# Reimagining telecom.

An AI/ML powered future of growth and opportunity.

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# Foreword

The telecoms industry stands at a pivotal moment. Despite decades of technological progress, our commercial models are under growing pressure. Revenue growth is sluggish. Investor confidence is fragile. And customers — consumers, enterprises, and governments — expect far more than basic connectivity. The reality is: we are investing more and delivering less.

But this is not inevitable. At TM Forum, we believe the telecom industry can return to growth — delivering greater shareholder value and renewed societal impact. The key lies not in more infrastructure, but in a reimagined operating model. And nowhere is that opportunity more profound than in Artificial Intelligence and Machine Learning.

AI/ML represents far more than tools for efficiency — it is a platform for growth, a catalyst for business reinvention, and a bridge to new ecosystems. It enables us to shift from building networks to orchestrating value. From siloed services to intelligent platforms. And from cost-centred strategies to outcome-driven innovation.

To realise this potential, AI must be built into the core — not bolted on at the edges. Successful AI-native transformation requires clear leadership from the top, starting with the CEO. When embraced fully, AI becomes a forcing function for radical simplification — of products, processes, and systems. It breaks down internal silos by necessity and drives a shift to more modular, data-driven operations designed with AI in hand. This has a double effect: strengthening today's business performance, while opening up space for experimentation, co-creation, and entirely new revenue models. As iterated at Google Cloud NEXT 2025: **"Your business doesn't need an AI roadmap. Your business roadmap needs AI."**

This paper, developed in collaboration with Google Cloud, offers a practical roadmap to do just that. It is grounded in TM Forum's strategic focus on enabling communications service providers (CSPs) to become AI-native — able to operate with agility, composability, and intelligence at scale. Our three industry missions — **Composable IT & Ecosystems, Autonomous Networks,** and **AI & Data** — provide the building blocks for this transformation. They are designed not as standalone efforts, but as a coordinated framework for tackling the most critical industry-wide challenges — together.

## The paper identifies three major areas where telecoms can lead:

**Sovereign AI:** As data sovereignty and digital trust rise up national agendas, telcos are uniquely placed to deliver secure, compliant platforms rooted in national infrastructure. But success won't come from simply building capacity. It requires strategic partnerships with AI specialists to co-create solutions that meet real regulatory and innovation needs. With deep local knowledge — of customer behaviour, regulation, and culture — CSPs are vital to localising AI in ways global players cannot.

**AI-powered B2C innovation:** Generative AI changes the economics of innovation, allowing telcos to rapidly develop and scale new services across adjacent markets like home energy, security, and entertainment. It enables true hyper-personalization, new revenue streams, and higher customer engagement.

**B2B2X ecosystems:** Telcos can move beyond connectivity to become enablers of enterprise value creation. By providing AI-powered infrastructure, intelligent networks, and composable platforms, they can support businesses in delivering new services to their own end-users — creating entirely new value chains.

Underlying all of this is the growing interdependence between connectivity, cloud, and AI. In a world where resilience, sovereignty, and security matter more than ever, CSPs have a unique role to play — offering the integrated digital infrastructure that underpins secure, trusted, real-time services. That role must be seized with urgency, strategic clarity, and bold leadership.

This paper is being released alongside **DTW Ignite**, where many of its themes will be debated by industry leaders. We hope it helps spark the dialogue — and action — needed to move from potential to progress. The purpose of TM Forum's industry missions, working with partners such as Google Cloud, is to bring us together: to co-create the standards, tools, and momentum required to unlock growth for all.

The future will not be defined by the next G, but by our ability to deliver intelligent, trusted, real-time experiences at scale. The opportunity is clear. The tools are ready. And the time to act is now.

