



Cards and e-commerce payments in Macedonia

6th Financial Sector Conference on Payments and Securities Settlement
Systems, July 2013 Ohrid

Payment cards in Macedonia

- All 15 banks work with payment cards, from which 14 are members of international card schemes (Visa/MasterCard/American Express): 9 MC and Visa members, 2 MC members, 3 Visa members and 1 American Card member. There is Diners club servicing Diners cards.
- There are private banking cards which mutual acceptance between the banks is regulated with an agreement. 5 banks are issuers of these cards, 9 are acquirers.
- Card processors services are used by all 15 banks, while 3 have their own in-house processing solutions. Processors that service domestic banks are: Casys, FirstData Slovakia, FirstData Hellas, Quipy Germany and Bankart Slovenia.
- In-house card personalization bureaus have 3 banks, while others are serviced by personalization bureaus of Casys, FirstData Hellas, Oberthur, Procredit corporate perso bureau.

Incentives







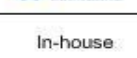





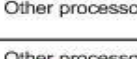

So far

- Salaries schemes connected with payment cards of the public administration
- Canceling guaranteed cheques
- Introduction of transactional accounts
- Pension payments through transactional accounts
- Membership of banks in international card schemes
- Implementing contemporary technologies in banking system

Future

- Domestic national net settlement of payment card transactions
- Implementing value added services (new card products, additional functions of the terminals, new payment channels)
- Increasing points of acceptance of the cards by installing new terminals
- Paying with cards for state and local government services

Payment cards in Macedonia

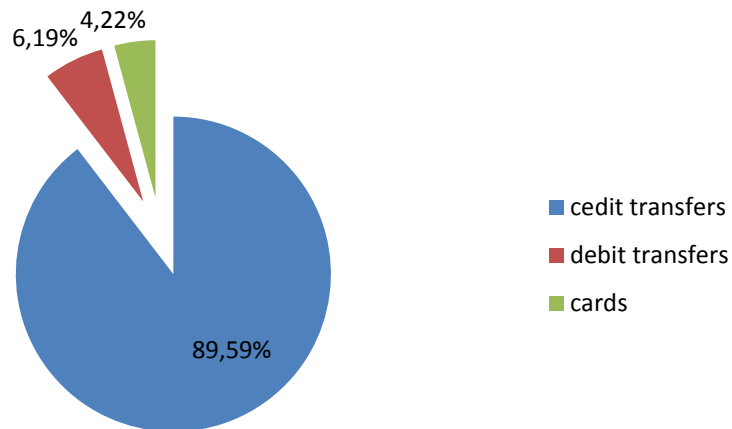
	 issuing + ATM acquiring	 merchant acquiring	VISA issuing + ATM acquiring	VISA merchant acquiring	 e-commerce acquiring	VISA e-commerce acquiring	American Express	Diners	Domestic card issuing	Domestic card acquiring	Processor
Komercijalna Bank	√	√	√	√	√	√					 In-house
Stopanska Bank	√	√	√	√	√	√				√	 In-house
NLB Tutunska Bank	√	√	√	√	√	√			√	√	Other processor 
Uni Bank	√	√	√	√	√	√				√	
Halk Bank	√	√	√	√	√	√				√	In-house
TTK Bank			√								Other processor
Stopanska Bank Bitola			√						√	√	
Postenska Bank									√	√	
Eurostandard Bank	√								√	√	
Centralna Kooperativna Bank	√	√	√						√	√	
Sparkasse Bank	√	√	√		√					√	
Capital Bank	√	√								√	
Alfa bank			√				√				Other processor
Procredit Bank	√		√	√							Other processor 
Ohridska Bank	√	√	√								Other processor
Diners								√			In-house

Payment cards in Macedonia

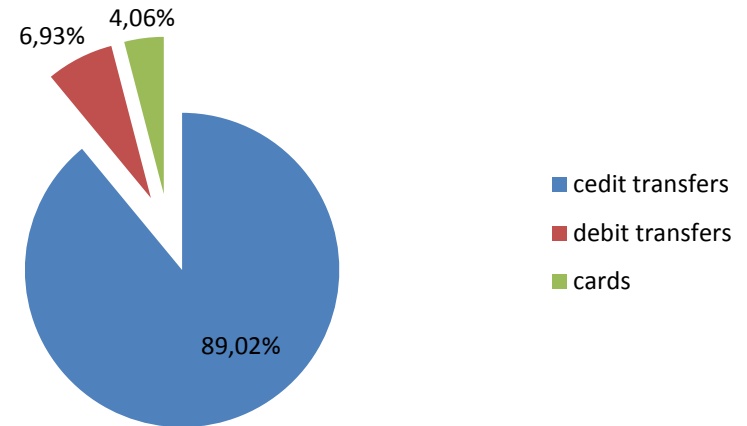
- Almost full EMV acquiring
- Almost full EMV issuing
- 19,85 % credit cards, 76 ,20 % debit cards, 3,95 % cash cards (May 2013)
- Installments (creditors: banks, merchants))
- Cobranding cards with loyalty features
- Pre-paid cards
- Contactless
- Mobile payments
- ATM advertisement
- ATM: balance inquiry, PIN change, card activation, bill payments, pre-paid mobile top up, credit payments, transfers, statements, invoices, usage of on-us credit cards as debit ones
- POS: bill payments, pre-paid mobile top up
- SMS notifications
- Web services: managing of daily and monthly card limits
- E-commerce, 3D secure supported
- Low level of frauds
- MasterCard settlement: IntraCountry Settlement Service, MC performs in NBRM
- Visa settlement: NNSS (National Net Settlement Service), Visa performs in Stopanska bank
- Private banking cards settlement, Casys performs in NBRM

Payment instruments (amount)

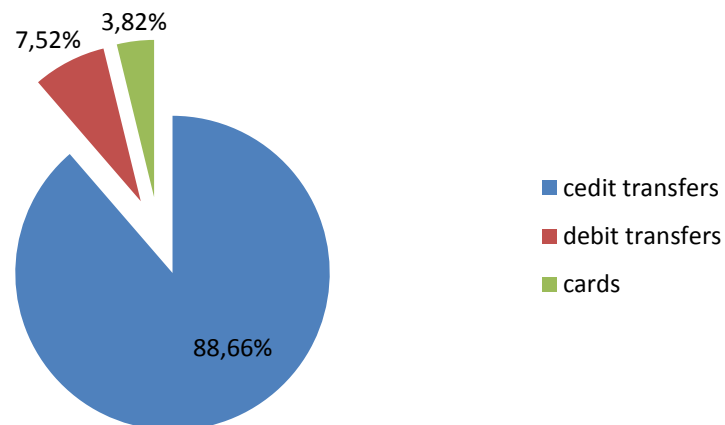
2011 payment instruments (mkd)



2012 payment instruments (mkd)

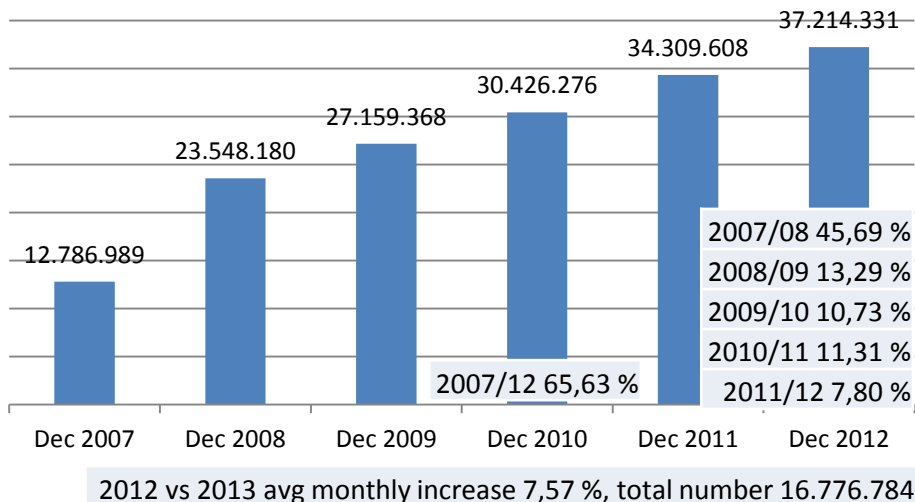


2013 payment instruments (mkd)

