable to different customer and application needs), and more ***open,*** both internally in their architectures, and externally by exposing their capabilities to third parties in an "as a Service" model, like that applied successfully in cloud computing.
We expect to see a step-by-step introduction of the functionalities and capabilities that will take networks to this level, following an evolutionary transformation. CSPs will certainly want to lay solid foundations and progressively develop -or gain access to- the assets and skills that will make a future growth strategy sustainable. That means they will need to deploy *Enablers,* and seek support from partners with the right capabilities to help guide them through the difficult but necessary process of change. That is the essential first step needed to gain competitive advantage in a complex and unpredictable market.

NTT DATA has identified three types of *first priority enabler,* aimed at both bottom and top line performance improvements, and these are covered in the rest of this paper. These enablers involve technologies that are proven in action and are backed by real customer use cases. They are also *foundational in nature,* delivering benefits in their own right, while preparing the infrastructure for the introduction of future technologies and services. Other publications will cover future enablers in the months ahead.



3. Transformation Enablers: OPEX Efficiency

Modern Telco networks are complex systems that contain a vast number of proprietary components (hardware and software), which require integration and continuous management, update and maintenance.

3.1. Enabler 1: Single Data Layer

A classic OSS may contain several hundred discrete components, and there is no question of simply "mixing and matching" elements without significant investment in IT integration. It follows that for CSPs to achieve the levels of agility the market is starting to demand, while reducing the currently excessive burden of fixed costs in the network, they need to implement a new kind of Next Generation OSS.

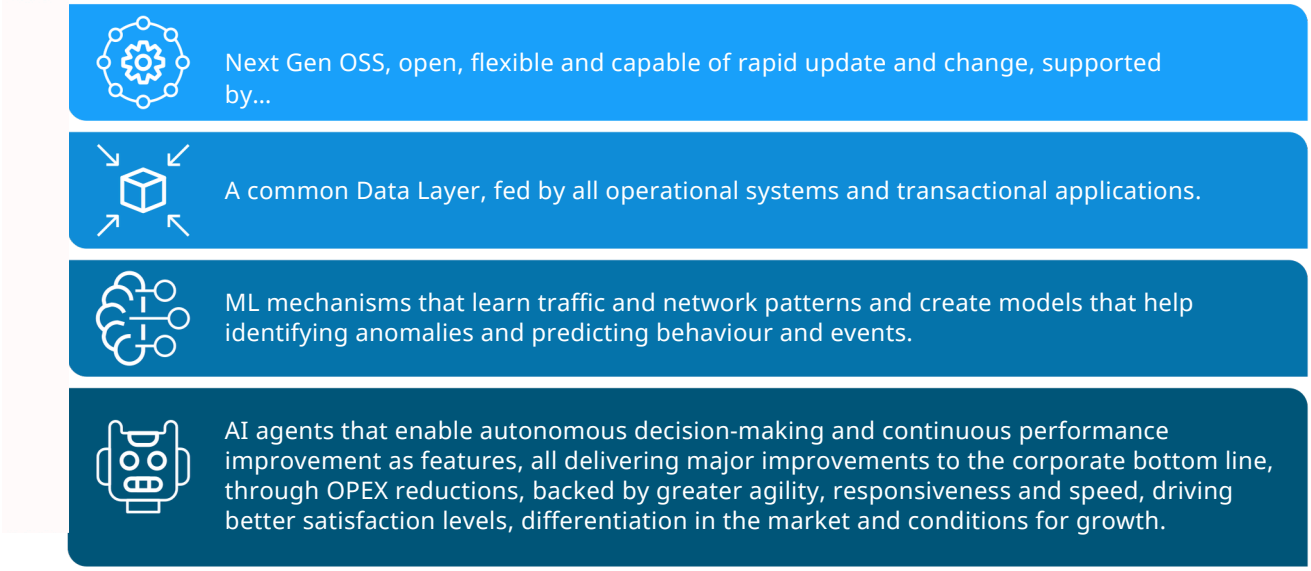
What would this look like?

The first key requirement is a *single, common Data Layer,* fed by data moving southbound from transactional applications and systems, and accessed as the *single source of truth* by the OSS.

This approach is being adopted stage by stage in large enterprises through a process of *data democratization,* which ensures that all relevant data can be accessed by human users, applications and management systems as and when needed, according to agreed and enforced access and security policies.
Implementing a single Data Layer will play a key role in helping Telcos become more responsive and flexible in their operations, facilitating open horizontal *multi-domain multi-technology OSS.* It will also help with improving the quality and efficiency of operations, reducing the bottom line.

