



WHITEPAPER

eSIM: The technology mobile operators can't afford to ignore any longer

Published by

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Executive Summary

The latest evolution in SIM technology, embedded SIM (eSIM) isn't just another incremental upgrade. It comes with wide-reaching opportunities for MNOs and MVNOs to reposition themselves as modern, agile operators, and opens many avenues to new revenue streams and improved competitiveness.

Advantages of the technology include savings in aftersales service costs, ease of customer acquisition and improved consumer experiences through a range of factors including digital onboarding. It also enables a number of new use cases.

By supporting eSIM, operators can provide the basis for enhanced roaming options, new multi-device bundled tariffs controlled through an app, try-before-you-buy deals, tie-ups with popular events such as music festivals, and the potential to take a mobile brand truly global or a global brand truly mobile.

With increased demand from consumers for digital-first services driven by their experiences during the COVID-19 (coronavirus) pandemic, now is the time to take full advantage of the drive towards eSIM.

In this paper, we discuss the eSIM ecosystem as it stands today, its rapid growth trajectory, challenges to deployment and give a detailed account of some of the key revenue drivers linked to adoption of the latest SIM technology.



State of the industry

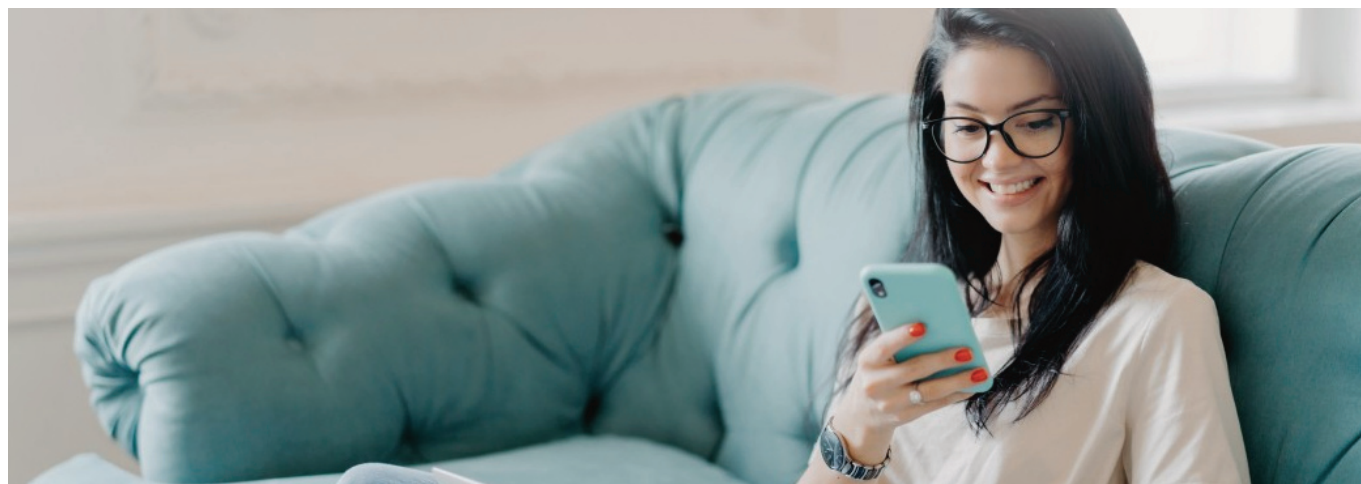
With the mobile market mature across large proportions of the globe, differentiation of service can be tough, with quality of connectivity and coverage often very similar between rivals in the eyes of consumers.

In this environment increasing profitability often comes down to: improving customer retention, cutting operating costs, bundling a greater number of services into a package or increasing demand for data by pushing use of emerging and popular content such as VR experiences, gaming or social media.

Today's consumer also has high expectations of service levels and is used to the ease of experience associated with digital-first companies, which have disrupted many sectors in recent years from the taxi industry to financial services.

