

**LEVERAGING
DIGITAL
TECHNOLOGIES
TO ACHIEVE
NEW GROWTH:
HOW SHOULD
TELCOS ACT?**

by Stefano Sorrentino, Adriano Giaquinta, Chin San Ng

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EXECUTIVE SUMMARY

(1) See Value Partners' previously published perspective "Mobile Lending: The New Frontier in Mobile Financial Services - A Complex Environment with no Champion yet".

Digitalization has changed the telecommunications landscape forever. While investments in radio spectrum, network infrastructure and other core areas are necessary for telcos to stay competitive, core connectivity services are not going to significantly boost their revenues in the future. Digital technologies, on the other hand, offer telcos with many new growth opportunities. This paper discusses the new digital technology growth areas that telcos are recommended to invest in, and the areas that telcos should avoid.

In fact, not all digital technologies will deliver the growth that telcos seek. For example, the Media & Content, Cloud Computing, and Cybersecurity verticals carry relatively higher risks, and lower synergies for telcos because of higher development costs, stronger competition from non-telcos, and tightening industry regulation. Conversely, we believe that **FinTech**, **IoT**, and **Blockchain** hold the highest synergies and largest monetization opportunities for telcos. Telcos will be able to leverage their distinctive assets [i.e. their extensive reach (mobile and fixed network, distribution, marketing channels), large customer base, and availability of big data] in these 3 areas, especially in emerging markets such as developing Asia, which generally possess higher propensities towards new technology adoption.

Firstly, telcos can leverage their proprietary customer data repositories, loyal customer base, and distribution channels to develop competitive Fintech offerings such as digital lending and insurance services. These services have the highest monetization potential in the short term for telcos, especially in emerging markets. To develop such value propositions, telcos are advised to establish a network of players with specific domain expertise, such as financial institutions, credit scoring providers, and tech companies¹.

Secondly, telcos' ownership of connectivity infrastructure assets also allows them to establish proprietary IoT ecosystems that use their own networks and enhance their product and service portfolios. Further, as connectivity only represents 15% of total IoT project revenues, telcos must also look at ways to increase their share of the IoT pie through the development of new IoT devices, platforms, applications, and services.

Finally, telcos' extensive network infrastructure, millions of transactions, and billions of data records make them particularly susceptible to inefficiencies, errors, security threats, and higher transaction costs. Telcos are therefore also the largest potential beneficiaries of blockchain applications such as smart contracts and fraud detection measures. Although some telcos such as T-Mobile (USA), KT Corporation (South Korea), and NTT (Japan) have made forays into the Blockchain market, the race for Blockchain supremacy is still very much open.

The 3 high opportunity areas identified, i.e. FinTech, IoT, and Blockchain, demonstrate different challenges, monetization potentials, technological requirements, market readiness levels, and synergies with telco businesses. The application of these 3 digital technologies will also lead telco business models to evolve to become less integrated (i.e. the provision of connectivity and applications will be increasingly separated, with multiple application platforms sharing the same infrastructure) and less uniform (i.e. specialized architectures will be required to support different services) than before.

This perspective articulates Value Partners' view of the actions that telcos should take (e.g. by determining actual use cases and their corresponding investment requirements and returns, prioritizing financial and managerial resource allocation, ensuring organizational readiness, etc.) to develop and fully benefit from digital technology propositions such as FinTech, IoT, and Blockchain in the short and medium term.

Telcos should steer clear of non-synergistic digital services and set instead on a journey to capture the growth opportunities available in the FinTech, IoT, and Blockchain spaces.

WHERE SHOULD TELCOS PLAY?

(2) GSMA Mobile Economy report 2018.

Connectivity or digital technologies?

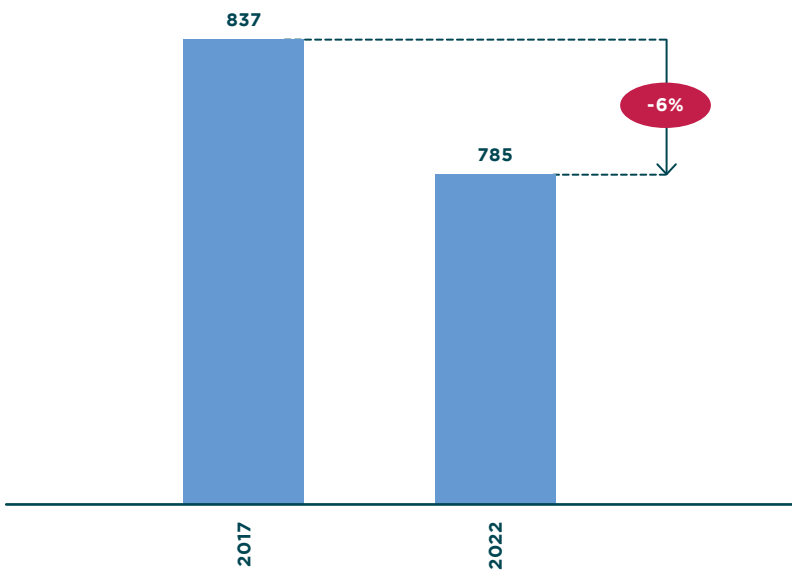
The telecommunications industry is in the midst of an exciting revolution. While still nascent, digitalization and new technologies have opened up a new world of possibilities for telcos.

