

Radu PRODAN
Ioan NA CU
Technical University of Cluj-Napoca
Department of Automation
Cluj-Napoca, Romania

THE SMART HOMES – A PROMISING BUSINESS DOMAIN WHICH WORTH ATTENTION OF ROMANIAN TELECOM COMPANIES

Keywords

Smart home
Telecom operator
Smart home service
Home automation

JEL classification

L25, L84, L86, L96, O33

Abstract

In the paper the authors present an overview of the main worldwide development directions in the Smart Home solutions, review the Smart Home services, and give recommendations to potential Romanian and foreign investors in the establishment of such services in Romania. The homes and how people live and behave in them have evolved dramatically in the last fifteen years. Today, the authors are able to present a few major trends that revive the Smart Homes: social trends, digital addiction and the fact that global players see the home like the kernel of the digital atmosphere that surrounds us. The purpose was to identify an opportunity today, as these trends have a satisfying maturity degree. Studying various projects, authors were able to estimate that Smart Homes revenues will increase with 8-10 % per year until 2020 in Romania. These estimates include both direct revenues like home automation products/services and indirect revenues like maintenance of the new devices/services.

1. INTRODUCTION

The Smart Home is a building that has installed a local area network enabling its tenants to remotely command and control a grid of automated home electronic devices. The “intelligent” attribute appears along with a rich palette of new applications from home automation (home comfort,

entertainment, security), e-Health services and home cloud (sensors data produced or used at home, productivity, management of content).

Since the appearance of the first home automation products in 1980s, Smart Home products were offered by major electronics and software companies. At a reasonable time distance they were followed by the first connected home appliances (e.g. Electrolux Screenfridge – an intelligent refrigerator, in the 1999 [1]) and by integrated software media systems (e.g. Microsoft Windows XP Home Media Center [2] shown at CES 2002). These proposals were initially received with limited success.

2. MOTIVATION

The homes and how people live and behave in them have evolved dramatically in the last fifteen years. Today, authors are able to present a few major trends that revive the Smart Homes:

- Social trends - According to the European Commission, "... by 2020, single parent families are expected to represent 21% of total families. Also, by 2050, the number of people in the EU aged 65 and above is expected to grow by 70% and the number of people aged over 80 by 170%.[3]" Romania's population has decreased by 1.8 million inhabitants during 1990-2008, from 23.2 to 21.4 million inhabitants [4]. Until 2050 Romania's population is set to decrease by a supplementary 4-5 million inhabitants, to achieve 16-17 million residents (according to studies conducted by EU, World Bank, International Monetary Fund and the UN) [4]. Life expectancy in Romania increased from 70 years in 1990 to 74 years in 2008 and

continues to rise [4]. It can be observed an increasing demand for new services in the home.

- Digital addiction – Predictions show there will be on average 4 screens per person in Europe in 2015 (including smartphones and tablets) compared to 1,7 screens per person in 2000 [5]. This growth determines us strongly to believe the portable devices (as controllers for smart applications in the home) are the ideal teammates for Smart Home applications. For example, in the past three years, social networking and online purchasing have become major features of net activity and traffic. Music online now looks old-fashioned, but there are movies and there is much more to come. So 5G technology will be just as transitory as 4G, 3G and 2G – and in turn it will be eclipsed by 6G, perhaps sometime in the early 2020s. You might think that this growth would ultimately tail off, but it looks as though we really are in the early phases of mobile network expansion [6]. The global population now stands at around 7 billion people, and nearly 5 billion have access to mobile devices of one kind or another. It is estimated that 2-2.5 billion surf the net using smart and "smartish" phones. So there is plenty of room for growth there alone.

- Global players see the home like the kernel of the digital atmosphere that surrounds us – A broad number of key players (e.g. Microsoft, Google) provide applications and operating systems, utility service and telecom providers (e.g. E.ON, GDF Suez, Deutsche Telecom) manage the customer relationship, and appliance manufacturers (e.g. Samsung, LG, Philips, GE) provide Smart Home devices (Figure 1).

