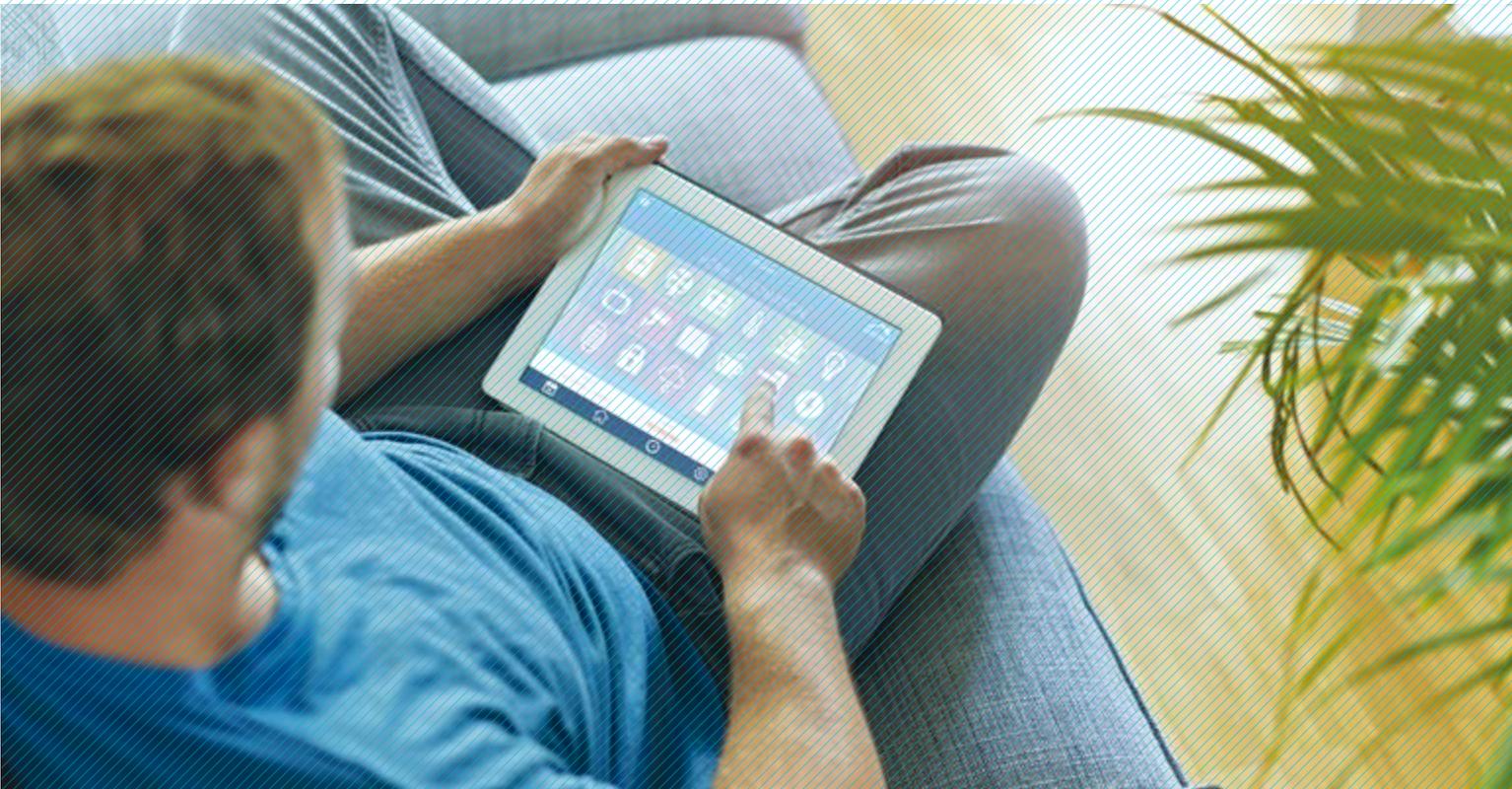


Risk Solutions

Connected Home Technologies

Part 1



Hartford Steam Boiler

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Since before the invention of the telephone, **Hartford Steam Boiler** has been monitoring trends in energy and technology that impact homes, with a focus on emerging risks for which there are limited market solutions. Because the pace of change today is greater than anything we've seen in our history, we have developed a three-part series on **The Connected Home**. Our goal is to help you understand what the connected home is, how connectivity is being pursued, what to look for in the future, and the kinds of coverage and services that will be needed.