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# Introduction

The telecommunications sector faces significant turbulence. Financially, the industry struggles with declining Return on Invested Capital (ROIC) and shareholder returns. This occurs despite massive capital expenditures on networks like 5G and fiber, which have surged by roughly $300 billion since 2018 while global revenue growth remains sluggish at 1–2% annually (with declines in Europe).[1] High debt levels and rising interest rates exacerbate these financial strains, particularly for operators with speculative-grade ratings, leading to negative investor sentiment.[1]

Simultaneously, customer relationships are strained. Consumers perceive declining value-for-money (a 7% drop in the price-value ratio), with 43% reducing telecom spending.[2] Poor customer experiences are costly, as 61% of customers switch providers after one negative interaction, and first-contact resolution rates hover around only 40%.[2] Intense competition from traditional rivals, MVNOs, digital brands, and OTT providers further intensifies these pressures.[1] This confluence suggests the traditional connectivity-focused business model is nearing its limits.

In stark contrast, AI is experiencing explosive growth. The AI market is projected to exceed $240 billion, with 20% annual adoption growth.[3] Investment, particularly in the US ($109 billion in 2024), is pouring in, with Gen AI attracting $33.9 billion globally in 2024. Enterprise AI adoption jumped from 55% in 2023 to 78% in 2024, with around 72% of companies using AI overall.[4] Global AI users are expected to reach 378 million by 2025.[5] This divergence highlights a critical risk: without integrating AI for value creation, telcos may become mere ‘dumb pipes’ facilitating value captured by others, a movie we’ve seen before.

The rise of AI also sharpens the focus on data sovereignty and cybersecurity. Data sovereignty — data being subject to the laws of the nation where it's collected — is gaining importance due to national security and economic independence concerns. Simultaneously, cyber threats are growing more sophisticated, and AI introduces new vulnerabilities like data poisoning, model theft, and privacy risks. While challenging, this focus creates a strategic opportunity. Telcos, with their national infrastructure, operational history, and established trust, are well-positioned to address sovereignty and security demands, potentially turning a global challenge into a competitive advantage.

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# Challenge the staus quo

Historically, the telecom industry has been slow to reinvent itself. High capital intensity for network buildouts (5G, fiber) focuses strategy on asset deployment rather than rapid service innovation.[1] This infrastructure focus can lead to a 'build it and they will come' approach, now proving insufficient. Reluctance to disrupt core businesses, in some instances an overreliance on incumbent vendors, complex legacy systems, and price-focused regulation have also contributed to inertia.

However, the current AI revolution demands a departure from this status quo. The scale and impact of AI, especially Generative and agentic AI, represent a technological discontinuity far greater than previous network upgrades. AI offers entirely new ways to create value, automate processes, and engage customers. Concurrently, severe financial and competitive pressures necessitate fundamental change, as cost-cutting alone cannot bridge the performance gap. AI can also democratize powerful capabilities, lowering innovation barriers compared to past infrastructure investments.

Crucially, telcos possess inherent strengths for the AI era. Foremost is trust, built over years of providing critical infrastructure to consumers, enterprises, and governments. In an AI world involving sensitive data, this trust is invaluable, differentiating telcos from tech giants facing data usage scrutiny. However, this trust must be actively maintained through responsible AI implementation.

Secondly, operators command vast physical infrastructure — networks, central offices, edge computing capabilities — essential for low-latency, high-bandwidth, or geographically specific AI applications like sovereign AI. Finally, they have access to enormous customer bases and datasets (network traffic, usage, interactions). Used ethically and with consent, this data can fuel powerful AI-driven personalization and insights.

Therefore, the AI narrative must shift from focusing solely on operational efficiency (network optimization, automated customer service, predictive maintenance) to viewing AI as a primary engine for top-line growth. Efficiency gains should fund investment in AI for revenue generation. Leading operators like SK Telecom (£14bn AI revenue target by 2028[6]) and Deutsche Telekom (€1.5bn target[7]) exemplify this shift.

This requires a cultural evolution towards becoming an agile, customer-focused, data-driven organization — demanding new skills, structures, and a leadership mindset focused on creating AI-era value.

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# The AI/ML advantage

From Google's vantage point, we observe telecom visionaries charting a new course in the AI era, unlocking growth across several key opportunity areas: sovereign capabilities, B2C innovation, and B2B2X value chains.

## Sovereign AI: A strategic imperative

The global trend towards data sovereignty is accelerating due to national security, economic independence goals, and regulations like GDPR. This is amplified in the AI era, extending to AI sovereignty — control over AI development and deployment.

