

AI-ML Smart Network CapEx - Phase II

Smart CapEx, using AI/ML to automate and optimize Access, Transport and Core rollouts unlocking 15-25% CapEx efficiencies while maintaining CX



The solution:

CSPs need smarter ways to forecast traffic and plan infrastructure as networks scale. This Catalyst applies AI and big data to expand smart capex planning from radio to transport and core—resulting in sharper forecasts, faster rollouts, and more efficient investments.



Addressing the challenge:

This Catalyst proposes to solve the CapEx allocation challenge through an AI/ML-driven, cloud-native Smart CapEx platform that integrates commercial forecasts, network KPIs, and external data into a unified planning model. The solution approach includes:

- **AI-powered Demand Forecasting:** Translating Marketing's commercial projections into street-level traffic forecasts using machine learning models enriched with external datasets (mobility, demographics, 3D urban models).
- **Optimization Algorithms:** Utilizing advanced mathematical optimization techniques to design Transport and Core rollout plans that minimize total cost of ownership (TCO) while maintaining or improving CX.
- **Intent-Driven Orchestration:** Implementing TM Forum's TMF921 Intent Management API to automate integration between planning tools, legacy OSS/BSS systems, and operational platforms, accelerating automation adoption.
- **Cloud Big Data Environment:** Deploying the solution on scalable cloud infrastructure (e.g., AWS, Snowflake) to handle large volumes of multi-source data and intensive computations efficiently.
- **Continuous Improvement:** Creating a closed-loop system where operational feedback continuously refines forecasts, rollout decisions, and commercial assumptions.



Participating in the Smart CapEx Catalyst allows Telefónica to directly benefit from more accurate traffic forecasting and AI-driven network rollout optimization. These innovations can help us achieve up to 20% savings in Transport and Core CapEx, while enhancing customer experience and accelerating our transition towards more efficient and autonomous networks.

At an industry level, Smart CapEx showcases how open standards like TM Forum's ODA and Intent APIs can unlock faster automation and broader interoperability, reducing integration costs and future-proofing operations. For society, smarter investments mean higher digital access, lower carbon emissions, and a more sustainable digital future, fully aligned with Telefónica's ESG commitments.

Flavio Magalhães

Senior Manager - Digital Transformation



Business impact:

AI-driven Smart CapEx cuts network costs by **15-20%**, boosts CX, drives greener growth, and speeds automation via TMF standards

