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UNLOCKING VALUE: STRATEGIC PRIORITISATION OF NETWORK AND AUTOMATION INVESTMENT

Operators are transforming their networks to provide advanced services and tackle network complexity. However, progress is uneven as operators develop various capabilities at different stages. We outline four common pathways and provide recommendations for operator peer groups.

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Executive Summary

Operators must invest in network transformation and automation to stay competitive. They must drive their own costs down (to free up resource for service innovation and keep margins stable as connectivity gets commoditised) and "unlock" new revenues from differentiated services (which they have struggled to do at scale). STL Partners, in collaboration with Amdocs, has undertaken a two-phase project to clarify operators' transformation and automation progress and provide actionable recommendations to accelerate transformation and unlock value sooner.

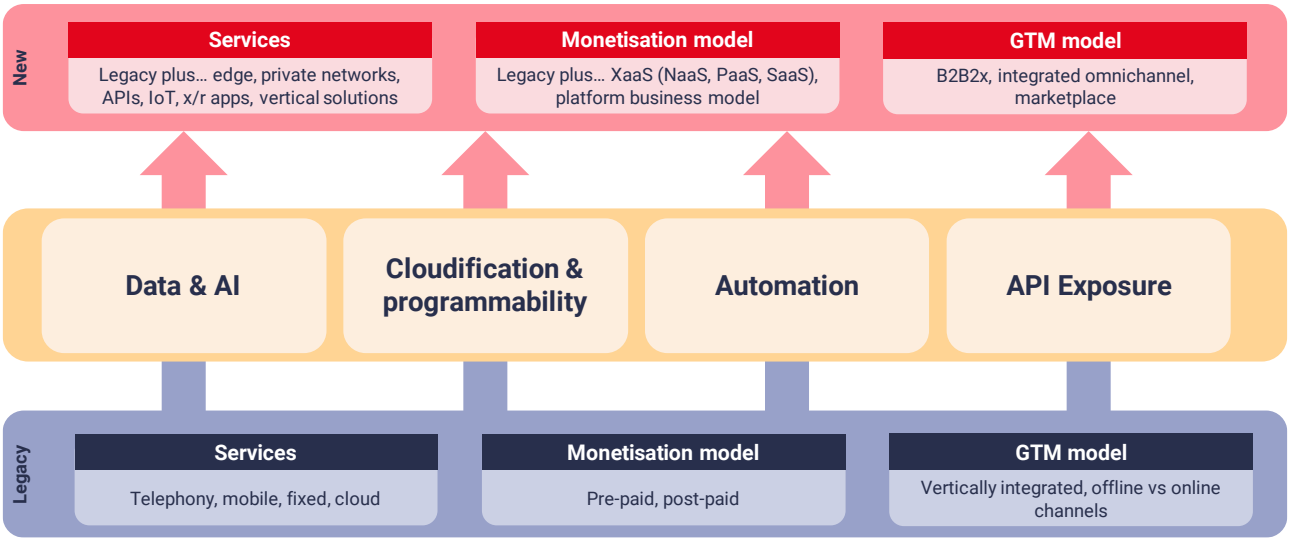
Phase 1

In the first phase of the research programme, STL Partners interviewed 22 operators and five vendors globally. The insights were used to produce an evidence-based "next-generation network maturity framework". See Figure 1 for a high-level overview and the Appendix for more detail. The framework details the maturity milestones for operators on their network transformation journey across four key pillars:

- Data & AI
- Cloudification & programmability
- Automation
- API exposure

The output is a set of normalised industry benchmarks that operators can use to qualify and quantify their transformation progress.

Figure 1: The four pillars of network transformation and automation



Source: STL Partners

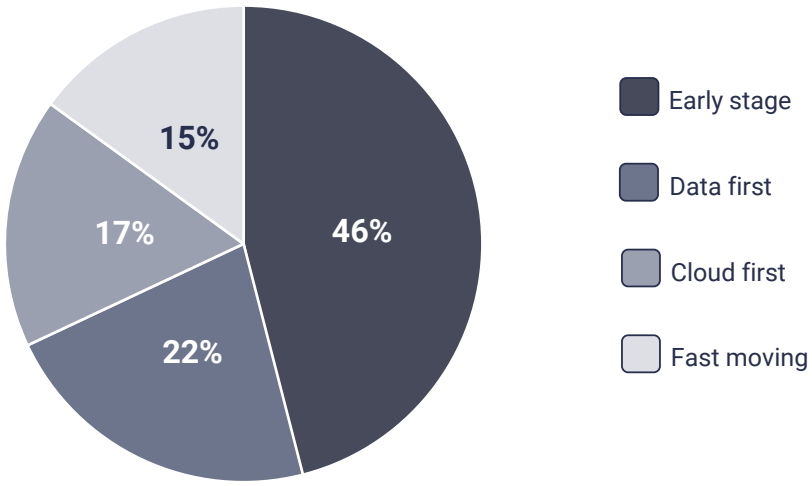
There is no clear pathway from legacy to next-generation network. Consequently, operators have evolved various capabilities at different paces depending on their strategic priorities, market conditions, consumer expectations, and other factors. The outcome is a broad spectrum of transformation and automation journeys.

This can make it difficult for operators to identify and enact strategic recommendations that apply to their specific transformation journey. This is partly because there has been extensive research on the "end state" for the telco rather than the steps for where and how to start. To be practical and actionable, recommendations must consider an operator's current transformation and automation state and the immediate priority for investment.

Phase 2

In this report, we outline the second phase of research. The phase leverages cluster analysis of 3,500 data points on the data & AI, cloudification, automation and API-exposure capabilities of 100 operator stakeholders, to identify the four most prevalent pathways that operators have pursued in their network transformation journey so far and their anticipated future roadmap. The purpose of these profiles is to enable operators to find their transformation peer group and answer the most pressing question for each of these four groups. See Figure 1.

