EXECUTIVE INSIGHTS

The Connected Home: Can Your Company Plug Into Opportunity?

The connected home ecosystem comprises an estimated 1.8 billion smart devices — and that number is climbing. In our survey, 89% of current connected-product owners considered purchasing a connected device within the past year. Moreover, 60% of current connected-product nonowners also considered purchasing a connected device. Depending on the product, search volume for key connected products increased two to three times from 2017 to 2022. And despite variations in the speed of penetration growth, most third-party forecasts expect increases of more than 20% over the next five years or so.

Factor in the new Matter standard that enables greater interoperability, and this presents an obvious growth opportunity for an array of prospective players — including members of the investment community as well as players within industries that have an organic connection to the space across seven basic categories (see Figure 1).

Less obvious is how these prospective players can capitalize on the opportunity. What are the key factors that lead to success? Research shows that a primary differentiator will be the ability to determine consumer preferences. In an example of misreading the market, there has been considerable emphasis on developing smart speakers and product voice control, even though smart speakers have received relatively low usefulness scores in consumer surveys — only 17% of respondents indicate voice control as their preferred method of interacting with connected products. As one example of the consequences such miscalculations can produce, Amazon has instituted massive layoffs — including 2,000 employees in its devices and services organization — largely as a result of the slower-than-expected adoption of its Alexa voice assistant.

Figure 1
Connected home product categories and examples

NON-EXHAUSTIVE

	Home comfort	Security and access control	Appliances and lighting	Entertainment	Healthcare and wellness	Energy	Outdoors
Definition	Products designed to control air quality and temperature	Products designed to monitor home premises and access	Appliances/ lighting systems capable of predictive functionality and heightened customization	Internet-connected devices capable of accessing content/music streaming and voice communication	Products designed to monitor health and provide alerts in cases of adverse incidents	Solar generation, energy storage technologies, and EVs and chargers	Technology designed for lawn care, pool and spa, gardening, and other home outdoor activities
Examples of products	Thermostats Air purifiers HVAC units Smart shades	Cameras Access control Doorbells Garage control	Vacuums Laundry machines Smart lights Smart plugs	Smart TVs Smart speakers	Remote monitoring Emergency response	Solar panels Home batteries EVs	Sprinklers Lawn care Spas

Note: EV=electric vehicle
Source: L.E.K. research and analysis

Companies must better identify consumer pain points and then determine if they have the proper means to address them. Entering the space just because you can is not a winning strategy.

Connecting on common terms and definitions

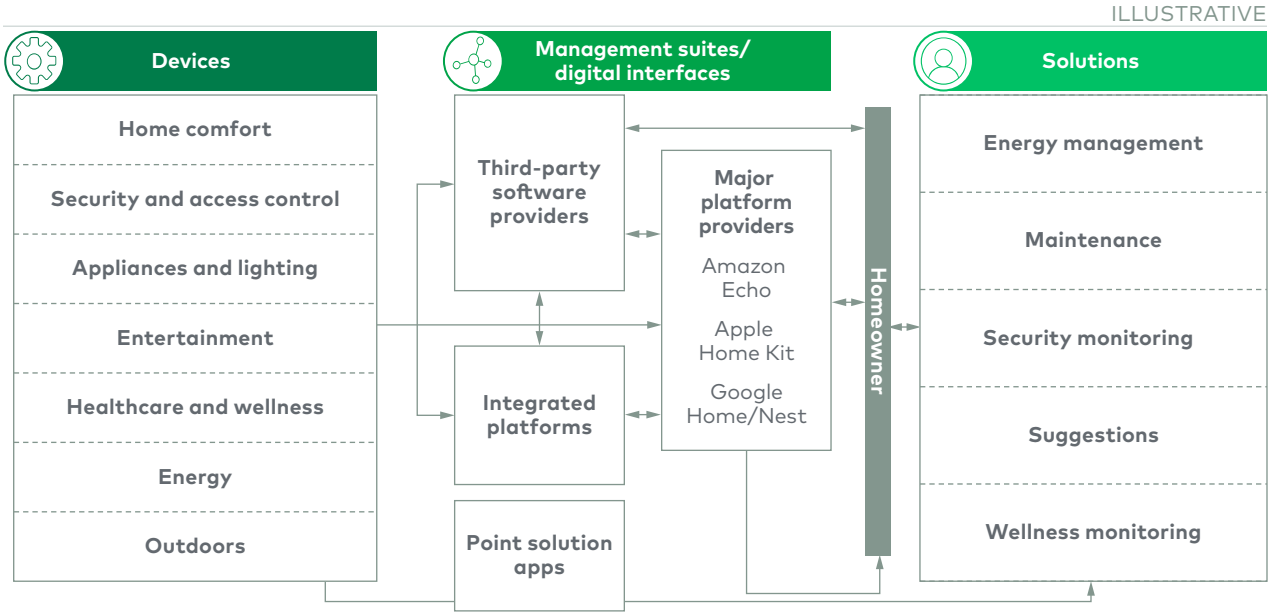
Before we go any further, it's critical to have a shared understanding of exactly what "the connected home" means. It can be a confusing topic, but the ecosystem consists of three essential components:

