MOBILE NETWORK ENABLEMENT

TATA COMMUNICATIONS MOVE™ - MVNE SERVICES
The MVNO model is evolving
Is your business keeping up?

No matter if you are launching a sub-segments that includes a brand extension, IoT, roaming, or a B2B2C model, your MVNO is only as successful as your marketing strategy. Hence, everything that comes with launching a MVNO can keep you from your core business and focusing on executing a marketing strategy to successfully break into new markets...

<table>
<thead>
<tr>
<th>High upfront investment</th>
<th>High risks and time-to-market</th>
<th>The need for flexibility and simplicity</th>
<th>Complex systems</th>
<th>The demand for innovative value-add services</th>
</tr>
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<tbody>
<tr>
<td>In mobile infrastructure, network service management or go-to-market operations</td>
<td>In a highly competitive market where timing is essential</td>
<td>To quickly adjust your strategy or adapt to market changes right away</td>
<td>To manage and to keep separate from your core business</td>
<td>To create a seamless user experience, requiring simple set-up and customer interaction processes</td>
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# MVNO Business Model Evolution

## Traditional MVNO
- Phone, network and customer service (traditional model)
- Traditional mobile communications based services
- Outsourced IT platform
- Relatively less effective customer experience
- Primarily discount focused pricing Model
- B2C & Retail Offerings

## Digital MVNO
- Data-centric business model: Apart from the traditional services, the new model refers to moving data & content in a way that delivers value-based proposition for digital savvy customers
- Digital transformation services for enterprises (IoT/M2M): IoT/M2M is a new revenue stream with significant potential for MVNOs; IoT MVNO model would give chance to anyone — from start-ups to IT hardware makers — to deliver IoT services
- Owned IT Platform: Own IT platform not only enables it to be independent from the host’s IT platform, but assists in driving innovation, automation and personalisation of services & customer experience
- Real-time Customer Analytics: Gains a holistic know-how of customers and their behaviour in real-time to offer personalised services and experience
- Value-focused pricing model: As consumer are willing to pay more for innovative and superior services, MVNOs focus on differentiating through service innovation
- B2B & B2C Offerings: Enterprises continue to seek new sources of value as consumers expect customized and seamless connectivity via a variety of devices, which is giving rise to innovative MVNO opportunities in B2B segment

Source: Global Market Insights, Delta Partners, GSMA, Deloitte, other blogs and articles
Tata Communications MOVE™ - MVNE services offers the best of both worlds: the traditional mobile network operator characteristics of quality, reliability and scalability; combined with faster time-to-market, lower CAPEX, and a range of value-add services to create a seamless user experience.
TATA COMMUNICATIONS MOVE™
FIRST TRULY GLOBAL PROGRAMMATIC MOBILE SERVICES FOR ENTERPRISE MVNO & M2M MVNO
TATA COMMUNICATIONS MOVE™
MOBILE NETWORK ENABLEMENT

TRUSTED, NEUTRAL, GLOBAL MOBILITY ECOSYSTEM ENabler

MVNE for MVNO
MVNE for MNO
MVNE for IOT
IOT / M2M GLOBAL IOT CONNECTIVITY AND VAS

MVNO FOR BRANDS & SEGMENTS
MNO LAUNCH SUB-BRANDS & AFFILIATES

900 MNO RELATIONSHIPS
CONNECTIVITY MODELS
MVNE FOR MNO, MVNE FOR MVNO, MVNA

MVNE for MVNO
- Connectivity to host MNO
- Modular approach - MVNO may have own infrastructure

MVNE for MNO
- For MNO to host MVNOs on its network
- MNO can choose to use their own HLR, billing, etc.

MVNA Aggregator

MVNE MVNE FOR MVNO

MVNE MVNE FOR MNO

MVNO MVNO

Air-Time & VAS
# Key Elements

<table>
<thead>
<tr>
<th>Minimal up-front investment</th>
<th>Diverse commercial models</th>
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<tbody>
<tr>
<td>our OPEX-gearied model enables you to deliver MVNO services built and hosted on our network-independent MVNE platform</td>
<td>from a brand extension, mobile loyalty and second brands to corporate propositions for employees</td>
</tr>
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<thead>
<tr>
<th>Best in-class technology</th>
<th>Global reach and dependability</th>
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<tbody>
<tr>
<td>includes SCP, GGSN/PCRF, HLR/HSS, IN/OCS, VAS, SIM management, and OSS/BSS</td>
<td>leverage Tata Communications’ global mobile data and voice network with regional PoPs on five continents</td>
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<tr>
<th>Flexible operational management</th>
<th>Technology agnostic connectivity</th>
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<td>for billing, business workflow, product set-up, service delivery, customer care, web service integration, and reporting</td>
<td>supports service deployment across WiFi, 2G, 3G or 4G</td>
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<th>Easy integration</th>
<th>Multiple service options</th>
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<tbody>
<tr>
<td>covers all systems and infrastructure including connections to 3rd party systems via open APIs</td>
<td>supports pre-pay, post-pay and hybrid subscriptions, as well as multi-IMSI and M2M/IoT connectivity, plus multi-MSISDN and global WiFi roaming services</td>
</tr>
</tbody>
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<th>Robust Operations and Business Support Systems</th>
<th>Launch on time and budget</th>
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<td>complete control of your business and information on customer status via a secure, easy-to-use portal</td>
<td>launch mobile services in weeks instead of months. Benefit from our world-class, end-to-end, self-managed services to suit your budget</td>
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<th>Multi-tenant architecture</th>
<th>24/7 Support</th>
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<td>plus secure, carrier-grade redundant infrastructure</td>
<td>MVNO-managed help desk for first line CRM support - with 2nd and 3rd line support through a trouble ticketing module</td>
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ARCHITECTURE - ‘MIX & MATCH’
TATA COMMUNICATIONS MOVE™ - MVNE SERVICES

