GfK Future of Smart Home Study
Global Report: January 2016
Foreword
The future of smart home

In the last 12 months we have seen a large number of announcements around the smart home, showcasing a whole plethora of products and offerings for the consumer. Analysts are predicting great things for smart home as this is seen as a huge growth opportunity in the next few years. It finally feels like the time that home automation and smart home products and services will take off, as we see a host of organisations looking to address the developing opportunity.

It was in this context that GfK decided to investigate the levels of interest among consumers by running a global study on the smart home. The aim was to really examine consumer reaction to smart home and try and establish some understanding of the potential opportunity. To what extent are consumers even aware of and interested in smart home? what aspects really appeal? how do they expect it to work? are just some of the questions we looked to address in this study. This report details some of the reaction from consumers and examines if the opportunity lives up to the hype.

Ranjiv Dale
Head of Technology, GfK UK
ranjiv.dale@gfk.com
Introduction

Key topics

To better understand how the future of smart home, this study seeks to explore and provide insight on the following questions by assessing consumer attitude and behaviour.

1. What do consumers know and expect of smart home?

2. What are the key areas of opportunity?

3. The main barriers to adoption?

4. How can smart home be best delivered?
Introduction
Introduction

How we approached the study

To understand the market for smart home we have structured the report around three layers, aiming to understand the consumer landscape, the opportunity and potential of smart home categories and products, and finally how smart home can be best delivered.

Understand the **consumer landscape**

Assess consumer reception to smart home, product categories and individual use cases

Understand how smart home can be **best delivered**
GfK conducted primary research with consumers in countries where smart home is increasingly relevant or presents an opportunity for significant growth in the near future. Respondents were recruited and interviewed using an online survey based methodology.

7 Markets
Consumers interviewed in Brazil, Germany, Japan, UK, US, China and South Korea

7,000+ consumers
Representative of online audience in each country

Online Interviewing
Via smartphones, tablets, laptops and PCs
An online methodology is most representative in developed markets due to the ubiquity of online usage. The impact of lower levels of online penetration in emerging markets (Brazil, China) has meant that our sample is not as representative of the total population in these markets, but rather of a more tech engaged segment.

(%) of respondents who use the internet regularly

<table>
<thead>
<tr>
<th>Universe of consumers</th>
<th>UK</th>
<th>DE</th>
<th>JPN</th>
<th>SK</th>
<th>US</th>
<th>BR</th>
<th>CN</th>
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<td>85</td>
<td>84</td>
<td>54</td>
<td>49</td>
</tr>
</tbody>
</table>
Introduction

Respondent profile overview

Age and Gender data has been weighted to be representative of online usage. In China and Brazil this results in a much younger age profile, which is reflective of online usage in these markets.

Source: ComScore 2014
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Introduction

Respondent profile overview: The household

Household profiles differ significantly across the markets, with Germany in particular having very high levels of rental. Household income in China is in line with other markets in the study - due to our focus on online households.
Leading Edge Consumers: Predicting the future
Identifying the consumers that will drive the category

We identified the consumers who are most likely to be critical to a new product’s success - those that are early triers of a product, who are passionate about the category, and/or influence others in the category. We call these people Leading Edge Consumers. The attitudes and behaviours observed from LECs can help us predict the later direction of the majority.

There are three question areas that, when combined define the Leading Edge Consumer (early adoption behavior, influential status, and passion for/interest in the category).

GfK’s Leading Edge Consumer framework helps identify the minority of consumers most likely to predict the future direction of the majority.

An individual may have none, one, two or three of these characteristics. For example, they may be passionate about a category and blog about it, recommend it to others, but very slow or hesitant to try new things or switch brands. The true Leading Edge Consumer will do all three.

Because of the influence Leading Edge Consumers exert over their peers, we have found that this group of pioneers helps us predict the later direction of the majority.

LEC’s in our sample: 17%
Leading Edge Consumers: Predicting the future
What do our Leading Edge Consumers look like?

We know the Leading Edge Consumers are more likely to consider themselves experts when it comes to technology, have people seek their opinions and are passionate about technology. We see a younger, male skew among Leading Edge Consumers and they are more engaged in technology - using more devices and also more subscription services than the average consumer.

**LEC’s in our sample**
- 17% of the sample are Leading Edge Consumers (LEC’s)
- 60% are under 35 years old
- 40% are 35-54 years old

**Leading Edge Consumers use more devices on average**
- 5.3 devices vs. 3.7 for the average consumer

**Leading Edge Consumers are already daily users of a ‘smart’ function**
- 77% use it’s ‘smart’ functionality daily +11%

**82% currently pay for / have access to multiple subscription services**
+28%

**24% use a smart watch**
+15%

**97% use a mobile device**
+12%

**71% use a tablet**
+27%

**58% use music streaming**
+24%

**63% use video streaming**
+27%
Traditionally new product and service innovation testing has relied on consumer’s stated intention to purchase to uncover likely take up of new concepts. However, GfK has developed a more realistic and standardised approach (GfK MarketBuilder) which also takes into account how well it will fit into consumer’s lives before a new product is adopted, giving a much more calibrated potential for any new offering. We used this approach to assess likely take up of Smart Home.

**Behavior-centric testing**

- Concept-centric KPIs are replaced by behavior-centric KPIs that measure how new experiences fit into consumers’ lives.

**Key Levers**

- UX and Behaviour change
- Self-Identification
- Social Effects
- Marketing/Retail Push
- Relative Advantage
- Trust
- Service & Support
This report is a global overview of the finding of the GfK smart home study. In addition, country deep dive reports are available that provide a more detailed market evaluation from January 2016.
Executive Summary
Consumers and the smart home:
Consumer awareness and expectations are high for smart home

When we examine the level of currency that ‘smart home’ as a term has, it is clear that consumer expectations are high on what smart home will offer:

• Nearly two-thirds of consumers are familiar with the term and half of them expect smart home technology to impact their lives in the next few years;

• The expectations are particularly high among Leading Edge Consumers (LECs), where more than ‘3 in 4’ expecting it to have an impact on their lives ahead of all other technology trends;

• While familiarity with the term is high, the depth of knowledge is relatively limited, with few claiming to know a lot about the terms (except in US/China and Brazil where more than 20% claim to have a lot of knowledge);

• To some extent, people have already adopted some smart home technology, with over a quarter already owning at least one smart home device (level of adoption is considerably higher among LECs, with more than half owning at least one smart home device);

• However, the fragmented nature of the market is seen in the fact that there is no single ‘hero’ product that is driving the adoption of smart home devices, with a whole host of products having been adopted to date.
Identifying the opportunity for smart home:
Many consumers clearly understand smart home to be relevant and useful

Reaction to the concept as a whole and also specific categories and products within these show that smart home is seen as potentially relevant to many consumers’ lives:

• The appeal and relevance of the smart home concept itself and across specific categories is relatively high with smart security & control and energy & lighting emerging as the areas of most appeal;

• The levels of appeal and interest are considerably higher among LECs, Millennials and Gen X and also those with High/Medium income levels, suggesting that these groups should be targeted for initial development;

• However, while appeal is relatively high, there remains a significant proportion of consumers who are lukewarm to smart home, suggesting they need to be fully convinced of the merits of adopting this technology and how it could improve their lives;

• Overall, we see similar levels of interest and stated intention to purchase amongst the specific products tested within each category area;

• Among Leading Edge Consumers, the stated intention to purchase specific products is considerably higher and their interest centres on smart lighting and appliances in the main.
While the majority of consumers state they intend to adopt a smart home device in the next 2 years, validating this potential adoptions shows only 14% will be likely to do so:

- Using GfK’s MarketBuilder validation approach to the adoption of smart home technology reveals that three key areas emerge that will prevent widespread adoption – trust, the user experience and personal identification with smart home technology;
- Concerns around trust in the brands and how they will handle data privacy, learning how to use the new technology as well as feeling it fits with them personally are the key barriers to taking on the technology;
- The validated purchasers of smart home technology are evident in high levels in China and Brazil – which is expected in these markets given the online population is younger and more tech engaged – and is also seen to a high level in the US (16%);
- Likely adoption levels are considerably lower in the UK (6%) and Germany (6%) and Japan (3%) – who need greater education of the benefits and how smart home will work for them;
- The main areas they will adopt centre on smart lighting, detectors and appliances;
- When consumers were asked directly on barrier’s to adopting smart home technology the key stated concerns are cost, data privacy and knowledge emerge as issues that they need to be convince on.
Consumers expect the smart home to be delivered and managed in a seamless and simple fashion with an expectation that the disparate technologies will work together in the background:

