



What is the Smart Home?

What do Consumers expect from the Smart Home? And how are we going to deliver it to them?

Looking at our cars and comparing them with our homes provides a clear hint of how a smart home of the future will look like. In addition to car engines becoming more efficient and significantly improved safety, the number of devices that help us to control all the onboard functions has really accelerated: from central door locking to tire pressure sensor, parking sensors (or complete park-help), automatic settings of chairs and mirrors. It is amazing.

However, when compared to the “smart car”, the Smart Home has still ways to go. The most stunning example is a central door-locking system. While this feature is commonplace in most cars – even though all the car doors are almost within arm-reach – at our homes, most of us still have ordinary mechanical door-locks, old, proven keys and probably no plans of upgrading this to something more sophisticated for quite some time. This is despite virtually everyone in the world having the regular experience of standing at the front door, and wondering: “Is the back door locked?”.

So why, when compared to cars, are our homes are still so primitive? What is taking so long for our homes to become smart?

There are several reasons. To start with some obvious ones: we do not change homes as “regularly” as we change of cars, and the car market is highly competitive, pushing manufacturers to differentiate from each other, including smart features/packages/editions. But for homes the only real differentiation is the adagio: “location, location and location”, so there is little incentive for a home owner to keep his home up to date with the latest technology so that it will be sellable in the future.

There are other reasons that homes are behind as well. Smart home systems are expensive, high end market, cumbersome to install, and require significant maintenance. In some way these systems have stayed away from mainstream business, and outside the scope of the technology revolution and the cost reduction curve. But this is going to change, and probably sooner than later. Many large companies are now recognizing that the smart home could be the next frontier after the smart phone!

Actually, in an inconspicuous way this change is already going on, driven by some unexpected companies, the MSO’s (the aggregate name for cable, satellite and telecom operators). MSO’s see their core revenue (content distribution) under continuous pressure from new, simplified services offered by emerging competitors and service models (Apple TV, Netflix, etc.). So, MSO’s are looking at the Smart Home market with extreme interest: they can offer new services to their subscriber base, using their existing infrastructure for installing, servicing and billing.

MSO’s also have a very cost-effective way to get themselves set-up for rolling out new services for the smart home market: they are migrating their set-top boxes, transceivers, gateways, etc. from using infra-red remote controls into RF-based (Radio Frequency) remote controls, using the ZigBee standard. This already pays for itself: RF technology is much more reliable, and remote control batteries can easily outlast the life time of a remote control, significantly reducing the number of support calls for an MSO’s. In the last few years, most MSO’s have





begun phasing out infra-red remote controls and replacing them with RF, and inconspicuously bringing a ZigBee base-station in every home, currently at a volume of over 1 million units per week and growing. This is phase one.

And phase one is kick-starting phase two: rolling out smart home service. However, it is not that easy. Consumers do not “buy” smart homes, like smart phones – something that many companies have already found out since the previous century, where Hollywood movies promised the smart home to be around the corner. Consumers do not buy concepts, instead consumers purchase solutions for problems that they want to see resolved at an affordable price. One big mistake that has been made over the last few years is that “smart home” companies (including some MSO’s) have marketed complete smart home concepts at a too high of a price, driving away consumers even if they were interested.

What do consumers want from a smart home perspective? Actually consumers are interested in many things. Here are some specific real world demands that we have recognized:

1. Security systems: sensors that send a signal to a dispatch center when there is an intrusion
2. Smoke (fire) or carbon-monoxide detection systems: to immediately detect and alert dangerous situations
3. Home monitoring systems for small children: sending a message to a smart phone if a child wakes up and starts crying
4. Alert systems for elderly people: who has not had an older family member falling in the bathroom, breaking a hip and being out of help for hours?
5. Central locking system: to finally be capable to lock that back-door, while standing at the front door – and making sure that all the windows are closed and locked as well. And also as you stand in line at the airport to go away on vacation, to be able to check – did we really lock the doors?
6. Remotely controlled lighting systems: to be able to turn on/off lights while not being at home (for security reasons and/or for energy management)
7. Climate control (heating/air-conditioning/humidity) systems that can be monitored and controlled with a smart phone from any location?
8. Being able to open and close the curtains, the sunshades for further energy reduction?
9. Water leakage detection: ever had a flooding in the house, and compared the reconstruction and repair expenses with the cost of a leakage sensor?
10. Diagnostics reporting by white goods (like freezer/fridge, (dish) washer, dryer, etc.) to avoid break-down at that very inconvenient moment, just doing the laundry before going on vacation.

This list can clearly go on further, but the key message is: consumers do not buy a smart home, they buy specific solutions for specific problems. Product builders and MSO’s are recognizing this and they are developing “packages”: vertically integrated solutions that solve one specific problem, and market this to their subscribers at a monthly fee. Examples are: security and energy management. In this situation it is important to recognize and understand that there are different value propositions for solving different problems: closing a curtain may be something different than a security alarm.

This is all phase two of the arrival of the smart home: MSO’s driving new vertical service opportunities to their subscribers, leveraging the roll-out of phase one - the ZigBee control in every set-top box/transceiver/gateway. The MSO’s will be connecting new devices to this box and developing a wide variety of applications (largely cloud based) to enable all type of computer devices (tablets, phones) to become the remote console of the smart home.

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Part of phase two also includes the integration of ZigBee with WiFi within the home. WiFi is the wireless technology that distributes content throughout the home, ZigBee is for battery operated devices that require a very long battery life. But they can work together. For instance a security system where the ZigBee operated motion sensor can turn-on a WiFi camera to actually see and transmit if there is an intrusion detected. Both ZigBee and WiFi will be in every home control/internet access box and will play complementary roles in the smart home – and this will be the start of the next phase, the real arrival of the smart home, phase three.

So, what is the real smart home and how will phase three distinguish itself from phase two?

The key characteristic of phase two was the vertical solution orientation. But in the near future, people will start realizing that different vertical applications can share the same sensors. For instance a security system uses a motion sensor in the room, to detect intrusion. But an energy management system can also use that same motion sensor – when activated - to turn on the lights and the heating (or air conditioning).

The logical question will be: can that be the same sensor? The answer is a clear yes. But it will require more standardization to make sure that all the sensors in the home can talk with a “background” application, a piece of “intelligence”, that can interpret the motion detection. If the alarm is turned on, the motion detector needs to trigger a security alert. If the alarm system is off, it needs to check lighting conditions and determine whether to turn on the lights, as well as check on climate conditions for turning on the heater or air conditioner.

Here is another example: the home’s central locking system needs to be connected with the heater or air conditioner as well, as there is nothing as expensive as an open window with the heater or air conditioner turned on.

So, phase three, the arrival of the really smart home, is when all these systems exchange information to work together. Frankly, that is quite a challenging task of which a lot of work is going on at this moment. And even though it sounds insignificant, the replacing the IR remote controls with a ZigBee remote controls is the critical first big step towards the truly smart home.

Do you have comments or suggestions? I appreciate your feedback!

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