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SPECIAL REPORT

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Making sense of the world's mobile networks

THE FUTURE TELCO

A SPECIAL REPORT FROM THE MOBILE NETWORK ON HOW TELCOS ARE CHANGING THEIR OPERATIONS STRUCTURE TO ENABLE BUSINESS SUCCESS

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The Future Telco // a special report from The Mobile Network

EDITOR

The Future Telco Report looks at how telecommunications operators are achieving positive change in their businesses by transforming their network operations.

It outlines how operators are taking steps to change their operational foundations to enable new business models, creating the future telco today.

We talk about the concrete steps of digitising and automating processes, creating a common data layer and eliminating vendor EMS, and then building AI products as a result.

As we conclude, the most powerful element in change is giving yourself the ability to change – and that's where the Future Telco Report can add value to your business.

Keith Dyer
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The future telco network operator - *from "here" to reality*

Destination

Destination - the future telco: a scalable, cloud and AI-native network business that delivers true operational efficiency, with the speed and flexibility to quickly create and deliver new sources of sustainable revenue growth, combined with the agility to adapt to and benefit from new sources of innovation.

Question

The question - how to get there? It's an old joke. A traveller, lost on their journey, asks a veteran local for directions to their destination. "Ah well now," comes the answer, "I wouldn't start from here."

If you wanted to design a modern operating structure for a customer-centric, flexible and fast-acting telco business, you wouldn't start from where many telcos found themselves in recent years. However, to state the obvious, the main problem statement for designing the future telco is that telcos do indeed have to start from "here": you cannot create your future operational self without transforming your current one.

One of the key reasons it is hard is the operating structures that telcos have built for themselves. Over decades, telecom operators have constructed complex operational support systems (OSS) built around proprietary hardware, siloed network and service domains, and individual vendor solutions. Vodafone, for example, as it grapples with moving towards a data-led operating model, has turned off 400 legacy tools and systems over the past four years. Other operators who are making the operational transition have made similar progress.

Attempts at standardisation and enforcing interoperability between silos have often had the counter-effect of reinforcing this complexity, creating intricate architectural fixes with numerous deployment options that require expensive consultancy fees and months of integration testing. These projects generate huge sunk costs that become too big to fail and that telcos cannot afford to walk away from. This drives higher costs, slows innovation, and, over time, saps investor confidence, creating a vicious cycle of investment constraint, failed delivery and loss of trust.

Learning from success: *the future telco is here and now*

> Reimagining OSS requires not only re-aligning the old, but bringing in the new.

Yet even though this journey looks challenging, there are examples of telecoms operators who have successfully made that operational journey, and are well advanced along the process of transformation, accommodating legacy with the new.

It is not as if telco leadership teams are unaware of the challenges they face. In fact, all telcos that we spoke to for this report are very familiar with the issues we have raised; many have been put in place specifically to solve them.

For many telcos, and this is the focus of this report, one of the key challenges they identify is that the existing operating structures and culture have placed them in a position where they have struggled to innovate internally, and to take advantage of innovation happening externally.

The desire, pushed down over the last two years in particular, from C-Level to have an "AI strategy" has only sharpened focus on these operational limitations.

> We are starting to see certain telcos read the map more clearly.

Even where the intention and desire is clear - to create the ability to truly create and offer consumable dynamic, easily accessible services to a diverse range of customers - the underlying systems and processes have dragged on the corporate will.

Yet we are starting to see certain telcos read the map more clearly. They are moving to create platform approaches where operational software products can act horizontally across a network, supported by an observability platform that provides a single view of the network, using 'traditional' and new AI and ML capabilities to correlate business goals with the current and desired network state.

This approach is reinforced by cultural change: cross-domain teams are created and empowered to act on business goals end-to-end across the business, rather than devolve responsibility to core, transmission and access domains and to individual service functions.

The simplest encapsulation of this approach is not to accept complexity as something to be managed, but to eliminate it in the first place. Reimagining OSS requires not only re-aligning the old, but bringing in the new.

The route to that destination is already established, with several operators well advanced in their progress. This report outlines how they are doing that.

Starting from here - *Reclaiming lost time*

As already stated for most, if not all, operators "here" is a complex and time-consuming operational environment that is simultaneously crying out for change, but also makes change hard to achieve.

Introducing change while you are running a complex network is hard work and time consuming. But having to do it in the way that a telco normally upgrades a network is a further barrier. In other words, the way that telcos are forced to manage change is part of the reason they find change so hard.

