



Towards e-Lebanon

Secure Electronic Banking and
Information for Lebanon



Nasser Saidi

Banque du Liban June 2003



e-Lebanon is the Portal to Lebanon's future

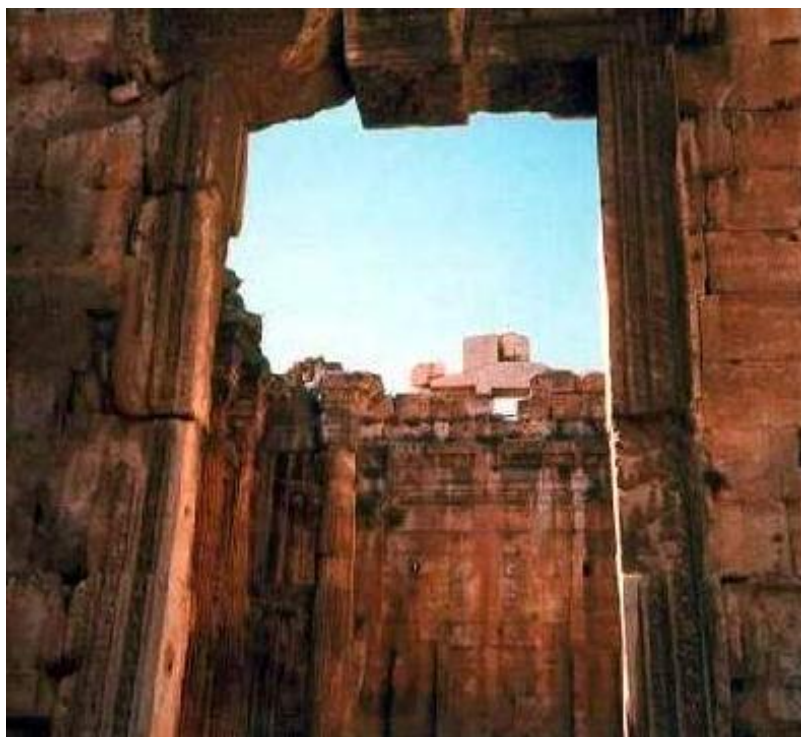
Portal:

*Grand and imposing Door, or Entrance
Approach or entrance to a bridge or a
tunnel*

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E-Lebanon is the Portal



Media & ICT source of:

- Growth
- Development
- Modernization

Lebanon is:

- a positive example of coexistence and symbiosis
- A Post 11 September & Post-Iraq War necessity

Towards e-Lebanon





1. Focus on MICT to re-engineer, business & public sector strategies
2. Use MICT for Strategic Innovation
3. Adopt best practices for MICT Initiatives
4. Invest, Budget & Finance MICT Initiatives
5. Protect Privacy, provide security & encryption
6. Focus on MICT & Economic Development
7. Use MICT for Human Development
8. Foster eDemocracy

Role of BDL

- Expansion of banking & financial services in modern economies \Rightarrow wider role of CBs
- Modern ICT \Rightarrow \downarrow information costs & \downarrow payment costs
- Monetary Arrangements & Policy
- Exchange Rate Arrangements & Policy
- Public Debt Management

Role of BDL: II

- Enable & Facilitate Finance of Reconstruction
- Payment & Settlement Systems
- Banking Control & Supervision
- Financial Market Supervision

Role of BDL: III

- Wider Role & Responsibility:
 - Inform the general public
 - Advise Government
 - Inform International Organizations
 - Inform Markets: domestic, international
- International Economic & Financial Integration
- Comply with International Codes & Standards