1. **Devices:** physical, connected products with sensors, interfaces, controls and/or artificial intelligence to enable the operation of a smart/connected home (this includes everything from smart doorbells and locks to HVAC systems to home entertainment centers)

2. **Management suites:** software that integrates various connected home products into a system through which a homeowner can manage many products at once (e.g., Google Home, MyQ, IFTTT)
3. **Solutions:** services provided by third parties or OEMs that offer the homeowner incremental value beyond the feature set of the devices themselves (e.g., security monitoring, predictive maintenance, targeted ads)

These connect together into an ecosystem of players (see Figure 2).

Figure 2
Connected home ecosystem



Source: L.E.K. research and analysis

Left to their own devices, consumers are eager for connected homes

The question is no longer whether consumers want connected homes. The answer is an emphatic yes. Only 8% of survey respondents identified as "nonadopters," meaning that they do not have any connected devices.

One reason for this growing demand is that homeowner awareness of smart devices is rapidly increasing, driven by availability, visibility and marketing. Lower pricing helps drive higher engagement, with 38% of homeowners citing that as a factor in connected device adoption. Other forces at work include a growing interest in smart products (34%) and a growing comfort with technology (33%).

Another factor is that rising energy prices have encouraged the development and adoption of smart energy solutions.

All of this has made the connected home cycle largely self-reinforcing. Advances in technology drive greater consumer engagement, which leads to additional product evolution, which leads to still greater consumer engagement and penetration. Among current connected-product owners, the number of devices per home has increased from 10 to 16 in just three years. At the same time, the percentage of homeowners who engage with their devices on a daily basis has grown from approximately 41% to approximately 66%.

Additional homeowner incentives driving this growth include:

- **Convenience.** Consumers can reduce the time and effort required to complete tasks via automation, orchestration and remote control
- **Security.** Improved monitoring of both their home's perimeter and interior, along with hazard detection and access control, increases the consumer's sense of security and peace of mind
- **Cost savings.** More efficient energy use, improved routine maintenance and financial incentives to participate in energy grid optimization programs help mitigate operating costs
- **Sustainability.** More efficient use of resources helps reduce energy consumption, waste and water usage

Common pain points still need to be resolved, led by privacy concerns, high monthly costs, devices not functioning as intended, and difficulty setting up and integrating devices. A company that can mitigate one or more of these issues has a strong opportunity to differentiate itself and drive the adoption of its solution.

Given the breadth of factors driving growth in the connected home space, many different types of players feel compelled not only to participate but also to lead. To avoid missed (or misguided) attempts at claiming leadership, as well as risks of disintermediation or wasted investments, players in the space need to step back and objectively assess their prospects for succeeding in the connected home ecosystem.