Outpacing Change – The Evolution of the Connected Home

With the proliferation of personal smart phones, high-speed internet and Wi-Fi, homeowners can control, with a few clicks, all major appliances, electronic devices, heat and lights. We call this quickly emerging trend the Connected Home. And because these new capabilities provide comfort, convenience, energy efficiency and cost savings, consumer demand is growing dramatically.

Here's an example of how it works: The temperature outside is -4 degrees and you're heading home from work. You turned the thermostat down to 56 degrees when you left in the morning, but you've arrived home to find the house toasty and warm, the blinds are turned down, the lights are on, and your favorite music is playing. You've managed to do all of this through your smart phone, which remotely controls devices connected to home systems, appliances and more.

The connected home can align everything from computers, TVs and Wi-Fi networks, appliances, HVAC systems, door locks, thermostats, garage doors, motion sensors, cameras, water leak sensors, light bulbs and switches, smoke and carbon monoxide detectors, plugs, outlets, power strips, and music systems. You can even get a text message alert when you forget to turn off the stove or the kitchen lights, and energy measurement devices can transmit information to and from remote locations.

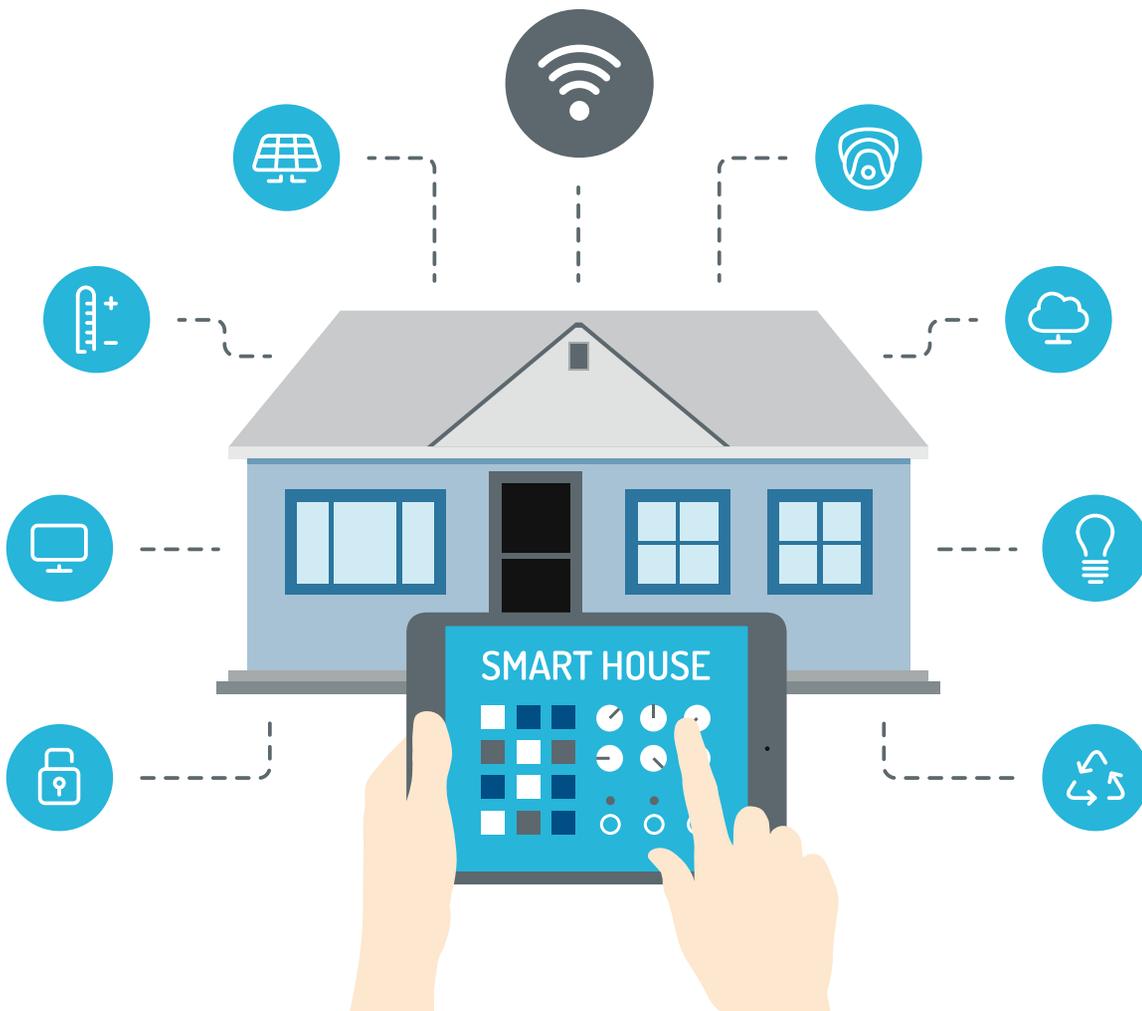
Today's patch quilt of mobile apps and add-on sensors will evolve as new homes are built or retrofitted with technology at their core, connecting every device and piece of equipment to each other and the Internet. Electrical vehicles will charge at home, and as seniors strive to stay in their homes longer, medical technologies will monitor, diagnose and even treat them remotely.

