# COMMERCE GOES MOBILE:
A Service Provider's guide to navigating opportunity, hype and reality

Executive summary

Mobile commerce (m-commerce) will radically improve how we shop and how we pay. The opportunity for adoption by consumers is enormous – but to date, the hype has outstripped the capability of organizations seeking to capitalize on this opportunity to deliver. The reality is that innovative organizations can drive adoption today by hiding technology complexity, and delivering convenient, secure and personalized buyer – seller interaction across all stages of a transaction.

The mobile Internet – the convergence of wireless data and Internet protocol (IP) – represents a huge opportunity and m-commerce represents the means to monetise it.

Historically, retail transactions between a business and its customers have been conducted face-to-face within a bricks-and-mortar store, or if not in person then over the telephone.
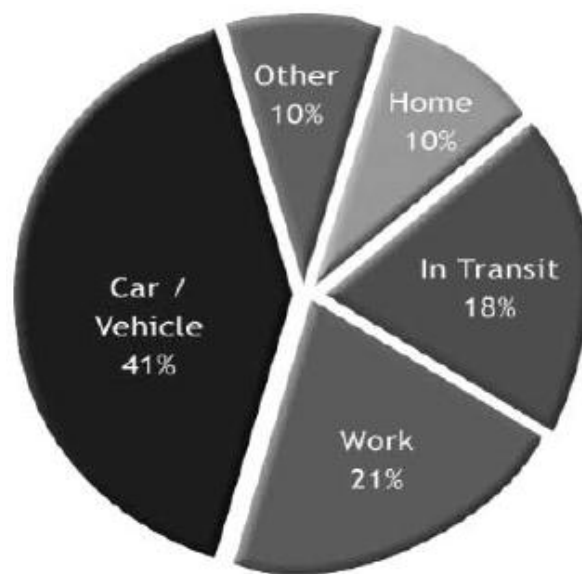
Use of Mobile According to Place of Use

Today, the rapid adoption of personal computers (PC) and wireless data devices, coupled with the growing ubiquity of the Internet as a medium through which to conduct business, is significantly changing the nature of the transactions and payments upon which commerce is built.

Based on a value proposition of unparalleled convenience, the mobile Internet is set to surpass even the wired Internet as a medium over which buyers and sellers transact.

Disruptive technologies seldom deliver on their promise as quickly as the market expects them to, but when adoption does set-in, it is always much larger and ramps at a much steeper rate than anticipated. The Internet reached its point of inflection in the mid-1990s, and forecasts indicate that the mobile Internet will ramp quickly in the months and years ahead. Around the world, billions are already being spent on improving the mobile platform and underlying wireless data infrastructure. The result is that we are rapidly moving beyond mere content.

Transactions are the next wave of the mobile Internet and for any organization having a stake in facilitating buyer – seller interaction the time to act is now. While there is widespread acknowledgement of the tremendous market opportunity m-commerce represents, the confusion and doubts surrounding m-commerce today are not unlike those that afflicted the fixed-line Internet in its early years.

Similar to early mobile subscribers, fixed-line users in 1995 had to be satisfied with simple applications and slow connection speeds. Despite its uneven start, the Internet now enjoys worldwide adoption. According to International Data Corporation (IDC), nearly 340 million people are using the World Wide Web today and generated more than $270 billion in electronic commerce revenues in 2000 – twice what was forecast only three years ago.

Meanwhile, leading strategy firm McKinsey forecasts global m-commerce transaction revenue to exceed $200 billion by 2005. Not surprisingly, a significant number of intermediaries are now emerging to enable buyers and sellers to complete m-commerce transactions with each other in the wireless world. Key to making these m-commerce transactions successfully enhance the relationship between buyer and seller will be to ensure that the underlying facilitating technology remains invisible to both parties.

For m-commerce service providers, selecting, testing, and refining an m-commerce offering today is critical to competitive advantage as adoption rates climb steeply. To succeed, the efforts of the service provider need to be squarely focused on delivering value-added m-commerce services that enhance buyer – seller interaction resulting in increased dollar value and volume of transactions. Consequently, the underlying m-commerce service delivery platform must

comprise a highly scalable and secure wireless transaction enabling technology and modular delivery solution – one that provides the ability to continually add and evolve new services and support new devices and technologies that optimise service delivery.