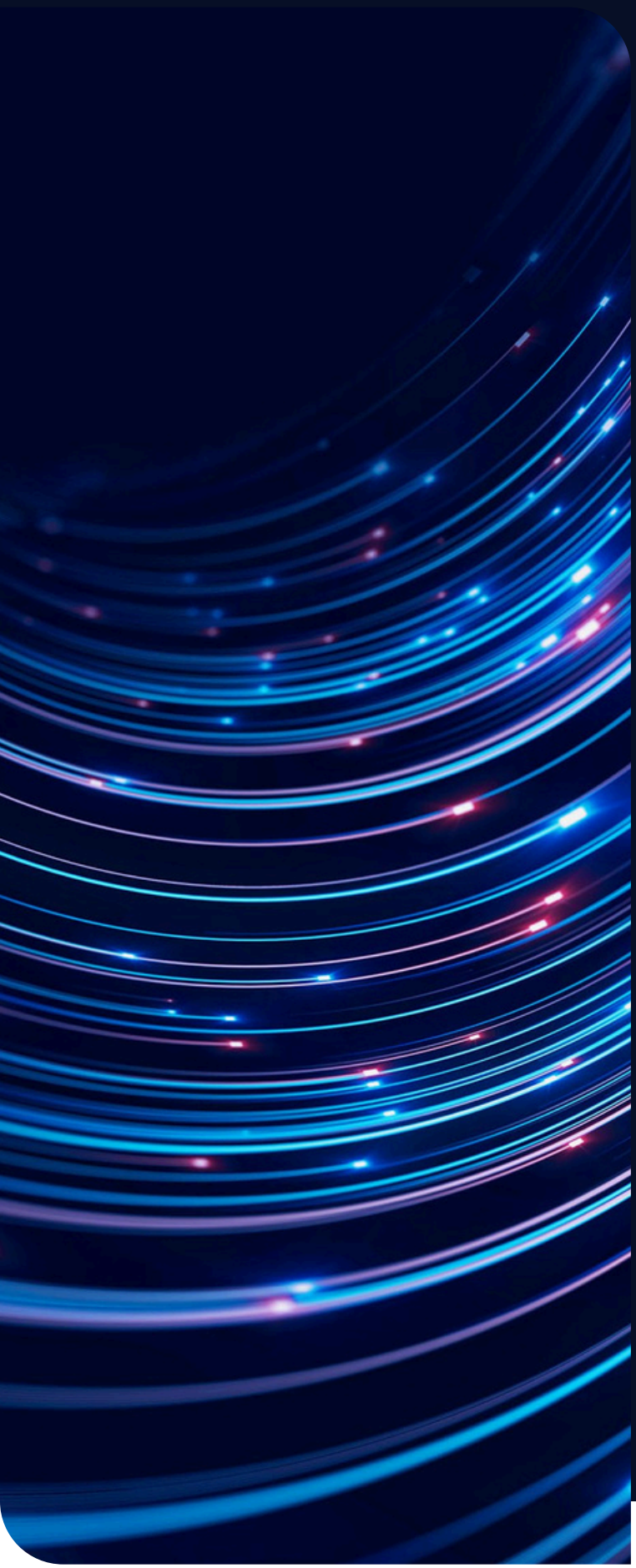
3.2. Enabler 2: Automation, AI and Autonomous Working

High levels of automation will require sophisticated AI tools and agents, backed by Machine Learning and a consistent Data Layer. Despite the current GenAI hype, these agents are not necessarily based on LLMs. Many are driven by more traditional analytical AI algorithms that enable autonomous decision-making across the network, based on clearly defined rules and supported by continuous improvement as a result of ML. One essential consequence of telco network growth and sophistication is the rise of *Hyperconnectivity,* and it is the scale and number of connections within the network that make *Hyperautomation* a necessity. Even before the introduction of *Next Gen OSS,* higher levels of autonomous decision-making will reduce human errors and the need for human intervention to monitor the network and check and fix issues, while accelerating response times. The net effect will be to cut fixed costs, reduce pressure on the bottom line, improve profitability and, perhaps just as important, drive competitive advantage through higher levels of service quality and customer satisfaction. Establishing a consistent Data Layer and making an effective use of AI and ML are necessary preconditions for developing a *Next Gen OSS,* which will be very different from the multiple, closed and proprietary traditional systems of today. Instead, these will be open systems, using open interfaces, able to integrate components from multiple technology providers without difficulty or disruption. Next Gen OSS will be open to new data sources, systems and tools, able to evolve and develop as the market requires, rather than as a specific set of technology providers propose. To summarize this vision for OPEX refinement and efficiency, we expect CSP networks to have:



A change of this scale is not achieved overnight or without special skills and capabilities. Moving from traditional to Next Gen OSS requires a process of transformational change, delivered in partnership with IT partners that have proven expertise in the field.