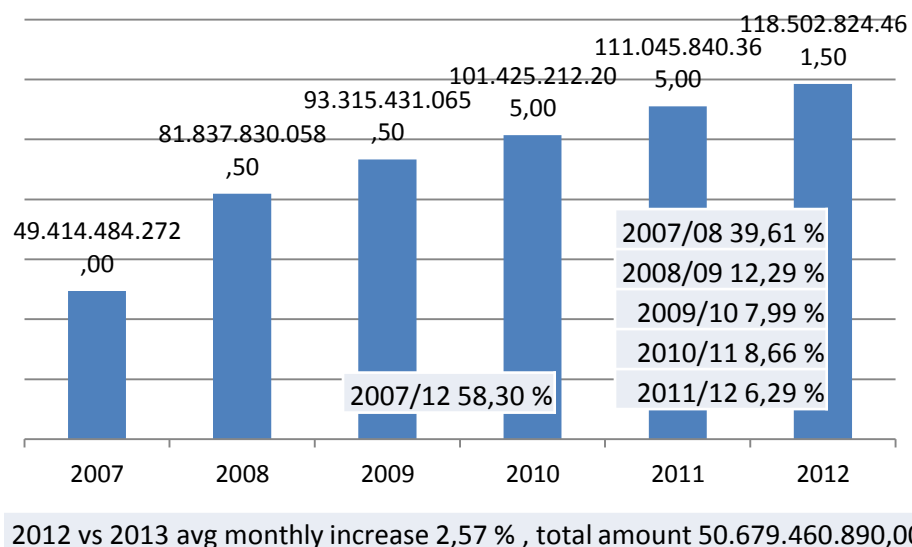


Growth of payment cards in Macedonia 2007-2013

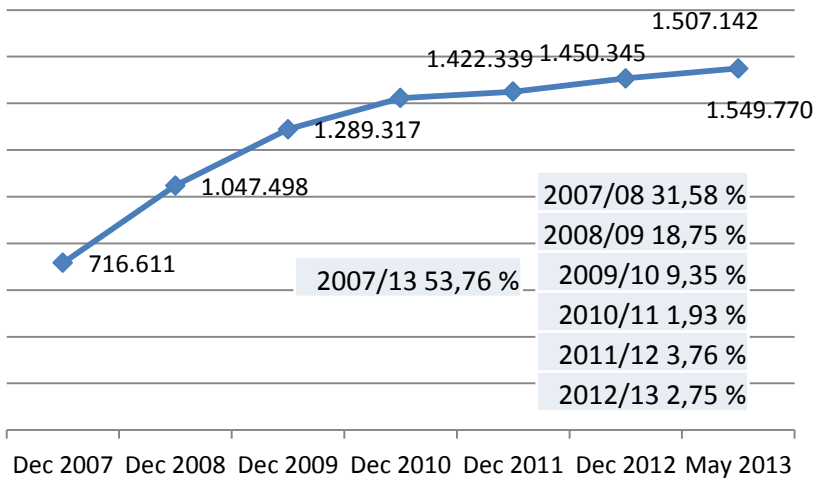
Transactions with cards issued by domestic banks on terminals acquired by domestic banks



Total amount of transactions with cards issued by domestic banks on terminals acquired by domestic banks (mkd)



Cards

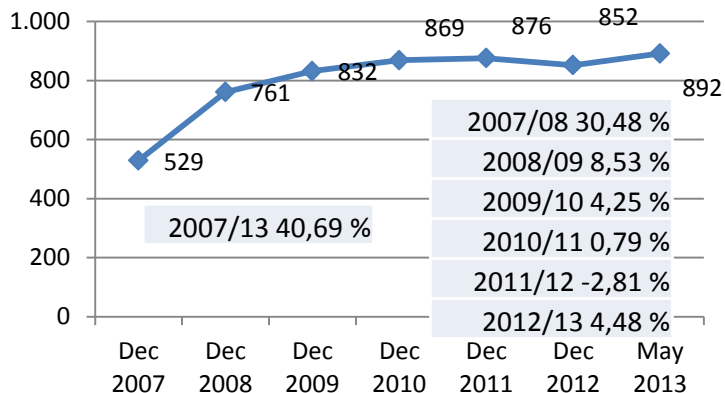


	Transactions with domestic cards	Transactions with foreign cards
2011	96,58 %	3,41 %
2012	90,65 %	9,34 %

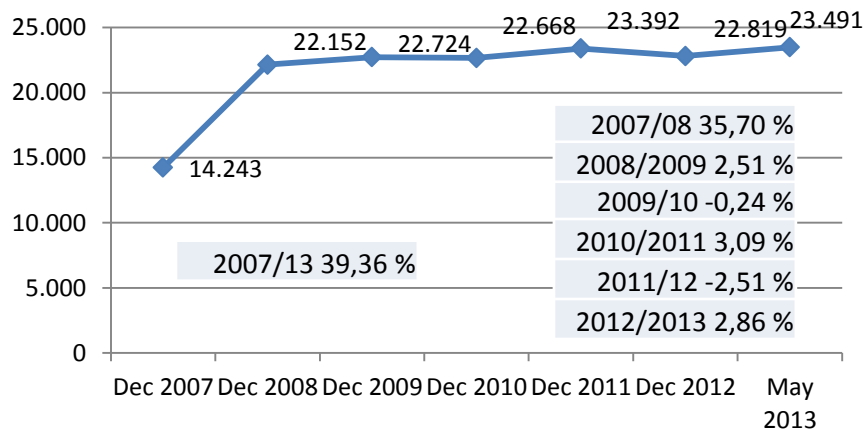
	Amount with domestic cards	Amount with foreign cards
2011	92,85 %	7,14 %
2012	91,82 %	8,17 %

