



The race to the home butler

Are telcos about to miss the digital home service opportunity?

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Executive summary

Since 2012 we have identified the smart home as one of the most sizable opportunities for telcos, as it is increasing at a CAGR from 2018 to 2023 of more than 20 percent, to reach €126bn by 2023. However, until now, most telecom operators have not been able to transform this opportunity into profit. In recent years, many telecom operators launched smart-home initiatives hoping to capture part of the promising smart-home market. However, device-centered and platform-based offerings were not successful in empirical experiences, while client value- and service-oriented solutions were adopted and offered significant returns. Many different actors, such as internet giants and utilities, see the potential of this market and have started to develop a competitive advantage. However, by leveraging their assets, telcos have a unique legitimacy to move beyond connectivity to become the main digital home-service providers. To create holistic and successful offerings, telcos should also look into partnerships with platform and home-service aggregators.

But time is running out, and the race is on!

1. Introduction

Why are the majority of telecom operators missing the smart-home opportunity?

In our 2012 report, "Catching the smart home opportunity: Room for growth for telecom operators," we explained how telecom operators could take advantage of smart-home service as an offering. However, since then, very few operators have succeeded in unlocking this potential. Why did most of the telecom sector miss the chance to position themselves in a segment that is set to be valued at approximately 10 percent of total fixed and mobile telecom revenue¹ through growth of 20 percent CAGR to reach €126bn²? Overall, the smart home has been seen as a controversial opportunity in the telecom landscape. The reasons for such views range from fear of failure to operators' own limitations (lack of experience and flexibility), as well as failure to clearly perceive the opportunity and how to transform it into success.

Only service-centered offerings have been successful for telcos so far

Attracted by this growth potential, some European telcos launched device-oriented smart-home initiatives. Their offerings were centered on selling smart devices (personal or household-related smart devices) with basic value-added services, mainly leveraging their logistics competencies. They opted for low-cost, mass-market positioning, hoping to disrupt the market and see rapid take-up rates. This value proposition was characterized by promoting self-installation, responding to one customer need (e.g., security, lighting and temperature control) and requiring self-action and self-monitoring from the client (e.g., the client needed to check the security/automation of his house himself). In addition, the user was responsible for device maintenance and upgrade. Smart-home solutions were also mainly driven by white-label or low-end products.

Such initiatives have not been able to go beyond early adopters, blocked by a perception that they are "geeky" products, difficult to manage and install, offer limited added value for the client, and have a clear positioning gap in terms of trust and quality. Therefore, their results included weak penetration (less than 1 percent of the customer base), low pricing (but still expensive in terms of the value created), low usage, low loyalty, and limited overall revenue generation and profit potential.

As a result, some operators have stopped smart-home offerings, convinced of the products' lack of market potential and/or their lack of legitimacy.

Going further, some operators are aiming to create a smart-home ecosystem to bring together multiple hardware and software providers and ensure their interoperability on a single platform. These actors are leveraging their scale to develop a strong ecosystem of industrial partners. Deutsche Telekom (DT) is one of them, with its Qivicon platform: a white-label solution composed of a home hub for smart-home devices and applications. It groups more than 40 industrial partners offering over 600 devices. DT launched Qivicon in Germany under the Magenta Smart Home branding. However, its results are mitigated with a slow adoption rate (having reached 352,000 customers, or approximately 2 percent of its customer base, in 2018, five years after its commercialization) and low-price tag (approximately €5 per month).

The potential to replicate such an initiative for small and medium-size telcos seems low considering the CAPEX investment required to build the platform and ecosystem. Therefore, some telcos have opted to leverage other platforms, such as KPN using the DT Qivicon platform in its smart-home offering. Its success is also yet to be demonstrated.

