Microsoft Researchers Show off Wireless Projects

Several projects dreamed up by the software giant's research department find new uses for mobile phones.

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Microsoft Research workers showed off some of their projects, including several that find new uses for mobile phones, on Monday at a summit in Redmond, Washington.

Eric Chang, director of incubation at Microsoft's Advanced Technology Center in Beijing, described Fone+, a product that lets users connect their mobile phones to a TV, keyboard and mouse. Fone+ would let users take advantage of the growing processing power in mobile phones that enables more computing functions but would allow them to use phones to access the Internet with a full keyboard and on a larger screen.

The product would be aimed at regions like China where PC penetration is still quite low but mobile phone ownership is high.

Users could also connect other devices, such as external storage, to the phone through the cradle. The phone could connect to the Internet either wirelessly or through broadband wired connections, Chang said. While some parts of China have broadband, others are covered by at best GPRS (General Packet Radio Service) or EDGE (Enhanced Data Rates for GSM Evolution), relatively slow mobile connections, he said.

Chang expects to demonstrate the application Tuesday at the summit. The application appears to have caught the eye of Microsoft executives such as Craig Mundie, chief research and strategy officer, who mentioned Fone+ at a conference earlier this year.

Another researcher showed off applications that combine physiological sensors with mobile phones. One application developed and tested by Nuria Oliver, a researcher at Microsoft Research, combines a heart-rate sensor with a music-tempo analyzer to let runners use music players in their mobile phones to set their workouts.

With MPTrain, a user first chooses a workout on the phone that might include two 10-minute periods of intense exercise interspersed with periods of slower exercise. The application then analyzes the music in the user's phone to choose songs based on their tempo and length, matching the chosen workout.

"The phone knows where your heart rate should be based on the workout you want to do," Oliver said. "It determines whether you need to slow down, speed up or keep the same pace and based on that selects the right song to induce you to run at the right pace," she said.

She tested how well a song encourages a runner to change pace and found that music works remarkably well, compared to runners trying to pace their workout on their own without music.

Oliver has also developed and tested an application that can be used by people who suffer from or think they might suffer from sleep apnea. People with sleep apnea repeatedly stop breathing as they sleep, often many times a night, and perhaps for a minute or longer. Wearing a small sensor on a toe that communicates with a mobile phone over Bluetooth, a user could sleep at home and monitor their heart rate and level of oxygen in their blood.

Most people with sleep apnea undergo tests when they are hooked up to many sensors on their bodies and must sleep in a hospital for one or two nights. Oliver's application would allow users to remain in the comfort of their own homes and monitor their sleep for longer periods of time, allowing them to note how different factors like food or stress may affect their sleep, she said.

The researchers showed off their projects at the Microsoft Research Faculty Summit, a conference where Microsoft invites members of academia to discuss issues in computer science research. Microsoft Research, a group comprising 700 researchers in five labs around the world, works on a variety of projects that may ultimately become