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The Mobile Intranet

Getting Closer to a World Mobile Phone

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The goals of the Universal Mobile Telecommunications System (UMTS) initiative are quite ambitious. Just imagine a cellular phone that works under one phone number in Berlin and San Francisco as well as it does in Hong Kong, that provides mobile videoconferencing wherever you are and lets you browse the Web at a remarkable 144 Kbps.

The overall objective of UMTS is to give roaming users the same functionality they have at their desktop, as well as the same speech quality, data transport capabilities, security, and account management facilities. In more technical terms, UMTS is designed to support circuit-switched as well as packet-switched services, a variety of mixed-media traffic types, plus bandwidth-on-demand of up to 2 Mbps for stationary office settings and at least 144 Kbps for wide-area coverage. In addition there will be comprehensive billing capabilities for mobile multimedia applications and intelligent network management tools that will blur the difference between fixed and wireless networks. The specification also includes wideband local-loop access to the fixed network, which makes it a very scalable system.

The telecommunications industry has been talking about UMTS for many years; over time the goalposts have moved. The problem is that the three largest markets in the world -- Europe, United States, and Japan -- have three different standards for digital cellular phones, and it is unlikely that they will come together in the near future. Apart from the technical problems, there are also political battles that make standards agreements very complicated.

However, in late January, nine of the leading international telecommunications manufacturers -- Alcatel, Bosch, Ericsson, Italtel, Motorola, Nokia, Nortel, Siemens, and Sony -- decided to jointly promote a single technology for UMTS. This concept is based on two different technologies: wideband code division multiple access (W-CDMA) and time division CDMA (TD-CDMA). W-CDMA was originally promoted as a method to embrace the Japanese Personal Digital Cellular (PDC) system under the UMTS umbrella, whereas the TD-CDMA specification is closer to the existing GSM air interface. Both proposals, TD-CDMA and W-CDMA, are based on the CDMA air interface that is used in the North American Personal Communications Services (PCS) system and has some technical benefits over GSM's pure time division multiple access (TDMA) system.

This arrangement is more of a political measure than an agreement on the final technical standards. "Now the technical experts will have to bring together the best parts of both worlds," says Thomas Zecher, a spokesperson at Bosch. Although the technical specifications are not yet clear, the industry has already found a new acronym for the air interface. It will be called Universal Terrestrial Radio Air Interface, or UTRA.