TUI Santander: A University’s Smartcard Standard

May 17th, 2013

Jorge Lanza
AGENDA

- OTTIUC
- Evolving towards standards
- Next step forward
- Conclusions
AGENDA

OTTIUC

Evolving towards standards

Next step forward

Conclusions
- Improve university smartcard capabilities

- Provide university’s smartcard
  - More flexibility and dynamism
  - Personalized contents and multiple applications
What we have done

- Exploit smart card possibilities
  - Apply the knowledge and research experience
  - Adapt developments to final user requirements
- Main developments
  - Applet JavaCard™ WG10
  - Control of buildings and computers using smart cards
  - Printing and payment management system
  - Digital Signature
  - Mobile communications: OTA, STK y SIM Browsing
  - Contactless technologies: Mifare, DESFire, NFC, ...
  - e-Health smart card support
Research and activities

- R&D activities
  - State of the art of technology
  - Applications and trends
  - Get in touch with technology
  - Development of smart card systems
  - One step ahead – analysis and viability
- Technical support to Santander universities
  - Help on deployment new solutions
  - Hear your needs and study possible options

Dissemination activities

- Participation in conferences, workshops, etc.
AGENDA

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2. Evolving towards standards
3. Next step forward
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TUI Santander: A University’s Smartcard Standard

JavaCard™ + Contactless

University of Cantabria

1234 5678 9012 3456

Antonio Roman de Gonzalez
DNI: 12345678
Alumno

Banco Santander

Maestro
TUI Characteristics

- Security
- Multiapplication
- Dynamic
- Hardware independent
- High performance
- Contact
- Flexibility
- Contactless
- Cost effective
- User friendly
SANTANDER’S UNIVERSITY SMARTCARD
GemXpresso Lite R2

Services
- Payments
- University / Health
- Public Transportation
- Authentication and Digital Signature
- Loyalty

Implementation
- EEPROM 16K
- JavaCard 2.1.1
- GPPlatform 2.1.1
- MPCOS
- Contact WG10
- EMV
- Mastercard
- M/Chip2.1
- Contact WG10
- WG10

Year 2002

A LITTLE BIT OF HISTORY

TUI SANTANDER: A UNIVERSITY’S SMARTCARD STANDARD
SANTANDER’S UNIVERSITY SMARTCARD
Optelio Contactless R5 (combi card)

Services

Payments
- WG10

University / Health
- Contact WG10

Public Transportation
- Mifare 4K Emulation
- GemSAFE

Authentication and Digital Signature
- Calypso

Loyalty
- Welcome Real-Time

Implementation

- EEPROM 32K JavaCard 2.2.1
- GPlatform 2.1.1
- EMV
  - Mastercard M/Chip2.2/4
  - Visa VSDC
- EMV Contactless
  - Mastercard PayPass M/Chip4
  - Visa PayWave DualVSDC
- Self Developed

Year 2011

Year
Evolution at a Glance

- **Services**
  - Payments
  - University
  - Public Transportation
  - Authentication and Digital Signature
  - Loyalty

- **Implementation**
  - Legacy WG10 R1
  - JavaCard R2
  - GemXpresso Lite R3 (contact)
  - GXP4-Santander (dual interface)
  - Optelio Contactless R5 (combi)
  - EMV Contactless
  - Mastercard M/Chip2.2
  - Visa VSDC
  - Mastercard PayPass M/Chip4
  - Visa PayWave DualVSDC
  - Mifare 1K/2K
  - Mifare 4K
  - Calypso
  - GemSAFE
  - Welcome Real-Time

- **Year**
  - 1995
  - 2002
  - 2004
  - 2007
  - 2011
### Santander’s University Smartcard

#### Services
- **Payments**
  - EMV
  - Visa or Mastercard CPA (Contactless)
- **University**
  - WG10
  - Desarrollo propio
- **Public Transportation**
  - Mifare/DESFire
  - Calypso
  - CEN TC 224
    - EN 1545
    - EN 15320
- **Authentication and Digital Signature**
  - GemSafe
  - CEN 14890
  - CEN 15264
- **Loyalty**
  - Welcome Real-Time
  - Self Developed
- **Others**
  - Standard Solutions
  - Proprietary applications
  - Self Developed

#### Implementation
- **Paypass**
- **Proprietary solutions**

#### Characteristics
- **Credit**
- **Debit**
- **PrePay**
- **E-Purse**
- **Information**
- **Contactless**
- **Secure**
- **Open to interact**
- **Flexibility**
- **Standard**
- **Easy deployment**
- **Open**
- **Open**

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Observatorio Tecnológico de la Tarjeta Inteligente de la Universidad de Cantabria
Issuing new smartcards is non-sense
- Reuse of smartcard ⇒ user chooses applications
- Most universities use similar memory map and services
- Waste of resources ⇒ waste of money

Inspire the creation of standards
- Standards needed
- Ease adaptation to new EU education methodology
- Community mobility support but keeping native identity

Extend plug and play concept to TUI
AGENDA

- OTTIUC
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- Contactless payments
- Contactless university
- Authentication and digital signature
- Contactless public transportation
- User-friendly
What is the tendency?
NFC mobile phones
- Heterogeneous communication interfaces
- Keyboard and screen for user interaction
- Smartcard Secure storage

Touch and go paradigm
- Compatible with contactless standards
- Multi-application smartcard capabilities
- Portable reader
University Smartcard and NFC

- Improve university capabilities
  - Dynamic application management
    - On-card and off-card in mobile phone
    - Added value services
  - Payments gateway
    - Load money on device
  - Public transport
    - Both payments and retrieval information
  - Secure token: contactless and Internet access

- Community mobility support
  - Seamless student/personnel identification
  - Students/personnel always connected
Secure mobile environment

Interaction TUI with mobile phone
- I/O interface
- Connectivity gateway
- End to end secure channel

Change form-factor
- Contactless microSD
- SIM SWP
- Virtual TUI in the cloud

Mobile phone personalization
- Keep university image visibility
Enable secure access to services outside campus
Next generation services

Trust Service Manager (TSM)

University A

Mobile network operator

User

University B

Added value services

Observatorio Tecnológico de la Tarjeta Inteligente de la Universidad de Cantabria
Next step forward
Evolving towards standards
OTTIUC
Conclusions
CONCLUSIONS

- TUI Santander
  - Collaboration network
  - Multi-application: adaptability and added value services

- Scenario is changing and adaptation is required
  - Mobile and ubiquitous university
  - Seamless access to information
  - Reuse of resources
  - Cloud services as social networks, etc.

- When and how to make the step forward is up to you
  - It is not easy to take the decision
  - Users and technology will demand
  - Santander Universities will help
Works done by Observatories are used by universities
  - Periodic meetings
  - Own experience from Observatories and home universities

We miss the participation of final users
You are the ones that better know your needs

Your opinion is really valuable
Help us improving
Luis Muñoz - Jorge Lanza
Pablo Sotres
OTTIUC
Network Planning & Mobile Communications Lab
Universidad de Cantabria
Avda. Castros s/n, 39005 - Santander (Spain)
Phone: +34 942 200 914
Fax: +34 942 201 488
Email:ottiuc@tlmat.unican.es