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Mobile Payments and a Regulatory Framework

and: regulators' interest in the best efficiency and interoperability for payments

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Introduction

- Mobile may become the most used self-service banking channel over the next years, but mobile banking will leverage the benefits of ubiquity rather than being a copy of Internet banking (GSMA Pay-Buy-Mobile consortia with 46 operators, emerging markets using SMS)
- The opportunities of Additive vs. Transformational banking affect Mobile banking : different customer basis (unbanked low-income groups vs. Affluent ones)
- Standards, security , profitability, interoperability and compliance procedures have been addressed, but there are open holes and disagreements on regulations, liability issues and NFC terminals.
- How far to allow the SIM (operator « owned ») to control the secure elements of payment processes, and is downloaded software not an alternative ?
- At best regulators have seen their role as creating awareness, securing deployment , and ensuring system integrity ,but they have not cared not for communications or banking customers and the rivalry between financial/banking and communications regulators is delaying concrete decisions



Plan

- Mobile payment eco-system
- Cases and strategic intents of players
- Extended roles
- Payment process: identity management, alignment of infrastructures, cost efficiencies and interoperability
- Changes of roles in need of regulation
- Regulatory and policy steps



Projected increases in Mobile and Internet Banking (Source Siemens Pictures of the Future, Spring 2009)

| % of users aged >16 y | Germany | France | UK | Italy |
|-------------------------------------|----------------|---------------|-----------|--------------|
| 2007 Internet banking users | 34 | 32 | 31 | 11 |
| 2010 Internet banking users | 50 | 49 | 43 | 26 |
| 2007 Mobile banking users | 4 | 8 | 6 | 6 |
| 2010 Mobile banking users | 20 | 25 | 25 | 25 |



Mobile payment eco-system

- Banks and financial institutions
- Payment and credit card providers
- Payment processing system's houses
- Merchants collecting payments via mobile terminals
- Mobile network operators
- Access terminal vendors
- Semiconductor vendors
- SIM card vendors (3,07 Billion shipped in 2008)(European world leaders: Oberthur, Gemalto)
- Security and eID solution providers
- andCentral banks



But who is active / passive / against ?

- **New usages**
- **New services**
- **Banking acces to new populations**

- *Operators*: in developed countries look at it as technical projects (security, RFID) , in developing countries as a key service
- *Banks* : reluctant to obstructive (1/3 just wait for other banks to take action and do not believe in client acquisition)
- *Regulators* : communications, information and financial/ / banking regulators , and Central banks, talk very rarely together and jointly, or complicate the debate
- *Payment processors*: have global and competitive strategies
- *Access terminal vendors*: waiting for the regulators to reduce the market risk (only 40 M RFID enabled cellphones, most in Japan)



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Mobile as an element of multichannel banking strategy

- Nordea, SE
- BNP Paribas, F+etc
- Bankinter, SP



Mobile banking as a change agent

- Gains are no longer measured by the substitution of labour force by a tool
- With M-banking , every agent becomes a user as well as an information/knowledge source
- Thus cooperation and control/audit modes and roles must be redefined ,including internal as well as external parties
- Mobile banking as a source of value-addition via personalization,etc



SMS etc based payments and the Strategic intent of Operators

NB: SMS based information excluded

- Manila, world capital of SMS based payments incl. International transfers (started 2000, 28 M users, 200 M SMS/day in total); uses swap accounts managed by the operator domestically and internationally; recipient is advised by SMS with a code and can withdraw transfer value from a network of operator partners (money machines, shops); used also by the 8 M Filipino foreign workers transferring home 10 BUSD (10 % of GNP)
- In India an SMS based payment costs 2 roupies (A Little world) , an Internet payment 10 roupies and a bank branch payment (if any branch around !) 50 roupies
- **Strategic intent** . Operators, by turning the mobile phone into an electronic wallet, achieve higher loyalty by a wide network of partners, far wider than bank branches ; use of SIP-AAA
- Transfer fee : 1 % , typically for amounts up to 500 USD ,vs. Banks fees of 4,5 % say from HK to Manila
- Other players. DoCoMo's acquisition of the payment branch of Sumitomo Bank (700 MUSD in 2006) , Telefonica / Banco Bilbao Vizcaya Argenteria (BBVA) plus many experiments worldwide , SK Telecom Moneta service



