

From Smart Devices To Smart Systems:

The Keys To Catalyzing Smart Home Adoption



Smart
Systems
Design

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Research

Over the past 20 years, increasing availability and adoption of mobile devices, televisions, electronics and the Internet has set the stage for a new wave of technology to enter the lives of consumers. This new wave, like the ones that came before it, provides consumers enhanced comfort, convenience, safety, and entertainment, not only on-the-go, but at home as well.

The “Smart Home” has the potential to unleash unprecedented data-driven value in the form of cost savings and quality of life improvements. The sheer volume and velocity of manufacturers, service providers and tech companies racing to capture this new value speaks to the size of the opportunity.

With so many cooks in the kitchen, the big question is, how will all of these devices, services and technologies work together and interact to create this value?

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Over the past 20 years, increasing availability and adoption of mobile devices, televisions, electronics and the Internet has set the stage for a new wave of technology to enter the lives of consumers. This new wave, like the ones that came before it, provides consumers enhanced comfort, convenience, safety, and entertainment, not only on-the-go, but at home as well.

From security systems to entertainment devices to appliances, our homes have always been domains for technology to improve our lives. Now, thanks to the advent of wireless networks, new sensing capabilities and cheaper, more powerful computing technologies, this new age of pervasive connectivity and computing in the “Smart Home” has the potential to unleash unprecedented value in the form of cost savings and quality of life improvements.

For evidence, look no further than the sheer volume and velocity of manufacturers, service providers, and tech companies racing to capture the potential opportunity to create new data-driven value in the Smart Home market. But with so many cooks in the kitchen, the big question is, how will all of these devices, services and technologies work together and interact to create this value?

SMART HOME DEFINED

A Smart Home is a home outfitted with smart, connected devices that grant users increased control over their environments and support additional services like automation, energy management, security management, and highly personalized customer support.

A key enabler of the Smart Home market is the decreasing costs of home controls systems. Not only are they becoming cheaper, but also increasingly versatile, multi-functional, and easier-to-use. These systems help tie together multiple devices to manage entertainment, security, entire home energy systems, lighting, heating and cooling, solar panels, and even energy storage devices. They are remotely controllable from everywhere: from home on a local PC, a hand-held remote, or from outside by mobile device. Most importantly, they have the potential to improve our quality of life, make more efficient use of resources, and grant customers more control and convenience.

SMART HOME, SMART LIFE

To consider the broadest vision for the Smart Home is to consider it less from a standpoint of connecting more ‘things,’ and more from a standpoint of connecting our lives in the ways that matter—securing those we love, reducing our energy consumption, and enabling our most personal of environments.

The need for “always-on” connectivity is refocusing from on-the-go to at-home.

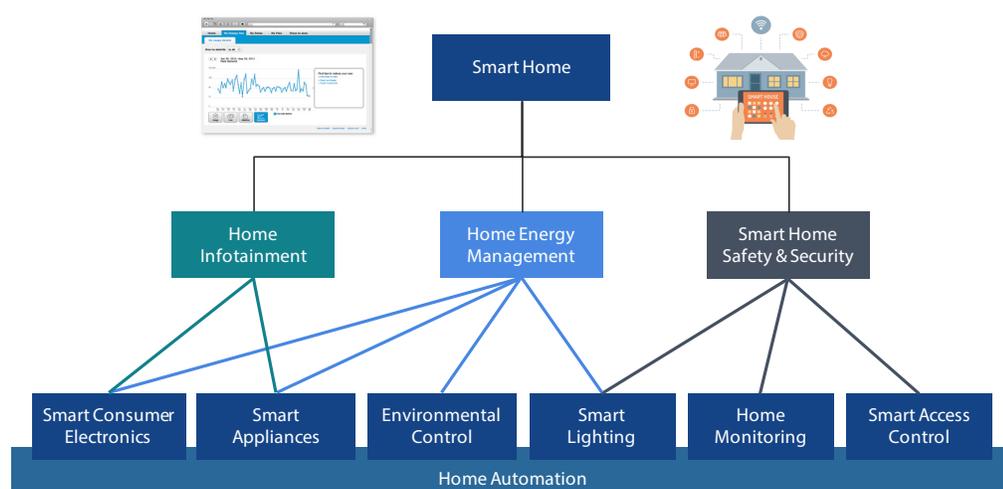
The emergence of the Internet of Things unleashes an age of “always-on” connectivity in which every connected product transforms its manufacturer into a new kind of “Smart Services” business. What this means is that data produced, analyzed, and integrated across products enables new services and new relationships, far beyond the point of sale and deep into their customers’ daily lives. The smartphone is the precedent and a

widely adopted example of this “always-on” connectivity, as are other connected health and lifestyle products designed to provide additional value to consumers while they are away from their home. Together, these products and services assemble the building blocks to a “Smart Life”— one of greater awareness in which a consumer knows her home, health and loved ones are comfortable, safe and secure.