Telcos are uniquely positioned as providers of sovereign cloud and AI solutions due to their established in-country infrastructure, experience operating critical systems securely, and trusted relationships with governments and regulated industries, including banking and healthcare.

By offering sovereign AI capabilities, telcos can support national AI strategies, providing secure environments for sensitive data and fostering local innovation while ensuring compliance with fast-evolving AI regulation. Examples include Proximus'[8] dedicated sovereign platform, Indosat Group's offer of Google Distributed Cloud for organizations in Indonesia to run workloads at a location of their choice,[9] and KDDI's recent commitment to infuse AI into domestic infrastructure for offering AI services.[10] While building large-scale AI data centers may be limited to a few, providing secure infrastructure for sovereign AI workloads is a broader opportunity.

This represents a potential 'safe harbor' for growth, driven by regulatory and geopolitical factors favoring local providers. Monetization can come from premium hosting, specialized AI PaaS, and consulting on AI governance and compliance. Success requires deep expertise in AI governance, ethics, clean energy sourcing, security, and compliance, potentially necessitating partnerships or significant upskilling.

## AI-powered new product and service innovation (B2C)

Telcos have struggled to diversify B2C revenues beyond core connectivity amidst price competition and low satisfaction. Generative AI is changing innovation economics. Gen AI significantly lowers the risk and cost of developing and launching new B2C services. Rapid prototyping, content generation, code creation, and simulation enable agile testing of multiple ideas, investing only in those with proven traction.

Telcos could take lessons from early adopters in the advertising sector who are already seeing the benefits, for example WPP's use of AI to better predict the success of marketing content, ahead of campaign activation. In this example, the global agency is able to have faster, more accurate predictions, and reasoning behind the predictions, which offers superior recommendations to improve content. This powerful tool has the potential to free up millions of dollars for brands to re-invest in only the best-performing campaigns.[11]

# This accelerates innovation, opening doors to:

**True hyper-personalization and upsell:** AI analyzes customer data (ethically, with consent) for real-time understanding of individual needs, enabling personalized offers, content, pricing, and support. Telefónica's "Next Best Action AI Brain" drove sales increases, and another operator saw 5–15% ARPU uplift via hyper-personalized campaigns.[12]

**New service verticals:** AI enhances offerings in adjacent markets:

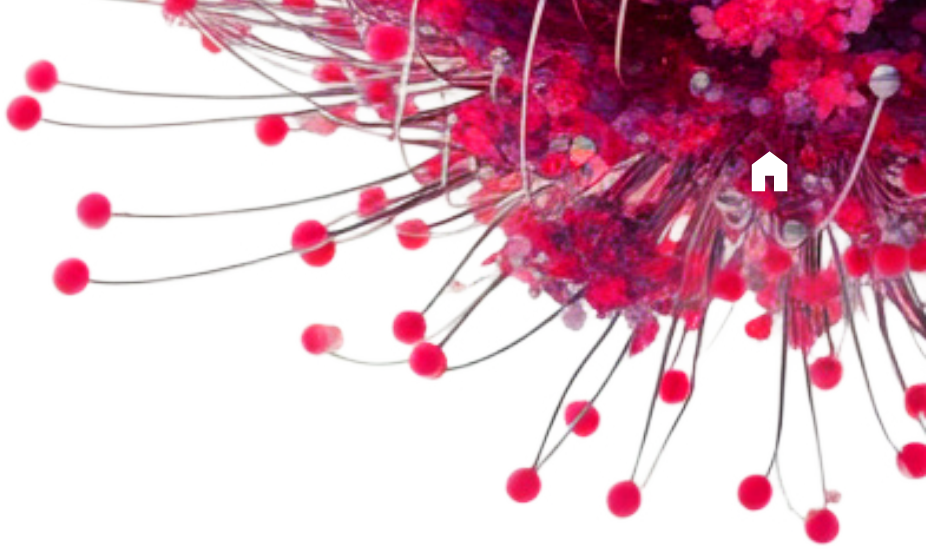
**Smart home and energy:** Piloting new smart energy and resilience solutions — for example, Comcast's Xfinity brand provides smart home services and in 2024, the company's ventures invested into New Haven, to accelerate the adoption of home energy storage.[13]

