CONSUMERLAB

ERICSSON

CONNECTED HOMES

CONTENTS

THE VOICE OF THE CONSUMER

Ericsson ConsumerLab has 20 years' experience of studying people's behaviors and values, including the way they act and think about ICT products and services. Ericsson ConsumerLab provides unique insights on market and consumer trends.

Ericsson ConsumerLab gains its knowledge through a global consumer research program based on interviews with 100,000 individuals each year, in more than 40 countries and 15 megacities – statistically representing the views of 1.1 billion people.

Both quantitative and qualitative methods are used, and hundreds of hours are spent with consumers from different cultures. To be close to the market and consumers, Ericsson ConsumerLab has analysts in all regions where Ericsson is present, developing a thorough global understanding of the ICT market and business models.

All reports can be found at:
www.ericsson.com/consumerlab

METHODOLOGY

Qualitative study:
A total of 10 at-home interviews were conducted in San Jose, US; and Barcelona and Madrid, Spain.

Quantitative study:
An online survey with 1,000 respondents per country was conducted in Chile, Russia, Spain, Sweden and the US. Respondents were aged between 18 and 69 years old.

KEY FINDINGS

Consumers demonstrate a high interest in connected home services

> 5 out of 10 respondents are highly interested in connected home services

> The highest needs and interest are in the area of health and wellness

People currently living in connected homes are not the same as those who would benefit from one

> Connected home services are mainly used by young men in single person households. However, families with young children would experience greater benefits from them

> Women living in larger households express particularly high needs

Consumers are calling for simplification and support

> 4 out of 10 would like an integrated connected home service

> The majority of users want some kind of support or advice when it comes to using connected home services

> Consumers consider there to be many potential suppliers of connected home services

THE IMPORTANCE OF THE HOME

It's 7:00 am and the alarm clock rings in a connected home. This triggers the house to start morning routines: lighting is set, alarms are deactivated, breakfast is prepared and heating is adjusted.

This is just an example of how the connected home of the future could be intelligent and helpful enough to adjust to the needs of its inhabitants.

In this report we focus on how people perceive life at home. We examine the potential for services enabled by connectivity in the home, by understanding key areas of household needs and requirements. We also look at what companies people think are in the best position to provide such services.

The concept of a connected or smart home has been around for some years, and has a variety of definitions. Throughout this report we define a connected home as one where household appliances and services are enhanced by internet connectivity.

The home is a vital structure in our everyday lives. Apart from offering physical comfort and safety, it provides us with a sense of stability and belonging.

People have increasingly busy lifestyles, with a need to stay healthy, organize family life and retain a feeling of security and peace of mind. To meet these needs, the home is becoming a melting pot of different connected services offered by a range of industry players.

While connected homes aim to provide simplicity in life, an increasing amount of equipment, devices and services in the home add complexity and fragmentation.

