Smart Home Sensor Networks

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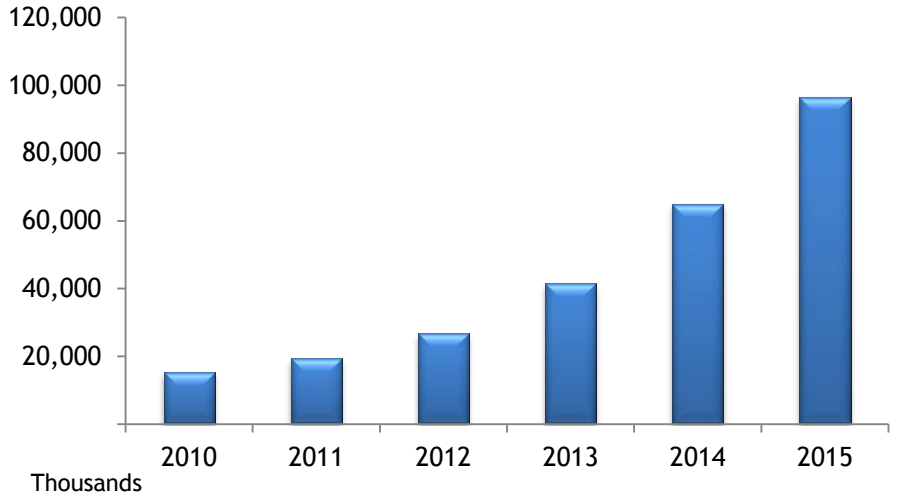
Executive Summary

Smart Home products and services will see dramatic growth over the next few years as an expanding IP infrastructure with smart mobile devices, cloud apps/services and sensor network technologies provide users with cost cutting and enhanced home experiences. Affordable Smart Home managed services will soon reach tens of millions of homes, helping consumers save energy while providing safety, security and convenience. Adoption of Smart Home sensor networking is accelerating in several channels and new business models are emerging.

ON World's recent research finds that Smart Home sensor network chipset shipments will approach 100 million worldwide in 2015, enabling nearly $6 billion in cloud services for energy and home service providers. Although there continues to be a wide variety of sensor network alternatives, wireless chipset solutions will make up the majority of shipments over the projection period.

Figure 1: Global Annual Smart Home Sensor Network Chipsets (2010-2015)



Smart Home sensor network technologies include ZigBee, Z-Wave, WiFi, IPv6, Bluetooth, INSTEON, KNX, UPB, G.hnem, HomePlug GP, and many proprietary alternatives.

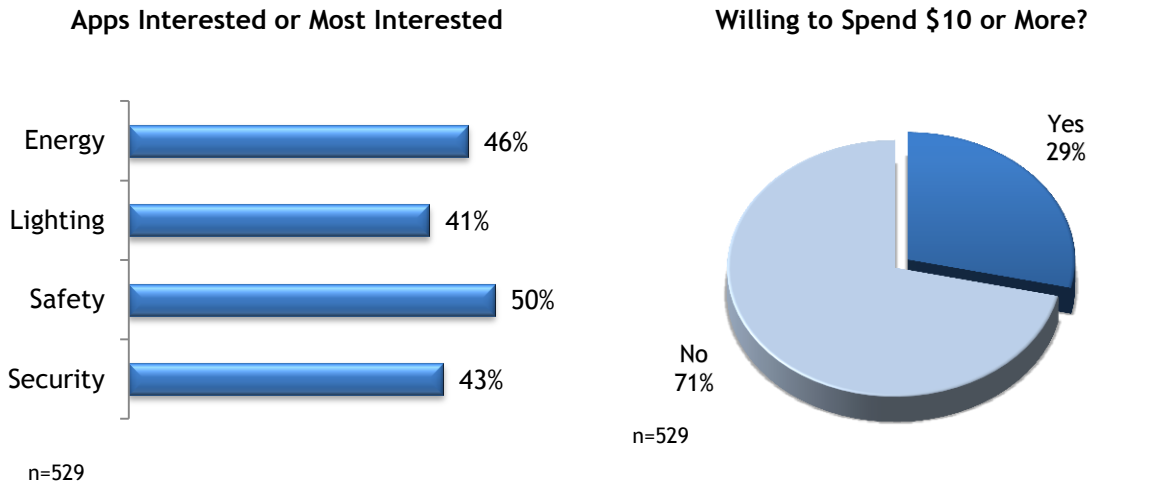
Based on surveys and phone interviews with 900 individuals, ON World's latest report "Smart Home Sensor Networks" covers the global Smart Home market opportunities enabled by sensor networks including equipment, installation, cloud services, and chipsets. Forecasts are broken down by geography, system type, application, distribution channel, product segment, and chipset shipments by technology.