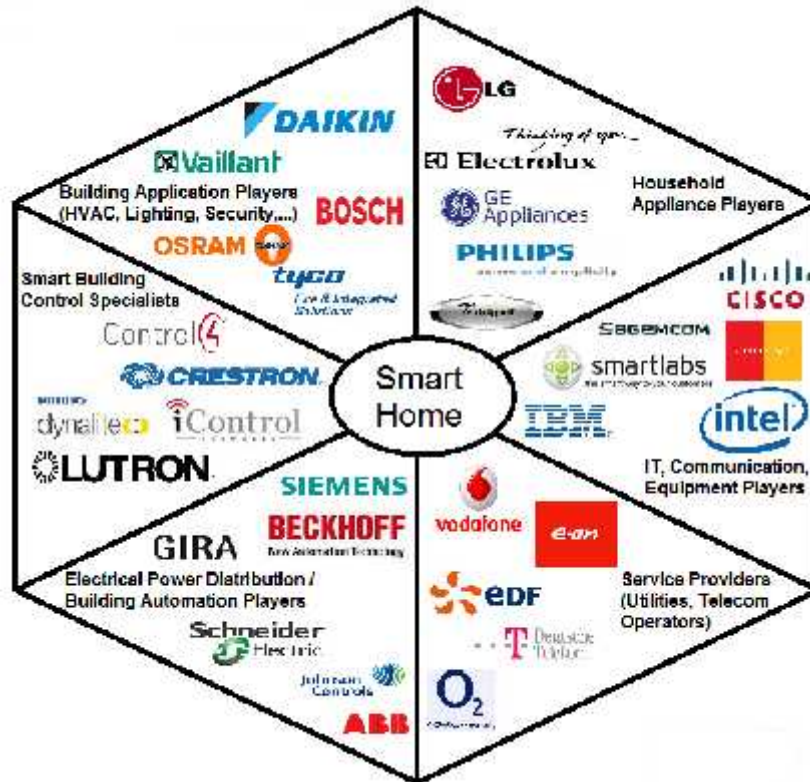


Figure 1. Key players from various industries
 Source: Companies' logos

AT&T has just become one of the first main telecommunications companies to offer the concept of home security and automation to their customers. Initially this service will appear in 15 markets after they thought of eight markets. They will then achieve a goal to have 50 US markets switched on to this service by end of 2013. This is although a handful of Internet Service Providers including a few French and British operators are running home security and automation as the “fifth play” service. This service, known as AT&T Digital Life will feature the 24/7 monitored alarm service which will let you and the police or fire brigade know about emergencies including where they occur in your home like what most monitored alarm systems are capable of doing [7]. As well, the service will let you manage and control home security and automation functions through the use of programs and alerts including non-time-specific events such as you opening the garage door causing lights to come on or the heating or cooling to be adjusted to the “comfort” setting [8]. They reckon that this will be a wireless-centric experience with a variety of

sensors and controlled devices including movement, glass-break, carbon-monoxide, water-leak sensors with controlled devices including lighting and heating controllers and electromechanical door locks.

What would typically happen is that the telecom operators and similar firms would resell monitoring services from established alarm-monitoring companies. Then they would integrate the control functionality through a Web dashboard that has their branding on it. This could easily be facilitated through the security monitoring firms that the telecommunications or cable-TV firm engage to protect their premises having their business relationship strengthened by being in a position to wholesale the service to the telecom operator’s retail customers. Similarly the wired-broadband link provided by the telecom operators, rather than a separately sold link could end up as the monitoring link. This can be augmented with the use of a wireless-broadband link sold to the customer as the mobile solution for an “eggs in one basket” deal serving as a fail-safe link.