Imagine a large incumbent telco that wants to introduce new services that require them to replace routers and switches with new generation equipment. These routers and switches don't sit in isolation. They're connected and integrated in a complex, "telco-centric" design.

The telco is running critical national infrastructure and services, so the upgrade process is taken into design, which will take months. The design objective asks, "How do you de-risk the transformation of these networks?" taking into account that you don't want to bring services down and are necessarily risk averse.

A telco with a thousand routers in its core might replace a small number over a weekend, and verify performance by Monday morning. It will take 12-15 months to clear the workload across its network - and that's before starting to implement the services that the vendor has promised.

> If CTOs were in a world where change itself was easier then they could win a large portion of their time back to engage on monetisation and revenue generating areas.

The reason why telcos appear to (and do) move so slowly is because the technical team and the CTO office spend a lot of their time managing these sorts of changes in the network. If CTOs and their teams were in a world where change itself was easier then they could win a large portion of their time back to engage on monetisation and revenue generating areas.

For any major change programme in the network, OSS (Operational Support Systems) will be there to support it. The elements of an OSS support the design, deployment and running of a network. That includes planning, updates, changes, upgrades, swap outs, extensions, service and performance assurance, element management, fault management and inventory.

Historically, operators have integrated OSS vertically with their network domains and services.

The biggest step to simplifying those processes is to build a structure that enables the OSS to act horizontally across these vertical processes and elements in the network.

Even if the networks themselves were still vertically integrated, but sat under a common and horizontal OSS which could manage inventory and services, that would create a huge reduction in complexity.

Therefore, part of the process of change is to get to a destination where you can manage change quicker. It's the difference between managing complexity and benefiting from simplicity.

One company in the market that is focused on enabling change via change itself is Rakuten Symphony. Rakuten Symphony has created a technology and operational platform formed from the real-world experience of building and then re-building the operational capability behind Japan's challenger operator Rakuten Mobile. It has also supported the rollouts of 1&1 in Germany, and the rollout of Boost Mobile's core network in accordance with the rapid rollout and deployment of Boost's hybrid MNO-MVNO mobile network.

> Part of the process of change is to get to a destination where you can manage change quicker.

But its technology is not just about creating nice, clean deployable blueprints for greenfield operators. It has also helped the most heavy legacy operators redefine their operations, building out capabilities in a phased way within the operational space.

One current example is Rakuten Symphony's Site Management. This is a set of software and automations that enables operators to carry out the functions of network planning, site and facility design, procurement and logistics management and construction.

A key proof point for Site Management has been its use within AT&T. Rakuten Symphony's multi-year engagement with AT&T started as a project to simplify AT&T's network simplification transformation initiative. This was a process to replace legacy RAN networks with new equipment, laying the foundation to move, eventually, to a cloud-native RAN. This involved upgrading existing sites, taking out legacy vendors and consolidating on a single RAN platform.

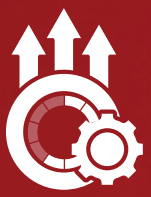
One of the key initial stages in planning this project was to digitalise the network, consolidating data from a myriad of different tools and sources - from paperwork to emails and spreadsheets - into a single asset lifecycle management platform. This enabled AT&T and its partners to have a single view of how to design, plan, configure and deploy sites.

There are now eight thousand users on the Site Management platform on a daily basis, including AT&T employees and field employees.

Now the next phase of the journey is to move from automation to introduce autonomy. Once that single digital view of the lifecycle is in place, the platform can leverage AI technology to introduce process automations. Automation will do as it is programmed to do, but autonomy means it will also use machine learning to improve processes based on feedback the tool is seeing every day.

As well as enabling this change in operations, Rakuten Symphony's approach is to work to scale tools and processes that already work within the telco. Designed with a micro-services architecture, Site Management can integrate with existing tools that may have been designed as a small scale tool, not as a product. Rakuten Symphony's OSS platform can then take that tool and scale it up across the platform in a productised manner, making it available in a horizontal way across the business or network.

The platform can also work with existing tools, taking in and digitalising data, and then transitioning that onto the newer UI, without disrupting day-to-day operations. For example, the tool is taking in digital RF design sheets, and then using those to create automatic configurations, which are passed on to provisioning. Gradually, the platform brings in more use cases, migrating existing tool capability onto its platform, and enabling the legacy tools to be shut down. This is change management, with the goal of enabling changes to happen in a different manner in the future.



