



**mCommerce:**  
Forget the Hype --  
Let's Get Down to  
*Real* Market Opportunities

June 27, 2001  
Proceedings

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## Executive Summary

On Wednesday, June 27, 2001, the Silicon Valley World Internet Center convened a Think Tank Session where participants gathered to contribute their ideas about genuine mCommerce market opportunities. mCommerce, comprised of any monetary-value transaction conducted via a mobile network, offers strong market potential in the United States. Research firms estimate that by 2004, mCommerce revenues will reach between \$14.5<sup>1</sup> and \$21 billion<sup>2</sup> in the U.S. alone.

Think Tank participants discussed the barriers facing the U.S. in implementing mCommerce services. These barriers include the lack of a standardized network, few compelling applications, poor usability and consumers' resistance to change. Other challenges are the lack of privacy methods, bandwidth limitations and non-existent integration with other networks.

Participants also discussed the idea that the consumer market will propel enterprise-level adoption, and not the other way around. This concept was met with a debate over whether this adoption method would follow the same path it had in Japan, currently the world's leading provider of mCommerce services.

After considering the adoption path in Japan, participants said that the youth of the U.S. would most likely become the earliest adopters of mCommerce. This is

good news for service providers as the youth market is less price-conscious than older consumers are. U.S. adoption will likely follow the same pattern witnessed in Japan: young people, serving as mCommerce missionaries, will tout the devices and applications to their parents.

While discussing enterprise mCommerce adoption, participants determined that the first widespread mCommerce application will target consumers, and that increased consumer adoption will drive the enterprise market. They predicted that within the next 12-18

months, wireless gambling, auction tracking, P2P gaming and social-content messaging will cause the first explosion in the consumer market. The general consensus of the group was that as the rate of consumer adoption increases, application service providers (ASPs) will develop additional value-added options, increasing carrier revenue as well as enterprise interest in mCommerce initiatives. After achieving increased consumer adoption, the enterprise market will follow within the next 18-

36 months. Participants agreed that mobile accounting, billing, payment and information services would spur the first round of enterprise mCommerce adoption. Participants also felt that mobile collaborative processing and mobile storage devices will be a huge boon to the enterprise market in the next 3-5 years.

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<sup>1</sup>Jupiter Research. Jupiter Research Consumer Survey: September. New York, NY: Jupiter Research, 2000.

<sup>2</sup>Rusavy, Peter. "E-commerce Unleashed." Network Computing, January 22, 2001.

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## Introduction

From collaborative gaming to wireless business-process tracking, the list of potential mCommerce applications is broad and deep. But which will be the most lucrative mCommerce applications throughout the short (12 to 18 month), medium (18 to 36 month) and long-term (36 to 60 month) future? What marketplace is most likely to succeed first? Where do the challenges and facilitating factors lie? On Wednesday, June 27, 2001, the Silicon Valley World Internet Center convened a Think Tank Session where participants gathered to contribute their ideas about the real market opportunities behind mCommerce. The Session yielded a lively debate about enterprise versus consumer markets, network standards and initial applications for widespread adoption. The following proceeding reviews and synthesizes those application ideas and the factors that will affect the global mCommerce market over the next 12 to 60 months.

**NTT DoCoMo holds a 16-percent stake in AT&T Wireless and hopes that their i-mode success will translate across the Pacific, where AT&T Wireless will launch i-mode in Seattle at the end of 2001.**

## Current mCommerce Front runner

Revenue models of service providers around the world affect the way mCommerce is applied in different regions and cultures. Members of the Think Tank Session debated the existing models and how they do and will affect the adoption of mCommerce within enterprises and among the general consumer population.

According to Jupiter Research, only Japan earned significant revenue from mCommerce in the year 2000: \$400

million (USD). Worldwide, the present mCommerce leader is NTT DoCoMo in Japan, boasting 60 percent of the Japanese wireless market share. This success is due largely to the profitability of the NTT DoCoMo i-mode wireless service. Most of the NTT DoCoMo i-mode revenue resulted from subscriber charges for data, which Japanese i-mode subscribers pay between one to three dollars each month to access. i-mode subscribers do not

pay for airtime. Handset owners use the phones not only for voice communication, but also to send images and wireless messages. Customers also download music, ring tones and access other forms of entertainment. In addition, more than 30,000 Japanese-language i-mode sites exist, broadening subscribers' data and research capabilities.

Why are net-enabled handsets so popular among the Japanese? One reason is the dearth of personal desktop computers. Only 20 percent of Japanese access

the Web from a desktop computer. Most Japanese use mobile handsets for accessing the Web. In addition, Japanese wireless users typically employ i-mode services while commuting to work aboard public transportation, which allows them convenient use of a keypad. The i-mode handsets utilize a packet-switch network, so the handsets are always on and can be used for a week without recharging the battery. Handsets also feature full-color screens, Java support and they weigh just shy of two ounces.