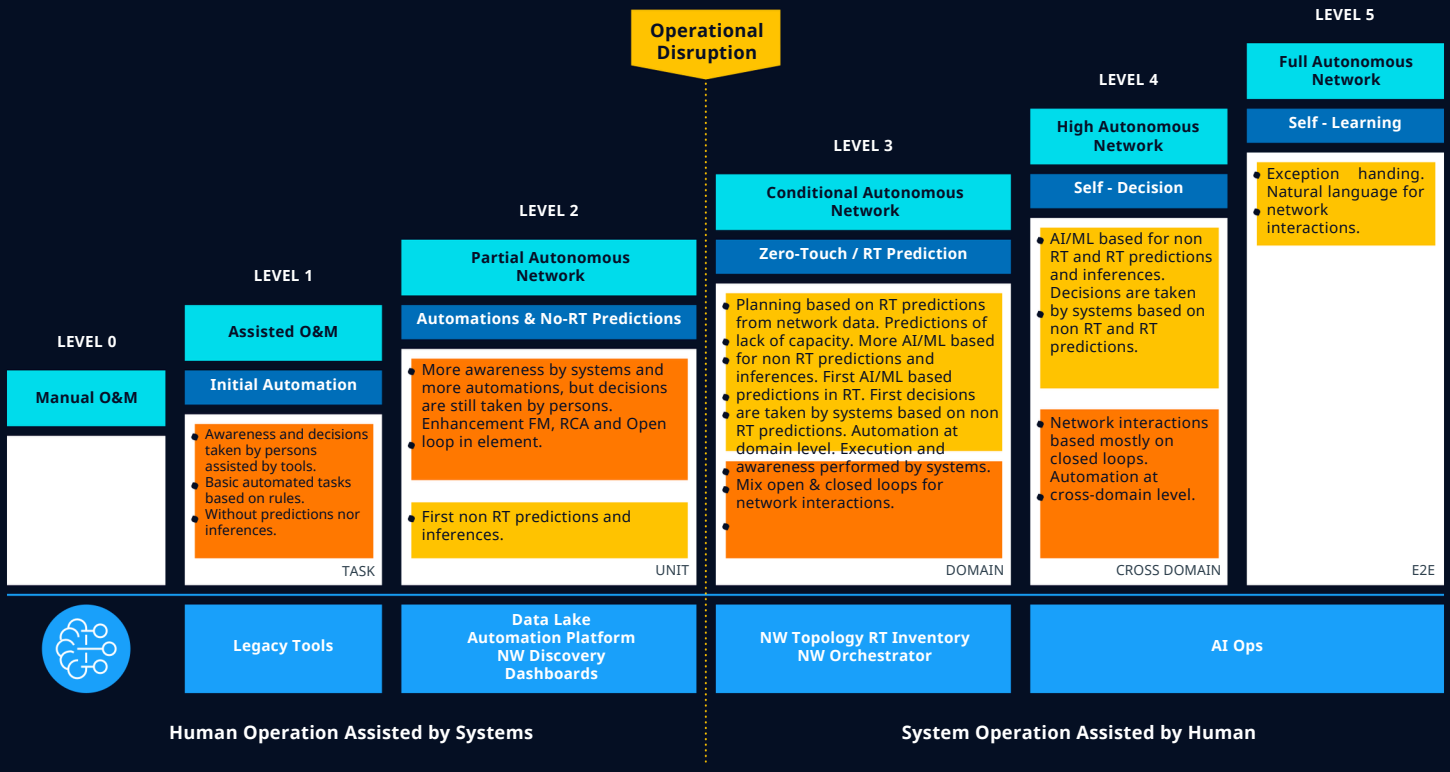
NTT DATA combines the know-how and experience of a major Telco (thanks to the presence of NTT Telecom and Docomo within our group) with the reach and depth of IT capability that comes from being a global Top 10 Systems Integrator. NTT DATA understands the process needed for implementing this new generation infrastructure capability in depth, and has proven its ability to deliver. Here are two recent examples of how we have worked with a major CSP and one of its largest subsidiaries to deliver exactly these changes:



Use Case 1, Data Layer and Performance Management at
The largest CSP in Latin America, is also a key subsidiary of one of the Top10 CSPs in the world. As part of a major ongoing engagement, which also covers omnichannel customer experience, NTT DATA implemented a project to automate the collection of data from network elements, for insights, AI/ML processing and automation applied to network performance management. In the project, the company faced the challenge of having many partial and siloed views of the different network domains, which made it difficult to integrate them to provide an end-to-end view of the network. To solve this challenge, NTT Data deployed its Next Gen OSS Performance Management solution. The foundational data layer within the solution provided a unique and end-to-end view of the network through data collection and data transformation capabilities. This data layer integrated 7 different network domains consisting of more than 85,000 network equipment items from 48 different vendors On top of the data layer, the Performance Management module was implemented, featuring a set of interactive dashboards for network exploration with an analytical view, currently containing over 700 charts. These are all organized by network and searchable within a tree structure for each desired segment. Specific KPIs were used to detect network degradation and were reported to existing Fault Management solutions. The automation module is enabled thanks to the foundational data layer. It is an AI-powered workflow to automate network operation use cases. This open approach to a Performance Management solution provided with a key technical enabler to accelerate progress in their journey towards Autonomous Network Operations.

Use Case 2, Intelligent Network Process Hyperautomation

Autonomous Networks Journey program is driving the company towards an autonomous network operation.



Following the levels of automation defined by TMForum, the project is taking the company from a basic automation (level 1) with humans assisted by tools, making all decisions and using limited rule-based reactive automation; up to level 4, AI/ML-based operation with decisions and actions taken by AI agents applying prediction and inference, with humans limited to oversight; and eventually reaching full autonomy (level 5), in which networks are preventively self-provisioned and self-maintained, with humans handling exceptions and overseeing compliance.
The project is on course and is already delivering significant benefits and learnings for future automation steps.
NTT DATA's intelligent hyperautomation of network processes is aimed at optimizing and improving network processes by applying automation technologies, tools and solutions. The approach not only applies technologies as a lever for cost savings, but also uses them as a cornerstone to enable more complex digital transformation initiatives.

The technologies applied range from task automation and processes automation (RPA, iBPM) to more disruptive technologies based on AI/ML (copilots, GenAI).
The Hyperautomation methodology begins with the definition of use cases to identify process improvement opportunities. Then, focusing on these use cases, progresses through design of the best solution for intelligent process automation, incorporating advanced technologies like Generative AI to facilitate and accelerate solution development and deployment.
Business cases are built to forecast the expected return on investment. After implementation, the automation solution is continuously monitored, and the corresponding support service is implemented to ensure business continuity and track the resulting improvements.

4. Transformation Enablers: CAPEX Reduction

It is difficult to make predictions in this industry, as there are plenty of internal and external factors in play, but there is no doubt that operators are moving towards cloud-based design, implementation and operation of their networks, following the strategy that has proved transformational for other industries. By moving to cloud-native systems, CSPs will be able to use general purpose hardware and improve their capacity utilization, benefitting from IT's economy of scale, and the flexibility, scalability, agility and rich set of tools that cloud technology brings.

