



Workshop on the PNG National Payments System

30 November 2009



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What is the National Payments System?



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The National Payments System (NPS) of a country encompasses everything to do with the movement of money from payer to payee.

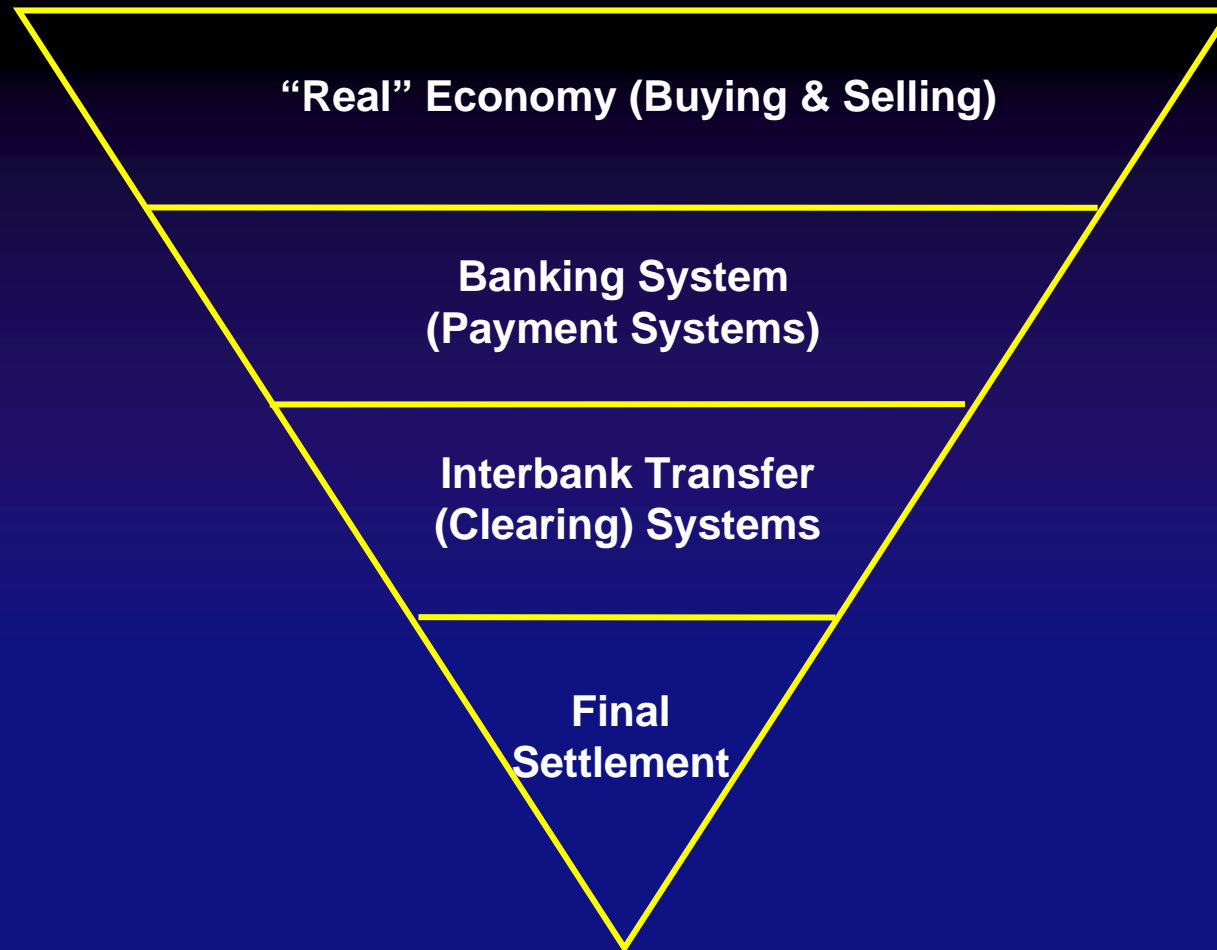
It covers all phases of payment from initial offer of a payment instrument to final settlement.

It is the essential lubrication mechanism for the engine of the economy.



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The NPS is the infrastructure for moving money safely, efficiently and swiftly



Requirements

- Speed of payment
- Certainty of payment
- Reliability
- Safety and soundness
- Reduction of risk
- Convenience
- Cost
- Equality of access and competition
- International standards



Typical Modernisation Objectives

- Provide the foundation for improved banking products and services, and geographical coverage
- Ensure greater efficiency
- Make maximum use of the liquidity in the banking system
- Reduce risk and establish a sound risk management process
- Optimise the costs of funds transfer transactions
- Provide support for international funds transfers
- Support a more efficient operation of the commercial and public sectors
- Support the development of securities markets
- Foundation for future technical developments



Outcomes (Benefits)

1. Reduction of Risk
2. Efficiency
 - Speed, cost-effectiveness
3. Convenience
 - For business, government and citizens
4. Safety
 - Reduced use of cash
5. Trust
 - Leading to increased use of the financial system



Components of a National Payments System

- Payment Instruments
- Systems
- Legal and regulatory arrangements



Payment Instruments

- Cash
- Paper
 - Cheques
 - Warrants
- Electronic
 - EFTPOS
 - Electronic credits
 - Direct debits
 - Mobile payments



