QR Code for Digital Signature
Online/Offline Payment

James Wu
www.jrsys.com.tw
Big Risk of Online Shopping

You may lose

Card Number + Expiration Date + CVV

“Card Not Present Transaction”

Trojan, Sniffer, Phishing site

e-Commerce site compromised
On-Line Payment

No more Card Number + Expiration Date + CVV
Just Scan the Secure QR Code

Commerce
1. Prepare checkout data
2. Create a Digital Signed Checkout QR code on the screen

Consumer
3. Scan the checkout QR code
4. Select virtual credit card
5. Input PIN code to confirm the payment

Credit card information is not transmitted
Off-Line Payment

More Secure and Fast than Magnetic Credit Card Swipe Payment

Mobile Payment

Out-of-band authentication

Sign a Credit card Check

Merchant scan the QR

Before

Handwriting signature

Card can be Cloned
**Offline Payment Process**

**Consumer**

1. Select Virtual credit card
2. Enter the amount
3. Input PIN to make a digital signature and Generate a QR code

**Commerce**

4. Scan the QR code
5. Make a Digital Signature
6. Connect to Payment Gateway

Date: 2014/10/02

Consumer’s Digital Signature

Commerce cannot clone any card!
Secure Tokenization Payment

No credit card number store in the e-Wallet

3rd party cannot get consumer’s Credit Card Data

All transaction is confirmed by digital signatures
How do we protect “Card not present Transaction”?

- Issue certificate to the register’s e-Wallet
- User input the **Card Number + Expiration Date** then encrypted it immediately and send to backend server
- User can decide if he want to encrypted his CVV by his public key so no need to input the CVV for each transaction
- Support both hardware/software Secure Element
System Architecture

Jrsys provides:
- Mobile QR iOS/Android Client SDK
- Backend Authentication Servers

Jrsys Payment Authentication Servers

- Secure Single Sign On Server
- Microsoft Active Directory Server
- Authentication Server
- Log/Audit Server
- Registration Authority
- Certificate Authority

Merchant

POS

Mobile POS
NFC, QR code

Audio EMV Reader
Secure MicroSD
Industrial NCF/Bar code scanner Phone

Portals

Application Servers

e-Mail/SMS Server
Database Server
Payment Gateway

Consumer
Secure QR code

Issuing Bank
Credit Card Acquirer

VISA
MasterCard
UnionPay
QR code for Logistic

- Shipping QR code contains Product codes, Quantities, Date, Time and Manufacture's Digital Signature
- User can scan and verify it immediately
Digital Signed Hard Copy Document
User can scan and verify it immediately

Before

Handwriting Signature

Now

Digital Signed PDF

PDF417 Original Document with Digest

Party A’s Digital Signature

Party B’s Digital Signature

Digital signed PDF 417 License

Digital signed QR code Invoice
Why FoxitSign is different?

Besides of online Document Exchange

**Original Document**

**FoxitSign**

**FoxitCloud**

**Mobile Signature and Validation Service**

**WebTrust CA**

PDF417 Digital Signed Document

Both parties scan it and Make their digital Signatures by Mobile

PDF or Hard copy

Both parties will receive the digital signed confirmation receipt after they finish their digital signatures

Final PDF can keep in the FoxitCloud or print it out

*Original Document*:

<table>
<thead>
<tr>
<th>Signed on behalf of our corporation</th>
<th>Signed on behalf of another corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party A: [Signature]</td>
<td>Party B: [Signature]</td>
</tr>
</tbody>
</table>

*Signed Document*:

<table>
<thead>
<tr>
<th>Signed on behalf of [Name]</th>
<th>Signed on behalf of [Name]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Signature]</td>
<td>[Signature]</td>
</tr>
</tbody>
</table>

*PDF417 Digital Signed Document*:

<table>
<thead>
<tr>
<th>Signed on behalf of [Name]</th>
<th>Signed on behalf of [Name]</th>
</tr>
</thead>
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<tr>
<td>[Signature]</td>
<td>[Signature]</td>
</tr>
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</table>
Patented QR Code Payment

