# DOMOTICS AND SMART HOMES

Domotics standards

Some specific domotics standards include: Universal powerline bus (UPB), System Box, LonWorks and KNX and others. Bridges are used to translate one standard to another.

Home robots

Butler robots are finally becoming a reality, with AI machines to run the house, raise the children and do many other things. 2017 was the year when robots began their march into our homes. A whole set of smart home robots was produced to help users' run homes better, and they are not just toys. Some examples are Alexa, a smart assistant that lets users control their home with their own voice, and Kuri, an AI assistant.
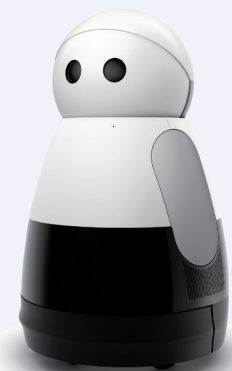
Domotics, or **home automation**, defines techniques or technology capable of automating private homes providing a series of services for the comfort and security of the residents. Although many techniques are also used in **building automation**, such as light and climate, automatic closing of doors and windows, control or surveillance systems, domotics also refers to additional functions such as multimedia home entertainment systems, automatic plant watering and pet feeding, and automatic scenes for dinners and parties.

Automatic pet feeder

The expression **smart home**, or **intelligent home**, relates to the integration of different devices for the automatic control of household appliances, with sensors and telecommunication systems for remote control or assistance. An integrated home is therefore controlled by using appropriate interfaces, e.g. buttons, remote controls, touch screens, keyboards and voice recognition, which communicate with a central computer unit or a distributed intelligence system.

We can distinguish five levels of home automation, but we can only talk of 'smart homes' from the third level onwards. The levels are the following:

1. **homes which contain intelligent objects** – homes contain single, stand-alone applications and objects which function in an intelligent manner, i.e. a kitchen robot with a database of recipes.
2. **homes which contain intelligent, communicating objects** – homes contain appliances and objects which function intelligently in their own right and which also exchange information between one another to increase functionality, i.e. when it is dark, a sensor sends a signal to the computer to switch on the lights.
3. **connected homes** – homes have internal and external networks, allowing interactive and remote control of systems, as well as access to services and information, both within and beyond the home, i.e. a central computer controls all the devices in the house.
4. **learning homes** – patterns of activity in the homes are recorded and the accumulated data are used to anticipate users' needs and to control the technology accordingly, i.e. the central system has a database and knows how to behave, for example, in case of snow, intense cold, etc.
5. **attentive homes** – the activity and location of people and objects within the homes are constantly registered, and this information is used to control technology in anticipation of the occupants' needs, i.e. lights are automatically switched on or off as you move from one room to another.

Another important distinction concerns the location of the domotic system. The architecture of the system can be:

- **centralised** – a centralised controller receives information of multiple sensors and, once processed, generates the appropriate orders for the **actuators**
- **distributed** – the intelligence of the system is distributed among all the modules that are sensors or actuators, through a system of wires
- **mixed** – systems with decentralised architecture with several small devices able to acquire and process the information of multiple sensors and to transmit them to the rest of the devices distributed by the house.

1 **Listen to the extract and complete the table.**

Home automation applications

1	Energy saving	• C .... • N .... L	• L .... • E .... M ....
2	C .... L	• A .... L .... • V .... S .... and D .... • I .... of all devices • M .... of all multimedia devices	• Audio S .... and D .... • I .... S .... • Internet control • Generation of P ....
3	Home P .... and S	• D .... of I .... • Detection of D	• S .... of P .... • M .... A ....
4	Communications	• Ubiquitous C .... • A .... transmission • Robotics	• R .... C .... • I ....
5	Other systems	• G .... doors	• P .... feeders

2 **Read the text and discuss these questions in pairs.**

DoorBird, an alternative to Ring Video Doorbell

We are sure at some point of time, you may have come across the Ring Video Doorbell or even the Pro version. Ring is one of the most popular wireless doorbells available on the market. It is reasonably priced, easy to self-install and is feature-packed. However, the one great drawback is that you have to keep charging your doorbell, but the Pro version provides automatic recharging at a higher cost. Remember, the main reason you want a video doorbell is so that you can view the visitor and open the door! So, you need a video doorbell with the following features:

1. Doesn't require constant recharging

2. Able to unlock any smartlock or connect to any magnetic doorlocks, after viewing the visitor

3. Able to use the inbuilt sensor in any existing home automation system

4. Able to use a camera and stream the video to existing systems.

DoorBird is designed and available in a variety of configurations. It is made of reinforced polycarbonate with a stainless steel faceplate and button. It has an HD camera with an infrared sensor, below which is a microphone/speaker grille and the stainless steel button. Since the DoorBird reuses the existing wires for your doorbell, the installation may not be so straightforward. Setting it up would require some wiring, waterproofing at the backplate, and drilling, before you even turn it on. The DoorBird can be linked to your home network via ethernet cable or wifi.

Adapted from: http://www.domotics.sg/review-doorbird-an-alternative-to-ring-video-doorbell/

1. What type of product is Doorbird?
2. What are its characteristics?
3. Would you like to install such a device in your house? Why/why not?
4. What do you think are the advantages of installing such a product?

ACTIVITIES