DRIVERS OF ADOPTION

While adoption of Smart Home is limited today, the market is ripe and forecasted for significant growth. Manufacturers, telecom providers, retailers, and other service providers will both react to and proactively drive this adoption, both to sustain their business models and support users’ expectations and society’s need for greater efficiencies. From broadband Internet penetrating more homes to smartphones penetrating more pockets, forces driving this growth are diverse.

Exhibit 1: Smart Home Market Structure



Consumer Awareness of the Smart Home Space is growing rapidly, as ‘mass market’ media, retailers, and existing in-home service providers are atwitter writing about and marketing the opportunities, risks, services, and capabilities in-home connected devices offer users. 2015 was the year electronics retailers carved out distinct “connected home” and/or “smart fitness” sections in their online and brick and mortar stores, from Best Buy to Sears to Target, even Amazon.

Smart Home Adoption May be Low, but Mobile Adoption is at an All-Time High.

While mobile devices are inherently more transportable than homes, their impact on consumer expectations—hyper convenience, real-time services and communications, always-on connectivity, a single ‘console’ of control— has significant implications for the experiences we demand at home. Furthermore, we use our mobile devices as the ‘remote controls’ to our lives, heightening manufacturers’ and service providers’ incentive to integrate with them.

IoT In-Home Automation Appeals to a Broader Audience. Historically, the adoption of traditional in-home technologies like security and entertainment systems were dominated by higher-income demographics. But as cost and connectivity barriers to adoption go down, the new generation of in-home technology doesn't just appeal only to those with higher incomes. Younger 'tech-savvy' or 'digital natives,' what many call the "mobile generation", are also interested in faster, more automated, transparent, and customized services that Smart Home technologies enable.

Another force broadening the audience of potential adopters is the growing presence of Internet infrastructure already in the home. As telecom and communications providers shift/converge from landlines to mobile and wired to wireless, many homes are already well equipped to support devices that connect to common protocols.

Growing Energy and Cost Efficiencies are an inherent outcome of connected products and infrastructure because of the visibility sensors provide into product performance. Energy and cost savings appeal to all of us—consumers, businesses, and society at large. The need to better manage, allocate, and use energy (i.e. cooling, heating, electricity, gas, water, and other resources) isn't just better for the planet, it helps save on costs and reduce redundancies.

Smart Home Technologies Appeal to Classic Consumer Psychological Forces. Although energy and cost efficiencies are a strong value proposition, early research in the Smart Home space reveals consumers' motivations for purchasing the leading Smart Home devices (i.e. video cameras, door locks, thermostats, etc.) are perhaps less pragmatic. Numerous studies show that the number one reason consumers adopt Smart Home technologies today are security and safety. From identity-authenticated door locks to lightbulbs and video-enabled security systems, Smart Homes offer numerous opportunities to better safeguard the lives of loved ones and the belongings we value most, especially when security is enhanced through interoperability.

Indeed, consumers love 'cool' gadgets; they love the 'magic' of new technology when it works, new interfaces and new interaction modes. They love the convenience, control, and agency appliances like connected garage door openers and connected crockpots offer. The notion of 'user experience' in the home is transformed by the rise of smart 'concierges': devices or robots which integrate all consumer devices across one platform and support modes of interaction such as voice or gesture. See the success of the Amazon Echo as one early example, selling more than 3 million devices since its introduction in late 2014. Going further, 'sentient homes,' for some, sound even more appealing with promises to anticipate your needs, automating mundane or repetitive tasks, even enable devices to 'take care of themselves' through vacation modes or even machine learning...

Yet, despite so many accelerating forces rendering the Smart Home ripe for adoption, the space has many significant barriers to the astronomical adoption some forecast.

RESTRAINTS TO ADOPTION

Security & Privacy are Top Concerns for Consumers. Just as enhanced physical security can be a driver of adoption, increased cybersecurity and privacy concerns, if unmet, are a barrier. Connecting home devices like appliances, lights, and locks introduces cybersecurity risks that were hitherto entirely absent. For example, a connected garage door opener collects data about my comings and goings, which can translate into a vulnerability if the data were to land in the wrong hands. The multiple baby monitor hijackings in 2015 and 2016 are another example of the many events that put security and privacy in the spotlight for consumers relative to connected devices.