Figure 1: Smart-home offering



Source: Arthur D. Little, company information

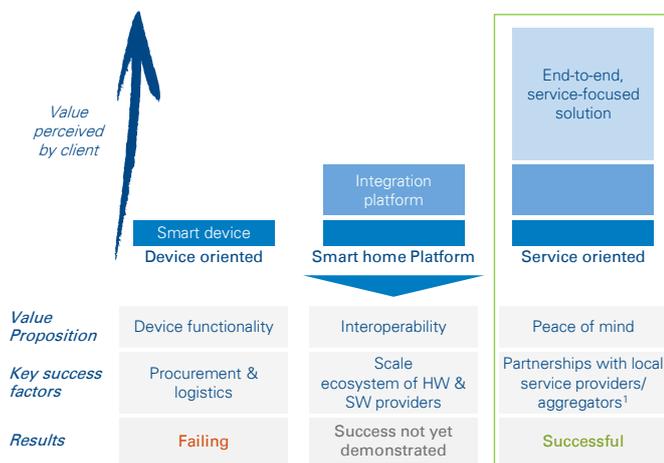
2. The digital-home service

Digital home is a full-play service that covers all aspects of the customer journey and shows multiple advantages for telcos

As already shown in our previous Viewpoint, “Time to dare: Reinvent the Home Butler”, the only successful smart-home offering is based on services to the customer. They offer a “burden-avoidance” solution and peace of mind. These solutions are based on three unmet needs:

- Helping customers equip their homes – full assistance, from selection of the device to installation and after-sales support and maintenance
- Coaching customers on how to use devices effectively and efficiently
- Acting/reacting when needed – there are three possible trigger moments (upon request, proactive maintenance or repair, and reacting in cases of incidents).

Figure 2: Smart home offering



¹ Or internally via organic growth and/or M&A
Source: Arthur D. Little, company information, desk research

In late 2012, Comcast launched its Xfinity Home offering around home security. Since then, its ambition has widened to become the single point of contact for all matters involving home-control systems (which offer energy control, lighting and shade control, and home-access control services). Price tags range from \$40 (Home Security) to \$50 (Home Security Plus) for the plan and \$360 (Base Home System) to \$600 (Ultimate Home System) for the equipment, plus \$60 for installation fees. Comcast’s

end-to-end solutions include advising clients on which products to choose, performing installation and offering 24/7 professional monitoring and support. The offering shows good traction in the market, with penetration of more than 5 percent of its internet customer base (approximately 1.365 million customers in 2019 Q3) seven years after its launch, having grown by 6 percent per quarter. Going forward, Comcast plans to broaden its scope to include health monitoring in its home offering.

In the same way, PCCW provides home automation, home entertainment (e.g., audio-visual products and installation service) and e-health services (e.g., installation and maintenance of post-operative care devices) to its Hong Kong customers. PCCW is also active in home-networking and smart-living consultancy services, helping customers to design and build smart homes through a service that is less expected from telecom operators. Thanks to its end-to-end service offering, PCCW succeeded in cross-selling approximately 17 percent of its broadband subscriber base to its digital-home service.

Two take-aways emerge. First, all of these operators put human services³ at the heart of their offerings, using their own or external staff to perform smart-home assessment, product installations and configuration, and after-sales support. Second, all successful smart-life offerings started with security/surveillance services monitored end to end. These services have not always been well marketed, although they are at the core of the smart-home need. Indeed, people want to “watch their home” for purposes such as monitoring their dogs, taking deliveries, supervising housekeepers or simply getting a nostalgic feeling of being at home. Once the company has gained the customer’s trust with this emotive topic, it extends the scope to other digital-home verticals.

Finally, as identified in our previous viewpoint, “Time to dare: Reinvent the home butler”, overall, smart-life services could generate 25 to 130 times more value than the current device-driven small-play offerings. This is thanks to high ARPU levels and indirect value creation such as substantial increases in net promoter scores (NPSs), retention, and reliance on core telecom services.

A digital-home offering is incomplete without a service component

³ Part of this could be replaced with artificial intelligence solutions in the future

Digital-home services go way beyond pure connectivity, platform and smart-device sales. The real value in the digital-home offering lies in setting up an ecosystem that includes providers of tailor-made services to respond to notifications from smart devices. These smart devices are controlled through a platform, and the service is billed through a client management system. Six components are therefore required for a successful digital-home offering.

