L.E.A.D.E.R

eSIM Adoption Opportunities & Benchmarking

eSIM–capable device shipments, consisting of consumer devices like smartphones, laptops, tablets and IoT devices, are expected to reach more than 4.3 billion by 2025. Therefore, it is imperative for mobile network operators (MNOs) to prepare themselves for the future of SIM cards.

In this white paper, we unveil a new exciting "L.E.A.D.E.R" framework which assesses various MNOs on their ability to adopt, implement and monetize eSIM.

The goal of this unique proprietary framework is to highlight key eSIM–related KPIs and identify "leaders", best eSIM implementation practices, and monetization opportunities for the wider audience.

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Executive Summary

The adoption of eSIM is near an inflection point. We are getting close to an equilibrium between the demand-side pull and supply-side push. More and more eSIM-capable devices are hitting the market every quarter across the consumer, IoT and mobility space.

The need for a robust, scalable eSIM device enablement and management platform is higher than ever with an end-to-end digital onboarding journey, and across a variety of device types including smartphones, wearables, routers, vehicles and more. The growing eSIM platform capabilities, such as device entitlements, digital identity and discovery services, are becoming important to maximize eSIM benefits.

Mobile operators across the world are gearing-up to add these capabilities and offer a seamless, digital eSIM provisioning experience. However, there are still hundreds of mobile operators which are unsure about what route to take in this eSIM transformation journey.

Therefore, we have developed a unique, proprietary framework called L.E.A.D.E.R to set benchmarks from different operators across the world on their eSIM capabilities, like scaling the technology across several lines of businesses, seamless enablement and management, driving rapid friction-free adoption, support for multiple devices across categories, and efforts in expanding or leveraging their reach across channels and borders.

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Rise of eSIM

Need for eSIM

The need for eSIM arises from growing data connectivity, requirement for simple and seamless remote SIM provisioning, and smarter connectivity management. Therefore, the SIM card has evolved into a more secure, embedded chipset form-factor called eSIM or embedded SIM. The use of eSIM further facilitates slimmer device designs, more board space saving, bigger batteries, greater user flexibility and newer revenue opportunities.

The eSIM excels across multiple attributes compared to a traditional SIM card, including provisioning, size, flexibility, security, customer experience and, above all, cost.

Self-provisioning is the biggest advantage for service providers, which drives a superior and stickier customer experience. The eSIM re-programmability extends the SIM lifecycle, bringing durability and convenience for customers.

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These factors have already driven substantial adoption of the eSIM in the mobility and IoT segment. Close to half a billion consumer devices, including smartphones, smartwatches and other devices, will be shipped this year. The convenience of remote activation has solved one of the key pain points for users, especially in situations such as COVID-19.
As eSIM features secure chip-to-cloud connectivity with all active profiles being managed and provisioned in the cloud, it brings greater scalability across devices. eSIM management and support become more important as newer generation cellular-connected devices, like smartwatches, AR/VR headsets, hotspots, and pets' or kids' trackers, proliferate. Given that the eSIM is restricted to higher-end devices for now, offering eSIM services now can help to secure higher ARPU customers for the long term.

In addition to this, eSIM helps MNOs in driving down their business costs as they can onboard customers digitally without needing to spend on things like offline activation, packaging and shipping.

	Traditional SIM	eSIM
Remote Provisioning & Cost Savings	Low	High
Customer Satisfaction	Low	High
New Opprotunities	Low	High
End-to-End Security	Low	High
Scalability	Low	High

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eSIM Adoption and Opportunities

47%

99%

73%

Forecast eSIM Penetration (%) of Annual Shipments of Cellular Devices by 2025

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eSIM Smartphones Going Mainstream

Google Pixel started the integration of eSIM with Project Fi. Apple made eSIM mainstream with the introduction of the iPhone XR, 11 series and 12 series and now with iPhone 13 series, Apple has launched the world's first smartphone with dual eSIM indicating an "eSIM only smartphone" is in the works. Apple has the largest installed base of eSIM users in the world. Samsung is also increasing the percentage of eSIM supported devices with launches beyond the flagship Note, S and Fold series to the affordable A series.

More than 15% of smartphones sold since 2020 support eSIM. We are also seeing operators launching eSIM supported devices in partnership with OEMs. One of the biggest success stories for eSIM is the adoption of sub-$200 smartphones by MNOs in Japan. Devices such as the Sharp Aquos Sense 4, OPPO A73 and Rakuten Hand have brought the prices of eSIM supported devices below $200. This eSIM device ecosystem will be emulated across the world as we see more launches in affordable price categories. We might also see an iSIM enabled smartphone by the end of 2022 or beginning of 2023, recently Thales, Vodafone and Qualcomm demonstrated an iSIM working model on Samsung's Galaxy Z Flip 3.

We expect more than 3 billion eSIM supported devices to be shipped by 2025. Smartphones will hold the majority share in the next five years, which is why the democratization of eSIM supported smartphones holds the key in increasing the number of eSIM devices.

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eSIM Smartwatches Going Mass Market
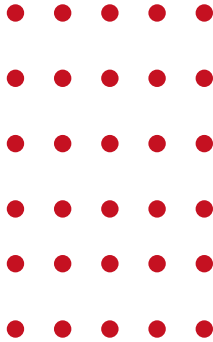
Smartwatch is another segment where eSIM adoption is being driven by a growing attach rate for cellular-based smartwatches. eSIM facilitates a small PCB footprint, activation flexibility and greater security in smartwatches.

The share of cellular-connected smartwatches went above 30% in 2020. Almost 75% of these were connected by eSIM. As is the case with smartphones, Apple leads the adoption of eSIM in smartwatches as well.

Roaming – Tourists and Travelers

Countries worldwide collectively see tens of millions of incoming travelers every year. Most of these users either roam using their relatively expensive data plans or go through the inconvenience of buying a local SIM and following an in-store activation process. eSIM support offers a huge opportunity for operators to attract these users and boost their top lines. Furthermore, end-to-end virtual provisioning and servicing translates into significantly lower OPEX. **Potential data revenues of $4.6 billion can be generated globally from traveling users via eSIM by 2025.**

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eSIM Opportunities:
Consumer and Enterprise IoT

The rise of LPWA and 5G cellular technologies is driving the adoption of connected and eSIM-capable consumer IoT devices such as NB-IoT-based door locks, smoke detectors, smart appliances, 4G smart cameras, language translators and 5G FWA CPEs.