Figure 1: Share of operators falling into each transformation profile



Source: STL Partners analysis of 100 telco stakeholder survey respondents

- **Early-stage transformers:** Active in growth markets or challengers elsewhere that are focused on reducing costs while scaling. Progressing towards virtualisation and basic automation but lack a common data model. Transformation has largely been outsourced to vendors.
  - These operators ask, "where should I prioritise my network transformation resource to help accelerate my journey and compete effectively in the wider ecosystem as more than just a pipe?"
  - **Recommendation:** Implement a common data model, invest in rearchitecting network for virtualised infrastructure, and automate simple workflows.
- **Data-first transformers:** Largely composed of leading operators in growth markets. Characterised by heavy investment in data skills, they see these as the foundation for further transformation and automation. Strongly focused on revenue generation.
  - These operators ask, "how can I accelerate network transformation to feed our strong data practice and make the most out of those skills?
  - **Recommendation:** Think about virtualisation as a gateway to disaggregation, use their data skills to leapfrog on automation and transform data monetisation skills into services.
- **Cloud-first transformers:** Predominantly Tier 1 operators who have invested heavily in the network. Early adopters of virtualisation, they are pushing towards disaggregation to build a programmable, modular network of microservices. Data skills are comparatively weaker.
  - These operators ask, "how can I build out my data capabilities to understand my customers better and enable me to innovate services that they need?"
  - **Recommendation:** Let data drive their decision making, make themselves attractive to data talent and establish a data culture from the top down.
- **Fast-moving transformers:** Operators falling into this group are either, global Tier 1 innovators with large R&D budgets or agile challengers. Driving differentiated enterprise services is clear focus for transformation and automation as is improving performance in the financial markets.
  - These operators ask, "how can I leverage the network as a platform to change customer and market perceptions, enabling me to compete and differentiate in the space beyond connectivity?"
  - **Recommendation:** Invest in organisational transformation, particularly building an automation first culture and developing software skill, and build a platform mindset by innovating around the commercial model for APIs and monetising data.

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Introduction to the operator profiles

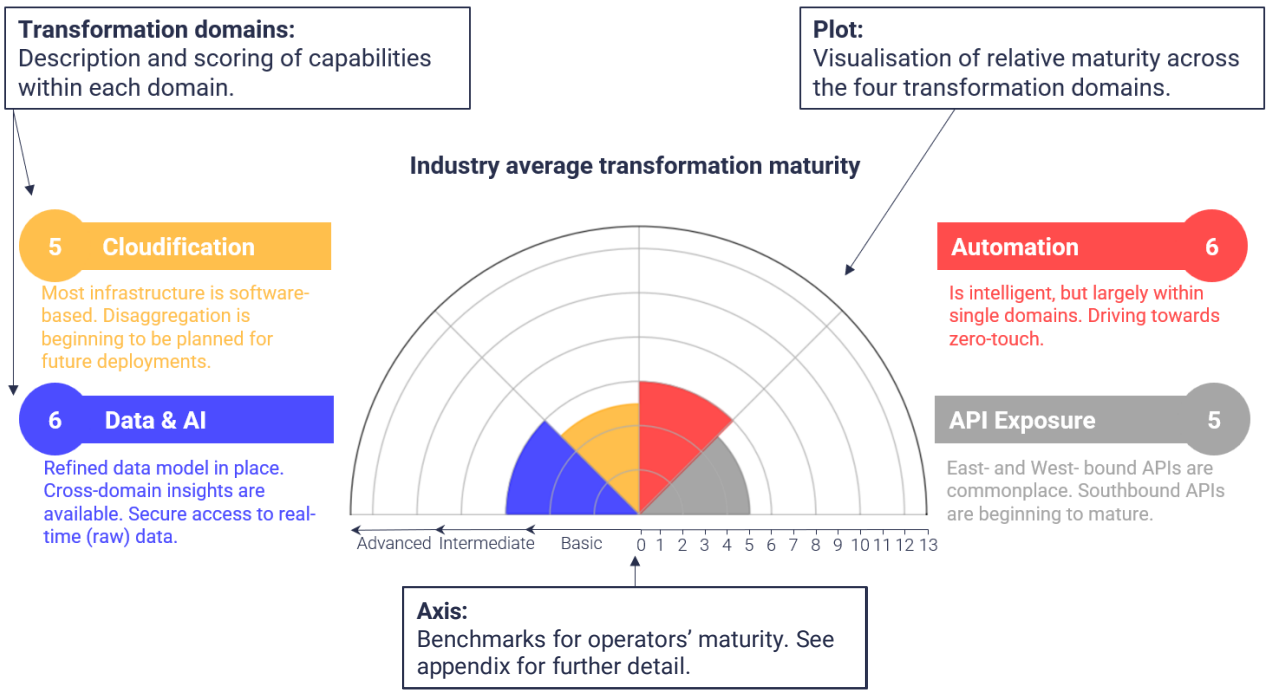
Categorising operators into groups based on their maturity across the four pillars of transformation and automation makes it possible to create data-driven strategic recommendations for transformation that are cognisant of an operator's existing capabilities and reflect where operationally similar peers have found success.

This report looks at the four transformation peer groups and provides:

- An overview of each group's current situation, including transformation maturity, market and strategic priorities and any challenges they may face.
- A benchmark of their current technological transformation – see Figure 3 for an example.
- An outline of their transformation roadmap, including their key transformation question.
- Tailored recommendations to accelerate the transformations that will allow them to achieve their strategic objectives sooner.
- An estimate of their technological maturity in 2026, if the suggested recommendations are pursued.

Figure 3 is a guide for interpreting the profiles.

Figure 2: A guide for reading transformation profiles



Source: STL Partners

1 Early-stage transformers

1.1 Current transformation state

Situation

These operators are recognised by their initial progress towards virtualisation and basic automation within specific, discrete domains. Operators in this profile are likely to either be active in growth markets, or challenger operators within advanced markets. Their overall imperative is reducing costs of operations while scaling – either through churn reduction or increasing their subscriber base.