SMS based payments and the Strategic intent of Banks

- Caisse d'Epargne 's Movo service for customers with an account ; receipient characterized by his mobile phone number and amount (SMS to 72111) ;sender and recipient have to register on movo.fr
- 6 Euros/year subscription price, plus 0,50 Euro fee/transfer, plus SMS fee to operator
- **Strategic intent** is: 1) to increase deposits rotation and take business away from credit card processes 2) control the distribution of SIM cards with payment card functionality on SIM (EMV standard) via MVNO's, OR RFID (with the active participation of some mobile terminals suppliers such as Nokia, Sagem) 3) prepare for the possible reduction in plastic cards in favor of electronic purse
- Other players or attempts : Ebay Paypal, plus many experiments; initiatives of Master Card PayPass , SEB, Rabobank SMS Betalen, Gemalto, Sagem, Inside Contactless, Credit Mutuel, Cresco (NO); , failure of Deutsche Bank's Paybox
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*SMS based payments and the Strategic intent of some **Systems houses***

- In Belgium, almost all banks have (had) one common intersettlement platform Banksys, thus enabling multi channel payments : Fortis, Dexia, KBC, ING ; other one was Bank Card Company (BCC)
- ATOS Worldline purchased both for approx 1 Euro per turnover Euro (309 M Euros in 2008)
- In Malaysia, Visa/ Maybank launches RFID payment
- **Strategic intent** of systems houses : serve as third party neutral payment agent outsourcing agents to both banks and operators
- Other cases: CSK in Japan , DST in US , Monitise (M-payments/RFID only),
- Few back end finance systems are prepared for mobile security and formatting requirements



Mobile operators as banks

- With an average 35-80 % (culture and also country dependent) of all mobile generic services being prepaid to the operator over periods of several months ,directly or via a payment agent (not only banks) , aren't mobile operators short-term deposit banks holding at any time double digit Billions Euros ?
- Going beyond collection of receivables from their own customers alone, to what extent should operators carry out simple payment processing functions traditionally carried out by banks between their customers and between their customers and third parties? For example, for some mobile operators whose ownership include public utility companies, such third parties could be water, power and cable TV bills –
- Furthermore, with mobile operator's capability to handle efficiently and in real-time large and also Euro 10-type payments (tickets, parking,..), and their ability in handling bundled service definitions, aren't they already micro- and macro-payment agents ?



Banks as communications operators

- With the option to add WiFi or WiMAX base stations to largely owned and shared ATM and shopping terminals networks, as well as RFID readers to ATM units and many other terminals (e.g. in public transport and shops), banks can in urbanized environments become hot spot / RFID operators, and they can provide financial and other content surpassing what mobile operators can give
- In the process they can bypass some ISP's or public wireless operators for payments
- They can optimize their physical branch and ATM terminals grid in the face of reduced physical client visits



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Payment processors as trusted neutral parties with economies of scale

- In case of outsourcing and coherent regulatory frameworks, systems houses would be able to carry out payment processing on the same platforms both mobile billing, mobile payments, credit card processing and many commercial bank payments, with economies of scale



Payment Process BPM steps

- O: Establish and verify terminal owner's identity
- 1: Associate the access terminal with payment instruments (Bank, Pre-pay, Credit card, Mobile account) all at a banking grade of security
- 2: Payment tool download (via SMS, RFID, browser, or Java app)
- 3: Pass-on payment information to payment backbone infrastructure and execute transactions and notify recipient / payee

All agree on the above, but who controls what or performs best each step ?



Identity management

- Legally rooted national eID identity management solutions and processes
- European wide electronic identity interchange (evolving standard eg from STORK project)
- Turning the service provider into a trusted party by banks and national e-ID root servers
- eID brokerage between third parties (eg. Mobile advertising) with privacy compliance
- Operator based subscriber data broker to link policy and subscriber identity information with public eID



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Payment/transactions infrastructures

Very important is the research result (see also COST 605 presentation in Rome) that actually there is not much difference , at IT and technology levels, between the customer care and transactions platforms of mobile operators (see Figure 1) ,and those of banks (see Figure 2) ! This fact is the result of the evolutions of both layered communications systems architecture, and of banking software systems architecture, in that mobile networks have evolved much faster than fixed networks. The security levels offered by mobile networks inside the infrastructure are also on par (higher to) with those in banking software .



Banking systems / Communications systems

Billing (& hot..)

Cash flow mgt

Infrastructure

OSS/NM



(Operator) Enterprise integration services

Digital customer
information files

Revenue
assurance

CRM customer
relationship manager

Customer
profiling

Personalized
Services

Targeted marketing &
cross-sales

Credit risk rating
& screening

Identification
Autentification

Access networks suite

Internet and
broadband

Circuit
switched
lines

Virtual
private
networks

Mobile
data

Mobile
Voice
(2/3G)



