

Looking back at the First Virtual Payment System for Clues about the Virtual Goods Business Model and its Technical Requirements

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*This paper is structured after the fashion of a Frequently Asked Questions Document.
This was done to facilitate its use for answering questions.*

1. In General -- What are we talking about?

Virtual Goods which are to be sold, delivered and paid for using Internet Ordering, Delivery, and Payment systems in support of the productive efforts of Virtual Goods Creators, Merchants and Customers.

2. What do we mean by Virtual Goods? We cannot discuss undefined terms!

Definition: Virtual Goods are not embodied in any physical medium, such that they only exist as a stream of binary bits that are delivered to buyers via digital communication media, such as the Internet. The delivered product consists of digital bits as they are delivered via some bit transmission system, plus perhaps some customer support. Digital Information written on a CD or DVD medium is not a Virtual Good.

3. What is different about Virtual Goods, as compared to Non-Virtual goods?

3.1. Non-Virtual Goods (Hard Goods) consist of goods and products that are embodied in some form of physical material, such as a book, or a shovel made of wood and steel, or clothes made of fabric, or beverages in containers, or information written on a CD or DVD, etc.

3.2. The cost basis of the business model for Virtual Goods is missing some large and significant cost factors, when compared to Hard Goods.

3.4. Costs of physical embodiment of virtual goods are nominally zero, as physical embodiment is not used in any way, so all cost aspects of physical embodiment such as packaging, transport, inventory financing, warehouse storage, damage losses, theft, unsold goods and returned goods will approximate zero.

(Does this list include all aspects that disappear?)
(If not, we can add others later.)

3.5. Thus, the Virtual Goods Business Model involves significantly lower costs and opens up new opportunities for new kinds of "costs", such as failure to collect full payment for some delivered Virtual Goods. Some people label these costs as "Theft". Others do not. See Question #10 below where "theft" is explored as a "cost of doing business."

3.6. But, there is another kind of "theft" where a customer buys one copy, and then makes copies for friends and other potential buyers. This problem was never solved by FV, but most sellers were happy with their revenue collection results. Yet, there is room for improvement.

4. So, what remains the same in the Virtual Goods and Hard Goods business models?

4.1. The Virtual Goods Business model does not shed all costs. Remaining costs include the costs of product creation, customer support, delivering goods, and handling transactions. The cost of creation appears to be the single most critical issue, because without payment for this cost, creation will no longer provide incentives to create.

4.2. This kind of change in the Information Content Business Model is quite radical, and requires something like a paradigm shift in the thinking of anyone that moves from dealing with traditional real (hard) goods business models to the virtual goods business model.

5. Do all virtual good sales require a new business model?

5.1. No -- Some kinds of digital information exchange, like consulting reports or discussions, and such, will no doubt still be delivered on the basis of contract prices based on the effort of production plus costs of travel and delivery, so only the delivery costs will be reduced. That is, travel costs might be lowered with less travel, but the typical consulting business model usually involves time plus expenses.

5.2. So, it appears that the distinction is that single copies of information delivered as contract work products are not of great interest to developers of Virtual Goods technology, just because new technology is not required to support such products which involve very few copies to be delivered to specific clients. Internet technology supports single copy delivery just fine.

6. What does the shift to the Virtual Goods business model mean?

Given almost 10 years of experience since the First Virtual Payment System was launched (In October 1994) to serve the Virtual Goods market, it is clear that the whole range of problems have not yet been resolved. So, there is still room for invention and innovation to obtain all the economic values that Virtual Goods trade can offer. So let's look at what the FV payment system tried to offer.

7. What were the First Virtual Payment System Start-up objectives?

7.1. Focus on Internet Information Commerce. What we here call Virtual Goods Commerce.

7.2. Allow anyone to buy and/or sell over the Internet.
Size should not matter. (EBay now enables this for many goods, including auctions.)