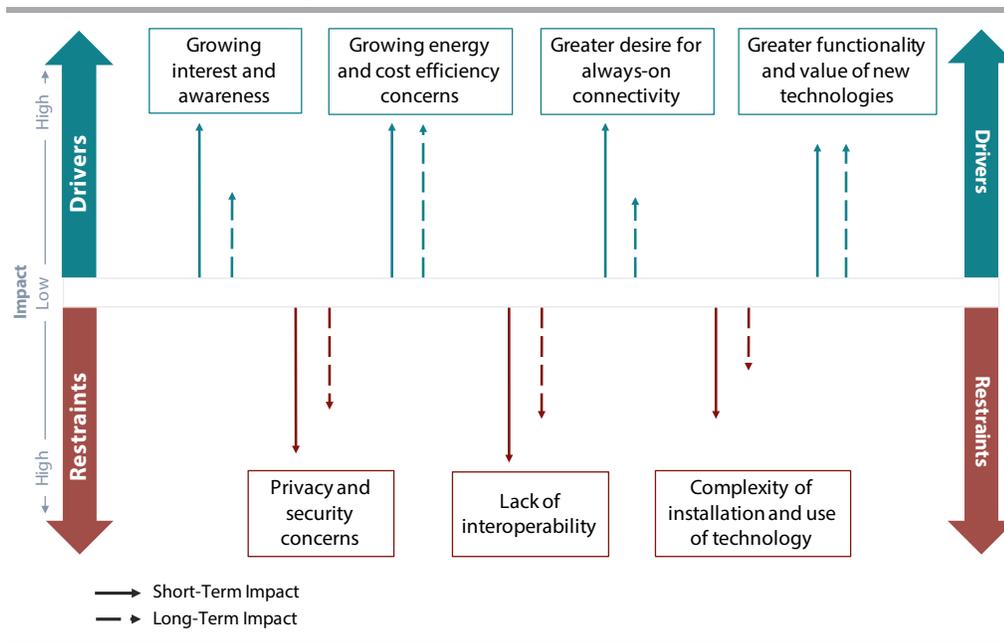
Digital and physical security and privacy continue to hinder the adoption of many Smart Home devices & systems.

But it isn't just misuse by hackers and cybercriminals. Smart Home devices also raise the issue of the collection and handling of highly personal and private information by companies.

As these devices collect data on our whereabouts, habits and lifestyle, consumers have questions about how companies might use that data in less than benevolent ways. Examples go beyond creepy advertising and could potentially include predatory data sales, targeting and segmenting without consent, even disenfranchisement of demographics based on forces beyond their control. With this said, a recent survey conducted by Intel concludes that a majority of consumers are willing to share personal data from Smart Home devices in exchange for money. Regardless of consumer willingness to share data, however, security from outside threats remains a significant issue.

Complicated Systems That Require Self-Installation and maintenance make all but the most technically-proficient consumers wary to adopt these technologies. This complexity results in backlash from early adopters with complaints of too many steps for

Exhibit 2: Smart Home Adoption: Drivers & Restraints



installation and use and frequent malfunctions. If a layman cannot setup, interact and troubleshoot these systems, widespread adoption will not occur.

Interoperability is the holy grail of the Smart Home. Without it, the true value of smart and autonomous home systems will never be realized. Several implications of interoperability are currently barriers to adoption of Smart Home systems. If a company or group of companies can solve these problems, they will catalyze adoption in the market.

Lack of Integration. For all of their sophistication, many of today's Smart Home technologies are direct descendants of the traditional cellular telephony model where each device acts in a "hub and spoke" system. The inability of today's popular Smart Home systems to interoperate and perform well with heterogeneous devices and environments is a significant obstacle to wide-spread adoption of these systems.

Traditionally, there have been many device and service providers to consumers and their homes, and today is no different. While there has been some consolidation in services providers, the same cannot be said for device and appliance suppliers: consumers can still choose between a significant number of appliance makers for a washing machine, television or coffeemaker. This becomes a problem when integrating connected devices into a single Smart Home system. The communication standards, data structures and applications associated with devices are largely dependent on the manufacturers of the products, and these manufacturers rarely work together. Consumers are demanding that integration and interoperability occur off-the-shelf. Manufacturers are starting to take notice, however, they are looking to platform providers to help facilitate this integration. Smart Home systems work best when they are fully connected.