Systems

Payments

- Real Time Gross Settlement (RTGS)
- Low Value Clearing (LVCS)
- Card clearing

Central Bank

- General Ledger
- Cash management

Securities

- Central Securities Depository (CSD)
- Primary Market (auction)
- Secondary Market (trading)

Government

- Treasury Systems

Markets

- Interbank money market
- Forex market
- Stock Exchange

Financial Institutions

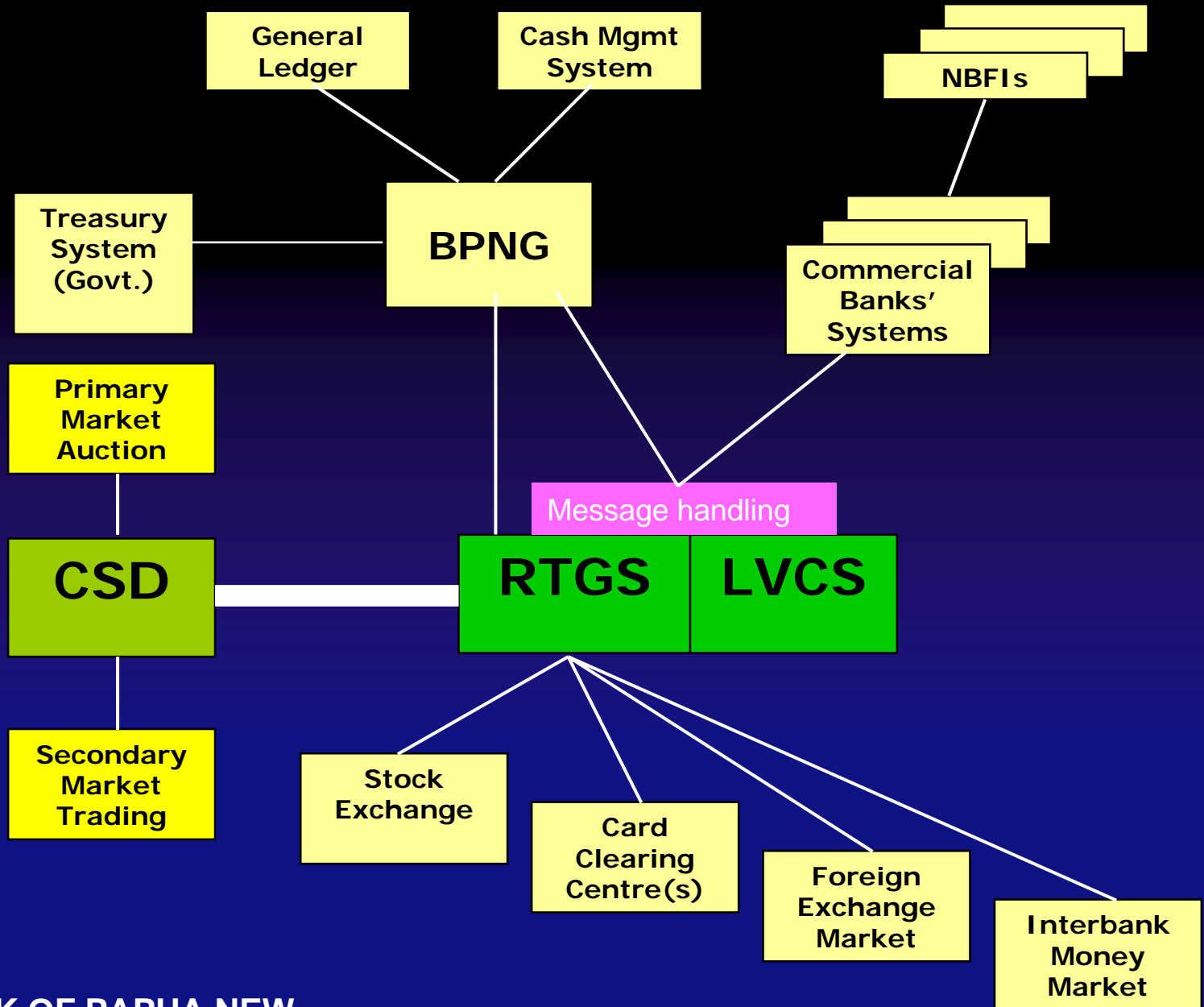
- Core banking systems
- Customers' accounting systems



Linkages

- A National Payments System comprises a number of individual payment systems (see previous slide)
- In the past, systems were introduced piecemeal by different players
- Little or no integration of systems
- NPS functions more efficiently – and with less risk – if systems are linked appropriately
- The modern approach is to acquire and install systems in a co-ordinated fashion, to ensure that they can interwork and exchange information as needed





Real Time Gross Settlement (RTGS)

- At the heart of a modern NPS
- Mainly used for high-value, high-priority interbank payments
- To ensure regularity, RTGS systems are usually operated by central banks (one per country)
- Primary objective is to eliminate systemic risk by ensuring that each payment is settled:
 - In Real Time (as soon as it is sent)
 - Gross (one by one, no batching or netting)
 - With finality (once settled, the payment is irrevocable)



Systemic Risk

- High-value payments are a source of systemic risk – if a bank cannot pay, this can cause system-wide problems (domino effect)
- With an RTGS system, each bank has a settlement account maintained by the central bank
- Payments are sent to the system for immediate settlement – if there are sufficient funds
- Settlement is **final and irrevocable**
- Unsuccessful payments (insufficient funds) can be either rejected or queued until funds are available



What Sorts of Payments?