The Hub

Ultimately all home devices can network directly through a hub, a kind of brain for the connected home, which coordinates a series of devices that may not otherwise be capable of communicating with each other. The hub is connected to the home router for Internet access, so homeowners can control or monitor devices through mobile apps and websites.

Many hubs can be specifically designed to coordinate the home to match the occupant's designated habits, allowing the homeowner to set up a schedule based on different inputs, like the time of day. This way, the user can turn off the porch light after 11 PM or set a wake up alarm to music at the same time every weekday. Location tracking of smart phones is another input, so that doors can automatically lock when the occupant leaves, and lights can be turned on when he or she gets home.

Further down the road, technology in the increasingly intelligent home will operate based on behavior patterns that have been monitored or predicted without direct intervention by the homeowner. For example, the thermostat will process the home occupant's patterns and know that he or she arrives home regularly at 6:15 P.M. The thermostat will turn on the heat automatically beforehand, then activate lights in specific rooms, and turn appliances to the "on" position, and more.





Do It Yourself?

For consumers, putting together a connected home affordably these days remains mostly a do-it-yourself project.

Cable companies offer monitoring systems, but these tend to have limited flexibility and installing a complete customized home automation and security system can cost thousands of dollars. And as a do-it-yourself project, the more devices you add, the greater the number of separate apps you need to control them, so convenience becomes, well, less convenient.

Recent products available in the market, like Lowe's Iris and Home Depot's Wink, are providing the more centralized, hub-based "network" of devices that can connect and work together, as long as devices within the product family are used.

But growth is still expected to be strong as the technology improves, is more affordable, and becomes easier to use. While most people have only one smart phone, they tend to have multiple devices connected to their home Wi-Fi. According to Parks Associates, about 20 million home devices were shipped in the United States during 2014. This number is expected to increase to 36 million by 2017¹.

1. 1/14/15 The Race to Build Command Centers for Smart Homes, Wall Street Journal.

A Changing Marketplace

Currently, there is no clear leader in any segment of this market. The market potential is vast and the players are many. The fact that many prominent companies are investing in this space illustrates the importance of this technology. Here's an overview:



Chipmaker Intel and networking providers, like Cisco and Juniper, are prominent in the hardware arena.



Security providers, such as ADT and Vivint, are updating their products to fit this market.



Web companies like Google and Amazon hope to capture data to improve their online services.