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<sup>3</sup> For purposes of the Think Tank Session discussion, the Silicon Valley World Internet Center defined mCommerce as:

- Any business or consumer transaction with a monetary value conducted via a mobile telecom network.
- A subset of all eCommerce transactions, both for consumer and business users.
- Applications and services on mobile phones or PDAs

<sup>4</sup> Jupiter Research. Jupiter Research Consumer Survey: September. New York, NY: Jupiter Research, 2000.

Table 1 describes projected global mobile commerce revenues in (\$) billions.

*Table 1*<sup>5</sup>

Global Mobile Commerce Revenues (in \$ billions) <sup>5</sup>						
Region	2000	2001	2002	2003	2004	2005
• North America	0.0	0.1	0.2	0.7	1.8	3.5
• Western Europe	0.0	0.1	0.5	1.7	4.6	7.8
• Asia	0.4	1.3	2.6	5.0	7.4	9.4
• Latin America	0.0	0.0	0.0	0.1	0.2	0.5
• Other	0.0	0.0	0.1	0.7	1.8	3.5
• Global	0.4	1.5	3.4	7.6	14.5	22.2
• US	0.0	0.1	0.2	0.6	1.7	3.3
• Japan	0.4	1.2	2.1	3.5	4.5	5.5

The combination of a high-speed wireless network, ample supply of feature-rich handsets and a culture that lacks personal computers has stimulated heavy adoption of mCommerce services in Japan. NTT DoCoMo holds a 16-percent stake in AT&T Wireless and hopes that their i-mode success will translate across the Pacific, where AT&T Wireless will launch i-mode in Seattle at the end of 2001.

### Existing US Market Challenges

At the Silicon Valley World Internet Center, Session participants heard that, despite its tremendous projected market potential, mCommerce faces many barriers within the U.S. These barriers include lack of standards, lack of existing applications, change-resistant human behavior and poor usability. In addition, wireless providers cannot agree on standardized platforms or devices, choosing between CDMA (Code Division Multiple Access) and TDMA (Time Division Multiple Access) technology. TDMA is conceptually similar to the GSM (Global System for Mobile communications) technology widely used in Europe. As the U.S. currently lacks a single standardized

network, spotty implementations result in expensive, non-scalable, non-reliable and non-extensible applications. Location-based applications have their own problems. Powered by GPS (Global Positioning Systems), they are slow, sporadically connected, and do not work well inside buildings or within dense urban areas.

Though standards will solve only part of the mCommerce market dilemma, mCommerce will not blossom without creative, stand-alone applications that are designed specifically for mobile commerce use. Current applications simply extend or transcode existing Web-based and enterprise systems to mobile devices. Transcoded applications utilize stripped-down markup languages to parse Web-based information to wireless handsets, but transcoded applications do not provide the leverage necessary to win a piece of the mCommerce market. Think Tank Session presenter Erik Steiner of Unwired Marketing urged developers to design applications specifically for mCommerce in order to shatter the Web paradigm.

<sup>5</sup> Jupiter Research. *Jupiter Research Consumer Survey: September*. New York, NY: Jupiter Research, 2000.

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Sorin Damian, presenting from The Information Group, Inc., emphasized that the business problems solved by mCommerce are more important than the technology behind each application or its price tag. This is true because business-process managers generally make the application purchase decisions, and for them technology is a secondary factor. Of primary importance to these managers is the ability to access information and conduct transactions from anywhere; instantaneous access is more

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valuable to this market than implementation cost. To this end, successful mCommerce applications should follow a transaction-driven business model, one where the key driver is the business-process solution derived from an mCommerce application.

After defining the business problems solved by mCommerce, the group looked at the additional

challenges facing enterprise adoption of mCommerce solutions. These challenges include the psychological resistance to change among management and staff as well as the difficulty of using some devices. In general, resistance to change hinders technological adoption. Circumventing this natural human resistance requires both user education and strong incentives. Besides resistance to change, usability is another challenge. The European and Asian mCommerce markets are far ahead of their U.S. counterparts partly because Asians and Europeans are able to use keypads during their mass-transit commutes. Damian suggested that voice-activated menus could do the same for mCommerce in America, where the workforce generally drives to work alone.