BDL has to adopt & Change Policies

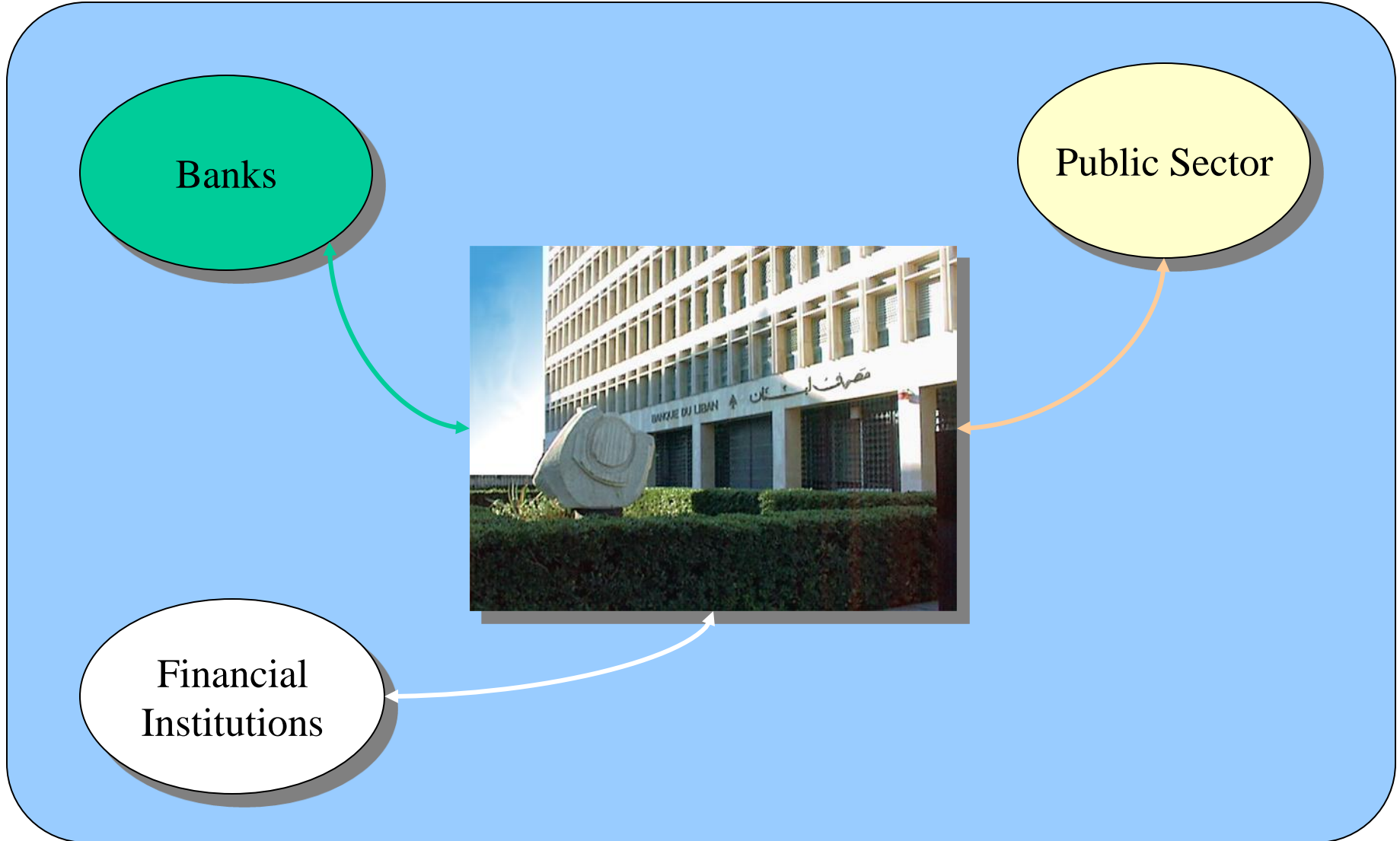
- Enabling environment
 - Communications Infrastructure
 - Electronic Security Arrangements
 - Information Infrastructure
 - Legal framework and enforcement
 - Risk related regulations
- Banking & Financial Market Competition policy
- Managing risks
 - Institutions/prudential
 - Consumer/investor protection

Foundations for SeBIL:

Challenges facing the Lebanese financial sector

- re-establishment of prominence in regional & global financial markets
- keep pace with rapid change and modernization
- platform for secure payments (banks, markets, governments & cross border)
- increased ability to manage market liquidity & risks
- increased discipline in financial market practices
- electronic end-to-end processing at all levels of interaction
- assured reliability & integrity of strategic information
- appropriate regulatory environment

SeBIL: Major Players



Vision

■ SeBIL

- Technical 'road map' & feasibility
 - Funding: USTDA, BDL, ABL, HP
 - Feasibility: HP, BDL, Banks
 - Supported by a secure IT infrastructure designed by DSSi
- Legal & Regulatory 'road map'
- Partnership: BDL, Banks, Government, MICT, Public