Connectivity and networking make up the enabling layer of the digital-home solution, connecting devices between them and to a controlling platform. With the increase in connected devices (UK households are expected to have about 50 connected devices by 2023, for example), the quality of the connectivity will become increasingly important to ensure good quality of service. The challenge for connectivity providers, then, is to upgrade, manage and maintain indoor wireless solutions (such as Wi-Fi, 4G and 5G, Zigbee, and LoRaWAN).

Because they leverage indoor connectivity, smart devices are the cornerstone of digital-home solutions: collecting information, interacting with users and acting on demand. A vast variety of devices exist, ranging from personal devices (such as smart watches, fitness bands, and mobile), to connected household appliances (speakers, cameras, TVs, thermostats, and locks) and smart sensors (to detect smoke, water, weather, pressure, and motion).

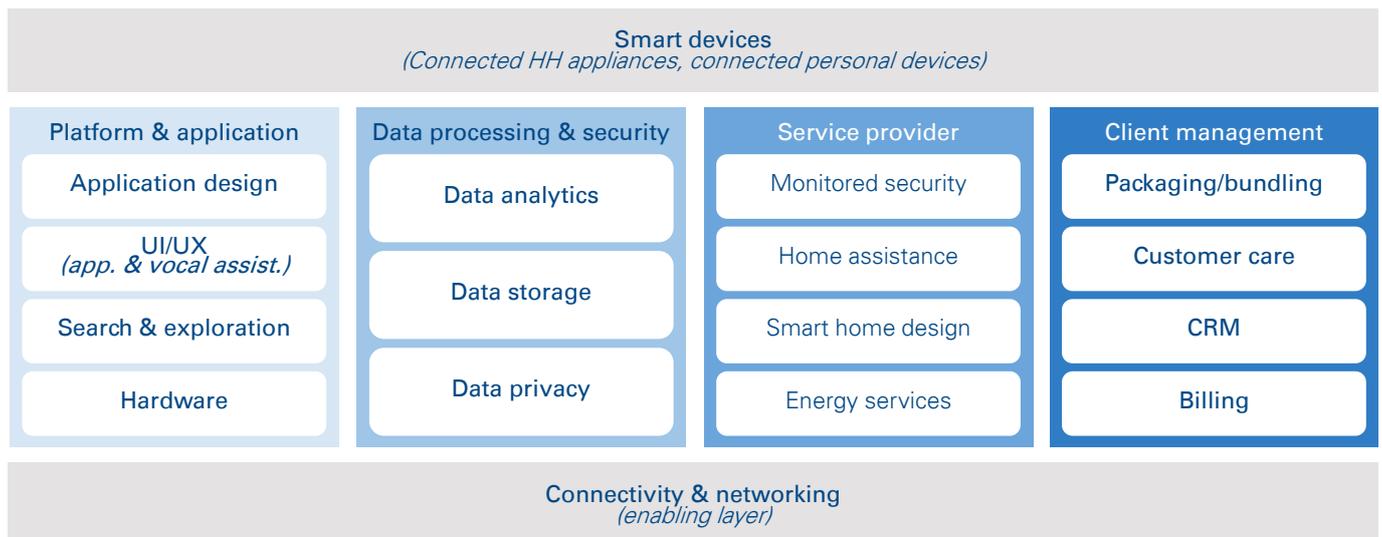
The platform allows the customer to access multiple objects and services seamlessly in a single ecosystem. The platform hardware acts as a central hub for the smart home to which all devices are connected, and includes search and exploration tools. The client then accesses and uses the objects through user interfaces such as applications, either on mobile or using a voice assistant.

With the increasing awareness and demand for additional data security and privacy, it is key for service providers to position themselves as *data protectors*.

In addition, the service provider leverages the insight from the smart device to bring a human service to a customer need. This requires local presence and staff throughout the city or country to ensure appropriate actions with the right timing. This building block is essential because many offerings have failed due to lack of (good) service.