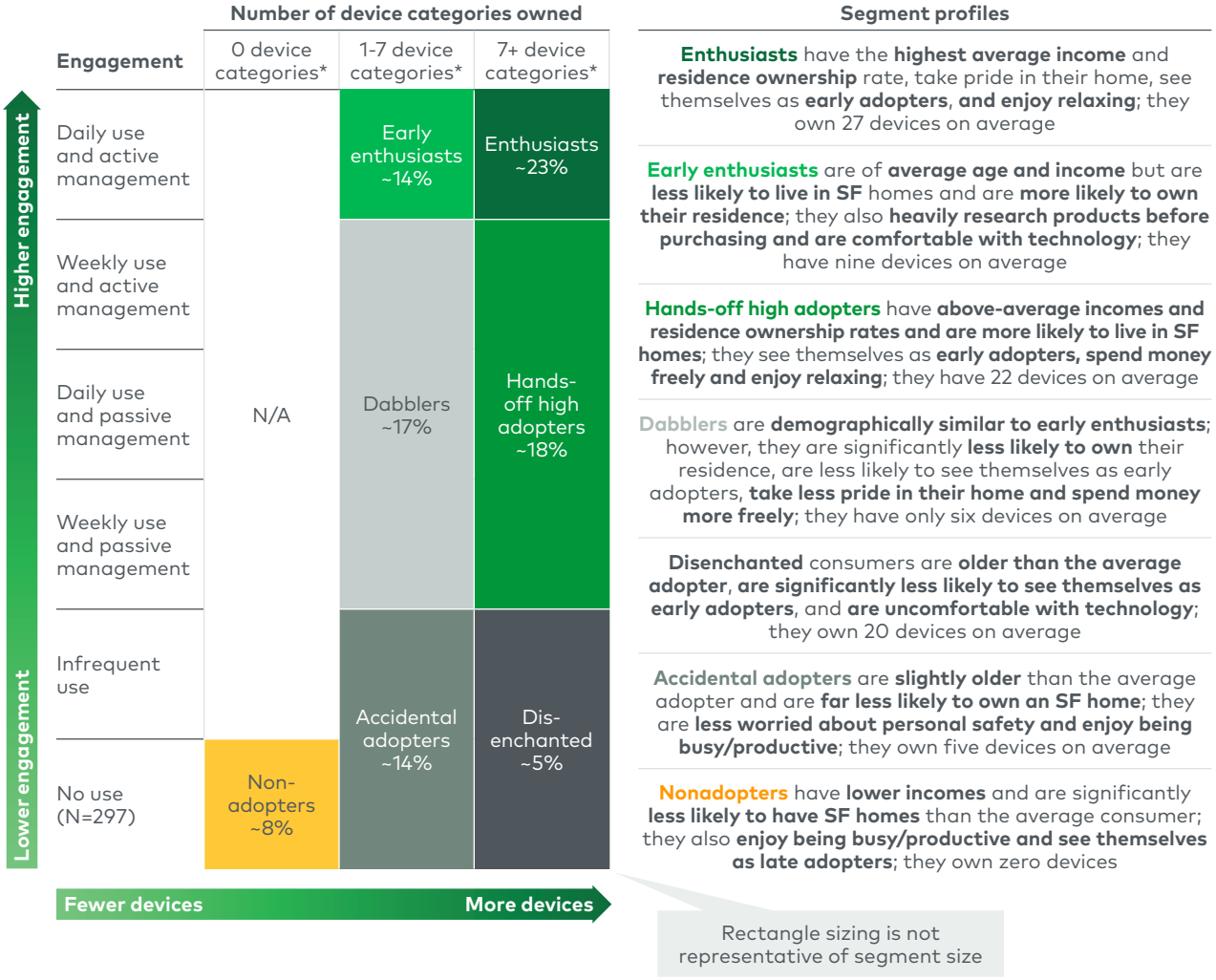
The connected home ecosystem is multifaceted — and so is a winning strategy

There is no single type of connected home consumer. Identifying the precise consumer segment that you need to target is a critical first step to succeeding in the connected home space. Companies must then develop and implement a strategy targeting that segment and articulating a solution to a specific pain point (and/or describing a potential benefit).

The connected home ecosystem consists of clearly defined segments with different adoption rates and engagement levels (see Figure 3).

Figure 3
Connected home consumer segments

Connected product ownership vs. engagement classification
Percentage of respondents (N=1,496)



Segment profiles

Enthusiasts have the **highest average income** and **residence ownership** rate, take pride in their home, see themselves as **early adopters**, **and enjoy relaxing**; they own 27 devices on average

Early enthusiasts are of **average age and income** but are **less likely to live in SF** homes and are **more likely to own their residence**; they also **heavily research products before purchasing and are comfortable with technology**; they have nine devices on average

Hands-off high adopters have **above-average incomes and residence ownership rates and are more likely to live in SF homes**; they see themselves as **early adopters, spend money freely and enjoy relaxing**; they have 22 devices on average

Dabblers are **demographically similar to early enthusiasts**; however, they are significantly **less likely to own** their residence, are less likely to see themselves as early adopters, **take less pride in their home and spend money more freely**; they have only six devices on average

Disenchanted consumers are **older than the average adopter**, **are significantly less likely to see themselves as early adopters**, and **are uncomfortable with technology**; they own 20 devices on average

Accidental adopters are **slightly older** than the average adopter and are **far less likely to own an SF home**; they are **less worried about personal safety and enjoy being busy/productive**; they own five devices on average

Nonadopters have **lower incomes** and are significantly **less likely to have SF homes** than the average consumer; they also **enjoy being busy/productive and see themselves as late adopters**; they own zero devices

*Consumers segmented on the number of device categories owned (0-30), not the number of devices owned
Note: SF=single-family
Source: L.E.K. research and analysis

In addition to segmentation based on the number of device categories represented and the engagement level with each device, there is significant variability in standard economic demographics. Income, housing ownership rate, residence style and psychographic profile of consumer segments all play a role.