IoT modules are being equipped with eSIM as it is practically impossible to physically activate widespread and fragmented devices manually; the entire process needs to be automated, secure and seamless. This has driven a huge adoption of eSIM.

Fast-growing IoT applications, like utility meters, gateways, environmental monitoring, heavy machinery, asset tracking and logistics, offer significant scale and revenue opportunities beyond smartphones and consumer IoT devices for operators supporting eSIM.

eSIM equipped IoT device installed base is expected to reach close to 2.5 billion devices by 2025, driving significant scale, cost savings and new revenue opportunities for operators.
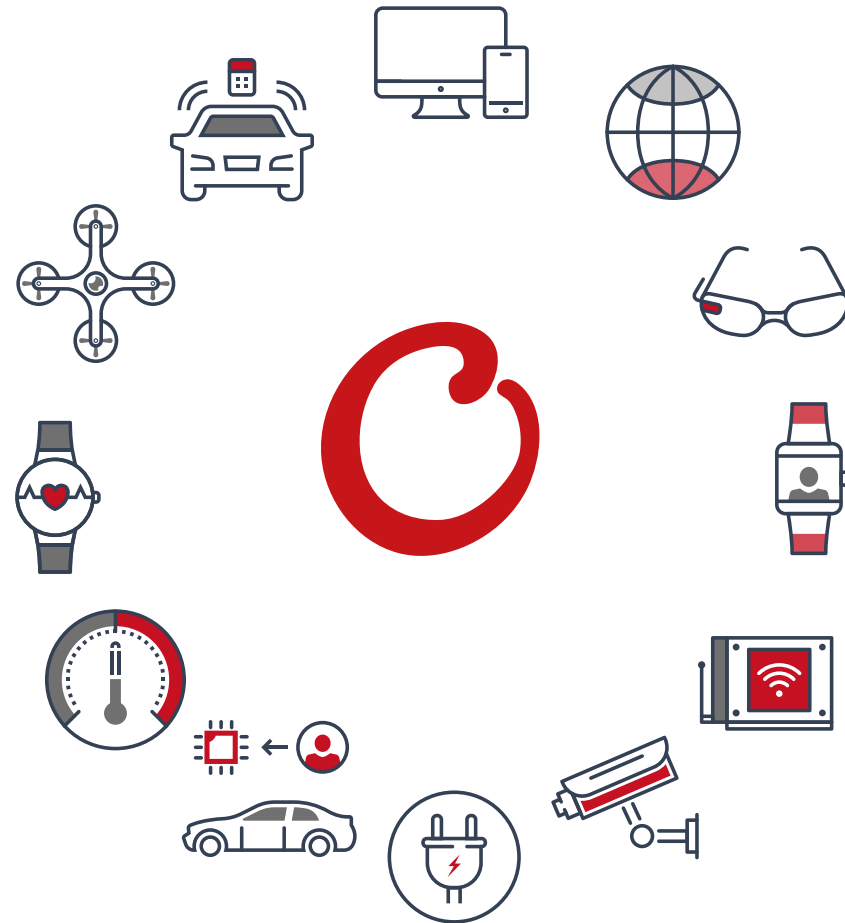
eSIM Value Chain and Central Role of MNOs

The eSIM value chain is inherently complex. It comprises multiple stakeholders, from enablement to management stages, connected by a single thread – MNOs. Why do we say that the value chain is connected by MNOs, even though each part is pivotal to the existing value chain? MNOs control two essential parts of the whole supply chain:

- They have access to the existing physical SIM customers, who can easily upgrade to eSIM and thus bring revenues to this value chain.
- They control the distribution of profiles to the customers, decide pricing and upsell to customers.

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eSIM COMPONENTS (Hardware, Software, Security) → MODULE / TCU PLAYERS → DEVICE / IoT / AUTO OEMS → MNO / MVNO / MVNE / Wholesale → eSIM MANAGEMENT (SAS-SM : SM-DP/ DP+/SR/DS) → ENTITLEMENT SERVER → ORCHESTRATION & IMPLEMENTATION → MANAGEMENT & TESTING

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eSIM Enablement | eSIM Management

SIM/eSIM
THALES, Giesecke & Devrient, IDEMIA, VALID, WORKZ, 楚天龙 Chutian Dragon, 东信和平 EASTCOMPEACE, ST, NXP, E-KART, Infineon, SONY, SEQUANS, QUALCOMM

Soft / iSIM
TRUPHONE, Kigen, RedteaMobile, OASIS smart sim, Gotell, telna, GIGSKY

Security
rivetz, Tiempo Secure, synopsys

Modules
QUECTEL, SUNSEA, SIERRA WIRELESS, THALES, u-blox, Telit, 中国移动 CHINA MOBILE, HUAWEI, NORDIC, MEIG 美格

Auto TCU
HARMAN, LG, Continental, DENSO, MAGNETI MARELLI, BOSCH, Visteon

Devices
Apple, Google, HUAWEI, Mi, OPPO, SAMSUNG, Microsoft, Lenovo, ASUS, HP, DELL, acer, Rakuten, telna, SCHILDKNECHT SMART DATA COMMUNICATION

Auto
Audi, BMW, Mercedes-Benz, TOYOTA, Ford, GM, BYD, TESLA, HYUNDAI

Operators
orange, vodafone, Telefonica, verizon, AT&T, T-Mobile, vivo, פלאפון, A1, docomo, Rakuten, EE, airtel, MTN, VI, Jio, telenor, 中国移动 CHINA MOBILE

MVNO/E
GIGSKY WORLD MOBILE DATA, TRUPHONE, Ubigi, RedteaMobile, cubic telecom, telna, 1oT, iBASIS POWERED BY TOFANE, sim point, SimTony, transatel, bics, OASIS smart sim, simLOCAL, KORE, airalo, eSIM.net, telenor connexion

GSMA Approved
THALES, Giesecke & Devrient, IDEMIA, VALID, TRUPHONE, INVIGO, WORKZ, OASIS smart sim, Kigen, 东信和平 EASTCOMPEACE, 恒宝股份 HENGBAO CO., LTD., ERICSSON, VI, airtel, Jio, TIANYU, STC, protahub