4.1. Enabler 3: Building the Telco Cloud

The importance of this strategic development cannot be overlooked for the following reasons:

Current network infrastructures are relatively simple, based on black boxes that come integrated and tested in the factory, but are rigid and lack flexibility. There is no chance of replacing any components of the end-to-end system if they do not bring the right functionality or performance, and upgrades can only be done to the full system, even if it is only a part failing or not performing. This leads to effective hardware lock-in and a lack of agility in upgrading, updating or introducing major changes in functionality.

Cloud is based on physical hardware abstraction. Cloud-based networks are built from common hardware components that can be assigned to several network functions (sharing processing capacity), reducing costs significantly, improving resource utilization, and using existing mature and well-proven IT and cloud tools.

Cloudification facilitates disaggregation, as it can be done at software level, splitting the functionality in modules connected via standard interfaces.

Well-managed, a Telco Cloud can optimize investment and operating expenses in processing and storage capacity by increasing utilization (sharing capacity among several functions) and benefiting from the economies of scale and pay-as-you-go models of the Public Cloud.

The future multi-vendor Telco Clouds will provide mechanisms to ensure portability, compatibility and interoperability, reducing current lock-in threats.

Delivering CAPEX Efficiency

Operators are focused on "CAPEX efficiency" to improve Return On Capital Employed (ROCE) and market value. In future, for example, network operators aim to deploy, upgrade and update their networks remotely through software-based actions. The presence of technicians on site will be required only occasionally for initial hardware installation and programmed hardware capacity upgrades following the practices applied in current large-scale data centers.

The value of hybrid infrastructures

Moving to cloud is not easy, especially when we accept that the future Telco Cloud will be heterogeneous, hybrid and multicloud. A good part of the functionality required by network operators can be delivered by hyperscalers today, but there will remain gaps in the operating model. These may include specific performance areas, affordable and manageable operating model and pricing scheme and characteristics like compatibility, portability and interoperability required in a multi-provider environment.

Committing to a public cloud provider brings a *risk of vendor lock-in* due to the complexity and high *cost of portability.*

CSPs are forced by regulation to provide high *service availability* and *performance levels.* They cannot rely on a single source of supply for any of the critical components as they would need to be immediately replaced by an alternative in case of failure or poor performance. The Telco Cloud needs to be *multi-provider* as it is a critical infrastructure pillar on top of which all network functions will run.

Privacy and *security* may force the use of private clouds for some network segments (e.g. most sensitive parts of the core network), and that will lead to hybrid architecture for the Telco Cloud combining the use of private and public cloud.

To ensure *scalable,* agile operation in a complex environment of this kind brings specific requirements, including *new abstraction* and *orchestration* layers and standard interfaces to interact with different cloud providers.

This activity has been ongoing for some years across the industry, and many obstacles remain to be overcome, before we can say the move to cloud is complete and Telco Cloud is a mature reality.

Partner expertise and experience

This is an area in which partnering with a seasoned system integrator is essential. NTT DATA brings experience, capability and tools built on successful projects to move large enterprises to cloud, backed by insider knowledge of the telecom industry, and is applying this experience for accelerating cloud adoption in telecom networks, as illustrated in:

Use Case 3, Telco Cloud *As part of the Telco Cloud program, one of the majors players of the telco industry defined a challenging plan to deploy Telco Cloud nodes across the country with the objective of starting to deploy virtualized network functions. The roll-out plan involved many players, and especially the different vendors of the modules included within a Telco Cloud architecture: compute, hardware, storage, virtualization platform, orchestration platform, etc. For the Go-Live of each telco cloud node, an end-to-end certification process was required to ensure that the node was ready to start hosting a network load in production. The certification was required not just for each component separately but, more importantly, end-to-end for the whole telco cloud platform. To guarantee this end-to-end certification, NTT Data provided an ATP (Acceptance Test Plan) service to accelerate the process and therefore the roll out of the different nodes. NTT Data deployed a testing automation process and implemented automation procedures to automate the acceptance test execution process.*

4.2. Enabler 4: Adopting Open RAN

Cloud benefits need to be extended to the RAN. Remote Radio Heads (RRH) and Base Band Units (BBUs), the main components of the RAN, have traditionally run on proprietary hardware. Traditional RAN vendors invest huge efforts and costs to integrate end-to-end systems that they deliver extensively tested at the factory. The operator must install them (which requires specialist expertise), connect them to the network and configure them. Some performance testing is done for fine-tuning but with limited effort.

The ORAN Alliance is setting standards for disaggregated RAN architecture, defining components that interact via open standard interfaces, making it easier to integrate elements from different suppliers to deliver end-to-end RAN systems. This facilitates innovation by allowing niche suppliers specialized in certain components to thrive; allows the telecom operators and other actors to participate in the design and evolution of the solutions (for instance, choosing components that deliver efficiency and others that provide differentiation); and increases agility in network update and upgrade, being able to replace or upgrade a single component and not the whole system. Several new suppliers are making the Open RAN concept a reality. Despite slow progress over the past decade, we are now on the brink of major developments, following the agreement reached by most network providers to introduce open standards for RAN on a step-by-step basis. NTT Docomo is becoming a major player in the new Open RAN league, having launched the OREX-SAI initiative to help accelerate the adoption of O-RAN technology globally. Docomo has been one of the first operators worldwide in taking Open RAN solutions to a production network, with its more than a decade of experience used as the basis for OREX, a virtualized RAN solution that may be fine-tuned to specific customer needs:

Use case 4, OREX *OREX is Docomo's Open RAN service brand, developed in collaboration with multiple global vendors. Docomo is the world's first mobile operator to provide large-scale 5G services using Open RAN and, utilizing its communications technology, is able to meet the unique challenges of each customer, helping to build a customized Open RAN system with optimal vRAN, software, and customer service. The objective of OREX's Open RAN services is to reduce clients' total cost of ownership by up to 30%, considering both initial set-up and ongoing maintenance. It can also reduce the time required for network design by up to 50%. Additionally, OREX reduces power consumption at base stations by up to 50 %. The services offered by OREX are divided in three different packages:*

OREX RAN: Open RAN's pre-tested and validated solutions combining various vendor products to create base stations that are highly cost-effective.
Leveraging the knowledge gained from Docomo's unique experience in building mobile networks with multiple equipment vendors since the 4G era, OREX integrates the strengths of its 13 OREX PARTNERS to offer an extensive range of virtualized radio base networks (vRANs) and radio units (RUs) compatible with the range of different frequencies in use in various countries (For details: OREX SAI).