- The majority of consumers expect devices to connect and communicate with each other and would be willing to pay for a single application to control all the devices in the home;
- This expectation is amplified amongst those that already own a smart home device and also for Leading Edge Consumers, suggesting this need will need to be delivered on if smart home adoption is to take off;
- Interest in simplicity for the smart home is further reflected in the fact that many consumers would prefer to have a single vendor supply all their smart home technology (43%);
- How consumers expect to control the smart home is reflective of current device ownership levels, with Smartphones emerging as the key expectation;
- Installation, maintenance and payment options reflect the device dominated nature of the current smart home market, with many preferring to self install and maintain devices and to pay for devices as a ‘one-off’ payment (especially among LECs);
- In terms of the types of companies expected to offer smart home products, this reflects the diversity of organisations that consumers trust, ranging from manufacturers, technology brands and retailers as well as utilities in particular for smart energy & lighting.
In order for brands to realise the potential for smart home it is clear there a number of issues they will need to consider:

- Positively, it appears that a lot of the market hype and buzz around the category has already connected with consumers but this will also have raised hopes on smart home delivery;
- Consumers have a clear desire for simplicity and expectations on how smart home technology will work in the home – the current fragmentation and lack of coherency across the disparate devices will potentially only drive incremental growth;
- Communicating how smart home technology will fit in with and enhance people’s lives is key as well as ensuring that the user experience is engaging and intuitive in order to truly deliver mass market adoption;
- It will also be critical that concerns around the data collected (via smart home technology) are allayed – trust is going to be a key issue that brands will need to reassure buyers on;
- Building value across the devices and usage in the home will also be central to communicating the potential of the smart home – this means a number of organisations will have to work together and unlikely partnerships will form to address consumer needs;
- Ultimately, brands will need to be clear on how making the home smarter will really benefit consumers and how adopting the technology could transform their lives.
Consumers and the smart home
Consumers and the smart home
Personal device usage in the home

Consumers are using a variety of connected devices in the home, with vast majority having at least one mobile device (Smartphone or tablet). We also see Smart TVs gaining significant traction; introducing consumers to the idea (if not the practice) of smart technology in the home.

Personal device usage in the home

Own a modern mobile device of some kind

- 85% (80% Smartphone, 70% Laptop (including netbooks or ultrabooks), 61% Desktop PC / Apple Mac, 44% Tablet)

Consumers personally use an average of 3.7 connected devices (from a list of 10)

- 32% Games console (e.g. Xbox One, Playstation 4, Nintendo Wii)
- 31% Smart TV
- 18% DVR recorder (e.g. Sky +, Humax)
- 17% Portable games console (e.g. Nintendo 3DS, Sony Vita)
- 10% Fitness tracker (e.g. Fitbit)
- 9% Smart Watch (e.g. Apple Watch, Moto 360)

Base: H02. Which of the following devices do you use personally? Base: All markets=7149
Consumers and the smart home
Ownership and usage of Smart TV

Smart TV represents the first mainstream smart home product. Consumers use the smart functionality regularly; with nearly ‘2 in 3’ using smart features at least once a day; however German consumers are significantly less likely to use this functionality on a daily basis.

**Frequency of TV ‘smart’ functionality use**

- **31% use a Smart TV**
- Several times a day
  - At least daily
  - At least weekly
  - Every 1-3 months
  - Less than every 3 months

- Never used the ‘Smart’ functions

![Frequency of TV ‘smart’ functionality use](image)

**Definition of ‘Smart Functionality’**: Smart functionality could relate to anything other than watching normal channels i.e. accessing video on demand/catch-up TV services, or accessing the internet / apps such as Facebook and Netflix through your Smart TV. Base: H02. Which of the following devices do you use personally? [Smart TV] H04. Thinking about your Smart TV how often do you use the Smart functionality? Base: Smart TV Users=1757.
Most consumers are paying for at least one subscription, with entertainment being the key element. The fact that many consumers are comfortable accessing subscription services and this is likely to increase in the future may well have implications for smart home delivery in the future – potentially through a service model.

Top consumer subscriptions

- Cable/Satellite television (e.g. Sky, Virgin, BT etc) 54%
- Video streaming (e.g. Netflix, Amazon Prime, Sky Go) 36%
- Music streaming (e.g. Spotify, Pandora, Google Play) 34%
- Cloud storage services (e.g. Box, Dropbox, Google Drive, OneDrive, iCloud) 27%
- Games (e.g. Xbox Live, PlayStation Plus) 25%

*Digital subscription = Pay for or have access to any of the following subscriptions: Includes Music streaming, Video streaming, Productivity software, Creative software, Cloud storage services, Games, Privacy and Connection Security, Paid news subscription (Excluding: Cable/Satellite television subscriptions).

Base: H03. Do you pay for (or have access to) any of the following subscriptions? Base: All markets=7149
Consumers and the smart home
Knowledge of technology trends

Although smart home is a broadly established term among consumers (86% having at least of heard of it), depth of knowledge is less than some other comparable technologies, which may reflect its relatively recent emergence into the mainstream.

### Knowledge of technology trends
Those who have some knowledge of trend (know a lot/a fair amount/a little)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Some Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Payments</td>
<td>80%</td>
</tr>
<tr>
<td>3D Printing</td>
<td>74%</td>
</tr>
<tr>
<td>Cloud Computing &amp; Storage</td>
<td>73%</td>
</tr>
<tr>
<td>Driverless cars/autonomous driving</td>
<td>65%</td>
</tr>
<tr>
<td>Wearable Technology</td>
<td>61%</td>
</tr>
<tr>
<td>Virtual and Augmented Reality</td>
<td>50%</td>
</tr>
<tr>
<td>The Internet of Things (IOT)</td>
<td>50%</td>
</tr>
<tr>
<td>Connected Car</td>
<td>46%</td>
</tr>
<tr>
<td>Smart Cities</td>
<td>44%</td>
</tr>
<tr>
<td>Machine to Machine (M2M) Technology</td>
<td>38%</td>
</tr>
</tbody>
</table>

Base: C01. Please indicate how familiar you are with the technology and trends that are known by the following terms. Base: All markets=7149.

'Have some knowledge'=Code 'I know a lot' or 'I know a fair amount' or 'I know a little’

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When we examine knowledge of smart home across markets, we see China and Brazil as the most engaged with the topic (which is unsurprising since the online population is more technology engaged). There are relatively low levels of knowledge in Japan, with the US the leading developed market.

Smart home depth of knowledge

- Never heard it before today
- Don't know much
- Know a little
- Know a fair amount
- Know a lot

<table>
<thead>
<tr>
<th>Country</th>
<th>Never heard it before today</th>
<th>Don't know much</th>
<th>Know a little</th>
<th>Know a fair amount</th>
<th>Know a lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>26%</td>
<td>33%</td>
<td>23%</td>
<td>25%</td>
<td>16%</td>
</tr>
<tr>
<td>CH</td>
<td>23%</td>
<td>33%</td>
<td>23%</td>
<td>25%</td>
<td>16%</td>
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<tr>
<td>BR</td>
<td>23%</td>
<td>29%</td>
<td>29%</td>
<td>26%</td>
<td>23%</td>
</tr>
<tr>
<td>US</td>
<td>29%</td>
<td>23%</td>
<td>29%</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>DE</td>
<td>29%</td>
<td>23%</td>
<td>29%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>UK</td>
<td>31%</td>
<td>35%</td>
<td>23%</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>KO</td>
<td>35%</td>
<td>31%</td>
<td>23%</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>JP</td>
<td>35%</td>
<td>31%</td>
<td>23%</td>
<td>13%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Base: C01. Please indicate how familiar you are with the technology and trends that are known by the following terms. Base: All markets=7149.

‘Have some knowledge’=Code ‘I know a lot’ or ‘I know a fair amount’ or ‘I know a little’
"All remote control... equipped with adjustment function... technology that can be friendly to children and the elderly."

"Internet matrix for home electronic equipment... control the home from a single wireless communication device... an adjustable system."

"An in-home network controlling domestic devices... technology monitors everything in your home... all connected to one hub... items connecting together."

"Networked home, all about smartphones and controlling homes even while travelling... technology that intelligently adapts."

"All appliances and home security are connected to an app on your smartphone... I can directly monitor my household devices."

"Connected devices chatting with each other... without physical presence... anything with automation of home and domestic work."

"Making family life in the home intelligent through automation networks and electronic devices... using remote control."

**Understanding of the term ‘smart home’**

**Least engaged with term**
- Japan (30%)
- Korea (59%)
- United Kingdom (65%)

**Most engaged with term**
- Germany (67%)
- United States (74%)
- Brazil (78%)
- China (81%)

Base: C17. What is your understanding of the term ‘smart home’? [Open end] Base: All who know at least a little about the smart home term

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Consumers and the smart home

Technologies that will impact consumers lives

Around half of consumers expect smart home to have an impact on their lives in the near future, a feeling most pronounced, relative to other technologies, in the UK, Germany and US. Consumers in China see smart home as the technology most likely to have a potential impact, although this feeling is not shared in Japan.