Banking systems / Communications systems

Core banking

Credit card

Treasury



(Bank) Enterprise integration services

Customer profiling

Digital customer information files

Digital credit management system

Digital sales & Marketing automation

Personalized Services

Targeted marketing & cross-sales

Credit risk rating & screening

Origination Fulfillment

Delivery channels suite

Retail Internet banking

Digital cash management system

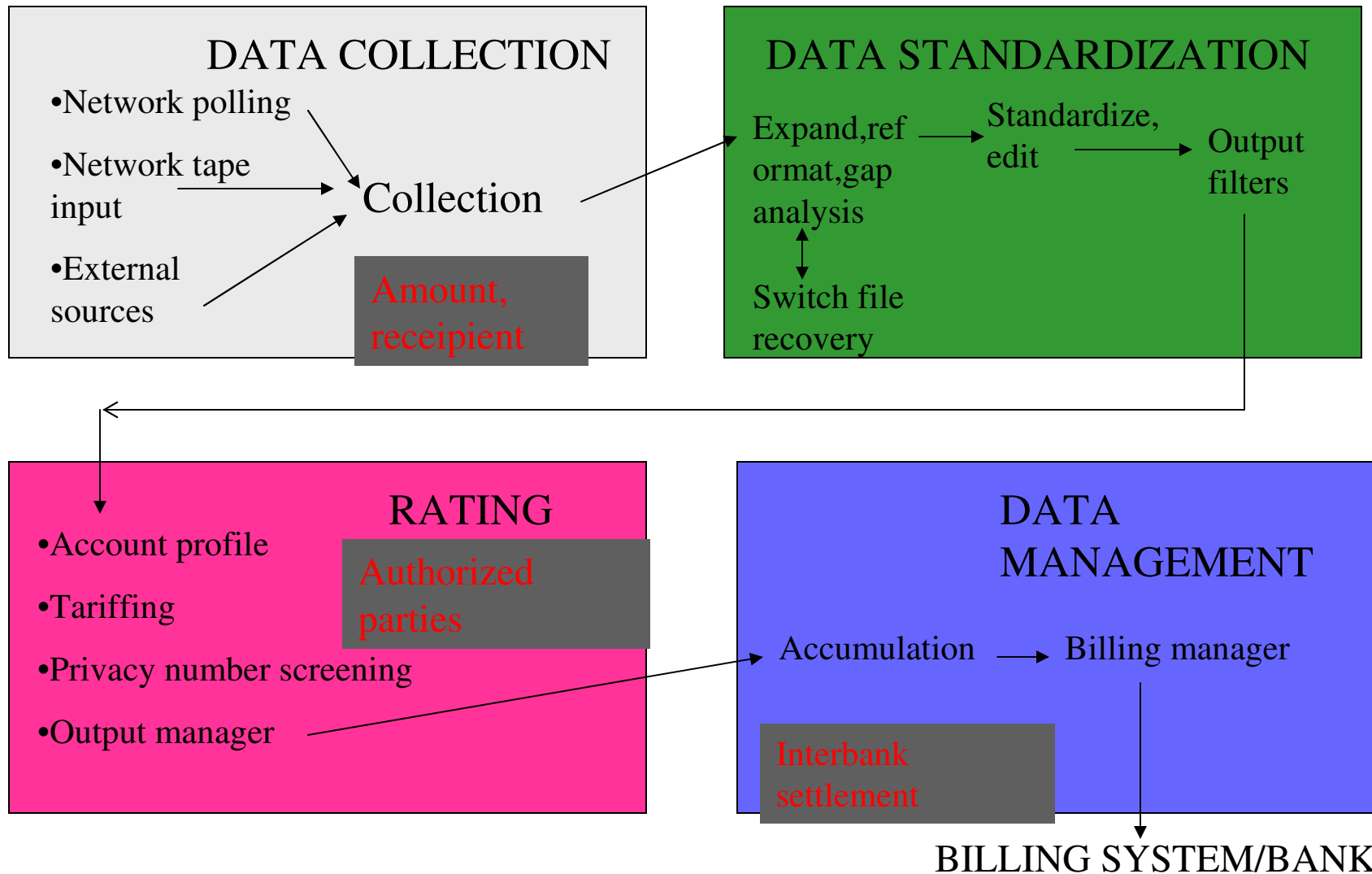
Digital teller

Digital call center

Mobile banking



Mobile billing pre-processing system architecture





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Efficiency of payments : financial analysis of mobile operators' cash flow statements

Sample (over 5 years 2002-2006 and 2004-2008) : NTT DoCoMo (part of NTT) , Singapore

Telecom , Orange , Belgacom , Telenor , Verizon , TDS , Telkom Indonesia , Estonian Telecom

Empirical research proves for the following indicators :

Leverage of short term debt/ short term deposits (avg. 55%)

Net operating cash flow margin (avg. 2,13 %)

Free cash flow margin (avg. 110 574 Euros)

Free cash flow from operations/employee (avg. 1,94 %)

Number of customers / Employee (avg. 1176)

that the average mobile operator achieves similar or better financial results from payment operations than the average short term operations in a bank with limited investment operations (e.g. : a postal bank or savings and loan institution)

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Interoperability or the mistake of some players

- Several operators want to offer mobile payment services, but with proprietary technologies, on interoperable networks and terminals.... Doomed to fail !
- OMA and Financial Services Technology consortium develops API's that facilitate M-payment systems in mobile terminals based on interoperable back end systems (e.g. US Sprint+eOne Global+Payment Works)



Isn't it time to revisit some roles and regulations to benefit from transactions handling efficiencies at mobile operators and banks ?