- All RTGS payments are bank-to-bank
- Settlement of securities purchases
- Payments of interest and maturity on Government /BPNG securities
- Settlement of interbank obligations (loans and repayments)
- Large payments by banks on behalf of customers
- Settlement of netted low-value clearing operations (e.g. cards) – see below
- Settlement of trading operations in equities and securities



Central Securities Depository

- Holds information about all Government and BPNG securities:
 - Details of each issue (date of issue, maturity, interest, etc.)
 - Details of holders (identity, amounts held, etc.)
- Updated each time:
 - an issue is completed
 - A trade is settled on the secondary market
 - An issue reaches maturity
- Calculates and pays interest, maturity payments



Coupling of RTGS and CSD

Best modern practice is to have the RTGS and CSD systems very closely coupled. Why?

Two main reasons:

1. Delivery versus Payment (DvP)

2. Intraday Liquidity Management in the RTGS system



Delivery versus Payment

- Avoidance of Settlement Risk:
 - I don't want to pay for your securities until you let me have them
 - You don't want to let me have your securities until I pay you
- Solution is to carry out the transaction simultaneously:
 - in the RTGS for the 'payment leg' of the transaction
 - in the CSD for the transfer of ownership



Intraday Liquidity

- RTGS systems are very safe but can require a lot of liquidity to support high-value payments continuously throughout the day
- If a bank has insufficient funds in its Settlement Account, it can't make payments – this can lead to system-wide problems
- One solution is for the BPNG to lend money to banks to support the payments flow (to “oil the wheels”)
- This naturally requires collateral – a good source of collateral is the securities held by the borrowing bank
- The borrowing bank offers suitable securities, which the BPNG would typically take via a repurchase agreement (‘repo’)



Low Value Payment Systems

- The great majority of payments are low-value, high-volume. For example:
 - (cheques)
 - Credit orders
 - Salary and pension payments
 - ATM, EFTPOS and credit card transactions
 - Collection of Government revenue
 - Payment of utility bills (phone, gas, water, electricity, etc.)
 - Regular customer payments (loan repayments, insurance premiums, etc.)
- It is inefficient and costly to handle these on a real time, gross basis – and each payment by itself poses no systemic risk



Low value payments usually go through a bulk clearing

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Automated Transfer System (ATS)

- In many countries low value clearing of interbank credit payments, direct debits, etc., is done in special centres called Automated Clearing Houses (ACH)
- There is no ACH at present in PNG: all low value payments are cleared between banks on a bilateral basis
- The modern approach is to have one system which combines RTGS and ACH and can handle both low-volume/high-value and high-volume/low value payments – an Automated Transfer System (ATS)



Payments System Development in PNG



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Role of the Bank of PNG

1. Responsibility

- “.... to promote an efficient national and international payments system”
(Central Banking Act 2000)

2. Goal

- “.... improve payment, clearing and settlement systems to:
 - promote efficiency
 - reduce risk and
 - encourage electronic payments”
(2005-2008 Strategic Plan)



NPS Development Programme

- 2008 Review
 - Analysis
 - Vision and Strategy
 - Action Plan
- 2009 ->>> Implementation
 - Consultative framework (NPC)
 - Legal and regulatory development
 - New payment and settlement system



Institutional and market structure

1. Bank of PNG (the central bank):
 - Formulates & implements monetary policy
 - Regulates & supervises financial institutions
 - Promotes an efficient payments system
 - Promotes macro-economic stability
2. “Formal” banking sector
3. Non-bank financial sector



“Formal” Banking Sector

- Small number of banks
- Number of accounts approximates to 7% of population (...but a high percentage of the ‘formal’ economy)
 - Large organisations and their employees
- Serve the main centres only (~100 outlets)
- Offer modern products and instruments
- BUT...
 - >90% of population don’t have bank accounts
 - Stringent ID requirements
 - Geographical penetration is shallow
 - No electronic interbank payment instruments



Non-Bank Financial Sector

1. Savings and Loans Societies

- Occupational (e.g. Police, Teachers, BPNG)
- Rural (generally geographically-based)
 - Membership growing rapidly
 - Many rural areas are prosperous (coffee, copra, palm oil etc.)
- Greater geographical reach than banks

2. Microfinance companies

- Customer base growing rapidly
- Greater geographical reach than banks

3. Finance companies

4. Superannuation funds

5. Life insurance companies & brokers



Payment instruments and circuits

1. Cash – the predominant means of payment
 - Inefficient and risky
 - Money is locked up in “bamboo banks”
.....but is the only practical instrument in most of the country
2. Cheques
 - Prone to fraud
 - Long clearing times
3. Warrants
 - Preferred for larger payments (safer than cheques)
 - But still cumbersome and inefficient
4. Debit Cards – ATM/EFTPOS
 - Each bank has its own network of ATMs, EFTPOS
 - No interbank switch (but bilateral electronic linkages)
5. Credit Cards
 - Not much used