Proprietary / Partners
Gotell, RedteaMobile, 1oT, telna, 10T TECH, KORE, NetLync, TATA COMMUNICATIONS, cubic telecom, Nordic eSIM, GIGSKY WORLD MOBILE DATA

Proprietary
amdocs, Hewlett Packard Enterprise, NOKIA, ERICSSON, IDEMIA, 10T TECH, TRUPHONE, RedteaMobile, WORKZ, ELIT NET, devicemax

Orchestration
amdocs, Netcracker, NOKIA, ERICSSON, Optiva, HUAWEI, moflix, LOTUSFLARE, Hewlett Packard Enterprise

Implementation
Giesecke & Devrient, VALID, THALES, IDEMIA, amdocs, 10T TECH, NetLync, RedteaMobile

Connectivity Management
ERICSSON, NOKIA, HUAWEI, Jasper, KORE, THALES, Giesecke & Devrient, IDEMIA, Kigen, evolving, cubic telecom, GALLUP, simLOCAL, Gotell, eseye, telna, RedteaMobile

Testing
GLOBALPLATFORM, GSMA, UL, FIME, COMPRION, VALID, ROHDE&SCHWARZ

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eSIM Adoption Across MNOs

More than 200 leading mobile network operators and over 70 countries are already supporting eSIM provisioning and management. They support an average of 20 or more devices, including smartphones, smartwatches, laptops and tablets. However, this is still a small percentage of the overall MNO market and there are significant growth opportunities for everyone.

Supporting eSIM has expanded the MNOs' total addressable market and ability to attract new subscribers, such as travelers and existing multi-SIM users, with attractive rates, sometimes bundled with other apps and services.

70+	**200+**	**20+**
Countries	Operators	Avg. Devices Supported

Benchmarking
eSIM Enablement, Adoption and Management

MNOs control, connect and manage connections via the SIM. With eSIMs too, MNOs play a crucial role in enabling and managing the eSIM-based connectivity and devices. As we highlighted, eSIM brings a multitude of benefits for every player in the ecosystem and more so for MNOs which save millions of dollars on provisioning costs, reduce friction with customers and boost the service experience to the next level. Further, as more devices beyond smartphones include eSIMs, it can be a whole new stream of revenues for MNOs.

MNOs have been gradually adopting eSIM capabilities as many face challenges either in terms of faith in the technology, a fixed mindset or cost constraints. As the eSIM-capable device ecosystem has entered the mainstream, coupled with rising consumer awareness, especially with the ongoing pandemic, many MNOs have been forced to prioritize eSIM technology integration within their network.

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eSIM Leadership

However, hundreds of MNOs are still struggling to shed eSIM related misconceptions, identify the right opportunities, partners and scale, and learn the best practices to successfully deploy eSIM solutions.

With this in mind, we are excited to announce an innovative framework – L.E.A.D.E.R – to help the mobile ecosystem players identify some of the world's most successful eSIM deployment case studies and to use them as industry benchmarks. The framework analyzes and evaluates an MNO's eSIM journey, best practices and success factors across different criteria and parameters as highlighted below:

Line of business
Has the MNO set an example for adopting the eSIM technology across different Line of Businesses – consumer, IoT, roaming, etc?

Enablement
Has the MNO set an example for a seamless, scalable and cost-effective eSIM enablement platform?

Adoption
Has the MNO set an example for driving eSIM adoption across its portfolio, customer base and services?

Devices
Has the MNO set an example for supporting multiple device categories and device models capable of eSIM?

Experience
Has the MNO set an example for simplifying and creating friction-free eSIM activation / provisioning / support experiences?

Reach
Has the MNO set an example in offering eSIM provisioning across different channels and the number of partnerships to extend the eSIM reach?

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Line of Business

The eSIM offers multiple opportunities for MNOs. It can drive digital transformation in terms of efficient provisioning and seamless connectivity management for consumer, enterprise and growing IoT device segments. Further, operators can also capture significant roaming revenues via eSIM-enabled devices.

MNOs' ability to serve these different lines of businesses – Consumer, Enterprise, IoT and Roaming – signifies their readiness and potential opportunity to scale their eSIM related platform investments.

The first benchmark – "Line of Business" – evaluates MNOs on their ability to support eSIM-related services across various lines of businesses. We have evaluated more than 200 operators in 70+ countries and their offerings across these lines of business.

Nearly all MNOs are actively supporting eSIM across consumer devices such as smartphones and increasingly companion devices such as smartwatches. However, support for eSIM across enterprise and IoT devices lags in comparison. Further, fewer are geared up or looking to capture the massive eSIM roaming opportunities for multiple reasons.
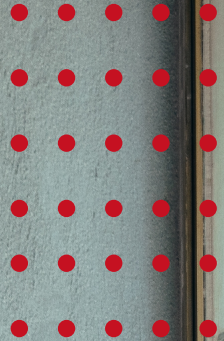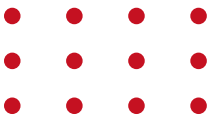
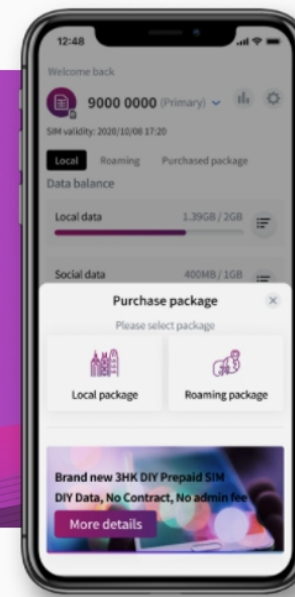**L**EADER

Line of Business

Background

3 Hong Kong is a telecommunications and internet service provider operated in Hong Kong by Hutchison Telecommunications Hong Kong Holdings, a subsidiary of CK Hutchison, operating under the global Three brand. The company was founded in 1984 but was officially named 3 Hong Kong in 2002. It currently provides 4.5G, 4G LTE, 3G, GSM dual-band mobile telecommunications and Wi-Fi services through its own network infrastructure. 3HK also provides gaming and home entertainment services.

Consumer eSIM

3 Hong Kong was one of the first to launch eSIM services in Hong Kong. It launched its eSIM services with smartphones and later added other consumer devices like smartwatches, tablets and laptops. It is one of the few operators to support all types of Apple devices, including iPhones, Apple watches and iPads. The operator also provides support for eSIM-based Samsung Galaxy watches and other eSIM phones.