Among these digital disruptors speed, agility and convenience are core to their propositions. With restrictions on visiting physical vendors imposed in many markets during the COVID-19 pandemic, the stream of customers demanding digital-first has become a flood.

With eSIM, operators have the opportunity to bring themselves closer to this all-digital experience and crucially differentiate from rivals reliant on less agile systems for selling, onboarding and dealing with subscribers. During this time of crisis operators able to support eSIM and deal with customer queries with robust digital platforms were able to provide flexibility and better support new customers. Those reliant on physical shops for customer care were placed at a significant disadvantage.





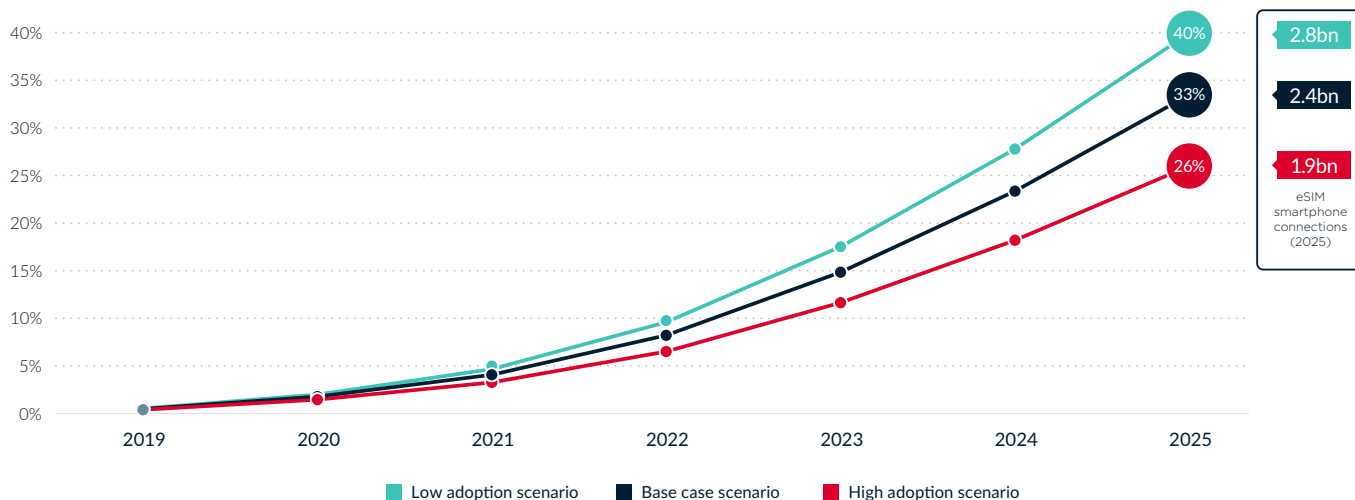
The march of eSIM

eSIM is far from being a new technology. In fact, all the key indicators point to it being both mature and poised for mainstream adoption in the consumer market.

The GSMA released its first specification for eSIM back in 2013, designed for use in M2M applications. This eventually became the de-facto standard and, in 2016, the industry association released its first specification for connecting consumer devices using eSIM.

Since the consumer specifications were created the technology has gained significant traction as operators, device makers and consumers recognise the value it can offer.

GSMA Intelligence estimates by 2025 there will be 2.4 billion eSIM connections worldwide in smartphones alone, equivalent to 33 per cent of all those in use.



Source: GSMA Intelligence

Geographically, the analyst company expects Europe and the U.S. to lead adoption in the early years of its five-year forecast (published March 2021) before China becomes the largest market for the technology in 2025.

As of the end of 2020, GSMA Intelligence noted more than 175 MNOs and MVNOs covering 69 different markets offered eSIM as part of their service. This level of adoption is being driven by the largest mobile markets, with more than 70 per cent of operators in the top 30 countries ranked by mobile revenue offering the technology.

