

Mobile banking convergence with banking payment platforms

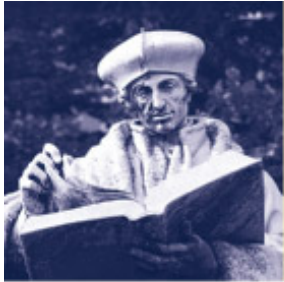
L-F Pau lfp.inf@cbs.dk

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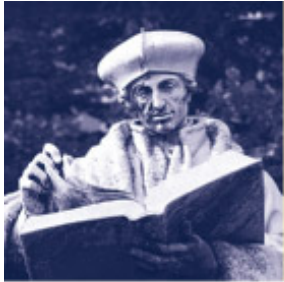
Introduction

- **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**



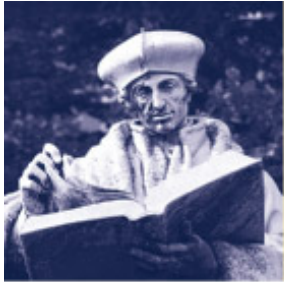
Mobile payment eco-system

- 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



SMS based payments and the strategic intent of Operators

- **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)**
- **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

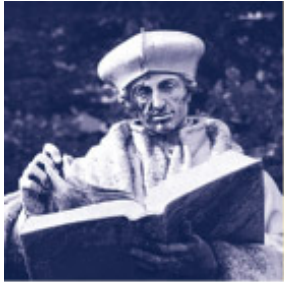
- Caisse d'Epargne 's Movo service for customers with an account ; recipient characterized by his mobile phone number and amount (SMS to 72111) ;sender and recipient have to register on movo.fr
- 6 Euros/year subscription price, plus 0,50 Euro fee/transfer, plus SMS fee to operator
- Strategic intent 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, 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

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- 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)
- 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



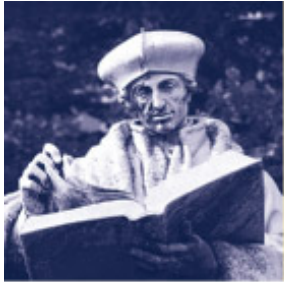
Mobile operators as banks

- 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 ?



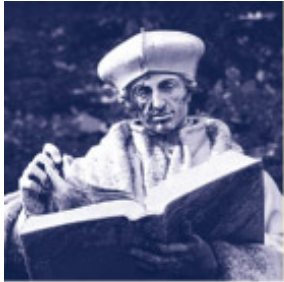
Banks as communications operators

- With, one one hand, large sole-owned and shared ATM networks mostly in urbanized areas, linked to IP/packet backbones, and , on the other hand, the easily deployed capability to extend ATM's with RFID/NFD readers, haven't the banks the capability to become operators bypassing wireless public operators for payments?
- With the option to add WiFi or WiMAX base stations to ATM terminals, banks can in urbanized environments become hot spot operators, and they can provide financial and other content surpassing what mobile operators can give



Payment/transactions infrastructures

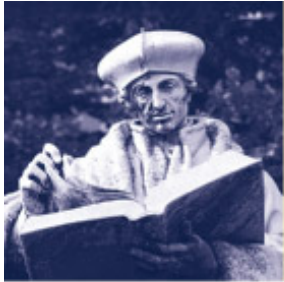
Very important is the research result that actually there is not much difference , at IT and technology levels, between the customer care and transactions platforms of mobile operators (see Figure 1) ,and those of banks (see Figure 2) ! This fact is the result of the evolutions of both layered communications 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 .



BPM Process steps

- **0: Establish and verify terminal owner's identity**
- **1: Associate the access terminal with payment instruments (Bank, Pre-pay, Credit card) all at a banking grade of security**
- **2: Payment tool download (via SMS, 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 ?