At this juncture, telcos have a key decision to make: Should they continue to focus on their core competency of providing connectivity services? Or should they redirect their resources towards exploring the opportunities that digital technologies offer?

Connectivity as the enabling factor for digital

Connectivity has been the bedrock of telcos' business models since the invention of the telephone. In the digital age, connectivity will remain an important enabling factor for new digital technologies. However, intense competition, tightening regulation, and high capital expenditure requirements have constrained telcos' revenues, margins, and growth. In fact, mobile operators' global core revenues are projected to decline by 6%, from ~USD 837 bn in 2017 to ~USD 785 bn by 2022 (Exhibit 1).

EXHIBIT 1
MNO global core revenue projections, USD bn



Intense competition. In recent years, increasing competition from telcos and non-telco players such as global tech companies (e.g. Google, Facebook, Amazon, Apple, Microsoft, Tencent), Mobile Virtual Network Operators (MVNOs), and start-ups have lowered telcos' revenue and profit margins².

Telco customers, particularly millennials, have been looking towards tech over-the-top (OTT) players for the same telephony and messaging services traditionally provided by telcos. OTT services such as those provided by Apple, Facebook, Microsoft, and Tencent provide customers with a suite of complementary services in their ecosystems, across a variety of platforms such as FaceTime, WhatsApp, Skype, and WeChat.

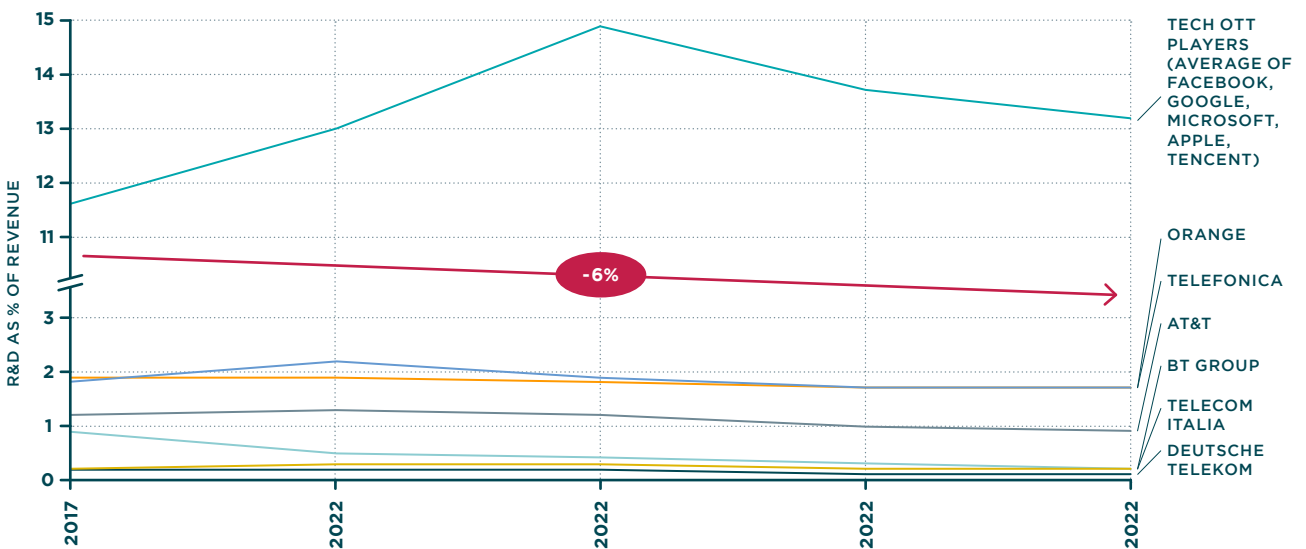
Source: ITU, Juniper Research.

A further indication of the struggles that telcos currently face is the large difference between their Research and Development (R&D) investments compared to OTT players in recent years (Exhibit 2).

The emergence of more tailored and competitive offerings from MVNOs has also led to an increasingly fragmented market for telcos. The Singaporean digital MVNO CirclesLife for example, offers data-heavy, low-talktime plans with free WhatsApp data usage targeted at 'digital natives' who prefer using OTT applications instead of traditional phone or SMS services. If telcos fail to adapt their generalist product and service offerings to the more specific needs of each niche customer segment, they will continue to lose out to MVNOs' more customized and varied alternatives.

Start-ups are also seizing on the inefficiencies within telcos' legacy network infrastructures to provide disruptive substitutes for telcos' connectivity services. Shenzhen-based Redtea Mobile, for instance, plans to provide cross-border network coverage for IoT devices through the deployment of embedded SIM (eSIM) technology. Hong Kong-based QLC Chain is also looking to leverage its NEO blockchain platform to provide decentralized connectivity for users. Once completed, QLC's Network-as-a-Service (NaaS) infrastructure will allow customers to purchase or lease connectivity from their peers, bypassing traditional telco providers.