OREX is adding new Radio Unit vendors (DENGYO Technology, DKK, Fujitsu, HFR, Mavenir, NEC Corporation, and SOLiD) to meet the demands of a large customer base.

OREX SMO: OREX provides software developed by NTT Corporation to facilitate the efficient design, configuration and monitoring of wireless access networks, enabling autonomous and optimized device operation. "OREX SMO" is compliant with the standard specifications defined by the O-RAN ALLIANCE.

OREX Services: OREX RAN Services provide the procurement and system integration required for the adoption of "OREX RAN" and "OREX SMO", as well as post-implementation operational support and maintenance.

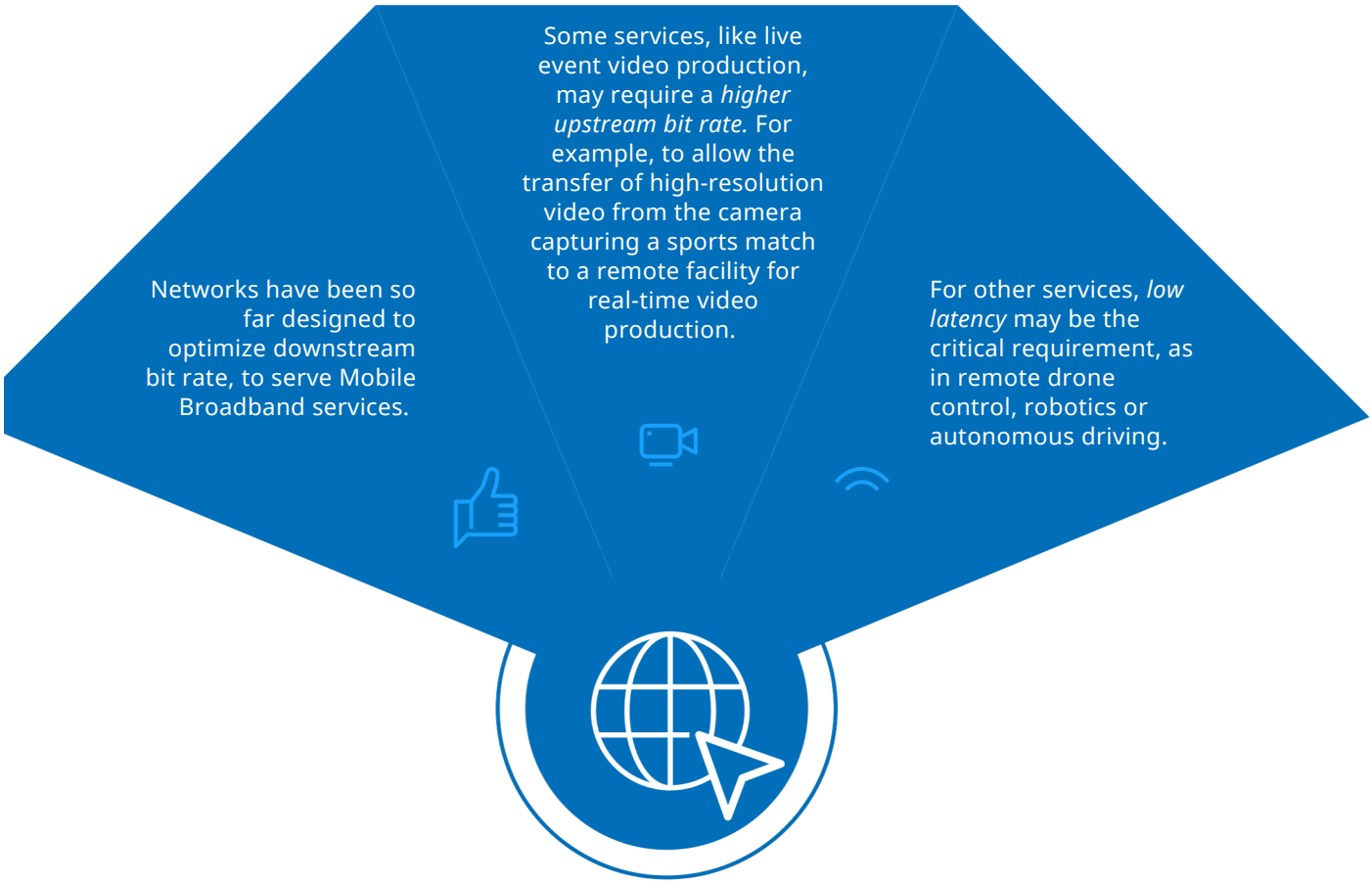
As part of NTT group, NTT DATA is a leader in this field, following the activities at the O-RAN Alliance for the past seven years. It has carried out projects to demonstrate the potential advantages of Open RAN and, most significantly, has used joint proofs of concept with network operators, under the auspices of the TM Forum.