Technologies/trends consumers feel will have an impact on their life

Most likely

- 55% Mobile Payments
- 50% Smart home technology
- 41% 3D Printing
- 38% Cloud Computing and Storage
- 35% Wearable Technology
- 33% Driverless cars / Autonomous driving
- 29% The Internet of Things
- 26% Connected Car
- 24% Virtual / Augmented Reality
- 24% Smart Cities
- 14% Machine to Machine Technology

Least likely

- 75% Smart home technology
- 57% Mobile Payments
- 55% 3D Printing
- 51% Cloud Computing and Storage
- 47% Wearable Technology
- 43% Driverless cars / Autonomous driving
- 43% The Internet of Things
- 43% Connected Car
- 43% Virtual / Augmented Reality
- 43% Smart Cities
- 43% Machine to Machine Technology

50% of consumers who feel that technology will have an impact on their life

Of consumers feel that smart home Technology will have an impact on their life over the next few years.
Leading edge consumers identify smart home as the trend most likely to impact their life over their next few years – ahead of technologies such as wearable technology and 3D printing. This suggests that LECs have very high expectations on the possibilities of smart home technology and how it will transform their lives.

Technologies/trends consumers feel will have an impact on their life

- **78% Smart home technology**
- 74% Mobile Payments
- 63% Wearable Technology
- 62% 3D Printing
- 60% Cloud Computing and Storage
- 52% Connected Car
- 51% Driverless cars / Autonomous driving
- 50% The Internet of Things
- 48% Smart Cities
- 46% Virtual / Augmented Reality
- 29% Machine to Machine Technology

Of leading edge consumers feel that **smart home Technology** will have an impact on their life over the next few years.
While the smart home is an emerging trend for many consumers at a conceptual level, it is clear that many are already adopting smart home products/services, but, in many cases, they may not perceive this as part of broader ‘smart home’.

Ownership of a smart home product

27%

Own at least one smart home product or device*

- 1 device owned
- 2-3 devices owned
- Over 3 devices owned

Smart home products currently used

- Smart toothbrush 8.0%
- Alarm system 6.8%
- Streaming multi-room audio 6.6%
- Robot Vacuum cleaner 6.6%
- Smart air conditioner 6.5%

*This definition does not include Smart TV, Smart set-top boxes or health/fitness devices. Base: D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All markets=7149

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Over half of Leading Edge Consumers have already bought at least one smart home product and Leading Edge Consumers are more likely to own more than one, with over 2 in 5 owning more than 3 products. We see similar categories of interest for LECs but higher usage of all products among Leading Edge Consumers.

### Ownership of a smart home product

**Leading Edge Consumers**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Own at least one smart home product or device*</td>
<td></td>
<td>52%</td>
</tr>
<tr>
<td>1 device owned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3 devices owned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 3 devices owned</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*This definition does not include Smart TV, Smart set-top boxes or health/fitness devices. Base: D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All markets=7149. Total Leading Edge Consumers=1189.

### Smart home products currently used

<table>
<thead>
<tr>
<th>Product</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart toothbrush</td>
<td>17.9%</td>
</tr>
<tr>
<td>Alarm system</td>
<td>16.4%</td>
</tr>
<tr>
<td>Smart air conditioner</td>
<td>15.3%</td>
</tr>
<tr>
<td>IP camera (for security)</td>
<td>15.0%</td>
</tr>
<tr>
<td>Smart refrigerator</td>
<td>13.8%</td>
</tr>
</tbody>
</table>
Consumers and the smart home

The long tail of smart some product ownership

Very few smart home products currently have any clear advantage when considering existing ownership, and items most popular with consumers tend to be those where manufacturers have integrated smart functions into everyday devices – resulting in most smart products being used in isolation, and for specific tasks in the home, resulting in a highly fragmented market place.

Smart home product ownership

We have not included smart devices that have a high chance of consumer confusion regarding ownership (i.e. the exact definition of ‘smart’) or market penetration – which largely relates to entertainment, connectivity and health products.

27%

Of consumers own at least one smart home product or device*

D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All markets=7149.
Consumers and the smart home
Satisfaction with smart home devices

Satisfaction with devices is strong among early adopters, with a relative minority being dissatisfied with their devices. Both smart toothbrushes and robot vacuum cleaners show some indication of dissatisfaction when compared to products such as alarm, audio and air conditioning systems due to the heavy reliance on the technology in daily use.

Satisfaction with smart home devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Extremely satisfied</th>
<th>Very satisfied</th>
<th>Satisfied</th>
<th>Somewhat dissatisfied</th>
<th>Dissatisfied</th>
<th>Satisfied (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart toothbrush</td>
<td>37%</td>
<td>32%</td>
<td>22%</td>
<td>5%</td>
<td>4%</td>
<td>91%</td>
</tr>
<tr>
<td>Alarm system</td>
<td>37%</td>
<td>32%</td>
<td>27%</td>
<td>3%</td>
<td>3%</td>
<td>96%</td>
</tr>
<tr>
<td>Streaming multi-room audio</td>
<td>41%</td>
<td>30%</td>
<td>22%</td>
<td>4%</td>
<td>3%</td>
<td>93%</td>
</tr>
<tr>
<td>Robot vacuum cleaner</td>
<td>34%</td>
<td>29%</td>
<td>24%</td>
<td>10%</td>
<td>4%</td>
<td>87%</td>
</tr>
<tr>
<td>Smart air conditioner</td>
<td>37%</td>
<td>36%</td>
<td>22%</td>
<td>3%</td>
<td>3%</td>
<td>95%</td>
</tr>
</tbody>
</table>

D03. How satisfied are you with the following products or services that you own? Base: Smart toothbrush:542, Alarm system: 476, Streaming audio:440, Robot vacuum:455, Air conditioner:444
Consumers and the smart home
Expectations from smart home

When giving opportunity to talk about the devices they associate with smart home, consumers respond with a range of potential devices, which while positive for future adoption highlights the lack of a single leading ‘hero’ product or application, further reinforcing the likely fragmented nature of the market.

**Products, devices or services thought of when thinking of ‘smart home’**

**Appliances**
- “Refrigerators monitoring stock…that can independently shop for items themselves” (DE)
- “TV, computer, telephone, refrigerator, stove, washer, dryer, microwave, DVD, cable television, air conditioner, Automotive, radios, doors, fan” (BR)
- “Vacuum cleaners and air conditioners, refrigerators” (JP)
- “Devices that you wear and connect to other machines and monitor things like your pulse and BP.” (UK)

**Entertainment**
- “Tablets, PC, videogames.” (US)
- “Home audio and video products.” (CN)
- “Synchronising multiple TVs.” (KO)

**Energy and Lighting**
- “Light bulbs that turn on with your phone.” (US)
- “Energy devices; lighting; socketed appliances.” (UK)
- “Including smart appliance control, intelligent lighting control, electric curtain control, anti-theft alarm, access control intercom, gas leaks and other.” (CN)
- “Video cam / CCTV, curtains, alarms, gas sensor.” (UK)
- “Smoke detectors, locks, garage doors, windows, lighting.” (US)

**Security and Control**
- “Smart Health”
- “Video cams / CCTV, smoke detectors, locks, garage doors, windows, lighting.” (US)
- “Smoke detectors, locks, garage doors, windows, lighting.” (UK)

**Smart Health**
- “Watches, fitness trackers.” (UK)
- “I think of heating and air conditioning.” (DE)
- “Apps control the heating, lights.” (DE)
- “I think of refrigerators monitoring stock…that can independently shop for items themselves” (DE)
- “Energy devices; lighting; socketed appliances.” (UK)
- “Energy devices; lighting; socketed appliances.” (UK)
- “Devices that you wear and connect to other machines and monitor things like your pulse and BP.” (UK)
Identifying the opportunity for smart home
We evaluated the opportunity for smart Home in three stages: starting with the concept as a whole; then broad smart home category areas and then finally individual product use cases.

1. **Smart Home Concept**
   - Evaluate the **appeal, credibility and relevance** of the concept as a whole.

2. **Smart Home Categories**
   - Understand **interest and appeal** towards 5 broad smart home categories: Energy & Lighting, Entertainment, Security & Control, Health and Appliances.

3. **Smart Home Products**
   - Test **interest, appeal and purchase intent** for a comprehensive list of smart home products in each of these categories.
We introduced an overview of the smart home concept to respondents and highlighted the types of categories and products that can be related to the concept. We then tested the smart home concept against the following key measures…

1. How appealing is the smart home concept?
2. How believable is the smart home concept?
3. How easy is the smart home concept to understand?
4. Does the smart home concept fulfil a problem or need?
At a headline concept level, while the smart home is seen as credible and understood, it is not necessarily communicated well enough how it will fit into consumer’s lives, with only 37% agreeing that the concept fulfils a need they have – better consumer understanding of the benefits of smart home will help further increase appeal.
Consumer response is generally favourable to smart home, though a large proportion (38%) of consumers just find the concept fairly appealing, a group who like the idea but are not ready to jump into the category. Appeal is strongest in Brazil and China – but we also see high appeal among our broader sample of US consumers.

**Appeal of smart home concept**

40% of consumers agreed that ‘smart home’ was an extremely or very appealing concept.