60%
improved site build efficiency

Real-time project intelligence

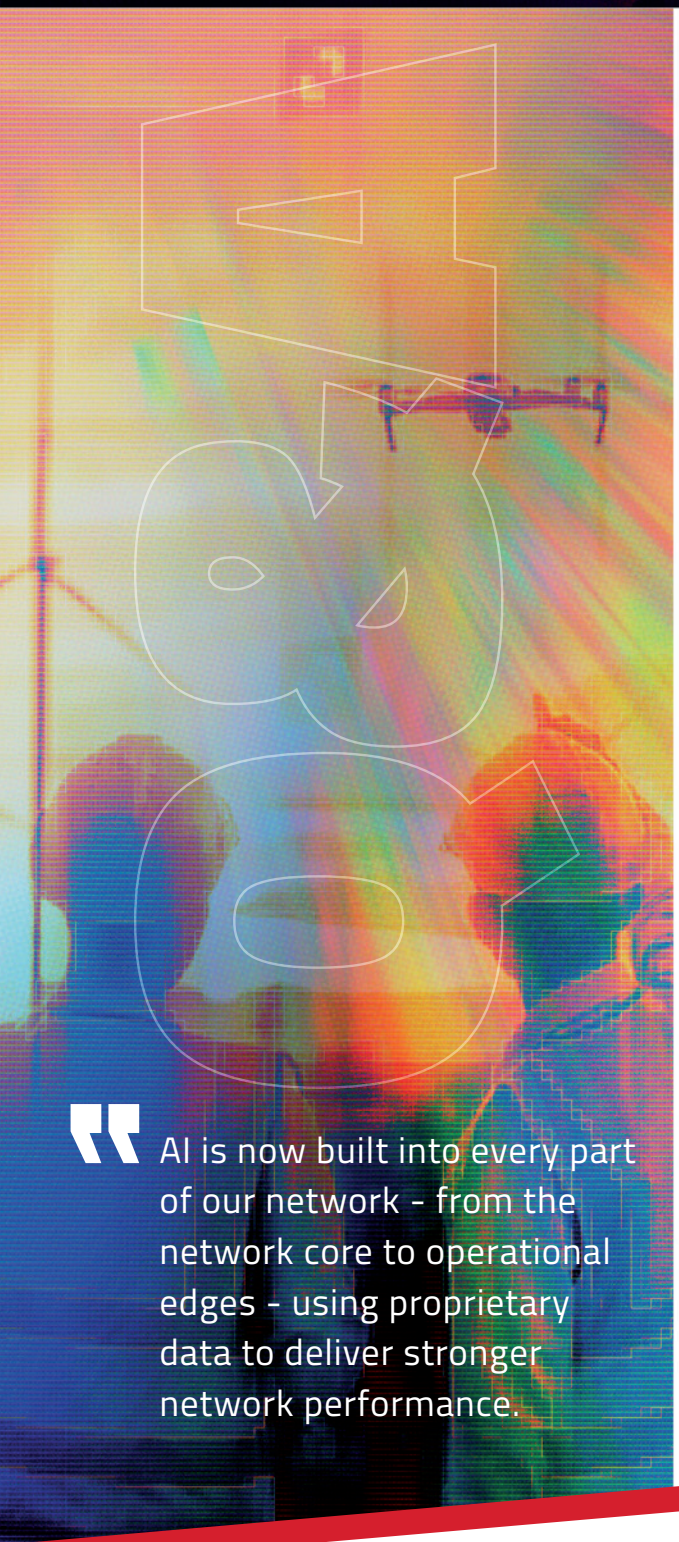
Comprehensive project management tool to track site activities and provide risk visibility.

3XXX
reduction in site inspection time

Centralized site data capture

Unified view of all site activities and asset inventory from a centralised platform.

A Q&A with AT&T on its transformation towards the Future Telco



> AI is now built into every part of our network - from the network core to operational edges - using proprietary data to deliver stronger network performance.

What does the future telco look like from an operational standpoint, in AT&T's view?

The overall operational vision of AT&T is to create a world in which our wireless planning, design, and construction functions are seamlessly orchestrated and predominantly automated to help our people be more efficient. Operationally speaking, we need to materially transform and evolve our build and maintain operational models to be more efficient if we're to reduce our collective cost structure.

In line with that vision, how has AT&T changed, or how is it changing, its telco operations framework? Specifically, how has that involved the incorporation of AI and ML technology within operations processes?

