

Mobile Technology threats and opportunities for taxation and government payments

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Global penetration of mobile technology

Key Global Telecom Indicators for the World Telecommunication Service Sector in 2011
(all figures are estimates)

	Global	Developed nations	Developing nations	Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas
Mobile cellular subscriptions (millions)	5,981	1,461	4,520	433	349	2,897	399	741	969
Per 100 people	86.7%	117.8%	78.8%	53.0%	96.7%	73.9%	143.0%	119.5%	103.3%
Fixed telephone lines (millions)	1,159	494	665	12	35	511	74	242	268
Per 100 people	16.6%	39.8%	11.6%	1.4%	9.7%	13.0%	26.3%	39.1%	28.5%
Active mobile broadband subscriptions (millions)	1,186	701	484	31	48	421	42	336	286
Per 100 people	17.0%	56.5%	8.5%	3.8%	13.3%	10.7%	14.9%	54.1%	30.5%
Fixed broadband subscriptions (millions)	591	319	272	1	8	243	27	160	145
per 100 people	8.5%	25.7%	4.8%	0.2%	2.2%	6.2%	9.6%	25.8%	15.5%

Source: International Telecommunication Union (November 2011)
http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html

via: mobiThinking
<http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats>

The rise of mobile payments

At the end of 2011, there were **6 billion** mobile subscriptions - that is equivalent to **87% of the world population**.

Mobile subscribers in the developed world has reached saturation point with **at least one cell phone subscription per person**.

At the end of 2011 there were **4.5 billion** mobile subscriptions in the developing world (76% of global subscriptions).

There will be **212.2 million m-payment users** in 2012 (up from 160.5 million in 2011)

m-payments will total **US \$171.5 billion** in 2012 (up 61.9% from \$105.9 billion in 2011)

By 2016 there will be **448 million m-payment users**, in a market worth **\$617 billion**. Asia/Pacific will have the most m-payment users, but Africa will account for the highest revenues

Mobile payments



In the developing world in particular, mobile payments and mobile PoS technologies mean new populations are included in electronic payments



MasterCard Mobile Readiness Index



MasterCard Mobile Readiness Index



Mobile technology in m-Government



Most innovative payment products still mostly for P2P transfers, utility payments and direct payments to merchants



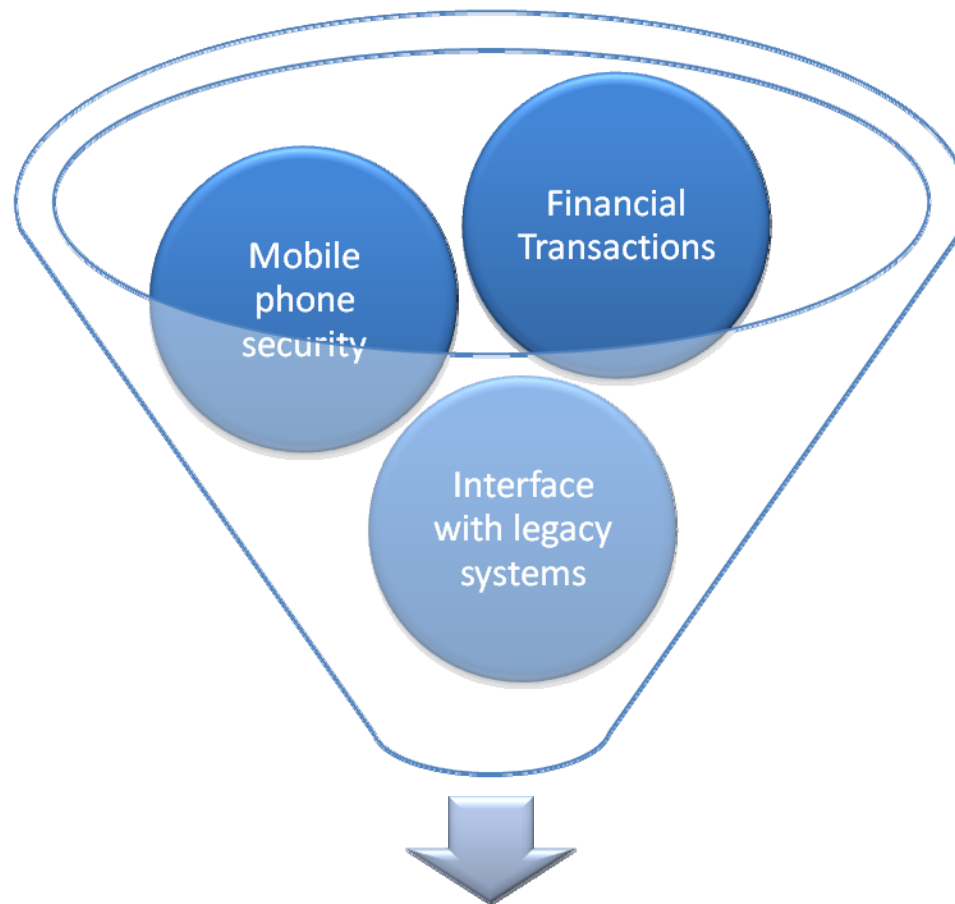
Less than 10% of the products supporting government-to-person payments