The report also provides an in-depth technology section with software simulations on sensor network technologies, analysis of 60+ companies, and presents the findings from several surveys with consumers, retail outlets, home service providers, utilities and custom installers.

Consumer Viewpoints

ON World's survey with over 500 consumers found nearly half are interested in traditional Smart Home applications. Nearly 3 in 10 are willing to pay at least $10 per month on a monthly service that provides remote access, automation and control of home systems such as lighting, security and energy.

Figure 2: Consumer Survey – Interest in Smart Home Applications



Source: ON World

Evolution of Home Energy Management

Demand for energy solutions is the primary driver behind today's Smart Home market. Despite some public relations challenges in the U.S., smart metering initiatives are an important component of the Smart Home. In Great Britain, every home with a smart meter is also planned to receive an energy display. The European real-time energy display market is already rapidly growing and set to reach 4 million installed devices by the end of the year, mostly in advance of smart meter installations. Cloud services and IP based automation are growing trends and nearly all vendors today provide Web applications and/or systems that provide automation of energy consuming home systems. In the U.S., millions of households will adopt energy management products and services within the next few years, primarily through security/Telecom home service providers, professional installers, online and retail outlets. Utility rebates have been a significant driver and some product sales have increased by 300% over the past year.

Integrated whole home automation systems are preferred and require collaboration among device manufacturers, software developers, utilities, and home service providers. Recently, Tendril announced an alliance with security and home automation service provider Vivint and Deutsche Telekom is developing a Smart Connect management platform with partners such as AlertMe, eQ-3, E.ON, EnBW and Miele.

Smart Home of the Future

The Smart Home market is being driven by convergence between the automation, consumer electronics and Telecom/mobile industries. Within the next five years Smart TVs, that are connected to traditional television streams as well as IP networks such as WLAN and the Cloud, will increasingly serve as the primary interface for sensing, automation and home based web services. Smart TVs will benefit from and integrate with Internet operating systems such as Google/Android, Apple/IOs and Windows Mobile. The Smart Home of the future will use a variety of user interfaces such as the recently launched Amazon Web enabled Tablet as well as innovations that bridge the Web and automation worlds. These developments present opportunities for today's home service providers as well as potential threats as new business models emerge with even lower cost alternatives.

Key innovation areas that we see driving this are the following:

- Backend Data Analytics, Cloud Caching/Processing and Smart Services
- Smart Interface Devices
- App Virtualization
- Integration of Smart Home services with Audio/Video Streaming

Internet Protocol (IP) is and will continue to be the core integration component for the Smart Home. The Smart Home of the future will have embedded sensors and actuators everywhere and eventually these will all support IPv6. Although device interoperability will continue to be essential, developers will increasingly focus on abstracting the application from the multitude of

sensor network technologies and protocols. However, this will not end competition for sensor network protocols. In fact, market leading Smart Home technologies such as ZigBee and Z-Wave are facing growing threats from low power variants of Bluetooth and WiFi, Android@Home wireless, KNX-RF, proprietary protocols using IPv6, and emerging power line technologies such as HomePlug GP, G.hnem and IEEE 1901.2.