Fixed income securities

- Government instruments
 - T-Bills
 - Inscribed Stock
- Central Bank Bills (plus some repos)
- Primary market via weekly auction
- Little secondary market trading
- All dematerialised, records held at BPNG



Clearing and settlement

- Interbank paper instruments (cheques and warrants) cleared at BPNG Clearing House in Port Moresby
 - < 2,000/day on average (most cheques are intrabank)
 - Several daily sessions
 - Settlement at end of day via paper Debits at BPNG
 - Long clearing times (4 days in POM, 9 outside)
- ‘Local Interbank Exchanges’ in some other centres – not a formal Clearing House but covered in the interbank agreement (RABB)
- Debit card clearing done bilaterally with settlement via Warrants



Non-financial players

- Government
 - ~ 60% of interbank payments
- Utility companies
 - Mainly cash collections
 - Limited use of Billpay
 - Easipay for PNG Power (prepayment)
- Payroll
 - Many salaries paid by bulk payment (“EFT”)
- Retailers
 - Increasing use of EFTPOS in urban centres
- Trade Stores
 - Predominantly operate on a cash basis
 - Often provide cheque encashment service to their customers (e.g. growers)



Technological infrastructure

1. Telecommunications

- i. Fixed line – Telikom monopoly (~68,000 lines)
- ii. Mobile
 - B-Mobile
 - Digicel
- iii. Satellite – wide use of VSAT
- iv. WiMAX – government WAN in NCD

2. Computers/IT

- i. Well-served by local IT industry
- ii. Limited internet penetration (and confined to locations with suitable telecommunication connectivity)



Areas of Concern – Risks

1. No collateral required for settlement at BPNG (or for interbank loans)
 1. Systemic Risk
 2. Credit Risk
 3. Settlement Risk
2. Local Interbank Exchange clearings not settled at BPNG
 - Credit risk
3. NBFIs (S&L Societies, Microbanks) are not participants in Clearing House operations
 - Settlement Risk
 - Credit Risk
4. Settlement of securities trades is by warrant or cheque
 - Settlement risk
5. Settlement of POMSoX trades is not linked with payments
 - Settlement Risk



Areas of Concern – Risks

6. Securities Commission is a single person
 - Operational Risk
7. The current environment inhibits competition and discourages interbank participation (e.g. multiple ATM, EFTPOS networks)
 - Competition risk
8. Underdeveloped technological infrastructure
 - Operational risk
9. Legal and regulatory environment (e.g. telecomms) discourages competition
 - Political risk
10. Existing paper instruments are open to abuse
 - Fraud risk
11. Reliance on cash in an environment of high criminal activity
 - Physical Risk



Areas of Concern – Inefficiencies

1. The only interbank instruments are paper (cheques & warrants)
 - Inhibits development of efficient electronic instruments and circuits
2. No interbank electronic switch for cards –each bank has its own network
 - Inefficient
 - Merchants have multiple EFTPOS terminals
 - Strong inhibiting factor to new market entrants



Areas of Concern – Inefficiencies

3. Telecommunications infrastructure is very underdeveloped
 - Strongly inhibits spread of efficient electronic systems and instruments
 - (“...*the need to reduce cash in circulation. Customers will have no option but to utilise electronic banking facilities...as we go forward*” – MD of BSP after Kerema robbery)
4. NBFIs don't/can't engage in inter-institutional arrangements (including with banks) but account for a large percentage of customers & deposits
 - Inhibits mobilisation of financial resources to grow the economy



Risks in the Present NPS

- Systemic Risk (that one participant's failure might threaten the whole system)
 - could potentially happen in present situation
- Settlement Risk (that settlement will not take place as expected), e.g.:
 - NBFIs are not participants in risk-reducing operations such as the Clearing House
 - No DvP for trades in securities (or equities)
- Credit Risk (that a party will not settle an obligation), e.g.:
 - banks lend to each other without collateral
 - clearing operations outside NCD are not all settled on ESAs at BPNG



Other Risk Areas

- Operational Risk (that systems, procedures or people may fail, resulting in loss or unavailability), e.g.:
 - underdeveloped technological infrastructure
- Competition Risk (that lack of competition may stifle innovation and increase costs), e.g.:
 - no interbank card network
- Fraud Risk, e.g.:
 - cheque and warrant fraud
- Physical Risk (of violent crime), e.g.:
 - general reliance on cash



Future Developments

1. Automated Transfer System
2. Central Securities Depository
3. Institution-independent card switch
4. Electronic payment systems for the unbanked
5. Supporting legislation & regulations
6. Structure for co-operation



Automated Transfer System

- Clearing and settlement of all interbank electronic payments, irrespective of value or urgency
- Banks will be direct participants, other institutions will be indirect
- Tightly integrated with a Central Securities Depository
 - Facilitate Delivery versus Payment for securities transactions
 - Collateral support for BPNG intraday credit to participants
 - Encourage development of a secondary market
- Facilitate introduction of new instruments
 - Direct Credits
 - Direct Debits
 - Payroll/bulk payments