This data provides a basis for narrowing your target segment. Is your best fit the "enthusiasts," the approximately 23% of survey respondents who own the most devices and are the most engaged customer group? Or would it be the "accidental adopters,"

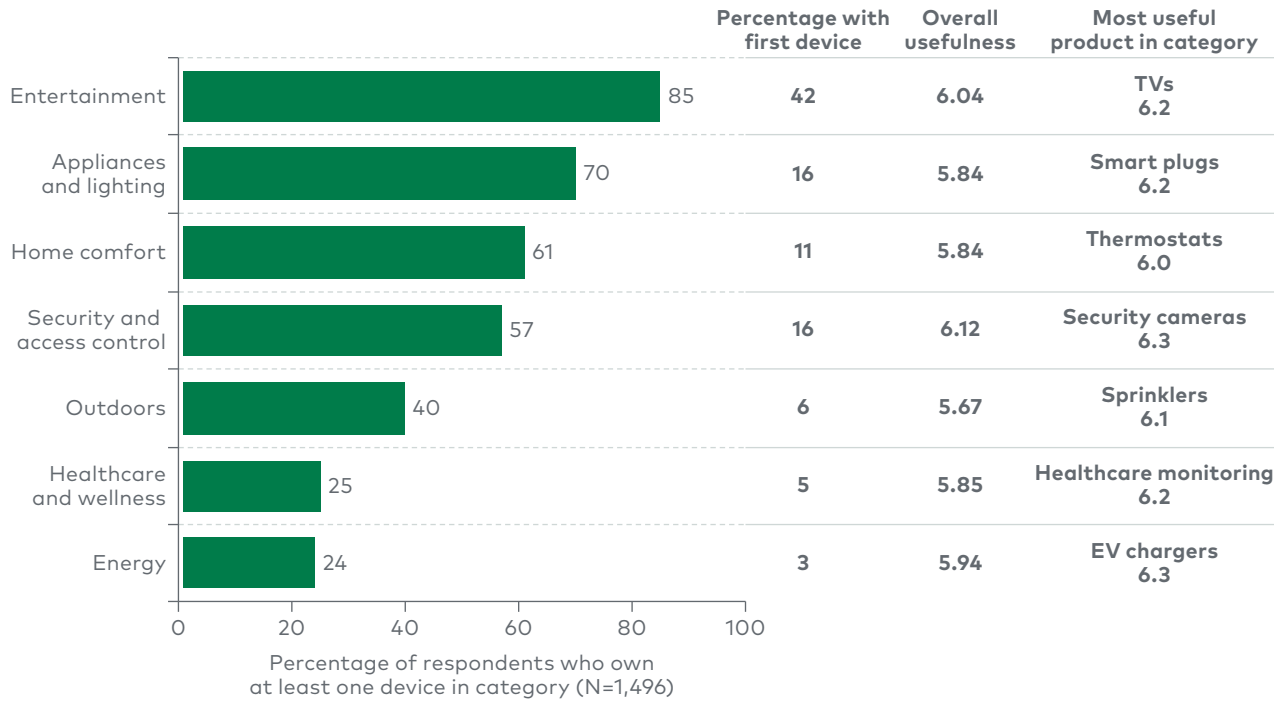
the approximately 14% of respondents who are slightly older, among other demographic distinctions, and own just five devices on average?

