

Connected Home

Weichen Wang

Software Development(Honours), GMIT

Abstract—Decades ago connected home has long been into the people's vision, but also let the people family has many beautiful future life quality of imagination. This report describes the use of connected home, the advantages of home life, the hidden dangers of connected home and future development, but for the current connected home technology, want to open the global market to become mainstream, but also need accumulation and development of time.

Index Terms—Connected Home, smart, home life.

I. INTRODUCTION

A Connected Home, sometimes referred to as a smart home, is a high-tech residential environment that combines information and communications technologies to provide residents with exceptional service, increased home boundaries and security, and a smarter, assistive lifestyle, and provide for the disabled people provide extra benefits. In the past few years, Connected Home, especially the concept of assisted living, has drawn a lot of attention. KEVIN FOREMAN believes that connected home will further open the market for people to enjoy the joy of smart home technology. A data system is set up for people appearing near the house to detect the real-time physical attributes of the host and the designated guest to fulfill the physical needs of the host and the designated guest. [1]. And in the not-to distant future, small mobile devices worn on your wrist will authenticate to your specific heartbeat as you walk around the home, Let your home automatic adjustment lighting to room temperature and play specific music at room temperature with preconfigured profiles. There have been several results for this trend: ubicomp revolution of 90s [2], resulting in the widespread proliferation and The fast adaptation of mobile technology and the steady increase of global Internet access that are associated with an aging society, But also include growing health and social-care cost [2]. However, the complete realization of networked smart families has not yet come into full play. We still can not figure out how to bring real connected home and assistive technology into the mass market while still not finding a clear business model.

The technology may sound fresh for connected home, but connected home has grown more than 30 years from the earliest home automation to the present, and is still a new word in people's understanding. It simply uses existing science technology. There are many reasons for this phenomenon, the most important reasons is due to the complexity of the smart home system. Smart devices provide common devices with more functionality by installing more sophisticated computers. Technically speaking, these features allow him to have different implementation features. Cable

broadband, DSL, Bluetooth and wireless technologies provide a way for home networking through which smart devices communicate with each other and with the Internet. These are the wired and wireless technologies that provide the foundation for smart furniture. However, because of the complexity of the genetic material of this "new species" practitioners with different industry background are more likely to see the shadow of their own industry when observing this "species", but this is not the truth. Because the connected home system serves all aspects of our lives, in the future, it is not your family, but your own intelligent system that knows you better than you. After analyzing your life data, it will give you a more realistic and objective you. This is what big data and artificial intelligence do, so for the next 5-10 years, connected home may be the first panoramic digital life of big data, long-term prospects are very attractive.

And for the current research standards have foreseen an intelligent, interconnected home, multiple devices that work together to meet the needs of users effortlessly. For instance, in homes with remotely controllable lights, monitors, and lock, it is easy to change the brightness of a light automatically bases on the prevailing weather and time, and remote monitoring can be done to see who is outside the door before unlocking. However, while the price of the hardware needed to perform these functions, such as radio light switches, locks, and monitors, is affordable. In normal family these simple operations are far from the needs of mainstream families. Some experts predict that in the future, the smart home with the highest utilization rate of intelligent home products will have about 35 smart home products, and be free to form a variety of combination packages. All smart home products need to be connected to the WI-FI. According to the market analysis company's observation forecast, in 2016 the total income in the field of smart home will exceed \$40 billion. [3]. However, connected home overall revenue will increase, including devices in entertainment, health and safety are also related.

II. USES OF CONNECTED HOME

For Connected Home use, there are four ways: local control, intelligent switch control, wireless remote control and host control. For local control, it refer to the smart appliances near by intelligent switched, wireless remote control, control panel, and so on a variety of smart home appliances. Second, the intelligent switch control refers to the use of smart panels, smart sockets and other intelligent switches to control home lighting appliances or appliances. It is characterized by: you could use multiple means to control home appliances

in multiple appliances at the same time. The next wireless remote control refers to the use of radio remote control home appliances for simple scene mode control, or with the infrared transponder and the host. The last one, host control is also one of the way smart home control. Same as smart switch.

In the current life, some technology companies have successfully produced some connected home devices. Philips Hue, for example, is an intelligent lighting system that dim, brightens, and changes the color of a light bulb as instructed. The light bulb is all controlled by a bridge, with the small power devices plugged directly in the rear of the wireless router. It uses Zigbee's Light Link for communication, so there's no need to rely on Wi-Fi. Once set up, you only have to install the free iOS application and login to your Hue website account.

With Hue, you can use applications on iOS or Android to control up to 50 light bulbs at a time. You can choose a color you like, create a color list from scratch, and even use other user's color themes. Even better, you can quickly set the bulb's automation, automatically adjust the level of light to fit your eyes, or change the color you want for dinner. A single LED bulb needs about \$ 60, but if you buy a combination, you need about \$ 200. [3].

III. ADVANTAGES OF CONNECTED HOME

A. *Maximum convenience*

If you want to transform your house into a smart home, you certainly want all the smart home products in your house to listen to you, and set them to whatever you want to maximize their satisfaction. [4]. You install appliances (such as smart ovens) at home and you just need to control all the smart home devices in your home with apps on your phone, tablet, or other mobile device. You do not have to worry about forgetting to turn off any electrical appliances in your home, just control your home from the simple end of the screen. Market developers have now developed applications and devices for controlling home audio, water usage, lighting, garage doors and even electronic supermarkets. All of this can be easily and conveniently controlled by your phone.