Growth of payment cards in Macedonia 2007-2013

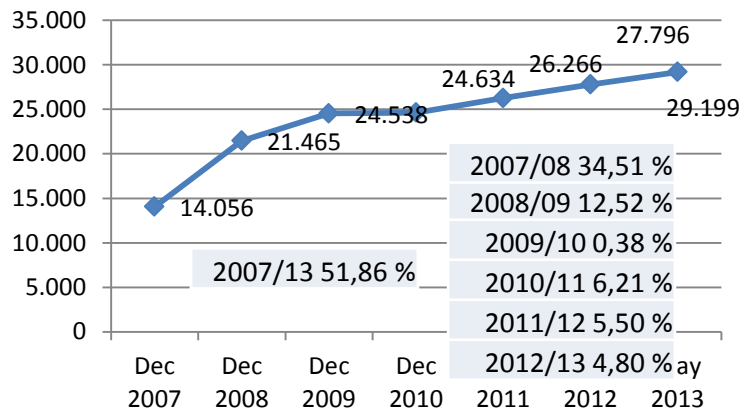
ATM terminals



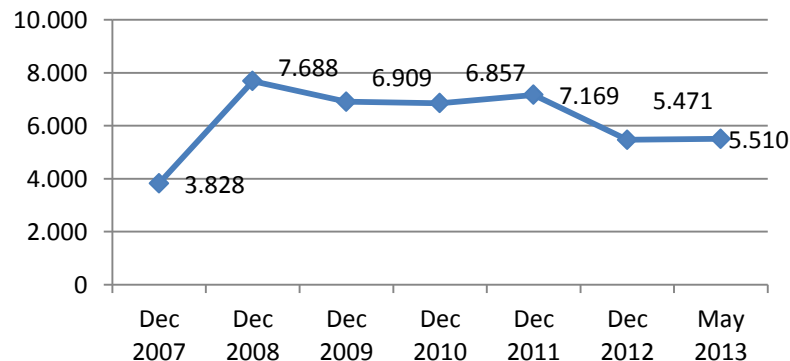
Merchants



POS terminals

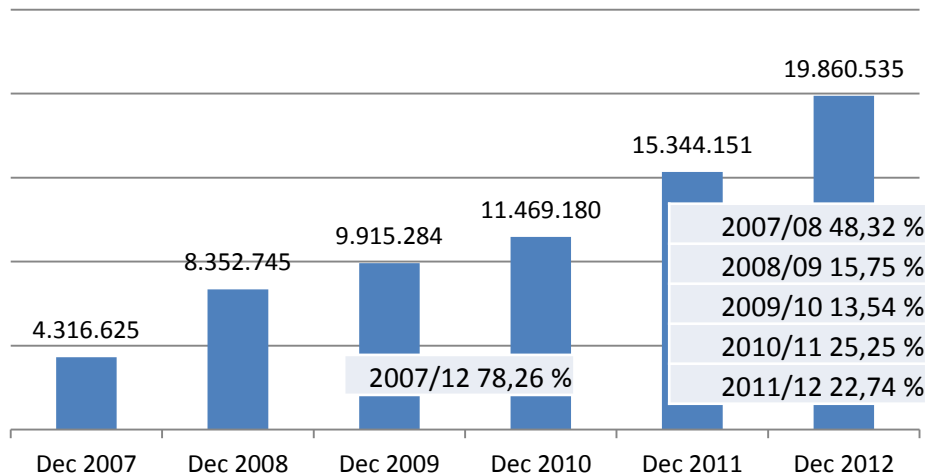


Imprinters



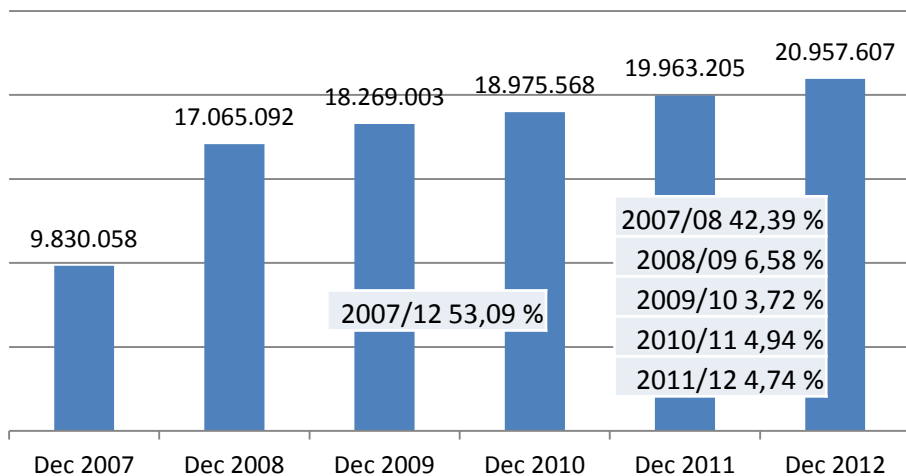
Growth of payment cards in Macedonia 2007-2013

POS transactions



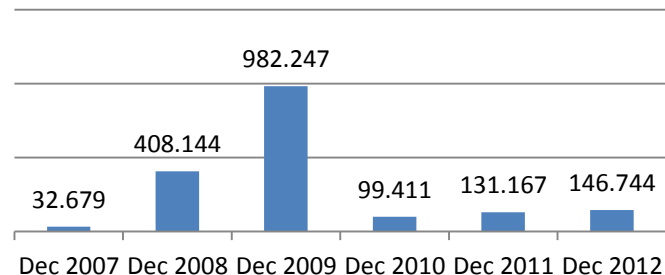
2012 vs 2013 avg monthly increase 10,06 %, total number 9.201.042

Cash withdrawals

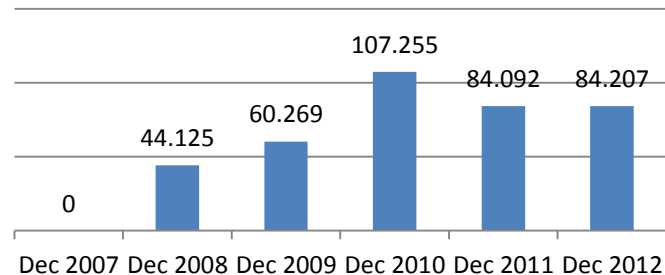


2012 vs 2013 avg monthly increase -1,13 %, total number 8.634.244

Imprinter transactions



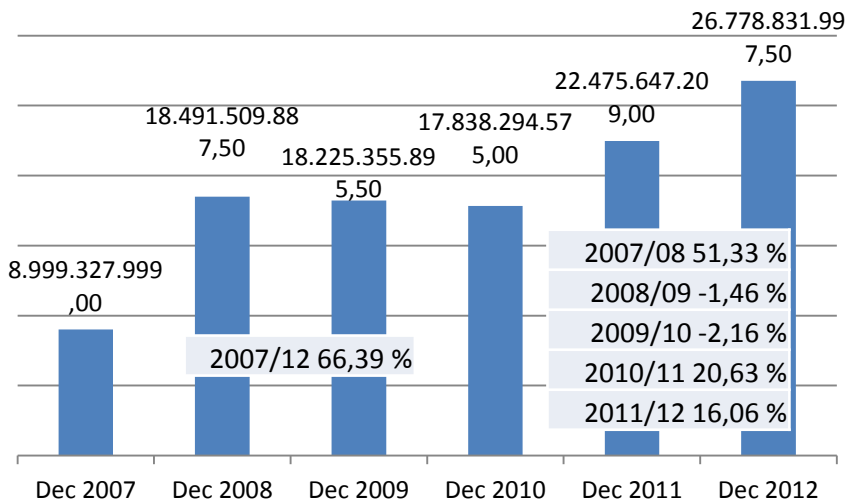
Card transactions on PC and other terminals



	cash withdrawals vs merchants transactions	
Dec 2007	69,32 %	30,67 %
Dec 2008	65,96 %	34,03 %
Dec 2009	62,50 %	37,49 %
Dec 2010	61,90 %	38,09 %
Dec 2011	56,19 %	43,80 %
Dec 2012	51,05 %	48,94 %
May 2013	48,16 %	51,83 %

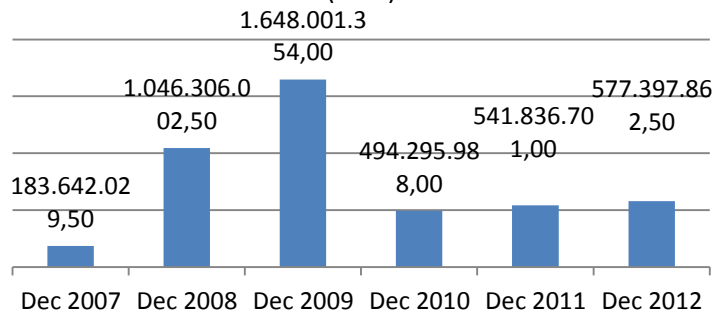
Growth of payment cards in Macedonia 2007-2013

Total amount of transactions on POS terminals (mkd)

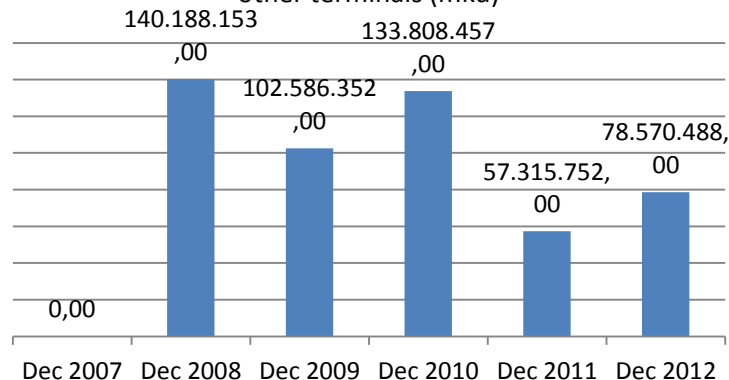


2012 vs 2013 avg monthly increase 1,93 %, total amount 11.377.593.673,00

Total amount of transactions on imprinters (mkd)

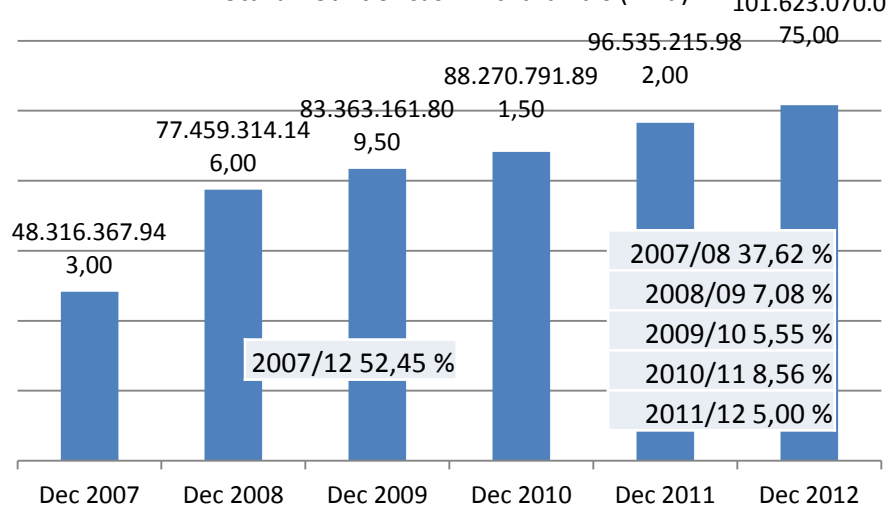


Total amount of card transactions on PC and other terminals (mkd)



	cash withdrawals amount vs merchants transactions amount	
2011	80,72 %	19,27 %
2012	78,74 %	21,25 %
2013	77,99 %	22,00 %

Total amount of cash withdrawals (mkd)