Enterprise and IoT eSIM

3 Hong Kong offers eSIM services to its enterprise users as well through its "3 Business" arm, which covers "property management to mobile gaming solutions". 3 Hong Kong is working on expanding eSIM support for laptops and other IoT devices as well as expanding the enterprise eSIM devices portfolio.

Roaming eSIM

The operator also offers Traveler eSIM services to inbound and outbound travelers in Hong Kong. More than 100 regional outbound travel data plans can be purchased at any time. Travel plans are available for as low as $10 per day.

Everything in just one app

- DIY plan
- Buy local/travel packages anywhere
- Port-in your number

Benchmark

3 HK's eSIM enablement across multiple lines of businesses, from supporting eSIM-based consumer, enterprise and IoT devices to capitalizing on roaming opportunities, is setting a leading example for other MNOs which are lagging in scaling the eSIM opportunities.

Enablement

eSIM enablement and management is one of the key capabilities for operators to realize the full potential of eSIM technology. It is imperative for MNOs to be equipped with the GSMA certified standardized eSIM management platform for the seamless enablement and provisioning of multiple eSIM-capable devices.

Many of these MNOs partner with eSIM platform providers to build a scalable, secure and standardized eSIM enablement platform. Some MNOs have themselves co-developed or fully developed the platform in-house and have successfully achieved GSMA certification.

This criterion measures how innovative, robust and versatile the MNO's eSIM enablement capabilities are to activate multiple types of devices securely and seamlessly in multiple scenarios. Further, the leaders driving the eSIM enablement also add significant value to the overall eSIM ecosystem with process, service or platform innovation.

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Enablement

Vi

Background

Vodafone Idea (Vi) is an Aditya Birla Group and Vodafone Group partnership. The company provides pan-India voice and data services across 2G, 3G and 4G platforms. As of April 30, 2021, Vi had a subscriber base of 281.90 million, making it the third-largest mobile telecommunications network in India and the seventh-largest in the world. Vi Business, the enterprise arm of Vodafone Idea Ltd , provides total communications solutions to empower global & Indian corporations, public sector & government bodies, small & medium enterprises and start-ups.

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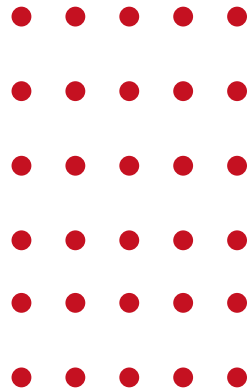
activate your
eSIM in 3 steps

eSIM Management Platform

Vi has obtained full GSMA (SAS-SM) certification for its eSIM management platform developed and hosted in-house, along with certification for SM-DP, SM-DP+, SM-SR and DCOM capabilities. India's first telecom provider to offer GSMA SAS-SM, DOT, ARAI (Automotive Research Association of India), and AIS140 (Automotive Industry Standard) compliant eSIMs. This showcases Vi's commitment and vision towards eSIM as one of the key enabling technologies for its consumer and enterprise customers.

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say hi to apple watch
on postpaid plans

T&C apply

Consumer eSIM Enablement

Vi has been actively working with OEMs to support eSIM across a number of consumer devices such as smartphones and smartwatches. Vi also has an in-house device entitlement server integrated into its eSIM management platform to provision companion devices such as the cellular Apple Watch. Other devices such as consumer laptops, tablets and FWA gateways are in pipeline.

Vi supports more than 30 eSIM-capable smartphones and over five smartwatch models for its postpaid users, covering a footprint of more than 150 million subscribers since the launch a year ago.
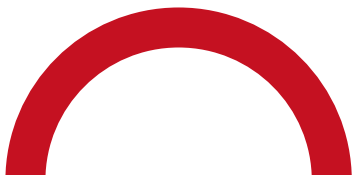
build for tomorrow, today

Future-proof your business with fast, secure and scalable IoT eSIMs

System Integration eSIM Enablement

In addition to supporting open market devices, Vi is working with ecosystem partners to help certify and integrate eSIM-based devices through its labs to ensure greater optimization with the network, security, e-KYC and compliance with local data regulations.

Benchmark

Vi sets a leading example of how an operator can innovate and leverage the eSIM technology to unlock newer opportunities via end-to-end enablement, reducing barriers for customers and partners to realize eSIM benefits.

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Adoption

eSIM adoption is one of the key metrics for MNOs and partners to see users downloading profiles, getting them remotely provisioned and enjoying the plastic-free seamless connectivity experience.

The adoption of eSIM stems from the MNOs' efforts to simplify and promote the messaging, benefits, and mediums. The operators in developed markets are in a better position to drive eSIM adoption across a mature user base. However, driving eSIM adoption in emerging markets is difficult and if operators are able to offer and achieve the same, it is a remarkable feat.