B. *Customization*

For the general pattern of the family are more or less the same, and the average family is difficult to accept the more exotic decoration life, coupled with the variety of furniture on the market style is not too much difference. As for the present society, more and more young people form their own families. The faster and faster pace of their life is to make them pursue efficient and comfortable family life. Therefore, a variety of smart home devices introduced by market leaders can meet the demand of contemporary youth family needs. Although there are many smart products on the market, you do not need to buy it all. You can always customize what you decide to make a part of your smart home [5]. You can decide what is most important for you and then add products as you wish [5].

C. *Security*

When you integrate the smart home network security and monitoring capabilities, your home security index will be greatly enhanced. If you have a lot of smart home security monitoring devices installed in your home, you no longer have to spend a lot of time trying to check each device for work, you just have to go to sleep or leave your home, Phone or tablet, a key in the management of product applications open just fine. [6]. In fact, the benefits of security more than that, if you are interested in visiting your family, you have the option of installing a security system to observe all guests coming and going through the camera. In the event of any abnormality, the security system will immediately send you a warning. [7].

D. *Easy to use*

At present, most of the connected home products on the market are easy to install, which completely saves the manpower consumption of the on-site service of the installers. [4]. If you have a better understanding of this area then maybe learning how to use these products will be even more easy. If you have elderly or disabled friends around, connected home technologies can extremely improve living quality and can use sound control to make it easier for people who are unfamiliar with technology to learn how to use them. Give you the special set-up you think you need for your device, automate it, and smart home products do not have to spend too much time researching how to automate, simply by going to the features interface for content configuration. that's enough [7]. Connected home devices make life difficult tasks easier, but also for those who have no ability to take care of themselves to improve housing flexibility Sexuality and independence.

E. *Save Money and the Environment*

Setting energy-saving properties for your smart home device can help you save on energy bills. Of course, you can configure the thermostat in your home to automatically regulate the temperature inside the house by the outdoor temperature and humidity, and develop a set of the best energy-saving solutions [6]. When entering the night mode, or when entering and leaving the room, the lights turn on and off automatically, so energy is saved. Perhaps the main motivation for many people to have ideas for using smart home devices is to save money. According to research reports from government agencies, only thermostatically controlled products are technically sufficient to save you about 30% on electricity bills [7]. In order to further save costs, increase solar energy or other energy conversion equipment can also save costs, but also can be recycled.

IV. DISADVANTAGES OF CONNECTED HOME

A. *Cost Expensive*

Installing state-of-the-art features in your home can lead to higher house prices and higher costs for smart home devices, as some technologies are relatively new. If the connected home device fails, the cost of maintenance and repair is also expensive. If the connected home system has been unable to

meet your needs, and want to upgrade your home connected home system, this intermediate price may face a huge span, which is the biggest drawback of connected home [8]. The fundamental system includes only burglary-controlled alarms, outdoor lighting, thermostats And the door lock. These devices are still for \$ 2,500 price points. For more expensive systems, your smart system can certainly be upgraded to a higher level, with more complete equipment, more extensive functions, and a better living experience, all of which are the benefits of attendant price increases. [8]. Higher-end systems will cost about \$ 130,000, which includes everything in other systems as well as entertainment controls such as music and television, and motion detectors. This can be controlled from any home's main room via a touch screen, keyboard, video display and speakers [8].

B. Responsibility

In particular, connected home depends on the network or WI-FI, if the network during use is unstable or interrupted, it will lead to the majority of smart home devices to stop working. And if you receive a strong signal interference, can also cause the product to stop working. Therefore, the home network is very important for the work of connected home products. [4]. On the other hand, while security is advantage, it is also disadvantage. A connected home system is similar to a computer system and may be hacked. Then they will be able to turn off safety alerts, cameras and motion sensors and control almost everything in the house [8] . This is a terrible thing.

V. FUTURE OF CONNECTED HOME

In May this year at the IoT World Congress in Santa Clara, Calif., Several speakers discussed a new model for delivering value through smart home devices and discussed the future of smart homes. Advances in AI and voice control have helped to accelerate smart home adoption and innovation, and the industry is now looking forward to the concept of a home with a built-in intelligence in the future.

While interconnection and standards issues are still the concern of the entire IoT industry, some stakeholders are beginning to believe that the advent of voice control has made the wireless and technology debate somewhat irrelevant, especially given the fact that about 80% US home uses the smart home networking technology for Wi-Fi such a background. Intel spokesman believes that the standard is very important, while some smart home businesses think, more importantly, to focus on enhancing the end user experience. However, most people are unified, and the smart home market has not yet reached the point of promoting mass market development. While it is expected that half of residential lighting sockets in the United States will use LED bulbs by 2020, cost and installation remain key issues to overcome. Since all smart bulbs are usually LEDs, this will provide the user with a channel that will allow them to enter the smart home. At the same time, home security for 70% of homes is based on the old, hard-wired calling system, which represents

a huge opportunity to guide them through the use of home automation services. Therefore, the future development of smart home is to make the house "self-conscious", adapt consumers' needs as they enter the house, and well predict equipment failures in the system.

VI. CONCLUSION

With the increasing demand for living environment, the development of smart home technology does bring many benefits to the need of human family environment, such as bringing convenience to life, purchasing a complete set of product without purchase, customizing and improving the home life safety and energy saving, saving money and so on. But for the current social foundation, it seems connected home technology can not spread to most home, the most important problem is that the price is too expensive for the average family is hard to afford, leading to connected home technology is hard to open the market in the world. For the future development of connected home before it becomes a mainstream business needs time to grow and mature, so that the house becomes more "smart".

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