EXHIBIT 2
R&D spend of OTT players and telcos as a percentage of revenues



Source: Light Reading, Company Annual Reports, Value Partners Analysis.

(3) Vodafone UK General Counsel and External Affairs Director.

(4) Ericsson.

Tightening regulation. Telcos incur many direct and indirect costs as a result of tightening regulation. For example, telcos are burdened by licence fees and the obligation to continue investing in the upgrading and maintenance of their networks. Recent price cap laws, complex regulations and red-tape, and initiatives encouraging competition have further worsened telcos' predicament.

For example, the EU has capped intra-EU call prices in the European Electronic Communications Code, while UK height restrictions on telecommunications masts and towers, coupled with misaligned government policies and incentives, have led to unnecessarily inflated infrastructure and maintenance costs³. In Singapore, the Info-communications Media Development Authority has put pressure on telcos to increase the accessibility and transparency of their walled networks. The Authority has trialed new standards for Over-The-Air Subscription Management that would enable eSIM chips in IoT devices to switch between different mobile network operators.

Although these initiatives will facilitate IoT adoption, telco customers' switching costs and loyalty will also be reduced, lowering telcos' profitability in the long run.

High infrastructure costs. Two key sources of increasing costs for telcos are their network infrastructures' O&M (Operations & Maintenance) running costs and the investments needed for network expansions and upgrades. Investments in 5G and the high costs of radio spectrum will further increase the financial pressures on operators.

In Italy's recent 5G auction, the 4 local telcos spent ~USD 5 bn in total (~18% of their combined revenue in 2018) for the 3.7 GHz spectrum band, which was more than twice the minimum government revenue target set. Recent C-band 5G trials have also shown that the power consumption of base transceiver stations (BTS) might account for almost 50% of network operation costs.

Moreover, 5G network rollout obligations have also added to telcos' financial burdens. For example, Hong Kong's operators have raised concerns over the coverage obligations set by OFCA, the Hong Kong regulator, in the upcoming 5G auction.

Between 2018 and 2020, telcos are expected to invest ~USD 0.5 tn worldwide in mobile capital expenditures, excluding spectrum acquisitions. These investments comprise roughly 16% of telcos' revenues on average⁴. Given declining core revenues from connectivity, it is imperative for telcos to develop a clear strategic roadmap that would look beyond the core telco market, and into more innovative and promising areas such as the digital arena.

Digitalization provides telcos with an avenue for growth amidst intense competition, tightening regulation, and high costs.

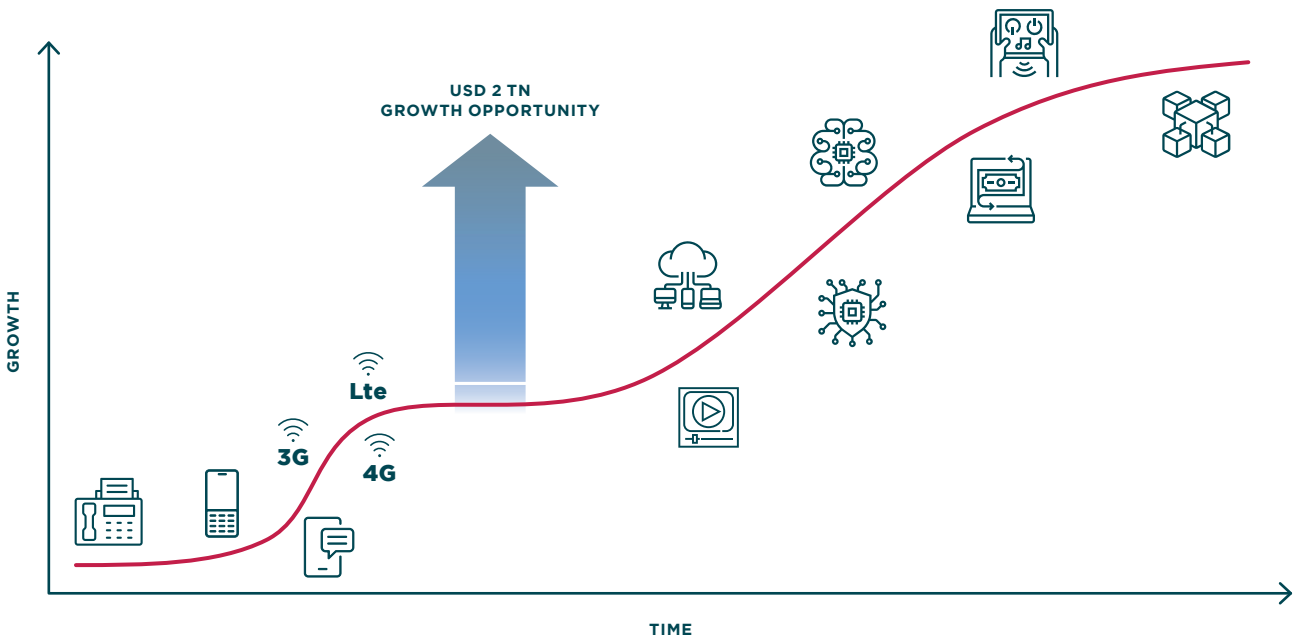
Digital technologies as the next growth engine

Digital technologies offer telcos with huge growth opportunities amidst the backdrop of declining core revenues from traditional connectivity services. Digitalization in the global telecom industry is estimated to be worth ~USD 2 tn over the next decade (Exhibit 3), with the most value arising from 5G-enabled digital technologies (e.g. eMBB, URLLC, Massive IoT).