Here are more detailed profiles of the different consumer segments:

- **Enthusiasts** have the highest average income and rate of residence ownership. They take pride in their home, enjoy relaxing and are self-described early adopters. Average number of devices owned: 27.
- **Early enthusiasts** are of average income and age. They are likely to own their residence, although they are less likely to live in single-family homes. They heavily research products before making a purchase and are comfortable with technology. Average number of devices owned: nine.
- **Hands-off high adopters** have above-average income and rate of residence ownership and are likely to live in single-family homes. They enjoy relaxing, spend money freely and identify as early adopters. Average number of devices owned: 22.
- **Dabblers** are demographically similar to early enthusiasts but are significantly less likely to own their residence or identify as early adopters. While they spend money freely, they take less pride in their homes. Average number of devices owned: six.
- **Disenchanted consumers** are older than the average adopters and significantly less likely to see themselves as early adopters. They are uncomfortable with technology. Average number of devices owned: 20.
- **Accidental adopters** are slightly older than the average adopter and are far less likely to own a single-family home. They enjoy being busy and productive and are less concerned about personal safety. Average number of devices owned: five.
- **Nonadopters** have lower incomes and are significantly less likely than the average consumer to have single-family homes. They enjoy being busy and productive and identify as late adopters. Number of devices owned: zero.

You can also segment by product categories (see Figure 4). With an 85% penetration rate, entertainment products serve as a gateway, with significant penetration potential in other categories. Entertainment also has the highest rating for usefulness and likely purchase. By contrast, a penetration rate of just 24% for energy solution offerings indicates the need for additional refinement to drive greater adoption. But again, it's vital to figure out exactly which segment(s) you are targeting and which pain points — rising energy prices or consumer privacy concerns — you can solve. You need to see the whole picture.

Figure 4
Device penetration rates and usefulness by category



Note: EV=electric vehicle
Source: L.E.K. research and analysis

Remember: You're not developing your strategy in a vacuum

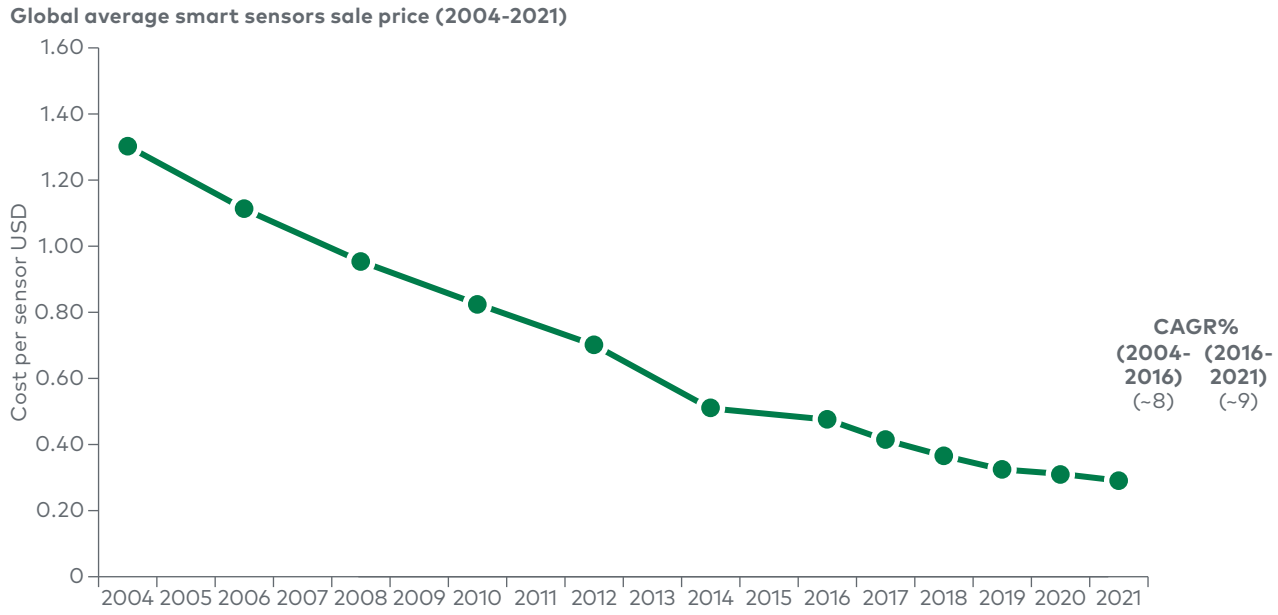
Call it the connected home paradox. The more the ecosystem expands, the harder it is to find an entry point, let alone become the leader in a particular category or segment. This is not only because of the intense competition to become a player in this potentially lucrative space but also because of the greater chance of business model disruptions as new solutions evolve.

