

U-Commerce

Leading the New World of Payments



A White Paper by
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THE NEW WORLD OF U-COMMERCE

Electronic commerce has hit the business world like a tsunami over the past several years, first with a wave of excitement around business-to-consumer (B2C), and then business-to-business (B2B) and person-to-person (P2P). Today, the buzz is about mobile commerce and the opportunities opened up by mobile phones and handheld computers that connect to the Internet. What will be next?

Will the next wave be “t-commerce” – transactions conducted through a television set-top box? Perhaps it will be voice commerce, or “v-commerce” – transactions initiated through voice commands. Or “p-commerce” – proximity commerce – the beaming of value from one device to another through infrared or Bluetooth technology.

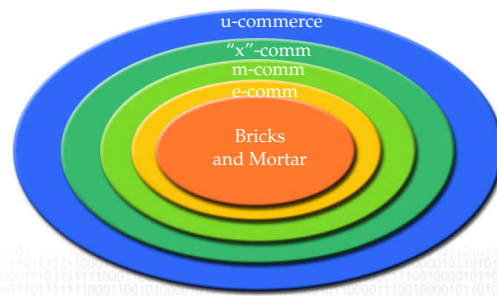
All of these channels, in fact, already exist. And despite the current shakeout in e-commerce – a necessary turn of events given the sector’s hypergrowth – these new business channels are here to stay. However, underneath the surface of this “channel du jour” phenomenon, something far more profound and dynamic is happening. This explosion of new commerce channels and devices is creating something totally new – an environment where buyers and sellers will literally be able to conduct commerce anytime, anywhere and any way they like. And for both buyers and sellers, this new environment provides more choice, more convenience, and more control over how they do business with one another. We call this integrating phenomenon “u-commerce” or universal, ubiquitous commerce.

U-commerce is a dynamic convergence of the physical and the digital, the interface of brick-and-mortar commerce with Web-based wireless and other next-generation technologies in ways that will create new levels of convenience and value for buyers and sellers. It is about the integration of more value-added information into each transaction, in ways that benefit both consumers and businesses. Ultimately, it is about minimizing friction in the commerce chain, creating new efficiencies and higher levels of productivity.

The creation of the payment card industry several decades ago was based on these very principles – convenience, ubiquity and financial control. Since then, the number of Visa cards issued worldwide has grown to more than 1 billion, accepted at approximately 22 million merchants worldwide, and processing nearly US\$2 trillion in payments each year. Visa members now issue thousands of different Visa-branded products worldwide. This dynamic interaction of payment cards and acceptance points, in partnership with the distribution and marketing resources of Visa’s 21,000 members, is extremely powerful, driving more than a decade of double-digit growth in Visa’s global sales volume.

This growth was achieved through point-of-sale (POS) sites equipped with hard-wired acceptance terminals. While the POS model continued to evolve with innovations such as debit cards, chip cards, and faster connections and transaction approvals, it is the rise of the Internet that really set things into motion. Around this core of point-of-sale transactions, the Internet is driving the creation of new channels that extend the scope and scale of commerce to e-commerce, then m-commerce and other new channels. We will suggest in this paper that integrating these channels and innovating new products – as well as continuing to add more convenience and functionality to point-of-sale transactions – will create the new world of u-commerce.

U-commerce: The Big Bang Theory



Point-of-sale transactions at physical merchant sites remain at the core of the u-commerce vision for payments. The growth of payment functions and access points rapidly expands the universe of electronic payments beyond that core.

In some respects, u-commerce is already here, only in an embryonic stage. We would argue that it began in the 1980s, when it became possible to use a payment card, for many practical purposes, anywhere in the world.

It certainly has been part of Visa's vision for electronic payments since then. In 1980, speaking at a U.S. banking conference, Visa's first CEO, Dee Hock, imagined what the world might look like in 2000.

"Most payment transactions will be originated electronically by individuals, either at home, at remote locations, or by the clerks which serve them at point-of-sale," Hock said. "*It will require communications networks reaching out to wherever a customer chooses to be.*"

That vision of global utility and ubiquity is the driver of u-commerce. It is about extending that value proposition from POS to new payment products and channels. Point-of-sale becomes points-of-convenience . . . or points-of-service. In the world of u-commerce, the focal point is the customer – providing them with what they need, when they need it and how they want it. To paraphrase Dee Hock, it is about making payments possible *wherever a customer chooses to be*.