Finally, the offering is packed and bundled under a single brand name (or together with a potential partner) and invoiced to the client. Clients will be able to contact customer care to get answers to any problems in their smart-home solutions.

Figure 3: Building blocks of digital-home services



Source: Arthur D. Little

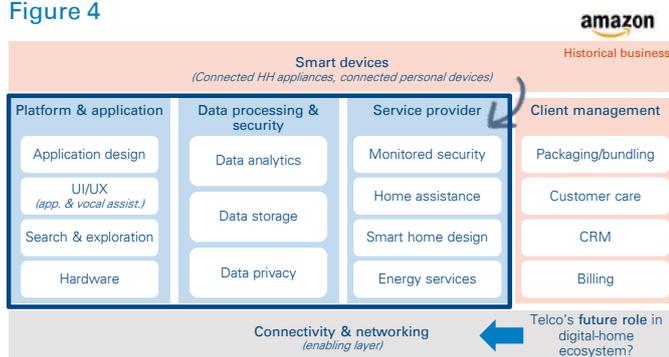
3. The race is on, but it is team play

Other actors, such as internet giants and utilities, have shown significant interest and are already in this market

Attracted by cross-selling opportunities and revenue potential, other actors such as internet giants have started to position themselves very well on the different building blocks of digital-home service.

For example, Amazon is well placed in the US to cover all home needs thanks to a network of service providers, a powerful platform and a user-friendly interface. It provides installation (such as locks, thermostats, and cameras), design and organization services, and life services (such as house cleaning, home improvement, and gardening). It also uses its own staff to provide smart-home assessments in all US zip codes. The company covers the entire middle layer, offering a frictionless customer experience: bundling products, managing payments to third-party suppliers, and leaving the connectivity role to telecom players. It has now entered the European market, trying to capture customers by leveraging its smart speaker, Alexa. However, Amazon (Ring) faces increasing concerns from the public regarding data privacy, mainly due to its partnership with law enforcement to share data, as well as the Alexa smart speaker constantly listening to and recording conversations.

Figure 4

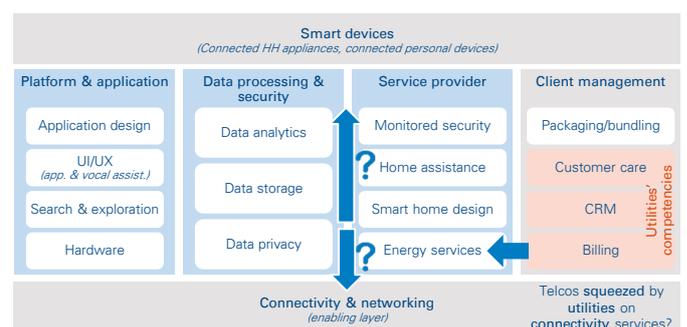


Source: Arthur D. Little

Recently, Amazon, Apple, Google and the Zigbee Alliance entered into partnerships with other large companies, such as IKEA, NXP, Legrand and Samsung, to develop connectivity and increase interoperability over a multitude of smart devices. Since no telcos have been included in this project, it illustrates that telcos can be excluded from the race by diluting connectivity – which is one of their historical competitive advantages.

Utility companies are also positioning themselves in this segment, aiming to find new growth areas, due to pressure from governments to lower energy prices and end users reducing their consumption. One of Germany's biggest utilities, innogy, has had a smart-home offering since 2011. The company is currently device oriented, rebranding and selling eQ-3 devices (such as heating, security, water and fire detectors) with a user-friendly mobile application. In September 2018 it partnered with Intertrust, a data-rights management platform, to improve the security of smart-home data management and deliver additional value-added services (such as giving insurers access to data while respecting Europe's General Data Protection Regulation). This investment seems to reflect the importance of the business to the company. In Norway, 15 utilities are positioning themselves in the smart-home segment through Hitch, a solution based on the Qivicon platform. In Italy, Enel, via its technology subsidiary Enel x, offers smart-home services such as heating and air-conditioning, solar, and photovoltaic systems bundled with installation, maintenance and repair services. The company has an advantage due to a strong position following installation of 21 million smart meters as of 2019, as well as a €5.1 billion investment in deploying its Italian fiber network.