Vision

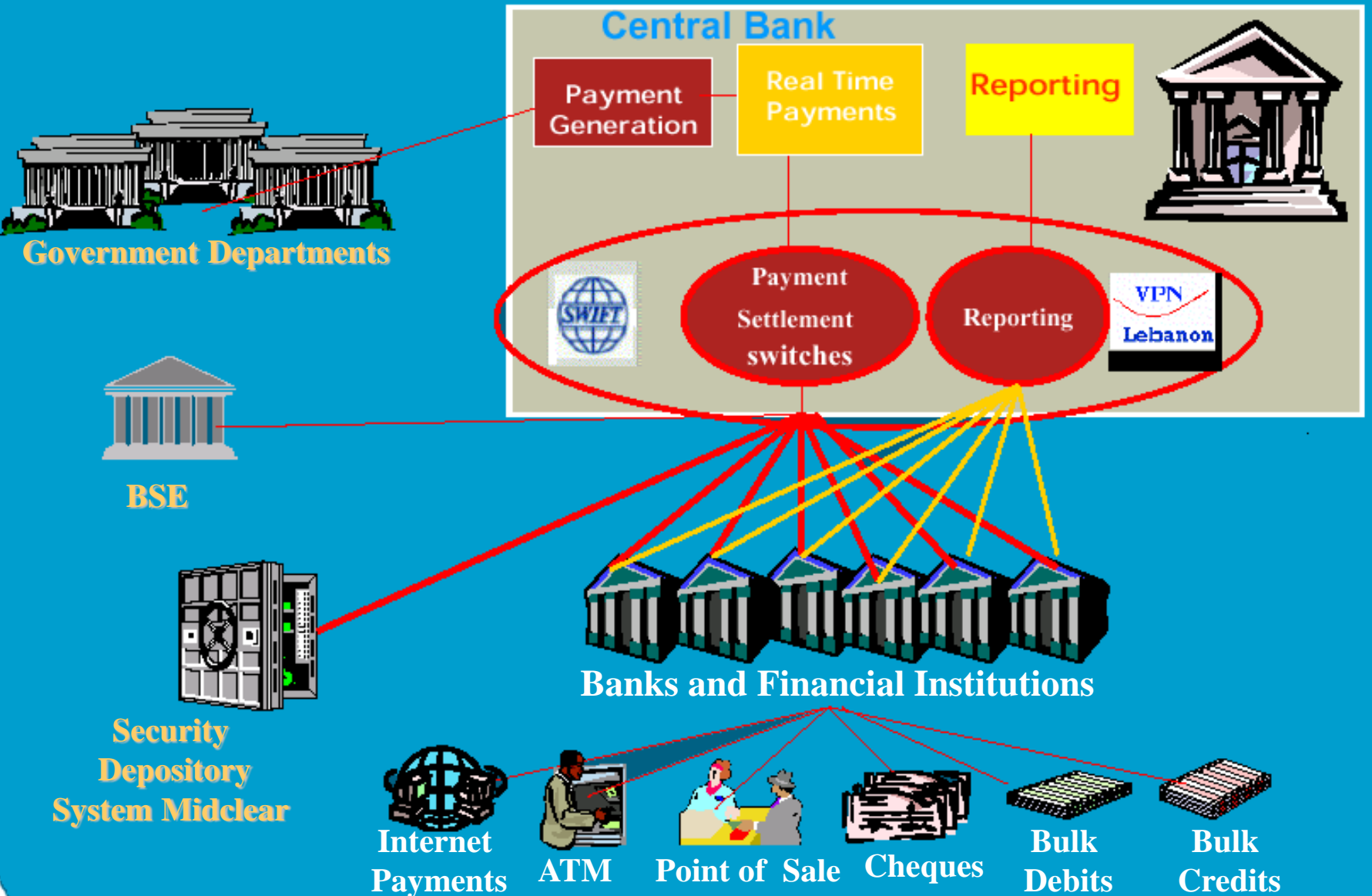
■ SeBIL

- Platform for secure payments (banks, Financial Institutions, Public Sector), reporting & transactions, supported by a secure IT infrastructure layer, designed by Decision Support Systems, Inc.(DSSi)
- Increased ability to manage market liquidity & risks
- Electronic end-to-end processing at all levels of interaction
- Assured reliability & integrity of strategic information
- Appropriate regulatory environment

