Escaping the Commodity Trap: Telkom's Wholesale NaaP Strategy for Autonomous Network Transformation and High-Margin API Monetisation

Ryan Achmad Arianto Ekasaputra, Telkom Indonesia

This applied case study poster demonstrates how Telkom Indonesia transforms its fragmented legacy infrastructure into a programmable, autonomous platform, achieving Zero-Touch Provisioning (ZTP) and enabling participation in the global API economy.

BACKGROUND - The Commodity Trap & Structural Crisis

Commodity Trap
Competition driven by price per byte and global pressure treats the network as an 'empty pipe', severely devaluing infrastructure assets.

Revenue Crisis
Analysis shows that revenue per unit of bandwidth declined despite significant increases in network traffic and capacity, indicating significant financial pressure.

Operational Friction
Fragmented legacy infrastructure and manual Order-to-Cash (O2C) processes lead to unpredictable TTD (Time-to-Delivery) and high OPEX.

OPPORTUNITY - Programmable Capabilities

Strategic Pivot
The opportunity lies in transforming network assets into Programmable Capabilities to introduce high-margin, value-based services that competitors cannot easily replicate.
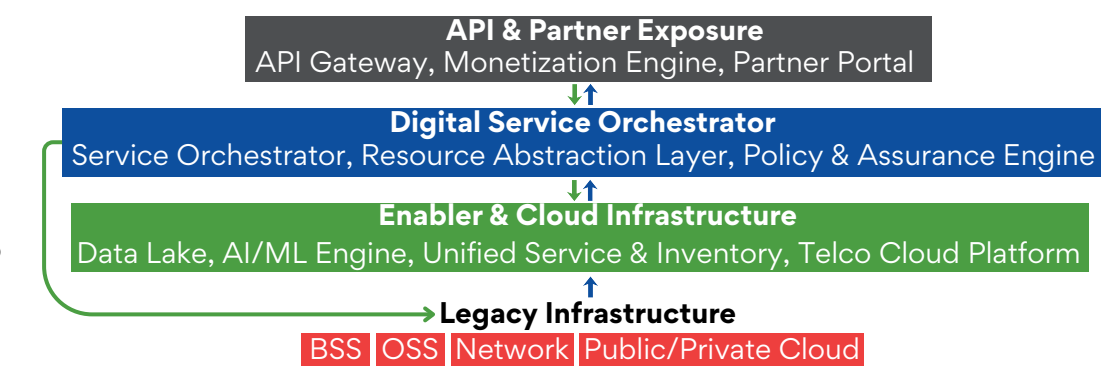
API Monetisation
By exposing Tier 1 APIs aligned with global standards, Telkom can generate new, high-margin revenue streams from the global API economy.
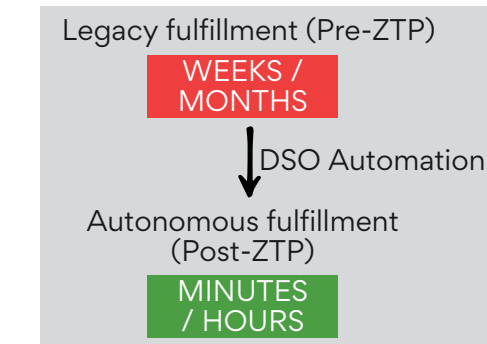
Operational Autonomy
Implementing a unified orchestration layer enables automated service provisioning, resulting in a significant reduction in TTD and OPEX.

PROPOSED SOLUTION - WNaaP Architecture for Autonomy

The Wholesale Network-as-a-Platform (W-NaaP) strategy structurally solves fragmentation by introducing a centralised, two-layered orchestration architecture. This architectural design modelling provides a system blueprint for autonomy.

Digital Service Orchestrator (DSO)
The platform's 'brain' that processes service orders and translates them into resource commands, enabling ZTP to eliminate manual O2C friction.

Resource Abstraction Layer (RAL)
The critical 'translator' that harmonises diverse, proprietary legacy interfaces by exposing network resources through a single, unified set of APIs (Quality on Demand API, Location API, Service Quality Indicator API).