In addition to momentum among operators, the world's premium smartphone brands are also firmly behind it.

Apple began offering eSIM in 2018 with the iPhone XS, a year after Google's Pixel 2 introduced it. Samsung now offers compatibility in its Galaxy range and in 2019 Motorola heralded its revamped RAZR as being the first eSIM-only device on the market.



Smartwatches are an area also tipped for rapid growth in the coming years, many of these are set to include a mobile network connectivity option. Analyst company Counterpoint forecasted 100 per cent penetration of eSIM in this segment by 2025 in its related study released in December 2020.

Similarly, tablets and PC makers are including the technology. This is especially true when the device is targeted at travelling executives, remote workers and nomadic freelancers. Manufacturers such as Apple, Microsoft, Samsung, Lenovo and Dell all have models that include eSIM and promote connectivity.



For handset manufacturers the end game would likely be the eventual removal of the physical SIM slot altogether. This would free valuable space within the handset for other things, in the same way headphone sockets are disappearing to clear internal space. In fact, usually the space allocated to the physical SIM is the same size as the smartphone's main processor.

Outside of mobile handsets, eSIM is the standard for many other connected consumer devices. Perhaps most notably these include popular wearables such as smartwatches from major manufacturers Apple and Samsung. Inclusion in these types of devices is ideal as a traditional SIM card would be too large for easy incorporation.



Impact of SIM evolution

The move to eSIM is not just another change in form factor like operators have experienced plenty of times before. It has far wider business implications for the operator, end user and their devices.

With forecasted rapid gains in eSIM support and even eSIM-only devices, not offering the technology could result in significant customer churn as those wanting to reap the benefits of eSIM flock to those able to deliver it.

GSMA Intelligence's 2020 operator survey found 40 per cent of those quizzed expected the transition to eSIM-only handsets to happen for the majority of OEMs during 2022 and 2023. This shows confidence from a significant number of players that the tipping point in the transition to eSIM is imminent. It is also fair to assume that with this outlook, operators will be progressing their own eSIM strategies to meet demand.

40%

of operators expect the transition to eSIM-only handsets to happen by 2023

The new standard in SIM allows the provision of easier upgrades, swifter customer acquisition, digital onboarding and benefits for customer service.

Many of the specific use cases are detailed later in this paper, but more generally the technology brings savings in the subscriber acquisition costs (SACs) and reduction in fees related to logistics of physical SIMs such as purchase, manufacture, storage and delivery.

Covid changed customer journeys

During the pandemic, consumer expectations for seamless digital journeys rapidly increased as retailers across many parts of the world were forced to close their doors. This accelerated a trend which has been going on for some time, away from physical stores towards online transactions and interactions.

Many customers are expected not to return to more traditional sales channels now they have been exposed to the ease and convenience of true digital journeys.

A McKinsey & Company study found that between December 2019 and July 2020 (when lockdowns began to be enforced in many major markets) the average share of digital customer retail interactions had grown from 36 per cent to 58 per cent.

It also found a majority of businesses expected the increased demand for online purchasing to remain after the pandemic, with almost half of those polled expecting a trend of "changing ownership of last-mile delivery within the industry value chain."

Across many regions, upgrades and switching providers slowed during 2020 for a myriad of reasons with some authorities, including Spain, pausing number porting. In parallel, a lack of new device launches and economic uncertainty quelled consumer appetite for new handsets.

Of those that did want to switch, though, many would no doubt have preferred to do so without having to go into a physical store.

A Capgemini study taken during the health crisis found 46% of users were open to eSIM activation as opposed to visiting a retailer, and a similar number preferred online channels for device set-up.

However, it also highlighted 32 per cent of consumers found operator online stores and apps hard to navigate, showing work still needs to be done in this area.

eSIM and cost savings

Although the logistics in supplying physical SIMs is a well-oiled machine, it does carry a cost and things can still go wrong. In an eSIM world many of these issues are mitigated.