The lack of and requirement for interoperability in the Smart Home is at once the greatest barrier and opportunity.

Poor User Experience. The lack of interoperability has a direct and distinct impact on user experience, both at the technical and emotional level. At the technical level, consumers desire ease of use, seamlessness across platforms and services. When consumers have to use dozens of different applications to control each of their connected devices, the user experience of one device is muddled by the experience of the disjointed nature of the entire Smart Home experience (see Exhibit 3). As modes of user experience and interaction evolve, from touch to voice to gesture recognition for instance, interoperability becomes even more important. For consumers, Smart Home devices will enjoy adoption if they actually work the ways consumers want them to work, easily, with each other, and every time.

Further, consumer commitment to an isolated system or device is risky in the current fragmented state of the Smart Home market. As exemplified by Nest's recent announcement that it will discontinue support for the Revolv Smart Home hub in 2016 (Nest acquired Revolv in 2014). Revolv customers who had connected all of their devices to the hub were simply out of luck; not only was the product no longer supported, it would no longer function. This event and others like it are forcing consumers to think twice about the Smart Home products they are buying.

The message is clear for OEMs: interoperability is in their best interest. Giving consumers the ability to control the entire Smart Home system from one application will catalyze adoption of these technologies soon, and over time, become required.

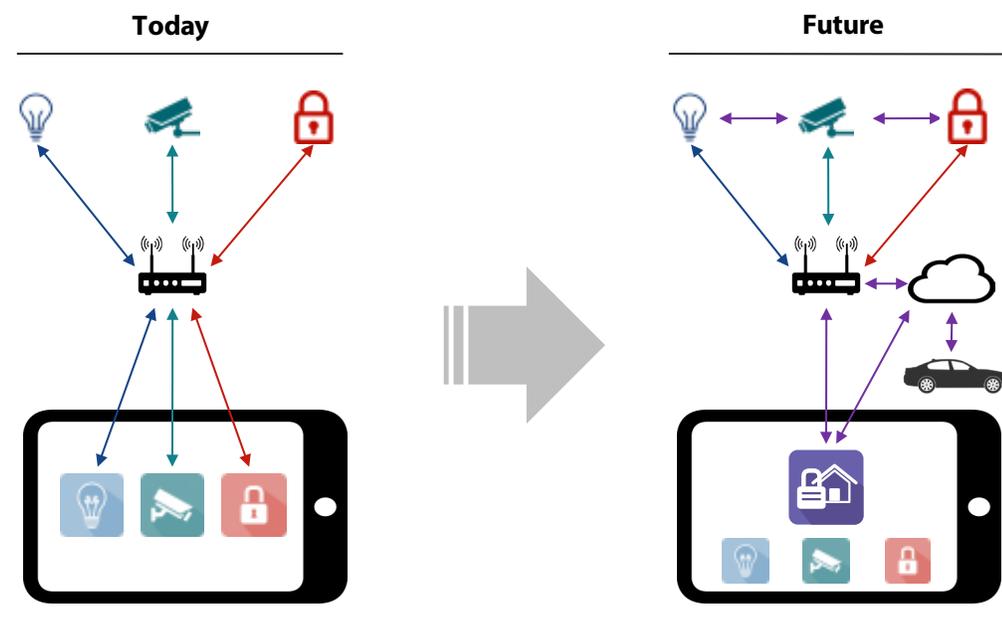
Limited Functionality & Value-added Services. For the most part, manufacturers are not thinking about user experience relative to the other devices in users' homes. They want to provide devices and services to consumers using their devices, but without the context of the product in use relative to other devices, these offerings can only generate so much value for consumers.

Interoperability supports improved and more effective functionality. If your lights, doors, and heating and cooling systems all talk to each other, they can "understand" you better and deliver enhanced value through better functionality such as learning your morning routine and scheduling your heat, coffeemaker and car to all turn on at respective times with the only direct human interaction occurring when the light is turned on in the bathroom.

This interoperability can also support value-added services such as security management. During this same morning routine, as you get in your car and leave your garage, your home security service provider is notified and arms the home alarm system automatically.

The data generated by all of these different devices, if leveraged correctly, can also inform manufacturers of better design practices that increase the interoperability of these products from day one, further increasing the value of these systems and services to consumers.