Network transformation is largely outsourced to international vendors to derisk deployments and the high upfront costs of network integration. They rely more heavily on the experience gained by vendors in supporting more mature operators with network deployments to help them to accelerate or "leapfrog" in their transformation.

Most operators in this group said that cost saving was their primary strategic objective with regards to network transformation. This proportion is significantly higher than other profiles and reflects that they are looking at new technologies primarily for efficiency gains.

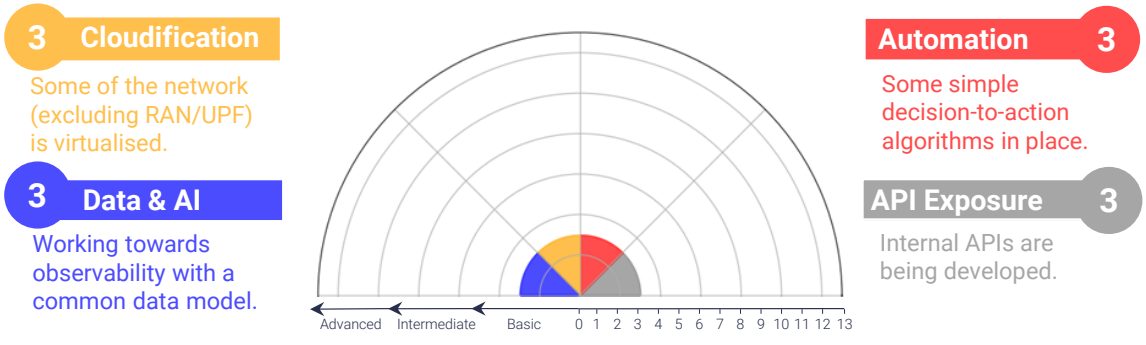
Complication

Combatting commoditisation: Many operators in this segment lack the scale and brand of global Tier 1s and therefore have an uphill battle trying to own the end customer vs. competitors (including hyperscalers [HCPs], systems integrators [SIs], and industry solution providers). They risk becoming squeezed in terms of the value they are adding and getting pushed further down the value chain, competing only on price and facing increasing cost pressures.

Balancing speed with in-house skills: Operators in this segment will rely more heavily on single vendor, pre-integrated stacks to help accelerate their transformation journey. However, outsourcing cloud, automation, and data capabilities to vendors could limit the telcos' ability to build in-house skills and thus their ability to take control of innovation pipelines, move towards best-of-breed, and avoid lock into specific vendors/SIs.

46% of operators fit this profile | **50%** of this group said that cost reduction is the primary driver for network transformation while the other 50% cited growing revenues

Figure 4: Early-stage transformers current scoring on our maturity framework



1 Early-stage transformers

1.2 Future roadmap

Operators in this group ask the following key question:

"Where should I prioritise my network transformation resource to help accelerate my journey and compete effectively in the wider ecosystem as more than just a pipe?"

Recommendations

1. Implement a refined common data model to support business intelligence

- Ensure the organisation takes a strategic approach to data, such that data and insights can be derived across multiple teams and domains.
- This involves maturing data cataloguing, storage (balancing data warehousing and edge processing), secure governance and visualisation.
- Unlocking network, OSS, and BSS data for internal use will enable operators in this segment to more carefully plan network roll out, effectively target niche customer groups where there is less competition, add value to partners beyond connectivity, enhance their customer experience.

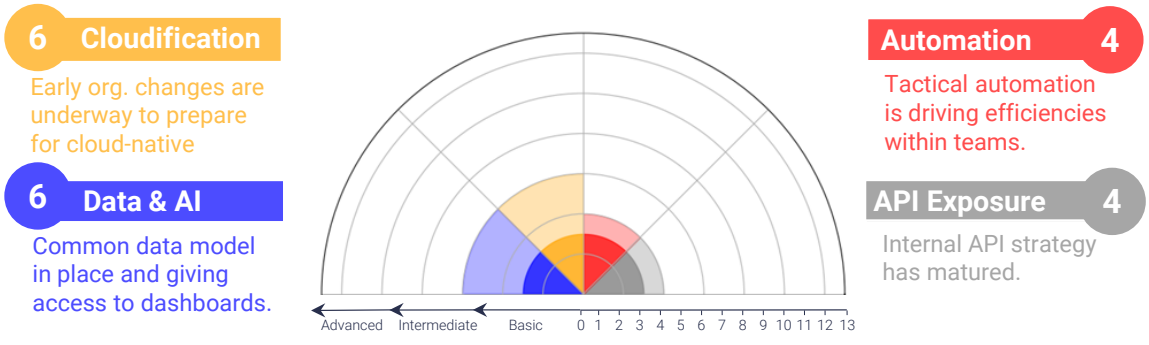
2. Invest in rearchitecting networks for virtualised infrastructure

- Most operators did not realise the promised cost savings of virtualisation – primarily due to the limited rearchitecting of VNFs to be "cloud native", the use of performance enhancers like SR-IOV that can recouple applications to underlying hardware, and heavy testing and integration costs.
- Early-stage transformers should learn from the mistakes of those that have gone before and embrace cloud native as both a technical and organisational change. Where possible, look to work with vendors to leapfrog to disaggregated architectures to accelerate automation journeys.

3. Understand the value of tactical automation

- Do not undervalue automation of simple workflows within a specific domain.
- Focus on identifying manual processes within teams (e.g., bill presentment and processing) and automate this to drive efficiencies – only once data and network infrastructures are more advanced, start to develop intelligent, cross domain automation.
- This is, however, largely dependent on individual circumstances – comparatively low labour costs in some markets for instance reduce the potential ROI of capital labour substitution.