AI is now built into every part of our network — from the network core to operational edges — using proprietary data to deliver stronger network performance.

As an example, AT&T is harnessing advanced drone technology to digitally map our wireless sites, capturing high-resolution imagery and comprehensive data attributes post-construction. This innovative approach enhances our ability to inform future wireless designs and ensures optimal site acquisition preparedness. By integrating these rich data sources, we are transforming our operational processes, revolutionising the wireless site build cycle, and opening the door to AI solutions.

How have you managed the tooling and OSS environment - have you been able to simplify and consolidate the tools required for the network lifecycle?

AT&T has made strides in modernising and consolidating our technology stack to lay the foundation for this new operational model; the end-to-end workflow manager is central to our tools evolution and has helped us retire several legacy applications. In addition, scalable and functionally specific SaaS platforms will complement our tools evolution as we balance a build versus buy approach.

Has the rise of AI and ML required a shift in how you collect, collate, manage, and store data, to feed to AI and ML tools? How have you achieved that?

Our AI differentiation lies in our ability to teach LLMs about our data. AT&T has been on the path to structured, high quality data sources over the past several years prior to the influx of AI and ML solutioning. With the larger focus on these types of solutions, our predominant focus is utilising these clean data sets to enable as many beneficial use cases as possible across our entire network.

What functions and processes have been automated using machine learning and AI technology? What have been some examples of good wins you have made as a result of adopting AI within the operational environment?

AT&T has most recently taken on automation efforts in the network design and equipment ordering spaces to promote reductions in both cycle time and manual touch points throughout the end-to-end process.

> Our predominant focus is utilising these clean data sets to enable as many beneficial use cases as possible across our entire network.

We're also investing heavily in AI to detect sub-optimal performance of services and perform self-healing. We can automate predictive maintenance tasks, as well as predict, plan and dynamically adjust network parameters for network optimisation.

What are the steps you have taken to ensure and assure that automated processes result in desired outcomes in performance and customer satisfaction?

As part of our Automation playbook and guided by OCM principles, we've developed robust feedback loops within modern tools to ensure that solutions incorporate human oversight until they consistently achieve the desired level of success.

What do you find have been the most challenging aspects of the operational transformation. Is it establishing leadership? Culture change? Skills and processes? Technology selection and integration?

The most challenging aspect of any transformation effort is consistently delivering solutions that provide the greatest value to both our employees and customers. It can be difficult to predict which initiatives will ultimately be most successful, and aligning changes in organisational culture with advancements in tools and technology often requires careful coordination and adaptability. That said, we don't believe that deploying timely tooling is the sole marker of success in a transformation, although it is one of two. The primary marker of success is organisational redesign and the evolution of functions to become broader, and more exception based.

Intelligent Operations

> A series of processes that are all emabled by an underlying data and AI platform.

Rakuten Symphony's digital OSS suite takes the approach it developed for its Site Management suite and mirrors it within a whole range of processes that it gathers under the Intelligent Operations banner.

