Wireless Ad Hoc Networks

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Developers will be presenting **a self-organizing communications network** during the e/home trade fair in Berlin. Users can enjoy wireless Internet access or remotely control utilities in the home without having to deal with complex installations or equipment compatibility.

Anyone who has tried to install an in-home communications network is familiar with the problems involved in making the different systems work together. In most cases this results in an extra big helping of cable spaghetti. If wireless systems are a blessing, being able to ignore the technical complexity of what happens in the background would be bliss. The mobile phone communicates with the PC and the PC connects to the Internet. Researchers at the Fraunhofer Institute for Communications Systems ESK in Munich will be presenting their prototype of a mobile ad hoc network at the e/home trade fair on September 1-3 in Berlin (hall 7.2a, exhibit stand 21). More than just making it easier to operate wireless devices in the home, the network can also be used to control wireless sensors and actuators that operate window blinds, ventilation or

heating systems.

“We build mobile ad hoc networks using forwarding nodes,” explains Markus Augel from ESK. It’s less complicated than it sounds. A notebook, mobile phone and a PDA, for example, automatically form a wireless network that organizes itself. “The forwarding nodes – the core of our technology – simultaneously interconnect multiple devices and transfer data from one device to another. As the user moves around the house, his position in relation to the node changes. This can interrupt the connection. To overcome this, we developed a hand-over process for the Bluetooth standard.” This technology automatically passes a deteriorating connection to a forwarding node that provides better quality. As is the case with mobile phones, the user is not aware of this happening. Moreover, the notebook and PDA are not directly connected, but instead communicate via the forwarding nodes using multi-hop communications. The greater the number of forwarding nodes, the wider the WLAN or Bluetooth transmission range. The nodes, small white boxes that require only battery or AC power, work with any Bluetooth or WLAN compatible device.

The ESK prototype provides wireless Internet access from anywhere in the home. Other potential uses include distributing information throughout shopping centers and museums or exchanging electronic business cards – even using different devices. The only requirement is that the device makes itself known to the network. Downloading an MP3 song from your home-office computer to a PDA while you sit in the garden then becomes easy. Or with sensors and actuators and a mobile phone, close the blinds without having to get up out of your favorite chair.

Source: Fraunhofer-Gesellschaft