Take, for example, the major advance in device interoperability enabled by the adoption of the Matter protocol by leading industry players. Approved by the Connectivity Standard Alliance and designed to improve interconnectivity, interoperability, security and functionality among devices as well as software, the Matter protocol is expected to trigger substantial changes within the connected home ecosystem. And while interoperability is a clear benefit for consumers, it can be a liability for a company that has invested in a proprietary solution that doesn't connect to the broader ecosystem, to cite just one possibility. Companies also risk losing consumer touchpoints and data as consumers move toward more centralized management suites.

Other potential developments that could negatively impact a company's strategy include:

- Risks of additional device manufacturers reserving some of their devices' more advanced functionality for their own apps, an approach that some are already experimenting with, along with developing strategic partnerships to enhance their offerings while retaining data ownership.
- Risks of competitors expanding their device portfolios and leveraging scale to reduce prices while enhancing functionality (see Figure 5).

Figure 5
Lower cost of smart devices



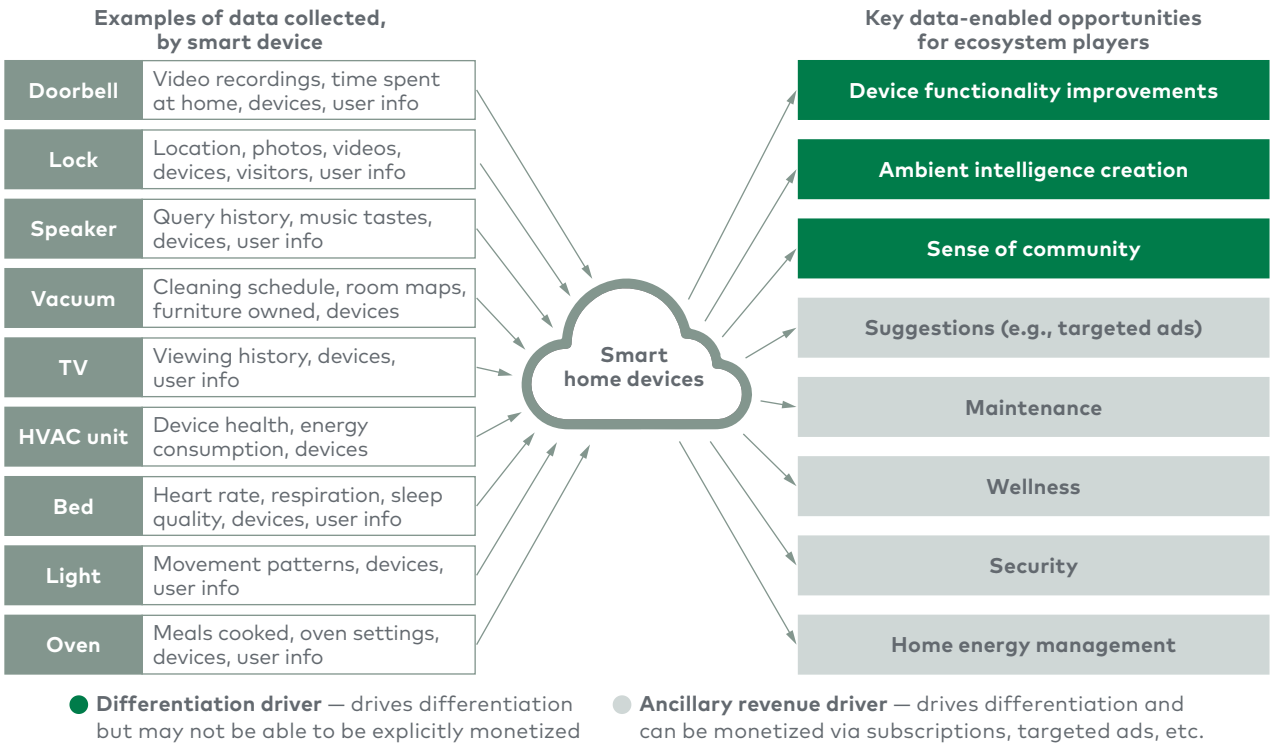
Note: CAGR=compound annual growth rate
Source: Statista; L.E.K. research, interviews and analysis

- Risks of disintermediation for service providers as OEMs develop smart device maintenance functionality and interface more directly with homeowners and their devices. (Service providers are evaluating technician training in light of greater technical requirements. They're also exploring strategic partnerships with OEMs to drive smart maintenance leads and volume while capitalizing on their in-home presence and trust to mitigate risks.)
- Risks of commoditization for certain products (e.g., lightbulbs, outlets, locks) as consumers increasingly take smart functionality for granted. (Lower prices can enhance this tendency.) Companies concerned about commoditization risks are focusing on traditional differentiators (e.g., aesthetics, ease of installation) to maintain margins as well as data monetization to capitalize on the prevalence of lower-cost devices.