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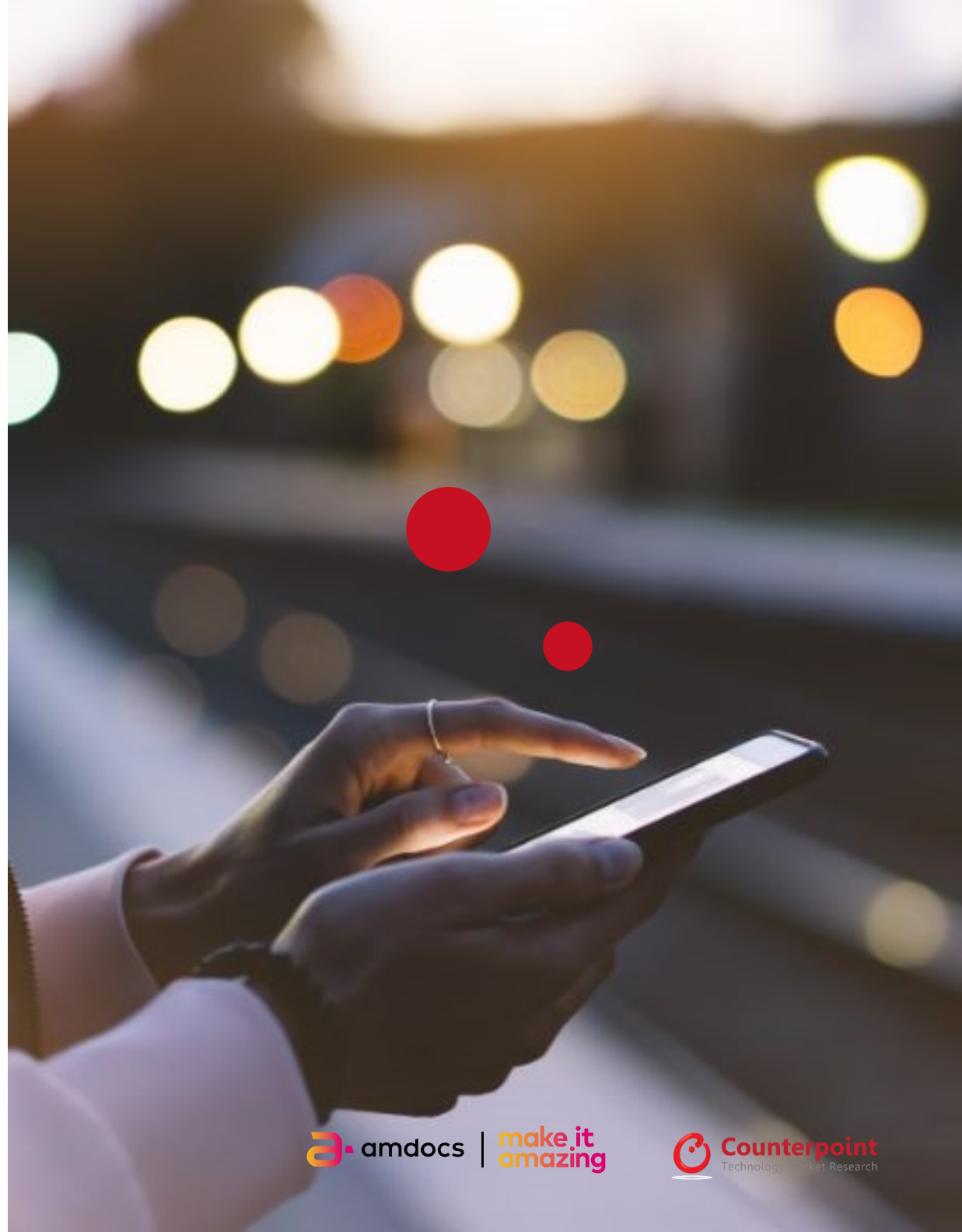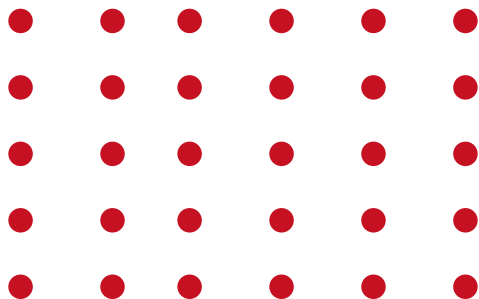
Adoption

vivo *☃*

Background

Brazil's leading operator vivo, which has more than 81 million customers, is among the early adopters of eSIM technology. Provisioning is not easy and cheap at a pan-Brazil level. This convinced vivo to kickstart digital customer onboarding and provisioning. It not only saves millions of dollars in costs but also provides a unique and seamless experience for its customers.

Consumer eSIM Adoption: vivo supports more than 30 eSIM-capable consumer devices, including smartphones and smartwatches from leading brands such as Apple, Samsung and Motorola. vivo is leveraging SM-DP+ in partnership with Thales

Consumer eSIM Adoption

vivo supports more than 30 eSIM-capable consumer devices, including smartphones and smartwatches from leading brands such as Apple, Samsung and Motorola. vivo is leveraging SM-DP+ in partnership with Thales and a holistic solution for devices entitlement from Amdocs. vivo's eSIM journey started with supporting smartwatches and then extended to other devices.

The key reasons which are driving the strong adoption of eSIM-capable devices at vivo are:

- vivo is offering eSIM free to its users on postpaid, prepaid, control and easy plans.

- vivo is allowing the eSIM to register for more than one line (personal or professional).

- vivo is offering its "Vivo Sync" service for free to its postpaid users to enable live number on the smartwatch seamlessly using Amdocs platform.

- Vivo Sync allows users to make and receive calls, exchange messages, make payments, use multiple apps and stream music while leaving the phone behind.

- vivo is offering multiple support points such as Whatsapp to easily onboard customers.
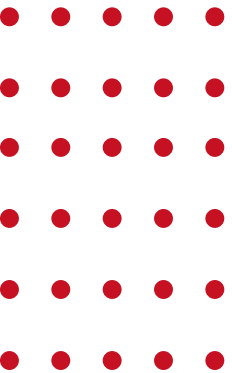
Devices

Device ecosystem is an inherent requirement for an eSIM service to be successful for the MNO and the customer. Although it is certain that eSIM is the new-age SIM, the transition from the physical SIM to eSIM can be hugely impacted without an adequate number of devices supporting eSIM.

It is important for an MNO to support a maximum number of devices with eSIM. This increases the chances of a customer choosing an eSIM service. It also gives the operator an edge over its competitors. Most of the MNOs support consumer devices such as smartphones. Smartphones have emerged as the primary device for starting with eSIMs.

As more and more devices are supported by MNOs across the world, the roaming eSIM ecosystem also benefits as consumers get the support even while traveling.
For the purpose of this white paper, we have evaluated MNOs on the ability to support four different consumer devices – Smartphones, Laptops, Tablets and Smartwatches. To be a L.E.A.D.E.R, an MNO should support a maximum number of eSIM-capable devices.
While evaluating the device ecosystem, we found that most MNOs start their eSIM services with smartphones and then expand to smartwatches and tablets. But very few MNOs support laptops.

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Devices

Magyar Telekom

Background

Magyar Telekom is the largest Hungarian telecommunications company. The former monopolist is now a subsidiary of Deutsche Telekom. Magyar Telekom was the first in Hungary to launch a 4G/LTE-based mobile internet service.

eSIM Devices Portfolio

Magyar Telekom has been one of the first operators to adopt eSIM and support OEMs launching eSIM-capable devices. For example, back in 2018, the Hungarian operator was the first one in Europe to sell the Huawei 2 smartwatch with embedded eSIM.

