



SKOCH GROUP
GROWTH | LIVELIHOODS | EQUITY
www.skoch.in

JIO PLATFORMS LIMITED

JioBrain

Abstract

The scale and complexity within modern digital networks have reached a point where traditional operational models are no longer sufficient. Reliance Jio operates one of the world's largest digital ecosystems, serving more than 500 million active subscribers, processing over 18 exabytes of data traffic every month, connecting more than 22 million homes, managing radio sites, core servers, cloud-native pods and monitoring over 1.25 billion network parameters in real time. Managing such a vast infrastructure requires a shift from human-driven operations to intelligence-driven autonomous systems.

Jio Platforms developed JioBrain, India's first sovereign, agentic AI suite built entirely in-house. Designed as an industry-agnostic AI/ML-as-a-Service platform, JioBrain combines networked machine learning, multimodal AI, edge computing, LLM-as-a-Service, autonomous agents and real-time inferencing to transform network operations, customer experience, planning, fraud management, sustainability and enterprise intelligence. The platform powers a suite of 14 specialised AI products that collectively enable predictive operations, autonomous decision-making and intelligent service delivery at national scale.

Introduction The emergence of 5G, cloud-native networks, edge computing, IoT and Generative AI has fundamentally altered the operating environment for telecommunications providers. Traditional monitoring systems, manual network operations and fragmented AI deployments are unable to effectively manage billions of daily events, rapidly evolving customer expectations and increasingly complex digital frameworks.

Jio recognised that attaining genuine digital transformation required more than deploying isolated AI models. It required the creation of an integrated intelligence layer that unified network operations, customer engagement, planning, security, sustainability and enterprise applications within a single sovereign framework. Leveraging its unique

position as the owner of the entire technology stack, including the 5G core, OSS/BSS platforms, cloud infrastructure and network architecture, Jio developed JioBrain as a fully indigenous AI platform. Unlike global operators that rely on multiple vendors and fragmented architectures, Jio was able to create deep AI integration across every layer of its digital ecosystem.

The result is an intelligence platform that not only powers Jio's nationwide 5G operations but also provides a scalable AI foundation for sectors such as healthcare, education, agriculture, retail, financial services, logistics, media, manufacturing and smart cities.

The Problem Statement Telecommunications networks have evolved into highly distributed, data-intensive ecosystems generating enormous volumes of operational information. Jio's infrastructure processes more than 18 exabytes of monthly traffic, supports over 500 million subscribers, operates 340,000+ radio sites, manages 20,000+ production servers and continuously tracks more than 1.25 billion network parameters. Traditional approaches based on manual intervention and siloed operational tools were increasingly inadequate for managing such complexity.

A key challenge was the fragmentation of AI deployments across telecom functions. Separate machine learning models existed for network operations, customer analytics, fraud management, planning and business intelligence. That fragmentation limited scalability, reduced visibility and created operational defects. Jio required a unified intelligence layer capable of orchestrating AI across the entire telecom value chain.

The second challenge involved the reactive nature of network operations. Conventional systems recognised problems only after service deterioration or outages had occurred. Root cause analysis remained time-consuming, operational expenditure remained high and customer experience suffered because of delayed interventions. The increasing complexity of 5G networks demanded predictive intelligence capable of identifying issues before they affected service quality.

A third challenge concerned AI sovereignty and data security. As AI becomes central to critical infrastructure, reliance on external AI models elicits concerns about privacy, compliance, intellectual property ownership and national technological independence. Jio required a sovereign AI framework that retained complete ownership of data, models, infrastructure and operational intelligence.

Strategic Vision JioBrain was conceived as an intentional effort to transform telecommunications from a reactive operational model into a predictive, autonomous and intelligence-driven ecosystem. The vision reached beyond network automation to the creation of a sovereign AI platform that could serve as the foundation for India's digital economy.

The initiative sought to establish a unified AI framework that could integrate network intelligence, customer intelligence, operational automation, planning systems, sustainability management and enterprise applications within a single architecture. By owning the entire technology stack from cloud infrastructure and connectivity

networks to AI platforms and applications, Jio aimed to achieve a level of integration that traditional telecom operators struggle to match.

At a wider level, the vision was to democratise AI capabilities through an industry-agnostic platform. JioBrain was designed not simply as a telecom solution but as a networked machine learning platform capable of institutionalising AI across multiple sectors. The long-term objective is to enable autonomous networks, multimodal digital twins, federated learning, AI marketplaces and hyper-personalised digital ecosystems that can support both public and private-sector transformation.

Solutions Stack

JioBrain’s architecture combines infrastructure, data, machine learning and application layers into a comprehensive AI ecosystem.

At the infrastructure layer, the platform operates across centralised AI data centers, edge computing environments, cloud-native platforms and Jio’s nationwide 5G transport network. GPU-based servers have been deployed both centrally and at edge locations to support distributed training and inference. This architecture supports AI processing close to data sources while maintaining centralised orchestration and governance.

The platform integrates real-time data pipelines spanning RAN, Core, IMS, IPM, NMS, probes, OSS and BSS systems. These pipelines ingest and process more than 350 billion telemetry signals every day, creating a unified data foundation for predictive intelligence and autonomous operations.