2012 vs 2013 avg monthly increase -2,63 %, total amount 41.255.969.275,00

About CaSys

- ✿ Independent card processor that offers services of e-payments with cards to banks and non-financial institutions
- ✿ 2001/2002-establishment of the company
- ✿ 2004/05-Certified MasterCard MSP and Visa TPP for operating with chip cards as well as supports domestic card schemes
- ✿ 2007-signed Multilateral agreement between banks and Casys for mutual acceptance of private banking cards
- ✿ 2008-CaSys BG is established as disaster recovery site of CaSys International which enables business continuity of services
- ✿ 2008-MasterCard SecureCode e-commerce payment gateway is certified
- ✿ 2009-Visa VerifiedByVisa e-commerce payment gateway is certified
- ✿ 2010-Certified MasterCard MSP for transactions performed by contactless cards (PayPass)
- ✿ 2011- Representative office of CaSys in Albania is opened
- ✿ 2012-Certified Visa TPP for transactions performed by contactless cards (PayWave)
- ✿ 2012-Services mobile payments (NFC)

CaSys services are used by following banks:

- ✿ NLB Tutunska Bank Skopje
- ✿ Postenska Bank Skopje
- ✿ Eurostandard Bank Skopje
- ✿ Sparkasse Bank Makedonija
- ✿ Stopanska Banka Bitola
- ✿ Stopanska Banka Skopje (member of NBG Group)
- ✿ CCB Bank Skopje
- ✿ Uni Bank Skopje
- ✿ Kapital Bank Skopje
- ✿ Commercial Bank Skopje
- ✿ First Investment Bank Sofia - Bulgaria
- ✿ First Investment Bank – Albania
- ✿ Diners Bulgaria
- ✿ ProCredit Bank Skopje



Technical Resources

Software Solutions

- ✿ ACI Base 24 for Front Office
- ✿ ACI CMS for BackOffice

Hardware Solutions

- ✿ HP/Tandem machine,
- ✿ HSM Thales,
- ✿ CIM and Matica machines for personalization, and
- ✿ P3 Thales for chip personalization

Services

- ✿ Switching, authorization and processing of transactions
- ✿ Card personalization and PIN generation
- ✿ Clearing and settlement
- ✿ Dispute transaction processing
- ✿ Key management
- ✿ Management and monitoring of ATM/POS network
- ✿ Multilanguage customer support center, 24 hours a day, 365 days a year

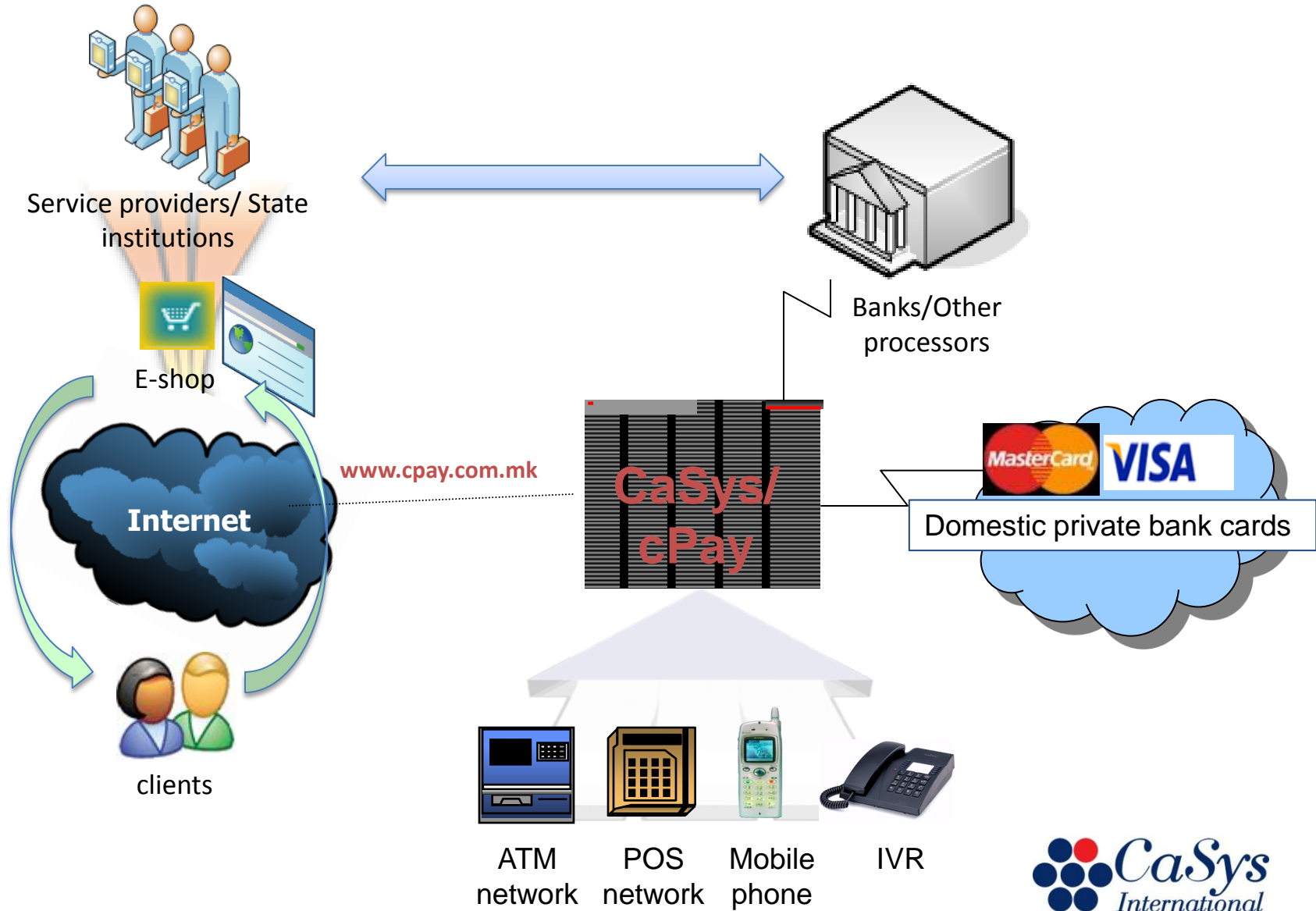
Certificates/roles

- ✿ Master Card MSP certificate
- ✿ VISA TPP certificate
- ✿ MasterCard/Visa personalization bureau
- ✿ Payment, clearing and settlement system for card payments
- ✿ PCI DSS 2.0 – Payment Security System data
- ✿ ISO/IEC 27001 : 2005- Information Security Management System
- ✿ ISO/IEC 20000-1:2011 - IT Service Management processes

Exclusive services

- ✿ Internet e-commerce with payment cards – cPay payment gateway
- ✿ New payment channels: internet, IVR, ATM, POS,
- ✿ Bill payments and mobile top up through the new channels
- ✿ Balance inquiry through the new channels
- ✿ PIN change on ATM
- ✿ SMS notifications
- ✿ Money transfer
- ✿ Loyalty schemes
- ✿ Installment programs
- ✿ Contactless cards
- ✿ Mobile payments
- ✿ E-PIN delivery

CaSys / cPay payment gateway



Merchant integration with cPay

- ✿ Hosted merchant plug-in service
- ✿ Quick integration of the merchant web store and the cPay Payment Portal
- ✿ SSL redirection from the merchant web store to the *cPay* for the on-line buying
- ✿ The basic parameters of the SSL redirection: The identification of the merchant web store and the amount of the transaction. Transactions are processed in denars.
- ✿ Type of transactions: direct financial transaction and authorization/completion
- ✿ The client enters the card data on the secure cPay pages without disclosing the payment card data to the merchant.
- ✿ When the on-line transaction is made, the parameters of the successfulness are sent to the merchant web store.
- ✿ The sensitive information about the payment cards and the cardholders are shown masked and with restriction.

