Why Is My Home Not Smart?

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Abstract. Although the idea of the smart home has been around for over three decades the smart technology that enables it has yet to reach the mass market. Spending on smart technology is expected to rise, but it is still negligible when compared to overall spending on consumer electronics. This paper examines the benefits of the smart home, peoples attitude towards them and smart technologies and the possible reasons for lack of interest and adoption of such technologies.

Keywords: smart home, smart technology, benefits, attitude, interest.

1 Introduction

The term smart home was coined by the National Association of Home Builders (NAHB) in the early 1980s after it set up a group to push for the adoption of smart technologies in the design of new homes [1]. Since then, there has been limited research into the area with the majority of this focused on the development of example smart houses showcasing the possibilities this type of technology could bring. However, this research, along with the efforts of the NAHB and others, has yet to deliver the smart home life envisioned by many during the late 20th and early 21st century. Most of the western world is still living in homes more similar to their grandparent rather than those conceived by the early smart home pioneers. This paper examines the benefits of the smart home, such as support for the elderly and energy saving, people’s attitude towards them and smart technologies and the possible reasons for lack of interest and adoption of such technologies.

A smart home is a domestic residence that incorporates common devices to control features of the home. The most basic feature of a smart home is the ability to control devices remotely or automatically [2]. Originally this may have been limited to switching the heating or lighting on or off, but as technology has improved almost any device can now be controlled remotely or automatically. Smart homes are now capable of incorporating large amounts of computing power to monitor the activities of its occupants and anticipate their wants and needs. They can provide users with complex customisation options to allow them to tailor their environment to precise requirements [3].

At the turn of the century the advent of high speed broadband (ADSL, cable etc.) and the always connected quality of this type of technology gave rise an to explosion
in home networking. With broadband companies giving away wireless router technology more people than ever are being exposed to the possibilities a connected home can bring. A report by Continental Automated Buildings Association Connected Home Research Council in 2008 [4] found that approximately nine-tenths of Americans have access to broadband Internet and approximately two-fifths have a home network. With access to high speed broadband people are downloading more data than ever before and are consuming vast amounts of content. A smart home used to be regarded as home where devices could be controlled or monitored remotely or automatically, but they are now regarded as technology rich multimedia environments. Only 10 years ago, the thought of remotely setting your living room personal video recorder (PVR) on the move then watching the program back in the bedroom was nearly impossible. Now using a home network you can connected to your PVR using a mobile phone then watch back the show in the bedroom using your laptop [5].

2 Benefits

Although the benefits for smart homes are numerous they can be divided into four distinct categories, these being:

- Energy saving
- Support for elderly or disabled
- Security and safety
- User convenience

User convenience is an area that has long been associated with smart technology, energy saving and support for the elderly or disabled have been more recently explored and, due to the global warming and an aging population, both of which are today very much in vogue. Each of these categories are briefly discussed below.

2.1 Energy Saving

The need to significantly reduce carbon emissions is arguably today’s greatest challenge. Energy efficient smart technology can be utilised within the home to offer the user a host of energy saving ideas. The installation of smart meters, promised by many governments, will allow a whole host of energy saving techniques to be implemented within the home. Those who generate their own energy will be able to sell it back to the energy grid. Smart meters will allow feedback of energy consumption to easily be delivered to the user. Wood et al. [6] explores the idea of using energy feedback displays to inform user of the amount of energy being used by the various devices currently active within the home. With these displays motivation techniques can be used to encourage a reduction in energy usage. Darby [7] investigates the use of a TV or PC to deliver information back to the user showing them their historic consumption, daily costs and comparisons with other homes. Other systems such as smart heating systems and smart lighting systems (the idea of a single off button for the home, which will turn off all but essential items) are being explored and researched.