U-COMMERCE NOW: EARLY INDICATORS

If the vision of u-commerce in the payment sector is about making payment services more ubiquitous, convenient and value-added, here are some examples of how that vision is taking shape today:

- In January 2001, Palm, Visa, Ingenico and VeriFone partnered in the creation of a new payment method leveraging the Palm OS, infrared technology, and the Visa payment function. The Palm is loaded with Visa credit and/or debit account information, which can be beamed to a terminal at a store to pay for goods or services. When the transaction is approved, a digital receipt is beamed back to the Palm, which can later be hot-synced with an expense report or a personal financial management program.
- Visa U.S.A. is exploring new Internet-enabled point-of-sale appliances that will be connected to a

service portal for merchants, integrating customized payment and value-added non-payment services. Through this Web-based POS service, merchants will be able to broaden customer relationships while lowering costs. Visa members will be able to increase brand exposure and generate fees from services that cannot be implemented today. And consumer expectations for a personalized, integrated and efficient shopping experience will be met.

- In a new pilot with Nokia in Australia, a Visa cardholder will be able to shop on a WAP-enabled mobile phone and pay with just the push of a button, made possible because billing and shipping information is stored on a server-based net wallet.
- In Asia-Pacific, Coca-Cola recently began a pilot using Visa Distribution, a solution that offloads the accounts receivable process for vendor payments, allowing Coca-Cola distributors in the field to accept payment for the products they deliver directly over their Nokia phones. The solution is simple, mobile, convenient, secure, and integrates value-added information.
- In California, Illinois and other states in the U.S., transit agencies are distributing electronic bridge toll devices (which leverage credit and debit payment functions) and have the ability to be used in other “proximity” environments, such as service stations or fast-food drive-throughs.

Individually, these are all powerful and innovative examples of new ways to pay – and new ways to *leverage* payments. But they are just early steps in realizing the full potential of u-commerce.

U-commerce, by definition, implies the continued existence of traditional payment forms such as cash and checks, which may always exist. But in the u-commerce environment, cash and checks will become increasingly marginalized because they provide diminished value and utility.

It’s also important to note that in the world of u-commerce, “traditional” credit and debit card payments (face-to-face transactions at point-of-sale) will always play a dominant

role. There is still huge growth potential for traditional credit and debit products worldwide, particularly in emerging markets. Extending the scope and scale of these core payment products, in addition to the development of new products and channels, is part of the u-commerce growth equation.

We believe there are tremendous benefits from u-commerce for individual buyers and sellers. But we believe there are also significant macroeconomic benefits. Payments are the lifeblood of economies. By facilitating the exchange of goods and services, they enable the different components of an economy to interact with one another. Removing friction from this process – which u-commerce is all about – can help economies to operate more fluidly and efficiently.

MARKET DRIVERS

U-commerce plays a key role in the long-term vision for the payments industry, but a sustainable one. It is built on several global phenomena that will only accelerate as we go forward.

- **The Pervasiveness of Technology** – History has clearly demonstrated that technology, properly applied, drives efficiencies, productivity, and value. As technology becomes more pervasive – think of the explosive growth of nanotechnology as well as ongoing capital investments in technology at the enterprise level – there is a larger platform on which to leverage innovation and new applications.
- **The Growth of Wireless** – One of the fastest-growing distributed bases of new technology is wireless, with up to one billion mobile phones alone expected to be in use by 2003. As wireless networks have expanded around the globe, mobile phone usage and new applications have exploded. One of the most successful new applications has been DoCoMo's iMode service in Japan, which allows its 20 million subscribers to download music, shop and send instant messages. Americans and Europeans are also excited by the possibilities. In a recent survey conducted by Accenture, 40 percent of wireless phone users in the U.S. and Europe found the idea of shopping with their phones an appealing concept. The potential of

wireless isn't limited to consumer applications. In some developing countries, for example, ATMs, one of the signal innovations of the retail banking industry, are now running off wireless GSM networks.