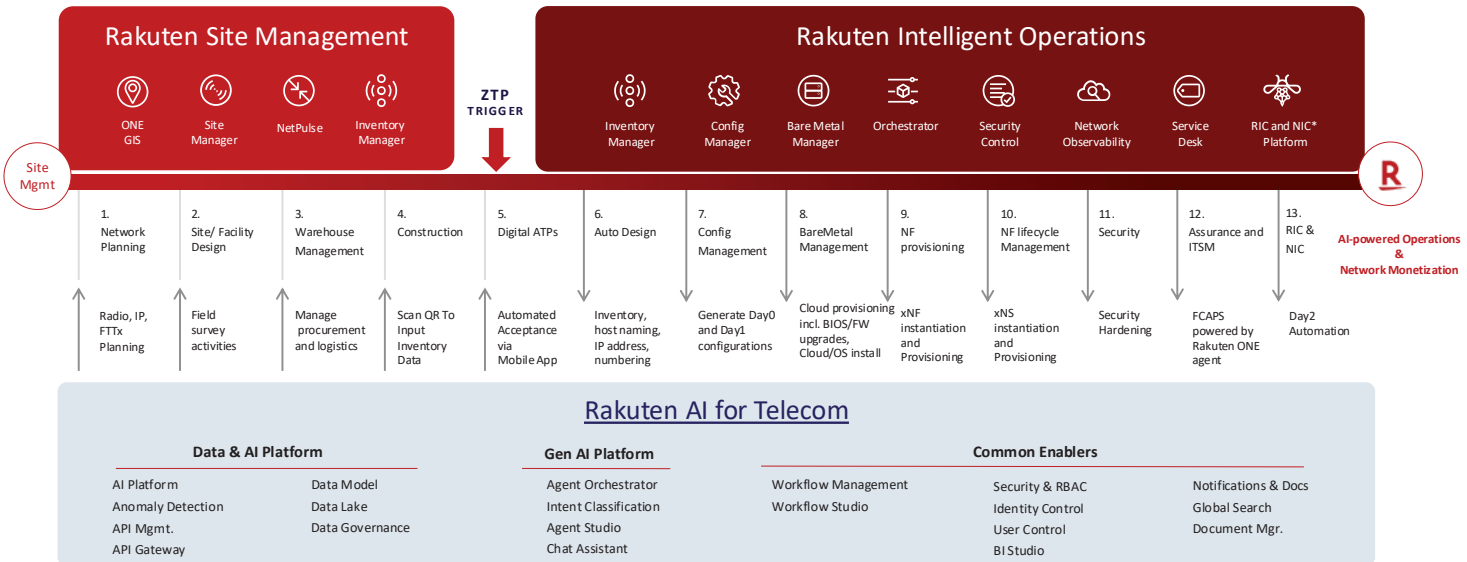
Intelligent Operations collects the functions of monitoring, analysing, decision making, orchestration and closed loop feedback into a series of processes that are all enabled by an underlying data and AI platform.

The capability starts off with resource monitoring via a series of observability agents, from the most basic monitoring and observability of network resources from network probes to tools which give realistic measurements of the user experience; data from handsets, integrations with drive test tools, and carrier or third party apps that are embedded with Rakuten Symphony's SDK. The platform can also monitor CRM and customer feedback sources.

This data is shaped into a common data model which can be leveraged by Rakuten Symphony's algorithms, apps and agents. Clearly, the richer and more granular the data model, the better the outcomes the platform can drive, for example to drive more correlations and causations to give better Root Cause Analysis, giving more granular control over what to measure and how frequently to measure.

This is a very different process from relying on vertically integrated, vendor-specific Element Management Systems that manage just the associated vendor equipment, or on tooling dedicated to a specific service chain.

End-to-end system design 100% Digitalisation



Rakuten AI for Telecom

Data & AI Platform
- AI Platform
- Anomaly Detection
- API Mgmt.
- API Gateway
- Data Model
- Data Lake
- Data Governance

Gen AI Platform
- Agent Orchestrator
- Intent Classification
- Agent Studio
- Chat Assistant

Common Enablers
- Workflow Management
- Workflow Studio
- Security & RBAC
- Identity Control
- User Control
- BI Studio
- Notifications & Docs
- Global Search
- Document Mgr.

When Rakuten Mobile began pre-commercial operations in 2019, it had a target of employing a total of 200 to 250 people to manage its entire network operations. Half of this number were software engineer hires from non-telco backgrounds. That meant there was a lot of work required to deal with vendors and acquiring domain knowledge.

The aim was to get all this knowledge data into the same platform, overlaid by a metadata dictionary which told engineers what the very telco-specific data meant. The system allows users to search for a Site ID (a unique identifier for a location or project). The platform then shows all the database tables that include that Site ID. Since Site ID is a primary key, it can be used to link data across multiple tables — basically connecting all data related to that site.

This enabled Rakuten Mobile to create data marts from that data. A data mart is a smaller, topic-focused database built from a larger data warehouse. This means users can extract the relevant data for analysis or reporting; for example, creating a data mart specifically for "Site Performance Metrics." The idea was to enable platform components, including a metadata dictionary - a catalog describing what data exists, what it means, and where it's stored - and also a workbench - an environment where users can work directly with the data. Users can use that workbench to pull sample data and then develop machine learning models or algorithms, with the platform allowing users to test and compare the performance of different models or algorithms. Once a model works well, it can be deployed as an API endpoint (so other apps can call it), or as a microservice that is hosted and scaled on the company's cloud platform.

The idea was to build an entire workbench to be able create closed loop automation or AI inference use cases, and from there, create a lot of applications, or product micro services for inventory, configuration, bare metal management.

This model is far more akin to working like a hyperscale or software company, rather than depending on proprietary vendor tools as traditional telcos have done.