Exhibit 3: Smart Home Interoperability Driving Enhanced User Experience



Restrained Potential. As more and more Smart Home devices come to market, Smart Homes will need to function more like systems to effectively provide value to consumers. If you have to control or interact with each device individually to make it work, the underlying needs of automation and personalization will not be met, preventing these systems—and the market itself—from reaching their true potential. Smart Home products must be able to work well together if these systems are to scale beyond point applications to full-home automation and control systems.

The facilitator of interoperability and the value it creates is collaboration. Players across the Smart Home market are just beginning to realize the value of interoperability, and are starting to organize to address the issue. While there are some instances of collaboration between and amongst ecosystem segments, the “I can do this alone” mentality still reigns supreme.

SMART HOME ECOSYSTEM & SUPPLIER TRENDS

Three distinct groups comprise the Smart Home market ecosystem: technology suppliers, OEMs and services providers/retailers. One can segment these groups out even further depending on what each company provides. Like many emerging technology markets, the diversity of the Smart Home ecosystem illustrates deep fragmentation across suppliers (see Exhibit 4). This fragmentation will likely persist, even worsen before consolidating, as legacy providers and emerging providers battle over connectivity protocols, architectures, standards, retro-fits, and beyond. The market is also experiencing a proliferation of new OEMs and start-ups developing unique product offerings specific to the connected home. One example is Nest with its smart thermostat and smoke alarm products, later acquired by Google.

Some legacy manufacturers think just connecting their products and providing basic services is enough. As the money from new services starts to come in, many product-centric organizations get drunk off the profit margins and fail to realize the full value of the Smart Home opportunity. These laggards are in for a rude awakening.

Many manufacturers, service providers and technology suppliers want a piece of the Smart Home pie and are expanding product and service offerings in an attempt to create additional value for consumers.

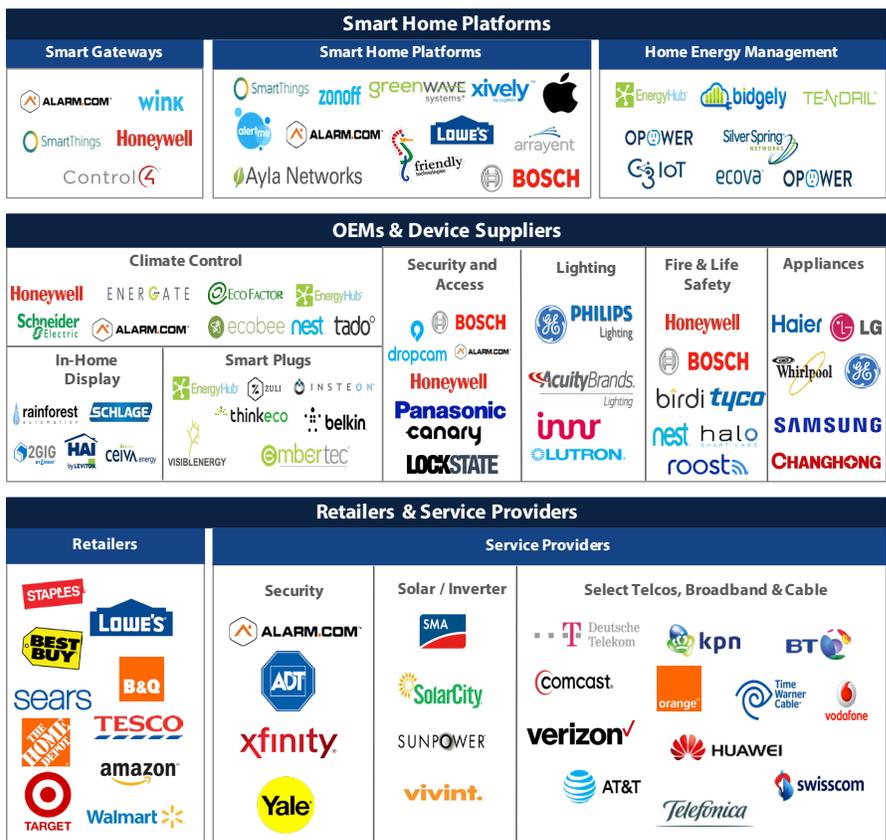
Current solutions in the marketplace are expanding as smart and connected appliance OEMs, building technology providers, service and broadband providers, retailers, consumer device companies, utilities and other IoT technology enablers seek to increase their presence and market share in the home. These vendors are approaching this market with a wide range of business models, ranging from horizontal platforms and whole-home automation solutions, to specific offerings around home security or energy management. This is resulting in the following trends:

Consumer-focused Vendors Restructuring the Existing In-Home Market. To the extent consumers have already adopted cloud-based home control systems, they are leveraging dedicated connected home service providers such as Alarm.com. However, the mar-

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Competitive Ecosystem and Dynamics

Exhibit 4: Smart Home Ecosystem Map



ket is experiencing a restructuring. Today, we're seeing existing security and communications service providers such as Verizon, Comcast, and ADT beginning to penetrate the market. Other consumer-focused companies, such as retailers (e.g. Lowes, Amazon) and consumer electronics manufacturers (e.g. Samsung, Panasonic) have started to enter as well, offering their own platform- and gateway-based systems.