- **Digital Signature QR code**
  - Not only an URL/ OTP short code
  - But also the transaction with digital signature

- **Easy to deploy and use**
- **No additional hardware cost**
  - Authentication, Integrity, Confidentiality and Non-repudiation secure transaction
# The Differences

<table>
<thead>
<tr>
<th></th>
<th><strong>Traditional Payment &amp; QR code Payment</strong></th>
<th><strong>jrsys QR code Payment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
<td>URL or a short OTP code</td>
<td>Digital Signed Transaction data and OTP</td>
</tr>
<tr>
<td><strong>Authentication</strong></td>
<td>Weak</td>
<td>Strong</td>
</tr>
<tr>
<td><strong>Authorization</strong></td>
<td>Weak</td>
<td>Strong</td>
</tr>
<tr>
<td><strong>Encryption</strong></td>
<td>Weak</td>
<td>Strong</td>
</tr>
<tr>
<td><strong>Non-repudiation</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Credit Card Data</strong></td>
<td>Merchant can get Credit Card data</td>
<td>Encrypted &amp; Merchant cannot get it</td>
</tr>
</tbody>
</table>
Secure Mobile Devices

Contact/ Contactless NFC Micro SD

Secure Mobile Applications
- Secure PDF
- Secure e-Mail
- OTP/PKI
- SMS/VOIP
- Mobile Wallet
- Mobile POS
- Mobile Money

Digital Signature / Encrypt/Decrypt

Java Card Operation System

Secure Element

NFC Antenna

World First
iOS/Android/PC
Token

Bluetooth Reader

e-Ink
Master OTP card

Audio Reader

Audio Token
World First iOS/Android/PC Token

- Platform: PC/Android/iOS
- Secure MicroSD inside
Easy & Fast PKI-enable Solutions

• PKI-enabled in 3 Days **Not** 3 Months

• Cross Platform

![browser logos](image)

• Various Devices

• **Mobile Signature & Validation Service**
Security Suits for PC

Web Authentication with SE

Applications can work with Jrsys Middleware and many

Software Applications
ERP (Enterprise Resource Planning)
Human Resource Management
Customer Relationship Management
Supply Chain Management
Financial Resource Management

Jrsys PC Security Suite
Firefox Plug-In
ActiveX
Chrome Plug-In

Multiple Tokens
Software PFX
Smart Card
USB Token
HSM
Mobile Authentication with SE

Applications can work with Jrsys Middleware and many Secure Mobile Devices.

Secure Mobile APP
- One Time Password
- Secure e-Mail
- Secure PDF
- Mobile Signature
- Mobile Money

jrsys Mobile Security Suite
- iOS SDK
- Android SDK

Multiple Mobile Tokens
- Software PFX
- HCE
- Smart Cards Bluetooth reader
- Secure MicroSD
- PC/iOS/Android Token

2014 Taiwan ITM Best product Winner Award
WebTrust® RA

Issue WebTrust ® certificates to Mobile & PC

Jrsys Secure Mobile/PC Tokens

USB PKI Token
Smart Cards USB PC/SC reader
Secure MicroSD
iOS/PC/Android Token
Bluetooth Reader
Software PFX HCE
Cloud Validation

All in One Authentication Service:
ID/Password, OTP, Smart Card, Mobile Tokens and Micro SD.
Worldwide Awards

- APICTA Award 2013 Security Winner
- 2012 Mobile Money Innovation Award
- 2014 Taiwan ITM Best 100 products Winner Award
- 2012 ASIA PKI Innovation Award

One of the 7 innovative ideas from 98 best ideas of 26 countries
BY: MIF, IDB, CAF and GSMA
Partner with Foxit

27,500 Millions
PDF users
use jrsys security Suite
Mobile Security Patents

Gained 2 U.S. Mobile Security Patents