Trends with potentially positive impacts on a company's strategy include:

- Data proliferation from increased interoperability and greater engagement with more devices is creating post-sale differentiation and monetization opportunities as well as shifts in channel power due to data ownership/access (see Figure 6).

Figure 6
Examples of data generated by smart home devices and benefits



Source: L.E.K. research and analysis

- Demand is increasing for home energy management and the resources available to facilitate it. (Caveat: A wide variety of energy management enablers are already trying to win in the space using a mix of business models targeting different areas of the home via OEM thermostats and other devices, smart panel OEMs, behavioral energy efficiency players, and energy/virtual power plant players.)

In short, the connected home space is experiencing rapid evolution due to the convergence of both homeowner- and ecosystem-level trends. Companies will need to evaluate their current and future role in the connected home space to maximize opportunity, mitigate risks and avoid misallocating resources.

How to transform theory into reality in the connected home space

The first move in determining how (or even if) your organization can be a viable player in the highly dynamic connected home landscape is to step back and review your current product portfolio and positioning. As part of this review, you must ask some fundamental questions about whether connected home functionality is a fit for the business and objectively assess the answers.

Key factors to consider when conducting this review include:

- Product/category fit
- Value-add potential
- Current actions of both stakeholders and competitors
- How thoughtfully customers interact with existing products

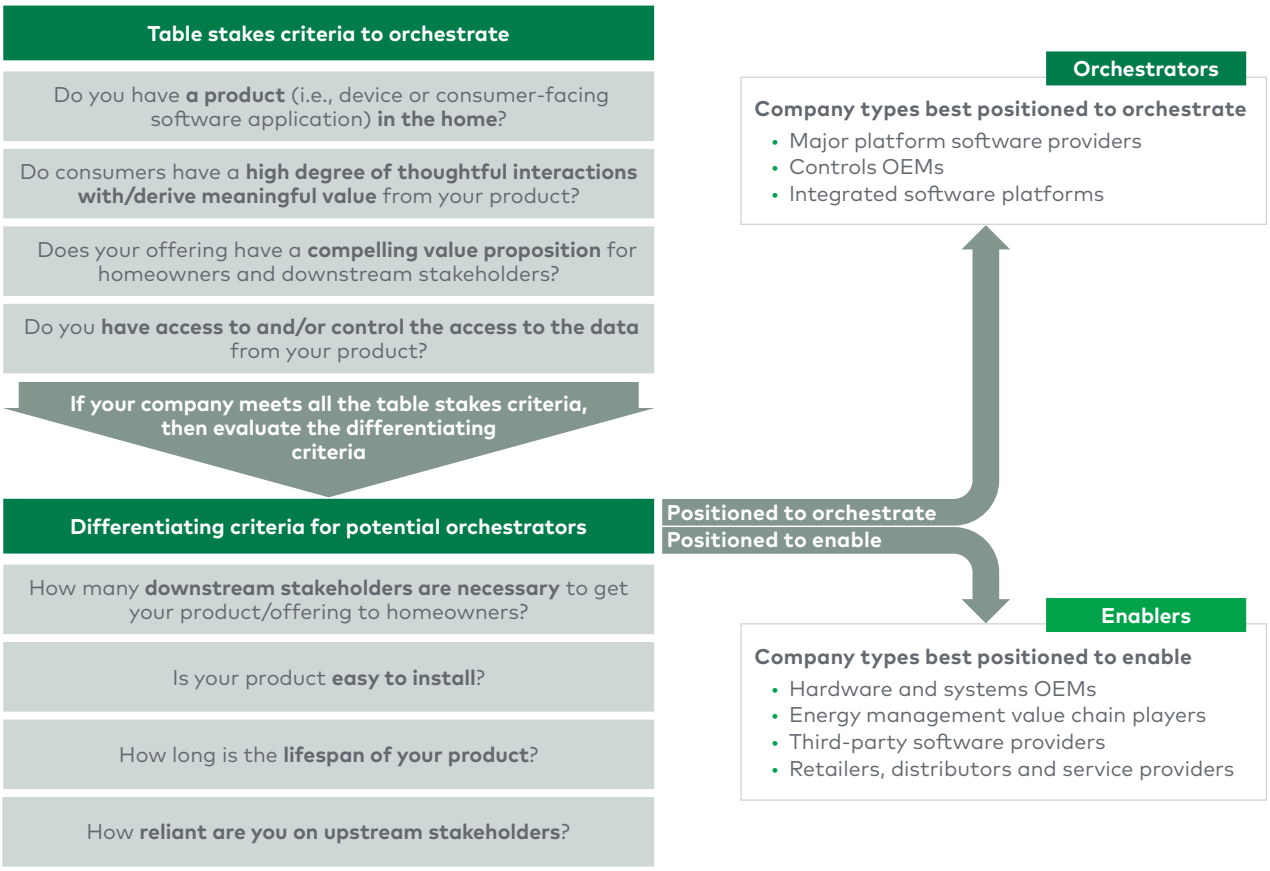
Companies with a more tangential link to the connected home space (e.g., structural product manufacturers, furniture manufacturers, home accessory manufacturers) might determine that developing connective functionality will provide little or no differentiation or value to consumers. These companies can then avoid misallocating resources and focus instead on creating excellence in their traditional bases of differentiation.