Magyar Telekom is the only MNO with more than 60 devices. It supports 61 eSIM-capable devices, including 34 smartphones, 18 tablets and 9 smartwatches.

Of all the MNOs we evaluated, 92% offer eSIM services and support at least one device. Support for smartphones was found to be higher among all MNOs – 98% of all MNOs who offer eSIM services support at least one smartphone. This isn't surprising as approximately 20% of all smartphones sold in 2021 were eSIM enabled.

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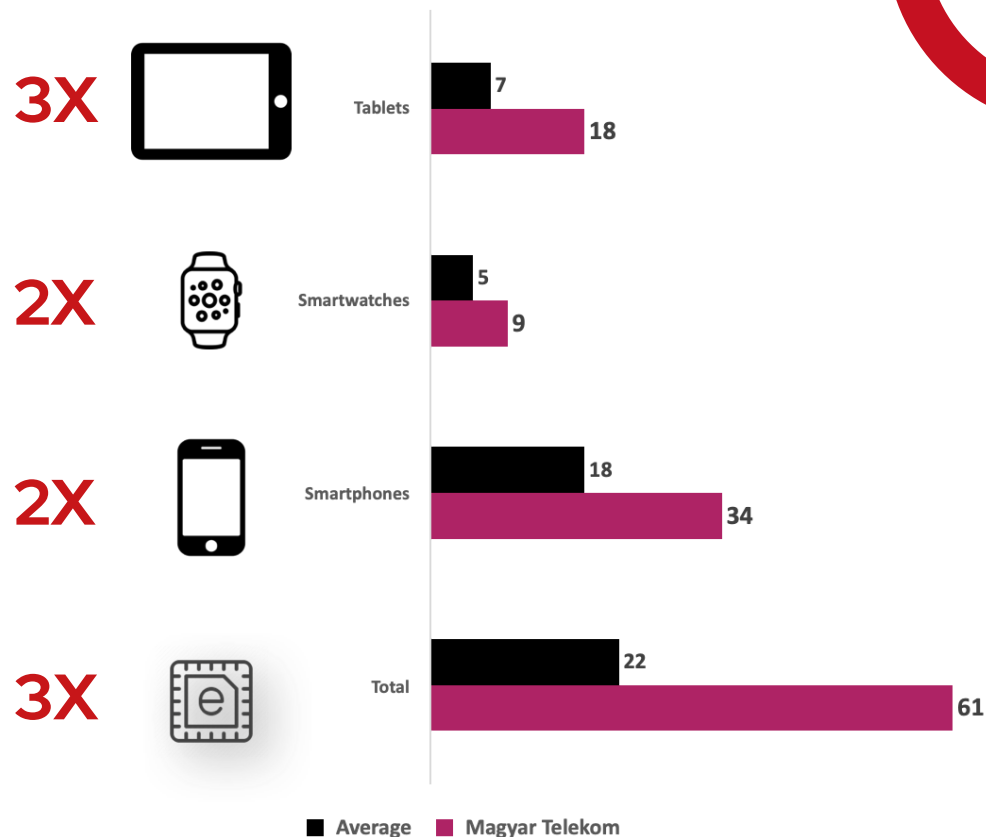Technology Market Research

Devices
LEADER

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3X Tablets — Average 7 / Magyar Telekom 18

2X Smartwatches — Average 5 / Magyar Telekom 9

2X Smartphones — Average 18 / Magyar Telekom 34

3X Total — Average 22 / Magyar Telekom 61

■ Average ■ Magyar Telekom

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36% of the MNOs supporting eSIM also support smartwatches and 27% support Tablets. The need for a separate entitlement server at OEMs is stifling the adoption, but the launch of GSMA's Discovery Service is expected to increase this percentage.
Support for laptops lags, with only 7% of MNOs covering them. With MNOs launching multi-device plans allowing the use of a single number, this segment is also set for growth.

Benchmark

Magyar Telekom has emerged as a leader when it comes to supporting most eSIM devices. The Hungarian operator supports three times more devices than an average operator. The lead is higher in tablets where it supports 18 tablet models compared to the average of just two across other MNOs.
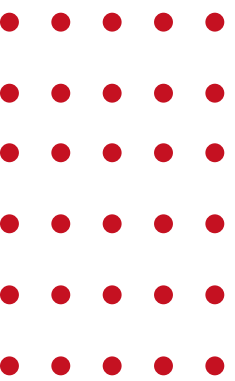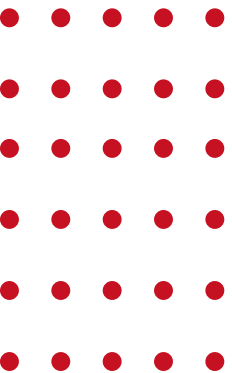
LEAD**E**R

Experience

The end-to-end experience in the eSIM technology journey, from onboarding to managing the customer's eSIM-capable devices, is the key to the success of the technology. The eSIM technology is designed to remove friction and offer multiple benefits to customers. The holistic eSIM experience which MNOs should focus on from the point of attracting users to start the eSIM journey includes efficient provisioning, simplified digital onboarding, and flexibility in managing eSIM-based connections.

eSIM experience is a key KPI for MNOs from a customer point of view. A consumer's onboarding or "the eSIM enablement" defines the consumer experience, sets expectations and makes the consumer more favorable towards trusting and using the service.

An ideal experience on the front makes the process easier, consumes less time and effort (compared to a physical SIM) and enhances the customer's trust.
For an MNO, digital onboarding for eSIM reduces costs associated with onboarding, such as inventory, procurement and sales, helps in reducing enquiries by customers and helps maximize eSIM adoption.

Experience

---

orange™

Background

Orange Polska is a telecommunication provider operating in all segments of the Polish telecom market. The company offers mobile and fixed telecommunication services including calls, messaging, content, internet, television, leased lines, data transmission, other value-added services, and sale of telecom equipment.

eSIM Provisioning Experience

The common features which help in enhancing consumer experience include onboarding via a QR code, operator app and multi-channel support. The consumer experience varies for different operators. More onboarding features reflect the priority of eSIM in an MNO's services portfolio. Orange Polska has used a variety of features to make the experience simpler for consumers, under the Orange Flex service. It offers eSIM to retail and enterprise customers in the form of a new card as well as an add-on card.