Operators have one server (a Subscription Manager or SM-DP+) that stores all eSIM Profiles and is able to send provisioning data to any device in that country; no supply chain is needed for last-mile delivery.

If we get to a stage where there are few or no SIM cards at all, there are also large customer care savings to be made. NetLync's own research shows a significant proportion of operator helpline calls are related to the SIM card in some way. These range from new customers who have lost their SIM, can't get it working or inserted into the device, to cases where it either hasn't arrived or is the wrong type.

In instances where operators rely heavily on third-party resellers, eSIM opens much easier direct access to the customer. This is achieved without the need for the huge overheads that come alongside running and maintaining a physical retail footprint.

Direct access can take a number of forms depending on the promotion medium most appropriate to the individual market, but includes the use of display advertising, flyers, signs in partner retailers or TV commercials featuring a QR code linked to a service, or the operator's app.

The end result is improved direct exposure to the customer, while reducing related logistics costs.

It's not only monetary savings. There is also a significant environmental impact here. Currently six billion SIM cards are produced globally each year. A vast majority of those SIM cards are packaged and shipped to stores where they will sit on a shelf dormant until eventually activated. Even aside from savings in power related to transport and manufacture, there is no need to use and eventually dispose of the raw materials and packaging involved.





Challenges

Many established mobile operators have been nervous about eSIM, with the technology on the face of it making it easier for subscribers to switch to a rival.

This view, however, fails to consider the positive impact of the introduction of eSIM on their own business and revenue drivers.

The reality is the technology offers benefits for operators of all sizes. It can provide operational savings, simpler and faster customer sales and onboarding, allow agile and innovative promotions in reaction to real world events, or to make more aggressive moves in the market.

Consumer demand for eSIM is also set to rise as they become aware of the benefits provided by the technology.

Many will have seen first-hand the advantages of using services existing fully in the digital realm during the pandemic. In the mobile sector, only operators offering eSIM were able to provide 100% digital onboarding and agility in their platforms in many markets during lockdowns.

For operators, the realisation of new revenue streams is a strong incentive and with the technology certain to become the standard for the handsets of the future, laggards will be forced to comply eventually, with those late to the party risking losing out on some of the benefits enjoyed by pioneers.

Use cases

The widescale use of eSIM provides the platform for many varied use cases, with agile, creative operators able to use the technology to open new markets, cut costs and reposition themselves within their own markets and beyond.

Below are a few of those use cases we at NetLync see as some of the key and immediate opportunities, but in reality these are simply the tip of the iceberg.



New customer acquisition and digital onboarding

Perhaps the most obvious and immediate use case is in aiding swift customer recruitment and onboarding.

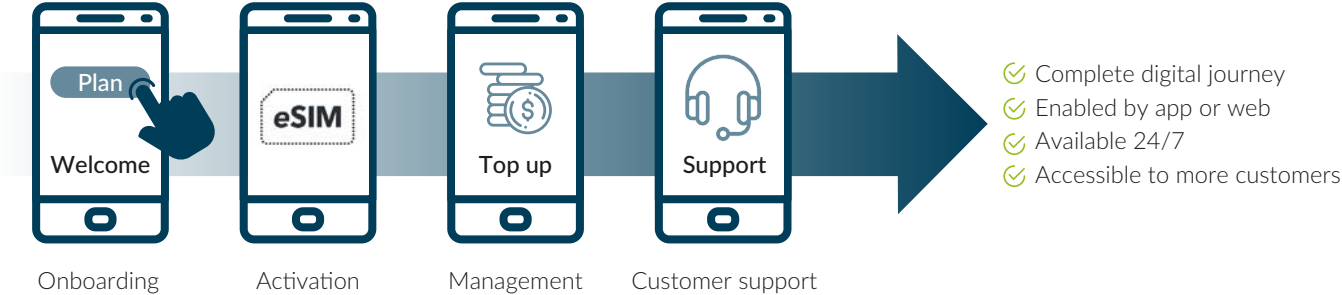
Once a consumer makes a decision to sign-up to an operator's service, it is vital to ensure the process is as smooth as possible.