Individual “As a Service” Offerings

Access Exchange Services

Value Added Services - Steering, Roampulse, VM

OSS/BSS - OCS, PCRF, OFCS, Billing, etc.

Data Transport

Voice

Messaging

SBC

SMSC

HLR/HSS

IN

PCEF

PGW

STP/DRA

VoLTE

SIM Technology - Physical, eSIM, multi-IMSI, etc.

Access - Mobile, WiFi, LoRa, NB-IoT, etc.

Transport - Signalling, GRX/IPX, MPLS
FEATURES AND OPTIONS
TATA COMMUNICATIONS MOVE™ - MVNE SERVICES

Access:
- Different service levels
- Customizable profiles
- Network expansion
- Limitations with permanent roaming
- 2G/3G and LTE

SIMs:
- Branded SIMs available
- Multiple form factors
- eSIM ready
- Customized Profiles
- Personalised SPN
- Over-The-Air Update (OTA)

600+ NETWORKS

OSS/BSS:
- Flexible Billing such as:
  - Shared Balance
  - End User Subscription
  - Pay per Use
  - Application based
- Flexible hierarchies
- Reseller ready
- Customizable rate plans

Cloud based subscriber/device management and OSS/BSS platform

Transport and Policy:
- Regional break-out
- Private APN available
- Customizable policies
- Flexible transport types

Public / private cloud applications

Customer’s portal

Portals & APIs:
- Full programmable
- White label portals available
DISTRIBUTED NETWORK - VIRTUALIZED INSTANCES ON DEMAND

GLOBAL SCALE AND REACH FOR BETTER QUALITY OF SERVICE

- Data routed to nearest POP for highest quality of service
- World class network already interconnected with most mobile operators for faster time to market and quality of experience
- Technical Support Centre 24/7 customer support
- Distributed network assets for efficient delivery data and network independence
- Cloud based subscriber/device management and OSS/BSS platform
- Ongoing expansion of POP sites
- Live POPs
- Expansion
SELF SERVICE WITH APIs AND MANAGEMENT PORTALS

TATA COMMUNICATIONS MOVE™ - MVNE SERVICES

- 150+ programmable APIs
- Modular approach for easier programming
- Ongoing expansion of APIs into IoT, VPN, etc.

- Customers can manage customers
- Create new propositions
- Full SIM management
KEY BENEFITS
TATA COMMUNICATIONS MOVE™ - MVNE SERVICES

GROW YOUR BUSINESS INTERNATIONALLY
leverage Tata Communications’ global mobile data and voice network with regional PoPs on five continents

MINIMUM UP-FRONT INVESTMENT
Enabling to deliver services built and hosted on our network-independent MVNE platform

FULL CONTROL FOR MANAGEMENT AND CUSTOMERS
our management portal supports multiple functions and cases without the need for additional systems integration

CONVENIENT, END-TO-END SERVICES
our platform’s service provides all core processes in real-time, including service control, charging and reporting

RESPONSIVE, AGILE, SCALABLE
access valuable new revenue streams by quickly launching differentiated mobile service propositions
MyRepublic, a Singaporean TelcoTech platform company, looked to expand its offering from home broadband to mobile services in Singapore, with plans to launch in Australia, New Zealand, Indonesia and other countries in the future. Tata Communications was asked for a future-proof and quick scalable solution.

“We have always envisioned bringing our brand of digital-first, worry-free mobile services to the market. As a platform company ourselves, the software-defined capabilities of Tata Communications MOVE™ was not just aligned with our operational philosophy, but also enabled us to introduce our mobile services in an agile, cost-effective, and scalable manner.”

Malcolm Rodrigues
Chief Executive Officer
MyRepublic

Tata Communications MOVE™ platform is integrated with MyRepublic’s business processes, simplifying and accelerating the management of operations such as service activation, launching of new innovative services, new billing plans, special promotions and value-added services. Instead of making costly capital intensive investments in its own mobile network infrastructure, MyRepublic obtains this through Tata Communications MOVE™ platform.