JioBrain provides a comprehensive AI/ML-as-a-Service environment that includes distributed machine learning, LLM-as-a-Service, AI on the edge, data federation at scale, automated model deployment, hyperparameter tuning, model retraining, streaming data support and support for more than 100 machine learning algorithms. The platform allows organisations to bring their own models and provides a broad library of ready-to-deploy algorithms covering forecasting, anomaly detection, clustering, classification, deep learning, NLP and generative AI.

The operational intelligence layer comprises fourteen specialised AI products.

For network operations, solutions such as 5G Network Pulse AI, 5G NeuralOps, Jio FluxOps, Network Sage AI, FortifiX AI, Jio Insights AI and Jio DBIQ provide predictive fault detection, automated root cause analysis, conversational network management, voice-enabled operations, cloud-native risk detection, enterprise

intelligence and integrated data visibility.

Customer experience is enhanced through RetainIQ, which predicts churn and improves customer retention and Network Guardian, which proactively detects spam, fraud and malicious activity across voice and messaging channels.

Network planning and engineering functions are supported through 5G Performance Horizon and Jio Spectrum IQ, which leverage predictive analytics and real-time intelligence to optimise network design, capacity planning and spectrum utilisation.

Generative AI capabilities are delivered through Jio Beacon, an autonomous learning agent and JioDiscover, India’s first multimodal enterprise GenAI assistant for network and business users. These solutions extend AI from analytics and automation into reasoning, discovery and conversational intelligence.

The platform also incorporates sustainability intelligence by providing 100 percent visibility into energy consumption, power reconciliation, diesel utilisation and infrastructure efficiency, enabling significant reductions in operational expenditure while supporting environmental objectives.

Outcomes

JioBrain has delivered measurable transformation across operational, financial, customer and strategic dimensions.

The platform has enabled a 40 percent reduction in network outages through predictive fault detection, automated root cause analysis and proactive network healing capabilities. By shifting from reactive incident management to predictive operations, Jio has greatly improved service dependability across its 5G Standalone network footprint in India.

Operational efficiency has improved substantially, resulting in 30 percent decrease in operational expenditure through autonomous operations, zero-touch workflows, intelligent automation and AI-powered optimisation throughout network operations centres, radio access networks, core networks and planning functions.

Customer experience initiatives powered by JioBrain have generated more than 20 percent uplift in ARPU through advanced retention models, personalised engagement

strategies, behavioural analytics and proactive service interventions.

At the operational level, the platform analyses 350 billion-plus daily signals in real time, enabling forecasting, anomaly detection, automated decision-making and rapid response across all network domains. This scale of intelligence represents one of the largest AI-driven operational deployments globally.

The platform currently supports approximately 5,000 internal beneficiaries and influences outcomes for 50 million external beneficiaries, while also serving as a springboard for future AI-enabled services across multiple industries.

Beyond business outcomes, JioBrain has strengthened Jio's technology leadership. The organisation has built an intellectual property portfolio of 4,067 patents, including 570 patents related to JioBrain AI/ML.

Highlights

- It supports 500+ million subscribers, processes 18+ exabytes of monthly traffic, monitors 1.25 billion network parameters and analyses 350+ billion telemetry signals daily.
- It integrates distributed machine learning, multimodal AI, LLM-as-a-Service, edge AI, autonomous agents and real-time intelligence into a unified AI ecosystem.
- JioBrain powers 14 specialised AI products for network operations, customer experience, fraud prevention, planning, sustainability and enterprise intelligence.
- Key solutions include predictive fault detection, automated root-cause analysis, churn prediction, spam and fraud detection, network optimisation and generative AI assistants.
- The platform has delivered a 40 percent reduction in network outages, a 30 percent reduction in operational expenditure and a 20 percent+ improvement in ARPU through AI-driven automation and predictive operations.
- With 4,067 patents, including 570 AI-related patents, JioBrain establishes a blueprint for sovereign AI, digital transformation and intelligent infrastructure at the national scale.

Conclusion JioBrain represents a significant evolution in how telecommunications and digital ecosystems are managed in the age of AI. By combining sovereign AI capabilities, distributed system learning, autonomous agents, multimodal intelligence and deep integration across infrastructure layers, Jio has created a platform that moves beyond automation toward intelligent autonomy.

What distinguishes JioBrain is not simply its technological sophistication but its capacity to operate at national scale. Supporting more than 500 million subscribers, processing over 18 exabytes of monthly traffic, monitoring 1.25 billion network parameters and analysing 350 billion daily signals, the platform demonstrates how AI can become the operational backbone of large-scale digital ecosystems.

By delivering a 40 percent reduction in outages, 30 percent in operational savings and over 20 percent improvement in customer value, while establishing a sovereign AI framework that can be replicated across sectors, JioBrain offers a compelling model for the future of cognitive infrastructure. It illustrates how indigenous innovation, AI sovereignty and large-scale digital transformation can merge to create sustainable competitive advantage and national technological capability.



SKOCH GROUP
GROWTH | LIVELIHOODS | EQUITY
www.skoch.in

SKOCH

ECO-SYSTEM FOR GROWTH

e-Mail: info@skoch.in
www.skoch.in

Disclaimer:

- This case study is based on the information/content provided by the organisation.
- Information published in the case study is as of November 2025.
- All company names, app titles and trademarks mentioned are the properties of their respective owners and are used solely for illustrative and reporting purposes.