However, there is also a new game in town – services online – and that market







appears near infinite. Here are a few examples of likely forthcoming demand that serve to paint a picture of mobility spanning the next 40 years or so: the cloud (represents a transformational process for computing and communication, with distributed data, memory, processing power, apps, sensors and services), sensors, wallet, security and other apps will be added to our mobile devices and will push bandwidth demand further in ways we have not yet experienced [6].

Home cloud is related to the types of digital data: content (pictures, music, video), productivity (documents and contacts, email) and sensors (data collected by the Smart Home devices, like e-Health devices, smart meters). Even there are some inhibitors like privacy and trust, the increasing amount of data, especially video, leads to a major demand for remote storage and access. This service is expected to grow in a quick manner. Over-the-top players already offer multi-device, cloud based solutions for personal information management (Table 1).

Home automation implies the existence

of a centralizing interface for the main five home systems: home security, home utility and energy management (smart meters), lighting, home motorization (remote control of devices e.g. thermostats, alarm systems) and entertainment. Comfort, modularity, peace-of-mind, cost savings, are all emphasized by energy management and security. In terms of integration, energy management and security are the most advanced systems. A great challenge for home automation is the myriad of technologies (e.g. wireless versus power line networks), standards and platforms. Partnerships and alliances are developed by key players along the value chain to develop and promote their platform. The key role of telecom operators is guaranteed by their assets, namely the network (broadband access, set-top boxes and other connectivity layers), the field service staff and network management abilities. They could extend their competence to home security and alerting, having as main goal establishing their position in home control and automation.

Table 1. Examples of Home Cloud Storage

	Google Drive: cloud storage of documents, music, e-books, photos and videos		Microsoft SkyDrive: file saving, sharing and accessing thorough a browser (integrated with Windows 8)
	Amazon Cloud Drive: 5GB cloud storage for photos, documents, videos and other digital files		Dropbox: Independent freemium synchronization and file sharing service with more than 4 million users
	Ubuntu One: Freemium model allowing 5GBs of free storage and music streaming (available on all the platforms)		iCloud: Freemium model including 5 GB of free storage and backup for music, apps, photos, etc.

Source: Companies' logos

E-Health represents the application of telecom technologies in the health domain in order to give the health stakeholders a better cost control. Outdated health services will be augmented or displaced by personal health monitoring and remote care. This will include home observation, testing, diagnosis and treatment online for short and long-term patients and people just wishing to keep fit and well. In this market there are two strategies: the first is a niche, B2B or B2B2C market, offering patient remote monitoring and electronic patient records; the second is a

mass, B2C market, offering Wi-things (e.g. WiFi body scales) [9], [10].

Home assistance regards configuration, repair, maintenance and support services for digital home devices, like TVs, PCs, video players, game consoles, home networks. It can be divided into two sub-domains: in-home assistance carried by on-site support staff and remote assistance. The main success factor in this market is the legitimacy perceived by customers, mainly retained today by manufacturers. But it must be taken into consideration the fact that telecom operators

are also well positioned among trusted companies for technical support.

3. VALUABLE ASSETS IN THE TELECOM OPERATORS' HANDS

Having owned the broadband internet gateways, telecom operators are in the position of leading players by a great amount of percentage points in terms of entering the households with Smart Home solutions. The broadband box stepped further from a trivial internet connection device to a highly innovative platform connecting various devices. For example *The Digital Home* from Romanian UPC operator [11] offers a wide range of multi-media applications like internet, TV, music and gaming, pay-per-view, remote parental control, polling, combined with innovative remote storage devices.

On top of that, telecom operators provide interoperable solutions based on open models that can allow heterogeneous Smart Home solutions to interconnect, opposite to ecosystems offered by the key players. A good example is the Italian alliance of Telefonica Italia [12] with a great number of partners, like utilities or household appliance manufacturers.

Another important telecom operators' asset in the Smart Home environment is the role they play in the customer relationship. Contrary to home appliance manufacturers or some key players, operators have a permanent contact with their customers and easily can promote, distribute and manage future Smart Home services. Also, the regular and secure billing relationship with customers can be capitalized.