WNaaP Architecture

API & Partner Exposure
API Gateway, Monetization Engine, Partner Portal

Digital Service Orchestrator
Service Orchestrator, Resource Abstraction Layer, Policy & Assurance Engine

Enabler & Cloud Infrastructure
Data Lake, AI/ML Engine, Unified Service & Inventory, Telco Cloud Platform

Legacy Infrastructure
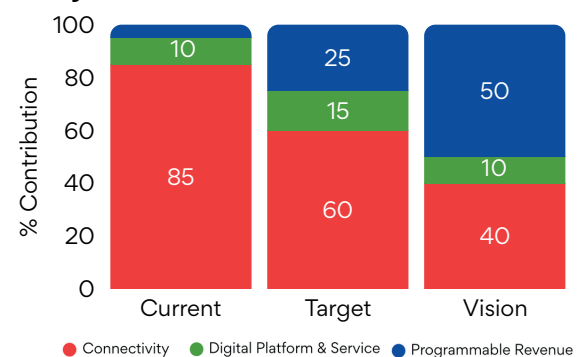BSS | OSS | Network | Public/Private Cloud

This architecture shifts the focus from managing individual network elements to managing standardised service performance, enabling true end-to-end automation and high-margin monetisation.

EXPECTED IMPACT - Quantifiable Results

Financial Growth & Strategic Value
- **High-Margin Revenue**: Achieve 5-10% premium margin uplift by monetising network performance through Tier 1 APIs.
- **Churn Mitigation**: Reduce toxic churn by up to 15% via proactive network assurance (SQI API), shifting the strategy from costly Reactive Retention to Proactive Retention. This aligns Telkom with global open standards and the API economy.

Operational Efficiency
- **Massive OPEX Reduction**: Implement ZTP across high-capacity services to deliver a projected 15-20% OPEX reduction.
- **TTD Agility**: Transform TTD from weeks (unpredictable) to minutes (predictable), meeting critical market demands for agility.

All quantitative results (OPEX, TTD, Churn) are based on performance evaluation data from the initial ZTP pilot.

Service Fulfillment Efficiency

Legacy fulfillment (Pre-ZTP)
WEEKS / MONTHS
↓ DSO Automation
Autonomous fulfillment (Post-ZTP)
MINUTES / HOURS

Projected Wholesale Revenue Mix Shift

% Contribution	Current	Target	Vision
Programmable Revenue	10	25	50
Digital Platform & Service		15	10
Connectivity	85	60	40

● Connectivity   ● Digital Platform & Service   ● Programmable Revenue

These two figures illustrate the core thesis: W-NaaP transforms manual friction into automation, resulting in significant OPEX reduction while enabling high-margin revenue streams.

LIMITATION - Scope, Data, & Operational Dependencies

Scope & Scaling
The proposed solution assumes full ZTP adoption maturity across the Wholesale segment. Further scaling to the Enterprise and Retail segments is an assumption that requires dedicated validation post-pilot.

Financial Reliability
Projected OPEX (15-20%) and Margin Uplift (5-10%) are based on pilot models and simulation data. Sustained cost savings require consistent data quality from OSS/BSS and a minimum 18-month post-rollout data window for confirmation.

Operational Dependency
Full ZTP adoption requires the mandatory elimination of all manual intervention and overcoming organisational silos. Success depends on the Top Management Steering Committee mandate and achieving ZTP adoption rates >80%.

ORIGINALITY - Unique Contribution to Global NaaP Practice

RAL as the Unifying Engine
Telkom's originality lies in making the RAL the primary engine for legacy harmonisation, unifying diverse vendor-specific systems into a single, standardised interface.

Triple Global Standard Integration
This is the first regional case study to comprehensively integrate the three primary global standards—TM Forum, MEF, and CAMARA/Open Gateway—to drive wholesale value.

Targeted ZTP & Partner Ecosystem (Developer-as-a-Partner/DaaP)
The strategic decision to focus ZTP exclusively on high-capacity wholesale services initially ensures maximum ROI and operational efficiency, while integrating the DaaP model to actively build the external ecosystem and unlock high-margin APIs for multi-asset monetisation.

CONCLUSION - The Platform for Future Competitiveness

This case study validates the W-NaaP strategy as a blueprint for legacy telcos seeking to thrive in the Digital Economy. By implementing a two-layered orchestration architecture, Telkom is transforming from a passive infrastructure provider into a Strategic Platform Enabler, primarily driven by the DaaP model and API monetisation. This fundamental shift successfully Escaping the Commodity Trap by realising critical operational efficiencies via ZTP while fundamentally shifting its revenue mix toward high-margin, programmable API capabilities. The architecture is positioned for advanced automation, with a clear roadmap toward Predictive Intelligence (PI) and 5G Network Slicing, ensuring long-term survival and sustainable growth.

REFERENCES

1. Mohapatra (2024). Autonomous Networks. TM Forum.
2. Martinez (2025). Open Gateway: Monetization. NTT DATA.
3. Dyke et al. (2025). 2025 Telco Industry Outlook. Deloitte.
4. Hatt et al. (2024). GSMA Open Gateway: State of the Market. GSMA Intelligence.
5. Pell et al. (2024). Seizing Core Connectivity Opp. McKinsey & Co.

Ryan Achmad
ryan.ekasaputra@telkom.co.id