- The possible convergence/overlaps between mobile operators and deposit banks (at operational level) has been largely ignored , as operators thought that banks were better at payment services , while banks thought operators were better at communication services ?
- Mobile data and value added services , have changed the view that mobile networks should be content and transaction neutral , with intelligence and any charging to happen in the province of the end nodes (clearing houses, customers ,and banks)
- Haven't the above perceptions been reversed by very efficient real time payment , transaction clearing systems and content-on-demand management systems at mobile operators ,but also by some banks analyzing now better and more strategically their IT and communication assets from a competitive point of view ?



The alternate regulatory and strategic scenarios (regulators , banks , mobile operators)

Options for regulators :

- -Banks get individually restricted communications service provider licenses, and lease mobile communications infrastructure
- -Bank groups get restricted communications service provider licenses, and lease mobile communications infrastructure
- -Mobile operators (genuine or virtual) get additional deposit bank licenses on demand
- -Mobile operators (genuine or virtual) gets automatically deposit bank licenses as part of their communications license; this option is of great appeal to developing countries where the banking infrastructure, coverage and trust are far lower than those of mobile operators
- -Mobile payment services are authorized to be opened up for licensing by third parties for their own customers (oil companies, physical transport networks, health system,..)
- In any case, communications and banking regulations would have to share mandatory prescriptions in terms of cash and short term debt, which would often be a change from the present situation.



The alternate regulatory and strategic scenarios (regulators , banks , mobile operators)

Options for mobile operators :

- 1) Delegate, for a % of the transaction fees (volume based) , fulfilment ,collection and risk management ,to banks or banking payment cooperatives ;this is the most frequent currently found option
- 2) Own , alone or jointly , a payment clearinghouse , bank(s) or consumer credit companies , to perform the services listed under 1) ;this is also quite common today, although different bank/credit card consortia offer competing vehicles
- 3) Apply for a deposit banking license in their own name, manage risks and reinsurance, and handle collection on behalf of third parties (content owners, administrations and public services)
- 4) Split between 1) for large transactions, and 3) for small transactions and reloads (for mobile services as well content)



The alternate regulatory and strategic scenarios (regulators , banks , mobile operators)

Options for banks :

- 1) Existing bank card system operator(s) own and manage servers, with proprietary applications, to handle multiple channels such as mobile with fixed- RFID extensions; a leased line/IP access solutions to the GGSN node of a mobile operator is sufficient; there is the option for a bank of owning an SMS/MMS Service center
- 2) Banks outsource some channels (such as mobile) to IT service companies if accepted by operators and not too expensive, and obey IT industry standards
- 3) Banks internationally create, or cooperate with, existing third party service suppliers to several mobile operators (e.g. roaming/ authentication suppliers) to enhance their services to transactions .The bank than would align it with communications industry standards
- It should be noted also that the issue spills over to payment terminals standardization and WiFi/ RFID capabilities;



Regulatory and policy steps

- *National Parliaments and EU* (for implementation by regulators) : grant as a default option a limited banking license for payment handling to public operators, and a public and VPN hotspot/ RFID communication license to ATM and payment terminal network owners (usually banks and shops)
- *Governments:*
 - *grant or adapt operators and banks access to national eID data ;
 - *allow for inter-EU eID interoperability respecting national sovereign eID choices
 - *establish security certification services for terminal providers, banks and mobile operators alike
- *Central banks:* set a ceiling on monetary flows for the mobile payments by operators as part of the limited banking license (in NL: 2500 Euros /year and 150 Euros/transaction) ; shops may get minor changes to their status of « business correspondent to bank »
- *Industry* : enable fast deployment in terminals via contactless SIM cards with eID registration, and embed RFID readers in ATM and payment terminals



CONCLUSION

- Distributed / multi-party / SLA based Mobile payment platforms represent an evolution of client-server mainframe based banking payment processing platforms
- Interoperability is in all parties interest
- Contactless SIM based access terminals are the key, with the communications industry leading the show and standardization
- Banks may see the benefits and investments would be small
- Regulatory changes are needed (see business presentation at COST Workshops in Paris and technical presentation in Rome)