Common Card Switch

- Interconnect all ATM, EFTPOS devices
- True provider independence
- Facilitate market entry of new providers, including NBFIs
- Electronic connection to ATS for automated settlement
- Operated by an independent company
- Ownership/governance of the company needs careful consideration



Payment Systems for the Unbanked

- APPS & card switch will provide platform for introduction of more innovative systems
- For example, mobile phone-based systems
 - M-Pesa (Kenya)
 - G-Cash, Smart Money (Philippines)
- Could be offered widely through Savings & Loans Societies & Microbanks



Legal and Regulatory

- Payments System Act
 - Ability for BPNG to provide oversight
 - Ability for BNPG to enforce operational rules
 - Power to offer intraday credit
 - Finality and irrevocability of payments
 - Finality in netting
- Other agreements
 - Rules and procedures
 - Timely crediting of funds
 - Service Level agreements
- Oversight of the NPS will be exercised by BPNG



Regulations, Agreements

- ATS – develop operating rules (membership agreement):
 - Equal access
 - Membership criteria
 - Loss sharing
 - Lending facilities
 - System administration (e.g. operating hours)
 - Irrevocability
 - Risk allocation
 - Security



Structure for Co-operation

National Payments Council:

- Representation from all stakeholder groups
- Led by the central bank
- Define and lead the NPS modernisation strategy
- Guide institutional and policy developments
- Assist in development of operating rules & agreements
- Develop and implement a communications strategy
- Operate through working groups



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Project Scope

- Legal and Regulatory Framework
- Establishment of a National Payments Council
- Implementation of a Automated Transfer System(ATS)
 - Real time gross settlement (RTGS) functionality
 - Retail clearing and settling (ACH) functionality
- Integrated Securities Depository
- Linkages
 - Internal to the BPNG eg: currency management, General Ledger, Treasury systems
 - Participants: Straight through processing (STP) to internal systems, including securities participants, and government as necessary
- Establishment of an interbank payments network
- Government Payments



Legal and Regulatory

- Payments System Act
 - Submitted to Parliament first half 2010
- Regulations
 - Mobile Payments (needed immediately to cover existing services)
- Other agreements
- Oversight of the NPS will be exercised by BPNG



National Payments Council

- Purpose
 - Oversee the development of the NPS
 - Secure commitment and cooperation from all stakeholders
- Role
 - Facilitate the co-operation between stakeholders and the sharing of information
 - Play a key role in selecting the main principle and options for the design and in the development
 - And in preparing strategic documents such as rules, procedures and agreements between participants
 - Advises on the priority and scheduling of individual projects



National Payments Council Cont:

- Membership
 - Represents all stakeholders in the NPS eg: Commercial banks, Microfinance, Savings and Loans, Dealers, Stock Exchange, Government and Business interests
- Charter
 - The charter will set out the objectives, roles and management of the council
- Meetings
 - Chaired by the BPNG Governor or his representative
 - Meet regularly especially during the preparation and implementation phases of the project



Automated Transfer System

- Two main functional components
- High Value Payments (RTGS Functionality)
 - Large value or time critical interbank transactions
 - Processed in real time with immediate and irrevocable settlement
 - Made on a payment by payment (gross) basis
- Low value high volume (ACH Functionality)
 - Retail low value, high volume transactions
 - Processed in batches
 - Settled during defined windows during the day