Residential developers like KB Home, Standard Pacific Homes, TruMark Co. and others are competing to offer the most networked homes.



Appliance manufacturers General Electric and Honeywell will embed more technology into their goods.



National service providers like the Geek Squad are expected to enter this market to provide set-up, maintenance and repair services, along with local providers.



Broadband providers like Comcast and Verizon will sell end-to-end connected home systems, opening new revenue opportunities.²

Drivers of, and Barriers to, the Connected Home Market

A number of factors will determine the advancement of the connected home market:

Awareness. So far, interest in the connected home has been mainly limited to those who are interested in technological gadgetry – the so-called “early adopters.” Other than marketing by manufacturers of specific devices, advertising and publicity has been limited. But the large presence of vendors promoting connected home devices at the Consumer Electronics Show in Las Vegas earlier this year suggests that a substantial increase in advertising and promotion for connected home products is forthcoming, which will increase interest, understanding and demand.



Financial investment. Vast financial investments are being made in the field. One key example is Google's \$3.2 billion purchase of Nest, and Samsung's multi-billion dollar purchase of SmartThings, both in 2014. Start-up companies are everywhere with all types of connected home devices and protocols.

2. <http://www.bizjournals.com/sanjose/print-edition/2014/04/18/home-smart-home-the-290b-internet-of-things-market.html?page=all>

Big-name companies. As brand-name companies like Samsung, Apple and Google get involved – which have infrastructures and resources to quickly access the market – the growth of the connected home will accelerate.

Age and Demographics. Consumers under the age of 40 typically adopt technology much faster and more comfortably than people in older age groups. We believe the under-40 age bracket will be the largest demographic driver of this market.

Cost. The price for some of the components will need to decrease to generate widespread adoption. In addition, monthly usage fees, specifically those associated with home security systems, can be cost prohibitive for many homeowners.

Convenience. Connected home products must be easy to use and easy to install, otherwise buyers will be reluctant to gravitate to these products. This too will evolve as more players compete for the consumer’s attention. The lack of industry standardization for communication protocols, however, is another major impediment. This causes confusion for consumers about which products they should purchase.

Variable Electric Rates. Most utilities prefer dynamic pricing – the ability to charge homeowners electric rates that vary throughout the day based on the company’s cost of production. Typically utilities pay more to provide electricity in the afternoon and early evening hours than they do during late night “off peak” hours. While few areas in the United States currently offer variable rate pricing, this option will become more prevalent, which will drive an upsurge in connected home devices and networks.

The incentive is clear: Smart appliances and home systems will interface with smart electrical meters linked to utilities to help manage energy use, lower costs and maximize efficiency. Homeowners will be able to optimize their bills by automatically shifting home electric usage to periods when rates are the lowest and curtailing demand when rates are the highest.

Security. With more smart or connected devices being used, more behaviors and habits can be tracked electronically. Clearly, security over this highly valued data is imperative. Consumers will increase their use of smart devices with the assurance that their security and privacy are protected.

The Insurance Connection

Home connectivity will help reduce losses from fire, wind and water damage. Water leaks can be detected and remotely shut off at the source. Smart fire alarms will sense smoke or carbon dioxide and automatically contact emergency response centers. Video cameras can monitor the property.

Home sensors and smart software could have a significant, positive impact on underwriting profits. Nevertheless, new home technologies will increase the risk of insurable perils and create new demand for property/casualty products and services.

While the race toward home connectivity is on, the market has not yet determined the winners in this category. We need smart insurance for smart

homes, as technology, connectivity and energy help define the homeowners market in the years to come. Insurers, agents and brokers must prepare now for the big changes to come.

Connected homes give rise to new risks for which solutions exist. For more information visit <http://www.munichre.com/HSB/connected-home>

In the second installment of this three-part series, we will discuss in greater detail, the products and technologies that are being developed for the connected home. In the third installment, we will focus on future prospects, including the implications and challenges for insurers.

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For all coverages, terms,
conditions and exclusions, refer to
the actual insurance policy.

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