- 7.3. Never exchange or keep financial information on the Internet.
- * This makes it very hard for hackers to steal any info.
 - * There is simply no access path from the Internet to this data.
 - * The Offnet database server accessed the Internet servers to extract the needed transaction data with a one way connection.
 - * FV was not trying to replace the banks or credit card companies.
- 7.4. Provide Security, but do not use cryptography.
- * In 1994, none of the cryptography options made sense for First Virtual, This is not true in 2003.
 - * FV security was provided with other means. Namely, it is very hard to intercept Email addressed to an individual, and then prevent it from also being delivered to the addressed recipient and then fake a reply to FV saying "YES", which the FV PIN holder never sees.
 - * Remember, the postmaster's job is to protect the mail, not to compromise it. The Internet postmaster's job is at stake. FV never had a case of receiving a false Yes..
- 7.5. No Special Software required. Buyers just use regular browsers and Email.
- * This was a general result of avoiding complexity of use.
- 7.6. Worked with the available WEB, FTP, and Email system and tools.
- * The KISS Principle: "Keep It Simple, Stupid"
- 7.7. High degree of privacy.
- * Sellers should not need to know the buyer's personal information, other than the buyer's "Virtual PIN" account identifier.
 - * However, some FV employees had access to user's data, and FV kept histories of user behavior to control rampant non-payment.
- 7.8. Very low transaction cost: \$0.29 +2% per transaction.
- 7.9. Available "today" (15 October, 1994 -- FV's "up and running" debut.)
- * A working system was announced -- not a statement of direction.

8. What were the essential features and functions of the FV system? (Aside from the goals)

- 8.1. To get an FV PIN, both buyers and sellers had to apply by Postal Mail, paying a sign-up fee to get a buyer, or seller, or a Buyer + seller account, with their credit card information (for buyer) or bank transfer information (for seller) along with the new account fees paid by bank check.
- 8.2. They also could pick a PIN of their choice, and they had to provide their Email address to enable Email information exchange with FV. All this account information was stored in an "OFFNET" FV server.

8.3. Functionally, the system involved and used a loop-back feature. The Buyer placed an order with a merchant for some Virtual Goods, providing the Buyer's Virtual Pin and the buyer took delivery of virtual goods immediately. Then the Seller transmitted the buyer's PIN, + the Seller's PIN, + the Virtual Product Info + the amount of the charge to the transaction server.

* Note that "delivery before payment" is authorized is required to allow the buyer to evaluate the value of the virtual goods. Without this arrangement, buyers must buy a "pig in a poke" and this will hurt sales revenue more than failures to collect.

* Note that the seller only knows the buyer's FV PIN and the purchased product information, unless the buyer volunteered more information. And the buyer never knows the seller's pin.

8.4. FV's transaction server received the transaction information via Internet and released it to the Offnet FV transaction server via a one-way channel when the Offnet server connects to collect this information. Then, the Offnet FV server sends a message to the buyer's Email address with the transaction information, including a unique Transaction Number in the Subject "Header" and a request to reply with a simple YES as the first word on the first line of a reply message to signify approval to send the charge to the buyers credit card account for collection by FV. The transaction code was in the ""Subject header of the transaction approval request message, so the Buyer's mail user agent could pick it up and place it in the Subject Header of the Approval reply message.

* Note that the buyer's Email address is only available in the Offnet transaction server, where the confirmation request message was prepared and transferred to the Internet for delivery to the user, while the transaction is held awaiting receipt of the buyers approval message.

* When the reply was received by First Virtual's Server, FV would send the transaction payment request to the buyer's credit card service for collection and transfer to the seller's bank account.

* All this is done with clear text messaging, with a one way connection from the back-end database server, in such a way that the buyer, seller, credit-card and seller's banks are all isolated from each other. Each participant in the transaction only sees the information they need in order to complete its part in the transaction.

8.5. In retrospect, the FV Payment System was more than just a payment system, since it embodied a complete value exchange system for virtual goods, where virtual goods with value were exchanged for money, which also has value. FV provided much more than mere bank transaction services.

9. The loop-back channel served several purposes that were not Explicitly included in the original list of established FV Goals.

9.1. First, it obtains a sort of "signature" from the buyer, for the record in case of a dispute. This is very important to have as proof of what FV received from the buyer for audit purposes. The buyer must take deliberate actions in order to approve payment for a purchase.

9.2. Second, it provides a buffer between the banking system; the buyer; the seller; and FV, to enable holding the transaction in abeyance until the buyer says YES! This allowed for the buyer to refuse payment in the event that the Virtual Goods do not measure up to expectation, for any reason. This feature was unique. No other payment system has ever offered this service, except that for hard goods, a customer can inspect and evaluate books in bookstores, and inspect other goods in stores before purchase. Catalog sales companies have generous return and refund policies to provide some equivalence to the concept of allowing a customer to inspect purchased goods before final commitment to payment.