Figure 5



Source: Arthur D. Little

There are even cases of consumer electronics providers becoming competitors to telcos, such as in South Korea, where LG Group plans to launch "LG Home Platform" and offer home-related services with all hardware and software solutions. This rare example is enabled by LG-specific capabilities in South Korea. It can consolidate its consumer electronics with home solutions from LG Hausys, connectivity/media solutions from LG Uplus (its telecom operator entity), and software/solutions from LG CNS. Apart from this, consumer-electronics providers are likely to act as partners to telcos in digital-home solutions.

However, telcos are uniquely positioned to take the smart home-enabler role, benefiting from quadruple legitimacy

Telcos have an opportunity to move beyond their traditional connectivity-provider role and become digital-home enablers. Enablers bring together different capabilities and brand digital-home solutions under their own names (or together with partners). They need to bundle service capabilities together with platform and controlling interfaces, select the relevant smart devices, and set in place the required customer management tools.

Telcos benefit from quadruple legitimacy to take this position. They are recognized as central players since they ensure connectivity and management of all connected devices in the customer's home. Besides, with the emergence of a plethora of connected devices and little customer support available, customers are likely to turn to their telcos' call centers when facing problems anyhow.

Second, most telecom operators, as local players, benefit from more customer trust than other companies (notably demonstrated when customers open their homes to installation and service support teams). They are perceived as providing fair conditions and service quality. This high level of trust is essential because the smart-home service provider is to be active in the heart of the client's home. Furthermore, they are also considered to be more cautious about data privacy, whereas large, international technology actors are increasingly criticized for data management policies.

Further, telcos own recurrent and local customer relationships: selling products to households, providing relevant care, and managing billing relationships are in their DNA.

Finally, their strong local presence via mass consumer sales channels (including physical sales points with trained staff) also supports their position to take the lead and set up the local ecosystem. Illustratively, telcos offering successful smart-home services cover all building blocks of the digital-home solution, such as Comcast and PCCW.

These examples show that telcos can leverage their historical capabilities and positioning to better address key challenges raised within the digital-home offering, compared to internet giants and utilities. However, it will be difficult for telcos to provide cost- and technology-competitive products to meet all those needs. Partnerships will help them get there, moving them away from device and platform considerations to focus on bringing relevant services to customers.

Telcos will need to partner with platform operators and home-service aggregators

In building the digital-home solution, partnerships have strong advantages: they reduce risks by diminishing the investment required and improve solution credibility by building on other powerful brands. Partnerships therefore lead to optimized returns on investments for telcos.

Successful digital-home experiences show that two types of partnerships are required. **First, telcos should partner with platform operator(s)** to connect and manage all smart devices in households seamlessly. Not offering end-to-end service solutions is a recipe for failure, and not selecting the right partner could deliver the same result. Hence, partners should be carefully chosen depending on the actual need and objective of the telecom operator, as well as strong alignment with the operator. In that aspect, a telco can partner with one or multiple players:

- **A technology company** such as Amazon or Google to ensure an always-up-to-date platform with powerful voice-assistant solutions.
- **A telecom operator** such as DT with Qivicon, which is available to KPN customers, or Comcast with the X1 platform.
- **A consumer-electronics provider** to build a platform customized to the telco's need. Vodafone Spain has done so with Samsung to create its own solution. This option is recommended solely for large actors as it is time intensive and risky (in that technology rapidly depreciates), and requires high CAPEX to keep infrastructure up to date

Second, telcos should partner with home-service aggregators to provide local services to customers. They operate strong networks of home-repair professionals and sub-contractors in many domains: plumbing, heating, electrical related, electronics, etc. Examples of home-service aggregators include HomeServe, Dixons, Geek Squad, and Multiasistencia. The last of these is the Spanish leader in management and repair of claims for insurance and utility companies. It leverages its large network of sub-contractors to resolve end users' insurance claims. Also noteworthy is that the last months have seen development of a plethora of Uber-like and collaborative-economy apps for those home services, which will probably land with a set of new home-service leaders soon. Examples of such on-demand home-services platforms are Angi Homeservices⁵, TaskRabbit, Zaarly, Porch and Takl. Typically, customers connect with (self-employed) service providers via the platform for a large range of services, from house cleaning to smart-home installation.