The combination of technological advances, big ICT players entering the market and the widespread availability of smartphones will enable connected home services to take off in a big way. Offerings already entering the connected home sector include Samsung's SmartThings, Google's Nest, Dropcam, Revolv, Apple's HomeKit and AT&T Digital Life.
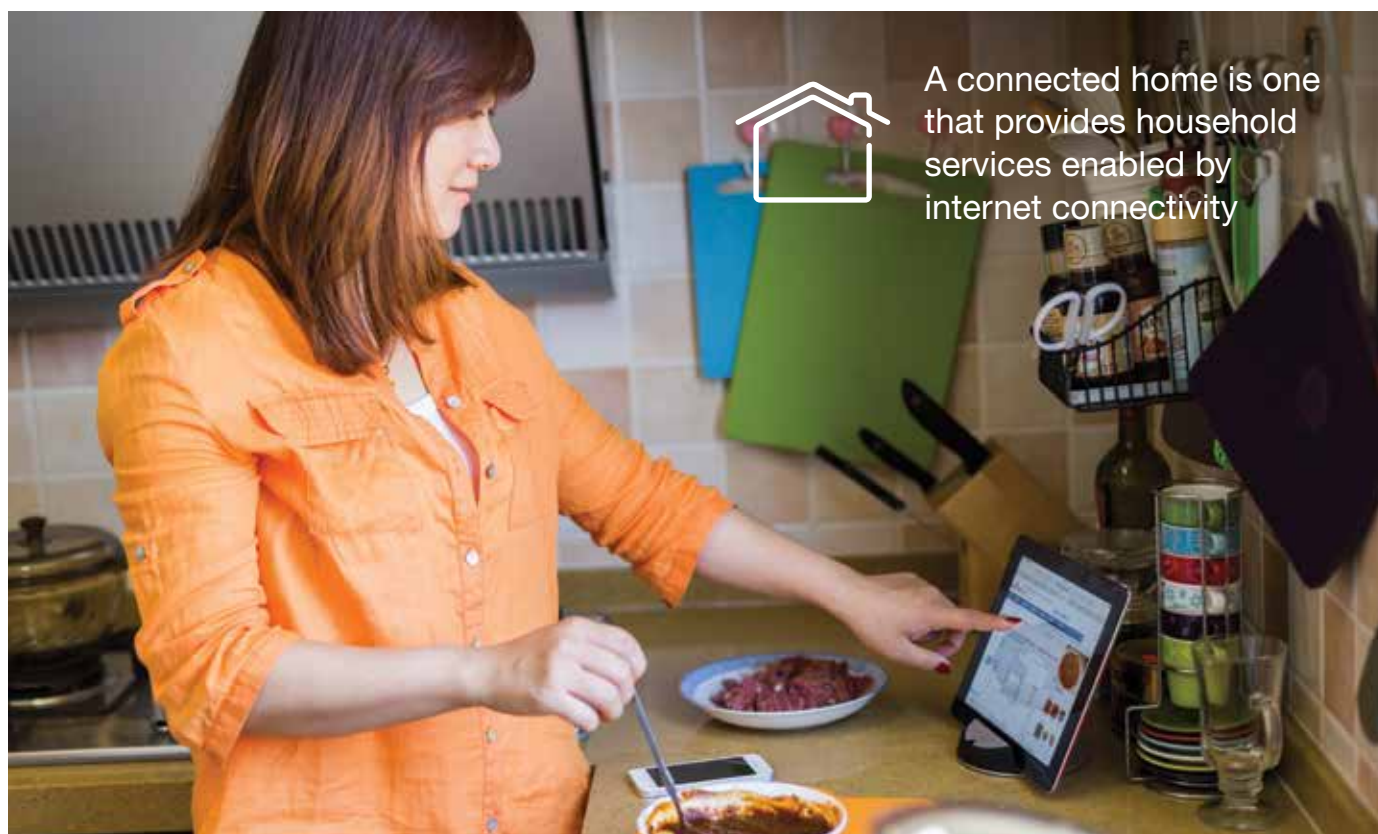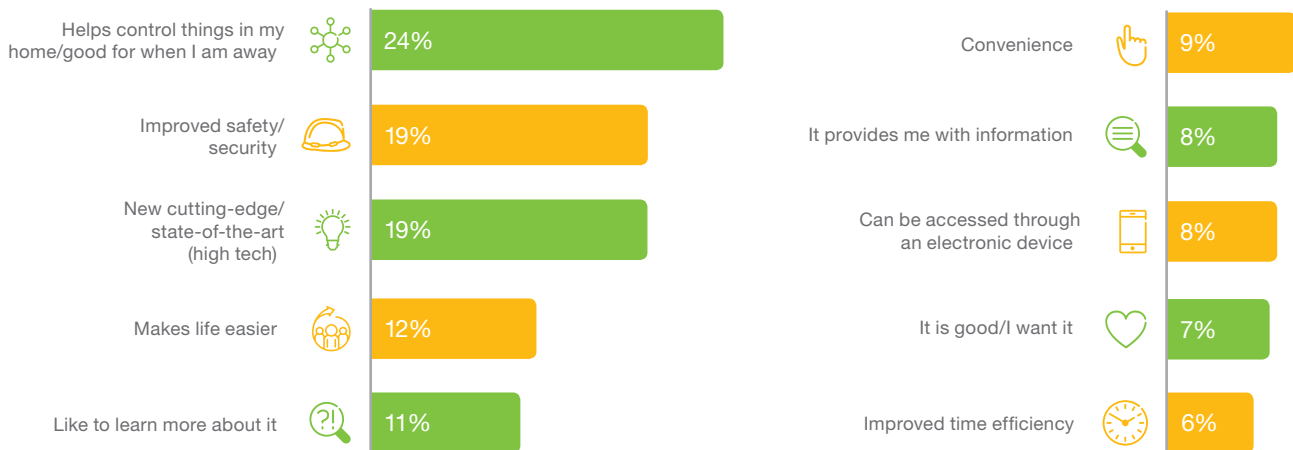
A connected home is one that provides household services enabled by internet connectivity

