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OVERWIEW AND BENEFITS OF DIGITAL SMART HOME TECHNOLOGIES

Науковий керівник к.філол.н., доцент Федак С.А.

The popularity of home automation has been increasing greatly in recent years due to much higher affordability and simplicity though smartphone and tablet connectivity. The concept of the "Internet of Things" has tied in closely with the popularization of home automation.

Home automation refers to the use of computer and information technology to control home appliances and features (such as windows or lighting). Systems can range from simple remote control of lighting through to complex computer/micro-controller based networks with varying degrees of intelligence and automation. Home automation is adopted for reasons of ease, security and energy efficiency.

In modern construction in industrialized nations, most homes have been wired for electrical power, telephones, TV outlets (cable or antenna), and adoorbell. Many household tasks were automated by the development of specialized appliances. Other traditional household tasks, like food preservation and preparation have been automated in large extent by moving them into factory settings, with the development of pre-made, pre-packaged foods, and in some countries, such as the United States, increased reliance on commercial food preparation services. Volume production and the factory setting allows forms of automation that would be impractical or too costly in a home setting. Standardized foods enable possible further automation of handling the food within the home.

As the number of controllable devices in the home rises, interconnection and communication becomes a useful and desirable feature. For example, a furnace can send an alert message when it needs cleaning, or a refrigerator when it needs service. Rooms will become "intelligent" and will send signals to the controller when someone enters. If no one is supposed to be home and the alarm system is set, the system could call the owner, or the neighbors, or an emergency number.

In simple installations, domotics may be as straightforward as turning on the lights when a person enters the room. In advanced installations, rooms can sense not only the presence of a person inside but know who that person is and perhaps set appropriate lighting, temperature, music levels or television channels, taking into account the day of the week, the time of day, and other factors.

Other automated tasks may include setting the HVAC to an energy saving setting when the house is unoccupied, and restoring the normal setting when an occupant is about to return. More sophisticated systems can maintain an inventory of products, recording their usage through bar codes, or an RFID tag, and prepare a shopping list or even automatically order replacements.

Home automation can also provide a remote interface to home appliances or the automation system itself, via telephone line, wireless transmission or the internet, to provide control and monitoring via a smartphone or web browser. An example of remote monitoring in home automation could be triggered when a smoke detector detects a fire or smoke condition, causing all lights in the house to blink to alert any occupants of the house to the possible emergency. If the house is equipped with a home theater, a home automation system can shut down all audio and video components to avoid distractions, or make an audible announcement. The system could also call the home owner on their mobile phone to alert them, or call the fire department or alarm monitoring company.

In terms of lighting control, it is possible to save energy when installing various products. Simple functions such as motion sensors and detectors integrated into a relatively simple home automation system can save hours of wasted energy in both residential and commercial applications. Recently, Web technologies have been suggested as an application-level solution to address the problem of heterogeneous home devices, building upon the concepts of the Web of Things.