Other key assets that worth taking into consideration by telecom operators include their sales team, shop networks and support staff, as well as network management capabilities. Anyway, telecom operators will need to focus their attention on staff training in order to accurately dwell Smart Home's express requisites.

4. OUR PROPOSAL – POSSIBLE MARKET EVOLUTIONS

Hence the Smart Home market is still in its early stages, the players need focus and train for different scenarios. The authors may

suggest two possible market evolutions:

1st Evolution Scenario: Global players take over and unify the Smart Home market into vast ecosystems

This scenario is definitely supported by the key players, which propose and develop solutions that can prevent or bypass telecom operators' involvement. For example Google launched a few proposals with Google Docs, Google Health and Google PowerMeter, however some of them being abandoned [13]. Another example comes from the United States: Control4 has joined its effort with top-ten vendors Black & Decker and LG Electronics to provide a real interoperability of its platform with the largest number of home devices [14].

In this scenario telecom operators are exposed to the risk of being left out, similarly to the smartphone application store. As most operators favor proprietary solutions trying to get a maximum share of venues, but with limited success so far, they actually are amplifying this risk. A scenario like this imply long development rounds of a limited number of applications, as operators fail to encounter developers to raise the ecosystem on verticals.

The authors believe that telecom operators in order to lessen this risk should make alliances when possible and encourage hybrid Smart Home platforms having applications near their core business, not forgetting other services offered by external providers. A good example is the partnership between the players MOOV, Android and PCCW from Hong Kong [15], having as result a digital home solution built around open models with a whole range of innovative functions.

2nd Evolution Scenario: Smart Home market turns big, but with a myriad of standards and solutions

The evolution result will be highly fragmented with large amounts of heterogeneous contenders trying to seize revenues from the Smart Home market. In the authors' opinion this is a great opportunity for telecom operators to place themselves in a position to leverage not only their assets to provide their own solutions, but also to incorporate external solutions and alleviate the digital life of their customers.

One should admit this market in Romania is still in a very early stage and a growing number of players are taking into

consideration entering the market.

5. CONCLUSION

Smart Home services are ready today for a fast development and stand for a great opportunity for telecom operators to diversify their offered services and expand the revenue streams.

Because of their key assets, like the internet gateway, control of customer relationship, support and sales capability, telecom operators are in an excellent position to seize value from Smart Home services. Disregarding the fact that payback will come in the medium term, they should act now and establish bridgeheads or they will face a similar destiny as what happened in the smartphone application market.

To take advantage from this estimated growth, telecom operators should promote hybrid platforms able to offer their own solutions as well as a broad range of external solutions and transform themselves in a sort of digital life assistants.

The future of the Smart Homes domain has to be seen in a larger context than just within the living space. Platforms will also connect the home to other locations, such as schools, office buildings, hospitals and clinics, shopping malls, cars and other places just imaginable by now.

This will enlarge the type of actors in this domain and will give the telecom operators the chance to consolidate their core position as integrators of Smart Home services. It is their choice to define the degree they want to be involved.

6. Acknowledgements

This paper was supported by the project "Improvement of the doctoral studies quality in engineering science for development of the knowledge based society-QDOC", contract no. POSDRU/107/1.5/S/78534, project co-funded by the European Social Fund through the Sectorial Operational Program Human Resources 2007-2013.

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Biography

Radu Prodan¹ is a PhD student in Systems Engineering at the Technical University of Cluj-Napoca with the thesis „Smart Home function adaptation to daily activities of tenants with cognitive deficiencies”. His main research fields are: smart homes, wireless sensor networks, multimedia technologies.

Professor PhD Ioan Na cu² is a full professor at the Technical University of Cluj-Napoca, Department of Automation. His main research fields are: autonomous mobile robots, intelligent systems, robust, adaptive and predictive control techniques, modelling and simulation of systems with distributed parameters.