The idea is to move into a domain agnostic set-up to be able to manage intelligent operations use cases. Indeed, in Rakuten Symphony's work with Boost Mobile and Echostar, the operator described itself as being the first operator to be EMS-less. For Rakuten Symphony, having an EMS is a thing of the past and it wants to enable more operators to move towards that model.

> For Rakuten Symphony, having an EMS is a thing of the past.

The Foundations of the Future Telco

An interview with Dawood Shahdad, SVP, Hybrid Network MNO/ Network at Boost Mobile

01. Being truly cloud-native

Our goal was always to make our network 100% cloud-native, which means applications must be 100% containerised, and everything we can put on public cloud, has got to be put on public cloud.

That's not just about having AWS as an infrastructure partner and running applications on a virtual machine - it's to make sure every app runs natively as an EKS-based application. We were the first to take large vendors to public cloud and also the only large network that ran end-to-end on public cloud. Now we are seeing more partners in industry join us, with other operators using public cloud as a back up.

Yes we were a greenfield and didn't have legacy. But on the other hand a lot of the cloud-native systems were not ready for prime time and we had to force them to get to the destination quicker than they wanted to.

02. Vendor agnostic data collection and observability

Being cloud-native forms the basis for how we start collecting data - logs, alarms, metrics - the basic fundamentals of our framework for monitoring the network. It all starts with how we built our network and plan on extracting data from the network.

It feeds our OSS, our network monitoring capabilities, and eventually the move towards closed loop automation and autonomous networks.

We're extracting data from the network using open source tools: Kafka streams, Grafana, Prometheus, and tools that comes natively from AWS. For application monitoring we are using Rakuten Symphony's centralised OSS layer for all our core network functions. We wanted a third party, cloud-native OSS. Rakuten Mobile use it in their own network – and we have used it very successfully for our entire stack.

The reason for that is we did not want to get stuck in vendor silos where you need their OSS functionality for their products. We wanted to be completely agnostic for the simple reason that every time we have to tweak the network, or deploy a CNF, we don't want to retrain our workforce, netops and engineering teams, on the new element.

> Every time we have to tweak the network, or deploy a CNF, we don't want to retrain our workforce, netops and engineering teams, on the new element.

All of the applications directly stream data into the centralised framework, and our engineers help define KPIs, alerts, performance-based metrics, to keep an eye on subscriber migrations, or any anomalies or faults in the network. That's a centralised place where we take action based on network performance.

Our engineers see a centralised observability framework which gives them a full-stack view.

03. Building automations on top of the platform

Rakuten Symphony's tool comes with some capabilities natively, but we have also built in-house automations.

The network products will stream KPIs, counters, alarms and faults into the centralised system, but you only know of the product fault itself. You could have a product generate a fault but it's not necessarily taking into account system redundancy, and there's somehow no impact on the actual service itself

We built a framework, that is our own intellectual property, which looks at the network as a whole entity, with the capability on certain use cases to look at the basic APIs coming from the product, mirror that with the actual network architecture and determine if we have a real impact upon users and whether we need to take corrective actions.
So we're doing some of these use cases where we detect using the Rakuten Symphony product, but our framework on top kicks in and does the course correction without needing human intervention. In TM Forum terms, we are at about Level 3, inching towards Level 4. We have certain conditional automations in place – e.g. intent-based – where if we see latency increase we take a closed loop automated action.

> We took our journey closer to where we wanted to be.

04. The data challenge

We have a centralised data lake. As we were building the network we had to have high level concepts ready. We couldn't have silos, but did compartmentalise in some "selfish" ways. So in the core network – three years ago nobody outside the core operations team was in practice accessing that data, but we had to set it up in a way that others could access it, for analytics, customer experience etc.

So as domain leads we all took an approach where everybody will stream into the same centralised system. Yes it's challenging. It's a lot of data and you have to know good from bad data. When you are creating important insights that matter to the business you need careful navigation.

But at least we are not migrating data from various sources that were set in place with tools on top of them. We took our journey closer to where we wanted to be.

05. Operational benefits

We do not want an army of Network Operations staff. We are 100% committed to investing more in automation. And we want to avoid the organisational challenges that typically a carrier will have to deal with. Think of our framework – an automated framework extracting relevant data in real time.

We're not having engineers log in to specific products and learning the complexities of each. If we have a new joiner, they don't have to learn Mavenir or Nokia, I just tell them here's your framework, here's how you extract the data.

And if we need to go deep inside the product and extract stuff that is not safe to be pulled in an automated way, that just requires a handful of engineers.