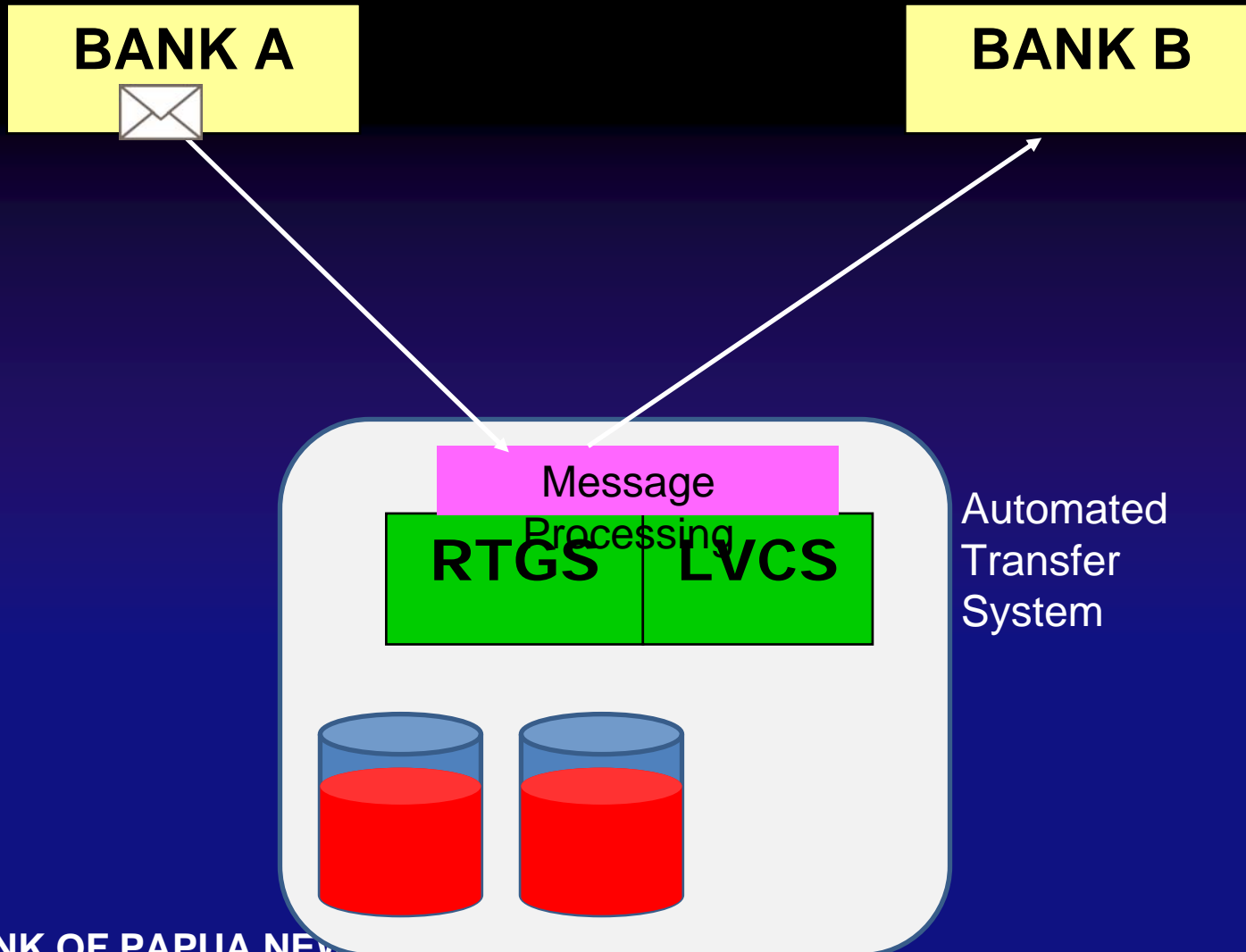


High Value Payments

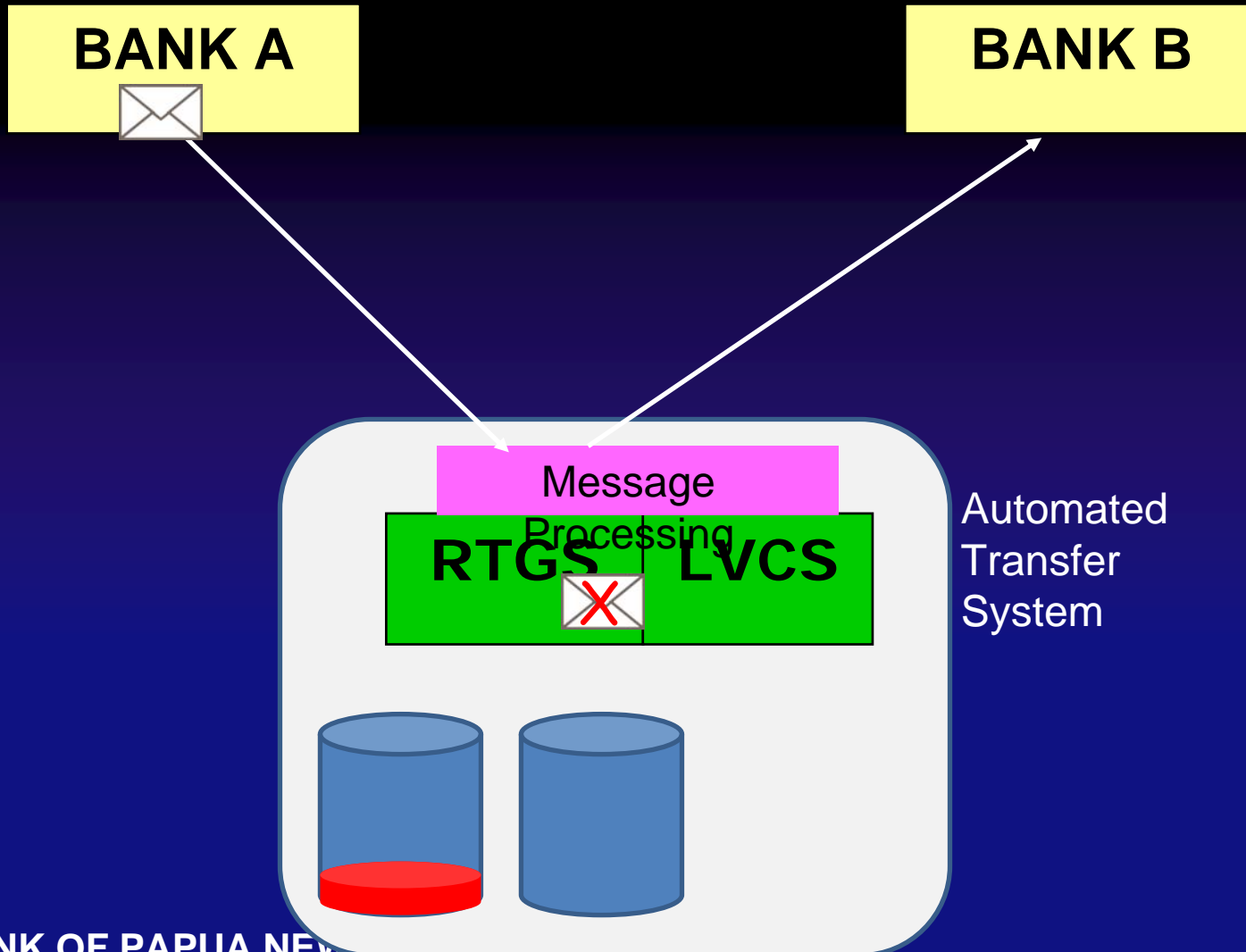
- Payments made are final and irrevocable
- All transfers are on funds held at the BPNG
- Transfers in real time and on a gross basis
 - Participants must pass value to beneficiaries without delay
- Funds transferred only where sufficient funds are in the participants Settlement Account
 - No overdrafts
- Where there are insufficient funds, transactions will cancel