The regulation of digital technologies is also less restrictive, allowing telcos more freedom to innovate and consolidate their market positions. The versatility of digital technologies also provides telcos with numerous use cases and applications (Exhibit 4, next page).

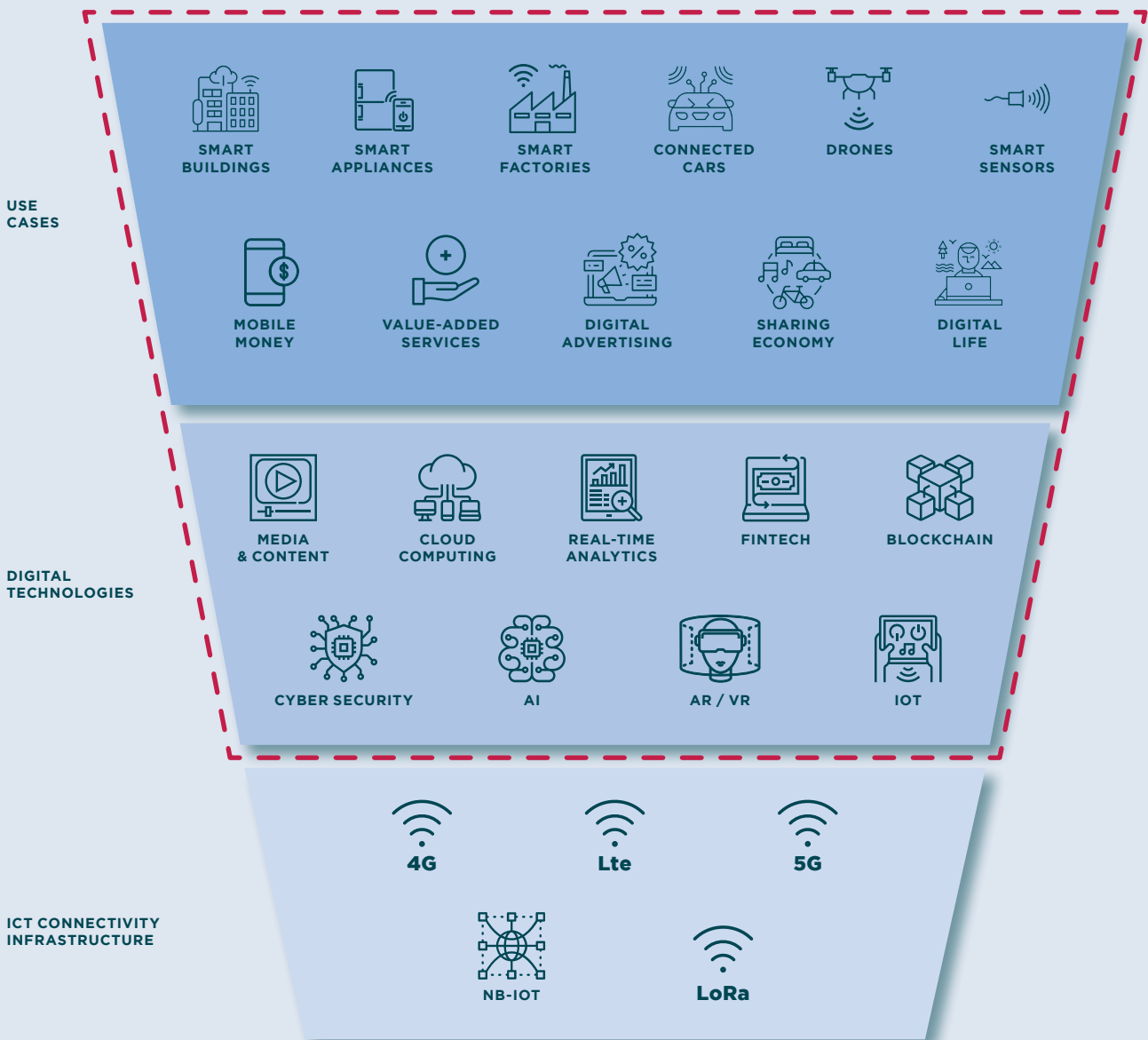
IoT, for example, has the potential to benefit individual customers, enterprises, as well as governments. Telcos investing in IoT can provide individual consumers with connected devices displaying real-time information streams, enterprises with improved efficiencies (e.g. predictive maintenance, asset tracking, inventory management, etc.), and governments with the ability to enhance public services (e.g. sensors for early disaster warning, crime detection, patient surveillance, etc.).

EXHIBIT 3
Digital technology S-curve and future growth opportunities



Source: WEF, Value Partners analysis.

