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:: SECURE 'BEHIND THE GLASS' -

:: 1. Scope

The purpose of this paper is to describe the design considerations that will affect the customer and cashier experience relating to card acceptance at the Point of Sale in a 'Secure Behind the Glass' environment. These environments will be encountered where, for various reasons, the cashier is separated from the cardholder by a security screen in for example Bank branches, Bureau de Change and Petrol Station 'Night Windows'.

Experience from international markets shows that it is the physical aspects of the device [PIN Pad or PIN Pad Card reader] that are affected by this type of environment and not the transaction flow. This means that the options within the **Operational Process at Point of Sale** that allows either the cashier or the cardholder to insert the card will not constrain the process.

Although this document seeks to highlight potential problems it cannot define specific solutions. The final choice for any implementation will be the retailer's as they are the ones that understand their environment, their customers and their operational processes.

:: 2. Two Configurations

There are basically two configurations of Point of Sale to be considered:

- [] 1. Always behind the glass in for example Bank branches where the cashier will always be separated from the card holder
- [] 2. Behind the glass at certain times of the day in for example Petrol Stations where during 'normal hours' the cardholder is admitted to the forecourt building to pay but 'outside normal hours' the transaction is performed through a secure partition.

:: 2.1. Bank type environments

For Bank type environments where the cashier is always separated from the cardholder there are two options for the provision of the PIN Pad [the sighting of the card reader is a separate consideration]:

- a) Pass the PIN Pad out to the cardholder under the Security screen or in the movable tray
- b) Fix the PIN Pad outside with the cardholder



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Method a) has particular advantages within the transition period as cardholder passes card through to cashier. The cashier inserts card into the card reader either separate or combined with the PIN Pad. If the transaction is to be signature verified then the card stays the cashier side of the screen and vouchers / receipts are created, signed and processed as today. If the transaction is PIN verified then the cashier passes PIN Pad to the cardholder for PIN entry. This may be desirable long term in 'financial' environments [Banks, Bureau de Change] and acceptable to the cardholder as the cardholder may be handing over additional identification material, for example a passport, it may not be as acceptable in more 'traditional retail' environments. It should be noted that not only should the PIN Pad be protected from malicious damage but also the cord and this may need to be armored to prevent it being cut. Additionally from the experience gained in France this type of device tends to experience a reduced Mean Time Between Failures. The MTBF is expected to be around 3 years and this must be balanced against the desired customer experience.

Method b) [fixed PIN Pad] if the fixed device also houses the card reader this puts the cardholder in control and this may be more acceptable particularly in more traditional retail environments. There would, however, be increased complexity in the interaction with the cardholder during the transition period that may mean that adopting this approach suggests 'late adoption'.

:: 2.2. Night Windows

Certain retail environments deal with cardholder differently depending on the time of day. That is; face-to-face during the day and from behind a secure window at night - typically this is a Petrol Forecourt. Again this environment has two potential implementation methods:

- a) Use the same device at night as used during the day but pass it out to the customer as in 2.1. a) above
- b) Have two devices one used inside during the day and a separate device passed or fix outside for night use.

:: 3. Fixed Devices

Where the PIN Pad is fixed on the cardholder's side a number of things need to be considered:

How will the cable be routed from the device to the Point of Sale equipment?

- Through the glass
- Through the counter
- Underneath the counter
- Over the top of the glass



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Additionally the routing of this cable may mean that it is 'longer than normal' and special arrangements may be necessary to protect the cable from attack and the data from noise interference and degradation over the communication link. The power supply conductors may also need to be more heavy duty to reduce power loss.

:: **1. How will the PIN Pad be fixed down to the counter?**

If the PIN Pad is fixed then the method of fixing needs to meet two key criteria:

- [] it must effectively lock the PIN Pad in place to prevent removal and malicious damage and
- [] it must be simple and easy to remove the PIN Pad from the mounting by an authorised person for replacement / repair.

Also the mounting device may provide additional security screening for cardholder PIN entry. Other people being able to see the cardholder input their PIN [Shoulder Surfing] is probably not so much of a problem in a Bank or Bureau de Change environment. In these places customers tend to queue in an orderly fashion this may not be the case at the night window on a petrol forecourt.