By adopting and implementing such a platform, service providers can focus on executing their business model rather than continually struggling with technology challenges.

The telephone has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no use to us.
Western Union internal memo. 1876

M-commerce – anywhere, anytime convenience
Similar to making a phone call not too long ago, until recently the Internet has only been accessible through a fixed, landline connection. Today, the Internet is quickly becoming pervasive across a broad range of wired and wireless devices, and consumers are becoming increasingly mobile.

Consequently, there is widespread agreement that consumers will utilize multiple devices through which to conduct electronic commerce transactions. Forrester Research forecasts that by 2003, 45 percent of online users will connect online using more than one Internet-enabled device – including PCs, digital mobile phones, personal digital assistants (PDA), game consoles, set-top boxes, Web ATMs, and in-car systems, to name a few.

The result is the escalating growth of multi-channel electronic commerce to facilitate transactions between buyers and sellers. According to a recent Jupiter Research survey, 80 percent of the online population is now either buying or researching products on the Internet and the proportion of online users who shop continues to grow. As online commerce solutions become separate from the desktop, new ways for buyers and sellers to participate in the electronic exchange of value are evolving rapidly.

Innovative organizations are moving quickly to experiment, learn, and realize the value of this unique wireless business channel that opens doors for new application and service offerings beyond either the desktop or retail store experience. They have used it to augment their current physical presence, and they have also introduced new services that exploit the distinctive opportunities it presents. Canada's Bank of Montreal is an example of an organization that was quick to

realize and leverage the advantages of the mobile Internet. In May 1999 it launched Veev, a service providing secure personal wireless banking, brokerage, information, lifestyle and shopping services on the customer's choice of mobile devices. Today, the Veev service is available in French and English, coast to coast on seven leading wireless carriers. Veev customers, using digital mobile phones and pagers, can access the following services:

- ***Banking***– view account balances, transfer money between accounts, pay bills, order checks
- ***Brokerage***– set-up watch lists, look-up stock quotes, trade stocks
- ***Shopping***– scroll through Canadian bricks-and-clicks retailer Indigo's collection of bestseller lists, and purchase books using express "buy" functionality
- ***Lifestyle***– access content such as news, weather, horoscopes, Air Miles loyalty program etc

Bank of Montreal is capitalizing on its nearly two years of experience in managing the Veev service to become a service provider for smaller financial institutions seeking to realize the value of providing their customers mobile banking, brokerage and commerce offerings.

Banks and brokerages are correct in their belief that mobility will revolutionize the way consumers will conduct their financial business. *Forrester Research Inc., 2000*

With both organizations and consumers increasingly moving online, m-commerce is poised to create a whole new buying and selling marketplace. It will generate new markets where transactions are completed from the office, the home, the car, or from wherever the consumer happens to be. They will utilize a wide-range of devices based on convenience, and increasingly that device will be an "always on", "always with me", personal wireless device.

Consequently, m-commerce solutions will cover a broad range of applications, including, for example, those that will enable people to order airline and movie tickets, make a restaurant reservation and receive order confirmations and status anywhere, anytime. According to IDC, there will be more than one billion mobile Internet devices globally by end of 2003. In Europe, mobile phones and PDAs will be nine times more prevalent than PCs and set-top boxes. In the U.S., where mobile Internet penetration currently lags behind the rest of the world, already more than seven percent of households have a member accessing the Internet using

a mobile phone, four percent via a PDA, and another 11 percent have someone planning to acquire and use a wireless Internet-enabled device this year.

With "Internet-ready" mobile phones shipping at a ratio of three mobile phones for every PC, the number of mobile Internet access points is growing rapidly. These new IP-connected mobile devices place the power of the Internet in the hand of the consumer, providing ubiquitous mobile access to information, content, and transactions. As a result, the potential for widespread consumer adoption is enormous. Alerts and notifications can be received, or services requested, wherever and whenever the mobile consumer chooses – leading to new service and business model opportunities for the seller.