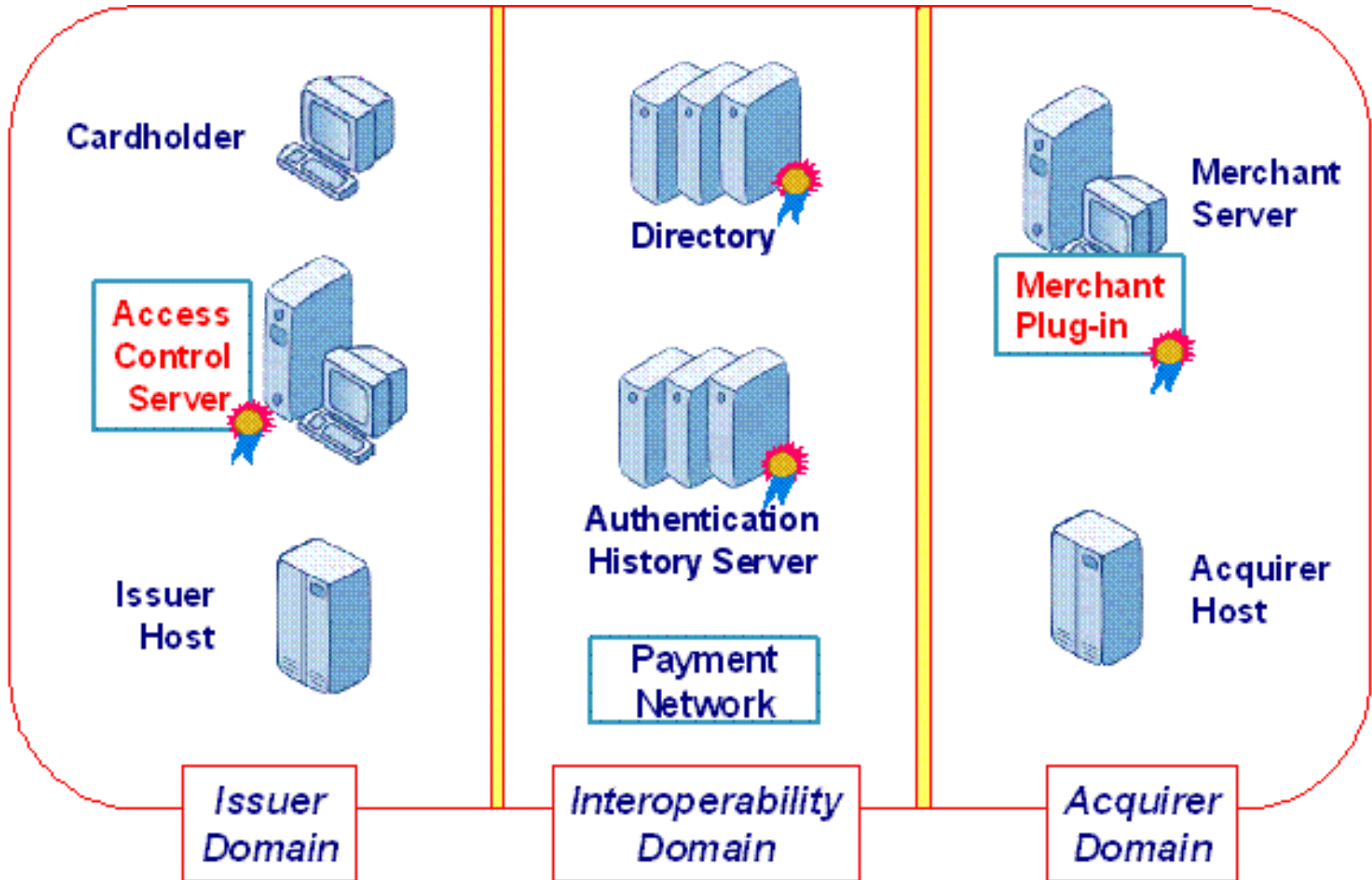
cPay web

- ✿ Client module
 - Secure and simple registration process of the client (an option)
 - Account balance of the payment card
 - On-line monitoring of all payments of the client made on cPay payment portal
- ✿ Merchant module
 - on-line monitoring of all transactions performed on the web shop of the merchant
- ✿ Bank module
 - on-line monitoring of all acquired transactions and all transactions by the cards issued by the bank on cPay web shop
 - Blocking card ranges/cards

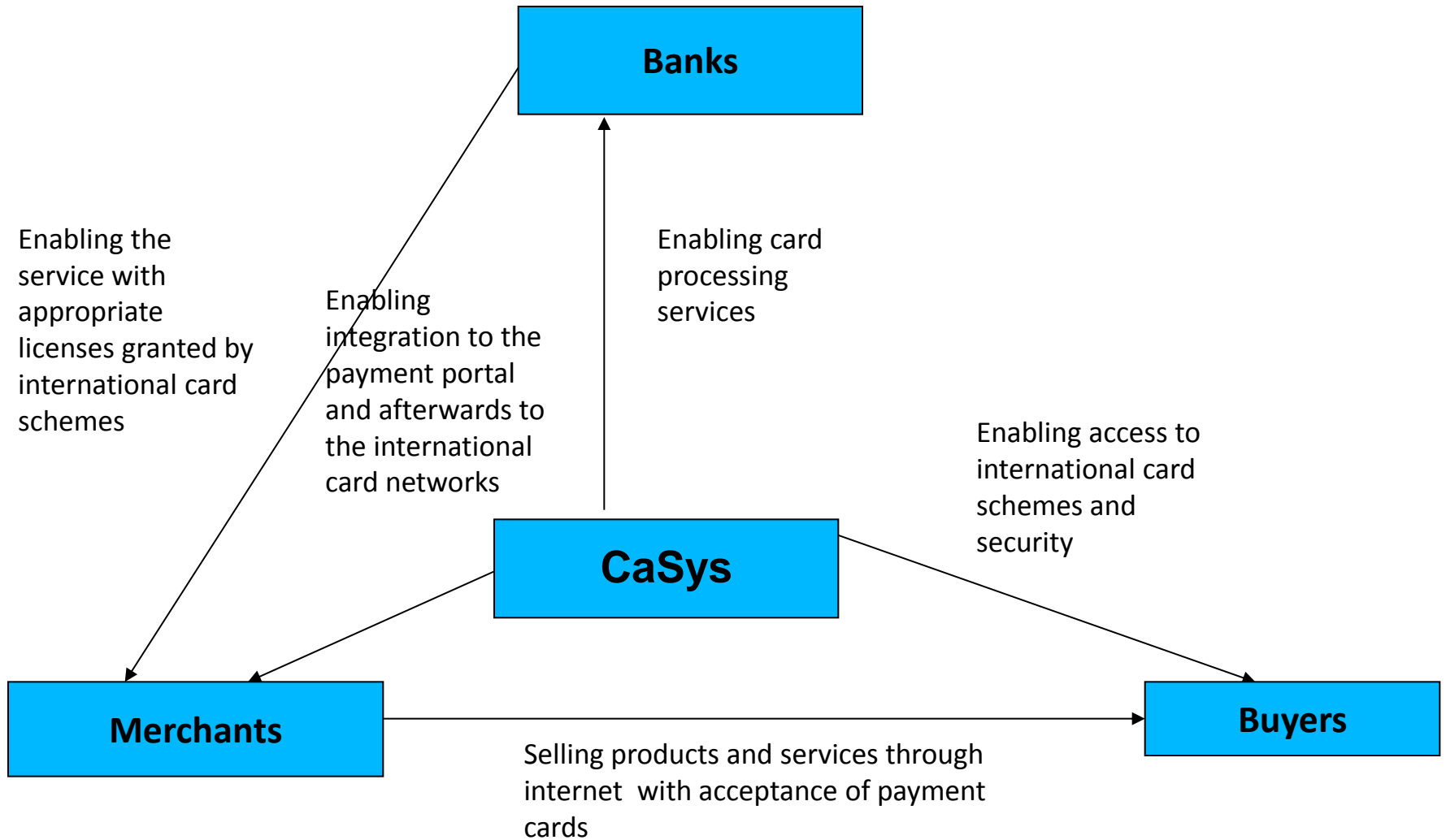
3D secure model

- ✿ 3-D secure model enables authentication of cardholder due to on-line shopping through internet
- ✿ Interoperability is established between bank issuer and bank acquirer through deployment of common protocol and interoperability service. Casys supports both 3D solutions, MasterCard SecureCode and Verified by Visa
- ✿ 3D model significantly decreases, up to 20 times, number of fraud transactions due to internet e-commerce
- ✿ How the secure code system works?
 - The cardholder is enrolled in the secure code program at the bank issuer of his payment card.
 - The cardholder has a secure code (password) that is used for authentication when shopping at the Web Site of a merchant that participates in the secure code program.
 - The bank issuer validates the secure code (password), the authentication is done and the transaction is completed and confirmed.
- ✿ The following procedure provides fully confidence towards Bank issuer and cardholder.