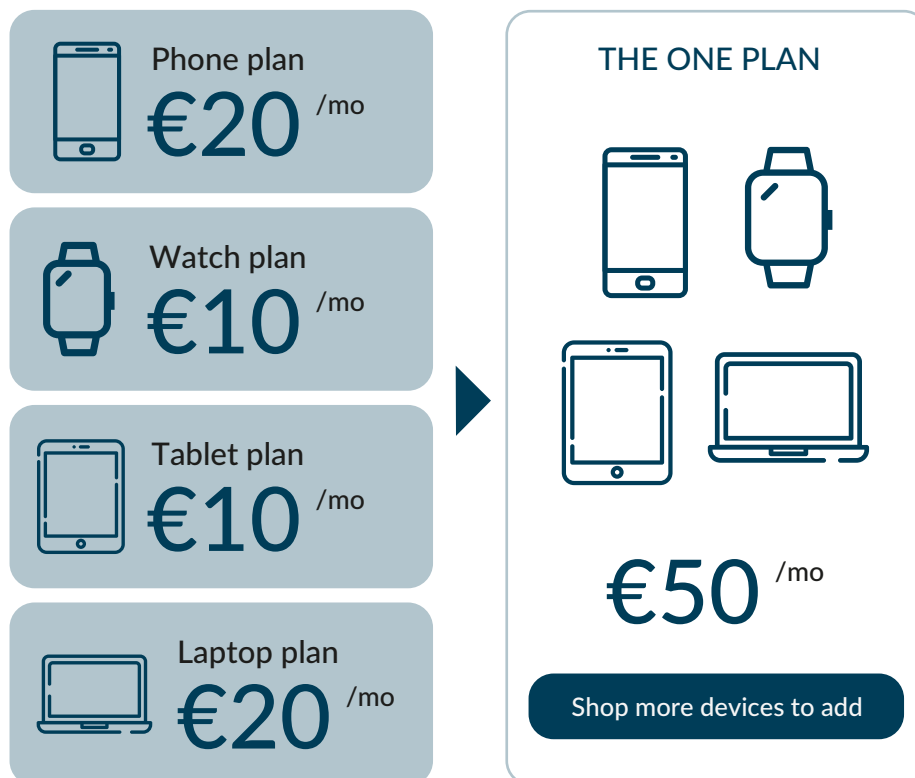
The quicker this order can be fulfilled the better. Put bluntly if it takes a few days to process or they have to physically visit a retail store to pick-up the SIM, the prospect might change their mind. With eSIM, the sign-up process can be done in only a few minutes in most markets (depending on KYC requirements) from wherever they are.

As a result of not having to visit a retail store, reseller or post a SIM, the overall cost of acquisition is cheaper. Although some form of retail presence will likely still be needed for handset bundles and brand visibility, there's a high probability costs can be lowered with increased use of automated systems such as kiosks. With this change of focus, retail floor space can also be reduced or reallocated to promote other products.

For the consumer, being onboarded using eSIM provides convenience and is akin to other high-quality digital experiences many are used to in 2021. They can sign-up wherever they are, even in another country or a remote area. Once they've onboarded and activated a plan, the operator's app serves as a means for customers to manage their subscription, devices, and interact with their supplier.

Digital Customer Journey





Connecting multiple devices

With sales of smartwatches, fitness trackers and other wearables rapidly rising in recent years, many consumers already own several eSIM compatible devices.

Here, operators offering eSIM technology have an opportunity to build enticing tariffs to connect these additional items, potentially deriving additional revenue and further enhancing subscriber relationships.