5. Transformation Enablers: Revenue Growth

CSPs struggle to identify new services that have the potential to bring significant additional revenues. One of the reasons for this is in the scheme of flat rates and "best effort" networks typically followed by operators, offering the available bandwidth on a "first come, first served" basis to all customers, following the net neutrality principles. Networks have not provided the kind of mechanisms to deliver premium services and tiered pricing that other industries like airlines have successfully applied. Nevertheless, net neutrality permits operators to deliver Specialized Access Services, with premium characteristics and dedicated resources, if these services are provided to any customer that subscribes and pays for them. This is the basis for Network Slicing.

5.1. Enabler 5: Network Slicing

Network Slicing makes it possible to tailor services to specific needs:



Network operators can configure their assets to deliver several network slices of this kind, that the application at the device may select depending on its requirements.
The issue lies in creating the network slices dynamically, on demand. For maximum efficiency, dynamic network slicing will require high levels of orchestration and automation to allocate resources to the slice only when and where needed, then release them immediately after.
Telefonica and NTT Data have shown the feasibility of this dynamic network slicing in a joint project, using technologies provided by key partners such as Mavenir and Cisco:

Use case 5, Automatic Network Slicing

In 2023, NTT DATA successfully deployed and tested automatic network slicing technology in a major player of telecom industry. This represents a new milestone towards network automation and the concept of Network-as-a-Service (NaaS) by demonstrating a pioneering end-to-end Network Slicing as a Service solution with multiple providers, in which automatic provision on all technological domains and dynamic management of network resources were tested. The project included SDN transport, access network with Open RAN and traditional RAN technologies, 5G Packet Core, different end-to-end orchestration solutions (open-source and commercial) and NTT's NextGen OSS service assurance solution, achieving complete and automated management of the end-to-end network slices and service assurance use cases. The implemented architecture followed a hybrid cloud approach, combining Telefónica's private cloud and AWS public cloud to deploy the different solution components. The project tested different use cases, including an augmented reality application for the broadcast of live sport events with technology designed by NTT DATA. The service levels requested by the application include low latency and high bandwidth to meet customer experience requirements. The most relevant capabilities of Network Slicing technology that have been validated are:

- *Real multivendor scenario with commercial products and interoperability challenges.*
- *Automation of the end-to-end network slice lifecycle management, including resource hosting, activation, modification, deactivation, and eviction use cases.*

- *Network Slicing service assurance monitoring, tracking the most relevant end-to-end metrics to monitor across multi-domain services.*
- *Definition of different scenarios for traffic management, such as prioritization and resource management in a network slice for RAN, Core and Transport in a multivendor scenario.*

Network Slicing is a key enabler for rapid uptake of 5G, making the promise of high availability, low latency, customized connectivity a reality. NTT DATA is now established as a leader in developing practical Network Slicing operations and is ready to work with CSPs to deliver this essential new source of revenue.

More information

5.2. Enabler 6: Application Programming Interfaces (APIs)

Perhaps the most promising opportunity for bringing new services to market is the use of APIs to expose and monetize telecom capabilities. These application programming interfaces enable telecom operators to expose their capabilities so that developers get access to them from their applications and pay for their use. As a result of this technology, network operators can expose their capabilities and charge for their use by accounting the API calls, on a pay-as-you-use basis.

Industry support

There has been a slow take up of this technology in the past due to a lack of unified support from the industry. Engineering teams have been enthusiastic, but the engagement of the business levels has been lower due to the strong market competition. The GSMA Open Gateway1 initiative intends to overcome this issue promoting an initiative at C-level. CEOs from more than 50 companies representing more than two thirds of the total mobile customer base, agreed to develop and adopt common API standards and align on business level to provide a universal API service. This is a gamechanger for the telecom industry, and is already rapidly accelerating API development, adoption and delivery.

An innovation ecosystem

The API concept is opening networks to innovators of every kind. Historically, CSPs have not proven to be very effective at creating added value services at scale for specific industries and taking them to market. There is a need for the telecom industry to monetize the high investment required for the deployment of 5G and Fiber access. API technology enables innovative service providers, large or small, to use the operator's capabilities to set up the environment they need for running their services, by invoking the corresponding APIs from their applications. The external service creator provides commercial vision and inventive service design. The use of a certain network operator's API allows the service to be delivered with proper experience by setting up the right network environment, adapted to the application requirements. This approach increases the number of fresh new service ideas available by orders of magnitude, while keeping network operator resources optimally employed and monetized. Clearly there are challenges, such as the necessary agreements between operators and the ecosystems of innovative application developers, availability of network capabilities, and the need for a new go to market approach (B2B2X models).