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
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Customer profiling

Personalized Services

Targeted marketing & cross-sales

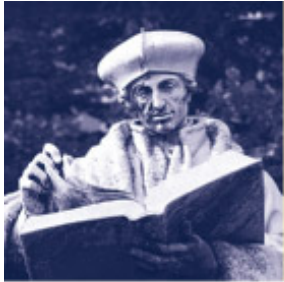
Credit risk rating & screening

Identification Autentification



Access networks suite

Internet and broadband	Circuit switched lines	Virtual private networks	Mobile data	Mobile Voice (2/3G)
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Banking systems / Communications systems

Core banking

Trade finance

Credit card

Treasury



(Bank) Enterprise integration services

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

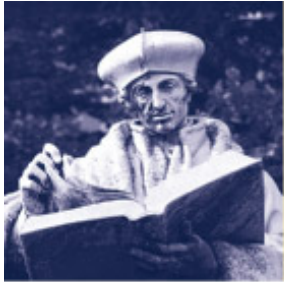
Digital cash management system

Digital teller

Digital call center

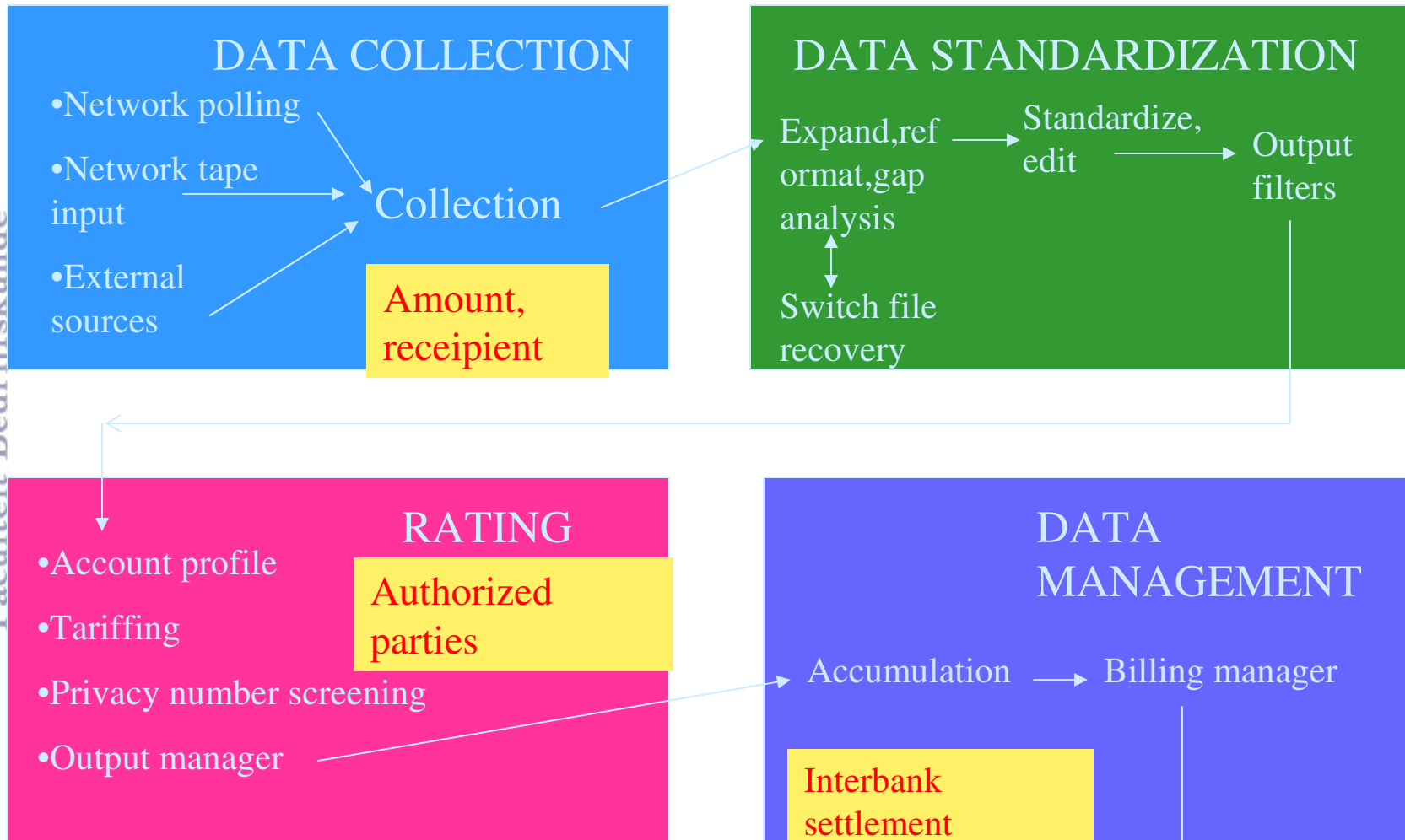
Mobile banking

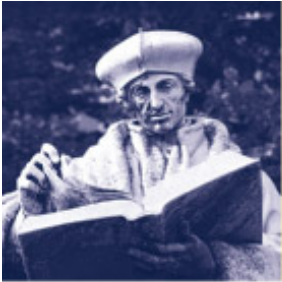




Mobile billing pre-processing system architecture

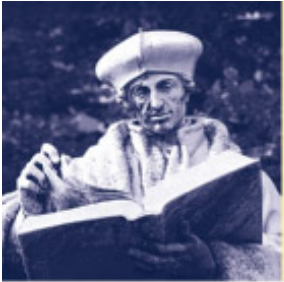
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Mobile payment embedding choices

- Key choice between fully embedded NFC in the access terminals, or contactless NFC enabled SIM cards
- The high price differential in favor of contactless SIM; a SIM only proposition is far more attractive for operators and users; it avoids operator handset subsidies, allows them to sign up new or existing subscribers; such savings can be passed on in the form of cheaper transactions
- Users taking advantage of SIM offers do not need to miss out on new mobile payment services while retaining their access terminals



Technical solutions for contactless NFC / RFID payments

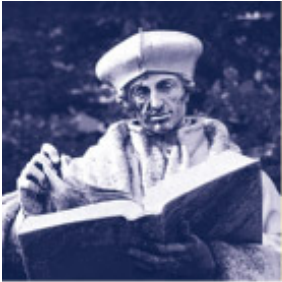
- User interface in access terminal for contactless payments : Application Activation User Interface (AAUI)