3D secure model

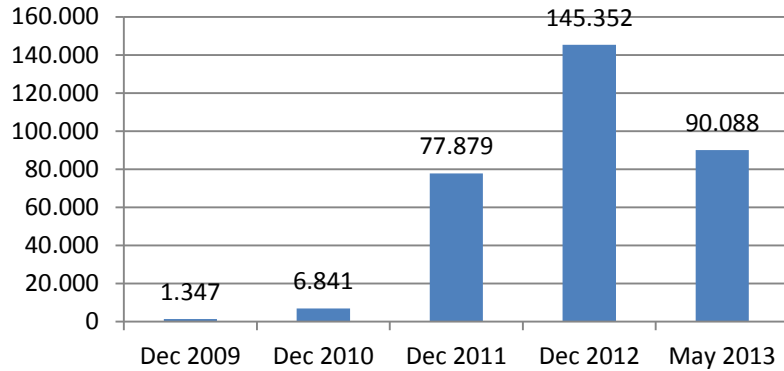


Business model

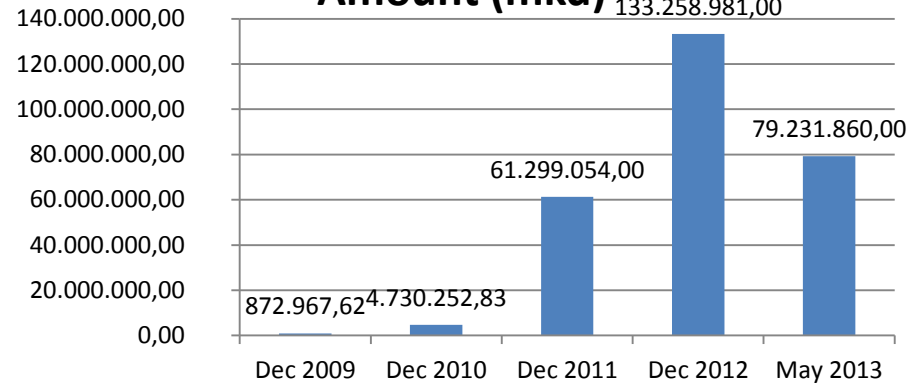


E-commerce development (cPay)

Transactions



Amount (mkd)



2012

(bill payments, mobile top up, group discounts, one government institution)

91 % transactions

88 % amount of transactions

2013

(bill payments, mobile top up, group discounts, one government institution)

95 % transactions

85 % amount of transactions

mcc, 95 % amount of transactions

mcc, 90 % of transactions

mcc, 93 % amount of transactions

mcc, 97 % of transactions

	Miscellaneous and Specialty
	5999 Retail Store
Services,not	5942 Book stores
8999 elsewhere classified	Computers/Peripheral
Telecommunication	5045 Equipment/Software
4814 Services	4722 Travel Agencies and Tour Op
Telecom Equipment	Computer Network/Information
and Telephone	4816 Services
4812 Sales	5331 Variety stores
7311 Advertising services	5732 Electronic Stores
	4814 Telecommunication Services
	Telecom Equipment and
	4812 Telephone Sales
	7311 Advertising services

	Telecommunication
	4814 Services
	Telecom Equipment
	4812 and Telephone Sales
	7311 Advertising services
	Telecommunication
	4814 Services
	Telecom Equipment
	4812 and Telephone Sales
	Services,not elsewhere
	8999 classified
	7311 Advertising services
	Telecom Equipment
	4812 and Telephone Sales

	Theatrical
	producers/Ticket
	7922 Agencies
	Travel Agencies
	and Tour Op
	4722 Services,not
	elsewhere
	8999 classified
	Telecommunicati
	on Services
	4814 Advertising
	7311 services
	Telecom
	Equipment and
	4812 Telephone Sales

E-commerce development (cPay)

2012

domestic card transactions	98,35 %
foreign cards transactions	1,65 %
amount of domestic card transactions	91,28 %
amount of foreign card transactions	8,72 %

2013

domestic card transactions	98,39 %
foreign card transactions	1,60 %
domestic card transactions amount	92,74 %
foreign card transactions amount	7,25 %

0,1 % of total card transactions amount at merchants

0,15 % of total card transactions amount at merchants

cPay merchants (220 in June 2013)

- ✿ Utility providers
- ✿ Group discounts e-shops
- ✿ Tickets, hotels, gift shops, clothes, cosmetics, books, trainings, food, restaurants, rent-a-car
- ✿ Software, intellectual services

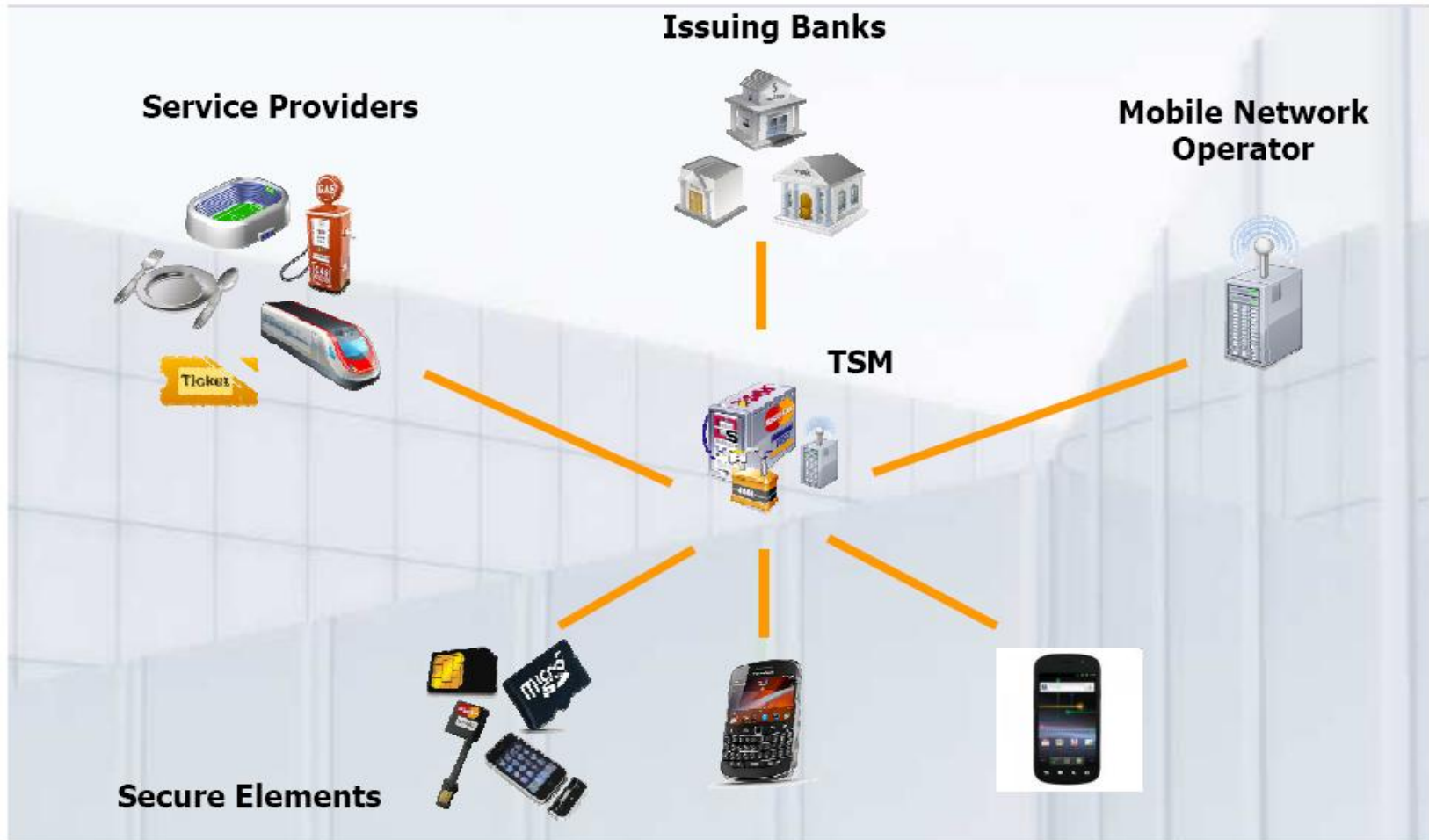
Advantages of e-commerce

- ✿ Unlimited market
- ✿ Selling products and services through internet, paying with payment cards through Macedonian provider
- ✿ Possibility for the bill payments – the electricity, the telephone, the water supply, the heating company, the cable TV, the mobile phone (post-paid and pre-paid), the taxes
- ✿ Acceptance of the international and the domestic cards