DRIVERS FOR A CONNECTED HOME

Through asking open-ended questions as part of our quantitative research, we have found that control, security, interest in new technology and the ability to make life easier are the greatest motivators for the adoption and usage of connected or automated home services. Cost efficiency is not a strong motivator at this stage, as for many users the cost savings have yet to be realized. Only 5 percent saw this as a reason to be interested in connected home services. Figure 1 shows an overview of the key motivators according to the study's respondents.

Figure 1: Reasons for interest in connected home services

Helps control things in my home/good for when I am away	24%
Improved safety/security	19%
New cutting-edge/state-of-the-art (high tech)	19%
Makes life easier	12%
Like to learn more about it	11%

|	
Convenience	9%
It provides me with information	8%
Can be accessed through an electronic device	8%
It is good/I want it	7%
Improved time efficiency	6%

Source: Ericsson ConsumerLab, Connected Homes, 2015
Base: People interested in connected home

Connected homes give families the ultimate control over what goes on under their roof – whether they are there or not. The ability to control elements in the home while away will make life easier for many people. One in four respondents says this benefit is the main motivator for a connected home.

Users of connected home services would like peace of mind. 19 percent of consumers expressed a need for the safety of their family and property. The ability to record visits to the home or faults in the electricity or water supply would be comforting.

Respondents also say a connected home would make life easier. Homeowners may be able to organize their lives and save time by performing housekeeping duties in a more efficient and automated way, for example by controlling everything from their household appliances to their door locks, using a single device, from any location.

19 percent of respondents also say they would like state-of-the-art technology. People want to keep up with trends and use the most high-end devices and services on the market.
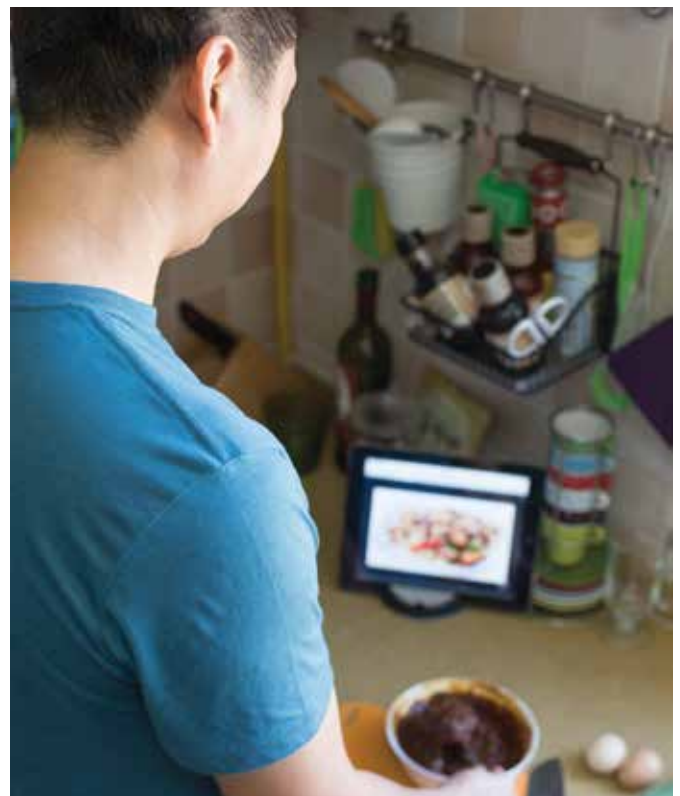
CONNECTIVITY TODAY

Internet connectivity in the home

Being connected is a necessity that consumers take for granted, in the same way as electricity or running water. It is expected to be available around the clock. Consumers are so used to accessing services instantly, such as music and video, that they reach a point where they no longer think of these services as internet-enabled.