EXHIBIT 4
Digitalization of telcos - where to play



Source: WEF, Value Partners analysis.

HOW CAN TELCOS WIN?

Steer clear of digital technologies with low potential

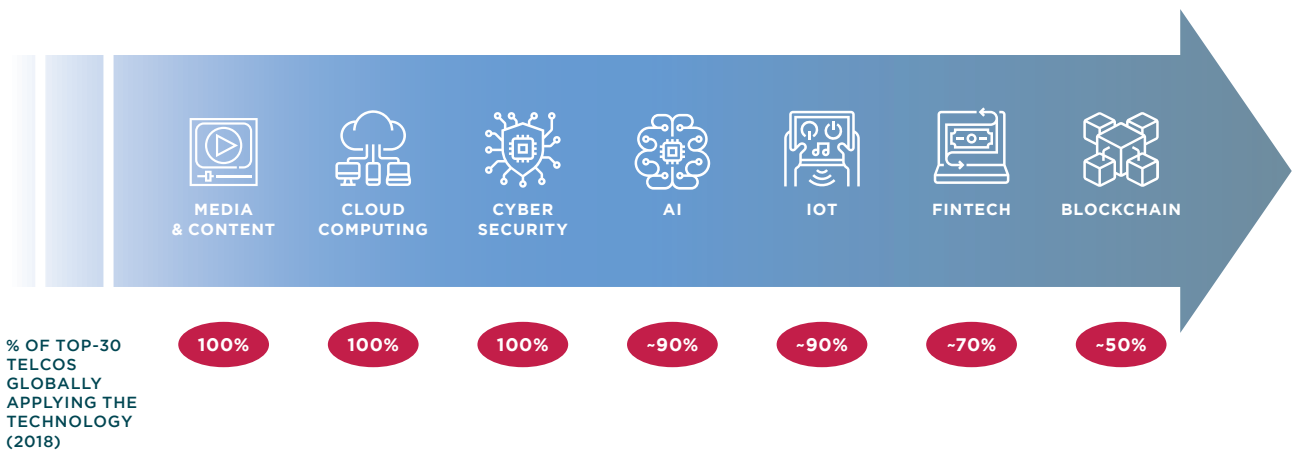
Given the numerous digital technologies available, it is imperative for telcos to decide on which ones they should invest in to realize the greatest synergies and returns. Current digital technology adoption rates among the largest global telcos have been relatively high, particularly for technologies such as Media & Content, Cloud Computing, and Cybersecurity (Exhibit 5).

While these investments will undoubtedly benefit telcos in the short-term, telcos will also need to carefully assess the forgone opportunities and long-term implications of entering these markets.

Telcos entering the Media & Content, Cloud Computing, and Cybersecurity markets face stiff competition from leading players with winning value propositions. Amazon Web Services (AWS), Google Cloud, and Microsoft Azure can offer more coverage and lower latencies than telcos in the Cloud Computing market due to their global datacenter networks, while specialized firms such as McAfee, Symantec, and VMWare possess deep expertise and track records in the Cybersecurity market.

In the Media & Content market, where content is king, telcos will have to invest large sums of money to procure or produce content to compete in the long run.

EXHIBIT 5
Digital technology penetration, Top-30 telcos globally by revenue, 2018



Source: Forbes, Company Annual Reports, Value Partners Analysis.

- (5) Financial Times, Raymond James research.
- (6) Financial Times.
- (7) Barclays.

As further evidence of the challenges that telcos are likely to face when entering the Media & Content space, European telcos with media strategies lost 40% of their stock market valuation on average in 2017⁵. For example, Altice, which spearheaded the telecoms-media convergence model, lost more than half its value in 2017. BT Group’s value also plunged in 2017, due in part to stagnant subscriber growth on its media platforms⁶.

By contrast, telcos which deprioritized their push for exclusive media content, such as Vodafone and Orange, experienced upgraded profit forecasts for 2019⁷.