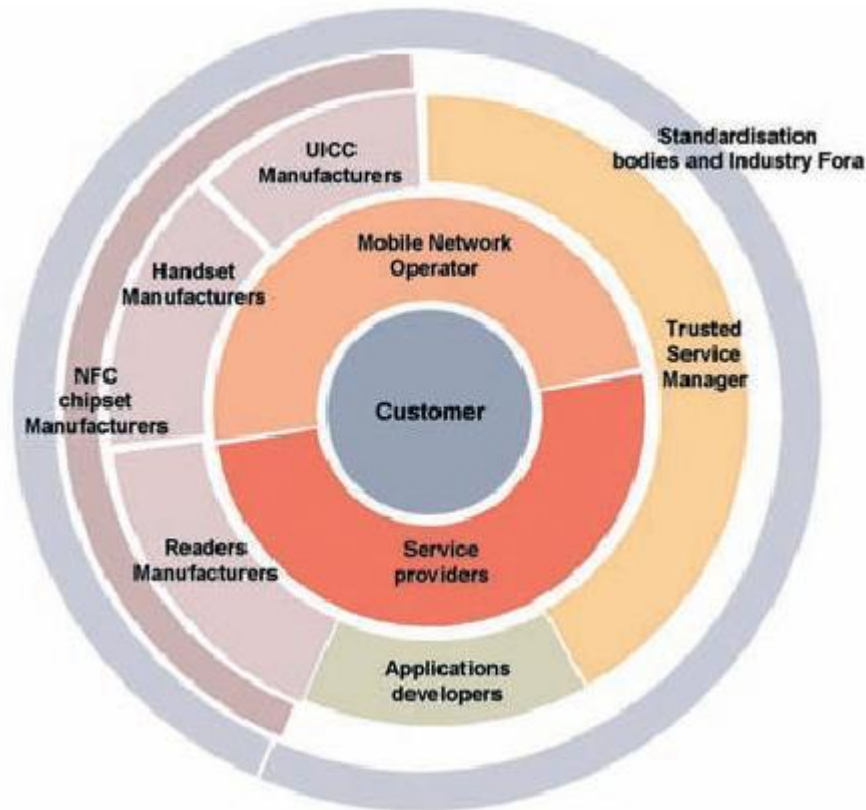
Mobile payment ecosystem from a consumer perspective



NFC ecosystem



Entities in mobile NFC ecosystem



- Mobile operators (MNO)
- Service Providers
 - Financial institutions
 - Transportation companies
- Trusted Service Managers
 - MNO-a
 - Individual MNOs
 - Consortium of MNOs
 - Outsourcing companies
 - Processors
 - Large financial institutions
 - Individual FI
 - Consortium of FI

Trusted service manager (TSM)

- Trusted entity for application management on mobile devices
- Enables access to a mobile platform for different parties (banks, service providers, etc.)
- Offers core services:
 - Application loading
 - Application personalization
 - Security controls
 - Post-issuance updates
 - Parameters management (e.g. top-up)
- Scalable to support a wide variety of applications
- Offers continues services to its customers

What is NFC?

- ✿ NFC (Near Field Communication) is technology enabling easy and convenient contactless communication between devices
- ✿ Is service-oriented, i.e. is targeted on provision of services :
 - Information collection and exchange
 - Payment transactions
 - Ticketing applications
 - Coupons and loyalty programs
- ✿ Is based on industry standards for contactless communication
- ✿ Launched initially by NXP and Sony in 2002
- ✿ Taken over by NFC Forum founded in 2004 by NXP, Sony and Nokia (now more than 130 members)

NFC for contactless mobile payments

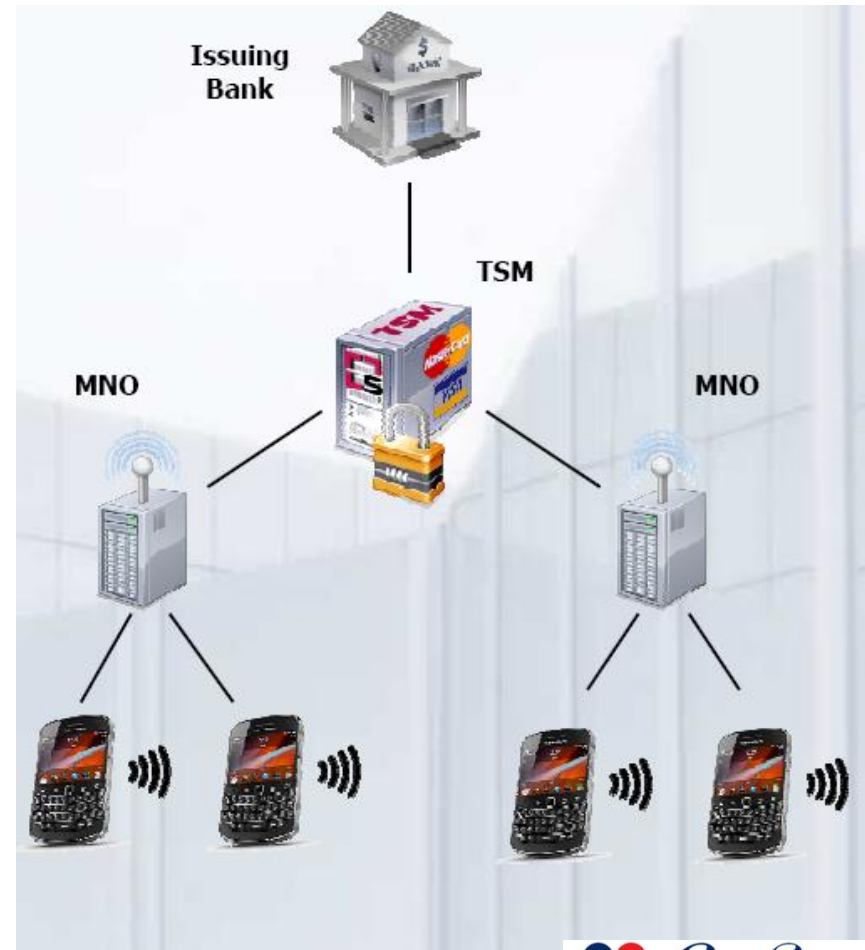
- NFC enables use of mobile handset for performing contactless payment transactions
- To support that, a mobile handset should contain specific elements :
 - NFC controller
 - NFC antenna
 - **Secure Element** to stored EMV payment application and data
 - Dedicated user interface application
- Contactless reader cannot distinguish whether a transaction is performed with a card or a mobile handset

Secure element

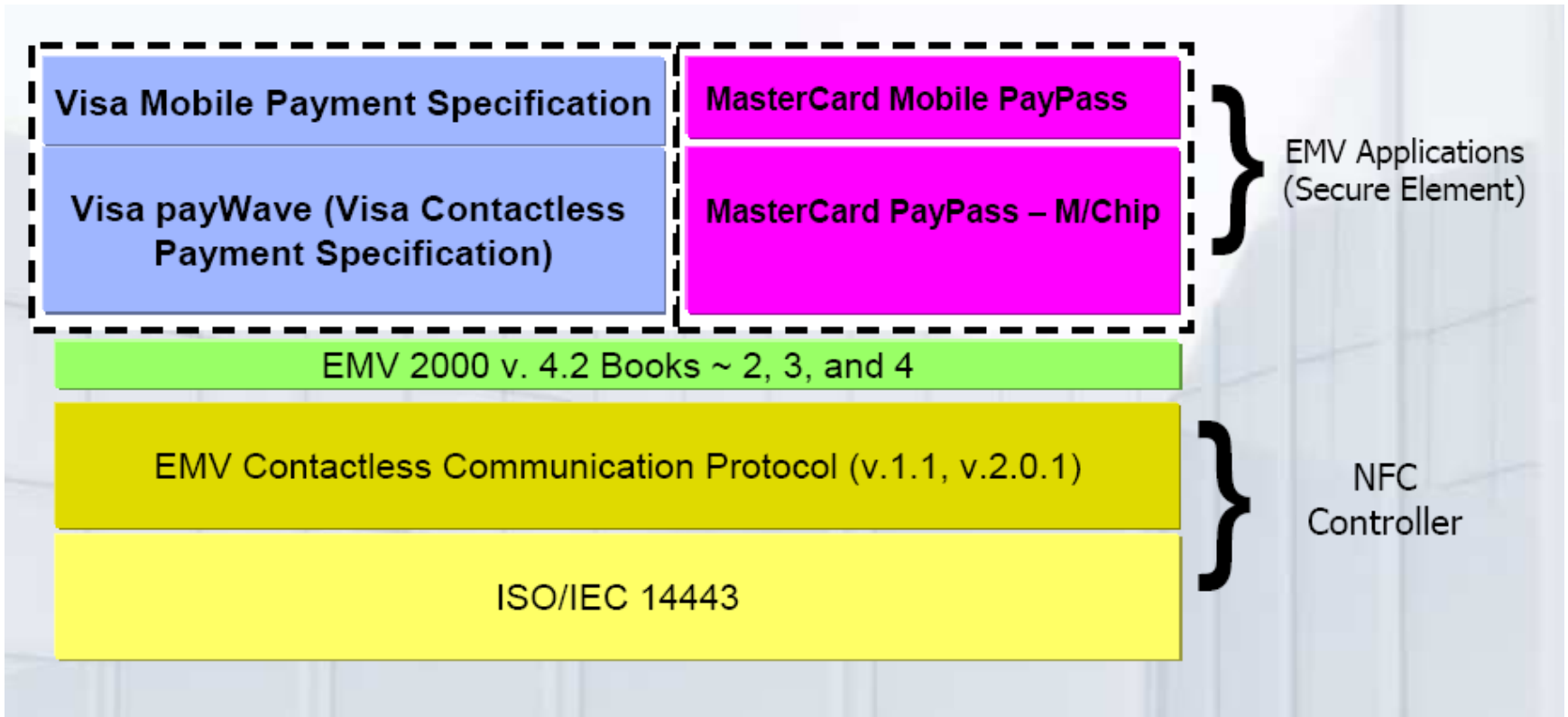
- EMV applications and their data shall be always stored in secure area of handset — in **secure element**
- Secure element is a smart card chip
- Currently 3 approaches :
 - **SIM-centric:** Secure Element is in USIM – payment applications are stored on USIM card
 - **Embedded secure element** — additional smart card chip integrated in mobile phone (eg: Samsung NEXUS S)
 - **External secure element** (eg: smart chip integrated in MicroSDcard)
- Each approach has pro's and contra's
- Application management 'over-the-air' (OTA)

