The Wireless Transaction Business

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History:

Since the early 90's, Merchants Service Providers have dreamed of processing credit and debit cards wirelessly. This was quite a worthy goal, considering the number of mobile merchants and businesses in the US alone; one could see a tremendous growth opportunity. A few terminal manufacturers began to design wireless machines. US wireless, Verifone, CellTell, Hypercom and Dassault, were trying their hand at the wireless terminal design. Pretty soon, the sales and marketing types were making all sorts of "Pie in the Sky Predictions" on future sales, dreaming of capturing the Lion's share of the wireless terminal market, because of their choice of the latest and greatest technology.

Nearly a decade later, the Wireless transaction market has not been much more than a disappointment. It should not have been, after all, Wireless was a growth business, and Merchants services was also a growth business, so marrying the two should have meant exponential growth!

Well just like in a marriage of people, where the two parties take a blood test (and counseling) for compatibility's sake, when two types of businesses get "married", some tests need to be performed.

The first wireless credit card machines to appear on the market operated on the NAMPS cellular networks, with all its wonderful services, limitations and quirks. They essentially were circuit switched devices, which almost always resulted from an integration of two or more devices, a credit card machine, a data jack and a cellular transceiver (Modem or Cellular phone), a battery and a charger.

The Mobile Merchant, POS50, Farephone and MobilePay were such devices. The designers had essentially responded to a market demand and the devices were designed to be sold as credit card terminals, by Merchants Service Providers, or by ISO's. Everyone in the MSP business became very excited and after the hoo's and haa's quieted down, and everybody committed to the sale of thousand of devices (After all there are 150 000 pizza places who deliver! they all need 4!) reality set in that these devices needed to have a combination of payment application and deployment, and a cellular activation which in those days was pretty costly. Mobile Merchants, who already owned a Cell Phone and knew the cost, were reluctant to pay for another contract and this is where the newlyweds found out that they were after all not totally compatible!

Before continuing with this analysis, let's compare the main differences between the Cellular business and the Merchants services Business.

The cellular phone business model relied on putting as many devices in the field as possible to acquire customers. The customers were lured with cheap or free phones, in exchange for long term contracts of one or 2 years. If a customer cancelled the contract, the cost of the phone, which was usually very high, was charged, making it very unappealing to jump from one provider to another. In each market, the cellular providers enjoyed a duopoly, whereas two and only two cellular providers were allowed to share the frequencies. This was very little incentive to make the service cheaper or better, people wanted mobile phones and they only had two places to go for them. To understand what this did to the pricing, think "Cable companies". Much to the demise of the Cellular companies, new technologies forced them to share the market with others (Think PCS, Nextel, GSM, Sprint etc.) But the business model remained unchanged, give away the phone, Lock in the customer and hit him as hard as you can for the services.

The MSP's and ISO's had a different way of doing business. Send an agent to sign up a merchant, and pay that agent by allowing to lease a piece of equipment at exorbitant prices, resulting in huge margins. An ISO agent cannot make a living by giving equipment away like the Cellular agents do, his income is predicated on how high a lease he signs.

The Built for Purpose Devices

Anyone who has ever built or attempted to build a wireless credit card terminal has been faced with tough business and technical decisions.

- Which wireless technology to use
- Build or OEM?
- Which device to integrate
- What companies to partner with?

Technology

For most companies in the beginning, the choice of technology was limited to Mobitex and Motient who were the top private packet radio networks, each with their own pros and cons, and cellular technology with a CDPD Twist added.
There were no real public digital data service, CDPD was an add-on to the NAMPS technology, it was expensive to deploy, it worked on the premise of making use of unused NAMPS channels (a real Irony), anyone who tried to use CDPD in the New York Metro area soon found out that unused channels were as easy to find as empty taxicabs at rush hour, making the promised 6 second transaction as lengthy as the cross-town trip. Reliability of the network was also an issue; it was not uncommon to see 20dB changes in carrier signal strength, for seemingly no reason, which made CDPD a poor choice for a truly mobile merchant.

Nextel and Sprint were still in their infancy, and were not making their data services available outside of their own equipment, or easy to integrate.
GSM was in its infancy in the US, and some optimists about the technology found themselves too far ahead of the curve to really deploy any kind of substantial number of terminals. The preferred baud rate of GSM switched modems (9600 baud) became an obstacle when it came to connect to most processors front ends, who like to talk at 1200 or 2400 baud.

Although the idea of using circuit switched wireless technology was appealing, because it did not require the use of gateways to funnel the transaction to the processor, it came with a curse, the price of the transaction was high because cellular networks bill by the minute of air time. To date, no one bills by the promised 6 second increment. Compound this with roaming charges and long distance charges, (no it was not so long ago that we still paid those), and a merchant would find that it could cost as much as $1.50 connection time per transaction.

Digital packet Networks came with a curse of their own. They require a gateway that reassemble the packets on the receiving side, and submit them to a card processor in the right message format. They also promised cheaper per transaction costs by charging by the Kilobyte rather by the minute, but the minimum monthly costs were high. There is also a coverage issue, They all promised 98% coverage, but as soon as you walked in a building such as a convention center made of concrete and steel, all bets were off..

Build or OEM?

Terminal manufacturers know how to build terminals. By and large, this is pretty much it! So to build RF devices that comply with all the FCC regulations require bringing knowledge in house that can be costly. It requires long term commitment to a technology that may be not so long term, and a learning curve that most companies are afraid to ride. The choice was to OEM the radios, which put the terminal manufacturers at the mercy of their suppliers. You can count the number of radio modules manufacturers on one hand of a bad woodshop teacher. They are not interchangeable and therefore, when you pick your vendor, you are sole sourcing, which is one of the capital sins of manufacturing because you lose control of your pricing and your schedules.
Is it any wonder that built to purpose wireless credit card terminals were so expensive to build? By the time the machine went trough the processor, the sales channels and the agent, the street price was prohibitive.
The result is: the growth in this business segment has been hard to achieve.