A customer can easily use a QR code to install profile in the chosen device. The QR code can easily be obtained from the website. To make the whole process easier, it has provided detailed guides on its website for the eligible devices. Further, Orange Polska has added detailed instructional videos and FAQs to make it easy for consumers to download, install and manage profiles by themselves.

Orange's customers can also use the Orange Flex app to order new or add-on eSIMs without going to a store for phones, smartwatches, laptops and tablets.

"The use of QR code is most common means of onboarding among MNOs. 88% of MNOs supporting eSIMs make use of QR codes while only 15% MNOs support eSIM download and installation via an app."

# eSIM on Orange Flex, naturally!

Do you go running? Are you going on tour? Are you sending your child to school? Or maybe you just need a bit more freedom? Sometimes even without your phone? You may be interested in eSIM, a virtual SIM card that takes a few moments to download to your smartwatch, phone, tablet or laptop. You can have an eSIM on Orange Flex, so it couldn't be better!

Devices that support eSIM:

Phone   Watch   Laptop   Tablet

Benchmark

Orange has set an industry benchmark in building the best-in-class experience to onboard eSIM customers via the Orange Flex offering. The overall end-to-end seamless self-provisioning process to the support via mobile application is something global operators should emulate.
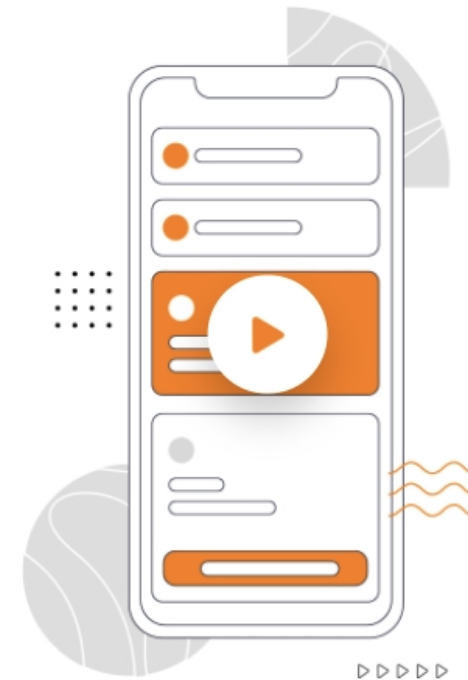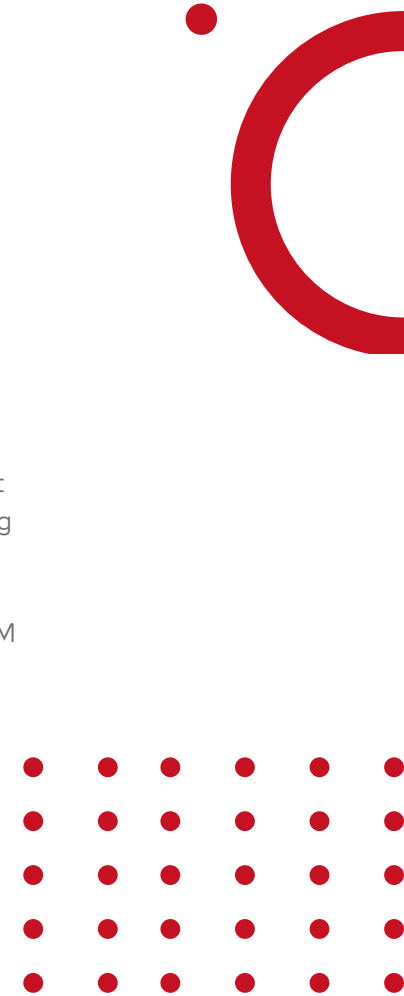
LEADER
Reach

Reach is one of the other important metrics which eventually drive eSIM adoption. This is in terms of the total addressable market available to target organically and inorganically leveraging different opportunities.
It depends on the MNO's strategy to expand the reach and scale for its eSIM platform.
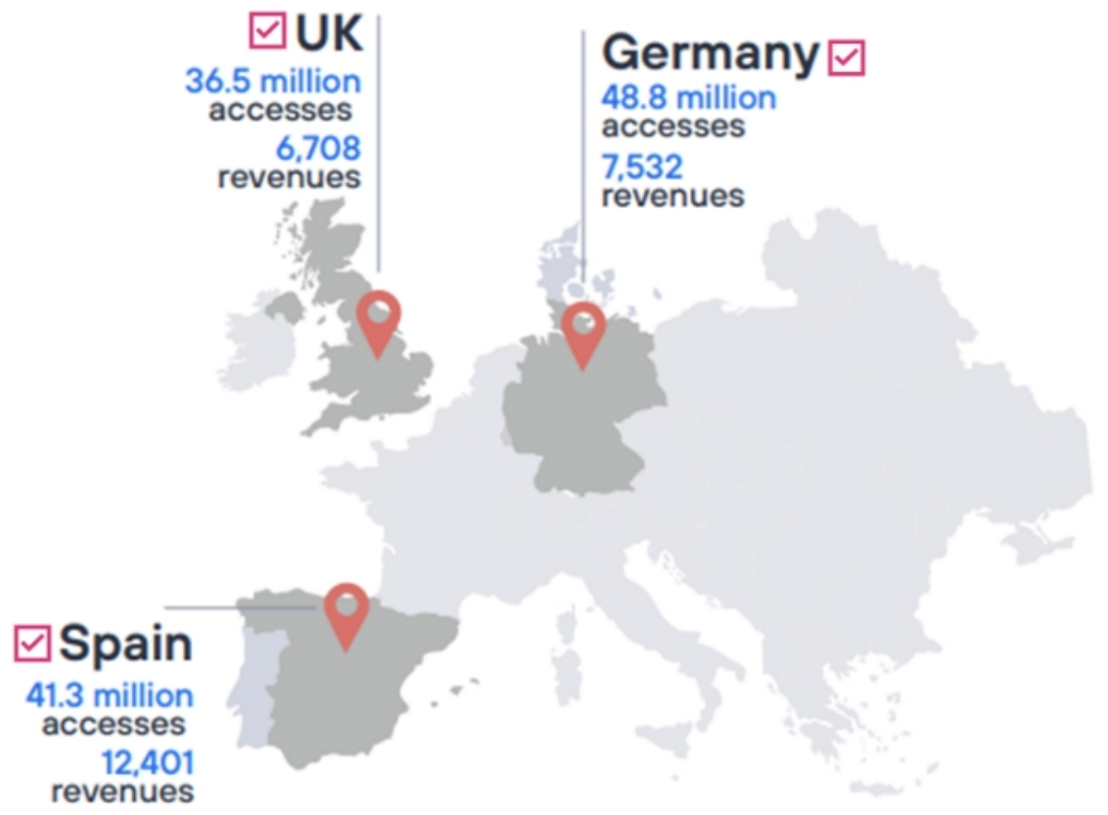
Reach

Telefónica

Background

The Spanish operator's footprint spans across continents – Europe and Latin America with more than 13 countries. The operator has a reach of more than 240 million retail mobile, 27 million fixed broadband, 26 million IoT and 23 million wholesale connections.