78% of consumers agreed that ‘smart home’ was an extremely, very appealing or fairly appealing concept.

The US significantly outperforms other mature markets for smart home appeal, with nearly 1 in 5 (17%) of consumers finding the concept extremely appealing.
Identifying the opportunity for smart home
The undecided consumers

A large proportion of consumers feel generally favourable towards smart home, without reaching the higher levels of appeal (especially in South Korea and Japan). This more cautious reaction is driven by less belief in the credibility and ability of smart home to fulfill a specific need, suggesting it is key to communicate this to build interest.

### Appeal of smart home concept

38% of consumers agree that 'smart home' is a **fairly appealing** concept.

37% agreed that smart home is a **credible concept** (-13 vs total)

19% agreed that smart home **fulfills a need** (-18 vs total)

Have a similar profile to the total sample in terms of age & gender
This group is most apparent in markets where smart home is less established, highlighting need for further education.
The smart home concept most resonates with millennials, and importantly does not see a significant drop-off in appeal with the 35-54 group, with only relevance significantly trailing younger consumers. This is also seen with the elder demographic who will require further education on how the smart home can directly benefit their lives.

**Identifying the opportunity for smart home**

**Smart home appeal: Influence of life stage**

The chart above shows the appeal of smart home technology across different life stages:

- **Millennials (16-34)**: 52% Credible, 64% Understand, 43% Need
- **Generation X (35-54)**: 52% Credible, 61% Understand, 39% Need
- **Baby boomers & beyond (55+)**: 42% Credible, 49% Understand, 23% Need

Significantly different from total at 95% confidence.
Identifying the opportunity for smart home
The Influence of greater spending potential

Income level has a greater impact on appeal, with high income (c.20%) consumers being most comfortable with the concept and how it will impact their lives. Due to the early stage of adoption, there is a real relevance issue for low income households – driven by the fragmented (and often expensive) marketplace.

High income (Top c.20%)
- Extremely appealing: 23%
- Very appealing: 31%
- Fairly appealing: 29%
- Not very appealing: 12%
- Not at all appealing: 5%

Medium income (Middle c.50%)
- Extremely appealing: 15%
- Very appealing: 36%
- Fairly appealing: 28%
- Not very appealing: 7%
- Not at all appealing: 14%

Low income (Bottom c.30%)
- Extremely appealing: 20%
- Very appealing: 43%
- Fairly appealing: 20%
- Not very appealing: 8%
- Not at all appealing: 9%

Base: C02. How appealing is smart home technology to you? Base: All markets=7149
© GfK 2016 | GfK Smart Home Study
Leading Edge consumers find the smart home concept interesting and relevant to their lives. Nearly three quarters find it extremely/very appealing, which reflects their keen interest in the category and more broadly technology in the home.
Following on from the concept as a whole, we tested the consumer appeal of five broad smart home categories. Security and Control and Energy and Lighting resonate the most – driven by a clear understanding on what these aspects cover and the proliferation of devices already available in these areas.

### Appeal of smart home category

<table>
<thead>
<tr>
<th>Category</th>
<th>Appeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security &amp; Control</td>
<td>53%</td>
</tr>
<tr>
<td>Smart Energy &amp; Lighting</td>
<td>50%</td>
</tr>
<tr>
<td>Smart Entertainment &amp; Connectivity</td>
<td>47%</td>
</tr>
<tr>
<td>Smart Health</td>
<td>44%</td>
</tr>
<tr>
<td>Smart Appliances</td>
<td>43%</td>
</tr>
</tbody>
</table>

Base: D01. How appealing are the following categories of smart home products or solutions to you? Base: All markets=7149

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Leading edge consumers see much stronger appeal for all categories due to greater relevance and knowledge of the broader smart home concept. Entertainment and connectivity has a greater appeal in relation to the other categories – reflective of their greater device usage.

### Appeal of smart home category

- Extremely appealing
- Very appealing

### Leading Edge Consumers

<table>
<thead>
<tr>
<th>Category</th>
<th>Appeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security &amp; Control</td>
<td>82%</td>
</tr>
<tr>
<td>Smart Entertainment &amp; Connectivity</td>
<td>81%</td>
</tr>
<tr>
<td>Smart Energy &amp; Lighting</td>
<td>80%</td>
</tr>
<tr>
<td>Smart Appliances</td>
<td>75%</td>
</tr>
<tr>
<td>Smart Health</td>
<td>67%</td>
</tr>
</tbody>
</table>

Base: D01. How appealing are the following categories of smart home products or solutions to you? Base: All markets=7149
Category appeal is largely consistent in the western markets, with Security, Control and Energy/Lighting leading in each market. Smart Entertainment, however, is a more attractive proposition in the UK and US, as well as Smart Health which is more inline with other categories in the US.

**Appeal of smart home category: UK, US, DE**

Base: D01. How appealing are the following categories of smart home products or solutions to you? Base: UK=1031, US=1005, DE=1009

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Identifying the opportunity for smart home
Category Appeal: China, South Korea, Japan

Appeal is driven by a range of categories in South Korea, but it is clear security and control resonates strongest. While widespread smart home knowledge and adoption is at a relatively early stage in Japan, it is interesting to note the comparative importance of Smart Health – especially relevant to an ageing demographic.

Appeal of smart home category: SK, JPN

Key
- Energy and Lighting
- Security and Control
- Entertainment
- Smart Health
- Appliances

Base: D01. How appealing are the following categories of smart home products or solutions to you? Base: South Korea=1029, Japan=1017
Identifying the opportunity for smart home
Category Appeal: China, South Korea, Japan

Appeal is consistently high in both China and Brazil, where technology adoption among this group is occurring at a rapid rate. Brazil in particular has extremely strong appeal across all categories – reflective of our tech savvy online sample.

Appeal of smart home category: CN, BR

Key
- Energy and Lighting
- Security and Control
- Entertainment
- Smart Health
- Appliances

Base: D01. How appealing are the following categories of smart home products or solutions to you? Base: China=1033, Japan=1017

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While reaction to the broader concept is important to understand, it is individual products and use cases for smart home products that really helps to understand consumer interest in the category. We tested 38 different use cases (with descriptions) among consumers; helping us to gauge the levels of interest, potential purchasing and current ownership.

**Interest**
- I might buy or use it sometime in the future
- I would be interested in buying or using it in the near future

**Planning to Buy**
- I am planning to buy or use in the near future

**Currently Own**
- I already own or use it

An example…

**Smart air conditioner**
Power your air conditioner and determine the temperature from a distance, via an app

- Interest: 50%
- Planning to Buy: 15%
- Currently Own: 6%

Please see the Appendix for a full list of the products and devices tested along with the description provided to respondents.
Interest in individual products is varied, but we see much higher levels of interest (relevance) than seen earlier for the broad concept and categories when individual use cases are communicated. For example, Smart Appliances are much more readily seen as appealing when the individual products are detailed in terms of what they can do.

### Smart home devices that consumers are planning to buy

<table>
<thead>
<tr>
<th>Security &amp; Control</th>
<th>Energy &amp; Lighting</th>
<th>Entertainment</th>
<th>Health</th>
<th>Appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectors/Smoke alarm (15%)</td>
<td>Smart lighting (17%)</td>
<td>Smart TV (14%)</td>
<td>Baby monitor (9%)</td>
<td></td>
</tr>
<tr>
<td>Alarm system (15%)</td>
<td>Light control (16%)</td>
<td>Smart settop box (13%)</td>
<td>Smart coffee maker (11%)</td>
<td></td>
</tr>
<tr>
<td>IP camera (14%)</td>
<td>Energy manager (15%)</td>
<td>Multi-room audio (12%)</td>
<td>Smart washing machine (16%)</td>
<td></td>
</tr>
<tr>
<td>Access control (14%)</td>
<td>Smart thermostat (13%)</td>
<td>Repeaters (12%)</td>
<td>Robot vacuum cleaner (16%)</td>
<td></td>
</tr>
<tr>
<td>Motion sensor (13%)</td>
<td>Smart meter (13%)</td>
<td>Tuner/Amplifier/Receivers (12%)</td>
<td>Smart air conditioner (15%)</td>
<td></td>
</tr>
<tr>
<td>Smart doorbell (13%)</td>
<td>Boiler monitoring (12%)</td>
<td>W-LAN sticks (12%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart blinds (11%)</td>
<td>Smart radiator (11%)</td>
<td>Home plugs (12%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smart routers (11%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby monitor (9%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Greatest demand: 18%

Least demand: 8%
Identifying the opportunity for smart home
Smart devices that LECs will most likely purchase

The ten smart home products embraced most by LECs are those where smart functionality has been added to everyday, domestic devices – with remote control/monitoring and self-maintenance being the two key features that enhance these domestic items.

