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MOBILE WIRELESS TECHNOLOGY AND SERVICES: EVOLUTION AND OUTLOOK

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Abstract

Recent development of wireless technologies, networking infrastructure, and mobile devices has contributed to the rapid growth of mobile commerce (m-commerce). While e-commerce continues to impact the global business environment, the focus has been directed towards wireless mobile computing. Given this trend, telecommunications is perhaps the key to all interconnection, information systems, and mobile devices. While countries such as Japan, Korea, and many European nationals are moving quickly and successfully in developing and establishing mobile commerce markets in the telecommunications industry, the United States has found itself somewhat behind in the race to establish a functional and supportive infrastructure for m-commerce.

Introduction

Mobile commerce applications are parallel with the development of wireless technologies. The capabilities of wireless devices will determine the type and frequency of the m-commerce applications. TDMA, CDMA, GSM and analog are four major types of existing access technologies. Wireless technologies have witnessed exciting innovations and developments in recent years. Recently, wireless LAN/MAN technologies have gained popularity. They provide mobile users with access to real-time information anywhere in their organization and home. This mobility supports convenience and service opportunities not possible in the traditional wired networks. Third-generation (3G) technology is able to support more advanced multimedia transmission and functionality of all widely accepted modes in more spread areas. The 4G will be designed to support an all-packetized wireless broadband cellular system.

In general, there are seven major challenges in the field of wireless technologies: 1) incompatibility among multiple standards, 2) limited roaming between networks, 3) quality of services including data transmission speed, 4) wireless security issues including limited authentication capabilities, 5) pricing issues, 6) user interface issues, and 7) government regulation and policies.

The purpose of this special session is to present “mobile wireless technology and services: Evolution and Outlook.” Mobile wireless technology and services are now universally available. Mobile systems are being upgraded to 2.5G and 3G to handle IP data at faster speeds. Invited panelists will deliver various topics including

- Main evolution into wireless fundamentals (AMPS, GSM, cdmaOne, GPRS, cdma2000, W-CDMA)
- Wireless technologies, applications & value chain evolution
- Wi-Fi: A threat or an opportunity for wireless carriers
- Wireless mobile issues (speed, billing, and security) and services
- Issues of worldwide mobile services and trends
- Mobile wireless markets and economic outlook

Overview and Issues of Mobile Wireless

“With worldwide cellular phone ownership set to outstrip PC ownership and no sign of abatement in users’ desires for online services, the emerging era of mobile commerce promises to permeate all areas of business and private life with vital and valuable services. This presentation addresses several issues of worldwide mobile and wireless products/services and trends including mobile user satisfaction, cellular phone budget, and renewal of their handsets.” - J.P. Shim

Main Evolution into Wireless Fundamentals

“There has been a lot of progress in wireless networks and infrastructure. We will present a discussion of several current and emerging wireless networks such as cellular/personal communications systems/GSM, 3G, Generalized Packet Radio Service, bluetooth, HIPERLAN, IEEE 802.11. We will also attempt to cover satellites, fixed wireless and wireless LANs. The discussion will also include the limitations and applications of these networks and also how these networks fit in the emerging mobile and wireless information systems.”
– Upkar Varshney

Wi-Fi: A Threat or an Opportunity for Wireless Carriers

“For wireless carriers in the U.S., their data services generate less than two percent of total revenue. Despite the migration to digital formats, packet switching and higher bandwidth, carriers nonetheless struggle to sell data services to thrifty businesses. In the meantime, Wi-Fi has gained tremendous momentum. By the end of last year, about 3,700 commercial hot spots have been set up in the U.S., and it is expected that 10,000 will become operational by the end of 2003. The first project of Cometa Networks, formed by AT&T, IBM and Intel, will provide bandwidth for Wi-Fi users in, of all places, McDonald’s. However, the use of for-pay Wi-Fi appears to be growing slower than its footprint. The big question thus is whether the traditional wireless carriers should jump on the Wi-Fi bandwagon and implement this technology to complement their cellular wireless services. The challenges facing carriers contemplating making this jump include nonstandard use of the unlicensed frequency spectrum, spotty security, limited range, high pricing, and interoperability. On the other hand, the grassroots movement has grown to 18 million users, attracted to Wi-Fi by a growing number of enabled devices, nationwide networks, increased popularity of high bandwidth Internet connections, support by technology giants, high speed of innovation, and falling prices. On balance, the coexistence of Wi-Fi and high-speed cellular data seems to be where the evolution is heading—at least at the moment.” – Sasha Dekleva

Mobile Wireless Markets and Economic Outlook

“The wireless industry is in a state of transition. Wireless service consisted of primarily voice services for more than a decade. In today’s market, the services include text messaging (data), Internet browsing capability, games, multimedia and point-to-point communications services. Wireless communications are replacing the traditional wireline services and are a competitive threat. Prices are dropping and the packages of bundled minutes provide sufficient time for the average Consumer to comfortably use the service without receiving a bill with “sticker shock.” The included Long Distance minutes in plans make the services even more attractive.” – Geoffrey Knoerzer