Options here include adding devices for a small charge or providing a more compelling case for unlimited data subscriptions, potentially with the option of adding or removing connections through the carrier's app.

Those who are getting value from multiple devices on the network would be less likely to churn, especially if rivals are unable to match their existing multi-faceted package.

Looking beyond an individual's devices, these types of tariffs could be extended to households, families or even teams of employees in enterprise settings.

Take the family example, if an operator has a facility in place to easily add or remove devices with eSIM it could be made possible for a younger family member to have their settings and number separated from the primary account when they become financially independent and are ready to take control of their own bill.

There is also an opportunity here to include connections to home applications with compatible IoT protocols. Adding the likes of trackers, washing machines and security systems under the same umbrella will become another way to create a stickier customer relationship and can only increase the value operators can provide.



Travel

The vast majority of eSIM-enabled smartphones also have a physical SIM slot, given there are some markets and service providers which are still yet to support the technology. This dual provision changes the fundamental paradigm of how people can connect.

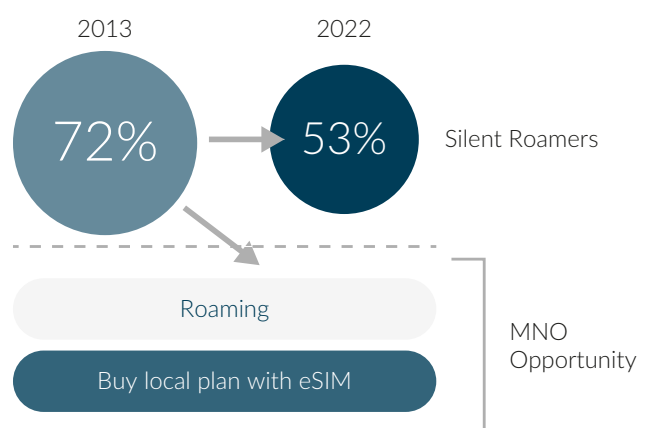
For users traveling, a dual connection option can allow the retention of their standard home line on a physical SIM while supporting a second profile for their current location using eSIM.

Although in several markets operators have favourable roaming agreements in place or local regulations set the price, the prohibitive cost of using handsets abroad or fear of potential bill shock are still huge issues for some consumers.

eSIM can be used by operators as a way to target both **outbound travellers** going abroad, and **inbound travellers** arriving in-country.

Many outbound travellers still switch off data while roaming – a recent study by Juniper Research estimated that the proportion of those not using any data roaming services in 2022 would account for 53 per cent of total data roamers globally, down from 72 per cent in 2013.

Other travellers buy a local SIM once they're arrived at their destination; however, use of eSIM could be the key to changing this. Through an arrangement before they depart or on arrival, the user's home operator can provide transparent roaming services by pushing users towards preferred providers for a temporary eSIM-based connection.



This can be achieved by creating a link to sign-up with local services through their home operator's app and is especially appealing to smaller operators or MVNOs who may not have the same level of affordable global roaming offers provided by larger groups.

By offering connectivity through home providers, both operators can derive revenue, while the consumer is able to allay fears of bill shock and maintain connectivity during their travels.

Inbound travellers

Integration of eSIM can offer a much smoother route to attracting inbound roamers too. Advertising and targeted marketing campaigns could be used to sign-up prospects before they even get on the plane, or on arrival with users

able to scan a code or download an app. This is a world apart from the purchase and fiddly installation of a physical card at the airport many travellers experience to get connected today.

Try before you buy

While the use cases above are perhaps the most immediate options for taking advantage of eSIM, there are also a number of creative tariffs based on use of the technology, which forward thinking operators could develop to gain a competitive edge.

Best suited to SIM-only plans and for customers switching from rival operators, eSIM can help operators offer a try-before-you-buy style service which effectively lets customers test-drive the network, assessing coverage in their homes or areas where they spend a lot of time.