## **mCommerce Challenges**

While brainstorming the most-likely mCommerce applications, participants identified many additional challenges facing the market. Privacy, legality, rapid consumer adoption and global differences of culture and standards appeared on each short-, medium- and long-term challenge list. Participants also bemoaned the lack of a single, universal, wireless-communication device platform. Other challenges included:

### **SHORT-TERM CHALLENGES (12 TO 18 MONTHS)**

- Limitations on bandwidth, security and standards.
- Which should come first: application or infrastructure?
- Sharing mCommerce market revenues with existing wireless providers
- Security in a mobile setting
- Slow adoption rates
- Lack of coverage inside buildings and dense urban areas
- Pessimistic economic conditions
- Lack of compelling business models
- Short battery life of devices

### **MEDIUM-TERM CHALLENGES (18 TO 36 MONTHS)**

- Building the wireless infrastructure
- Lack of interconnectivity between devices
- Lack of robust billing practices for value-added wireless services
- Poor usability factor of keyboard-driven devices while driving
- Winning consumer trust
- Seamless integration with multiple private networks
- Automatic provisioning of networked vending machines

### **LONG-TERM CHALLENGES (36 TO 60 MONTHS)**

- Adopting technical and network standards
- Transparent integration with other networks
- Standardized, viable platforms for handsets or other devices

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## Facilitating Factors

Despite the challenges facing mCommerce today, participants agreed that facilitating factors include ease of adoption by young people and security authentication processes. The group talked about how NTT DoCoMo proved that enticing the youth market is an important first step for mCommerce evolution. In Japan, the youth-based consumer market is less price sensitive than adult consumers are, and the youth market also embraces change. Japan's pre-pay models, attractive to young people who lack the credit history required for most wireless-service plans, facilitated more rapid adoption within that market. As a result, young people became the early adopters of i-mode in Japan. Children showed the feature-rich handsets to their parents, offering adults an opportunity to use the devices in the comfort of their own homes. This non-threatening introduction of technology by children to their parents became the first step toward winning Japan's enterprise market.

Participants found it likely that the U.S. will follow a similar mCommerce market evolution. "The consumer market will drive enterprise mCommerce adoption," Steiner told participants. As that market explodes, businesses will develop more compelling and robust content, services and search-engine applications. These value-added offerings will increase carrier revenue per individual user. Strong mCommerce authentication must provide the security necessary for confident adoption, so that if a device is lost the finder cannot access and utilize the owner's personal, business or financial/payment information. Once this authentication standard arrives, network interoperability will be a key driver for transparent connections within retail and service establishments.

## Short, Medium and Long-Term mCommerce Options

Participants in the Think Tank Session discussed the feasibility of introducing enterprise mCommerce to U.S. corporations within the next 12 months to 5 years. They also noted that mCommerce evolution would begin in the consumer market and then grow to the enterprise market during that time. Framed in a discussion of the development efforts that they themselves would fund, the group agreed that a consumer-based application, rather than an enterprise application, would be the first widely adopted mCommerce application within the next 12 to 18 months. Participants specifically named wireless gambling, auction tracking and P2P gaming applications as those with the greatest initial market promise. Gaming would be a powerful lure to the increasingly important youth market, and a profitable one at that. Datamonitor predicts that in 2005 the market for wireless games will be worth \$6 billion in the U.S. and Western Europe.<sup>6</sup>

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Social-content messaging, based upon Short Message Service (SMS), a service for sending messages of up to 160 characters to mobile phones that use GSM communication, scored high among the group as another potential mCommerce application leader. Spurred by a quest for identity and belonging among Internet users, participants noted the rise of online communities and extrapolated

<sup>6</sup>Datamonitor. The Future of Wireless Gaming. New York, NY: Datamonitor, September 2000

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that success to the wireless arena. Bringing users a sense of identity and belonging will promote consumer-based wireless adoption, participants suggested. "Never underestimate a group of people in search of an identity," commented Patric Carlsson of Research, Strategy & Business.

After achieving acceptance and adoption in the consumer sector, mCommerce technology could transfer to the enterprise arena within the next 18 to 36 months. Participants believed that mobile-business efficiency, combined with a measurable return on investment, could be the application mCommerce requires for widespread enterprise adoption. SMS devices that track accounting, billing, payment and other business information services for travelling professionals would be a strong lure for enterprise adoption. Participants especially appreciated the fact that sharing an SMS stream with a carrier provides a valid revenue model for both wireless carriers and ASPs. Other potential leading applications during this time period include instant-messaging-based sales force automation (SFA) and customer relationship management (CRM).

Participants suggested two potential mCommerce applications to appear within the next 36 to 60 months, one software-based and the other hardware-based. Ubiquitous and mobile collaborative processing would be a huge boon to enterprises, as it would enable each participant to monetize their own existing mobile computing structure in a time-share manner. Participants also named mobile-storage devices that could bridge the gap between the current lack of storage and real broadband as a strong future contender. The lack of increased, mobile, plug-and-play storage devices is already a hindrance within the mobile-device market. Users could not only cache their files transparently on an online/offline device, but also print the information via an infrared interface. Such mobile storage could be an especially useful add-on for digital cameras.