**Tech-powered insurance:** AI-powered home security with intelligent threat detection, bundled with insurance, e.g. Sky's launch of Sky Protect.[14]

**Immersive home entertainment:** Competing in the 'attention economy' via AI-powered recommendation engines, dynamic content generation, and interactive experiences. In today's crowded media landscape, the battle for consumer attention is paramount. Telcos are uniquely positioned to leverage their robust network infrastructure and customer relationships to deliver deeply personalized and engaging home entertainment experiences. By integrating Google Cloud's AI tools, telcos can move beyond simple content delivery to offer truly immersive environments. This includes utilizing AI to analyze consumption patterns and preferences, enabling hyper-personalized content discovery and recommendations that keep users engaged. Furthermore, Generative AI can facilitate dynamic content creation, allowing for adaptive storytelling, interactive media formats, or even user-generated experiences within a telco's platform. An example is Quickplay's collaboration with Google cloud,[15] which enables dynamic short-form video experience and creator tools for pay-tv platforms.

This strategic focus on the attention economy transforms the telco's role from a pay-tv provider to a curator and enabler of rich, interactive digital entertainment, opening new avenues for premium services, partnerships with content creators, and enhanced customer loyalty.

Success hinges on maintaining customer trust through ethical data governance, transparency, and delivering clear value in exchange for data access.



# AI-driven B2B2X: Creating new value chains

The enterprise market offers a significant AI growth frontier, allowing telcos to evolve from connectivity providers to strategic partners delivering value-added solutions

## This evolution includes:

**AI-powered SMB solutions:**
CSPs are among the top three providers SMBs rely on to implement information and communications technology (ICT) solutions.[16] Servicing this 'long tail' of the economy has traditionally been challenging to do cost-effectively but in the age of AI, the ability to reach SMB buyers and service their needs with bespoke bundles of core and beyond core services has never been easier. We see leaders, such as Indosat, successfully attracting tens of thousands of MSME subscribers and enhancing existing or creating new B2B offerings, evolving vertical-specific offerings (e.g. 'smart cashier' for retail).

**Intelligent, AI-era networks:**
AI transforms networks into intelligent platforms. Telcos offering next-gen SDNs, such as BT's recent announcement with Google to bring to market CloudWAN,[17] provides enhanced flexibility, automation, optimization, and security to enterprises. AI enables advanced network slicing for demanding use cases (industrial robotics) and improves reliability through automation, fault prediction, and self-healing.

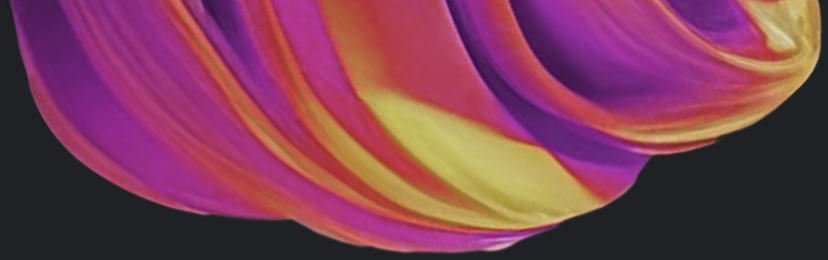
**AI-enhanced network security:**
As cyber threats continue to grow, telcos can become key security partners, offering AI-driven threat detection, automated response, vulnerability management, and fraud prevention, both in the IT estate and importantly networks. Bharti Airtel's AI anti-spam network is one example.[18] Omdia projects significant growth in telco-provided AI security services in the coming years, with enterprises citing 'better efficacy' as a major rationale for sourcing from their CSP.[19]

**Enabling the B2B2X model:**
The ultimate potential lies in B2B2X. By providing AI-powered platforms/ technologies to enterprise customers (B2B), telcos empower those businesses to offer innovative services to *their* end-customers, e.g. Indosat's Insights-as-a-Service offer is one such example, creating new value chains where telco is a critical enabler.

Capturing the B2B2X opportunity requires deeper vertical industry expertise and a shift towards consultative, outcome-based selling. AI-driven network intelligence (reliability, performance guarantees, security) becomes a key differentiator, allowing telcos to command premium value beyond commoditized connectivity.