- **Increasing Bandwidth and Connectivity –** Bandwidth has been doubling every nine months, or roughly at twice the growth rate of computing power. It is not hard to imagine a world where every electronic device has its own Internet connection and interactivity is possible in appliances as ubiquitous as televisions, medicine cabinets and refrigerators. Increasing bandwidth will lead to the creation of what is being called the "evernet," where billions of devices will be connected to the hyperspeed, broadband, multiformat Web. In the future, the Internet will always be "on."

These are very powerful and far-reaching phenomena that can clearly drive all sorts of business models (as they did in the dot-com explosion of the late 90s). But to paraphrase Peter Drucker, every great idea eventually degenerates into work. Realizing the full vision of u-commerce – commerce that is universal, seamless, and secure – will require a great deal of effort in a number of key areas.

THE BUILDING BLOCKS OF U-COMMERCE

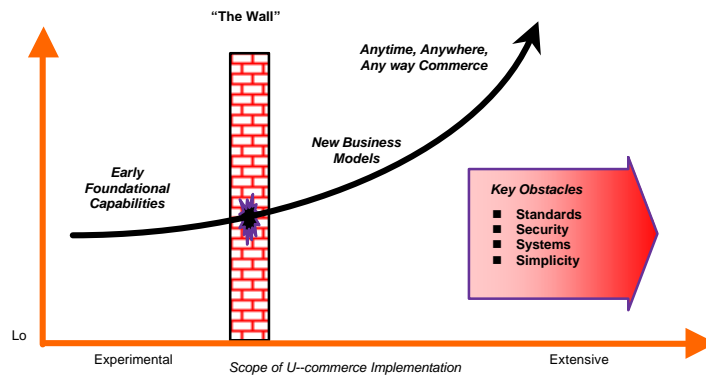
Let's consider a potential u-commerce scenario: a traveling business executive decides to get something to eat and – using her wireless handheld computer – checks out local restaurants, gets directions to the restaurant of choice, has a meal, beams payment information from her handheld, and gets an electronic receipt beamed back which automatically synchronizes with her expense report.

It sounds good, but all of the elements needed to make this happen are not yet in place. For example, the required system interfaces, the customer service systems, and the billing and settlement systems have yet to be integrated.

Coordination is also needed among the many parties that contributed to getting our customer fed: the portal that carries the restaurant information, the carrier

that calculates the customer's proximity to the restaurant and provides directions, the restaurant itself, and the company that provides the mechanism for payment.

Creating a u-commerce environment characterized by pervasive, continuous and seamless interactions requires breaking through a "wall." Beyond this wall development activities can proceed at an accelerated pace.



This "wall" consists of a number of fundamental factors that need to be addressed, which we call the four S's: systems, standards, security, and simplicity.

- **Standards** -- Common standards are a necessity. They allow devices to "speak the same language." Much in the same way the Open System Interconnection (OSI) model describes how applications and devices should communicate, or how Transmission Control Protocol/Internet Protocol (TCP/IP), a subset of OSI model for the Internet, describes Internet standards, new interoperable standards are needed throughout the u-commerce environment.

Visa's strategy toward the development of standards is clear: Make them flexible, make them open, and make them free, in order to maximize the scale, scope and rate of adoption.

One example is Open Platform, a smart card standard supported by Sun's Java Card and by Microsoft's Windows for Smart Card that allows "plug-and-play" applications to work with chip-based smart cards. This Visa-created open

standard enables retailers or hotels to create loyalty programs, or health care organizations to incorporate health or insurance information, or virtually any business to integrate its own value-added application with payments. Even Visa competitors are embracing Open Platform for their chip-based products.

Another example is Visa's XML invoice and travel and entertainment (T&E) standard for business-to-business commerce. Through this standard, called the Visa Global Invoice Specification, anyone needing to send or receive an invoice or T&E data can use this single specification instead of each potential partner's unique, specialized invoice format. XML is the *lingua franca* that will enable Web-based B2B to flourish. Developed in conjunction with Commerce One, IBM, Sun Microsystems, Inc. and ValiCert, Inc., this standard is available to all developers across industries and can easily be extended to support additional data needs.

Visa views standards as a key area for collaboration and cooperation so that we create a global infrastructure within which we can all compete.