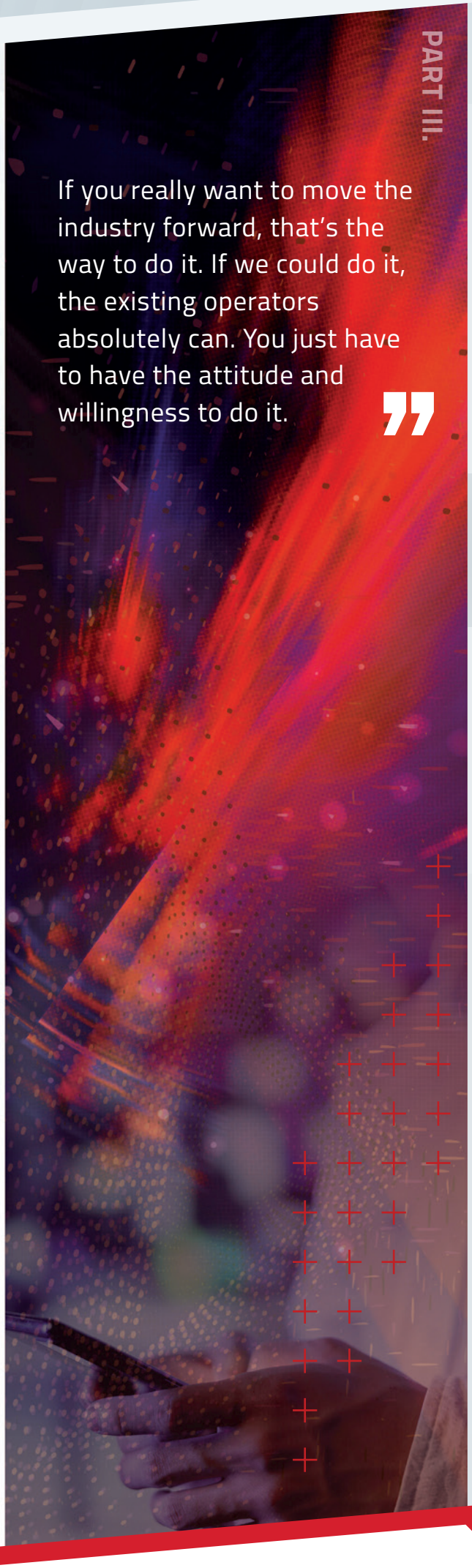
> Anybody who has been talking about transformation, monetisation - do something about it.

All the things that an engineer would do reactively, we do proactively in real time and marry that with data from the Rakuten Symphony OSS.

We're combining the capabilities of diagnostics and the product KPIs together to determine how to run our network better.

06. The future operator

We've built in-house, versus relying on suppliers. That was very intentional. A lot of operators don't necessarily operate that way but it's never too late. Anybody who has been talking about transformation, monetisation - do something about it. You may have to ruffle a few feathers within the organisation. But if you really want to move the industry forward, that's the way to do it. If we could do it, the existing operators absolutely can. You just have to have the attitude and willingness to do it.



Data products, marketplaces and AI-empowered operations

A re-imagined OSS relies on the creation of a common data layer that can be exploited to build AI use cases that aid automation and autonomic actions in the network to fulfil business requirements and intent.

This data layer can also build the observability platform of the network in real time, enabling applications such as digital twin testing of ideal configuration, verifying the new configuration and taking actions to provision sites to that configuration. In this way telcos can model changes and actions, using a live network view, that until now have required months of design planning.

We've seen how AT&T is committed to rolling out automation use cases across the network, changing the way its staff operates. We've seen how Rakuten Mobile created metadata on top of the domain data to allow its engineers to create data products, making that available in an internal marketplace but also to others in the world via Rakuten Symphony. As AI develops its coding capabilities over the next years, that process can flow the other way: it can unlock the ideas that telco engineers have and make them available to the industry.

We've seen Boost Mobile creating its own proprietary use cases, building on the Rakuten Symphony common data layer. So telcos that don't want to depend on a pre-made solution can apply internal IP, creating a new business model where they can sell that product to other customers, or earn credits on the marketplace. That's a marketplace model that enables more people to innovate and benefit from that innovation.

The future telco vision is of creating a data platform or data mart to generate data products that can be deployed. But it starts with understanding and trusting the data that underpins the applications, and underpins the horizontal, disruptive OSS.