SeBIL Vision

- Electronic Reporting
- Decision Support System
- Web-based Application
- Real Time Settlement System
- Automated Clearing House
- Treasury Management System
- Help Desk

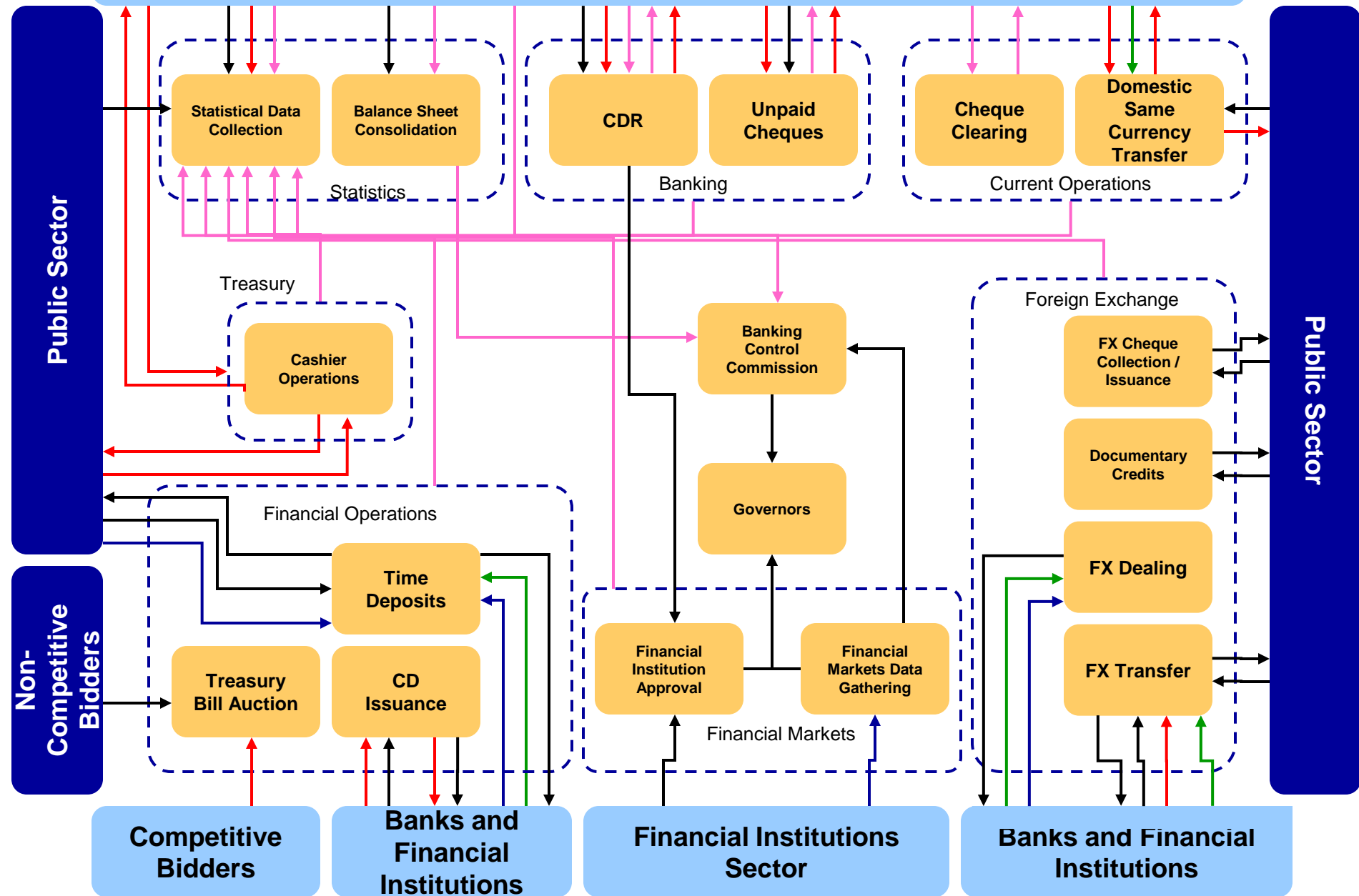
Transaction and Reporting System



SeBIL Scope

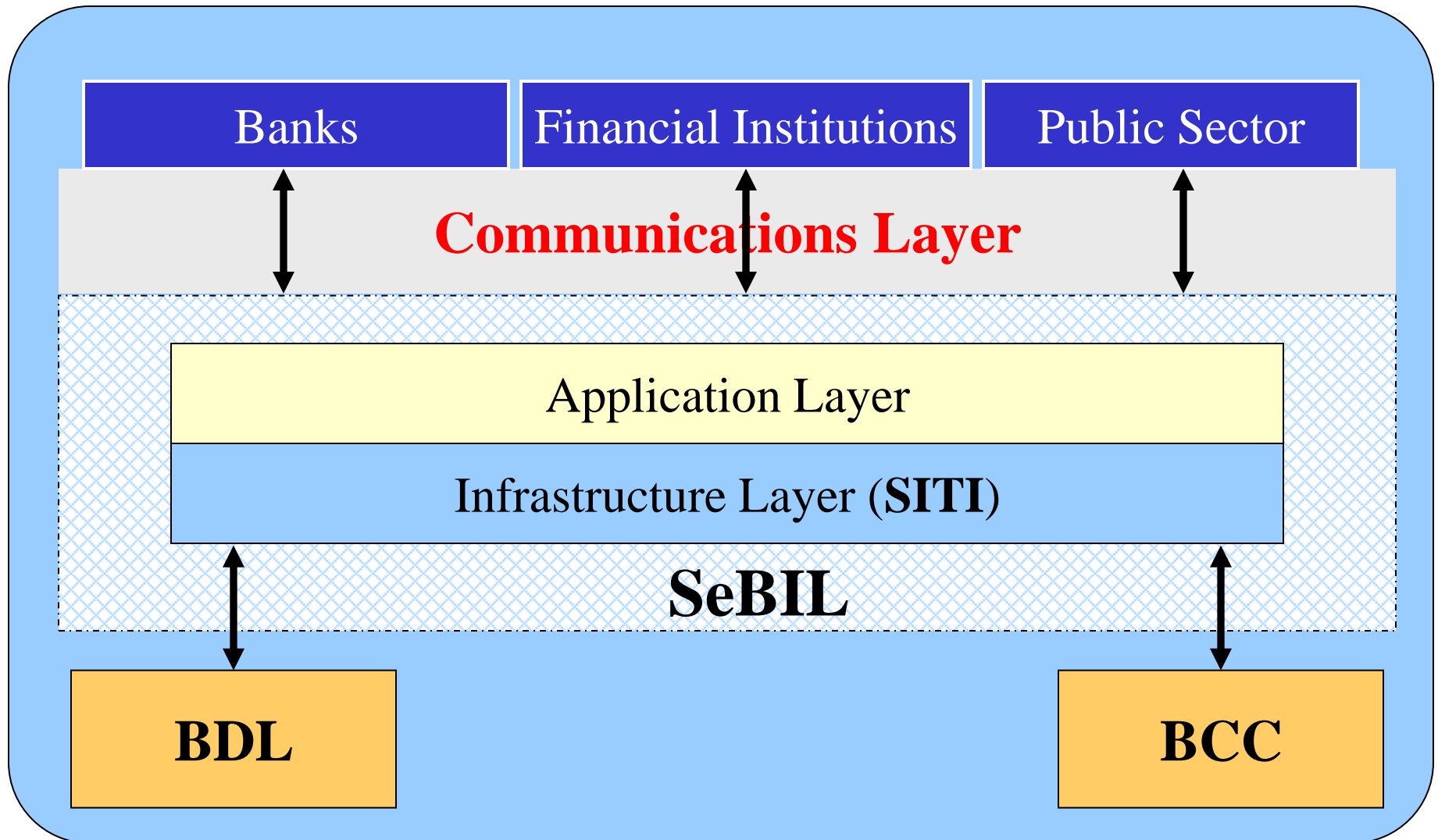
- Short term
 - Automate clearing process for Cheques
 - Eliminate manual/physical Clearing Houses
 - Reduce Operating Costs
- Medium term
 - Clear all third party instruments
 - Payment Orders
 - Direct Debit and Credit
 - Debit and Credit Cards
 - Commercial Bills
- Long term
 - Link with Real Time Settlement System (RTSS)

