

# Contactless Card Capabilities

*The New Horizon*

# Capabilities Today

- Transit
- Transit “extensions”
- “Pilot-level” Security

# Looking Forward

- **Regional Transit**
- **Financial**
- **US-wide Security**
- **World-wide Security  
(Borders and Ports)**
- **Interoperability Issues**

# Transit

## An End-to-End Solution

Media

+

Hardware

+

Business Management

### Card Technology



Magstripe



Disposable Contactless



Contactless Memory



Dual Interface Microprocessor

### Open Reader Architecture

Tri-Reader®



Micro RTD



Master Module



SIB



Win32 Expandable Memory Environment



### Access and Biometric Features



### Central Computer

Secure and Fast Access

Biometric Capabilities

- Local Reports
- Table Requests

Distributed Processing Solution

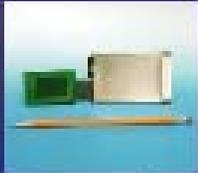


- High Reliability
- Security
- Disaster Recovery
- Reporting Services
- Smart Card Base Management
- Cardholder Support



# technology & product suite

Micro-RTD



Tri-Reader



Master Module



CUB-SAM



Magnetic Ticket Transports



Unattended Vending



Fareboxes



CICO Validator



Turnstiles & Faregates



Card Media



# Smart Card Technology

## Emerging requirements

- ISO-14443 Standard is in progress, but is not worldwide in application. This standard is primarily focused at microprocessor ( $\mu$ P) based cards not Memory/Logic cards.
- $\mu$ P cards are still evolving with technology advancements. This type of card exhibits: slow operation, large die size, changing operating system horizon, and costly to purchase.
- Readers need to read/write and comply to levels of supported Smart Card technology.
- The ability to locally encode and distribute cards is necessary.
- Whatever smart card is issued, it must be durable, reliable and secure.
- Magnetic, Memory/Logic and  $\mu$ P cards will co-exist for years to come.

# Contactless Smart Card Standard ISO 14443

Application (i.e.. fare collection)

Card OS (Not Included In Standard)

Security (Not Included In Standard)

Draft Submitted. Debates ongoing.



Part 4 -Protocol

ISO Committee debating this.



Part 3 - Initialization & Anti -collision  
(Type A and Type B)

ISO Committee vote complete.



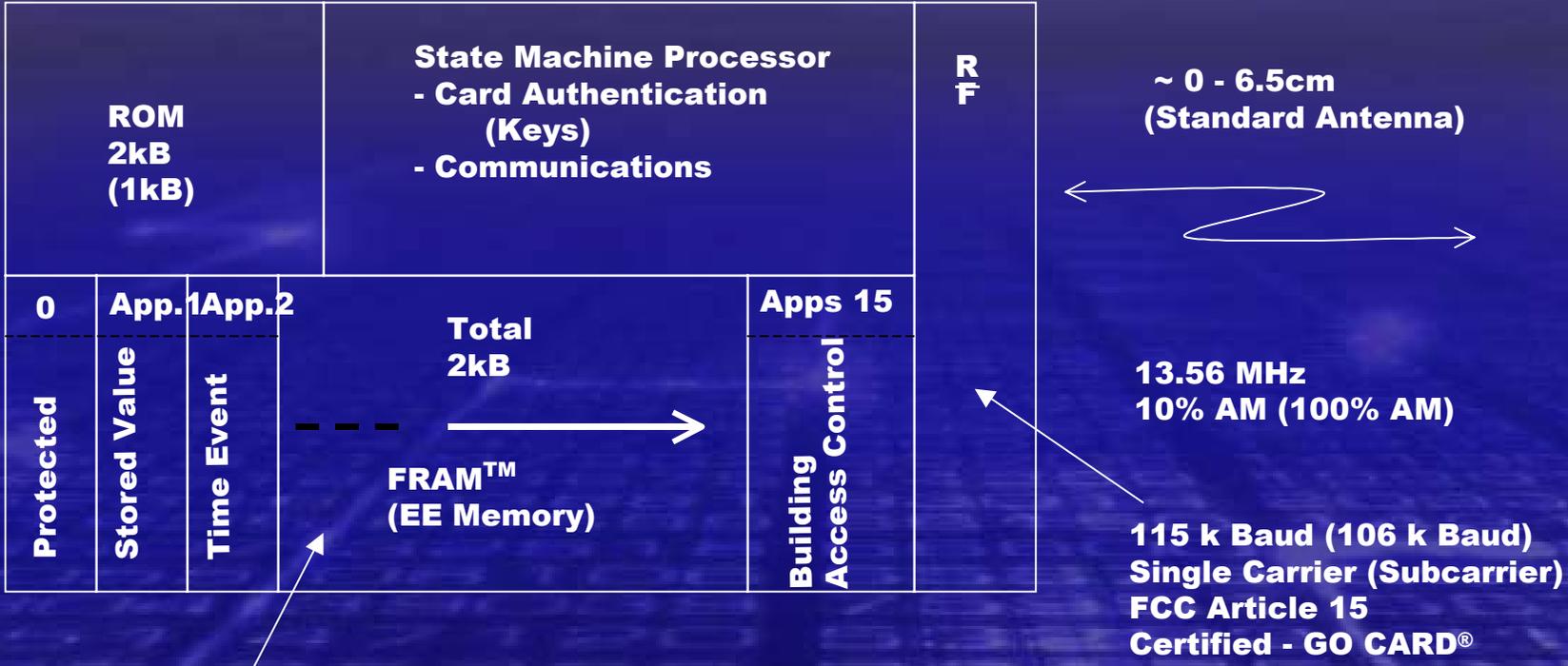
Part 2 - RF Power & Signal Char's  
(Type A and Type B)

ISO Committee vote complete .