Leading Edge Consumers: Planning to purchase or use in the near future

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart lighting (smart lamps)</td>
<td>37%</td>
</tr>
<tr>
<td>Smart light control</td>
<td>37%</td>
</tr>
<tr>
<td>Smart refrigerator</td>
<td>35%</td>
</tr>
<tr>
<td>Smart washing machine</td>
<td>34%</td>
</tr>
<tr>
<td>Robot vacuum cleaner</td>
<td>34%</td>
</tr>
<tr>
<td>Smart detectors (for smoke and gas leak)</td>
<td>34%</td>
</tr>
<tr>
<td>Energy manager</td>
<td>33%</td>
</tr>
<tr>
<td>Smart thermostat</td>
<td>32%</td>
</tr>
<tr>
<td>IP camera (for security)</td>
<td>32%</td>
</tr>
<tr>
<td>Smoke alarm and air quality sensor</td>
<td>32%</td>
</tr>
</tbody>
</table>

D02. (I am planning to buy or use it) Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: LECs = 1180
Security products and services have been one of the first areas to gain market traction. Surveillance and Alarm systems offer the greatest immediate opportunity, although interest is clear across the range of security use cases tested.

Smart Security

- **Smart Doorbell**
  - Interest: 45%
  - Planning to Buy: 13%
  - Currently Own: 4%

- **Access Control**
  - Interest: 46%
  - Planning to Buy: 14%
  - Currently Own: 4%

- **Motion Sensors**
  - Interest: 50%
  - Planning to Buy: 13%
  - Currently Own: 5%

- **IP Camera**
  - Interest: 48%
  - Planning to Buy: 14%
  - Currently Own: 6%

- **Alarm System**
  - Interest: 49%
  - Planning to Buy: 15%
  - Currently Own: 7%

**D02.** Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All Markets=7149
Household detectors show the clearest opportunity for smart home control, although it is clear that the category may well become more relevant once other smart products are already in the home, most notably around energy, lighting and security.

<table>
<thead>
<tr>
<th>Smart control</th>
<th>Interest</th>
<th>Planning to Buy</th>
<th>Currently Own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby Monitors</td>
<td>32%</td>
<td>9%</td>
<td>3%</td>
</tr>
<tr>
<td>Smart Blinds/ shutters</td>
<td>42%</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>Smoke Alarm/ Air Quality</td>
<td>50%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>Smart Detectors</td>
<td>53%</td>
<td>15%</td>
<td>6%</td>
</tr>
</tbody>
</table>
There are a wide variety of smart energy devices on the market. Energy management, and smart meters hold the highest immediate opportunity, with radiator and boiler management not having as strong appeal.
Of all energy and lighting products, Smart Lighting has a notably high interest to opportunity conversion rate – arising from the prominence of established brands bringing products with easily understandable use cases to market.

<table>
<thead>
<tr>
<th>Smart Lighting</th>
<th>Interest</th>
<th>Planning to Buy</th>
<th>Currently Own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Light control</td>
<td>51%</td>
<td>16%</td>
<td>4%</td>
</tr>
<tr>
<td>Smart Lighting</td>
<td>51%</td>
<td>17%</td>
<td>5%</td>
</tr>
</tbody>
</table>
When asked about ownership of a Smart TV in the context of the smart home ownership falls to 25% of consumers (from 31%) – reflective of those that actually use smart features on their TV.

**Smart Entertainment**

- **Smart Tuner/Amplifier/Receiver**: 45% Interest, 12% Planning to Buy, 4% Currently Own
- **Streaming Multi-Room audio**: 44% Interest, 12% Planning to Buy, 7% Currently Own
- **Smart Settop Box**: 44% Interest, 13% Planning to Buy, 10% Currently Own
- **Smart TV**: 42% Interest, 14% Planning to Buy, 25% Currently Own

D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All Markets=7149
Smart connectivity applications have similar levels of interest and potential for purchase, suggesting that manufacturers focused on implementing smart features into commonplace, everyday devices are more likely to be convincing consumers of the need for smart home products than those who do not.

<table>
<thead>
<tr>
<th>Smart Connectivity Products</th>
<th>Interest</th>
<th>Planning to Buy</th>
<th>Currently Own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Plugs</td>
<td>46%</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Repeaters</td>
<td>43%</td>
<td>12%</td>
<td>7%</td>
</tr>
<tr>
<td>W-LAN sticks</td>
<td>44%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>Smart routers</td>
<td>40%</td>
<td>11%</td>
<td>24%</td>
</tr>
</tbody>
</table>

D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All Markets=7149
Health is an increasingly important category both inside and outside of the home. While interest, and therefore opportunity in fitness trackers is on the rise, traditional health devices like Blood pressure monitors and Personal scales – often with a smart element to their design or functionality – have the highest levels of ownership.

**Smart Health**

- **Disease activity monitor**: 39% Interest, 11% Planning to Buy, 2% Currently Own
- **Medication monitor/reminder**: 39% Interest, 10% Planning to Buy, 3% Currently Own
- **Fitness activity tracker**: 40% Interest, 12% Planning to Buy, 7% Currently Own
- **Blood pressure monitor**: 42% Interest, 12% Planning to Buy, 10% Currently Own
- **Personal scale**: 38% Interest, 9% Planning to Buy, 16% Currently Own

D02. Do you currently use or are you interested in using any of the following smart home products or services within your household? Base: All Markets=7149
While not having the strongest appeal initially as a category (when compared to Energy/Lighting and Security/Control), there is significant interest in specific smart domestic appliances once the use case is explained. Current ownership is relatively low, though interest is very high in appliances that might ordinarily require more human interaction/time, like vacuum cleaning and checking stock in the refrigerator.

**Smart Appliances**

- Interest
- Planning to Buy
- Currently Own

<table>
<thead>
<tr>
<th>Product</th>
<th>Interest</th>
<th>Planning to Buy</th>
<th>Currently Own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Kettle</td>
<td>45%</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>Smart Coffee Maker</td>
<td>45%</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>Smart Air conditioner</td>
<td>50%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Smart Refrigerator</td>
<td>52%</td>
<td>17%</td>
<td>6%</td>
</tr>
<tr>
<td>Smart Washing machine</td>
<td>53%</td>
<td>16%</td>
<td>6%</td>
</tr>
<tr>
<td>Robot Vacuum cleaner</td>
<td>48%</td>
<td>16%</td>
<td>7%</td>
</tr>
<tr>
<td>Smart toothbrush</td>
<td>41%</td>
<td>10%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Predicting the potential for smart home
Smart home device ownership is set to expand quickly, with claimed intention of purchase for over half of consumers. However it is clear that claimed intention should be tested to ensure it provides an accurate estimation of consumer take-up.

### Currently own a smart home product*

<table>
<thead>
<tr>
<th></th>
<th>October 2015</th>
<th>28% of consumers currently own a smart home product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current user</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Non-User</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Interested in purchasing*

<table>
<thead>
<tr>
<th></th>
<th>October 2017 Estimate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (Current User)</td>
<td>22%</td>
</tr>
<tr>
<td>Yes (Non-current user)</td>
<td>36%</td>
</tr>
<tr>
<td>No</td>
<td>42%</td>
</tr>
</tbody>
</table>

58% of consumers claim they will purchase a smart home product in the next two years.

Note: Smart home product as defined on slide 28 (excluding Smart TVs, health and connectivity devices such as routers).

However, we know that respondent claimed intention is higher than often realised in practice.
To calibrate purchase intent, we have taken into account the relative importance that consumers put on different factors when purchasing technology in the home, then tested how smart home performs in each of those areas.

We asked respondents to rate the importance of statements regarding the purchase of technology within the home.

We then asked respondents to evaluate how the Smart Home concept performed against these expectations.

If the smart home concept satisfied all statements that are important to the consumer, then purchase would be validated.

We tested 16 statements that can be grouped into 7 categories:
- UX and Behaviour change
- Self-Identification
- Social Effects
- Marketing/Retail Push
- Relative Advantage
- Trust
- Service & Support
Once the validation was applied we see that 14% of consumers that stated they would purchase a smart home product and also feel that the smart home concept addresses all the factors that are important to them when buying technology. Interestingly this group includes a significant proportion of non users highlighting how smart home will reach new audiences in the coming years but not necessarily at the explosive rate of growth many might be predicting.

**Interested in purchasing**
A smart home product in next two years

- Yes (Current User): 22%
- Yes (Non-current user): 36%
- No: 42%

**Validated intention to purchase**
A smart home product in next two years

- Yes (Current User): 7%
- Yes (Non-current user): 7%
- No: 86%

58% of consumers claim they will purchase a smart home product in the next two years.

Note: Smart home product as defined on slide 28 (excluding Smart TVs, health and connectivity devices such as routers)
Predicting the potential for smart home
Using ‘levers’ to validate likely adoption

Around a quarter of those who stated they were likely to purchase a smart device in the near future passed all of the adoption levers. Trust, activation and UX & Behaviour are the areas where purchasers are least likely to believe that the smart home concept meets their expectations when buying technology in the home.

14% of consumers expected the smart home concept to meet or exceed expectations across all evaluation criteria & state they are likely to purchase a smart home product in the next 2 years and are therefore considered validated purchasers.