**Table 1:**
Key AI/ML application areas for telecom growth

| Application area | Description | Key AI/ML enablers | Potential value/impact |
|---|---|---|---|
| **Sovereign AI and cloud** | Providing secure, compliant cloud infrastructure and AI platforms within national borders. | Cloud security, AI governance, compliance tech. | New revenue streams, national strategy alignment, enhanced trust, competitive differentiation in specific markets. |
| **B2C hyper-personalization** | Tailoring offers, content, pricing, and support to individual customer needs and context in real-time. | Predictive analytics, Gen AI, customer data platforms. | ARPU uplift, reduced churn, increased customer lifetime value, improved customer satisfaction. |
| **B2C home entertainment and new service verticals** | Launching AI-powered media services and accelerating adjacent markets like smart home energy, security, insurance etc. | Gen AI (prototyping), image and video creation, IoT analytics, edge AI. | Revenue diversification, increased customer stickiness, new market entry. |
| **B2B vertical solutions** | Offering industry-specific AI applications (e.g. retail analytics, smart factory) and GPUaaS/AI factories. | Vertical AI models, predictive analytics, cloud AI. | New high-margin revenue, deeper enterprise relationships, solution provider positioning. |
| **AI-driven security and networks** | Providing AI-powered networking, advanced threat detection, automated response, and fraud prevention services for enterprises. | Anomaly detection, behavioral analysis, security AI, CloudWAN, slicing. | New networking and security service revenue, enhanced network trust, differentiated capabilities, reduced risk for B2B customers. |



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# AI/ML partnerships reducing risk

Mastering the breadth of AI/ML independently is impractical for most telcos. A strategic embrace of partnerships and an ecosystem approach is essential for success. Relying solely on internal capabilities risks slow progress and missed market opportunities.

## Partnerships are crucial for:

**Reducing capital risk:** Sharing the substantial investment required for AI platforms, infrastructure (e.g. GPU clusters), or scaling new services through alliances or joint ventures de-risks ambitious projects. Infrastructure-sharing JVs offer a precedent.

**Accessing specialized skills:** Two thirds of organizations say they don't have the expertise they need to unlock AI's full potential[20], so gaining vital access to scarce AI talent (data scientists, ML engineers, MLOps specialists, AI ethicists, vertical experts) through partnerships with tech firms, startups, universities, or consultants.

**Accelerating time-to-market:** Collaborating with partners possessing proven AI technologies shortens development cycles and speeds market entry for new services.

**Expanding market reach and capabilities:** Unlocking access to new customers, markets, or complementary capabilities, especially in B2B2X where joint offerings can have broader appeal.

**Enhancing innovation:** Injecting fresh perspectives from external partners to foster a more dynamic innovation culture and overcome historical inertia.

Potential partners include AI vendors, hyperscalers, startups, vertical software providers, system integrators, and potentially other operators. The build/buy/partner decision requires careful strategic consideration. Effective partnership management, clear governance, aligned goals, and continuous market scanning for opportunities are critical to capitalize on what will likely be time sensitive opportunities.

The AI era necessitates evolving from traditional vendor relationships to collaborative, co-creative partnerships with a shared risk and reward model. Telcos must clarify their core competencies (e.g. network, trust) and strategic control points, deciding which AI capabilities are core differentiators versus those best sourced externally. This strategic self-awareness maximizes value from ecosystem collaborations.

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# Conclusion

The telecommunications industry stands at a strategic inflection point: continue down a path of diminishing returns or seize the unprecedented growth engine of AI/ML. The evidence is clear: AI/ML are not merely tools for incremental efficiency — they are fundamental catalysts for revenue generation, market differentiation, and a comprehensive reimagining of the telco business model. To not just navigate current headwinds but to emerge as leaders in the next digital epoch, operators must transition from discussing AI to decisively acting on its transformative potential.

## Therefore, we call upon the telecommunications industry to:

**Establish sovereign AI leadership:** Deploy secure, compliant sovereign AI and cloud platforms using national infrastructure and customer trust to support national strategies and data localization.