Figure 5: Early-stage transformers predicted 2026 score on our maturity framework



2 Data-first transformers

2.1 Current transformation state

Situation

The group of data-first transformers is mostly comprised of leading operators in emerging markets. As they often operate in markets with less stringent data regulation, building data skills promises these operators new revenue streams through the monetisation of rich, first party, telco data (e.g., advertising, loyalty schemes, super apps).

They understand the value of customer data for enabling AI/ML solutions that improve customer experience – leveraging this to create stickier, higher ARPU subscribers. This is reflected by the clear focus this group has on revenue generation over cost reduction. Their data skills act as a foundation to accelerate automation and drive margin growth.

Over 90% of operators in this group said that revenue growth is their primary driver for network transformation. While just 6% cited cost reduction as the most important motivator.

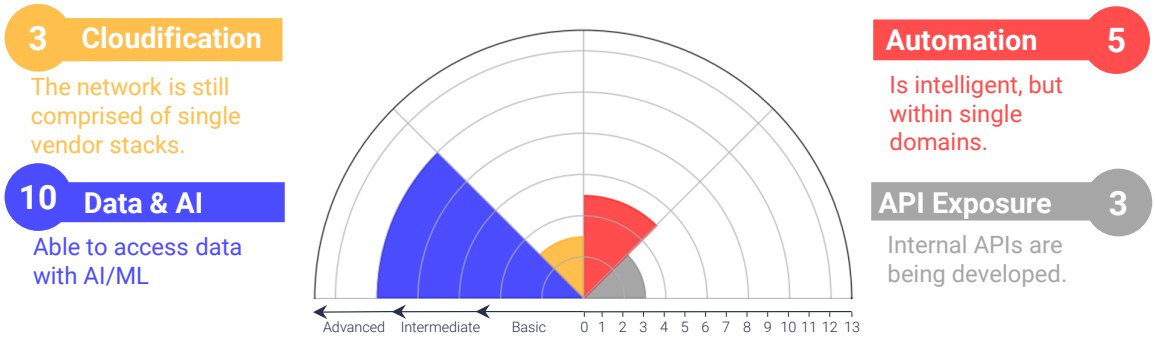
Complication

Automating a legacy network: The limited adoption of cloud native networks in this group frustrates further progress on automation – it makes no sense to invest in automating a legacy network end-to-end. In turn, this means the hungry data practice is not being fed in real-time by a softwarised and disaggregated network. Therefore, data is not as rich as it could be – hampering monetisation of strong data and analytics skills.

Difficulty moving to NaaS models: Limited progress in cloudification also reduces these operators' ability to adopt "cloud like" models for networking and monetisation (APIs, NaaS) – the network is not yet programmable. This impedes agile service innovation, along with the fact that these operators may be tied to the innovation cycles of their network vendors through lock-in – likely also driving up costs.

22% of operators fit this profile | **94%** of this group said that revenue growth is the primary driver for network transformation

Figure 6: Data-first transformers current scoring on our maturity framework



2 Data-first transformers

2.2 Future roadmap

Operators in this group ask the following key question:

"How can I accelerate network transformation to feed our strong data practice and make the most out of those skills?

Recommendations

1. Plan for disaggregation

- These operators must think about virtualisation as a gateway to disaggregation – laying the foundation for further automation.
- Engage partners to begin moving core networking (including 5G SA) workloads towards "cloud native" – consider working with multiple vendors for best-of-breed but invest in building internal cloud and software skills to limit future reliance on external support.
- This should not be a lift-and-shift exercise, network functions must be re-architected for a cloud hosting environment – ensure new network architecture feeds seamlessly into data practice.

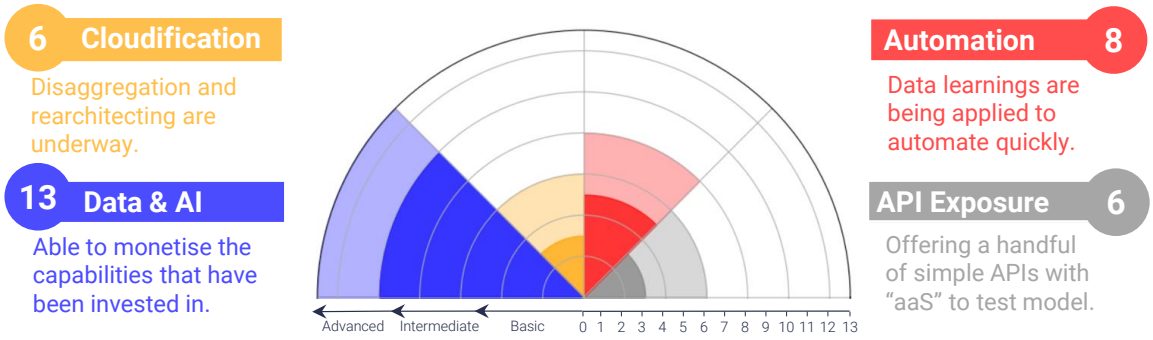
2. Leapfrog on automation

- Leverage leading AI/ML skills and apply these to identify opportunities for intelligent automation in the new, disaggregated network.
- Use expertise in cross-domain data exploitation to enable more efficient scaling of automation solutions – focus on how to take intelligent solutions from within a domain and apply end-to-end across networks, OSS, and BSS.
- Focus on automation from the perspective of the customer – prioritise solutions that automate their journey for differentiated customer experience.

3. Servitise data monetisation

- Seize the opportunity to monetise your data where operational territories may have relatively less stringent external data governance requirements.
- Consider new revenue models related to your leading data capabilities, exploring how you can provide a service to enterprise customers that are attempting to make better use of their own data, internally or externally.
- Explore professional services around this, including workforce empowerment through analytics of your customers and their data.