To create this capability, operators can task the industry's established vendors to treat their tooling more as "platforms". Orange Group's Sana Ben Jemaa, the operator's Technical Lead of the AI Empowered Networks Program, describes a platforming approach, in which a vendor assurance tool, for example, is considered as a platform.

"What we expect from this tooling is, of course, to respond to the needs of operational teams but also to be open and flexible so that we can build and replicate our use cases on top of it easily, to make it evolve and replicate our use cases. We are also working on orchestration, and the idea also is to have this orchestrator open, and to be able to link AI use cases on top of it," Ben Jamaa said.

Orange has described its desire to achieve "data democracy" by building a unified view of data across disparate systems. Using this data, a digital twin could model a business intent into network policies automatically, with closed loops self-healing, remediation and verification. But digital twins need accurate, complete, real-time data to create real time modelling across multiple domains. Orange is exploring graph-based solutions, an end-to-end view of the topology that can represent nodes and dependencies.

An operator the size of Deutsche Telekom has 80 different service chains, each one a vertical silo of infrastructure and tooling designed to support a specific service: 4G voice (VoLTE), say, or its streaming TV services. Deutsche Telekom is in the process of moving to a horizontal architecture that is agnostic to the service applications, with a common OSS assurance and automation platform that forms a set of integrated and harmonised tools, managed by just one team. But even that introduces complexity - making it harder to understand the relationships between resources and infrastructure and the end service quality, whereas previously it was clear where responsibilities lay.

Simon Norton, Vodafone's Digital & OSS Engineering Director, describes the emergence of the data product space as a "golden opportunity" to work in a cross-industry manner with the ambition to have more common definitions and standards in place.

> The danger for the industry is that they lean again on their established vendor partners to simply iterate upon the established model.

"What changes the economics is the ability to simplify our legacy, get data out of the OSS and run next generation data programmes, focussing on culture and data ownership."

Norton said that this focus is moving Vodafone forward in real terms. Next year, he said, the operator would have in production its first multiagent solutions focussed on network operations optimisation and on fault resolution. But there are still roadblocks. Norton said that because of compliance requirements, just using production data rather than synthetic data introduces a three month delay into the development process.

Telstra, too, is working on a framework to accelerate the shift toward autonomous networks.
It will explore solutions that address challenges such as fragmented and siloed data, gaps between business intent and execution, the complexity created by multi-vendor and multi-domain environments and the trustworthiness of AI models.

Its aim is to advance intent translation frameworks to bridge business goals and network actions.
It will also look to build a knowledge plane - an information layer using data, AI, and reasoning to monitor, analyse, and control the network intelligently.

All of these tier one telco approaches show that they have a clear understanding of where their challenges lie, and an awareness that the future telco journey will require a shift in operational processes and the elimination of system complexity.

The danger for the industry is that they lean again on their established vendor partners to simply iterate upon the established model, introducing some AI agents working within closed domains and reducing NOC staff, but not enabling a true change in business model.

The Path Understood

The world of technology moves fast. This both threatens telcos competitively and gives them the very tools with which to engineer their ongoing relevance. Run time product catalogue agentic flows and telemetry, data pipelines and MLops and data lakehouses: all offer the opportunity to eliminate the operational complexity that has held telcos back and limited their ability to change. But change won't come if the industry maintains its standard thinking of relying on versions and upgrades of existing platforms and processes, rather than simplification and disruption.

Instead, what is emerging is a blueprint for success. Define a programmable, cloud-native network foundation. Use available tools to make network, application and user data observable, and then make that contextualised data available on a horizontal basis across business applications and workflows. Use AI to augment the intelligence of these applications, and to close the loop to the network.

The evidence of the operators mentioned in the report is that many have taken and are taking these steps, driving internal capabilities and changing teams and processes. Others are doing so in close partnership with their key suppliers. AT&T has digitalised and automated its site planning and management processes and is now looking to extend AI use cases across its operations. Boost Mobile has constructed an EMS-less core that gives it the ability to operate with a very lean, flexible team. Rakuten Mobile has been the path-finder for this model.

The common truth is that the Future Telco already looks very different not just in process, but in outcome: being AI-native and AI operational.

How do you arrive at your destination? Well, you do start from here. And the steps are laid out to do so: digitalise, horizontalise, automate. That creates a change capability that becomes self-fulfilling.

Ongoing change is enabled by changing your ability to change.

For more information on Rakuten Symphony's AI-Powered OSS, see **https://symphony.rakuten.com/oss**