



## KCG Smart Transport Card

### A MULTOS Solution for Transit and Payments



Kaohsiung City, nestled against the Taiwan Straits on the south-west coast is the biggest harbour and the second biggest city in Taiwan. Its transport system caters to a population of 1.5 million people living within 153.6 sq. kms.

In January, 2005, as part of the Kaohsiung City Government's (KCG) drive to boost tourism, the project to implement electronic ticketing on public transport was awarded to a 6-partner consortium. The tender was for US\$9M.

The main objectives of the Transportation Bureau of Kaohsiung City Government were to:

- Improve efficiency of the transport system
- Improve the convenience of use for the public
- Minimise implementation costs.

The newly developed dual-interface platform by Multos International was chosen to meet these needs.

#### Smart Transport Cards

The management of a smart card-based transport system requires the same skills as operating a payment scheme (and the associated expenses), such as:

- card issuing
- customer relationship management
- risk management
- clearing
- settlement
- payment acquiring

Other transport schemes have opted to run as stand-alone programmes, requiring the Transport Company to establish a

new payment scheme. Some of these schemes have been able to extend in to low value retail payments, but these have been restricted to their particular geographic location. Outside of that area the cards can not be used.

The innovative approach taken for the KCG Smart Transport Card was to make use of existing skill-bases and infrastructure by partnering with the banks for who these types of operational necessities are day to day routine.

#### The Solution

The solution for this multi-function banking and transit card was to use existing EMV smartcard technology with the addition of a high-speed contactless payment function on the same chip. This meant that the security and infrastructure of an EMV chip-based payment system could continue to be utilised and expanded (already being deployed in high volumes in Taiwan). The contactless payment function is MasterCard's PayPass M/Chip, providing fast and convenient transactions that allow the card to be used to pay not only in the transit system, but also with other merchants offering PayPass payment acceptance.

The card uses a MULTOS 32K dual-interface chip which contains M/Chip4, PayPass and Taiwan's local debit/ATM application (FISC) as well as several other applications for possible future use (such as MasterCard's secure data application MODS, loyalty and PKI).

Since the transit system needs to provide fast transaction times the PayPass M/Chip application is configured as a Pre-Authorised Debit account. This means that an off-line EMV transaction takes place to reduce the total transaction time to meet the expectation of a mass transit system. It also allows for visitors (anonymous) and children to obtain a transit card.

The benefit of this solution is that the card is valid for transactions

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on the new KCG transit system, throughout Taiwan in all merchants and globally (with EMV or magnetic stripe transactions).

### The TaiwanMoney Card

The TaiwanMoney Card will be available in two variants: the Stand-alone Transport Card; and the Combined Credit and Transport Card.

The stand-alone card is targeted at children, visitors and those with out banking accounts and will feature a single payment brand. The MasterCard PayPass contactless functions will enable payment for low value goods and services.

The addition of MasterCard credit and/or debit to the Transport Card will provide a solution for existing cardholders and new account customers, allowing both contact and contactless payments.

Unlike other transport/payments cards, the TaiwanMoney Card will be suitable for use globally at any MasterCard or EMV acceptance points.

### PayPass

- PayPass provides quick, secure payments without the need for signature or PIN for both on-line and off-line transactions, using contactless smart card technology.
- The contactless transaction eliminates the usual card orientation issues, increases read reliability, and provides for a simple & quick customer experience. The fact that the card never leaves the customer's hand provides an additional level of comfort.
- MasterCard have successfully piloted PayPass in the USA and other markets, focusing on merchants in fast food, casual dining, movies, fuel, chemists, and retail.

### Pre-Authorized Debit

MasterCard's Pre-Authorized Debit uses the M/Chip 4 application and is fully supported by EMV infrastructure. The move away from a reliance on specialized infra-structure means many more points of acceptance, with payments possible at any EMV terminal.

Pre-Authorized Debit is ideal for any environment where low value, fast transactions are common, or where the burden of on-line transactions is not aligned with the business. It also provides an opportunity for closed schemes to shed infrastructure costs by moving from proprietary platforms to standard EMV.

An off-line spending amount (the "off-line balance") is stored on the card. This amount is tracked as the funds are spent and can be topped up during any on-line transaction. Management of the balance can be left to the cardholder or managed by the Issuer based on pre-determined risk parameters.

### Dual-interface MULTOS

The latest product from our in-house smartcard R&D group is a MULTOS platform with contactless capabilities. Implemented on an Infineon 32K dual-interface chip and available in chip or module format, the product brings a number of exciting features to the market.

This new leading edge product allows MULTOS applications the ability to interface to terminals via either the contact (ISO7816) or contactless (ISO14443 Type A). As a result, any number of applications can be combined on a single smartcard chip, including MasterCard's PayPass M/Chip or PayPass Magstripe.

Some of the key features of the 32K dual-interface product:

- Security features as standard across the entire MULTOS range such as data and application firewalls and platform integrity checking.
- Securely load and delete applications under control of the issuer, even after cards have been issued
- Contact Interface: ISO7816-3
- Contactless Interface: ISO14443 Type A (106kbps) – Note: Type B (848kbps) is available on request
- Applications in ROM: M/Chip4, MODS, PKI, PayPass, XLS
- Standard MULTOS applications can still be used on the contact interface without any modification
- Standard personalisation systems can be used without modification (from such industry leaders as Thales, DataCard, NBS/Ubiq, Muehlbauer)

This new MULTOS product family is also available in 64K dual-interface with 8K coming soon.

### Implementation

The KCG transit project has brought together a number of industry players providing their field of expertise and delivering a 'best of breed' solution.

- Multos International's implementation of MULTOS contactless smart card technology.
- Infineon's 32K dual-interface crypto-controller solution.
- MasterCard will provide a combined payment solution (including PayPass and MPA) for issuers and acquirers.
- Mondex Taiwan will operate the MPA host solution and clearing service.
- Cathay United Bank and E.Sun Bank and will focus on issuance of the TaiwanMoney Card, as well as marketing and customer services. In addition they will provide settlement services.
- Acer is the systems integrator, device provider and project manager.
- China Engineering Consultants, Inc. (CECI) will be in charge of programming the electronic transportation terminals.

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