Banks and Financial Institutions

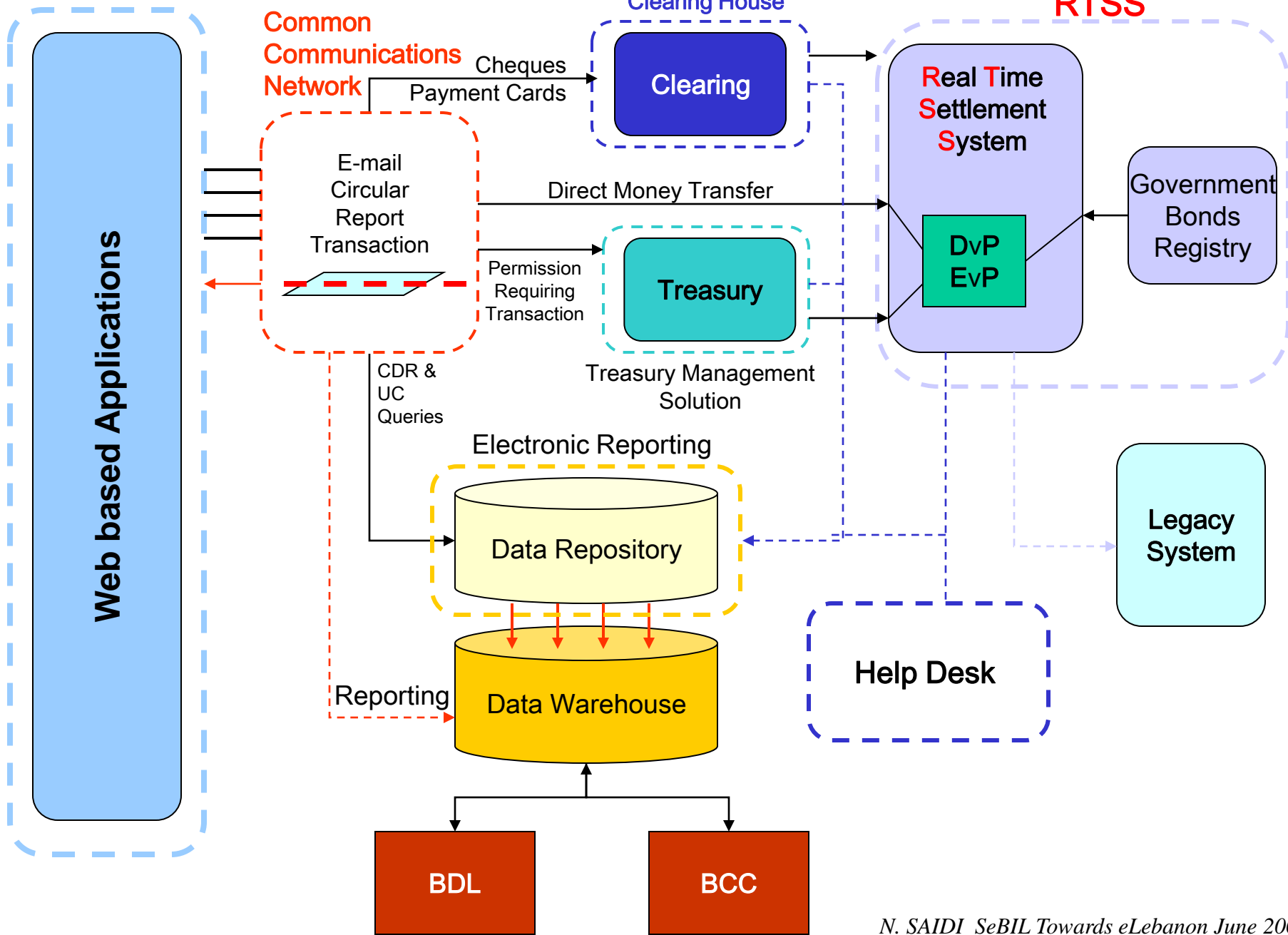


form, diskette, e-message, paper, telephone, manual

SeBIL: Logical Layout



BANKS



Communication Infrastructure

- Dialup PSTN / ISDN via MPT
- Leased Line via MPT
- Microwave via private sector
- SWIFT