Connected services in the home usually have multiple components, each serving a different purpose. Each service comes with proprietary devices, cabling, applicators and remote controls. For example, a connected house alarm comes with a camera, a set-up box and a router. However, the number of components leads to complexity – something that many want to avoid.

Many users say they are unfamiliar with the services in their home and the devices delivering each service. Troubleshooting is a difficult task when a service fails. Multiple components are confusing for users, leaving them unaware of what is not working. In many cases there is one family member with a basic understanding, leaving the remaining family members at a loss if that person should be away.

> **Families report that too many visible cables, remotes and components are annoying and take up too much space**

The importance of aesthetics

Families report that too many visible cables, remotes, and components are annoying and take up too much space.

In homes where a digital service installation, like a smart lighting or heating system, was part of an overall home renovation, homeowners were able to plan and ensure that everything was professionally wired to a central "brain". This, however, has significant investment costs and fees for maintenance and support.

Other families hire technicians to set up or install their entertainment centers, for example, to ensure that wires are hidden when a TV is mounted on the wall.

Some families work on a piecemeal basis. They add connectivity equipment to achieve connected home services, as and when they want them. Since many lack the required technical expertise, such piecemeal additions are often perceived as looking unprofessional.

New services such as connected security or entertainment systems should not add clutter to the home in terms of wires and components. However, there is a perception that aesthetic minimalism can only be achieved by starting from scratch, rather than updating existing systems.

CONNECTED HOME CATEGORIES

This study focuses on eight areas related to needs, duties and routines in homes, and how a connected home could address them by offering smart services.

These areas have been defined as a result of qualitative interviews and cover the main activity areas in a household.

Home security
Home security covers concerns for the safety of family, pets and items when not at home. Related services would be cameras for videoing your house, locking and unlocking doors, motion detector notifications and fire and flood alerts.

Energy and utility
This category encompasses both energy monitoring and managing energy consumption. Creating the right ambience and lighting are also key features, as well as smart meters, smart thermostats and smart switches. There is a need to focus on energy savings and reducing environmental impacts.

Housekeeping
With increasingly busy lifestyles, family members struggle to find the time to manage household chores. Housekeeping services include appliances like refrigerators and dishwashers that can be monitored and controlled remotely from different devices.

Entertainment
Entertainment services will ensure consumers can access a wide variety of media content from anywhere in their home. The technologies in this category allow you to stream online video content and connect different devices to the internet.

Health and wellness
This category focuses on the ability to prevent health problems and to monitor the health of household members. Services include tracking fitness through wearable devices, body monitors, and communicating with doctors and making appointments.

Socializing
During the day, consumers want to stay in touch with friends and family. This involves using apps and devices for communication and social networking.

Organization
Maintaining schedules, staying organized and time management are requirements in this category. Typical services include shared online calendars and family notification systems.

Grocery shopping and meals
A busy life may prevent consumers from extensive shopping and providing their family with healthy meals on a regular basis. This category contains services like online grocery shopping and delivery, and alerts when you are running low on items.

INTEREST VS. NEEDS

During this study, consumers were asked to rate the eight categories in terms of their needs and then in terms of interest.

While a need refers to attitudes, perceived benefits, frustrations and problem areas, interest relates to an explicit desire for a specific service and a perception that it may be beneficial. Interest levels are also to some degree a reflection of the products and services currently on the market.

Consumers in all of the studied countries show an interest in the idea of a connected home, with 47 percent of all those asked responding positively. The highest interest levels were in the areas of home security and energy and utilities, as well as in the health and wellness area.

Health and wellness is a major priority area across the countries studied. Consumers find staying healthy imperative, especially with busy lifestyles. The ability to remotely support family members, especially the elderly and those with health issues, is desired. Technology such as mobile personal emergency response devices and collaborative health monitoring could potentially help enable this.

Entertainment, socializing and organization categories have a high need level but a lower interest level. This suggests that the market is well developed and already benefits from high usage, meaning the interest for new services is relatively low.

Relatively moderate needs but high interest is found in the energy and utility and home security areas. These areas are already associated with connected homes and are considered to form the foundation of the service. Security services are not widely used, barring the US where 50 percent of respondents use them.