Figure 7: Data-first transformers predicted 2026 score on our maturity framework



3 Cloud-first transformers

3.1 Current transformation state

Situation

Cloud-first telcos are predominantly Tier 1 operators who have invested heavily in building a next-generation network. They are pushing towards disaggregation and building a more programmable, modular, and dynamic network of microservices that can be stitched together in different configurations to build new services for customers.

This group have managed to leverage their achievements in programmability early on to make progress in intelligent cross-domain automation and exposure of network assets. Their goal is to use these capabilities to build new enterprise and consumer services, as well as building a strong role for themselves in the value chain.

Most operators that have invested heavily in network cloudification did not see the promised cost savings and are now looking at how to build new revenues to justify the investment.

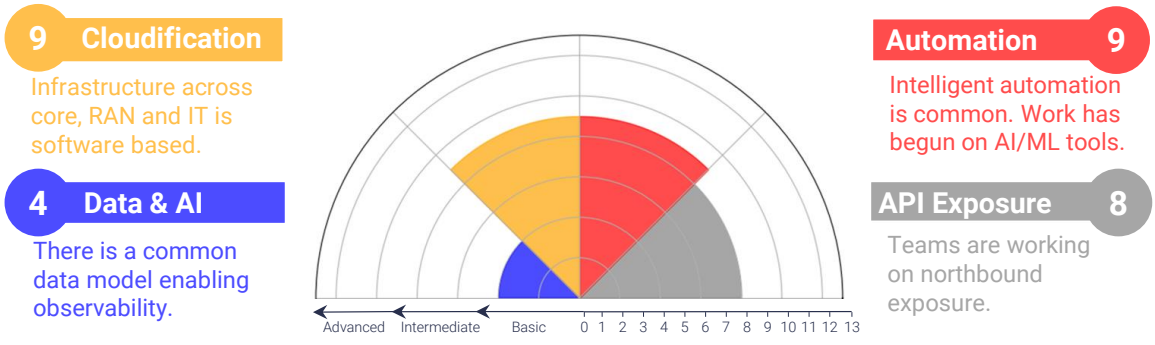
Complication

Difficulty scaling a platform play: However, data capabilities lag other domains (as shown in Figure 8 below), without a solid foundation in data exploitation, it is difficult to scale next-generation services in a platform way and take a new role with customers/partners – there is limited value-add of the telco "platform" beyond billing and difficult, low margin, integration work if data is not being exchanged between suppliers and orchestrator.

Lack of customer centricity: Strong progress in cloud-native and automated networking offers a solid infraco play. However, weaker data skills limits understanding of customer needs and thus the ability to both innovate products and services that customers want, as well as contextualise the customer experience across different teams. This hinders progress towards the servco model and slows building a strong brand beyond connectivity, especially with enterprise customers.

17% of operators fit this profile | **71%** of this group said that revenue growth is the primary driver for network transformation

Figure 8: Cloud-first transformers current scoring on our maturity framework



3 Cloud-first transformers

3.2 Future roadmap

Operators in this group ask the following key question:

"How can I build out my data capabilities to understand my customers better and enable me to innovate services that they need?"

Recommendations

1. Let data drive your decision making

- Implement a common data model so that data from various BUs can be inputted and accessed by all and used to drive customer centric decisions.
- This does not mean build a centralised data warehouse where all data is stored, instead define where which types of data should be stored, who should have access, and implement proper governance for access and language to contextualise across teams.
- Develop accessible data tools and train teams to use customer data to improve existing products and devise new solutions.

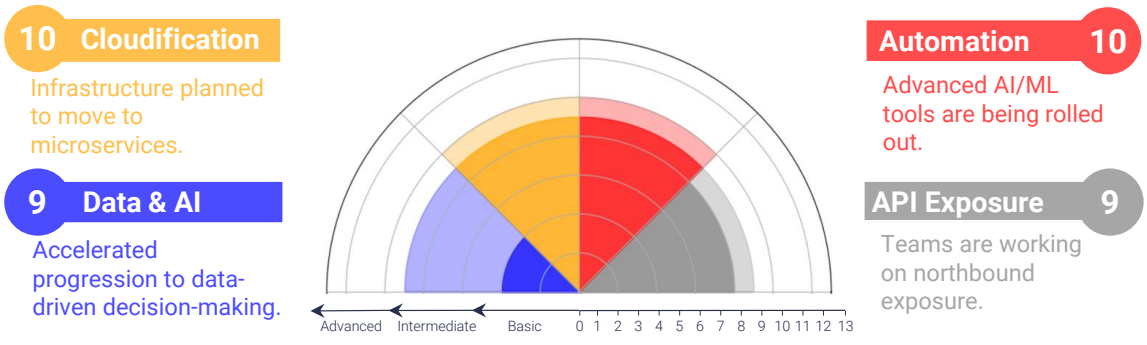
2. Retain data talent with better data engineering

- Minimise the data engineering tasks involved in their roles – tasks like cleaning and preparing data for analysis.
- Work with vendors/partners to accelerate the data engineering effort required (which currently accounts for around 70% of a data analyst's time).
- This frees up data analysts' time to focus on higher-value strategic activities such as data interpretation, analysis, and actionable insights generation. This is a better outcome for the operator and will boost analyst job satisfaction and retention.

3. Establish data culture from the top

- Institute a CDO role to advocate for a data-centric culture, ensuring that a holistic data strategy is pursued and aligning all departments towards common data objectives and best practices.
- The CDO can introduce incentives to improve the data culture, e.g. rewarding teams who maintain high-quality data and introducing new cross-domain data projects.
- They can help overcome regulatory barriers to data monetisation unlocking the potential in the rich, first party, data a softwarised network will produce.

Figure 9: Cloud-first transformers predicted 2026 score on our maturity framework



4 Fast-moving transformers

4.1 Current transformation state

Situation

This group is mostly composed of global Tier 1 innovators, differentiated from the market by their comparatively large investment in next-generation technologies (e.g., DT and AT&T). This group also comprises smaller greenfield operators who have entered the market as agile challengers (e.g., Rakuten).