If a company decides that connected functionality is a fit for its business, it must then address critical decisions regarding leadership positioning. Is it best positioned to be an **orchestrator** or an **enabler** (see Figure 7)?

- Orchestrators take a leadership role in shaping their respective ecosystems, driving change and influencing future ecosystem development. Typically, they are front of mind for homeowners.
- Enablers play a critical role in their respective ecosystems by offering key products as well as identifying gaps in the ecosystem and then filling them. Another role that enablers play is facilitating the smooth functioning of their ecosystem.

To determine whether your company can be an orchestrator, you must answer several critical questions regarding both table stakes criteria and differentiating criteria, as well as second-level questions that will help formulate an appropriate strategy.

Figure 7
Determining a company's role in the connected home space



Source: L.E.K. research and analysis

Our research indicates that controls OEMs (e.g., thermostats, speakers, appliances), major platform software providers (e.g., Google, Amazon, Apple) and integrated software platforms (e.g., Vivint, Control4, Savant) are best positioned to orchestrate within their respective connected home ecosystems. But to reiterate, enablers will also have a critical role to play in the connected home ecosystem of the future. They can be well positioned to benefit within the burgeoning connected home space without misallocating resources in a misguided attempt to be orchestrators.

Finally, it's important for companies to consider other internal goals and related factors (e.g., financial investment considerations) before deciding whether to pursue a connected home strategy. Experiments and participation to keep options open may be valid, but companies also need to determine exactly where they want to play in this ever-evolving space and how best to do it. They can then conduct a capability gap analysis and form an action plan.

For more information, please contact industrials@lek.com.

Case study: Generac

For a real-world example of how a company determined whether it was a good fit for the connected home space — and whether it should position itself as an orchestrator or an enabler — consider Generac. Since 1959, Generac has been manufacturing home backup generators and residential home batteries, among other hardware products. This is what its internal assessment concluded:

- The connected home space was a fit for its business
- The company could be an orchestrator within its energy/energy management ecosystem, based on clear adjacencies and expansion areas that would enable the company to reach its goals

Further, Generac determined that in order to become an orchestrator, it needed:

- Products with a greater degree of thoughtful consumer interactions (i.e., controls) than its core systems and hardware products possessed at that time
- Software capabilities to optimize and monetize consumer behavior and product performance

To help translate this strategy into action, Generac has purchased three companies in less than three years to realize its residential home energy management orchestration goals. Two of these companies are outside Generac's legacy focus (hardware), an indication of the company's commitment to developing software capabilities:

- **Ecobee (hardware):** A thermostat manufacturer
- **Neutrino (software):** An energy data company focused on analytics to optimize energy use within a home
- **Enbala (software):** A distributed energy resource orchestration software platform

While the complex connected home ecosystem is constantly evolving, with implications across the building and construction value chain, and participation is not always wise or leadership guaranteed, a careful systematic analysis can reveal where and how a company will be best positioned to play.

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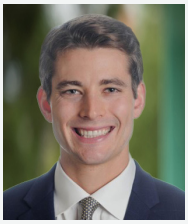

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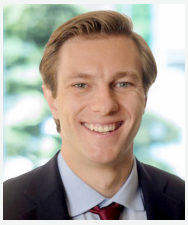

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