This is especially important for prospective subscribers who may be considering switching from an established operator to an MVNO or newcomer with a relatively unproven track-record for network quality.

Currently the only indication of signal quality is the use of an imprecise coverage map, vague test data from a third party or a leap of faith. Just because in theory the reception should be good, it doesn't necessarily mean it will be in somebody's home or even outdoors due to specific environmental factors not revealed in very general statistics.

The introduction of trial or temporary subscriptions can also have a positive impact on upgrading existing users. Here, operators are also able to better showcase new services such as 5G, where the benefits are far easier to convey through first-hand experience.





Partner brand and event specific deployments

Core operator brands can sometimes be seen as utility providers akin to power companies, which may not resonate with all consumers who perhaps prefer more retail-focused propositions. To get around this, over the years operators have partnered with lifestyle brands to help broaden engagement and differentiate.

While connectivity itself can be a difficult thing to market, aligning with brands and events and using eSIM to offer special deals, such as providing 5G services or unlimited data for a music festival, are excellent opportunities to raise additional revenue when these events eventually return after the pandemic.

eSIM also allows operators and brand partners to offer users a temporary identity and mobile number specifically for the event, which can be easily disposed of afterwards without the need to change SIM cards as would have previously been the case.

Providing enhanced connectivity linked to a valued brand can improve the reputation of operators by association, showcase the agility of a modern provider and help demonstrate the latest network technology.

Global brand

When tied to a physical SIM, operators are limited to the country or location their retailers are physically present in to sell those cards. It makes little sense to ship globally, but with eSIM this ceases to be an issue, opening the way to create truly global brands.

Rather than watching the decline in roaming revenue and attempting to grasp a few small gains in specific markets, the prospect of global mobile brands could open a market of billions to sell the operator's own brand or supply connectivity to well-known global names.

Many lifestyle brands already have large worldwide followings and supporting these companies in their aspirations to offer mobile services could prove to be the largest source of new revenue wholesale and roaming teams have ever had.

For larger operators with strong identities and international profiles they could even become the global brand themselves.

Using eSIM, consumers could select whichever company they wanted to be a customer of and just sign-up through their particular app (or alternative sales channel). Connectivity can then be provided by partner operators in the same way as in the inbound travel use case.

This type of service could be extremely appealing to large brands such as Disney, Guinness or Amazon which may want to add another product to their already large portfolios. This would allow them to build on already strong brand loyalty to add a new revenue stream and perhaps introduce cross-product offers.

An approach or service like this would require addressing a range of local regulations including taxation and permanent roaming, alongside striking long-term agreements with host operators. However, it is a potentially massive opportunity for both the brand and the company providing the underlying connectivity.





Staying ahead of the curve

With many potential use cases on offer and inclusion of eSIM technology in a growing number of handsets throughout consumer price points, it is important for operators to ensure they are ahead of the curve in supporting the service.

As handsets become eSIM-only, providers will have no choice but to either move to the latest SIM technology or not offer these devices, limiting consumer choice.

Flexibility is one of the most important assets of this new technology: eSIM opens a wide number of possibilities not covered in the use cases above.

These include connecting non-consumer IoT devices, home appliances, supporting new innovations such as modern action cameras, and providing multiple profiles on one smartphone (such as a separate work and personal line) as explained in this [whitepaper on dual-SIM technology](#).

Delays in implementing eSIM could open the way to competitors to lure users with innovative packages combining multiple devices, more enticing roaming services or temporary boosts to 5G.

With a growing number of challenger and large operators already moving to the service, it is important not to lose ground.

By embracing eSIM, operators can open upsell opportunities, derive medium term savings, contribute to environmental efforts, position themselves as modern brands and give what may be a rather stagnant customer offer a significant boost.

NetLync: A new entrant offering eSIM management solutions to mobile operators

NetLync is a technology company helping mobile network operators support eSIM and the next wave of connected consumer devices.

