

INTELLIGENT HOUSE

UTURE

How will microchip technology, the Internet and mobile communications affect our future domestic lifestyle? Enter the smart house!



One day, houses will be filled with 'intelligent' devices, reducing energy consumption, ministering to our comfort, health and security, saving us time and keeping us entertained and in touch. Already, numerous 'smart' houses exist, around the world, many as experiments. Cisco Systems is involved with several, including two, in the UK and France, that have been sold, after a period of demonstration, to private buyers.

The French Cisco house has a global communications network integrated into the structure, cabled into the foundations and connected to the Internet. A protected website allows the occupants to pilot equipment and solutions and access services both locally and remotely. They can programme the temperature and the lighting. Webcam images show them who's at the door, and whether baby is asleep. Even when absent, they can adjust heating, open shutters, check lights are off, start the washing machine or set the alarm. They can play music off the Internet, watch films from an online video club and play net-

worked games from every room. A domestic intranet allows them to communicate with services throughout the house. There is also a cordless network, for accessing facilities from nomadic terminals. The house has remote-access surveillance, a domestic management network, integrated Internet telephony and messaging, and a full range of household appliances. "The 'smart house' has not yet come to maturity," explains Sonia Vezzoli, project manager at Cisco Systems France. "Manufacturers are all trying to push their particular system and there are few common standards. The technologies will become more open, though," she adds.

In the crystal ball

"In the future, people will do basic shopping on the Internet," says Mike Pilbeam, Senior Director of Technical Operations for Cisco Systems UK. "Intelligent white goods will signal functioning defects to the supplier's maintenance department. Your fridge will write shopping lists and the supermarket will talk to your PC or fridge!" he adds. Detectors will dim lights if no one is in the room, and devices will be programmable to operate at economy time only, or go into energy-saving mode at certain times. Integrated control systems will adjust heating and lighting in accordance with the occupants' behaviour patterns, to save energy. Security and home-monitoring systems will send an e-mail and a video image if there's an intrusion or a fire. Virtual Private Networking will allow you to create a private communication tunnel, via the Internet, from your home to your company. The

phone in your home office will be connected to the company's phone network by Internet, and you'll have video images. People will view movies over the Internet, rather than going to the video shop. The smart house will have self-adjusting intelligent agents embedded in its systems, capable of learning from experience. Tiny, invisible computers will be embedded into unlikely things, like the fibres of clothing. "The washing machine will recognise the material and the clothes will know when they're dirty. The house will interact with you and know where you are," affirms Dr. Vic Callaghan, Head of the Intelligent Inhabited Environment Research Group at the University of Essex, UK. "Put into the paint on your walls, such agents could sense the right temperature for your heating system," he adds.

This technology physically and cognitively 'disappears', transferring the intellectual effort from the person to the system. If you're elderly or unwell, the intelligent home will put on the electric blanket, before bedtime. If you've fallen down, it will know something's wrong and signal for help. If your condition deteriorates, it could inform a doctor. And maybe if you forget to turn things off. ■

A EUROPEAN INITIATIVE

The EU-funded Intelligent Inhabited Environments research group at Essex University, in the UK, is working on embedding human-like intelligence into electronic artefacts in homes. It is developing "embedded intelligent agents", to be integrated into appliances and building-service devices, to provide smarter control of the home and relieve the homeowner of the need to understand the technology in order to install and use it. It has built an experimental living environment, called the "Intelligent Dormitory" (iDorm), based on a futuristic student dormitory.

<http://cswwww.essex.ac.uk/intelligent-buildings>



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