Some limited use of mobile apps in tax collection

- France mobile app for self assessment collection
- Malawi delivery of emergency aid via mobile
- Basque region collection of fees on face-to-face services (traffic fines, taxes and customs duty)

Countering fraud



The need for security

Countering fraud

Mobile Attack Incentives

Mass consumer adoption

Faster processors

Chip design new and flawed

Apps rushed to market without testing

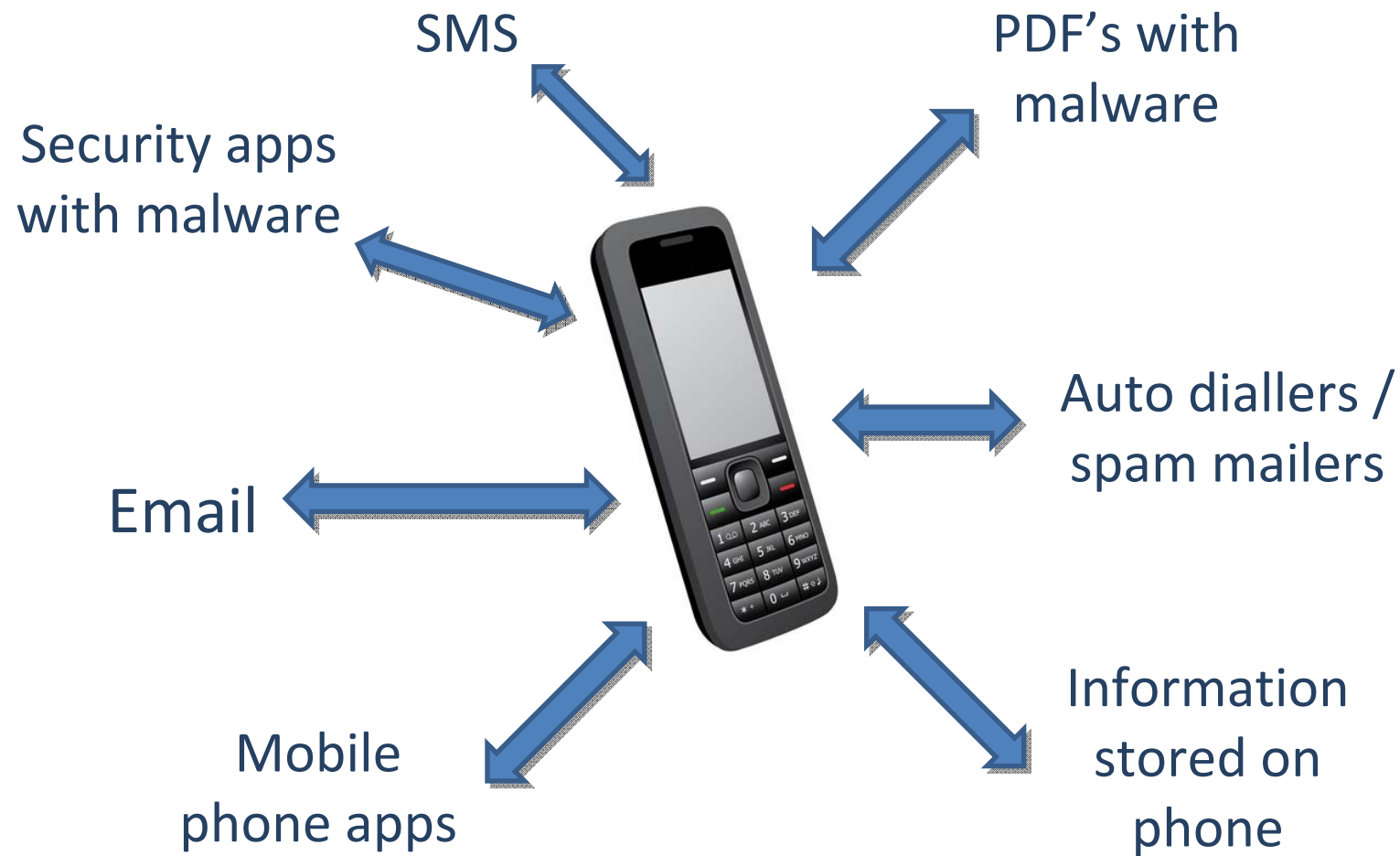
Phones ship with little protection