- Service and Support: 71%
- Relative advantage: 70%
- Social effects: 60%
- Marketing/PR push: 57%
- Trust: 51%
- Activation/Identification: 48%
- UX & Behaviour: 42%

Trust, Activation and UX & Behaviour are the key areas where consumers were least likely to believe the smart home concept could meet expectations.
Predicting the potential for smart home

The key reasons for consumers not validating purchase

Trust and user experience are the key areas to which consumers feel smart home products do not meet their expectations when purchasing technology within their home. While a proportion of those interested pass these ‘levers’ there are a significant number of interested consumers who will require education into how smart products deal with data and offer a meaningful difference to their lives before actual purchase could be expected.
A lack of depth of knowledge informs many of the secondary factors, especially with concerns around service and support and expectations that smart home can offer something significantly better than existing technology.
Predicting the potential for smart home
Profiling our validated smart home purchasers

Our validated purchasers are generally younger, more likely to be male and home owners. 40% can be considered Leading Edge Consumers, more than double the number found at a total level – highlighting the importance of early adopters to this group.

### Gender

<table>
<thead>
<tr>
<th></th>
<th>Purchaser</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>Female</td>
<td>45%</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Age

<table>
<thead>
<tr>
<th></th>
<th>Purchaser</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-34</td>
<td>49%</td>
<td>42%</td>
</tr>
<tr>
<td>35-54</td>
<td>39%</td>
<td>38%</td>
</tr>
<tr>
<td>55+</td>
<td>12%</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Leading Edge Consumers

- 40% of the validated smart home product intenders are LECs – highlighting the role of smart home as a proposition that is (at the moment) focused towards early adopters.

### Proportion of each market

- CH: 28%
- BR: 20%
- US: 16%
- SK: 15%
- UK: 6%
- DE: 6%
- JP: 3%

### Own or Rent property

- Purchaser: 78% Own, 22% Rent
- Total: 62% Own, 48% Rent
Validated purchasers, unsurprisingly see greater levels of appeal for the smart home categories – although interest shows the same pattern to the overall sample. Product interest is focused on lighting, control and appliances.

### Predicting the potential for smart home

**What are they planning to buy?**

<table>
<thead>
<tr>
<th>Category</th>
<th>Appeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security and control</td>
<td>83%</td>
</tr>
<tr>
<td>Energy and Lighting</td>
<td>81%</td>
</tr>
<tr>
<td>Entertainment</td>
<td>79%</td>
</tr>
<tr>
<td>Domestic appliances</td>
<td>79%</td>
</tr>
<tr>
<td>Health</td>
<td>77%</td>
</tr>
</tbody>
</table>

**Smart devices that validated purchasers are most likely to buy**

<table>
<thead>
<tr>
<th>Device</th>
<th>Appeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart light control</td>
<td>38%</td>
</tr>
<tr>
<td>Smart lighting</td>
<td>38%</td>
</tr>
<tr>
<td>Smart detector</td>
<td>37%</td>
</tr>
<tr>
<td>Robot vacuum cleaner</td>
<td>37%</td>
</tr>
<tr>
<td>Smoke alarm</td>
<td>37%</td>
</tr>
<tr>
<td>Smart refrigerator</td>
<td>37%</td>
</tr>
<tr>
<td>Smart washing machine</td>
<td>37%</td>
</tr>
<tr>
<td>Access control</td>
<td>36%</td>
</tr>
</tbody>
</table>

Base: Purchasers= Likely to buy at least one Smart Home Product (Validated) = 969
When asked directly, consumers see cost to purchase, privacy concerns and lack of knowledge as the main factors preventing purchase.

### Top barriers to smart home technology purchase

1. **Cost to purchase** - 33%
2. **Concerns about personal privacy** - 24%
3. **Knowledge of products** - 23%
4. **Concerns about tech communicating across different systems** - 19%
5. **Concerns about security in my home** - 19%
6. **Don't believe smart home can meet expectations** - 17%
7. **Don't think Internet connection could support this** - 17%
8. **Need agreement of landlord/home owner** - 15%

Base: D06. What do you see as the potential barriers for purchasing the following categories of smart home technology? Base: All markets=7149

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Predicting the potential for smart home technology

Key barriers to adoption by category

While cost to purchase is consistently the main barrier to each category, there are perceived nuances around privacy and integration that need to be overcome for specific product groups –most notably security, control, entertainment, connectivity and health.

Top barriers to smart home category purchase

1. Smart Energy and Lighting
   - The cost to purchase would be too high (34%)
   - Concerned that tech across different systems wouldn't be able to communicate with each other (20%)
   - Would have to get landlord / homeowner agreement (19%)

2. Smart Security and Control
   - The cost to purchase would be too high (36%)
   - Concerned about personal privacy (33%)
   - Concerned about security in my home (31%)

3. Smart Entertainment and Connectivity
   - The cost to purchase would be too high (33%)
   - Concerned about personal privacy (28%)
   - Concerned that tech across different systems wouldn't be able to communicate with each other (22%)
   - Don't believe it will meet my needs/expectations (19%)

4. Smart Health
   - The cost to purchase would be too high (29%)
   - Concerned about personal privacy (25%)
   - Concerned about security in my home (31%)
   - Don't believe it will meet my needs/expectations (17%)

5. Smart Domestic Appliances
   - The cost to purchase would be too high (37%)
   - Concerned that tech across different systems wouldn't be able to communicate with each other (19%)
   - Don't believe it will meet my needs/expectations (17%)

Base: D06. What do you see as the potential barriers for purchasing the following categories of smart home technology? Base: All markets=7149

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Concerns regarding privacy are seen most in security, control, entertainment, connectivity and health. German consumers are as a whole the most concerned with privacy, although it is of particular concern for Chinese respondents in the Smart Entertainment and Connectivity category.

<table>
<thead>
<tr>
<th>% Concerned about personal privacy</th>
<th>Most concerned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Security and Control</td>
<td>33%</td>
</tr>
<tr>
<td>Smart Entertainment and Connectivity</td>
<td>28%</td>
</tr>
<tr>
<td>Smart Health</td>
<td>25%</td>
</tr>
</tbody>
</table>

44% 33% 38% 32% 26% 33% 26%
38% 40% 24% 28% 22% 25% 17%
38% 25% 31% 28% 23% 15% 17%

Base: D06. What do you see as the potential barriers for purchasing the following categories of smart home technology? Base: All markets=7149, UK=1031, Germany=1009, US=1005, Korea=1029, China=1033, Japan=1017

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Predicting the potential for smart home
Barriers for those by stage of appeal

When looking at potential barriers by appeal of the smart home concept, we see that category knowledge and expectations are a key differentiator. Further promoting and communicating the benefits of smart home products will help increase relevance (and drive appeal) for those who do not currently see the appeal of smart home.

Barriers by smart home appeal

- Appealing
- Fairly appealing
- Unappealing

<table>
<thead>
<tr>
<th>Appeal of smart home</th>
<th>Barriers to purchase, by appeal of smart home</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>The cost to purchase would be too high</td>
</tr>
<tr>
<td>38%</td>
<td>Don’t see any potential barriers</td>
</tr>
<tr>
<td>22%</td>
<td>Concerned that tech across different systems wouldn’t be able to communicate with each other</td>
</tr>
<tr>
<td></td>
<td>Don’t know enough about this category</td>
</tr>
<tr>
<td></td>
<td>Don’t believe it could meet my needs/ expectations</td>
</tr>
<tr>
<td></td>
<td>Concerned about personal privacy</td>
</tr>
<tr>
<td></td>
<td>I don’t think my home internet connection/network could support it</td>
</tr>
<tr>
<td></td>
<td>Concerned about security in my home</td>
</tr>
<tr>
<td></td>
<td>Would have to get landlord or homeowner agreement</td>
</tr>
</tbody>
</table>

Base: D01. How appealing are the following categories of smart home products or solutions to you? D05. What do you see as the potential barriers for purchasing the following categories of smart home technology? Base: All markets=7149
Delivering smart home
While most consumers expect to pay just once for a smart home product, with no recurring fee, a large proportion of consumers are still undecided on their expectation of payment. Particularly when it comes to paying a subscription fee either to include the smart home product cost or a separate subscription fee associated with running the product, reflecting consumer uncertainty.

**Expectation of payment for smart home products**

- **67%** would expect to pay just once for the products (no recurring fee)
- **45%** would expect the cost of the smart home product to be included in a subscription / recurring fee
- **30%** would pay for the product and for a subscription / recurring fee associated with running the product

Base: D05. To what extent do you agree with the following statements? Base: All markets = 7149. T2B Scores: 'Agree Strongly' or 'Agree Slightly'

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While a considerable proportion of older consumers (55+) are willing to pay a subscription fee, this number more than halves when the same group is questioned on their willingness to pay for both a smart home product and the accompanying subscription fee associated with running the product.