47 percent of consumers are highly interested in the idea of connected home services

Low needs and low interest are found in housekeeping and grocery shopping services. Saving time and managing household chores efficiently are key but there are few consumers who believe it is worth connecting their home's appliances to the internet. Costs also limit the interest for this category and there are few incentives to digitalize routines. Shopping in-store rather than online remains the general preference. Cost savings, buying in bulk, and planning meals in advance are priorities, while carrying heavy or bulky grocery loads is a challenge.

Figure 2 represents consumers' needs vs. their interest. In some areas, industry and consumer expectations are in sync and the needs of consumers are met by service providers. However, in other areas consumers are unable to see the benefits of the connected home.

There is a high interest in health and wellness services

*Bubble size denotes the amount of people using services within this category
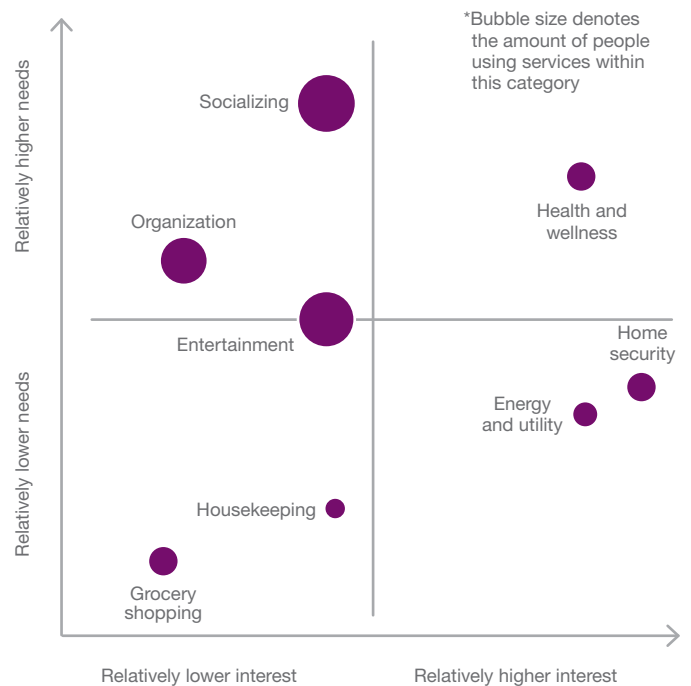
Source: Ericsson ConsumerLab, Connected Homes, 2015
Base: All respondents