Multiple attack vectors

Increased storage of personal data

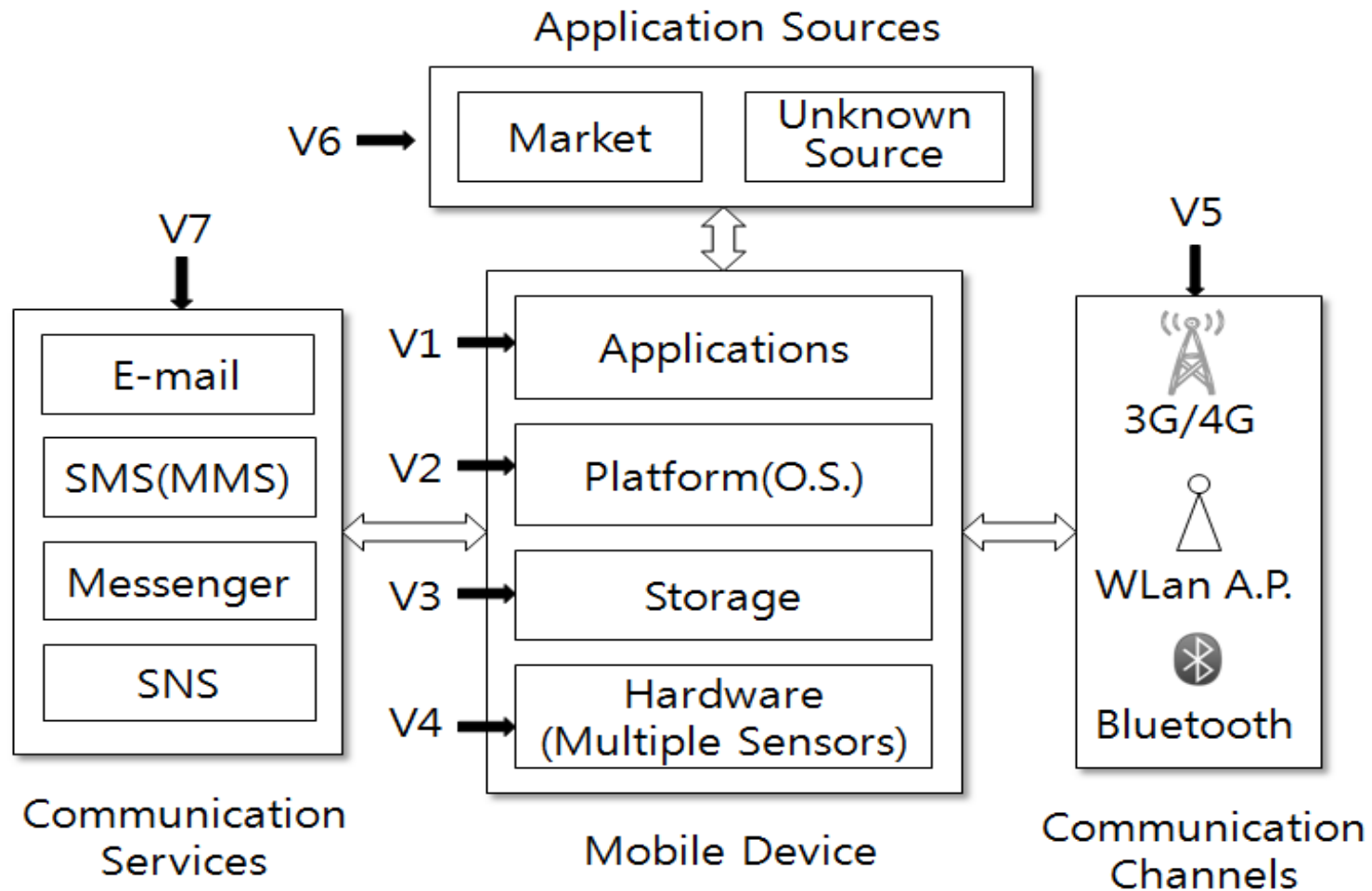
Countering fraud

Mobile Attack Vectors



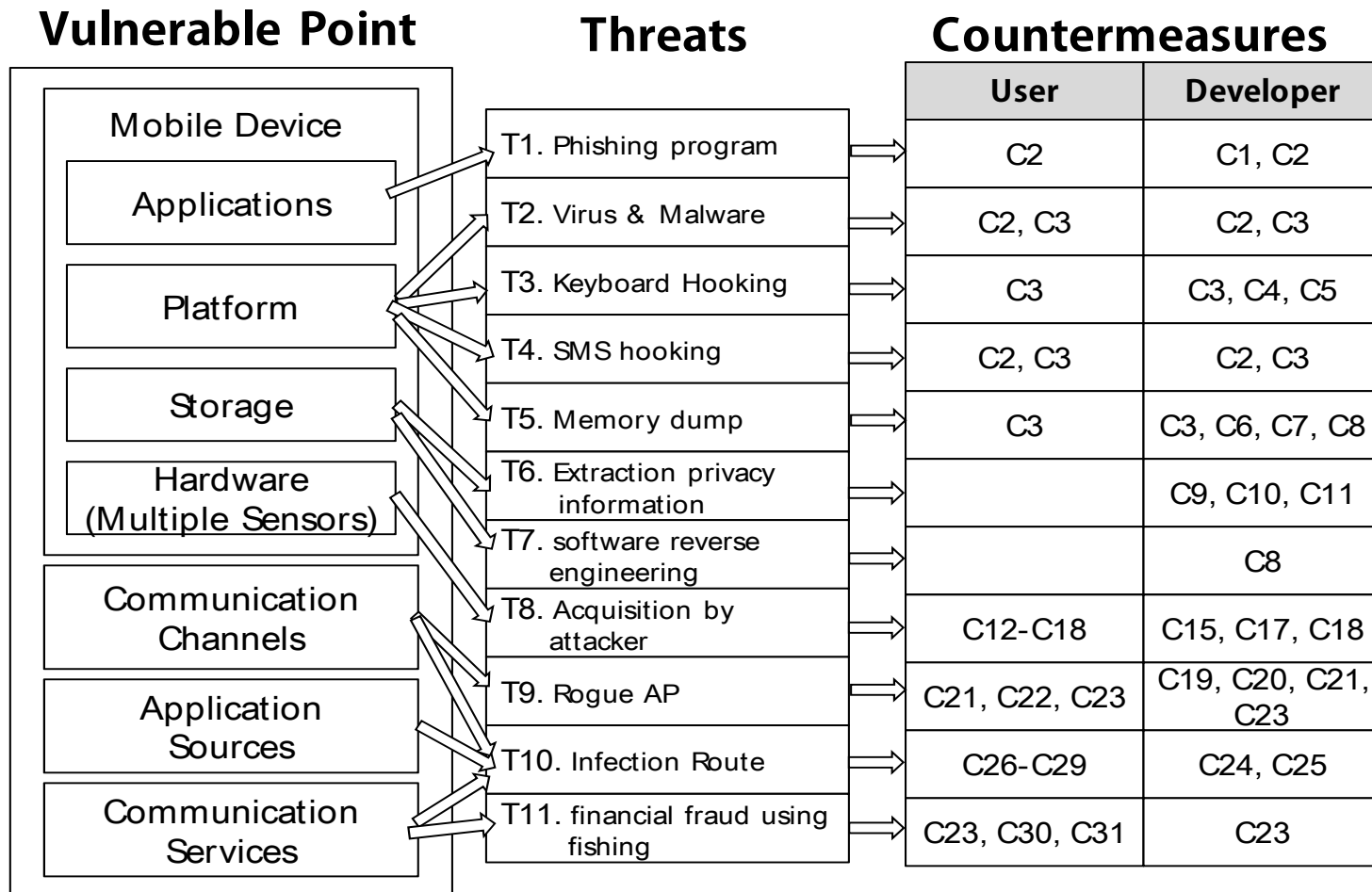
Countering fraud

Security vulnerabilities in mobile transactions



Source: Prof. Yong-Nuo Shin, Hanyang Cyber University

Security threats and countermeasures



Source: Prof. Yong-Nuo Shin, Hanyang Cyber University

Countering fraud

Software defence

- App store publishing controls
- Firewalling applications
- Apps signed with encrypted keys
- Antivirus / Antimalware
- Apps with data encryption

Countering fraud

Other measures

- Biometric security
- Timely patching / upgrading
- Location tracking / remote wipe
- Reduce storage of sensitive data
- Monitor logs / network traffic

Countering fraud

Ensuring the identity of the citizen



Tying the handset to the account holder:

- Passwords and PINs
- Biometric tests – fingerprints, handwriting, facial recognition, voice recognition, retina