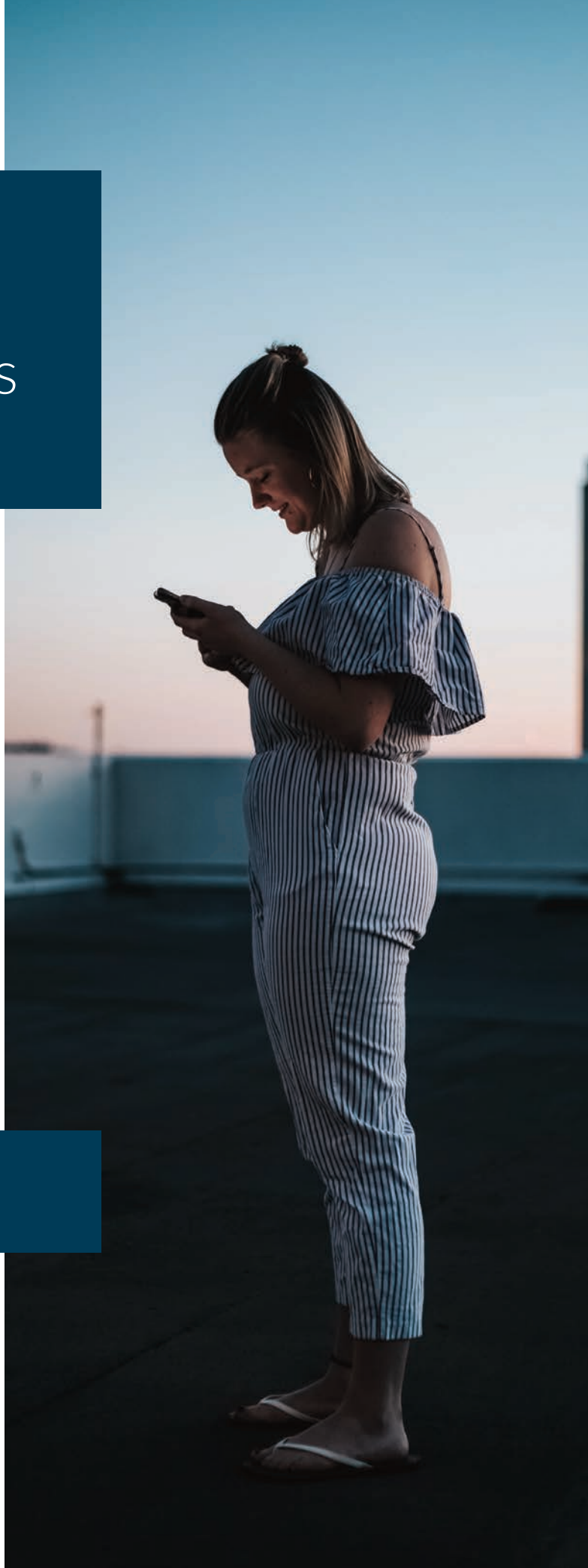
NetLync's UNITE Platform offers a complete end-to-end eSIM management and distribution solution including digital customer onboarding; white-label apps; eSIM subscription management; activation and provisioning; retail distribution and more – everything needed to deliver a completely digital subscriber experience.

NetLync originated from its sister company Sim Local, using their extensive tech development and expertise in telecoms and retail. With offices in London, Dublin, New Delhi and Vancouver, NetLync is a team of passionate telecom industry experts with proven experience in launching global software solutions that have scaled to reach millions of users worldwide.



The UNITE Platform

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NetLync CEO, Emir Aboulhosn, has been involved with eSIM since the early days of its use in connected devices, building companies that include an eSIM orchestration platform for mobile operators, and a global eSIM data service for consumers. Now he and the NetLync team are continuing to pave the way for eSIM to continue its growth and mass-adoption in the market.

For more information, visit www.NetLync.com or follow us @NetLyncTech.

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