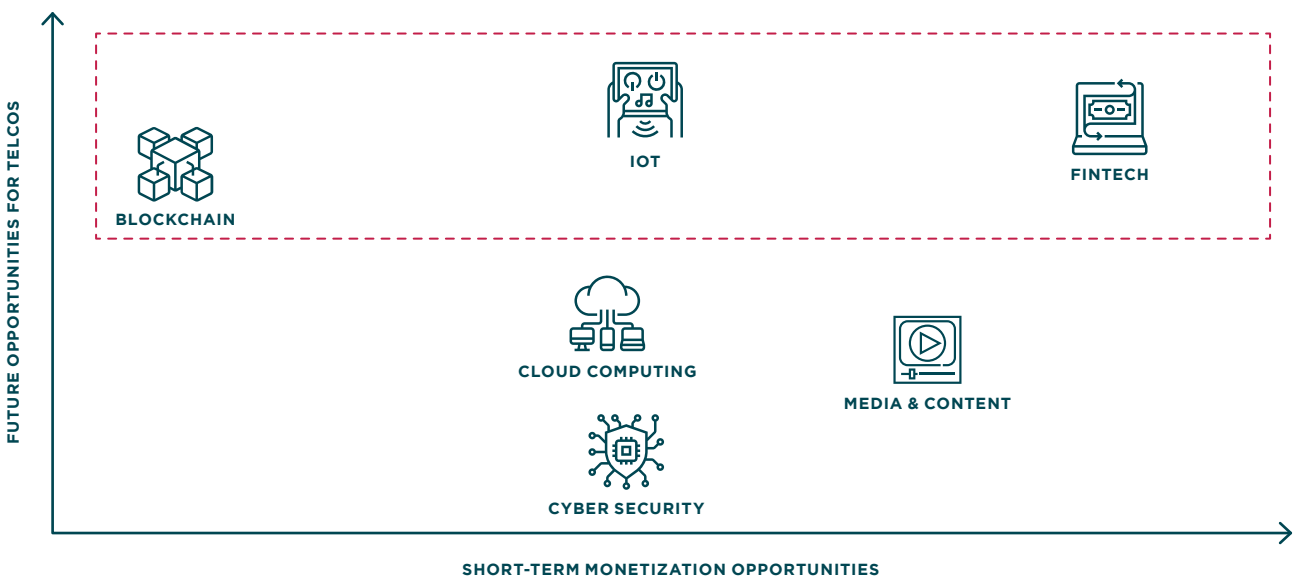
Telcos which ventured into Cloud Computing did not fare much better. In 2016, Verizon and CenturyLink rationalized their cloud businesses just five years after their first cloud investments.

Both telcos were unable to compete with AWS’s low prices, global reach, and relentless development of new services and improvements.

Identify synergistic digital technologies

FinTech, the Internet-of-Things (IoT), and Blockchain have been identified as the three digital technologies which offer the best growth opportunities for telcos (Exhibit 6). Most crucially, FinTech, IoT, and Blockchain demonstrate significant synergies with telcos’ key assets, i.e. their infrastructure network, big data, and customer base.

EXHIBIT 6
Digital technology opportunities



Source: ITU, GSMA, Company Annual Reports and Presentations, Value Partners analysis.

FinTech. FinTech comprises Stored Value Facilities (SVF), Mobile money, and digital lending and insurance services, among others.

SVFs are pre-paid electronic cash or cards that may be used by consumers to pay for goods and services. Examples include Octopus cards in Hong Kong, EZ-Link cards in Singapore, and T-money in South Korea. Apple's newly launched Apple Card will also have some functionalities akin to SVFs, such as the ability for users to store and transfer cash as part of Apple's Daily Cash rewards program.

Mobile money typically refers to Peer-to-Peer (P2P) payments and transfers, which facilitate basic banking services such as remittances, billing services, and savings. Examples include Globe Telecom's GCash and Bharti Airtel's AirTel Money.

Finally, digital lending and insurance services mainly include loans and insurance products which require fully digital and automated assessments of creditworthiness and underwriting risks.

Of the three FinTech categories, digital lending and insurance services offer telcos with the most promising growth opportunities. The SVF and Digital money markets are highly saturated and dominated by established government and private players. Profit margins are also low due to the low transaction values in these markets. Conversely, telcos possess an advantage in lending and insurance due to their key customer relationships and data assets, especially in emerging markets with limited access to traditional financial institutions.

Telcos' repositories of proprietary customer data will enable them to develop more accurate financial models for credit scoring, insurance pricing, or asset valuations. In the context of credit scoring models, larger volumes of customer data would enable telcos to improve their models' predictive powers, and achieve more optimal loan applicant acceptance rates.

Telcos will also be able to use the data collected to understand their customers' preferences and purchase habits better. This will in turn allow telcos to segment their customers more accurately, develop more personalized credit product offerings, and implement price discrimination mechanisms.

For example, Vodafone, via its African subsidiary Safaricom, has used a combination of telco and transaction data in their M-Shwari service to extend credit to customers at more optimal terms.

However, telcos should note that the use of private data in these models may be subject to compliance with data privacy policies and regulations. The implementation of the EU's General Data Protection Regulation (GDPR) has set a precedent that is likely to catalyze governments elsewhere to further tighten data privacy regulations. China, Singapore, South Korea, Japan, and Australia, Malaysia, and the Philippines have recently revised their data protection compliance rules, or will be introducing new privacy and cyber security legislation soon.

Internet-of-Things (IoT). In addition to FinTech, telcos will also find significant growth opportunities in the IoT market. The market opportunity for telcos in the enterprise IoT market alone is projected to grow at a CAGR of 11% from ~USD 107 bn in 2017 to reach ~USD 258 bn in 2025 (Exhibit 7, next page).

(8) Vodafone Automotive website.