Reliable underlying database of taxpayers

- UTIN allocations
- Cross-referencing with other government databases



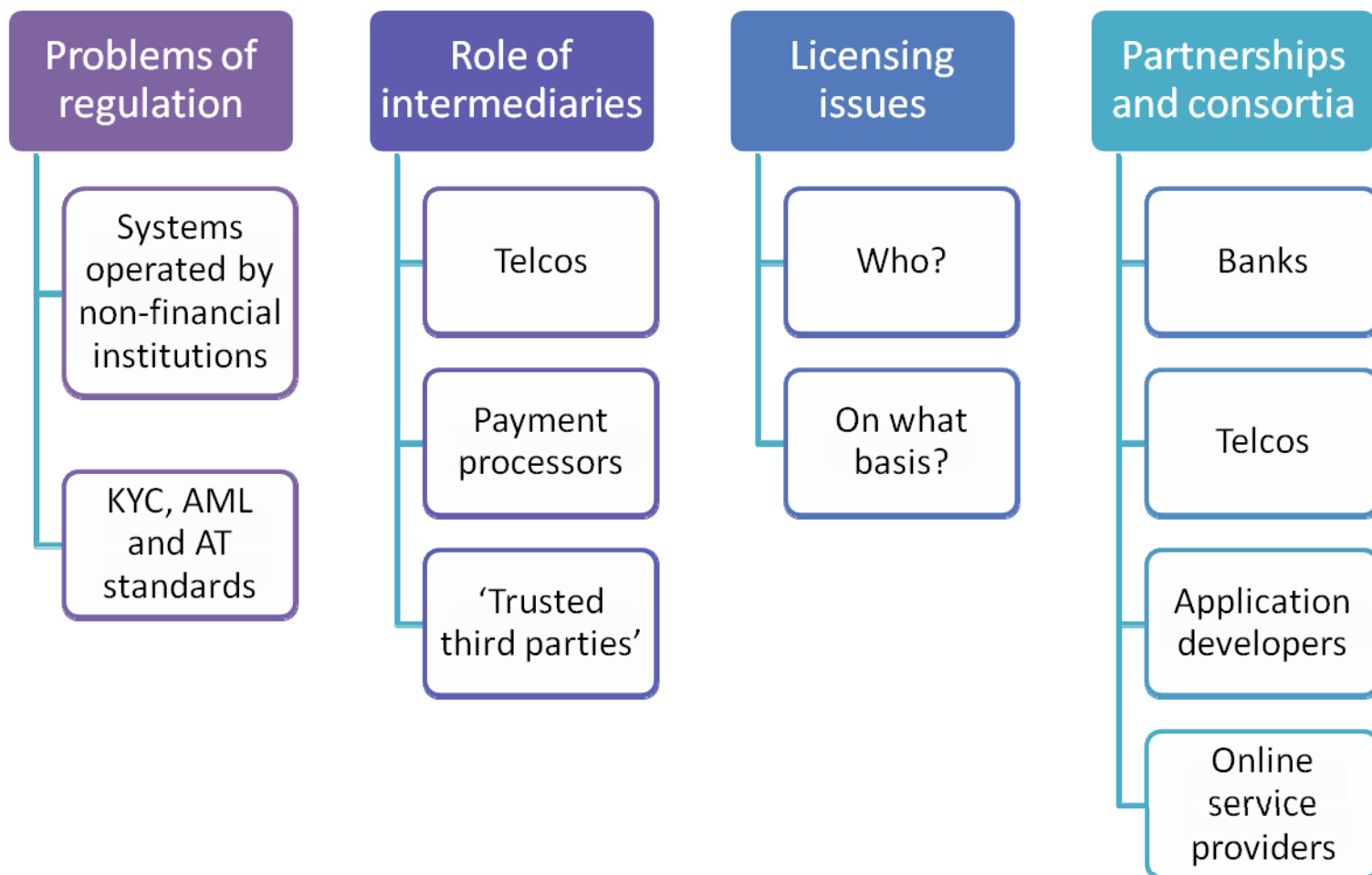
Verifying taxpayer identity in international transactions