**Expectation of payment for smart home products – By age**

- **One payment for smart home products (no recurring fee)**
- **Would expect the cost to be included in a subscription / recurring fee**
- **Would pay for smart home products and for subscription / recurring fees associated with running the product**

Base: D05. To what extent do you agree with the following statements? Base:All markets=7149. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’

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While the greatest proportion of consumers would prefer to self maintain, there is a large number (33%) who are unsure regarding their preference. Potential buyers are more likely to prefer to self-maintain, potentially a product of their greater knowledge of the category and products on offer and expectations of simplicity and desire for ‘plug and play’ products.

42% of consumers would prefer to self-service/independently maintain their smart home products

62% of those looking to purchase smart home devices would prefer to self-service/independently maintain their smart home products

Base: D05. To what extent do you agree with the following statements? Base: All markets=7149. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’
Delivering smart home
Self-Installation of smart home devices

A large proportion of consumers are simply unsure as to their preference towards installation of smart home products. There is greater willingness for self-installation among those looking to purchase smart home products – although half of these potential buyers either are unsure or disagree that they would prefer self-installation – suggesting there could be an opportunity for retailers and service providers to reassure with installation as part of the service.

% agree that they ‘would prefer to install smart home products myself, without any assistance from the device provider’

43% 40% 37% 31% 28% 35% 35%

% disagree that they would prefer installing smart home devices themselves (of those looking to purchase smart home devices)

35% of consumers would prefer to install smart home products themselves, without any assistance from the device provider

50% of those looking to purchase smart home devices would prefer to install smart home products themselves, without any assistance from the device provider

However it is clear there are not established expectations for many with 20% unsure and 30% disagreeing that they would prefer installing smart home devices themselves (of those looking to purchase smart home devices)

Base: D05. To what extent do you agree with the following statements? Base:All markets=7149. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’

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Reflecting stronger category knowledge, interest in self-installation and self-service/independent maintenance of smart home products is much higher among Leading Edge Consumers. However, some do maintain a preference for assistance with smart home product installation/maintenance and some uncertainty remains on how they would expect to manage the process.

### Self-Installation and Maintenance

<table>
<thead>
<tr>
<th>Statement</th>
<th>All respondents</th>
<th>Leading Edge Consumers</th>
<th>+17%</th>
<th>+24%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would prefer to install smart home products myself, without any assistance from the device provider</td>
<td>14% 19% 31% 25% 11%</td>
<td>9% 18% 20% 31% 22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would want to self-service/independently maintain my smart home products</td>
<td>11% 15% 33% 29% 12%</td>
<td>8% 9% 17% 38% 27%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Base: D05. To what extent do you agree with the following statements? Base: All markets=7149, Total Leading Edge Consumers=1189. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’ © GfK 2016 | GfK Smart Home Study
Delivering smart home
Self-installation and maintenance by gender and age group

There is a clear gap when looking at expectations by gender, with females less likely to prefer self-install or maintain smart devices. There is also a clear age divide, with those fitting in to the key target groups (25-44) most likely to understand the realities of setting up and maintaining smart devices for the home.

**Self-Installation and Maintenance**

I would prefer to **install smart home products myself, without any assistance** from the device provider (% agree)

I would want to **self-service/independently maintain** my smart home products (% agree)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 - 24</td>
<td>39%</td>
<td>33%</td>
</tr>
<tr>
<td>25 - 34</td>
<td>42%</td>
<td>39%</td>
</tr>
<tr>
<td>35 - 44</td>
<td>47%</td>
<td>45%</td>
</tr>
<tr>
<td>45 - 54</td>
<td>40%</td>
<td>34%</td>
</tr>
<tr>
<td>55+</td>
<td>41%</td>
<td>30%</td>
</tr>
<tr>
<td>Male</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>38%</td>
<td></td>
</tr>
</tbody>
</table>

Base: D05. To what extent do you agree with the following statements? Base:All markets=7149. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’

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The smartphone is the standout device considered to control smart home products and services although close to half would consider using their laptop/PC. Those who own a tablet / smart TV also show interest in using them as devices for smart home control. The expectation of using smartphone is reflective on current ownership levels and the familiarity of usage that consumers have – the reality of having products in the home may well result in consumers needing to have multiple options for control.

### Devices/technologies considered to control smart home products/services

<table>
<thead>
<tr>
<th>Device/Technology</th>
<th>Considered</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td></td>
<td>72%</td>
</tr>
<tr>
<td>Laptop/PC</td>
<td></td>
<td>47%</td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
<td>36%</td>
</tr>
<tr>
<td>Smart TV</td>
<td></td>
<td>22%</td>
</tr>
<tr>
<td>Separate stand-alone control</td>
<td></td>
<td>18%</td>
</tr>
<tr>
<td>Wearables e.g. Smartwatch</td>
<td></td>
<td>16%</td>
</tr>
<tr>
<td>Voice control</td>
<td></td>
<td>18%</td>
</tr>
<tr>
<td>Gesture control</td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>
Delivering smart home
Attitude towards a single vendor providing all smart home technology

Although many consumers would prefer a single vendor to supply all of their smart home technology, there remains considerable interest to purchase from a number of suppliers. One quarter do not have a preference, once again showing a large proportion of consumers who are simply unsure of their preference – reflecting a lack of understanding on how the smart home may work.

Attitudes towards a single vendor providing all smart home technology

- Prefer a **single vendor** supplying all smart home technology: 43%
- Prefer to purchase smart home technology from a **number of suppliers**: 32%
- I have **no preference**: 25%
Delivering smart home
Expectation for devices to communicate

The idea of devices made by different vendors communicating with each other resonates with most consumers. Most expect the ability for communication between devices made by different vendors but around one quarter are neither in agreement or disagreement. This reflects that consumers have a strong expectation for seamlessness with smart home devices – which underlines the need for simplicity in the home around the smart home offer.

**Expectation for device communication (by different vendors)**

66% expect devices made by different vendors to be able to communicate with each other.

<table>
<thead>
<tr>
<th>Country</th>
<th>Agree Slightly</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>28%</td>
<td>41%</td>
</tr>
<tr>
<td>Germany</td>
<td>44%</td>
<td>35%</td>
</tr>
<tr>
<td>USA</td>
<td>44%</td>
<td>35%</td>
</tr>
<tr>
<td>Korea</td>
<td>54%</td>
<td>11%</td>
</tr>
<tr>
<td>Brazil</td>
<td>54%</td>
<td>42%</td>
</tr>
<tr>
<td>Japan</td>
<td>36%</td>
<td>11%</td>
</tr>
<tr>
<td>China</td>
<td>28%</td>
<td>44%</td>
</tr>
</tbody>
</table>

The expectation is greater among those who already own a Smart device – 78% +12%

P07. To what extent do you agree with the following statements? Base:All markets=7149. T2B Score: ‘Agree Strongly’ or ‘Agree Slightly’

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82
Around half of consumers say they would be likely to pay for a single app to control all of their smart home devices. Many show uncertainty over whether they would, likely due to the lack of a tangible reason as to why they would need to. Few don’t see themselves paying for a single app so overall the idea has broad appeal and again reflecting the desire for simplicity.

55% would be likely to pay for a single app to control all smart home devices

This likelihood is greater among those who already own a Smart device – 72% +17%

P07. To what extent do you agree with the following statements? Base:All markets=7149. T2B Score: ‘Agree Strongly’ or ‘Agree Slightly’

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Delivering smart home
Leading Edge Consumers

Leading Edge Consumers simply expect simplicity in their smart home delivery – communication between devices made by different vendors and a single app for smart home device control. There is much less uncertainty among LECs and very few do not have these expectations which is likely to be a key driver of adoption amongst this key target group.

Device communication and likelihood to pay for a single app

<table>
<thead>
<tr>
<th></th>
<th>Agree slightly</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents</td>
<td>6%</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>36%</td>
</tr>
<tr>
<td>Leading Edge Consumers</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>28%</td>
<td>61%</td>
</tr>
</tbody>
</table>

Expect devices made by different vendors to be able to communicate with each other

+23%

All respondents

<table>
<thead>
<tr>
<th></th>
<th>Agree slightly</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>31%</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Leading Edge Consumers</td>
<td>4%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>46%</td>
</tr>
</tbody>
</table>

Would be likely to pay for a single app to control all smart home devices

+28%

Base: P07. To what extent do you agree with the following statements? Base: All markets=7149, Total Leading Edge Consumers=1189. T2B Scores: ‘Agree Strongly’ or ‘Agree Slightly’

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When researching purchasing smart home technology, many sources are considered. Consumers are most likely to use online review sites and speak to friends/family. Over one third would use price comparison websites and online retailers. One in five would contact their energy provider.