With the mobile Internet and its content becoming the everyday source of information, entertainment, and services for millions around the globe, m-commerce is set to explode with significant new value propositions based on time, location and preferences.

For value added service providers seeking to tap this market they will require an end-to-end solution that delivers simple yet compelling m-commerce applications while leveraging existing payment networks and systems and enabling secure mobile purchasing.

How manifesting m-commerce value facilitates adoption
To deliver compelling value for both buyers and sellers, service providers must capitalize on the inherent differences that distinguish m-commerce.

New service model opportunities introduced by m-commerce mean it will be insufficient for service providers to simply meet the current benchmark of the landline Internet experience. Consumers will expect more from their m-commerce provider, meaning that constant innovation and the introduction of new services will be necessary to compete in the wireless world. In short, this is not the landline Internet transferred to a cell phone.

M-commerce services that increase convenience for the consumer and provide top and bottom line benefits for the merchant will meet with success. Consumers will be quick to leverage the new value proposition of convenient, personalized, context-based services resulting from the ongoing revolution in mobile technologies. The ability to access commerce services from a wireless Internet device brings together the physical and online worlds, while freeing consumers from the inherent constraints of their tethered PC.

Initially, successful m-commerce solutions will complement and extend the PC-channel shopping and commerce experience onto wireless devices. Exploiting rapidly evolving mobile technology capabilities such as messaging and actionable alerts, these m-commerce solutions will be simple, yet compelling enough to be convenient, add consumer value, drive adoption and result in m-commerce revenues for both the seller and service provider. For their part, sellers are increasingly eager to expand their reach to qualified customers, complete the transaction, and get paid – regardless of Internet-enabled channel. They are seeking to integrate bricks and clicks, leverage their brands and existing consumer relationships, and to deliver a product or service to as wide a range of m-commerce markets as possible without worrying about security, communications channel, or technology limitations. From the seller's perspective, securely interacting with customers anywhere, anytime, is a valuable advantage.

On the technology front, the rapid proliferation of many new forms of mobile Internet devices is providing new opportunities for commerce transactions. Increasingly, these handheld devices will be designed for m-commerce transactions, and m-commerce is a natural extension and complement to the current Internet shopping experience that has seen rapid growth on the PC channel.

As new technology capabilities develop, m-commerce solutions must quickly evolve to provide context and proximity-based services, making dramatic new value propositions and service offerings available. Location-based solutions will be important to the success of m-commerce over the longer term, enhancing value by enabling more relevant transactions and services in a fashion complementary to other online and offline offerings.

According to one of our recent report *Mobile Location Services and Technologies*, the global subscriber base for mobile location services is forecast to exceed 680 million users by 2006, representing 70 percent of mobile Internet users. To successfully leverage this massive market opportunity, service providers must leverage robust, future-proofed m-commerce platform technologies that enable the delivery of value added m-commerce services today, while at the same time providing scalability and flexibility to continually exploit the unique advantages of the wireless channel and drive m-commerce adoption.

Security and choice of payments drive transactions online
The number of m-commerce transactions will grow dramatically over the next five years, fuelled by the increasing global uptake of e-commerce coupled with

consumers' rising demand for expanded access to financial, commerce and lifestyle services.

There were 21.6 million m-commerce users in 2000, equating to a penetration rate of three percent of the wireless population worldwide. By 2005, that number is expected to reach 499.3 million worldwide users, equalling a penetration rate of 32 percent. Payments are a significant part of an m-commerce transaction, and without the ability to securely complete the payment portion online a significant degree of the value and convenience that buyers are seeking is negated.

As the m-commerce market grows the need for fast, simple, and reliable Internet-based payment completion will increase. Unlike previous cash-replacement solutions, mobile devices are already deployed and used by millions around the globe, making the ability to use them to complete secure payment transactions more compelling. With the method of payment becoming increasingly electronic in nature, the ability to access easy to use, personalized payment services to complete a mobile purchase is of increasingly high importance to consumers. They are already accustomed to small-screen displays (POS, ATM, etc.) for completing retail transactions, and will appreciate the convenience provided by an always-on, always-connected mobile device that let's them complete payments online.

