



## Smart Cards In America: Think Globally, Act Locally

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Each year for roughly the past three or four years, many of us in the industry have predicted that the next year will be the year that smart cards finally take hold on American shores. Likewise, the chip card - seen by many as the ultimate magic bullet for personal data portability (stored value, public keys, etc.) - has been viewed, as the bridge needed between the PC and the physical world. Yet the payment applications that were once viewed as the primary driver for smart cards in the U.S. and globally are taking a back seat in North America and potentially in Europe as well to the security application. Secondarily, nationwide implementation of smart cards in a heterogeneous application environment such as via super-regional banking does not and probably will not exist in the U.S. market for several years.

We believe at least three mitigating factors have retarded the spread of smart cards outside of their current homes: the rise of the Internet, year 2000 compliance and, perhaps most fundamentally, the geographic size of the U.S. market and lack of real national networks in the private sector beyond the telco arena.

The Internet's explosion onto the scene in North America has meant two things for smart cards - a shift in platform development away from simple payment applications to full operating platforms and resource and focuses of IT departments being diverted to this unforeseen change in IT priorities. What in the early 1990s was an issue of retrofitting ATMs and developing POS devices to handle both mag-stripe and chip cards has become a full-on scramble to buy into and fill out platforms, in this case Java-based OpenCard with Visa and Mondex's Multos with MasterCard. Once promising platforms such as Danmont and Proton have been either absorbed into these efforts or relegated to also-ran. By choosing to focus on two platforms, card groups and the technology providers that support them have now become the centers of gravity around which all card technology interests now orbit. Making matters even more interesting is that in the interest of interoperability, and some bet hedging, those orbits cross in the guise of card technology companies and banks that want to reach the maximum audience.

But most importantly in this sphere, the Internet has less pulled development of card technology into the global network and more spilled out into the development of cards for use in open networks. Technologies such as Java, lightweight encryption and platform agnostic environments driven by the Internet have bled out into the card arena, shifting entirely their development focus. Though cards are not being tested as much for use in payment over the Internet as they are strictly for physical point-of-sale purchases, the Internet as a transport and communication network for card transactions will become a priority focus by the beginning of the next decade. And likewise, as NC and thin-client development accelerates, the line between the PC/Internet environment and physical POS environments such as phones, ATMs, kiosks and such will blur rapidly. One has only to look at pilots in places such as with Chipper in the Netherlands to see deployment today of Internet-based kiosks with full card payment capabilities to see this phenomenon in motion.

The second problem identified above, that of the year 2000 bug, is a temporary one. Nevertheless this problem will

drain resources for the foreseeable future, both prior to 2000 and likely several years beyond as financial institutions prepare, install and mop up after the necessary patches and migrations to newer technologies. In addition, the legal implications of failure to totally fix the problem, and the fallout from partners that have not, will undoubtedly create a drag on new technologies well into the next decade. Costs to sort out the fallout of the year 2000 bug will undoubtedly take precedence over retrofitting POS hardware and investing in subsidized deployment of in-home POS units.

The last factor, that of geographic size, may be the most fundamentally insurmountable obstruction in the path of smart card advancement in the U.S. One of the major drivers behind the successful deployment of smart card programs in Europe and Asia have been the ability of the state to mandate, usually via a state-owned PTT. Additionally, banks, PTTs or transit systems looking to deploy smart card schemes are facing total populations equal to a few cities on the U.S. eastern seaboard. The Netherlands' ChipKnip, for example, only needs to be rolled out to a minority of the 15+ million residents of that country interested in using the public phone system. One system, one operator, one mandate. On the other hand, pushing a smart card scheme out for multiple banks in the metropolitan New York area would mean reaching a population in excess of 10 million (greater than that of Belgium), through three to five major banks, each wed to Visa or MasterCard, each using different hardware, crossing different processing networks, etc. In the end, major investments only reach a minority of the population, and one in particular in New York that is very slow to move up to newer technologies.

No national card scheme can be launched in the U.S. that crosses all lines of affinity the way a national card scheme can be in Europe. Instead, smart cards in the U.S. will be inextricably tied to "local commerce loops" of some sort. The largest of these will be the two major card associations, followed by the RBOCs, national retail chains, large corporations, universities, theme parks, and so on. In each instance, users must be bound by affinity, a community of some sort. In this scenario, smart cards become a sort of local currency, and the multi-app environment will shine in this kind of implementation, with loyalty points passing back and forth as users spend money in these "local loops". An example of such an implementation would be among a group of local retailers sharing a single bank, or within a national chain, such as Blockbuster Video. Bottom line, while there is a compelling case for smart cards within these loops and constituent user groups, the fact that the U.S. market is actually hundreds of sub-markets makes wide-scale deployment of smart card technology in the U.S. very difficult. Different legacy requirements will mean slightly different platforms. As with the ATM and credit card networks, banks will likely be on roughly similar footing using nationwide networks. Co-marketing agreements are a natural fit in this space, similar to the co-marketing arrangement that exist in the travel industry, for example.

So, despite open, common platforms, advancements in public key interoperability and significant investments in smart card technology by technology companies, banks and telcos, we believe smart card deployment in the U.S. will be on multiple levels and for disparate uses for the next decade at least. In terms of usage numbers, the top level will undoubtedly consist of not payment cards, but chip cards used for secure access and stored data, used primarily on corporate campuses and in government agencies. Second in line in this tier will be cards combining secure access and payment, for such local commerce loops as universities and again corporation campuses. Internet usage of smart cards will undoubtedly be strongest here, and due to falling costs and rising interest levels, we anticipate large rollouts of these online/off-line schemes in these campus local loops by 2000.

On the broad scale, we do see card association backed, bank deployed smart cards for broad payment uses (credit, debit, stored value), issued by a handful of large super-regional banks with light penetration in the first five years. The second tier will be co-marketed payment cards again used in smaller loops, such as with regional retailers, gas and food outlets, and entertainment facilities.

While Visa and MasterCard have been spending the marketing dollars in the U.S. to raise the profile of smart cards, we believe it will be the second rank of technology providers behind the scenes, such as Spyryus, VeriSign and Litronic to name a few, and the silicon manufacturers, such as Motorola, Gemplus, and Schlumberger which will reap the most from the pattern of deployment smart cards will follow in the U.S. Using globally applicable technologies and platforms, these companies will push forward the smart card market in the U.S., but one local market at a time.