Current vs. future users

When comparing the profile of current users of connected home services with those who are interested and have high needs, there is a clear difference. The typical current user is a single male between 18 and 34 years old and is an early adopter.
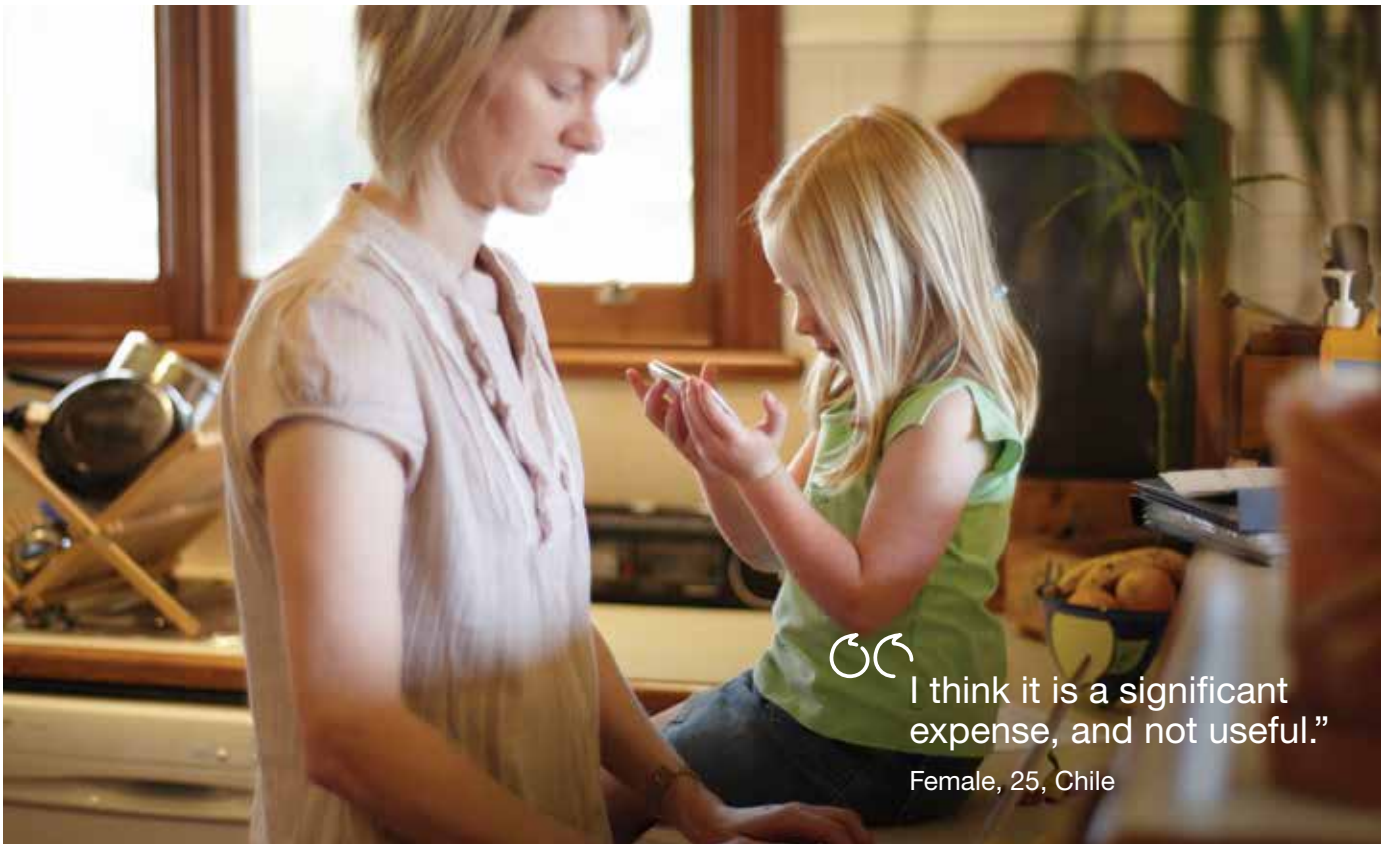
However, among the consumers with high needs we see more females living in families with several children, as well as with dependent elders. The different life situations of consumers result in different needs.

Women with children express high interest and needs in several connected home categories

BARRIERS TO ADOPTION

> ❝ I think it is a significant expense, and not useful.❞
> Female, 25, Chile

Although there is interest in several categories, there are also many potential barriers. A lack of interest, high perceived costs, privacy concerns and a belief that the services are difficult to use are the main barriers for consumers when deciding to connect their homes.

No need/interest
Within the 'neither high nor low interest' and 'low interest' categories, one in three consumers had no need or interest in using these services. This is mainly due to the fact that they don't see any benefits, or understand how a connected home will help them.

Costs
The purchase cost of technology, plus monthly fees is one barrier to adopting additional connected home related services. Some families invest significantly in their home technology and although many desire improvements or upgrades, there is a perception that upgrading technology is costly. In order to justify the cost, families must be provided with a compelling reason to adopt services in the first place. Currently, a lack of knowledge is part of this barrier. A connected home has the potential to lower costs, yet the benefits were perceived to be low.

Difficult to use
Connected home services need to work smoothly and intuitively. If not, this leads to frustration and distrust. Respondents said that an ideal connected home would be easy to update and change, simple to maintain, and easy to operate for all family members. Not all family members will have the same level of technical knowledge, so they cannot use services independently of the primary user.

Privacy
Families expressed concerns about giving service providers access to their personal data and 61 percent expressed concerns about the privacy of data online. However, they understand that in order to get the services they want, they must trust providers. In addition to this, they are even more concerned about giving other users access to their content and data, as they see personal devices and the content on them as private. They value the security of their data more than privacy, with concerns about providers being breached by a malicious third party.

The main barrier is a perceived lack of benefits

INTEGRATED SERVICES

An integrated service would entail an all-in-one system in the home, consisting of a series of connected home devices and services. For example lighting, security, entertainment, energy systems and health and wellness services could be connected and all work together.