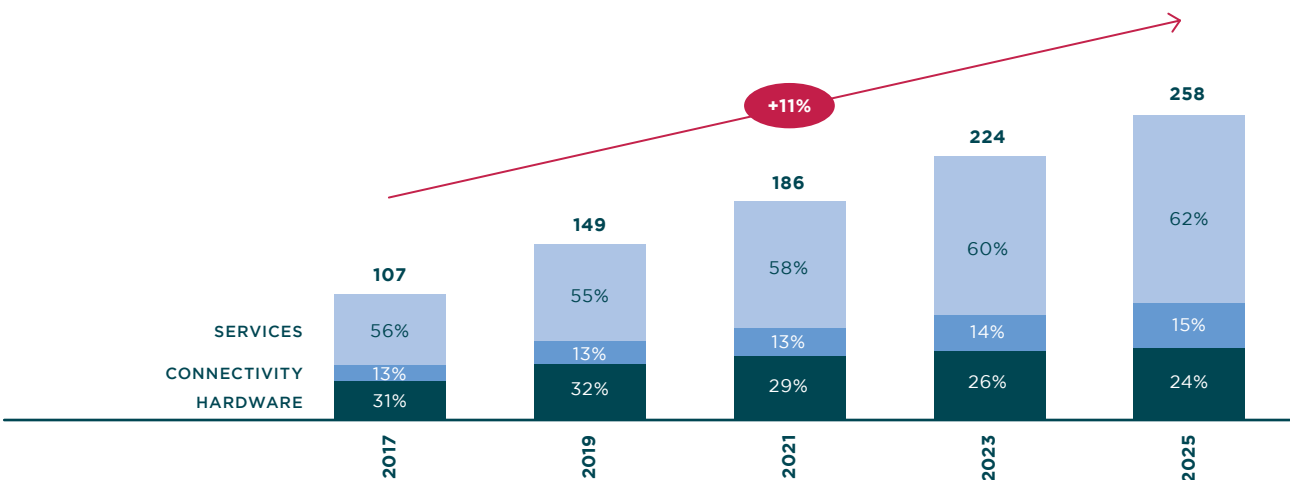
Telcos, with their key connectivity assets and capabilities, are well-positioned to take advantage of these opportunities. However, since connectivity only represents 15% of total IoT project revenues, telcos must also look at ways to increase their share of the IoT pie through the development of new IoT devices, platforms, applications, and services.

One way that telcos may do this is by opening up their platforms to third-party application providers [e.g. by using their Application Programming Interfaces (APIs)] or acquiring additional expertise to offer a more comprehensive suite of solutions and services. For example, Vodafone acquired Cobra Automotive to develop its connected car business, and currently boasts an IoT portfolio of automotive applications and services such as Stolen Vehicle Tracking, InCar Telematics, and Usage Based Insurance solutions⁸.

Secondly, telcos hold and manage key customer relationships, particularly with government entities and enterprises. Governmental organizations and enterprises have been early adopters of IoT systems and technologies such as smart cities and Industrial IoT applications (e.g. AR / VR, Machine Learning, and Artificial Intelligence). Telcos' existing relationships with these key stakeholders will give them a leg up on non-telco competitors.

Thirdly, telcos will be able to leverage the data generated from their IoT networks and systems for a variety of purposes across their entire business line. IoT-generated data has the additional benefit of being real-time, allowing for the generation of real-time analytics and feedback. IoT data will also be able to help telcos identify gaps in the market for new product development, better understand customer usage behavior, and anticipate potential maintenance requirements more accurately, to name but a few use cases.

EXHIBIT 7
Global IoT enterprise market projection, USD bn



Source: Vodafone H1 2018/19 Presentation, Source: Ericsson, "Global fixed, mobile and LPWA communication-based services (Feb 2017)].

Blockchain. Blockchain's adoption among telcos has lagged behind other digital technologies such as FinTech and IoT, mainly due to the technology's perceived lack of maturity, high investment costs, long payback period, and unclear monetization opportunities.

Nevertheless, some telcos have started to implement Blockchain technologies to improve efficiencies and reduce operation costs, through fraud detection for example. Blockchain also has the potential to generate revenue for telcos, through the provision of identity and data management services and project-based advisory services for other enterprises.

One use case for telcos is the employment of Blockchain to enhance the quality, efficiency, and security of their networks. For example, smart contracts will enable telcos to automate and increase the reliability and speed of network provisioning and real-time processing, reducing the obstacles of 5G deployment. Nippon Telegraph and Telephone (NTT), for example, has filed a patent for a blockchain-based contract agreement mechanism that will include the electronic signatures of all the involved parties in one transaction.

Blockchain will also enable secure peer-to-peer connectivity authentications and payments for users on telcos' networks. KT Corporation, for example, has launched a proprietary blockchain network to authenticate and verify user IDs, streamline international data roaming services, and develop an energy trading market for unused energy quotas.

Blockchain's reliable peer-to-peer connectivity solution can also be used to reduce the costs and increase the efficiency of managing the millions of potential interactions between IoT devices and sensors.

Secondly, telcos' large repositories of sensitive data will benefit immensely from the security, reliability, and cost-effectiveness of a Blockchain-based data management solution. Blockchain's fraud detection and identity verification capabilities will ensure that the customer and transaction data collected are reliable and secure. Blockchain will also be able to structure the data automatically for further analysis, reducing data cleaning time and costs. T-mobile, for instance, has deployed an internal blockchain-based system to manage its user identity, access, and approval data.