- Central facility connected to local services

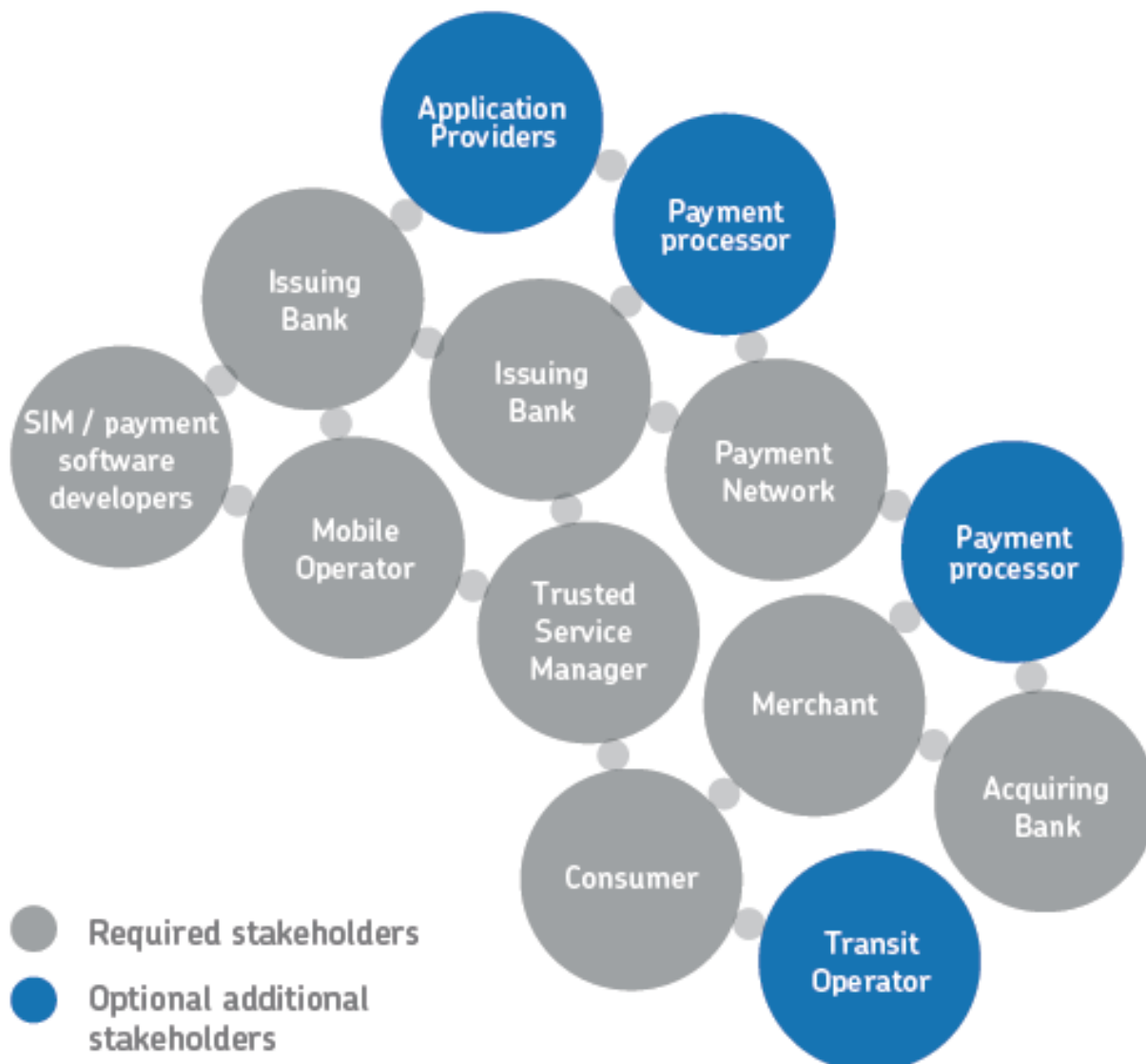


Countering fraud

Anti Money Laundering and Anti-Terrorism



Possible stakeholders in mobile payments



Key factors for mobile phone-based payment licenses

Interoperability – competitiveness and spread of users

Role of telcos – message passing, not banking

Security of messaging

Security of data – real time fraud analysis

Cost – competitive with card costs

Loading – simplicity

Using to make payments – incentives to stay electronic

Electronic Transaction Payment types (ETPs)