Energy & Security Management Suppliers Expanding to Home Automation. Home energy management and security management providers have found early success in the Smart Home market. These companies are now expanding into other areas of home automation through partnerships and acquisitions. One example of this is British Gas acquiring AlertMe in early 2015. AlertMe had previously powered British Gas' Hive remote heating system, released in 2013. It also has significant traction in other areas of the Smart Home including security solutions and a platform for connecting and integrating Smart Home devices.

Another example is security services provider Alarm.com. After IPOing in 2015, the company has been busy acquiring, partnering and innovating. As a result, they now offer smart energy management solutions in addition to a whole-home automation platform that integrates all connected devices in the home. As companies like Alarm.com adapt to shifting competitive structures, they illustrate the imperative to extend beyond point solutions for long term success in the market.

Emergence of Platform Providers & Resulting Partnerships. Many consider platform providers to be the backbone of the connected home value chain. This is because they enable much of the functionality that drives connected home value from a consumer perspective, such as the ability to receive automated alerts and to manage in-home devices from a smartphone or tablet. As other company types start to enter the market – from retailers to existing service providers or device OEMs – many of these companies will utilize third-party platforms to help them integrate their products into the lives of consumers. In addition, many companies that are dedicated product or service providers today will likely evolve into platform and software providers. Why? For one thing, platform- or software-based business models scale more rapidly than hardware. Second, platform providers can offer support for other new market entrants’ connected home initiatives. Third, platforms support interoperability more than hardware. Everyone from Bosch to Ford to AT&T is getting on board.

THE NEED FOR COLLABORATION

With so many competing communication, connectivity, and security standards present in the home, coalitions, partnerships and alliances will dictate the success and evolution of the space. Organizations must push the boundaries of collaboration to include many new and unfamiliar participants; what Harbor Research calls “strange bedfellows.” Coalitions of self-motivated, cross-functional participants that pursue a common goal will comprise the most successful and sustainable Smart Home solutions.

Product manufacturers looking to leverage collaboration or benefit from connecting Smart Home products to the Internet must understand that we have entered a phase in the marketplace where ideas can emerge from anywhere in the world—new network and IT tools have dramatically reduced the cost of utilizing them. The bottom line: no single company should look to innovate on their own. It is rare, however, to see legacy manufacturers and service providers make this connection themselves.

Smart Home platform vendors that provide the backend connections and enable consumer-facing applications are in a unique position to facilitate this collaboration. While consumers are only just awakening to the deeper value of the Smart Home today, early adoption trends and consumers’ general device fatigue signal a demand for interoperability. Given all of the devices, software, services and support that must be addressed from the consumer standpoint, alliances between suppliers often represent the best available means to address the issues facing the consumer and also create maximum value for all parties involved.

KEY CONSIDERATIONS FOR THE SMART HOME

As manufacturers and service providers think about their role, differentiators, and roadmap to capture and create value in the Smart Home, they must consider the importance of interoperability from the consumer perspective. Harbor Research finds the following best practices a valuable starting point in developing successful Smart Home strategies.

Future-Proof Products. Many manufacturers do not realize the bristling pace at which the Internet develops and changes. In the past, manufacturers have been forced to design products that may last a decade or longer with the same functionality, due to the static nature of the home environment and users' interaction with the products. Because the Internet and smart technologies change so quickly, connected products face rapid obsolescence unless designed to be upgradable. Not only will users expect connected devices to have lifespans similar to their non-connected counterparts, but they will also come to expect increased functionality and security measures as they become available. Manufacturers must future-proof their products to the best of their ability by enabling over-the-air upgrades and updates to a product's software to keep customers engaged and secure.

Design With User Experience In Mind. If connected products only work when connected to the Internet, or need to always be plugged into the wall, what happens when the power goes out or Internet connection fails? Does that mean my smart lock is now useless and I cannot get into my house?