All operators in this group share the same goal – to leverage significant investments in network transformation to drive differentiated enterprise services. They want to stay ahead of the curve as innovators, building a stronger brand with customers, as well as with the financial markets that still view them as a yield stock.

70% of operators in this group said that revenue growth is their primary driver for network transformation. Of those 70%, 63% said that they were focused on enterprise revenue growth over consumer.

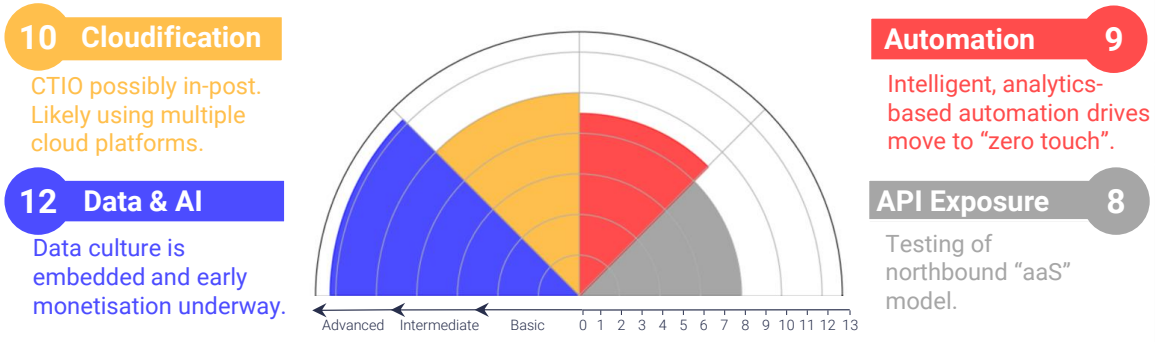
Complication

Coopetition with technology players: While this group hold the innovator title in the telco sphere, their desire to move beyond connectivity requires both partnering and competing with a wider pool of industry leaders – telcos must define their roles against hyperscalers, systems integrators, and industry solution providers to understand in which scenarios they can own the customer relationship and drive the go-to-market.

Industry perception: But telcos are hampered by the perception of legacy thinking and are not viewed as service innovators or agile business partners. The impact of this is two-fold. First, difficulty attracting an ecosystem of developers for co-innovation of network-driven solutions (including 5G and edge). And second, limited commercial model innovation vs. "techcos" since shareholders expect earnings through routine dividends and not growth.

15% of operators fit this profile | **70%** of this group said that revenue growth is the primary driver for network transformation

Figure 10: Fast-moving transformers current scoring on our maturity framework



4 Fast-moving transformers

4.2 Future roadmap

Operators in this group ask the following key question:

"How can I leverage the network as a platform to change customer and market perceptions, enabling me to compete and differentiate in the space beyond connectivity?"

Recommendations

1. Invest in culture and skills

1.1 Build an automation-first culture

- Incentivise (e.g., KPIs, bonuses) engineers to automate tasks before they do it manually – even if manual first is faster.
- Leverage increasingly microservice-based infrastructure to automate end-to-end, starting from the perspective of the customer journey.
- Unlock potential opportunities to monetise (e.g., with other telcos) as Elisa Polystar and Rakuten Symphony have done.

1.2 Develop software skills and culture

- Telcos lack software skills (including UI/UX) compared to "techcos". This limits both their ability to drive agile service innovation (without reliance on vendor pipelines), and their ability to build customer-facing platforms.
- Adopt software-driven KPIs (e.g., DORA) and set goals around these to push the shift towards a software/cloud-native organisation.

2. Build a platform mindset

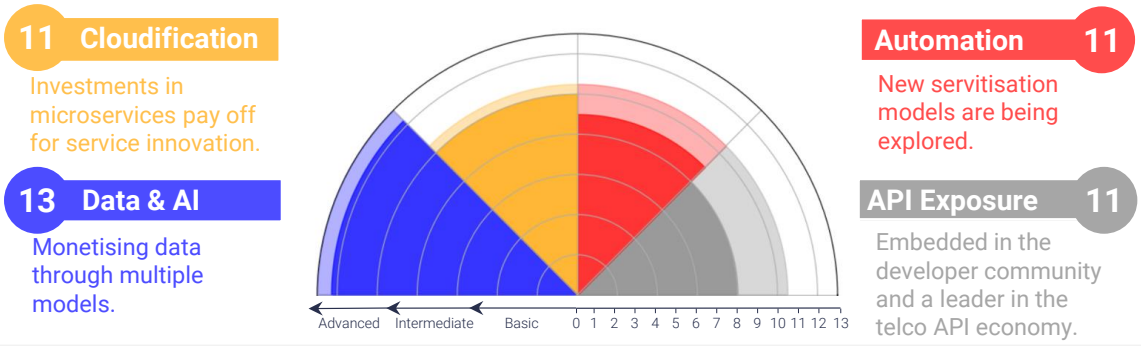
2.1 Innovate the commercial model around APIs

- Fast-moving transformers are investing on the technology side of API exposure, but more must be done on the commercial side.
- Engage developer ecosystems to define end-customer demands, go-to-market options, and revenue models to change perception of "legacy."
- Think of APIs as raw materials, not products – innovate services around them to create stickier propositions and indirect monetisation of the API.

2.2 Monetise data as part of the platform play

- Leverage network and industry leadership (including trusted brand and skills in data exploitation) to build platform play (e.g., API aggregator role).
- Ensure seamless transfer (and monetisation) of telco data (network, BSS, OSS, location) to add value to platform participants/suppliers and help scale on both sides.

Figure 11: Fast-moving transformers predicted 2026 score on our maturity framework



Conclusions and recommendations

The focus of research on network transformation and automation to date has been primarily on the singular "end state" and the new services (for example, dynamic 5G slicing) and the cost savings it will enable. This report complements the existing research, providing a step-by-step guide for operators to consider and the incremental potential value to be uncovered along the transformation journey.