⁵ Global leader in home services via acquisition of 12 brands of on-demand home-services platforms, including Handy and Angie's list

In November 2015, Swisscom acquired a majority participation in Mila, a start-up active in the collaborative economy. It proposes flexible and fast on-site customer-support service, with a network of independents ready to address technical problems at customer premises.

Setting up partnerships with home-service aggregators is not complex as they and telcos both have strong local dimensions. Another interesting move observed is telcos entering into partnerships with real-estate actors. This can create an additional growth lever that allows telcos to secure larger shares of "new net adds" from the market by obtaining deals with real-estate companies before the arrival of the first occupants. In addition, it can dramatically decrease the churn related to these customers thanks to higher value propositions and exit barriers for customers.

Smart speakers – A must-have growth driver and core element of the digital-home value proposition, or a distraction?

The application of smart speakers can be extended to conversational platforms, which can serve as control hubs to monitor connected devices. With the conviction that smart speakers could be the hub of the next smart-home value proposition, many different actors have entered this market, led by internet giants.

In this context, the market for smart speakers is booming, with a global installed base of 100 million in 2018. This is forecasted to reach 200 million by end of 2020⁶, with the US currently the largest market and internet giants the main providers.

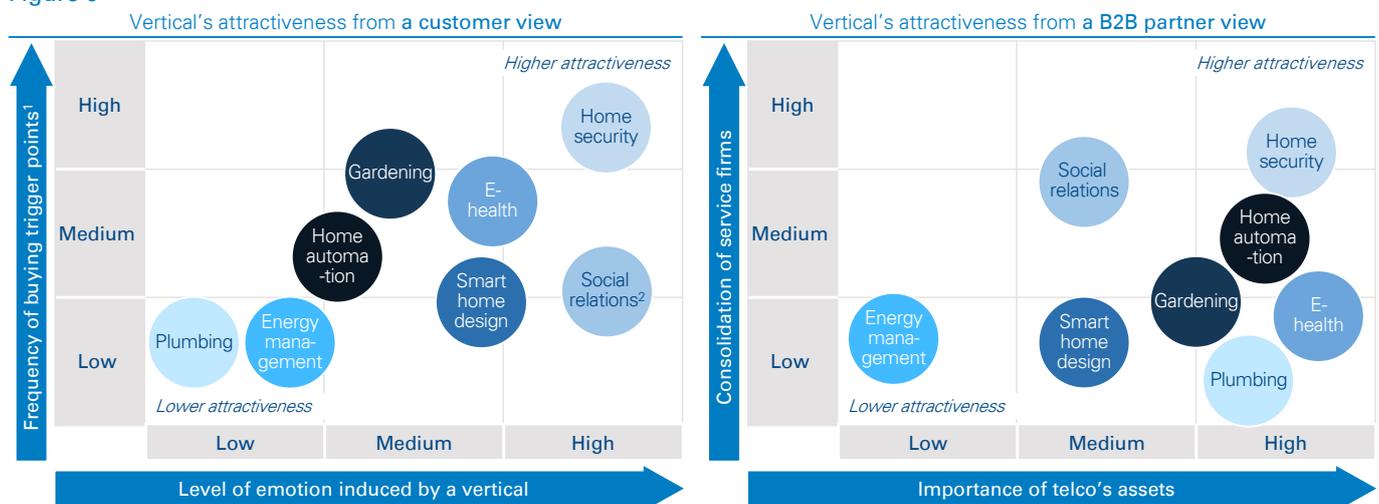
In Europe, some telcos have moved into this market by developing their own smart assistants either in-house or via

partnerships⁷, such as Orange with Django, Movistar with Aura and Deutsche Telekom with Magenta (Tinka, Sophie, Vanda). This trend is also showing in Asia, where KT and SK telecom compete against Alibaba's smart speaker with their respective voice assistants, GiGa Genie and Nugu.