9.3. But, this creates a new problem of regulating or controlling the number of times hat a given buyer may exercise the option to not pay for some reason. It is an apparent requirement of any such loop-back buffer that it not allow (or encourage) rampant non-payment behavior.

9.4. This was reasonably cured by keeping score for each buyer's non-payment behavior, in terms of percentages, with limits set low enough to prevent excessive non-payment cases. FV accounts were disabled when too many payments were refused.

9.5. Of course, each merchant can also keep records of behavior for each customer's PIN, and can set their own criteria for refusing to do business with offending non-paying buyers, keyed to the customer's PIN. No significant research has been done on this issue that I know of, but the FV position on this was that the trade off between non-payment vs. fewer sales without inspection is a business model issue to be resolved in by each individual seller of virtual goods.

9.6. So, one of my primary future expectations is that among all the features and functions of any similar Virtual Goods Payment System, the delayed loop-back confirmation buffer are critical.

10. Now, this brings us to a critical issue for any Virtual Goods Payment System.

10.1. In general, the buyer absolutely needs an opportunity to evaluate the Virtual Good that is offered for purchase. Without being able to evaluate before purchase, sales volumes will not reach their potential.

10.2. But what about the so-called "lost" revenue that inspection with possible non-payment that this will certainly cause? To enable buyer inspection, the Virtual Goods must be shipped before buyer payment is committed. This is where the original discussion of the differences between business models for hard goods vs. virtual goods comes to the fore.

10.3. The answer resides in the existing business model differences, and an observation that the seller's goal must be to maximize total revenue, regardless of how much is not collected due to refusals to pay after receiving the Virtual Goods. One useful comparison is to look at the cost of floor samples that cannot be sold as "new" after being subjected to floor sample handling before purchase. The issue is in the business model, not in the payment system.

10.4. The business model goal is not to minimize lost payments, but to maximize revenue gained from sales, coupled with the fact that the lost sales do not result in significant losses of invested capital. The total cost of sales is only the cost of producing the copy to be delivered + handling the automated transaction, + the use of Internet bandwidth to ship the product, + wasted computer server time, + possible customer support services provided. All these "losses" are extremely small compared to the losses suffered by hard goods merchants for shipping and warehousing and cost of inventory acquisition from producers, when a buyer refuses to pay after receiving the goods, or when a customer returns goods for refund.

10.5. In the case of Virtual Goods, return of the goods is of no value, and actually adds to costs for processing any returned bunch of digital bits. The returned bits have no value.

10.6 Further, FV observed that any buyer that habitually does not pay, is often not a serious buyer who wants to have a reliable source for Virtual Goods. We should focus our marketing on serious business partners and allow for some minor leakage at the margins. It is an old saying in business that:

"If you have never lost a receivable, your rules were too strict!"

11. A another important problem to solve...

11.1. One of the unfortunate factors in the FV story was the forced delay and awkwardness of using Email for the loop back scheme. Among other things, the Email loop requires a second system (Email) to be used after using the WEB to set up the purchase, and there was some trouble with customer mail user agents not doing the right thing with that transaction number in the Reply Subject Header, as FV required. And last of all, it was amazing how difficult it was to train users to reply with "YES" being the first word on the first line of their confirmation reply!

11.2. This was a problem that FV spent a great amount of time trying to solve, and this involved a massive effort to understand every available Email User Agent system and Email service, so that FV could automate handling of mail for each individual customer, based on learning about the specific that mail system each FV user used.

11.3. This accumulated knowledge about the many inconsistent mail systems, and how to deal with each of them, turned out to be a key value at the point where FV needed to find a buyer in the face of going bankrupt! FV was sold to MessageMedia (for \$0.60 per share). MessageMedia used the FV Email tools with considerable success in it's Customer Relations Management Services (CRM) until MessageMedia in turn was forced to sell out to Double Click in the dot.com crash for \$0.16/share.

11.4. Among other things, the confirmation loop delays caused many merchants to complain that they were losing sales to Impulse Buyers who did not complete the transaction after they had a chance to "Sleep On It" because of the delays. The customers loved it, but some merchants disliked it.

11.5. So, there is a serious need to find a loop-back confirmation facility that works with web protocols like HTTPS. Such technologies exist now, available from Network Manifold Associates at <<http://nma/com>>.

12. My Main Conclusion!

Understanding the Business Model must come first!

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