**Sources used to research purchasing smart home technology**

- **44%** Online review sites
- **41%** Friends/family
- **35%** Price comparison websites
- **34%** Online retailer
- **33%** Contact a technical expert / specialist / installer
- **31%** Online discussion forums
- **25%** Retail store
- **22%** Would contact my internet provider
- **21%** Newspaper/magazines
- **21%** Would contact my energy provider
- **19%** Colleagues at work

**Top three sources for Leading Edge Consumers.**

1. **Online review sites** 59% +15%
2. **Online discussion forums** 52% +21%
3. **Online retailer** 48% +14%
Delivering smart home
Sources used to research purchasing smart home technology

Consumers in Germany are most likely to contact a technical expert / specialist / installer when researching purchasing smart home technology. UK consumers are most likely to use an online review site. Across all markets, price comparison websites see the highest anticipated use among consumers in Japan – with other sources much less relied upon in this market.

Sources expected to use to research purchasing smart home technology – By market

Q.D07. Which, if any, of the following sources would you use if you were to research purchasing smart home technology? Base: All markets=7149

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A mix of organisations are trusted to deliver smart home services. When looking across categories, electronics manufacturers are the type of company most expected to deliver smart home services. Multinational technology companies and physical retailers follow but there is a level of expectation across all types of company which reflects the opportunity for a number of brands around smart home products and services.
Delivering smart home
Type of company most expected to offer each category of service

Unsurprisingly, utility companies are most expected to provide smart energy and lighting services. After electronics manufacturers, telecoms providers are the second most considered supplier for smart entertainment and connectivity. Physical retailers are second to electronics manufacturers for smart domestic appliances and interestingly financial services come into consideration as a secondary supplier for security and control applications.
Appendix
### Appendix

#### Product use case summary: Smart Domestic appliances

We tested ownership, intention to purchase and interest of 36 use cases across 5 categories. For reference we have listed each use case we have covered, the data for which is presented earlier in this report.

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart toothbrush</td>
<td>Lets you monitor the health of your gums and teeth e.g. viewing the parts of your teeth you have already cleaned.</td>
</tr>
<tr>
<td>Smart Kettle</td>
<td>A smart kettle boils exactly the amount of water required for a specific task like making a cup of tea, or enough for cooking in a large pot. Will save water and energy costs in the long-term.</td>
</tr>
<tr>
<td>Smart coffee maker</td>
<td>Use your coffee maker through a timer, and control its functions from a distance, via an app.</td>
</tr>
<tr>
<td>Smart air conditioner</td>
<td>Power your air conditioner and determine the temperature from a distance, via an app.</td>
</tr>
<tr>
<td>Smart refrigerator</td>
<td>Monitor the expiration dates of products, keep track of stock and have your refrigerator automatically order your groceries (or for a specific meal), via an app.</td>
</tr>
<tr>
<td>Smart washing machine</td>
<td>The machine recognises the type of load (wool or cotton) and adjusts the washing program to the material. You can also start or pause your wash cycle via an app.</td>
</tr>
<tr>
<td>Robot vacuum cleaner</td>
<td>Creates a virtual map of the physical space it is cleaning and navigates itself around. You can start/stop the cleaner and set cleaning programs via an app.</td>
</tr>
</tbody>
</table>
## Appendix

### Product use case summary: Smart Entertainment & Connectivity

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Streaming multi-room audio</strong></td>
<td>Play music from your smart phone or tablet (via an app) on various speakers in your home.</td>
</tr>
<tr>
<td><strong>Smart TV</strong></td>
<td>A television connected to the internet on which you can install apps (e.g. Facebook / Youtube, etc), and your smart phone can function as a remote control.</td>
</tr>
<tr>
<td><strong>Smart set top box</strong></td>
<td>While the box is still owned by your cable/satellite TV provider, you can pay for smartphone control in your subscription. This control will allow you to set up or start the recording of television program via an app.</td>
</tr>
<tr>
<td><strong>Smart tuner/Amplifier/Receiver</strong></td>
<td>You can play music on speakers, or stream video to screens from various devices in your home, via an app.</td>
</tr>
<tr>
<td><strong>Home Plugs</strong></td>
<td>Once plugged into your socket/electrical outlet, connect devices to the Internet and one another using your home’s existing electrical wiring.</td>
</tr>
<tr>
<td><strong>Routers</strong></td>
<td>A device that sends the data signal from a Local Area Network (LAN) to other devices.</td>
</tr>
<tr>
<td><strong>Repeaters</strong></td>
<td>An apparatus that extends a wireless signal further so devices can access the signal from a greater distance.</td>
</tr>
<tr>
<td><strong>W-LAN sticks</strong></td>
<td>A USB adapter you can plug into your computer so as to make a direct internet connection.</td>
</tr>
</tbody>
</table>
## Appendix

### Product use case summary: Smart Energy & Lighting

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart thermostat</td>
<td>Remote controlled thermostat, with customizable programmes through an app that can also recognise unique smart phones, and set a preference per user.</td>
</tr>
<tr>
<td>Energy manager</td>
<td>Provides insight into the energy consumption of appliances (e.g. lamp, refrigerator and television) in the home.</td>
</tr>
<tr>
<td>Smart control radiator</td>
<td>From a distance, monitor and change the temperature of the heating on a room-to-room basis inside your home.</td>
</tr>
<tr>
<td>Smart meter (energy meter)</td>
<td>As part of your subscription to your provider, the smart meter sends a meter reading automatically to your mobile network operator; via an app you can gain hourly insights into your current, gas and energy consumption.</td>
</tr>
<tr>
<td>Monitoring of boiler at a distance</td>
<td>You will be alerted/ warned via an app of any minor failures or inconsistencies in your boiler, allowing you to act before facing any serious problems with your boiler.</td>
</tr>
<tr>
<td>Smart lighting (smart lamps)</td>
<td>Use a remote app to control the lighting in every room, from powering on/off and adjusting the level of dimming, to changing the colour of the light itself.</td>
</tr>
<tr>
<td>Smart light control</td>
<td>Plugging your lamp/light power source into an additional device (which is plugged into a socket) allows you to control your current lights via an app.</td>
</tr>
</tbody>
</table>
## Appendix

### Product use case summary: Smart Security & Control

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart blinds or shutters</td>
<td>Blinds that can be controlled either remotely through the use of app, or automatically through use of sensors e.g. blinds would open with increasing daylight.</td>
</tr>
<tr>
<td>Alarm system</td>
<td>Through an app, turn on your home alarm remotely or alter settings such as the time given between someone entering your residence and the alarm going off.</td>
</tr>
<tr>
<td>Motion sensors for doors and windows</td>
<td>An automatic message would be sent to pre-determined phone numbers/devices when a door or window is opened in your residence.</td>
</tr>
<tr>
<td>Smart detectors (for smoke and gas leak)</td>
<td>Sounds a loud alarm when a detector in any room senses smoke/gas leakage, while sending a message notification via SMS or through an app to pre-determined phone numbers/devices.</td>
</tr>
<tr>
<td>IP Camera (for security)</td>
<td>Through an app, view a live feed or record the footage from any of the cameras you have installed around your residence or elsewhere (for example a motion sensor that will pick up and feed any activity from the home when you are away via your smartphone)</td>
</tr>
<tr>
<td>Access (digital keys)</td>
<td>Send one-off digital keys for the opening of your front/porch door, so guests can enter your residence or deliveries can be dropped off without you being present.</td>
</tr>
<tr>
<td>Smart doorbell</td>
<td>Using wide angle lenses, Wi-Fi connectivity and motion sensors a smart doorbell would alert you via your smartphone and enable access for deliveries/visitors when you are away from your home wherever you may be in the world</td>
</tr>
<tr>
<td>Smoke alarm and air quality sensor</td>
<td>A connected sensor monitors air quality in terms of humidity, dust, pollen count in the home and picks-up emergencies (such as carbon monoxide, fire etc.) and sends reports that can be accessed via an app on your smartphone</td>
</tr>
<tr>
<td>Product use case summary: Smart Health</td>
<td></td>
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<tr>
<td><strong>Personal scale</strong></td>
<td>After recognising the person standing on the scale through a previously-assigned profile, the scales will display graphs, statistics and take automatic measurements (e.g. weight, BMI, etc.) all via an app.</td>
</tr>
<tr>
<td><strong>Blood pressure monitor</strong></td>
<td>Keeps track of blood pressure over time and alerts you to any spikes or low periods while issuing general medical advice based on your current blood pressure.</td>
</tr>
<tr>
<td><strong>Fitness and activity tracker</strong></td>
<td>Through an app, keeps track of your daily movement activity and history, and provides fitness tips after a long period of inactivity. Also monitors sleep quality when you are resting.</td>
</tr>
<tr>
<td><strong>Baby monitors</strong></td>
<td>Offers the option to monitor your child remotely via audio and video through an app. Automatic monitoring can also include the use of motion sensors with an alarm function to alert you of the child’s movement.</td>
</tr>
<tr>
<td><strong>Medication monitor/reminder</strong></td>
<td>Receive notifications through SMS / an app that reminds you when to take your medication and what you should be taking.</td>
</tr>
<tr>
<td><strong>Disease activity monitor</strong></td>
<td>A device that provides insight into the stages of a disease and identifies likely periods of intensity or difficulty, so you can plan in advance.</td>
</tr>
</tbody>
</table>