**Take full advantage of the step change in the economics of innovation and unlock AI-powered B2C innovation:** Launch hyper-personalized Generative AI services, enter adjacent markets (e.g. smart home), and ethically monetize customer data.

**Become B2B2X value orchestrators:** Evolve from connectivity provider to strategic enterprise partner by offering AI-enhanced infrastructure and a marketplace of diverse AI solutions, empowering B2B customers to create new value for their end-users.

## Achieving this AI-powered future requires immediate and decisive action from telecom leadership:

**Champion a growth-first AI mandate:** Executive leadership must publicly and internally champion AI as a primary driver of revenue growth, setting ambitious, measurable targets for AI-generated income.

**Use AI to radically transform experiences:** Reimagine both employee and customer journeys by meticulously assessing value streams and how services are imagined, designed, and delivered. Seek inspiration from successful cross-industry AI use cases and adopt ambitious, '10x thinking' to break free from incrementalism and drive substantial, transformative innovation.

**Strategically differentiate with AI layers:** Define a clear, multi-dimensional AI strategy that aligns with strategic business goals, identifying which technology layers — particularly robust platforms and unique AI applications — will yield the greatest ROI for both internal and external audiences. Invest decisively in AI assistance capabilities in core activities, coupled with precise metrics, to fundamentally elevate productivity and service quality.

**Prioritize AI skills, training, and expertise:** Actively cultivate AI fluency across the entire organization, ensuring foundational AI understanding at every level, while fostering deep expertise in advanced topics for specialized roles through continuous education. Double-down on strengthening core domain knowledge in data management, programming, cybersecurity, and operational excellence to build a workforce truly capable of leveraging AI for sustained competitive advantage.

The mandate is clear: shift the operational focus from cost optimization as an end-goal to fueling investment in revenue-generating AI initiatives. The journey to becoming an AI-powered, growth-oriented telecom operator is a profound transformation. The time for incrementalism is over; the time for bold, AI-driven action is now.

Google Cloud and TM Forum stand as committed partners in this transformative journey, providing the necessary cutting-edge technologies, industry-leading frameworks, and collaborative environment to guide telecom operators towards an AI-powered future.


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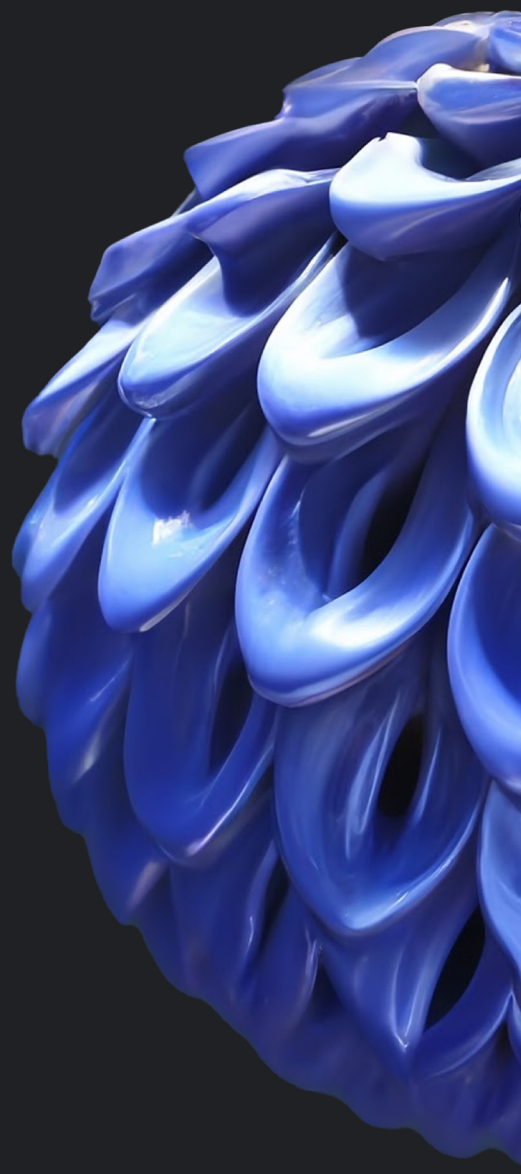

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