40 percent of respondents were interested in integrating two or more connected home areas. In Chile and Russia the interest for integration is more pronounced, as 50 percent demonstrate this preference.
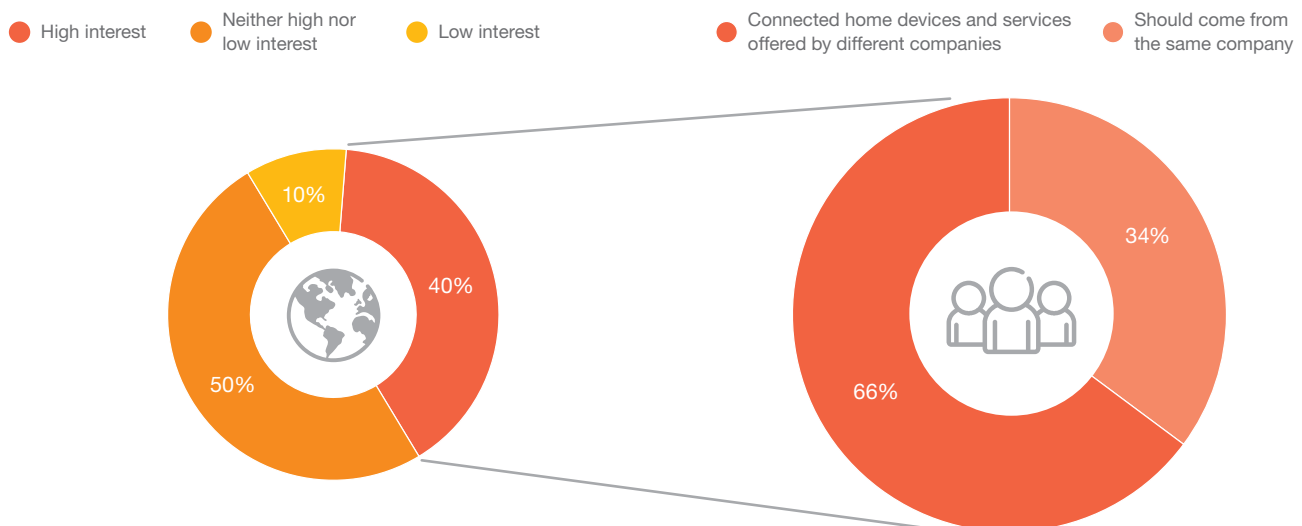
Integrated connected home services offer benefits such as cost savings, ease of use and maintenance, and simplified account management and billing. This could be offered as an open platform where several

companies provide services or as a bundle service offered by a singe company.

Among those who are interested in connected home solutions and 2 or more connected areas, 66 percent would like to have just 1 supplier.

When asked about the preferred way to get billed for an integrated home solution, it is clear that a separate monthly fee is preferred over one bill for all services.

Figure 3: Overall interest in integrated connected home solutions

● High interest   ● Neither high nor low interest   ● Low interest   ● Connected home devices and services offered by different companies   ● Should come from the same company

Source: Ericsson ConsumerLab, Connected Homes, 2015
Base: Highly/moderately interested in at least two categories