Or, probably worse, can someone else get in? Manufacturers rarely have a user experience team with a technology focus. As manufacturers offer devices with significant embedded technology, they must consider and understand the lifecycle of the persona interacting with the device, and its connections to other devices in the home. Consider power source and lifecycle, connected and unconnected control, troubleshooting and other technology-related issues when designing connected products. Design for usability, not spectacle.

Interoperability is in the best interest of all parties involved, but this requires significant cooperation.

Suppliers must leverage partnerships to fill capability gaps and enable new services-based business models.

Embrace Transformation, But Do What You Do & Do It Well. There is significant value in Smart Home technologies and a myriad of opportunities to capture that value. Manufacturers must embrace the transformation of the market to survive, but need not rush to the party with overly extravagant use cases or solutions. It is important at this early stage of the market to put in the time and effort to make sure the product works and the company can handle the ongoing customer support requirements. Move now, but start slow. Yes, the fact that your toothbrush may be able to recite the morning's biggest news stories as you're brushing your teeth may seem cool and innovative, but is that really necessary? With connected products, it is important to design for functionality first and foremost. Learn from the failures of others, and understand the extended value of products and related services in the lives of consumers. Design for usability, not spectacle.

As Smart Home adoption continues, the number of connections in the home will begin to inform new strategic revenue models informed by the data coming from these connections. While these models will not work for every company, it is important to consider the full extent of possible configurations enabled by connected products and services.

Pay-per-use. Connected devices enable companies to track how often and how long products are used. This ability can allow these companies to charge users for only what they use, when they use it while the company retains ownership of the product. This model is best deployed with large appliances with discrete use scenarios, such as washers, dryers and dishwashers that may otherwise have restrictive upfront costs to consumers.

Little to no upfront cost, plus recurring costs. This model is based on the principle that the value of the software or services provided on top of a connected product will be worth more over the lifecycle of the product than the hardware. In this model, companies may give the product away for free, or charge a relatively low price up front while recouping losses and generating profit on the recurring charges for software or services.

Higher upfront cost, little to no recurring costs. Interestingly, a 2013 Continental Automated Buildings Association survey suggests consumers would be more willing to pay a higher upfront cost with little to no monthly charge as opposed to little to no upfront cost with a monthly charge. This model facilitates the use of a warranty-based servicing program in which the customer pays upfront for a certain number or length of services.

ENTER AYLA NETWORKS

One such platform addressing many of the challenges of the Smart Home market is Ayla's Agile IoT Platform. Ayla's platform provides the connectivity, managed back-end infrastructure, and the consumer-facing mobile experience development tools that support manufacturers in their Smart Home initiatives. Most importantly, Ayla's platform helps enable device interoperability. As a third party, Ayla can help ensure products from different manufacturers can communicate with each other and other third-party services, such as asset management and maintenance, energy management, and security management.

Customer Spotlight: *LockState Unlocks More than Product Innovation; Partnership with Ayla Enables Interoperability and New Service Models*

Context: *LockState and the State of Connected Locks*

Dating back to 2004, LockState entered the in-home market with keyless entry door locks and safes. Over the next few years, they innovated their product suite to provide keyless entry solutions for vacation rental properties. But ultimately Lockstate's aim wasn't just to manufacture more door locks; it was to remain competitive in an already dense market by embracing, not rejecting, new technologies entering the home.

"There is no such thing as bulletproof security and we'll always have security issues like human error, but for us, it's vital we have a partner we know is using proper methods and protective services, as well as keeping up to date with emerging threat vectors."

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Customer Case Example

Challenge: *Proprietary Development Unlocks More Challenges than Expected*

For any manufacturer, embracing and infusing new technologies into previously analog product development is a challenge. But for a manufacturer of a device used for security and safety, the imperative to innovate wasn't just 'for fun'—it was critical to LockState's customers, brand, business model, and growth. Connected locks have to be reliable, both in safety and regardless of connectivity. In 2011, LockState began looking at how they could connect door locks to the Internet, researching firmware, cloud architectures, and customer requirements. At the time, there were few "IoT" platform providers on the market, and LockState worked proprietarily to build connectivity into its door locks.

In the first few years, LockState worked to build competency across circuit boards, mechanical components, user app technologies, data transportation, and data security. "We went through a lot of pain trying to do it ourselves in those early days" recounts Nolan Mondrow, LockState's founder and CEO. "We were forced to try to develop both our expertise and our products across really critical areas—data and device security—at the same time. To do this right required us to be experts in areas far beyond our core competencies."