Consumers will also want to choose how to pay and in addition to secure, simple, "express buy" functionality, the m-commerce platform must continually evolve to provide multiple payment options including credit, debit and new electronic payment forms such as micro payments that facilitate m-commerce transactions. This functionality must be available across m-commerce applications and accessible from any mobile device.

Naturally consumers are concerned about security when completing a payment online. They are less likely to access m-commerce services if their security expectations are not met – especially when the information being transferred is financially or personally sensitive.

Jupiter Research reports that better payment and personal information security would drive 62 percent of non-shoppers and 41 percent of buyers to purchase or purchase more over the Internet.

Financial institutions and network operators already have extensive experience managing sensitive information and typically enjoy high levels of customer trust. As a result, they have both a unique opportunity and a significant role to play in

delivering secure and trusted m-commerce services. For the m-commerce service provider, enabling secure, personalized payment completion will be critical to successfully driving an increasing volume of transactions online.

As the dollar value and volume of transactions increases and the m-commerce market evolves, buyer authentication will become an even more important issue for sellers seeking to minimize fraud. The recent passing of digital signature legislation in the United States, Europe, and Singapore is leading the way for legally binding digital contracts and the Internet equivalent of traditional hand-written signatures. This, in turn, opens the door for service providers to launch new wireless services supporting a wide range of higher value m-commerce transactions. Ensuring strong authentication and non-repudiation through digital signatures – two key elements to taking the risk out of mobile transactions – necessitates that the underlying m-commerce platform be robust and open enough to support a wide range of public key infrastructures (PKI).

Integrating this support at the application level enables the flexible implementation of policies governing which transactions must be digitally signed by the buyer, while lower risk transactions can undergo a fast-tracked completion.

Building a strategic m-commerce services platform
Just as shopping malls revolutionized the retail bricks-and-mortar world, m-commerce will revolutionize the way that all commerce is conducted in the future.

The Internet has caused a shift in power to consumers, and increasingly, they value time and control when accessing electronic services. The desire of consumers to enhance their productivity and personal lives, combined with the growth of mobility and the Internet, is giving rise to what has been dubbed the *Mobile Information Society*.

Digitalisation, the Internet, and mobility are the driving forces behind this societal trend. Digitalisation provides access to content and services in a very rich electronic format. The ubiquity of IP as a standard has resulted in easy-to-use access to services and applications, and mobility has led to an anywhere, anytime, "take-it-with-you" access paradigm. The sweet spot for the delivery of services to this emerging consumer populace lies at the intersection of personalization, immediacy, and location.

As the *Mobile Information Society* grows, consumers will be able to choose from an increasingly broad range of mobile platform solutions with which to access the m-commerce marketplace. These mobile platforms are defined by the tight integration of user interface, device form factor, data network and elements such as positioning infrastructure or alternate connectivity solutions such as Bluetooth.