- Multi-service/ multi-application environment for Secure payment element (SE) showing alternative payment applications on access terminal
- Global Platform Card Registry Service (CRS)
- EMVCo Common contactless communications protocol
- Mobile Payment Type Approval framework
- Universal security chipsets (supportng Sony's FeliCa™, MIFARE™, Java™)

The main barrier is still the late roll out to mass-market of NFC enabled access terminals



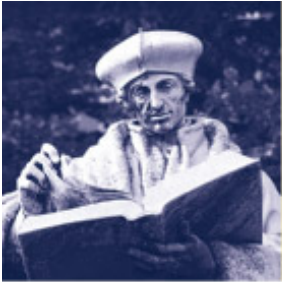
Identity management

- Legally rooted national eID identity management solutions and processes
- European wide electronic identity interchange (evolving standard)
- 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



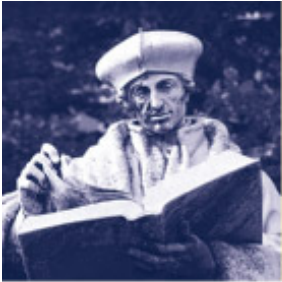
Interoperability or the mistake of some players

- 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)



Standardization initiatives

- **Contactless mobile payments and interoperability: EMVCo (Amex, JCB, Master Card, Visa) chip based transactions**
- **Mobile payments: Global Platform intl. (Smart card specification body) , GSM Assoc., NFC Forum, ETSI, Mobile Payment Forum, OMA**



Architectural design issues

- Private user data is Not visible to any e-service provider
- Sensitive data only visible in relation to the payment
- Multi-channel and platform payment software
- Integration with an existing pre-paid service to lower investment threshold
- Measure incentive to create more services since payment is immediate



CONCLUSION

- **Distributed / multi-party / SLA based Mobile payment platforms represent an evolution of client-server mainframe based banking payment processing platforms**
- **Contactless SIM based access terminals are the key, with the communications industry leading the show and standardization**
- **Regulatory changes are needed (see presentations at COST Workshops in Paris and Stockholm)**