A Successful Payment



A Failed Payment



Low Value Payments

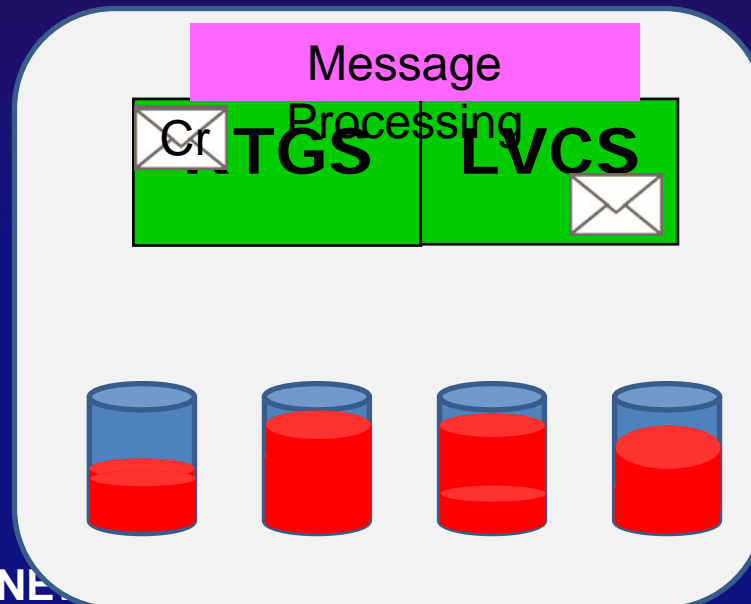
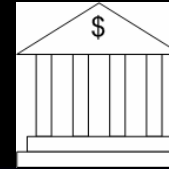
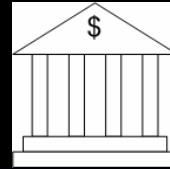
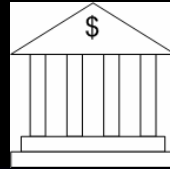
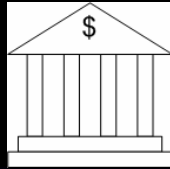
- Direct Credits
 - Payment from the payer's bank initiated by the payer
 - Fixed value payments: rent, loan repayments
 - Payments initiated at the bank, telephone, Internet
- Direct Debits
 - preauthorised debit on the payer's bank account initiated by the payee
 - Utility payments where the value changes
- Payments can be for a beneficiary of any participant
 - Participants submit payments to the ATS at any time
- Payments can be one-off payments or batches of payments