The proliferation of diverse access choices, the complexity of the connectivity required to complete transactions, the growing diversity of security mechanisms, and the lack of standards make hitting the sweet spot and the delivery of compelling m-commerce services more difficult. Hence, the goal of the service provider needs to be achieving a strategic m-commerce services platform that meets these challenges. M-commerce services should stimulate buyers by making available context-based services, central and easily accessible sources of product and service information and shopping agents. Buyers should be directed to buy based on their preferences and interests, have the ability to find the desired product
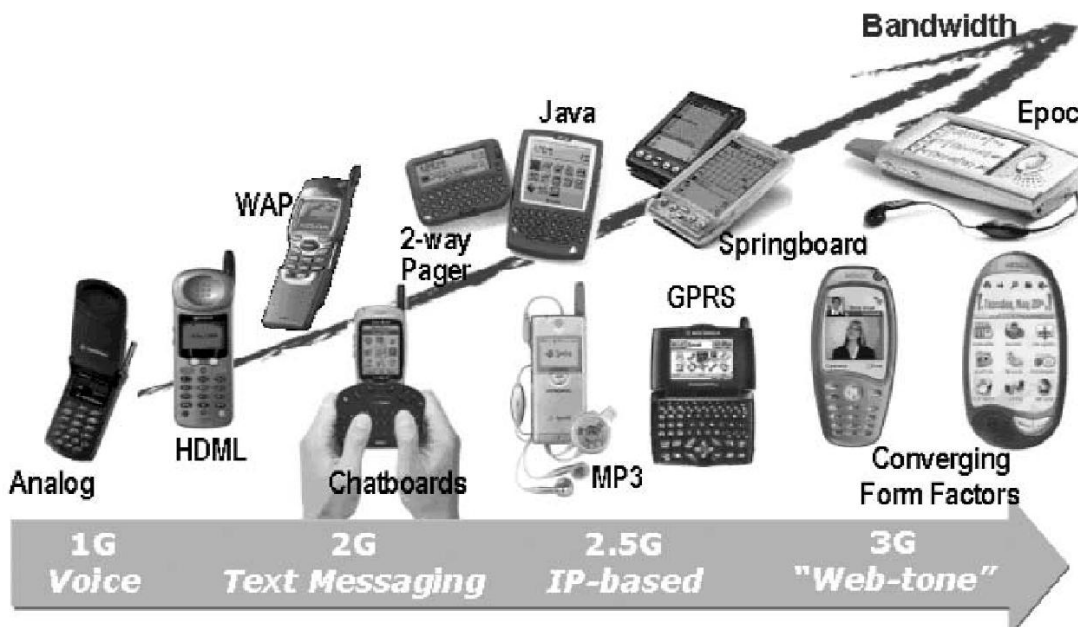
Continually improving access to the m-commerce marketplace

or service and to "buy now" regardless of where they are, and what device they are using. These services should also make it easy for buyers to pay using both existing and emerging payment products and infrastructure. Finally, buyers should be able to immediately receive electronic goods or services, such as tickets or entertainment receipts, as part of the fulfilment process.

Sellers must also benefit from m-commerce services that enable them to initiate a transaction and ensure that it is finalized – maximizing transaction volumes and expanding their service delivery. They should be able to target messages, special sales promotions, and loyalty programs to known buyers based on preferences and habits. They should be able to identify the risk involved in selling to specific buyers, and charge or reject accordingly. Ultimately, being able to confirm authenticated buyers through appropriate security measures and having customers digitally sign transactions will allow sellers to reduce fraud and charge-backs that affect their profitability. As part of the fulfilment process, sellers should have the tools to enable the proper order management and shipping notification to ensure that a transaction has been completed.

Building a strategic m-commerce services platform that consistently delivers compelling value to buyers and sellers, and enables secure payment transactions across a broad range of mobile platforms is not trivial. It requires a robust and scalable technology infrastructure, personalized application solutions, flexible and extensible open connectivity and secure payment services. The platform must enable sellers of products and services to meet buyer needs and will have to provide a dependable and ubiquitous m-commerce experience for both parties. Most importantly, it must be available today.

Why the time to act is now
While the opportunities m-commerce presents are compelling, one of the most significant challenges currently facing businesses wanting to enter the m-commerce space is the lack of clear business models. Regardless, these organizations know that they can't afford to wait until the m-commerce market is developed and offerings have been evaluated, tested, and launched by their competitors. They have to enter the emerging m-commerce market now to see where their own unique applications can succeed.

Consequently, many companies have made the commitment to m-commerce and are looking at ways to profit in this marketplace. They are going live, testing

industry leading business models and gaining a competitive edge that their competitors will find difficult to overcome.

For m-commerce services providers, m-commerce business model must be designed to maximize transactions by enabling delivery of personalized value-added services to buyers and sellers throughout the commerce transaction chain. It is also advisable to have an open standards based model intended to protect and enhance investment in existing infrastructure and interoperate with emerging technologies.

Behind this model a strategy to provide a highly scalable end-to-end solution that delivers simple yet compelling m-commerce applications for all stages of a transaction, enables secure purchasing from any mobile device, and leverages existing and emerging payment networks and systems must be deployed.