:: **4. Physical Environments**

The environment on the cardholder side will need to be factored in to the parameters when choosing the device. If it is going to be exposed to outside conditions then it must be resistant to cold & wet and potentially direct sunlight. Additionally the varying lighting conditions need to be taken into account. Devices that are 'in-doors' whilst they may not need to withstand harsh weather condition may still need physical protection from theft or malicious damage.

Vendors do not, in general, tailor make devices to meet specific retailer's needs but have devices that meet more general needs. Additional requirements particularly in the area of device protection and PIN input security [for example shoulder surfing] can be achieved by a customised mounting enclosure.

:: **5. Disability Discrimination Act**

In designing their point of sale to include PIN retailers must take care to also take into account the requirements of the Disability Discrimination Act. This will be particularly true where the retailer's choice is to fix the PIN Pad to the cardholder side of the secure screen and careful consideration of the mounting height, positioning and tactile and audible features must be made.

:: **6. Transaction Procedure**

In a mature environment the vast majority of transactions being Chip and PIN will mean that any of the configurations described will be valid and the transaction process will be simple. The position of the card reader will determine if the card is passed to the cashier or not and the PIN pad will be passed or will already be with the cardholder. In the transition period, however, the transaction process and the interaction between the cashier and the cardholder could be complex.



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:: 6.1. Cashier side Card Reader

Regardless of the configuration of PIN Pad and Card reader [same or separate enclosure] if the card reader is on the cashier's side of the glass at the start of the transaction then they have complete control. The cashier can determine whether the card magnetic stripe should be swiped or if there is a Chip to use. And if the chip is used will it be a signature based transaction or should the cardholder be passed or prompted to use the PIN Pad.

:: 6.2. Cardholder side Card Reader

This is not the case if the Card Reader is on the cardholder side of the screen. In all probability the cardholder will initially pass the card to the cashier. If the card has a Chip then the operator will have to return the card to the cardholder and request that they insert it in the Chip reader. If the card does not support PIN then when the receipt / voucher is produced the Cashier will have to ask for the card to be returned so that the signature can be checked. This process is obviously complex and potentially slow. The cashier asking pertinent questions [for example "have you got a chip on your card"] before the card is handed over could mitigate delays to some extent. It should be noted that some cardholders may elect to continue to use signature even after maturity has been reached due to disability constraints and that signature will still form part of the fallback process should the PIN Pad and or the Chip card reader be broken. Points of Sale therefore must continue to support Chip and Signature for the foreseeable future.

:: 7. Potential Implementation Path

If the retailer's choice is to have a device that passed out to the cardholder then this can be implemented in two stages.

Stage one would be to configure the PoS such that only the Chip Reader is enabled so that staff can begin to get used to inserting cards and there are potential financial benefits on transactions.

Stage two would be to enable PIN entry, staff would be guided by the PIN Pad when it was necessary to pass the PIN Pad to the cardholder.

Where the choice is to fix only the PIN Pad outside then the implementation can follow the same path. Whether the PIN Pad is installed before activation and hidden, installed in place but not used or installed later is a retailer decision. If the retailer's choice is for a combined PIN Pad card reader fixed on the cardholder side of the screen then the time at which the device is mounted and activated will need extremely careful consideration.



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:: 8. Summary

If the Card Reader is on the cashier's side of the security window then the transaction procedure is simpler to implement and relatively consistent regardless of the card technology and the use or not of a PIN. The retailer must ensure with this type of implementation that the card is always in plain sight of cardholder. It should also be noted that separating the Card Reader and the PIN Pad may carry additional costs and complicate maintenance because of the need to encrypt the PIN [between the PIN Pad and Card Reader], increased security in both devices and the need to have a key management infrastructure.

A combined PIN Pad Card Reader offers the same benefits in the transaction procedure plus there is no requirement for a key management infrastructure and this method may overcome some DDA compliance difficulties. The constrain will be whether it is physically possible to pass across the device, some 'windows' are purposely designed so that there is never an 'open path' across the barrier.

Although these devices may be assumed to have a reduced mean time between failures this is not necessarily the experience where similar devices are used in other countries.

To ensure that the solution implemented at the point of sale is fit for purpose the equipment provider [acquirer or retailer] must obtain a full understanding of the physical constraints and requirements of each installation.