Net value settled on the RTGS in a predetermined



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Low Value Payments



Automated
Transfer
System

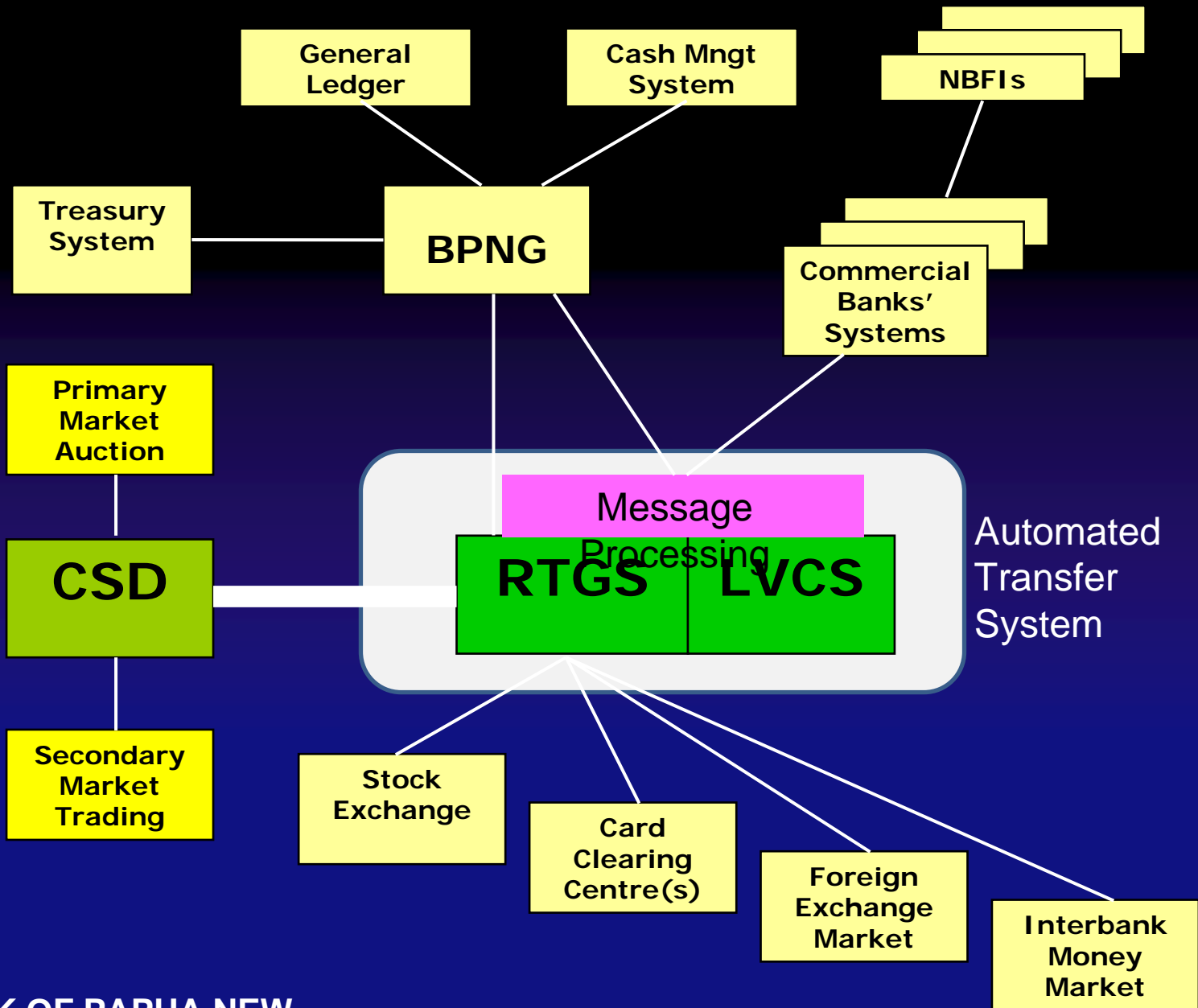


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Central Securities Depository

- Electronic record of BPNG and Government securities
 - Central Bank Bills
 - T-Bills
 - Inscribed Stock
- No paper instruments
- Integrated Auction functionality
- Integrated to the ATS (RTGS) for Delivery versus Payment
 - Securities transferred only where funds are available
 - Where funds are not available, transaction will





Interbank Payments Network

- All commercial banks must be connected at all times
 - During operational day
 - Real time system
- Network must be highly secure and have high availability
- Network Options
 - SWIFT Network
 - But what about smaller operators?
 - Develop own network
 - Combination of both
- Decision will be made after consultation with Participants



Government Payments

- BPNG acts as the Government's banker
- Salary payments can be made by Direct Credit
- Payments can be accepted by Direct Credit
 - Tax payments
 - Import duties
 - Any payment to Government
- Benefits:
 - Salaries in the bank on the day due (no waiting for cheques to clear)
 - Cheaper for Government and public
 - Less opportunity for theft or fraud



National Electronic Card Switch

- Multiple EFTPOS networks
 - Wasteful on resources
 - No level playing field
- Opportunity to implement a nation wide card platform
 - Wider access for banks
 - Not competing on physical network
 - Opens opportunities for other participants (Savings & Loans, Microfinance, Others)
- Decision for the National Payments Council





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Impact on Stakeholders

- Significant operational changes
- Introduction of new payment instruments
- Requirement for Straight Through Processing (STP)
 - Hardware and software implications
 - Effect on back office system
- Resource requirements
 - Implementation
 - Testing
 - Training



Impact on Stakeholders

- Banks:
 - Significant operational changes
 - Introduction of direct debit and direct credit instruments
 - Straight Through Processing (STP) considerations
 - Hardware and software implications
 - Effect on back office system
 - Project resource requirements
 - Implementation
 - Testing
 - Training



Impact on Stakeholders

- Securities Dealers
 - Access to auction system on line
 - Potential for secondary market activity
 - Introduction of DvP provides significant reduction in risk
 - Straight Through Processing (STP) considerations
 - Hardware and software implications
 - Effect on back office system
 - Project resource requirements
 - Implementation
 - Testing
 - Training



Impact on Stakeholders

- Other Participants
 - Savings & Loans, Microfinance
 - Access to an interbank network
 - Possible new payment services
 - Government
 - Significant cost savings
 - Increased operational efficiency
 - Reduction in risk: fraud and theft
 - Business
 - New payment services
 - Lower costs
 - Potential for direct connection to payment services
 - Reduction in risk: fraud and theft
 - Citizens
 - Access to new services
 - Lower costs
 - Much safer



Impact on Stakeholders

- Implementation costs
 - Cost model to be developed with NPC assistance
 - Must be fair on all participants
- Operational Costs
 - Charge per transaction
 - Attractive compared to existing instruments
 - High value/time critical payments will attract a higher cost than retail low value payments
- Participant setup costs
 - Design will minimise participant costs



Implementation Timeframe