- **Security** – As money and information become more digital and are transmitted across more devices, channels and borders, the security of the transaction becomes increasingly more critical. Two of the key challenges in such an environment are to extend the same kind of security that exists in the physical world to virtual transactions and to ensure the privacy of users involved in the transactions.

It is no secret that security concerns have mushroomed in recent years. According to an Accenture survey of Fortune 1000 companies, 70 percent viewed security as a top Internet issue. And in the U.S. in an FBI and Computer Security Institute study, one-fifth of all firms surveyed experienced theft of proprietary data.

Over the past 30 years, Visa has continuously developed new security tools and processes to protect the integrity of electronic payments. Today,

losses due to fraud are less than one tenth of one percent of global sales volume. Extending the same level of security to new payment channels is imperative and should focus on two key areas – authentication of the parties involved in a “virtual” transaction and ensuring that the privacy of account data is preserved no matter where it resides in the payment chain.

The Visa Secure e-Commerce Initiative addresses both of these issues with a suite of solutions, including globally interoperable authentication for merchants and cardholders, and best-practices and self-assessment tools for merchants, which can be accessed at www.visa.com/secured.

- **Systems** – Remember our scenario of the hungry traveler? Not only are the systems missing to calculate and distribute value across the chain of players involved in getting her fed, but so are the systems to seamlessly integrate the information across the various transaction components.

Given the number of players likely to be involved in any u-commerce scenario, it is unlikely that one player will ever control the end-to-end system. The alternative is to create more connectivity between systems. But this is complex given the multiple databases and legacy systems likely to be accessed.

This is the dilemma Visa faced. Given the explosion expected in the number and types of electronic payment transactions in the future we knew that our current proprietary network, VisaNet, needed to evolve. Our response was to begin building new infrastructure to handle the volume of these new transactions and guarantee access to our systems – anywhere, anytime, through virtually any type of interface, with the 99.999 percent reliability Visa has delivered through VisaNet for more than 20 years. This response led to three related initiatives:

- To allow more access to VisaNet, Visa U.S.A., working with Accenture, launched Direct Exchange. This IT initiative increases the ability of Visa’s processing infrastructure to handle the projected demands of u-commerce by opening up the system and allowing greater access at

the endpoints. Direct Exchange is one of the largest e-infrastructure projects in the world. It will enable VisaNet to process more than 10,000 transactions a second, more than double the volume possible today.

- To enable a higher level of customization of our global processing system, Visa launched the VisaNet Distributed Processing Solution (VDPS). This initiative will give Visa's operating regions more flexibility to configure processing solutions that meet the needs of their customers, while ensuring the global system has the scalability needed to accommodate continued growth in transaction volume.
 - Visa recently deployed the largest enhancement to VisaNet's BASE II transaction clearing system since its inception in 1974, expanding settlement processing to seven days a week, streamlining processes, and improving cost-efficiencies and time-to-market for ongoing enhancements.
- **Simplicity** – Perhaps the most difficult challenge is integrating technologies in a way that is both compelling and simple. Without simplicity and ease of use, failure in the consumer environment is almost guaranteed. The marketplace is littered with consumer applications that failed because of irrelevance, complexity or prohibitive adoption costs.

In this emerging world of u-commerce, sustainable technologies will be those that not only make life more convenient, but also make it simpler. Just because something is technologically possible does not necessarily make it relevant or compelling to the consumer. And just because something promises to make life simpler, like an electronic wallet that enables one to automatically populate online forms, does not mean that someone will go through a complex set-up or installation process.

The swipe of a card at a merchant terminal, the quick scan of a chip card reader, or the Palm-enabled Visa transaction described earlier are

models of simplicity in the u-commerce environment.

LOOKING AHEAD

We are in a transitional phase of the global economy. Some of the assumptions and early tenets of the “new economy” are being challenged. To us, the labels “old economy” and “new economy” are, in fact, a false distinction. The evolution we are witnessing – and want to help drive – is the evolution of the “smart economy.” This is an economy that is more flexible, fluid, interconnected, efficient and resilient. We believe u-commerce will be both a driver and an outcome of the smart economy.