Thirdly, as Blockchain technology matures, enterprises and governments will be among the early adopters testing and implementing it within their organizations. Compared to individual consumers, enterprises and governments will have much higher security, accuracy, and reliability service level requirements. Blockchain technology has the potential to meet these operational standards.

Additionally, telcos' experience and expertise in managing enterprise and government clients make them well placed to understand these customers' specific needs and how Blockchain technology can meet them.

WHAT COURSE SHOULD TELCOS CHART?

FinTech and IoT can serve as stepping stones for telcos looking to increase their revenues (Exhibit 8). This is because FinTech technologies are relatively well established, and are therefore easily operationalized by telcos. For example, telcos can develop Fintech value propositions by establishing partnerships with a network of players with specific domain expertise, such as financial institutions, credit scoring providers, and tech companies (e.g. FinTech start-ups).

Since the IoT industry is still in the midst of developing commercially viable IoT use cases, telcos will also need to partner with multiple stakeholders (e.g. system integrators, equipment vendors, platform developers, software houses, application vendors, etc.) to bring IoT products and services to market.

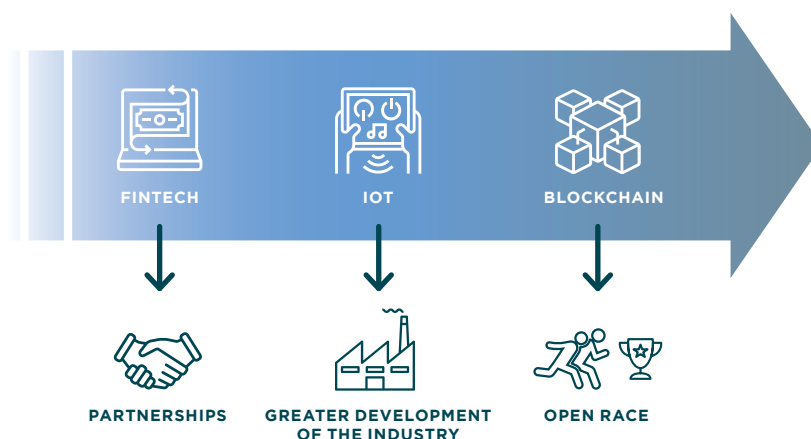
Therefore, until the IoT ecosystem matures, it will take more time and effort for telcos to monetize their IoT solutions.

Conversely, due to the immaturity of Blockchain technology, the Blockchain market is still an open race for telcos. Many telcos have dabbled in Blockchain, but few have committed significant resources nor investments to develop a niche in the market.

Blockchain therefore not only presents telcos with an avenue to diversify their portfolio and revenue streams, but also a way to differentiate themselves from rival telcos domestically and abroad in an increasingly commoditized global connectivity market.

Being a first mover in each digital technology category will not be enough. To win, telcos must develop unique, innovative, and tailored product and service offerings that are supported by robust and efficient internal systems and supply chains.

EXHIBIT 8
Proposed adoption path for FinTech, IoT, and Blockchain



CONCLUSION

The stakes for telcos are high. Increasing competition from local and foreign firms both within and outside the industry, changing consumer needs and preferences, and tightening regulation are threatening telcos' core revenues, and pushing them to reinvent themselves to survive. The digital revolution offers a vast ocean of opportunity for telcos to reinvent themselves and reignite their growth.

However, telcos must be careful to select the right course to chart, since not every opportunity available will be synergistic with their capabilities and business models. Telcos which have already started investing in these technologies will need to re-prioritize their efforts, and reallocate their limited resources to higher potential, higher growth opportunities such as FinTech, IoT, and Blockchain.

Nonetheless, knowing the general direction to take is only the first step for telcos. Telcos will also need to act quickly to design and execute a strategic and operational roadmap for a successful and sustainable digital transformation.

In this next phase, Value Partners is best positioned to guide and navigate telcos through this unpredictable and complex digital environment. With our vast experience and successful project track record in the TMT industry, Value Partners can support telcos via assessments of their digital technology market potential, internal digital readiness, and opportunities for partnerships and acquisitions.

Value Partners can also assist telcos with the digitalization and optimization of their existing processes and infrastructures, as well as the charting of their digital transformation roadmaps.

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ABOUT VALUE PARTNERS

Value Partners is a global management consulting firm with a proven track record in the Telecoms, Media, and Technology (TMT) industry.

We have worked for the vast majority of TMT players around the world over the past 25 years, including regulators, government agencies, industry associations, service providers, and strategic investors.

We have supported leading TMT players globally, on projects that span the full universe of telecom & media technologies – fixed, wireless, broadband, satellite, broadcast – and range from customer segmentation, to product launch, market entry, strategic alliances, and M&A.

In addition to management consulting, our Digital Technology team is also well equipped with the most advanced knowledge of the technological developments and opportunities in the digital space, thanks to our recent engagements for clients in various industries covering a broad range of digital topics in both B2B and B2C segments, such as digital innovation, digital products and services design, market assessment of digital solutions, customer journey, and digital transformation.

For more information on the issues raised in this note please contact the authors.

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**Leveraging Digital
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