However, the core positioning of smart speakers is far from obvious as full adoption faces multiple challenges. First, voice assistants are currently only able to respond to specific requests in optimal contexts (such as quiet environments) and cannot offer autonomous actions (such as prebooking a technician when the dishwasher is out of service) – yet. Second, the choice offered is narrow. As of today, research induced by voice results in a limited number of propositions. Hence, there could be a risk that the propositions would be more in line with commercial agreements of the voice assistant manufacturer than the needs of the customer. Further, increasing concerns and regulation in terms of data privacy, especially in Europe (the General Data Protection Regulation), could dampen the current momentum for smart speakers, which record every noise in their perimeters. Finally, the niche usage of smart speakers is problematic and could prevent them from fully replacing physical gateways in their pure form (no physical interaction). In many cases, having a screen is more helpful in making holistic choices than interacting with a voice assistant. Many experts forecast that voice will replace traditional interaction methods (mainly screens), but only for specific requests, such as switching lights on and off. Therefore, the new smart-speaker generation has begun to integrate screens to respond to this niche-issue.

To conclude, telcos should not only focus on smart speakers, but rather, concentrate on what really matters – the service.

Figure 6



1 Some client segments/niches may require shorter-term decisions and be more susceptible to buying trigger points
 2 Services centered on providing a social contact to a person who is isolated, disabled, etc.
 Source: Arthur D. Little

⁶ Statista, IDC, GlobalData
⁷ Partners including internet giants such as Amazon with DT and Orange

4. Where to start

Telcos must address five points for fast smart-home solution roll-out

To be successful in the smart-home business, telecom operators need to develop integrated solutions that leverage smart devices and field support. But other actors are lurking in the smart-home market and telecom operators need to act now. To deploy digital-home solutions, executives will need to answer the following questions:

- **Because each market is specific**, which vertical should you opt for? Is security a necessity, as in other markets? Are your current customers ready to pay for this service?
- **Based on your current assets, competencies and purpose**, what is the role you want to play (enabler, field-support provider, client management)?
- **Because multiple partners are available**, how do you identify the right company to work with (local or international)? What is the best co-development strategy (make, partner, buy)?
- **To ensure rapid customer adoption and return on experience**, what will be the pricing model? How will you ensure the right alignment between the product house and sales organization? How will you best market and brand the solution? In which city or region will you launch a pilot (while ensuring local staff presence)?
- **Based on the previous questions**, what are the significant financial guidelines? How will you define a five-year plan in accordance with a clear collective vision?

Insight for executives

- Very few telecom operators have been able to unlock the smart-home opportunity, which is set to be valued at approximately 10 percent of total fixed and mobile telecom revenue, growing at a CAGR of 20 percent to reach €126bn globally by 2023.
- Solely digital-home offerings have proven to be successful: leveraging smart devices to provide quick, no-burden reactions to everyday problems in the home is desirable to high-value customers, which can generate additional attractive revenue growth for telcos.
- Other actors, such as internet giants and utilities, are showing significant interest and have already entered this market. Therefore, telcos should aim to move into it quickly, before they are excluded (even from the connectivity layer).
- Telecom operators are uniquely positioned, benefiting from a quadruple legitimacy unique in the market: they are considered a reference for the connected world, benefit from client trust, and have recurring customer relationships combined with mass consumer sale channels.
- In order to create holistic, successful offerings, telcos should look into partnerships with platform operators and home-service aggregators.
- The smart-speaker market is expected to grow rapidly over the next years. However, they will likely not become the key element of the digital-home value proposition. Hence, telcos' focus should remain on the service offering.
- Five decisions are required for fast digital-home solution rollout in your country: 1) which vertical should you opt for? 2) what role do you want to play? 3) what is the best co-development strategy? 4) what will be the pricing model? 5) what are the financial guidelines to be defined?

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