Advice and support

When it comes to the advice and installation of connected home services, 14 percent of consumers want to select and install the services themselves, and 19 percent express the need for support and advice before choosing and installing. Often consumers are looking for new services that support their busy lifestyle, so having support with the installation process itself is favored by many. 28 percent want professional advice and the services to be professionally installed. Another 28 percent would prefer to have an all-inclusive solution that contains service and maintenance options. The remaining 11 percent had no specific preference.[1]
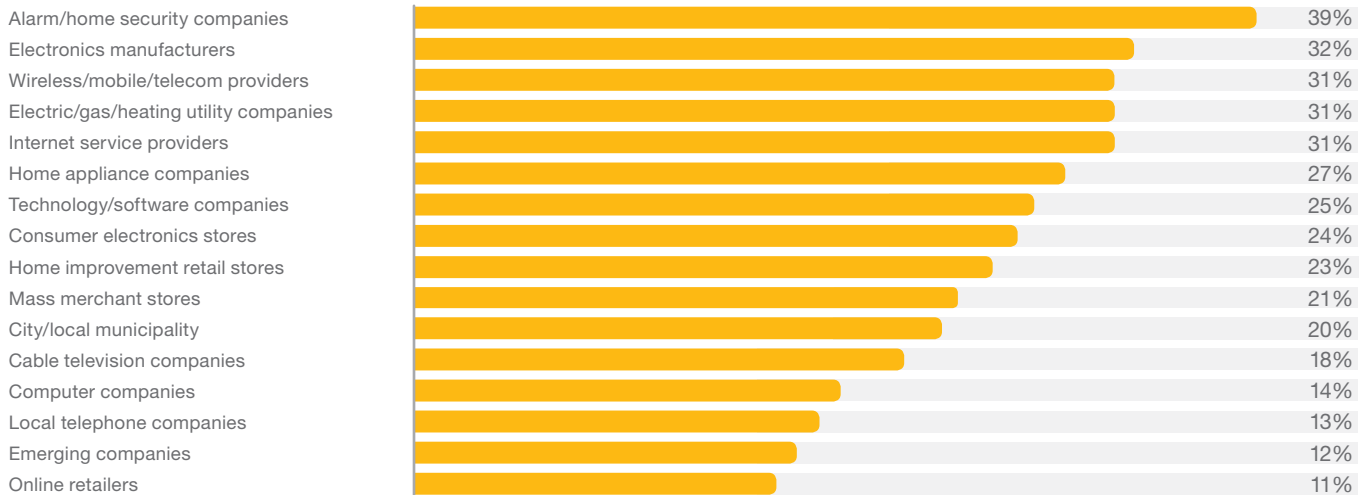
Diverse service providers

The question of who will provide an integrated home solution is vital. Consumers want to use someone they trust and can rely on. These companies will be receiving large amounts of personal data, and will have considerable responsibilities in regards to the services they provide, the quality and customer service. It is also important to have a local presence and the ability to demonstrate these services, as consumers desire hands-on experience before making decisions, as connected home services are often new to them.

[1] Frost and Sullivan, Home of the Future study, 2015

MANY POTENTIAL SUPPLIERS

Figure 4: Preference of consumers as to which company will provide connected services

Alarm/home security companies	39%
Electronics manufacturers	32%
Wireless/mobile/telecom providers	31%
Electric/gas/heating utility companies	31%
Internet service providers	31%
Home appliance companies	27%
Technology/software companies	25%
Consumer electronics stores	24%
Home improvement retail stores	23%
Mass merchant stores	21%
City/local municipality	20%
Cable television companies	18%
Computer companies	14%
Local telephone companies	13%
Emerging companies	12%
Online retailers	11%

Source: Ericsson ConsumerLab, Connected Homes, 2015
Base: Those interested in integrated home solutions

As Figure 4 shows, almost 40 percent of consumers interested in a connected home would prefer an alarm or home security firm to provide an integrated solution, with electronics manufacturers, wireless/mobile telecom providers, utility companies and internet service providers coming close behind.

When asked about the preference of provider in individual connected home categories, it is generally led by an industry specialist. For example, alarm and security companies have a strong preference in the security category. Similarly, in the housekeeping category, electronics manufacturers have a slight advantage. Across all categories, it is the telecom operators, electronics manufacturers and consumer electronics stores that turn up the most frequently.

Around half of those interested in an integrated connected home solution would prefer internet and telecom service providers, if they were grouped. However, roughly the same proportion would prefer hardware/software manufacturers or retailers.

Market leaders across different categories are expected to become part of the connected home

Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, business and society to fulfill their potential and create a more sustainable future.

Our services, software and infrastructure – especially in mobility, broadband and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities.

With approximately 115,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership. We support networks that connect more than 2.5 billion subscribers. Forty percent of the world's mobile traffic is carried over Ericsson networks. And our investments in research and development ensure that our solutions – and our customers – stay in front.

Founded in 1876, Ericsson has its headquarters in Stockholm, Sweden. Net sales in 2014 were SEK 228.0 billion (USD 33.1 billion). Ericsson is listed on NASDAQ OMX stock exchange in Stockholm and the NASDAQ in New York.