Through investigation of the routes to transformation, STL Partners has defined a set of realistic and actionable recommendations for operator peer groups, based on their market experience, historic investment in network transformation and current transformation state. This is crucial for an industry which, as a whole, is approaching network transformation and automation in extremely diverse ways due to the various strategic priorities, legacy environments, budgets, and regulatory circumstances of different operator groups. Our strategic recommendations by profile capture this nuance.

Operators looking to operationalise the recommendations in this report should:

- **Adopt a holistic approach to transformation:** The four pillars of network transformation – data & AI, cloudification & programmability, automation, and API-exposure – are intrinsically linked. Focusing solely on building the "end state" may inadvertently deepen siloes between domains and exacerbate the disconnect between technical and business teams. A more effective strategy would consider how connecting different teams across the technology and business domains from the get-go can enable the organisation to unlock value along the journey. It is not all about dynamic slicing, as much value can be achieved incrementally through small service enhancements and cost reductions.

- **Ensure customer-centricity trumps technology-first thinking:** One of the major barriers to unlocking the value from network innovation has been a "technology first" strategy that invested in technology without understanding the business problems it could be used to solve. Building a fully fleshed out business case (with evidence and proof points) to justify investment would combat this, and this is the model most operators would pursue. But the time this takes could hamper agility and risk losing the first-mover advantage. There is a balance to be struck between having a robust business case and risking investment in new technologies to capture growth markets - in either case, the customer must be at the centre of decision making. Aligning business and technology teams under a common customer-centric vision and integrate them into a common group with shared management, incentives, methods and R&D resource, allows more accurate anticipation of customer needs – so it derisks the investment. This is one way to ensure, that even in the early stages, commercial feasibility is equally well-researched as the technology.

- **Take a balanced approach to vendor partnerships:** A successful transformation is underpinned by a selective partnership strategy. If there is a strategic imperative to accelerate progress towards specific transformation milestones, for example implementing a common data platform and create the data foundation for other transformations, it is probably the right moment to call on international vendors who have experience with previous deployments. But, getting the

balance with vendor support is essential, and many of the data and software competencies that vendors can offer, are something you should be building in-house, or in collaboration with telco experienced software vendors. This balanced approach ensures long-term operational independence and resilience, while also ensuring that vendor expertise can be harnessed where needed to unlock value quickly.

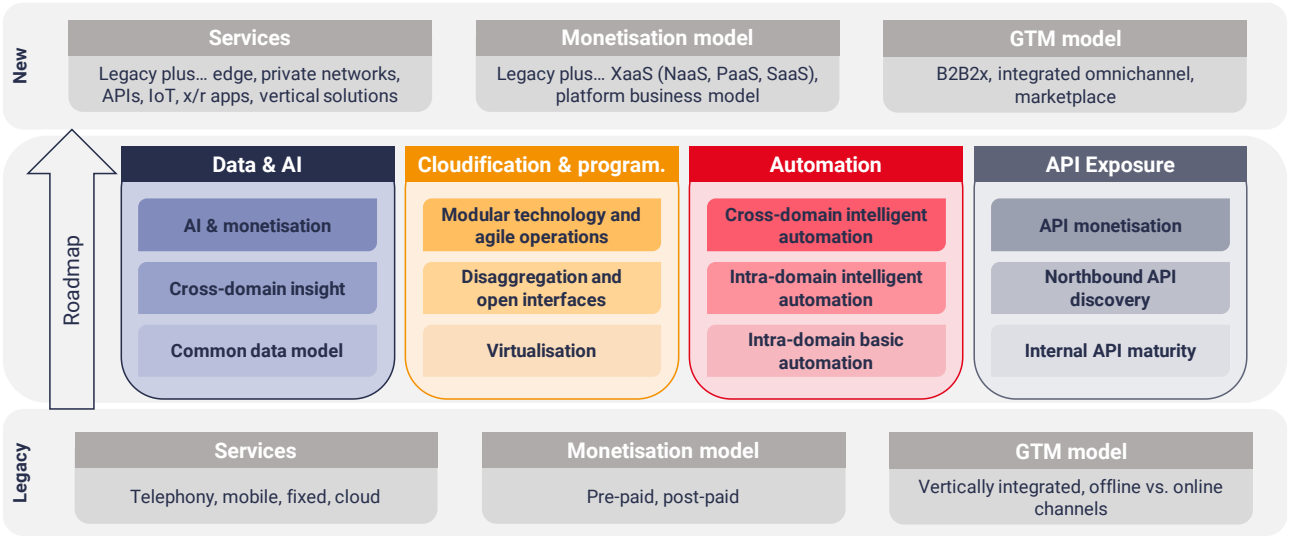
- **Drive organisational change forward:** Network transformation and automation is essential for the move from telco to techco, but it is not sufficient. Many of the recommendations in this report refer to the organisational changes that must accompany technical transformation. Specifically, becoming organisationally agile in business processes, planning and decision making. This creates an environment that is resilient and adaptable to market and customer demands. Hiring and retaining software and data talent will be essential for telcos if they are to achieve technical and organisational agility. As a next step, operators should look at how their organisational structure compares to telco industry leaders, and the techcos they seek to emulate. STL Partners' Future Skills Tracker can be used to compare the current penetration of future skills at specific telcos and techcos.

Appendix

A. The next-generation maturity framework

To help operators become a next-generation operator, STL Partners has created a network transformation framework. Comprising four key pillars of network transformation and automation, each pillar is intertwined and interdependent on the others, which, when combined, can elevate a telco's network to a key differentiator in the range of scale of differentiated services which it can offer. The next-generation network maturity framework (see Figure) has been designed following a survey programme consisting of 100 operator interviews and an interview programme with 22 telco executives and a select group of vendors. It captures the key pillars of network transformation, as well as the transformation journey an operator must take to achieve maturity within each pillar.