Reach and Scale

Along with the potential TAM of hundreds of millions of users across continents and the inbound and outbound roaming users, Telefonica has the best reach to capitalize and drive eSIM opportunities. Telefonica via its regional brands Movistar, O2 and vivo has been driving the eSIM technology across markets and lines of businesses.

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☑ eSIM Available

Brazil ☑
95.2 million accesses
7,422 revenues

☑ **Hispam***
108.5 million accesses
7,922 revenues

☑ **UK**
36.5 million accesses
6,708 revenues

Germany ☑
48.8 million accesses
7,532 revenues

☑ **Spain**
41.3 million accesses
12,401 revenues

Source: Telefonica as of Dec 2020

Omnichannel eSIM Strategy

Telefonica has worked with ecosystem partners such as Thales and Amdocs to support multiple categories of eSIM-capable devices, like smartphones, smartwatches, tablets, laptops and IoT, via its market-level subsidiaries. From O2 Germany to Movistar Ecuador, the operator on average supports 24 eSIM-capable consumer devices and continues to add more devices to the portfolio.

Telefonica subsidiaries across different markets are also expanding the reach and availability of eSIM via an omnichannel, digital and mobile-centric activation journey. For example, O2 Germany is expanding its reach to allow customers to activate eSIM via its MEIN O2 app. Telefonica has enabled an end-to-end digital eSIM provisioning process, from QR code scanning to eKYC, via a public cloud-based eSIM management solution that can scale as per seasonal peaks, driving the optimal user experience.

"For example, the operator in Germany saw the volume of eSIM activations per month double by the end of 2020 just by increasing its TAM via introduction of omnichannel digital eSIM onboarding for its customers"

Global eSIM Partnerships

The operator also supports eSIM-capable M2M/IoT devices from multiple IoT module and device vendors. Telefonica's business arm also offers a "global IoT roaming" eSIM connectivity for transport and logistics, and telematics applications. Telefonica has also struck eSIM roaming partnerships with several operators such as Docomo.

Benchmark

Telefonica offers a great example of how to scale the eSIM technology across channels and borders. To bring eSIM support across device categories and astutely work with different ecosystem partners to realize the true eSIM potential is a great case study for any operator looking to commence its eSIM journey.

Benchmark Summary

The eSIM adoption is on the cusp of an inflection point and MNOs hold a central role in the value chain. With this in mind, we are excited to announce a very innovative framework – L.E.A.D.E.R for helping the mobile ecosystem players to identify some of the world's successful eSIM deployment case studies as industry benchmarks. The framework analyzes and evaluates an MNOs eSIM journey, best practices and success factor across different criteria and parameters as highlighted below:

L
Line of Business

- 3 Hong Kong was one of the first one to launch eSIM services in Hong Kong
- 3 Hong Kong launched eSIM services with smartphones, and later added other consumer devices

E
Enablement

- Vi has full GSMA (SAS-SM) certification for SM-DP, SM-DP+, SM-SR and DCOM capabilities
- Vi has added value to the eSIM enablement ecosystem by supporting eSIM for 2G devices

A
Adoption

- Vivo supports more than 30 eSIM capable consumer devices
- Vivo has seen a significant growth for eSIM capable devices provisioned on its network with CAGR of ~3900%

D
Devices

- Magyar Telekom was the only MNO with more than 60 devices
- Magyar Telekom supports 61 eSIM supported devices which includes Smartphones, Tablets and Smartwatches

E
Experience

- Orange Polska has used a variety of features to make the experience simpler for consumers
- Orange offer eSIM to retail and enterprise customers in the form of a new card as well as an add-on card

R
Reach

- Telefonica has a reach of more than 240 million retail mobile, 26 million IoT
- Telefonica has set benchmark in offering eSIM across channels, markets and partnerships with global ecosystem players

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Key Takeaways

1 The eSIM ecosystem is maturing and seeing rising adoption and support for eSIM-based devices and management platforms.

2 More and more operators are embarking on the eSIM-led digital transformation journey to seamlessly and efficiently onboard their

3 The benchmarks provide guidance to expand the eSIM opportunity across lines of businesses, innovate in eSIM enablement, strategize to drive faster eSIM adoption, support multiple eSIM-capable devices, create a state-of-the-art eSIM provisioning experience and leverage channels and reach.

4 Opting for a Remote SIM Provisioning (RSP) platform alone won't help MNOs in driving scale and adoption. However, addition of capabilities such as device entitlement, digital identity management and discovery services will hold the key.

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About Amdocs

Amdocs helps those who build the future to make it amazing. With our market-leading portfolio of software products and services, we unlock our customers' innovative potential, empowering them to provide next-generation communication and media experiences for both the individual end user and enterprise customers. Our 28,000 employees around the globe are here to accelerate service providers' migration to the cloud, enable them to differentiate in the 5G era, and digitalize and automate their operations. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $4.3 billion in fiscal 2021. For more information, visit Amdocs at www.amdocs.com

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Authors, Copyright & Contact

Neil Shah
Vice President, Research
neil@counterpointresearch.com

Ankit Malhotra
Research Analyst
ankit.malhotra@counterpointresearch.com

About Counterpoint

COUNTERPOINT TECHNOLOGY MARKET RESEARCH

Hong Kong | USA | South Korea | India | UK | Argentina | China | Taiwan

20F Central Tower, 28 Queen's Road Central, Hong Kong
info@counterpointresearch.com