Part 1 - Physical Card Characteristics

# Memory / Logic Cards



**Each Application Memory Usage**  
 7 User Pages (16 bytes)  
 1 Key and Page Application Type

™ - Ramtron

# Contactless Smart Cards

- **Provides expanded flexibility over magnetic**
- **More memory and Higher Security**
- **Faster Transactions and Lower Maintenance**
- **Published Standards...Multiple Suppliers**
- **Better, Cheaper & Faster**

# The Production Process

- **ASIC/Microprocessor Design**
- **Semi-Conductor Fabrication**
- **Wafer Processing**
- **Module Assembly**
- **Card Production**

# The Players

- **Production Process typically managed by 2 to 3 primary participants:**
  - **Semiconductor House (with or without ASIC designer)**
  - **Card Manufacturer**
  - **Operating Systems Developer**

# Leading Semiconductor Houses

- **Philips**
- **ST Microelectronics**
- **Infineon**
- **Atmel**
- **Fujitsu**
- **Samsung**
- **Toshiba**

# Leading Card Manufacturers

- **Schlumberger**
- **Gieseke & Devrient**
- **GemPlus**
- **Orga**
- **Oberthur**
- **ASK**
- **Toppan**

# Leading Operating System Developers

- **IBM**
- **Keycorp**
- **Schlumberger**
- **Gieseke & Devrient**
- **GemPlus**
- **Mobile Mind**

Web Server



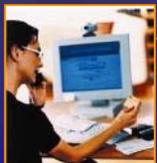
WAP Phone  
("coming soon")



Transit Store



3rd Party Kiosk



Internet User



Customer Service  
Operations



Transit Kiosk (MRM)

# Out-of-system sales



Consumer



ATM



Retail POS

**Cash  
Collection &  
Reconciliation**

**EFTPOS  
Acquiring**

**General  
Accounting**

**Settlement &  
Reconciliation**



# **financial services**

**Funds Pool  
Management**

**Electronic  
Funds  
Transfer**

# Bus Link

- The “contactless” Smart Card eliminates the need for correct change and significantly reduces boarding time.



# Why Regional Transit?

**Experience permits us to meet transport-security needs with a turn-key solution at a regional level**

- Smart card technologies at all transit ports
- High-volume access control systems and biometrics at transit buildings
- Central systems updated to support regional access

Federal



Transportation



Intermodal



# Regional Integration Process...

- **The “End Game” of Fare Policy Evolution.**
- **A Common Fare media and Fare Product set across Multiple Operators.**
- **Allows for Seamless Travel and Regional Transportation Planning.**
- **Provides Consolidated Regional Ridership and Revenue Reporting.**
- **Allows Linked service Promotional Strategies across Operators.**

# US Security Market Exploding...

- Federal Buildings
- US Visit / Borders
- Seaports and Airports



# Security Applications

- **Transit**
- **Borders**
- **Ports**
- **Hotels**
- **Office Buildings**

# U.S. Entry Exit “Enhanced” Credentials For Pedestrians and Vehicles



# Faster Security Checks

- Smart Card enabled biometrics provide multiple “layers of personal identification” for the trusted passenger reducing the need for more time - consuming inspections.



# Access Security

- Hotel reservations, payment, and office access are all facilitated by fast, secure, reliable contactless cards



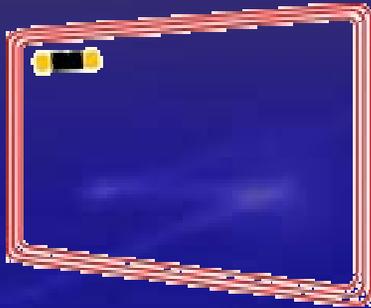
# Intermodal Port of the Future

*Briefing to the*  
Ship Operations Cooperative Program



*Presented by the*  
**Puerto Rico Ports Authority**

# Passport Concept



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## Embedded Contact-less Technology

- Millions in production for transit
- Fast (70 ms)

## Next Twelve Months...

- **TWIC specifying Port standards for compliance...add contact less to demos**
- **Border programs consideration of contact less for fast, secure access**
- **Gov't RFP's exist for contact less "Hybrid" cards**
- **Both finger and face biometrics verified with contact less memory cards**
- **Transit / USDOT paved the way...continuing with transit extensions for financial and security**