Delivering online assistance to the needy

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Video telephony allows immediate contact with people at home, enables them to continue living at home and relieves pressure on care-providers by reducing physical journeys. It was first tested in Europe in the early 1990s using analogue cable. Though costly and bulky, these pioneering systems were shown to be helpful for elderly people who also liked using them.

Under the project IST@HOME, researchers developed an affordable and usable video-telephony system that built on work done in a series of European Union-funded projects to design home and care-provision systems for elderly people. It comprises a small movable camera, a set-top box for a TV and a handheld service pad. Together, these components enable users to see, talk to or seek assistance from professional carers in real time, over the Internet.

"Our focus was on visual communications and user acceptance," says Simon Robinson, the project's coordinator. "We wanted to go beyond the state-of-the-art for systems in the home environment. Our goal was to allow users to communicate from any room in the house and to talk to service staff via a TV set rather than a desktop PC."

The project partners, funded under the European Commission's IST programme, installed the complete system in some 600 homes in Germany, Belgium, Spain and Portugal and tested it for six months. They also produced portable video-communications devices which can be carried from room to room. The size of an A4 sheet of paper, these devices are standard tablet PCs with a video camera.

Older users and service staff expressed great appreciation for the project's services and systems, with most of both groups saying they would like to use them in future if possible. Both groups also rated the video quality acceptable to very acceptable at the data rate used, which was typically 256 kbits/second.

However, service staff identified some problems. These included alarm integration, eye-to-eye contact, lack of synchronicity between lip movement and speech, as well as audio quality and technical interruptions. "What is important for two-way communications is frames per second – ideally 24 when there is movement, the screen resolution of each picture, and speed to code," says Robinson.

The partners also discovered that today's wireless networks are less than ideal for larger homes. "WiFi is inadequate for video telephony," he adds, "because it needs stable, high-bandwidth connections. Quality-of-service guarantees must be added to ensure video signals are acceptable."

Yet dedicated equipment was not the goal, notes the coordinator. For example, the centre providing services was reengineered using open Java technology plus real-time video encoding hardware. "We also developed pure software-based codecs which are almost as good as the hardware. So future systems could be based on standard devices."

By the project's end, the partners concluded that home video-telephony systems of this kind are feasible, but that they require better integration – for example with alarm systems or with mobile devices that register vital signs such as blood pressure.

The IST@HOME systems are on show in Portugal Telecom's exhibition centre and have been demonstrated by Johanneswerk, a service provider under the German social welfare organisation of the Protestant church, and hospital/care providers.