Electronic bank transfers

Online banking

Credit cards

International debit cards

Local debit cards

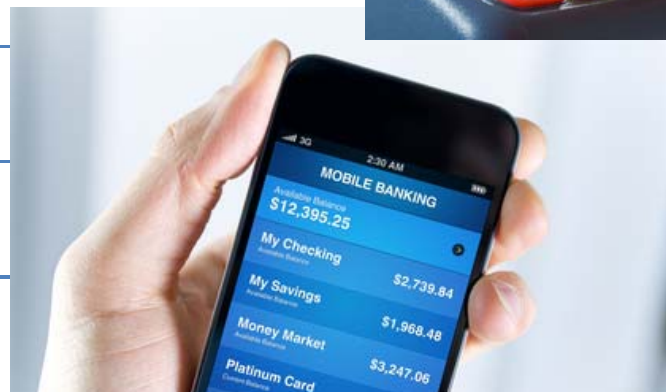
Electronic wallets / travel payments

Online virtual currencies

Social network currencies

Mobile phone based payment

systems



Requirements for a robust system

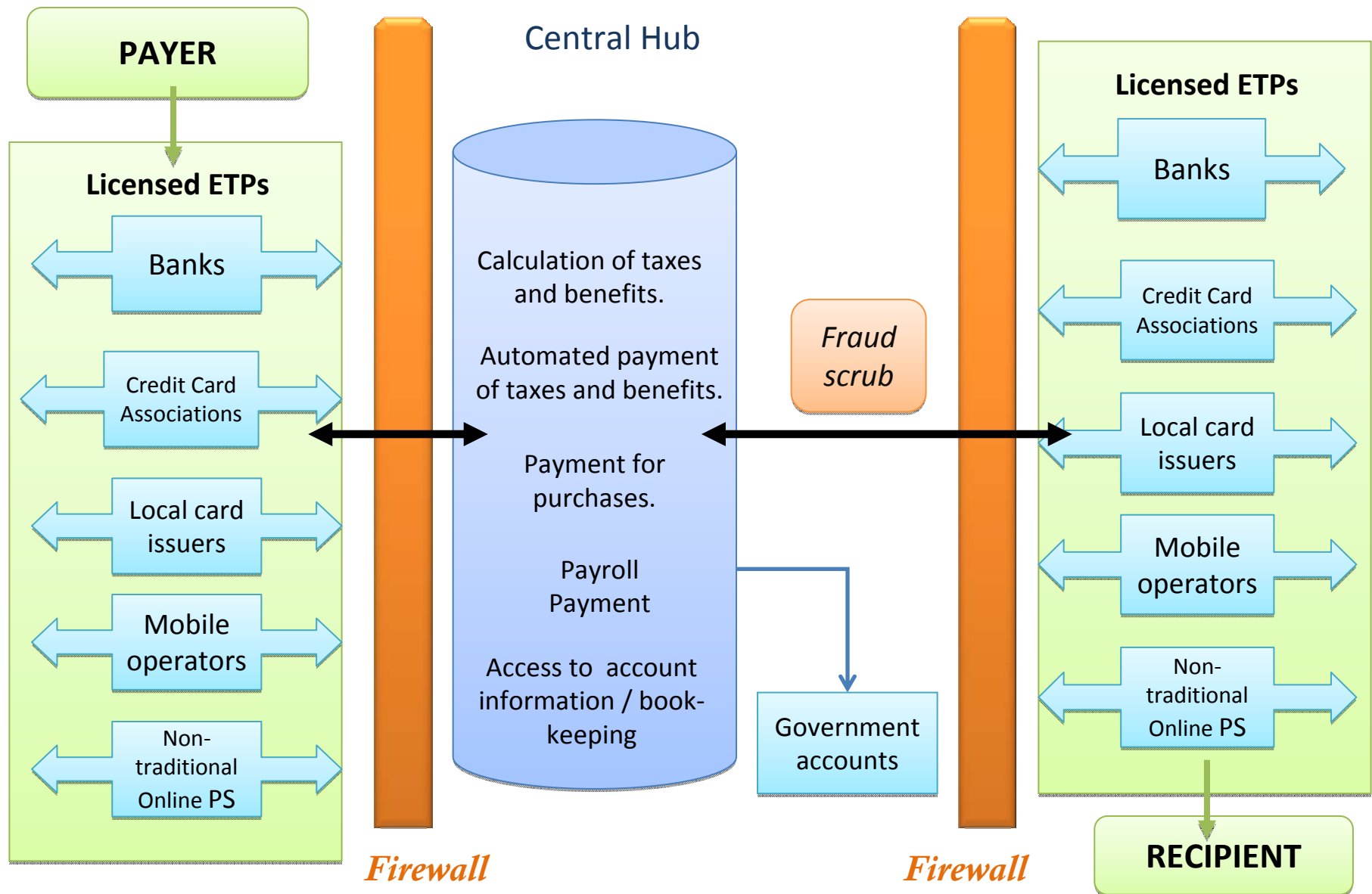
Internationally
agreed
standards

Robust fraud
counter-
measures

Standardization
of licensing

Interoperability
– with
m-payments
and other EPTs


Central hub for electronic payments




System components



- Point-of-Sale Data Capture devices / transaction data input



- Licensed Electronic Transaction Processing providers




- Interoperable spine for exchange of data between ETPs, central systems and the Central Hub




- Funds transfer conduit



- Firewalls between ETPs and central hub




- Central hub processing and data storage



- Central hub rulebase containing regulations and calculation rules



- Central hub calculation modules



- Real-time fraud analysis application

Hub-based system

Benefits payments:

- Benefits can be paid on specific goods and services (such as foods, petrol, utilities) for targeted recipients in an **entirely confidential** manner
- **The merchant is paid full price** for the goods with the subsidy added directly at the hub from government funds
- All regular benefits such as **employment, social, housing, pensions etc** can also be paid through the system
- Increased benefits payments can be offset from additional revenue raised by efficient, fraud-resistant tax collection

Hub-based system

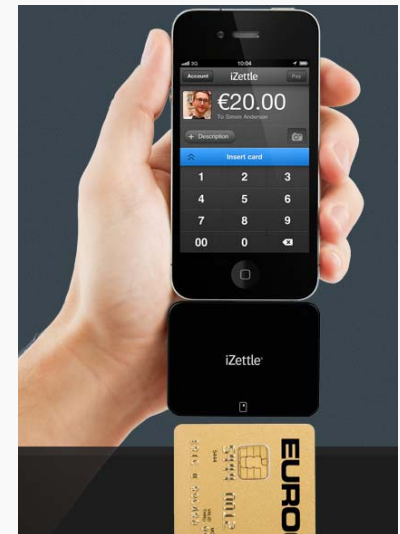
Payroll control:

- Employers can submit **gross salaries** to the central hub – reducing workload
- Employees can submit claims for allowances, dependents etc. in a **confidential** manner
- **Due taxes extracted automatically in real-time** and settled to appropriate tax authorities
- Employees can establish regular payments for utilities, pensions, insurance etc. from a virtual account on the hub
- Net pay can be **transferred directly to nominated bank or mobile phone-based accounts** for each employee
- Multiple incomes can be incorporated into the single account

Hub-based system

VAT collection:

- Merchants given Point of Sale capability via mobile phones or POS terminals
- Merchants can accept electronic payment, from cards, mobile phones or online
- VAT is deducted at the server level and paid to the relevant tax authority
- For applicable Business to Business (B2B) transactions, reclaims can be calculated and issued **in real time**