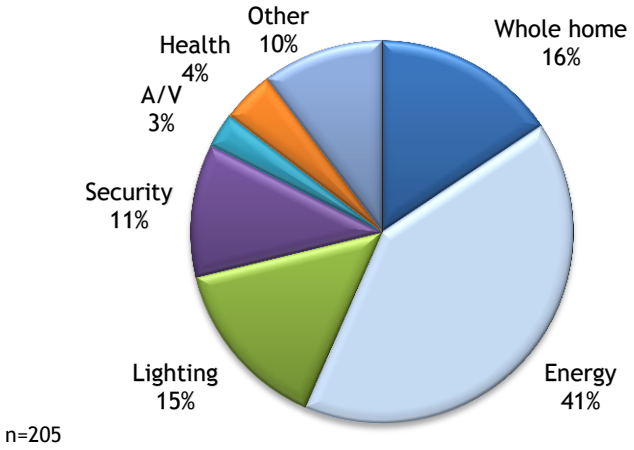
Expanding Value System

Over the past few years-- in the middle of the worst economy in decades-- dozens of Smart Home startups have raised over $500 million in venture capital funding. ON World's analysis of 100 companies and 205 targeted application areas found that only 16% are focused on whole home systems and 41% on energy management.

Examples of recently launched Smart Home products and services include the following:

- Security services firms such as ADT and Vivint now offer home automation and energy management as part of their latest monitored security packages, enabled by Alarm.com and 2GIG's Z-Wave enabled panels.
- DSL and cable broadband providers such as AT&T, Comcast, Rogers, Time Warner and Verizon are in the process of launching their home security and automation services with the cable industry and AT&T preferring ZigBee.
- Germany's RWE has launched a self-install Smart Home product line feature energy management and security products using a wireless IPv6 protocol.
- Lighting Science Group plans to launch LED lighting controls with integrated communications using Google's Android@Home Framework and GreenWave Reality has announced IPv6 enabled lighting products enabled by NXP.

Figure 3: Smart Home Sensor Network Companies – Targeted Applications



Report Scope & Methodology

This report covers the global market for Smart Home systems and services including whole home automation, vertical solutions, as well as energy monitoring systems. ON World has been researching sensor network technologies and the Smart Home for over a decade and has published dozens of reports on these and related subjects. Our methodology consists of the following steps:

Data Collection/Investigation:

- Online surveys with 529 most likely early adopting consumers in the U.S., UK and Australia
- Phone interviews with 300 retail outlets, home service providers, utilities, and home installers and 70+ vendors, suppliers, industry groups, and government officials
- Analysis of 350+ smart meter initiatives worldwide
- Thousands of secondary sources (e.g. third party reports, articles, press releases)

Segmentation:

- Target markets: North America, Europe, Asia Pacific, and Rest of World
- Solutions: Security/Safety, HVAC/Energy, Lighting, Home Health, Audio/Video, and Others
- Product segments: Equipment, Device Type, Custom Installation, and Cloud Services
- System type: Whole home, vertical solutions, and real-time energy monitoring

Competitive & Technology Dynamics:

- Evaluation of the value chain including utilities, managed service providers, software developers, hardware/device manufacturers and component suppliers
- Analysis of each technology's performance, pricing, functionality, potential for disruption
- Analysis of the risks and threats that could drive/inhibit market growth

Market Forces: Analysis of the existing market forces, drivers and inhibitors in each geographical region including socioeconomic factors, legislation, energy prices, technologies, standards, available products and distribution channels, competitive landscape, and costs for adopting.

Forecasting:

TPM: Analysis of the Total Potential Market (TPM) based on the number of most likely households to adopt in each region including penetration rates for broadband, home networks, smart phones, smart meters and monitored security services, etc.

Market Data: Compiled data on the current adoption rates for each solution/market, pricing for equipment and services, and vendor input on projections.

Projections: Forecasts are based on all of the above along with weighted market drivers in each region, historical adoption trends, and various data modeling techniques. Forecasts are per system, per device, communication chipsets as well as revenues for equipment, installation and cloud services.

"Smart Home Sensor Networks," published in Oct. 2011, is available as an immediate electronic download. The PDF, PPT and the Excel forecast data are included in a multi-user license.

For the full report synopsis, table of contents, and purchase options go to:
http://www.onworld.com/smarthomes

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ON World provides world class business intelligence on smart technology markets. Founded in 1996 in the San Francisco Bay Area, ON World is headquartered in San Diego, California.

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