Tata Communications MOVE™ helps MyRepublic to become an MVNO without having to make any capital investments in its own mobile network infrastructure or service management. MyRepublic can also expand to new geographies easily and rapidly with Tata Communications MOVE™ ecosystem of mobile network PoPs in Asia and globally.

BUSINESS CHALLENGE

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THE SOLUTION

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BUSINESS IMPACT

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BUSINESS CHALLENGE

Antel, a state-owned company and telecommunications market leader in Uruguay, looked for a new model to unlock mobility and IoT innovation in South America, Central America and the Caribbean and enabling the region’s businesses to open new revenue streams as MVNOs.

THE SOLUTION

Antel and Tata Communications deliver cloud-based mobile and IoT services using a business model that minimizes risk and lowers total cost of ownership, while accelerating time-to-market. This is made possible through a unique commercial risk sharing approach. The partnership combines Antel’s world-class data center and Latin American market knowledge with the Tata Communications MOVE™ platform global network reach.

“Through the use of the Tata Communications MOVE™ platform, Antel’s MVNO partners of all sizes and market segmentations are able to launch new mobile and IoT services without making large up-front investments in their own mobile infrastructure, network service management or go-to-market operations.”

Eng. Jorge Suarez
Deputy CEO, Antel

BUSINESS IMPACT

Using Tata Communications MOVE™ platform, Antel’s MVNO partners can bring their own mobile network access agreements across the region, or work with Antel as the enabler for mobile wholesale access.

As a result, MVNOs of all sizes and market segmentations are able to launch new mobile and IoT services without making large up-front investments in their own mobile infrastructure, network service management or go-to-market operations.
BUSINESS CHALLENGE

Leading airlines operating in the Mid-East and Europe wished to improve the efficiency of their pilots and cabin crew by, for example, reducing the use of paper to administer flight schedules and passenger lists. Tata Communications was asked to build a safe and reliable solution.

THE SOLUTION

All crew members use tablets with ultra-secured and global roaming connectivity via Tata Communications MOVE™.

We provide: a branded self-service portal, secure access to their corporate environment (via a private APN), cost-effective smart roaming options (e.g., least-cost routing of traffic), airline grade data policy and enforcement capabilities.

CUSTOMER REFERENCE CASE

AIRLINE - ENTERPRISE MVNO

CONNECTED CABIN CREW

Enabling better in-flight and operations planning
Electronic passenger manifest and seating plans to reduce boarding time
Tablet-based communications simplifying paperwork and increasing productivity
Unlimited usage of corporate apps on company devices
Controlled, policy-based access to other content
SIMS supporting up to 5 local numbers from countries of choice

ELECTRONIC FLIGHT BAG

Enabling better flight efficiency and planning
No more paper or cockpit clutter, with digital charts held on a tablet
Automated calculations for take-off and landing
BUSINESS CHALLENGE
An European multinational automotive company likes to connect their upcoming new car, its systems and its passengers to digital services, among which SOTA (Software-over-the-air), navigation, eCall, telematics, In-car Wi-Fi and connected services. Tata Communications was asked to build a safe and reliable solution.

THE SOLUTION
Tata Communications enables this automotive company to become an IoT MVNO.

We provide: Tata Communications MOVE™ - MNVO, including eSIM profiles and Mobile Operator eSIM Profiles, OSS & BSS, as well as eSIM Subscription Manager, Mobility Connectivity (B2B/B2C/Bootstrap), eSIM lifecycle Management, IT Integrations, MPLS VPN, Subscription Management Portal, Reporting, etc.

eSIM
eSIM is a significant development for the automotive industry, to deliver the independence from the mobile network operator required over a vehicles’ long lifespan. eSIM and Remote SIM provisioning gives an automotive manufacturer the ability to change to a different mobile access supplier and thus address the problem of potential network lock-in. This ability to change a SIM profile over the air and to remotely configure the connectivity, depending on where the device is eventually, sold provides additional flexibility to the manufacturer.

eSIM Hub
Tata Communications MOVE™ eSIM Hub ensures seamless operation, across different mobile networks and between different SIM vendors. This reduces operational complexity and cost. Working with the major SIM providers, our vendor agnostic eSIM Hub enables devices to be born connected and stay connected, wherever they are, whatever network they are connected to, and whichever SIM provider they are using.

CUSTOMER REFERENCE CASE
AUTOMOTIVE - IoT MVNO
WHY TATA COMMUNICATIONS

1 in 6 MNOs connected with VPN services

1 in 3 MNOs with signage

900 MNO relationships

We connect 4 out of 5 global mobile subscribers

50%+ MNOs connected by one or more IP services and/or TDM-based services

we offer connectivity to 200+ countries and territories across 400 PoPs worldwide

1 in 3 MNOs in voice

Serving 50% of global roaming traffic

Over 30% of the world’s internet routes use our network
THANK YOU

tatacommunications.com