Benefits of Central Hub System

For the tax authority:	For retailers:	For large employers:	For telcos:	For government:	For citizens:
<ul style="list-style-type: none">• Automatic, simple VAT and payroll tax collection• Real time fraud analysis reduces losses• Interface with other tax authorities	<ul style="list-style-type: none">• Efficient compliance, reduced admin, little reporting effort.• Facility to market goods more effectively• VAT refunds automated	<ul style="list-style-type: none">• Major saving in admin of employees' tax and benefits records.• A facility to bill customers to their quasi bank account for collection of regular bills.• Automated VAT collection and refund for all transactions.	<ul style="list-style-type: none">• Greater traffic over networks• Income stream from central clearing• More information facilities.	<ul style="list-style-type: none">• Major increase in tax revenue.• Capability to provide secure and confidential benefits.• Additional data stored on central servers.• Assisting developing countries to operate in a non-cash environment	<ul style="list-style-type: none">• Incentives including upgrades, price discounts or special bonuses• Assurance of correct tax calculation• Potential rebates or discounts on electronic purchases

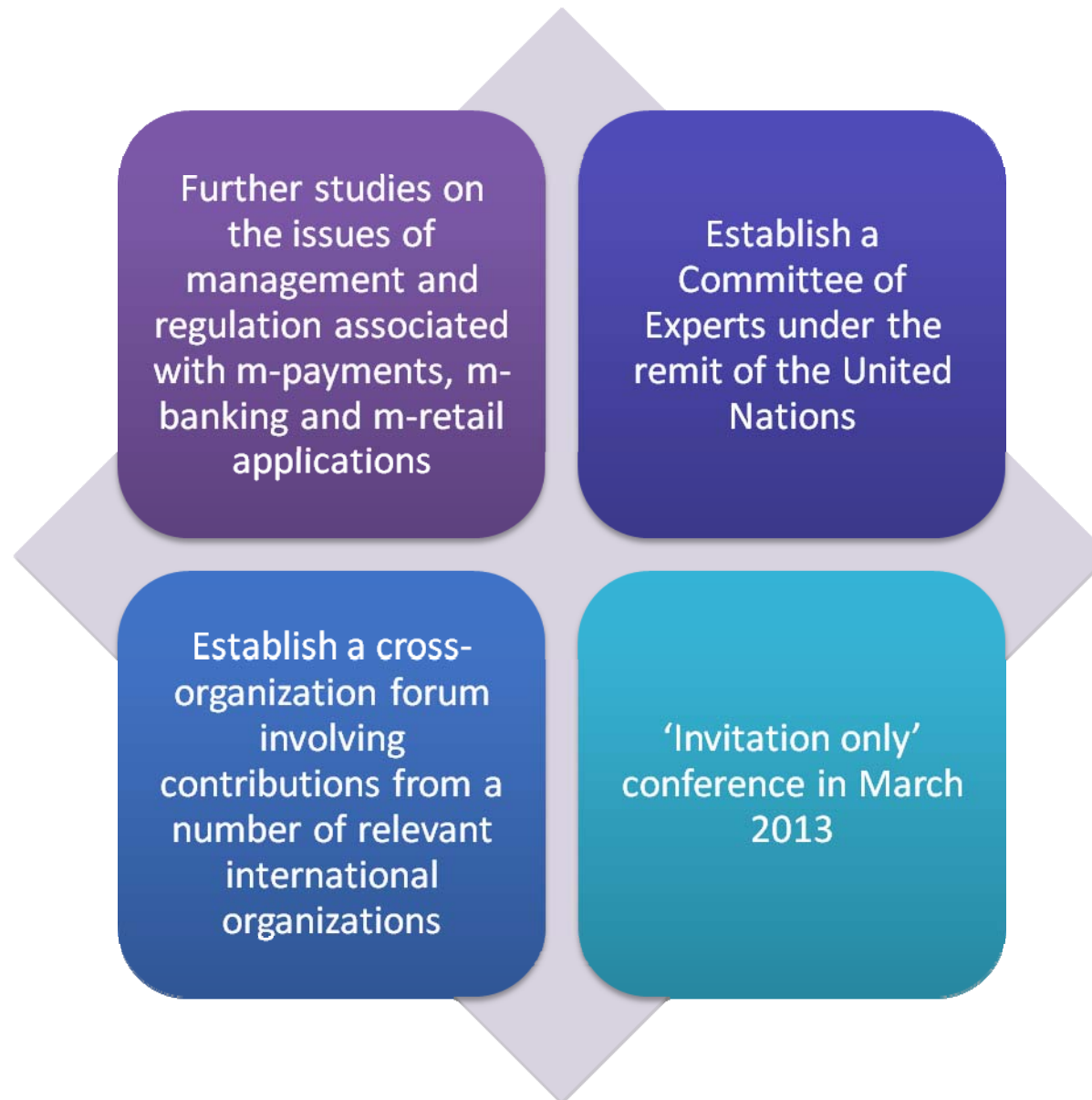
m-Government payments for the new millennium

m-Government payments for the 21st Century:

- **Processed in real-time**
- The tax component of each payment **split in the course of the transaction**
- **Fraud analysis** applied at each stage
- **Interoperable** with any ETP
- **Benefits, refunds and discounts** paid directly



Action points



The Guernsey model