Figure 12: Multiple phases of an operator's transformation within each pillar



Source: STL Partners

The four pillars cover the fundamental infrastructure within the network and the network operations which underpin this infrastructure. The pillars are:

- **Data & AI.** Viewing, analysing and generating advanced insights from data originated from heterogenous sources across an operator.
- **Cloudification and programmability.** Capturing the virtualisation and disaggregation of the network (and IT) stack, and beyond that the move towards a modular, microservices-based architecture hosted on a private (or public) cloud.
- **Automation.** Reducing or avoiding the number of human touchpoints within processes across an operator, through the introduction of simple, and later more intelligent, automation.

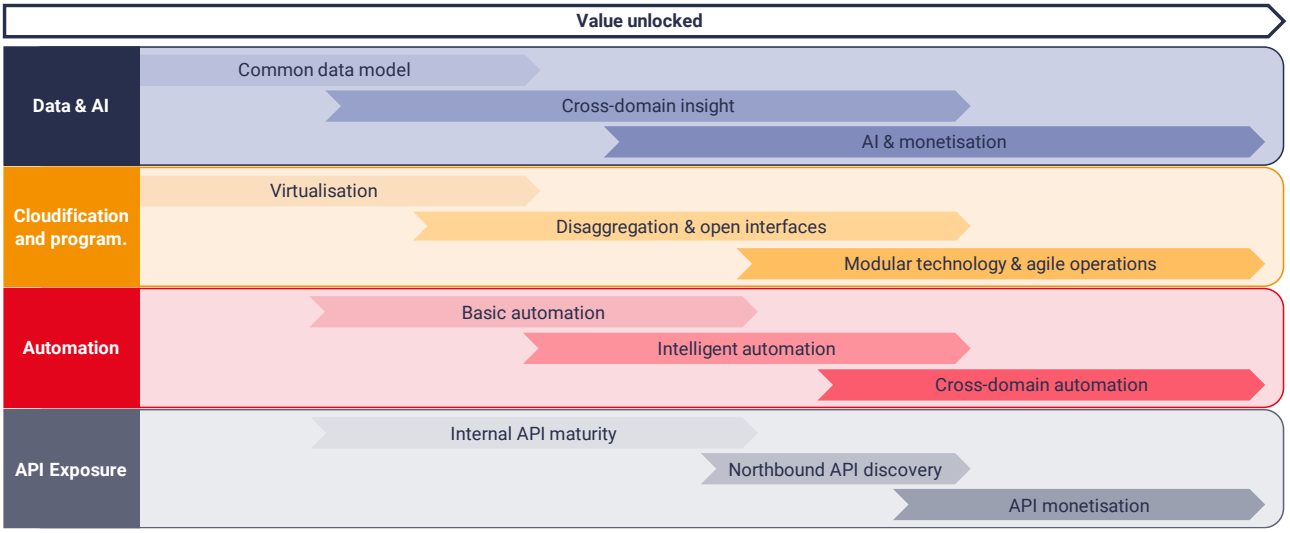
- **API exposure.** Exposing data and network services, enabling third parties to interact with the network in a simple and standardised manner. This applies to both internal and external customers, culminating in the ability to monetise this external exposure.

One key finding is that there are significant dependencies which sit within and between each of the four transformation pillars, mandating operators take a holistic approach to this transformation. It is not enough for operators to approach each pillar as its own siloed transformation programme. Dedicated resources, proactively architecting both the technology and associated business processes across these four pillars, is crucial to enabling a successful transformation.

B. Transformation milestones

Operators cannot expect to realise significant value through transforming in just one of the four pillars. Each pillar has significant dependencies and overlaps with other pillars, and the points at which value is unlocked for operators relies upon milestones being reached across multiple transformation pillars. See Figure .

Figure 13: The transformation milestones to value creation



Source: STL Partners

C. The scores

Figure 14: Scoring of operator capabilities across the four pillars of transformation

	Data & AI	Cloudification & programmability	Automation	API Exposure
Basic capabilities (Scores 1-4)	• Data from other departments is observable • Data can be exploited for basic BI within a team • Governance allows secure and timely access • Data under a common data model	• Significant portion of network (excluding RAN/UPF) and/or IT infrastructure is on virtualised infra. • Majority of planned deployments involved virtualised components	• Basic automation (e.g., RPA) of processes • Generally for pain points within specific teams/domains • Simple decisions to action algorithms	• East- and westbound (internal) APIs are commonplace • Southbound APIs in early-stage maturity to facilitate component optimization with vendors
Intermediate capabilities (Scores 5-9)	• Cross-domain insights available across teams • Data accessed through automated dashboards • Secure and real-time access to (raw) data • Data under a refined common data model	• Infrastructure across core, RAN, IT is software-based • Workloads are running on common hardware (COTS) • Disaggregation in majority of planned deployments • Begin to think more agile/cross domain (e.g., CTIO)	• Intelligent, analytics-based automation drives move to "zero touch" • Still primarily in processes in specific domains • Some organization-wide initiatives may exist	• Mature internal API strategy • Siloed teams working on northbound exposure • Handful of simple APIs offered "aaS" to test model • Standards driven and early central approach
Advanced capabilities (Scores 10-13)	• Cross-domain insights leverage AI/ML tools • Data analysts/scientists are commonplace • Data embedded in the culture and skills codified • Data can be successfully monetised externally	• Network and IT infrastructure is microservice based • Microservices can be flexibly pieced together across product portfolios • Leveraging multiple cloud platforms and HCPs	• Advanced tools (e.g., AI/ML) are prevalent in your automation strategy and routinely exploited • Intelligent automation is cross-domain/E2E to automate from the customer journey	• A diverse portfolio of northbound API aaS offerings • Mature monetisation model for scaling external APIs • Decentralised innovation as well as central strategy • Some APIs differentiated from, or setting, standards

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