SIM-centric approach

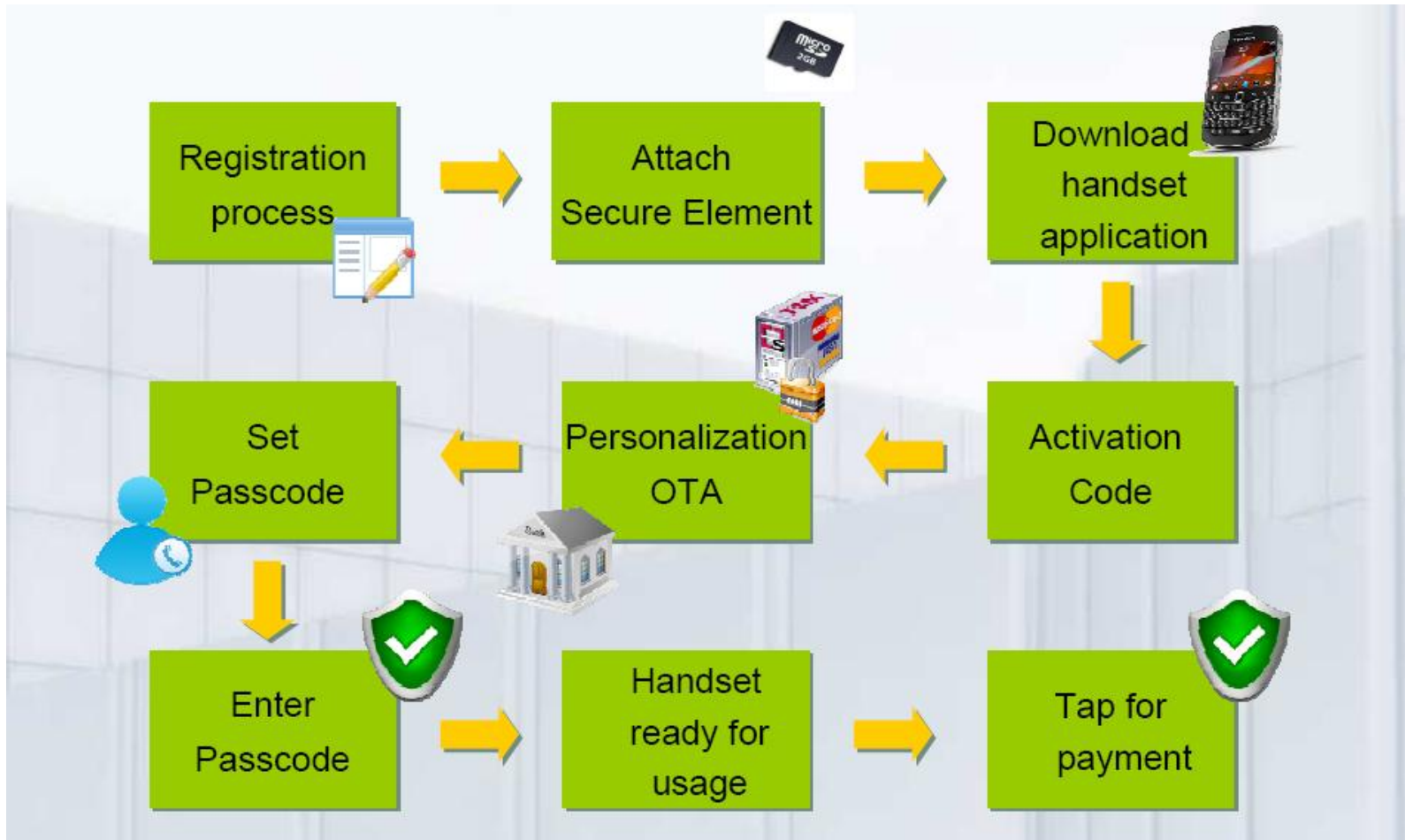
- Secure Element is USIM card
- Payment applications are on USIM
- Participation of MNOs is required for:
 - To enable payment applications installation and personalization
 - To provide an OTA channel for payment application management



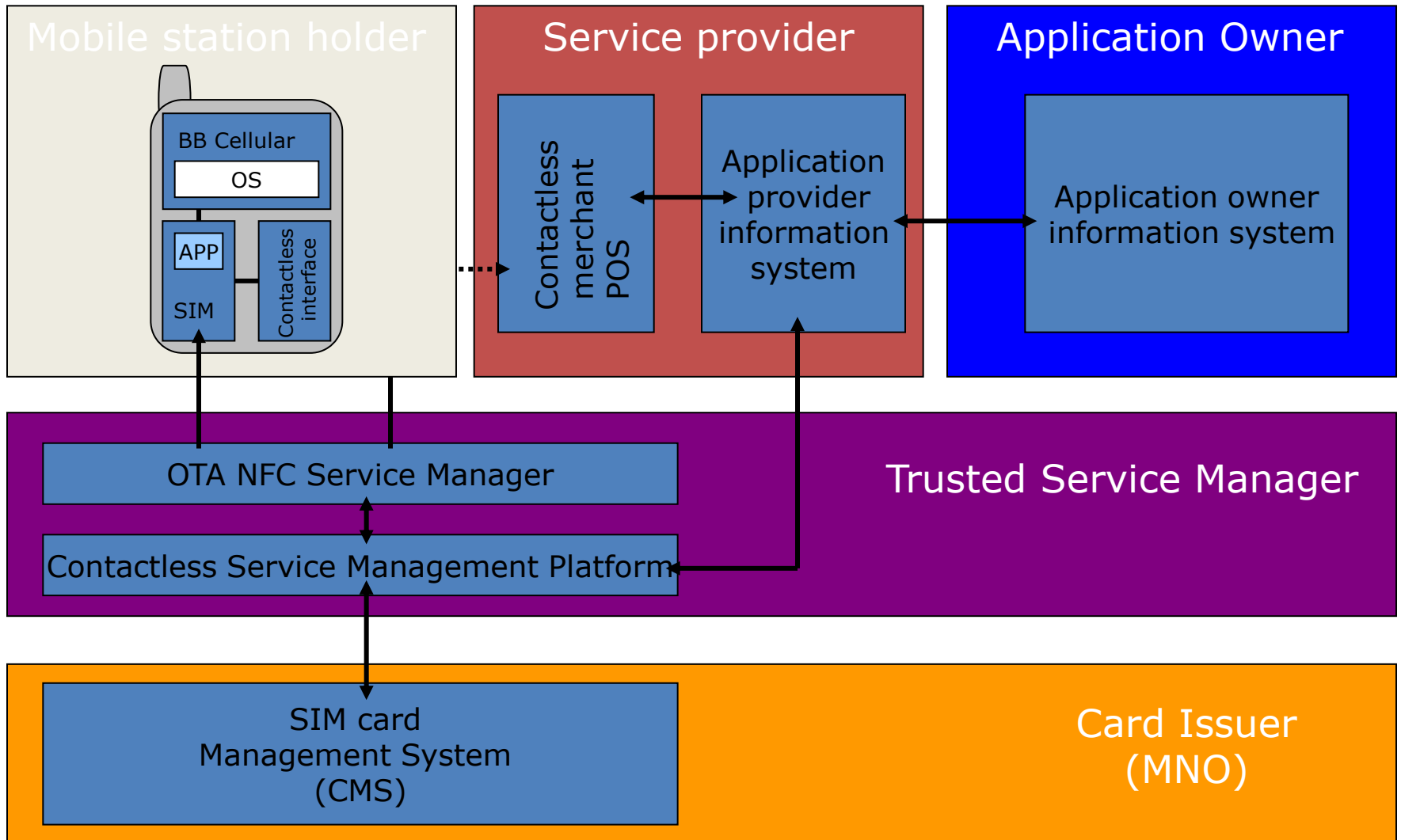
Payment applications for mobile payments



Process of activation and personalization of mobile telephone



Architecture of mobile NFC services



Thank you on the attention!

Sandra Tomanovic

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