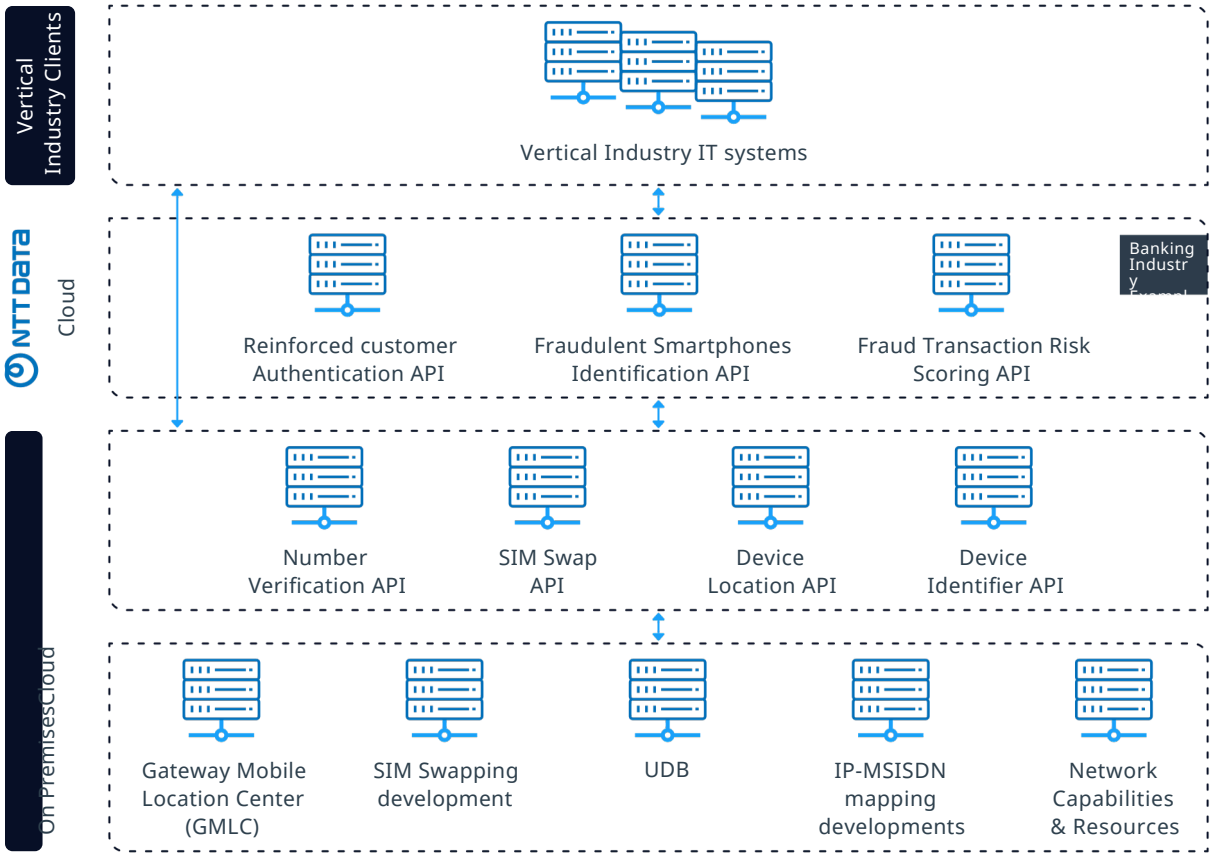
CSPs are dealing with these issues with initiatives like GSMA's Open Gateway. The roll-out of 5G is creating high expectations among customers, who expect new services and benefits coming from the strong capabilities this technology brings. Use of APIs will not only accelerate service uptake and accelerate 5G and 5G Advanced roll-out but also provide new opportunities for differentiation and monetization.

Engagement in Open Gateway

NTT Data has been strongly committed to the Open Gateway initiative from the beginning and wants to be an active player within the Open Gateway ecosystem. This is demonstrated by collaboration in a sequence of TM Forum "Catalyst Projects" (innovative and collaborative projects solving real challenges of telco industry) with major telco operators, demonstrating the feasibility of Open Gateway and the monetization benefits it can bring to telco operators.

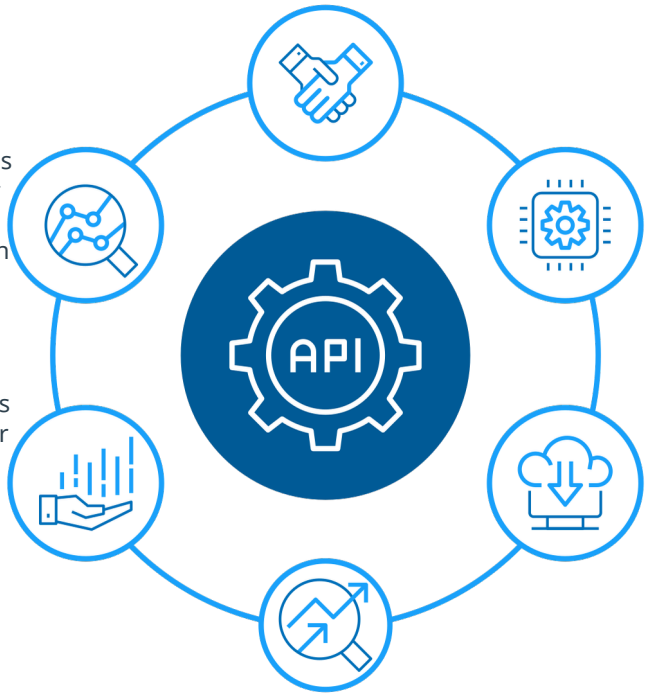
Commitment to Open Gateway, together with the blend of different business and technology capabilities (networks, IT and vertical industries business) allows NTT Data to support Telecom operators in the different layers, to accelerate adoption and development of the required enablers. This involves:

[1] For more details see https://www.gsma.com/solutions-and-impact/gsma-open-gateway



Finding and validating potential partners (developers, aggregators, marketplaces, ecosystem owners...) in every vertical for each API category; market analysis and development.

Identifying desirable new services in every vertical as use cases for the different APIs; commercial insights, finding the value of each API in every sector.