## **Conclusion**

The group concluded that consumer wireless market must be the first target in winning mCommerce customers. As children teach their parents, adults will become more enthusiastic about wireless devices, and this enthusiasm will carry over into the enterprise arena. Although the U.S. wireless market is more fragmented than Japan's, the introduction of i-mode in Seattle by AT&T Wireless will likely call other carriers to mCommerce action. Once consumers are comfortable using initial mCommerce services, enterprises will begin seriously considering wireless mCommerce for advancing their businesses. The most important first step is overcoming the natural human fear of change. A comfortable introduction of the devices to adults, paired with increased alluring content and applications, will help raise mCommerce from the consumer to the enterprise realm.

## **Suggestions for Future Think Tank Sessions**

Participants requested that future mCommerce Think Tank Sessions pertain to:

- Potential mCommerce opportunities in a longer, more in-depth forum.
- Location-based services.
- Voice-enabled enterprise applications.
- Mobile Virtual Network Operators (MVNOs) and the infrastructure of outsourced hosting and value-added services.

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## **Appendix: Participant-Brainstormed Applications**

In an active and lively brainstorming session, the participants came up with their best ideas about where mCommerce applications can be used in the future. The following is an extensive list of their suggestions.

### **ENTERPRISE APPLICATIONS**

- Remote document printing
- Transmission of logistics and delivery information from a mobile device to a home base
- Customer Relationship Management (CRM)
- Short Message Service (SMS)
- Instant Messaging (IM)
- Procurement
- Enterprise Resource Planning (ERP)
- Public transportation schedules
- Peer-to-Peer business applications
- Application code delivered with an event so that the recipient can act on the event (code could be URL or JAVA)
- Server/support applications for field workforce, i.e. Repairmen
- Telemetric, i.e. Electric meters/industrial maintenance/vending machine inventory
- Translation services
- Workflow, i.e. PC to mobile address book/email
- Device-to-network management
- Security, i.e. Burglar alarm alert reported via mobile network to mobile phone
- Ask-the-expert advice services for complex transactions
- Two way instant relay (IR)

### **SALES/MARKETING/ADVERTISING APPLICATIONS**

- Sales force automation (SFA)
- Workflow status updates for the mobile workforce
- Subscribed P2P applications for the sales force. My

### **Wireless SAP**

- Mobile PowerPoint presentation applications, i.e. Pull the file off an enterprise system and deliver it through a projector.
- Sales presentations in the field that can change depending on the customer's expectations. ("I want to see the OTHER product, not this one...")
- Wireless marketing and communication capabilities
- Interactive advertising
- Coupons, i.e. Brand sends coupons to the wireless device

### **INFRASTRUCTURE APPLICATIONS**

- Platforms that convert fixed mobile applications to wireless applications
- Collaborative tools
- Voice-activated command and delivery
- Security of mobile devices and communications
- Accounting, billing and payment systems
- Two-way communications
- Expert/Advisor applications
- Building/Entry security
- Protocol gateway to create P2P
- "Technology glues" that connect the applications to the technology structure
- Digital signatures
- Mobile ID encryption Seti @Home/Bluetooth/Gnutella
- Mission-critical applications that can be controlled remotely through mobile devices i.e. IT management
- Security/Device user authentication/secure transactions
- Data encryption
- WLAN roaming/authentication and management
- Context-based business information services
- Non-human, device-to-device transactions
- Communication over TCP/IP i.e. Voice over IP
- Network mediation middleware. Assist devices of all types to connect to networks of all types.

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## LIFESTYLE APPLICATIONS

- Baby mobile badge to track him in crowds at airports, parks, etc.
- Personal "follow-me" security
- Networked vending machines
- Mobile, value-added services/media based on lifestyle
- Retail and grocery purchases
- Consumer interaction with business applications, i.e. information on products, etc.
- Determining location of consumer goods
- Mass-transportation schedules
- Smartcards
- Seamless work/personal applications. PDA combined with the phone, i.e. Nokia Communicator.
- Location awareness of resources and further information. Personal knowledge.
- Personalized consumer information (expert advisory)
- Financial services
- Travel management
- Mobile psychological services
- Home care/health monitoring/medication
- Home security/home appliances/authentication
- Public service applications, i.e. Paying parking fees and traffic
- Text/messages converted to voice, i.e. For the visually impaired
- Local check for product available and price, i.e. Where is diesel fuel and its price
- Streaming, i.e. Music
- Disneyland wireless fast pass to main attractions
- Multimedia, i.e. Short-term for audio and gaming; Mid-term for voice
- Finding goods, i.e. Out of stock in store
- Translation services/signs/ads, etc., while travelling

## ENTERTAINMENT APPLICATIONS

- Betting/Gambling
- Games — Location-based role playing

## AUTOMOTIVE APPLICATIONS

- Automotive/OnStar
- Voice-delivered navigation
- Fast Pass commute tracking

*These proceedings were written by Lynn Benson of Motormouth Marketing.*