The smart economy is poised to grow explosively, with many players from multiple industries all vying for the customer’s attention. These players will be offering new services, new payment tools, and a host of new ways to get access to goods and services anytime, anywhere, and any way. We expect competition to be fierce among players in the payments chain, with the advantage going to those who recognize a few fundamental rules about this emerging environment.

- **The Importance of Brands** – In the developing u-commerce environment a strong brand may well be a company’s most important asset.

Given the explosion of new products and services that new technologies and channels make possible, consumers will be faced with more choices than ever before. In a world of so much choice, consumers will gravitate toward brands they can trust.

A brand associated with the delivery of consistently strong customer experiences will help differentiate offerings and reinforce the buyer’s decision. Strong global brands will be even more valuable assets in a world characterized by infinite choice and hypercompetition.

- **Strategic Collaboration** – Because of the chain of different players involved in u-commerce scenarios, such as the one of our hungry traveler, collaboration and partnerships have become increasingly important.

The foundation of Visa is a model for these types of partnerships. Visa is a global alliance of 21,000 financial institutions cooperating to support an infrastructure that allows global utility and ubiquity of payments products. It is this common platform on which the members of the alliance compete.

Strategic collaboration among multiple businesses – even among traditional competitors – are necessary to address challenges such as security, standards, and interoperability of systems. We expect to see an increase in these types of strategic partnerships in the future. Ultimately, they will increase transaction flows and advance u-commerce yet further.

- **Think Big, Start Small & Scale Fast** – Thinking big means being visionary and recognizing potential. Starting small means testing markets, understanding security issues, checking systems, and fine-tuning offerings to make them as simple and compelling as possible. And finally, scaling fast means recognizing when to pull out all the stops and quickly expand scope and scale.

AN ORGANIZING PRINCIPLE

U-commerce is not just a phenomenon; it is also an organizing principle. As technology rapidly drives the convergence of many different spaces – information, entertainment, financial services, payments, communications – u-commerce can help us think more expansively and holistically.

It's a vision that compels us to transcend borders – be they geographic or technological – and build links. And it's a vision that reminds us technology is valuable only insofar as it makes sense to the user – somehow making his or her life more convenient, more interesting and more productive – and presents a clear business case.

The potential for innovation is tremendous. As U.S. Treasury Secretary Paul O'Neill put it: "The potential for productivity gains in the U.S. economy is higher than we realize. If you look at the penetration of good ideas (into the base of existing technology), we are still at the 20-30 percent level of what's possible."

We believe that is true not just in the U.S., but on a global scale as well. We are bullish on technology, but we are even more bullish on the ability of people to adapt technology in productive, innovative, and surprising ways. And that is at the heart of our vision of universal commerce.

U-COMMERCE: RELATED READING

- *“Universal Commerce: The Final Convergence – Remarks before The Organization for Economic Cooperation and Development Forum,”* by Malcolm Williamson, President & CEO, Visa International, June 2000
- *“Cutting Loose,”* by Accenture Partners Glover T. Ferguson and Thomas H. Pike, Outlook 2001
- *“What’s the Big Idea,”* by James Fallows, Industry Standard, March 9, 2001
- *“Monsters in a Box,”* by David Poscovitz, Wired, December 2000
- *“Secure Identity in Mobile Financial Transactions,”* Nokia White Paper, January 2001
- *“The Speed of Light: The High Stakes Race to Build the Next Internet,”* by David Denby, The New Yorker, November 27, 2000
- *“Goodbye Lucent. Hello Wi-Fi,”* by Andy Kessler, Wall Street Journal, March 12, 2001
- *“Connected: Life in the Wireless Age,”* by James Gleick, New York Times Magazine, April 22, 2001

Stephen Schapp leads Visa International's Global Product Platform Group based at Visa's headquarters near San Francisco, California. His responsibilities include the development of product platforms and associated access and delivery channels for Visa worldwide. Visa is the world's leading payments brand and the largest payments system worldwide. Visa-branded cards generate nearly U.S.\$2 trillion in annual volume and are accepted at over 22 million locations around the world. The Visa organization plays a pivotal role in advancing new payment products and technologies to benefit its 21,000 member financial institutions and their cardholders. Visa is a leader in Internet based payments and is pioneering the creation of u-commerce. Visa's Internet address is www.visa.com.

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