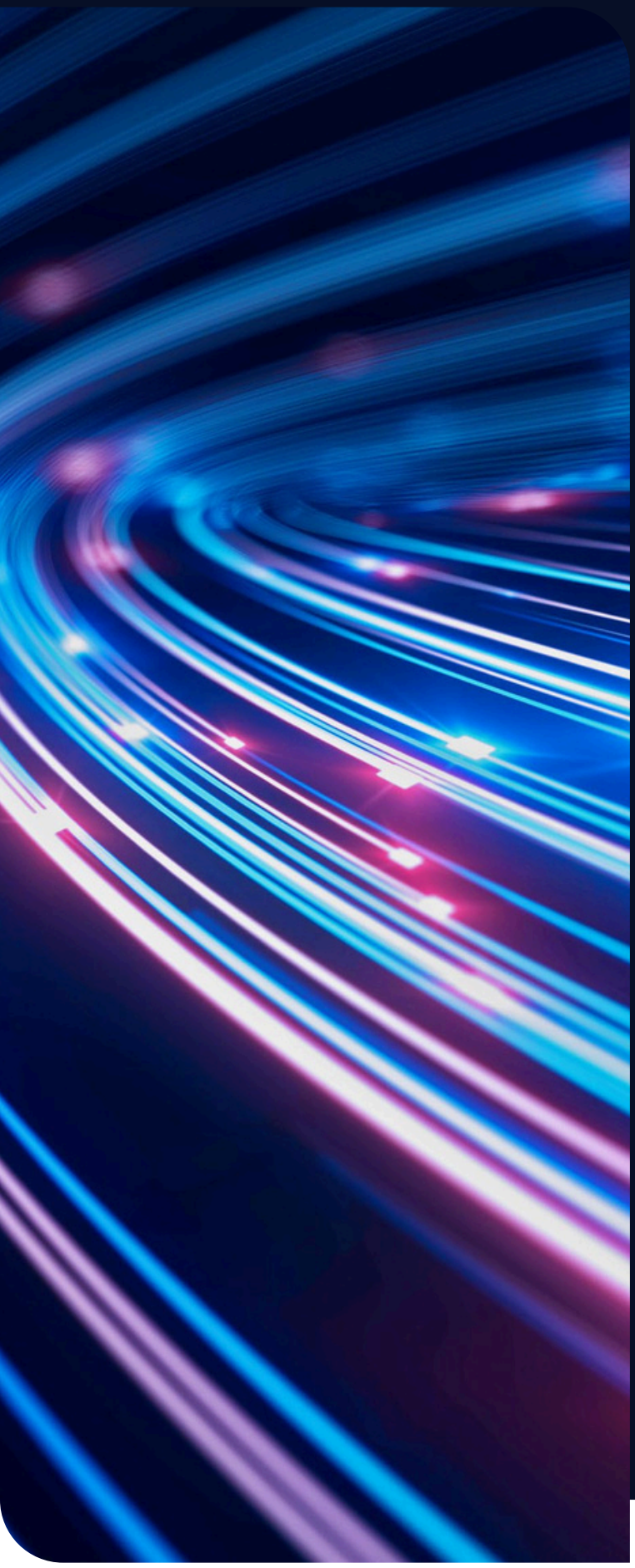


Overcoming technical obstacles in delivering the APIs; IT and network integration, transforming the access to complex capabilities into simple API calls, integrating the operator's API gateway platforms with the partner's marketplaces and development environments.

Automating processes as much as possible (IT innovation), to deliver the APIs in a self-served Network-as-a-Service model (NaaS) resembling the approach of cloud computing services.

Go to market activity to attract a new type of customer, the application developer, and this requires approaching the ecosystems where they run their activity.

Providing service proofs of concept and API sandboxes to scale and industrialize initial concepts.



Use case 6, NTT Data Open Gateway Enabler

An example of this blend of capabilities is NTT Data's anti-fraud service aimed at banking and insurance companies that retrieves information from Open Gateway APIs and uses it to calculate the financial risk of a client transaction together with other sources of information and applying disruptive technologies such as GenAI, Digital Twins and AI/ML.
Another example is the implementation of several standardized Open Gateway API, that follows CAMARA specifications, in a regional Tier-1 telco operator for 7 countries. In this project, NTT Data is delivering a multi-tenant cloud platform that exposes prioritized open gateway APIs (Sim Swap, Device Location, Number Verification, Device Status, etc.) that will accelerate the time-to-market of the Open Gateway-based product and therefore the monetization of their telco capabilities.

The most successful network operators will find an ecosystem of partners able to cover all these functions, and NTT DATA is currently one of the very few IT businesses with a strong focus and proven expertise across this entire area of activity.

6. Making it Happen: New Skills, New Partnerships

In this paper we have highlighted a set of technology and service enablers with the potential to address some of the key challenges faced by CSPs today: declining margins, rising operating expenses, high investment and lack of new revenue streams. The six enablers covered in brief here will help network operators to use OPEX and CAPEX more efficiently, while tapping into networks of innovation to access desirable new services, that will help regain 2-digit revenue growth. Other enablers remain to be analyzed and deployed effectively: notably Edge computing, which is key to deliver pervasive intelligence across the network, and new forms of AI. We will cover these and other topics in future papers. The actions included here form a logical starting point for future development and growth. Implementation will not be easy and will require not just a change from established practices, but also access to highly specialized IT services and support.

NTT DATA believes the next five to ten years are critically important to the telecom industry. We have seen successive technological developments take place, all of them heavily dependent on the connectivity provided by CSPs, yet none of them deliver the expected financial benefits for telcos. The move to Telco Cloud, adoption of widespread automation via AI, and access to new revenue streams all have the potential to be transformational.
All will require deep and long-term partnership with knowledgeable, highly expert IT and telco specialists. NTT DATA is ready to help make the move to a different, more profitable future with lower risk, higher speed and commercial success.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