**Manufacturers beware:
even the most analog
equipment will become
connected in the near future.**

After a couple years of incremental and costly internal developments, LockState partnered with Ayla to help enable their connected products. But they discovered enablement far beyond the products themselves.

Solution: *From Lock and Key to IoT*

Although LockState is still manufacturing locks and other devices, they have transformed into a technology and services company. Today LockState provides an extensive suite of offerings, from connected access controls and locking automation systems, to application development services, to an interoperable cloud platform compatible with multiple devices and manufacturers—not just LockState locks.

"We have made a bit of a migration from mostly hardware sales into Software as a Service (SaaS) revenue. Hardware sales will continue, but we view hardware as means of introducing our customers to SaaS services we're developing. The "things" are just a springboard for deeper relationships with our customers and other providers in the market."

Not only was LockState able to leverage the agility of the Ayla platform to help streamline critical elements like data transport, queuing, and provisioning, they were also able to back their connected locks up with rigorous security technology. As Mondrow explains, the partnership hasn't just lifted cost burdens on development, but security burdens as well. Since LockState is communicating with Ayla at the circuit board level, Ayla has the burden of securing that data transport from lock to cloud.

Moreover, LockState now differentiates itself on the basis of its interoperable Lock Cloud—a differentiation enabled in part through the cloud’s ability to communicate with Ayla-enabled devices and devices communicating back. LockState provides both ‘backward-facing’ and ‘forward-facing interoperability.

- » Backward-facing interoperability provides the ability to communicate between LockState’s products and other in-home device manufacturers’ API’s and their Cloud to enable control and monitoring of multiple devices from different manufacturers.
- » Forward-facing interoperability inserts LockState flexibly across their key markets by providing an API with which independent or vertical-specific developers (e.g. system integrators or property managers), can quickly integrate into their own apps and building management platforms lock monitoring and management capabilities.

The company has partnerships and integrations with some of the leading technology companies in the verticals it serves, such as AirBnB and HomeAway in the vacation rental space. Customers manage the system directly from the cloud, requiring no on-site servers or workstations.

Today, LockState’s core competency is not just in locks - specifically in innovating lock circuit development - but in developing and enabling interoperable customer-facing cloud applications.

Perhaps most importantly, the ability for LockState to support interoperability at the device and cloud layers hasn’t just facilitated innovation at the product level, but it’s unlocked new business models enabled by their products within the context of their ecosystems, both residential and commercial.

CONCLUSION

The Smart Home market is burgeoning, and unlikely competitors are surfacing everywhere. Manufacturers, services providers, and retailers must innovate to differentiate themselves and survive—but many do not possess the skills to do this alone. While the clear winners have yet to arise, one thing is certain: in this next phase of market development, innovation will result from collaborations designed to meet consumer demands for interoperability—seamlessness that enables simple and complete control of the Smart Home.

Competitors will come from unlikely places, but so will collaborators. Partners are key to capturing value through interoperability in the Smart Home.

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REPORT METHODOLOGY

Harbor Research and Ayla Networks partnered to produce this research paper addressing the importance of interoperability and collaboration in the Smart Home arena. The paper is a result of both primary and secondary research leveraging both Ayla's and Harbor's industry expertise and client experience. Additional acknowledgement must be attributed to LockState for willingness to participate in case study research supporting this paper.

ABOUT HARBOR RESEARCH

Founded in 1984, Harbor Research Inc. has more than twenty five years of experience in providing strategic consulting and research services that enable our clients to understand and capitalize on emergent and disruptive opportunities driven by information and communications technology. The firm has established a unique competence in developing business models and strategy for the convergence of pervasive computing, global networking and smart systems.

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ABOUT AYLA NETWORKS

Ayla Networks is headquartered in Santa Clara, California in the heart of Silicon Valley with offices across the United States, Europe, and China. Ayla Networks is an IoT platform for leading manufacturers, providing an Agile IoT Platform designed to accelerate the development, support, and ongoing enhancements of connected products for the Internet of Things. Ayla's end-to-end software runs across devices, the cloud, and applications to provide secure connectivity, data analytics, and feature-rich user experiences for its customers as well as the end consumer. To learn more about how Ayla can support interoperability in the Smart Home, contact Ayla.

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Jessica is a regular speaker, moderator, and panelist at IoT industry events. She is also a regular contributor to numerous 3rd party blogs and news/media outlets. Jessica is contributing member of the International IoT Council and FC Business Intelligence's IoT Nexus Advisory Board. Jessica is featured on Onalytica's top 100 influencers in the Internet of Things.

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