Which device to integrate?

Most manufactures felt that smaller was better. This is still a consensus today, which is a clear indication that companies view all wireless merchants the same. Most people refer to wireless merchants and mobile merchants interchangeably. I maintain that a lot of

mobile merchants need not to be wireless merchants and vice and versa. More on this later…

What companies to partner with?

This was the hard decision. You just finished drawing your business plan and your 5 year strategy on your product, and now you need to partner with companies that may not exist in a couple of years. We have seen our share of radio manufacturers, gateways and wireless operators go out of business or merge with someone and change business strategy.
A GSM network, who had committed to sell wireless terminals in their stores, was acquired by another who had no interest whatsoever in this type of business. What happened to that business model?
A wireless gateway, who was passing CDPD and Circuit Switched transaction became impatient at the slow growth of the wireless business, turned into an MSP, succeeding at neither and leaving hundreds of merchants without connectivity overnight.

The wireless Merchants types (you mean there is more than one?)

This is the part of the business I love. As I mentioned earlier, we tend to lump mobile businesses and wireless businesses together. I have seen business plans that listed mobile commerce by SIC codes, and lumped plumbers and cruise lines in the same boat (sorry for the Pun)
A solution that worked well for a mobile merchant such as a plumber or exterminator was woefully inadequate for a kinetic merchant, the one who does a transaction while moving such as a dining car or a Casino boat. And these two have nothing in common with the Art dealer who has a shop, but relocates on week ends to Art shows and flea markets. Building a device that works for all three (and there are more types) is a difficult proposition, one might end up paying a high price for unneeded features.

What is the solution then?

A long look at today's and tomorrow's wireless technologies with one eye in the rearview mirror will help us understand the trends and avoid the pitfalls that our predecessors stumbled into.

Communication instruments are becoming more and more sophisticated, sometimes because they combine different devices, sometimes because their applications are extraordinary. We can agree on a couple of statements:
Devices are migrating away from being single use devices; Phones now combine PDA's, Cameras, MP3 players and feature email, and instant messaging.
The line between voice phones and internet functionality has blurred.
It is also easier for developers to write applications for these "communicators"

Compare the cost of a cell phone or a PDA, to that of a wireless credit card terminal, and you'll ask yourself the question: why is the terminal so expensive? I can tell you that there is more technology going into a palm VII or a Treo than in a wireless terminal. The answer is obviously that when you build a million PDA's, your component cost is a lot less than if you build 5000 terminals. We are all aware of this principle, we hear the term "economies of scale" ad nauseum, but do we truly understand it? Why didn't we design terminals that would take advantage of already amortized technology? Perhaps it is because we could not visualize a payment system any other way than one looking like a credit card terminal of sorts.
Seldom have we seen in the credit card terminal design the use of Large Scale Integration Chips (LSI's) where an entire terminal set of electronics could fit on a chip. This is the kind of thinking that took a 1975 HP Calculator that cost $750 and reduced it to a $5.00 trade show Chatchkey".

But was it price alone?

The issue of price will come up all the time from the sales guys, "If you could cut the price by 20% I could sell a boat load of these." Well could you? Whatever happened to selling something on its value?
This is when we realized that the needs of one was not necessarily the needs of all, and the business plan came crumbling down, the promises of 10,000 wireless terminals the first year were readjusted to hundreds, and we celebrated orders of 50.

Proposition:

Why don't we start right now rethinking this whole wireless payment market, and come up with new names, to which we can attach different challenges solutions
I'll start with a few, you add some of you own:
Kinetic
Mobile
Re-locatable
Nomadic
Un-tethered
Un Attached
Remote

Look a these names now and see if you can attach trades to them:

Art dealer
Landscaper
Cruise operator
Roach Coach Vendor
Taxi cab driver
Office equipment repair

Merchandising sales

Finally, Look at these solutions and see who should use them:

Wireless terminal
Store and Forward terminal
PDA with payment option
PDA with payment option with added accessories such as Swipe and Printer
Wireless Laptop with internet access
Manual imprinters, coupled with subsequent manual entry

I added the latter, because sometimes, some "technologies are eternal, and some merchants are incurable, besides, nothing beats an imprinter as a back-up.

Here is my take on this

Art dealer	Re-locatable	Wireless Laptop with internet access PDA with payment option with added accessories such as Swipe and Printer
Landscaper, exterminator, maid services	Un-tethered	Java Phone
Cruise operator	Kinetic	Wireless Laptop with internet access
Roach Coach Vendor	Mobile	PDA with payment option
Taxi cab driver	Nomadic	Wireless terminal
Office equipment repair	Remote	PDA with payment option

I could go on, but in summary, I believe that m-commerce merchants would find it a lot more palatable if they could simply access a payment service from anywhere by leveraging the equipment they own and have already paid for.
New technologies are just below the horizon, that threaten to shatter our paradigm of broadband and wireless, technologies like 3-g take personal communications to higher speed While OFDM (Orthogonal Frequency Division Multiplexing), will perhaps destroy the cable broadband and DSL overnight by offering a wireless broadband service faster and cheaper that the wired technologies.

So the question we need to answer ourselves is: Do we want to build commodities, or do we want to build a service for these commodities. We do not need, as service providers, to play leapfrog with the technologies; we only need to guide them to our doorstep.