At the heart of any m-commerce business model is the middleware *Mobile Commerce Services Platform* (MSP).

The MSP must comprise of a complete technology solution for businesses and commerce intermediaries. Built on a highly secure, scalable, adaptable technology platform, MSP should facilitate simple and consistent buyer – seller interaction at all points in a commerce transaction making it easy for consumers to find, buy and pay for products and services from any mobile device. MSP must enable service providers and businesses to deliver to market complete m-commerce services.

Designed to stimulate the consumer's decision-making process and drive transaction completion, MSP may incorporate an extensible suite of m-commerce shopping applications which:

- Leverage the current online shopping experience into the mobile world, providing sellers the ability to extend their value proposition and relationship with buyers through personalized and timely push-based services.
- Enable context-based services to buyers by integrating offline stimuli such as a printed catalogue or advertising promotion with the mobile Internet, providing the capability for the buyer to pull an offer to their mobile device at "point-of-exposure" and complete a purchase.
- Facilitate quick find-and-buy mobile shopping by providing the buyer with convenient access to product and service information that enhances decision-making and leads to a purchase.

- Ensure secure purchasing anytime, anywhere, making it easy and convenient for buyers to complete a transaction and for sellers to get paid.

Capitalizing on the inherent differences that distinguish m-commerce services, these mobile application solutions provide the buyer with convenient, personalized and context-based services that drive them to make a buy decision. These push and pull m-commerce applications, all of which use the service providers mobile portal to control the transaction routing, offer a new and unique way for buyers and sellers to interact.

The result is that customers have more opportunities to buy, while vendors have more opportunities to sell. Simplifying the shopping experience creates more convenience for the buyer while encouraging high transaction volumes and additional revenues for the seller.

Integration of services and products throughout the transaction chain strengthens the role of the service provider in the mobile commerce space, and maximizes the dollar value and volume of transactions between buyers and sellers.

Eliminating time-to-market risk
For organizations seeking to enter the fray, the challenge today is to make the strategic decisions and establish the partnerships that will lead to success in the burgeoning m-commerce marketplace. In many previous emerging markets standard products and concepts were not available and businesses often had to build solutions internally to enable them to leverage new market opportunities.

In contrast to this "go it alone" approach, today's businesses and service providers must secure the right partners to ensure that they eliminate the serious time to market risks that can lead to disaster. While making the right partnering choice may seem overwhelming, selection should be based on ability to provide the competitive differentiators needed to establish a successful m-commerce offering.

Globally, we have worked with service providers in conceptualising services, making road maps, technology identification and search of a strategic partner. We assist service providers in their m-commerce business initiatives by significantly reducing their time-to-market risk for compelling m-commerce solutions.

Eliminating the need for extensive customized solutions along with their developmental complexity, and the uncertainty of whether those solutions will be compatible with the technologies of tomorrow, our expertise are critical to achieve highly secure, scalable, adaptable end-to-end solutions that can be deployed to market in less than a month.

Service providers benefit from the scale and scope leverage that standardized products bring while still maintaining the ability to quickly adapt for specific business contexts. Consequently, m-commerce is no longer a daunting challenge, but an exciting opportunity for businesses to compete in new markets and attract new customers and revenues. Over the next two years, the number and variety of m-commerce transactions will increase dramatically as buyers expect more convenience and flexibility to initiate and complete sales transactions anytime, anywhere.

As a result, we are committed to significant ongoing technology development and other initiatives to deliver new solutions that further enhance the m-commerce transaction chain. One important initiative is to drive the creation of new standards and innovation in the mobile space. We are active participants in standards bodies such as the Global Mobile Commerce Interoperability Group (GMCIG) www.gmcig.org, the Wireless Application Protocol (WAP) Forum www.wapforum.org, the Radicchio secure wireless e-commerce & PKI forum www.radicchio.org, and the mobile electronic transactions initiative (MeT), coupled with the development of patented technology for mobile purchasing and secure payment, and alliances with leading payment organizations such as MasterCard and Visa, ensure that our capabilities will continue to lead the market in providing m-commerce consulting solutions that enables its clients to "monetise the mobile Internet".

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