Secure IT Infrastructure

The Infrastructure Layer

SITI Components—Designed by DSSi

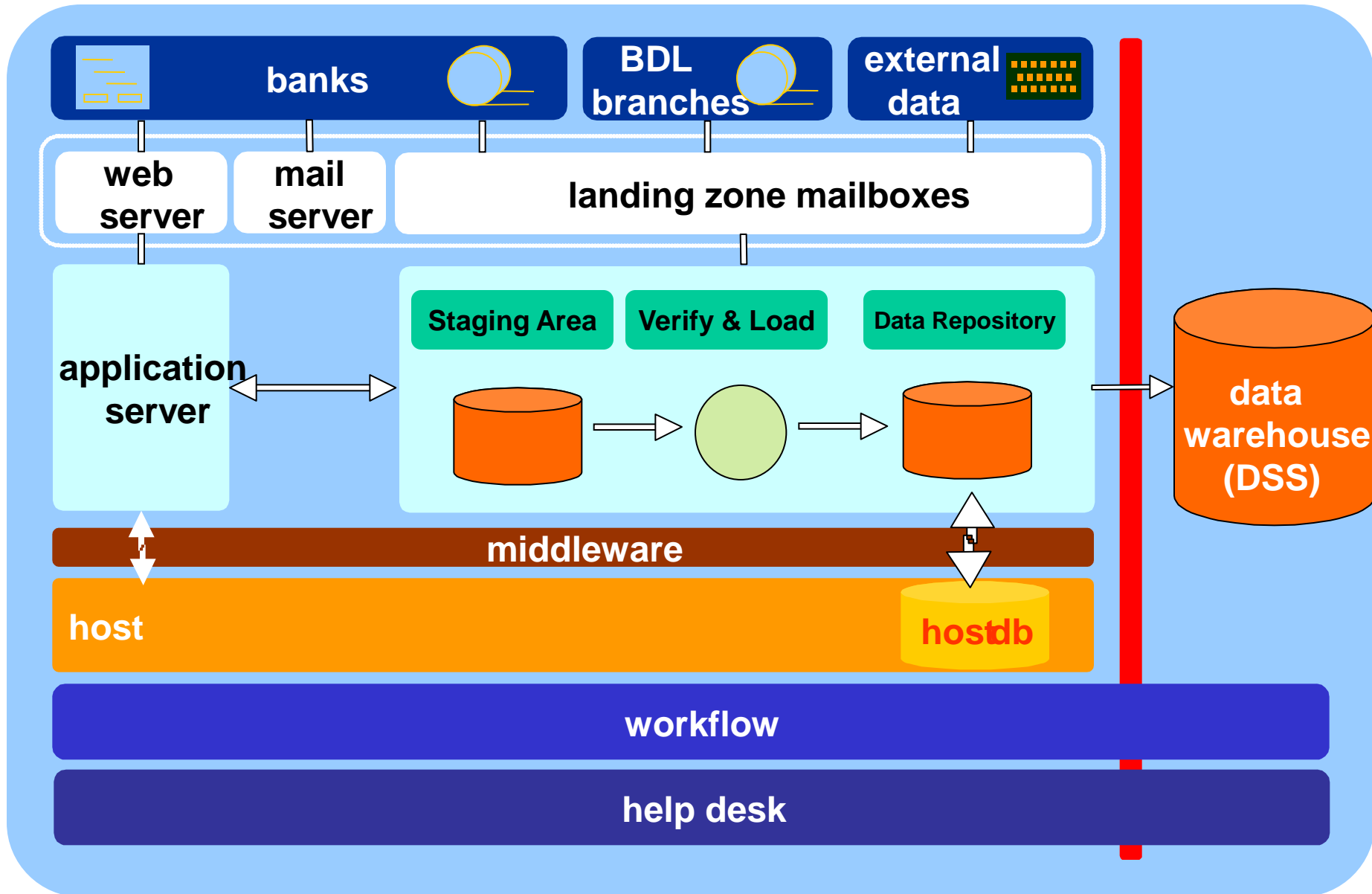
1. **Access Control** (Authorization – Authentication – Boundary)
2. **Encryption** (Cryptographic – PKI)
3. **Secure Communications** (Physical Infrastructure)
4. **Management** (Enterprise System & Security)
5. **Systems and Network Services** (software validation)
6. **Business Continuity Management** (disaster recovery)
7. **Potential Future Expansion** (Future application support)



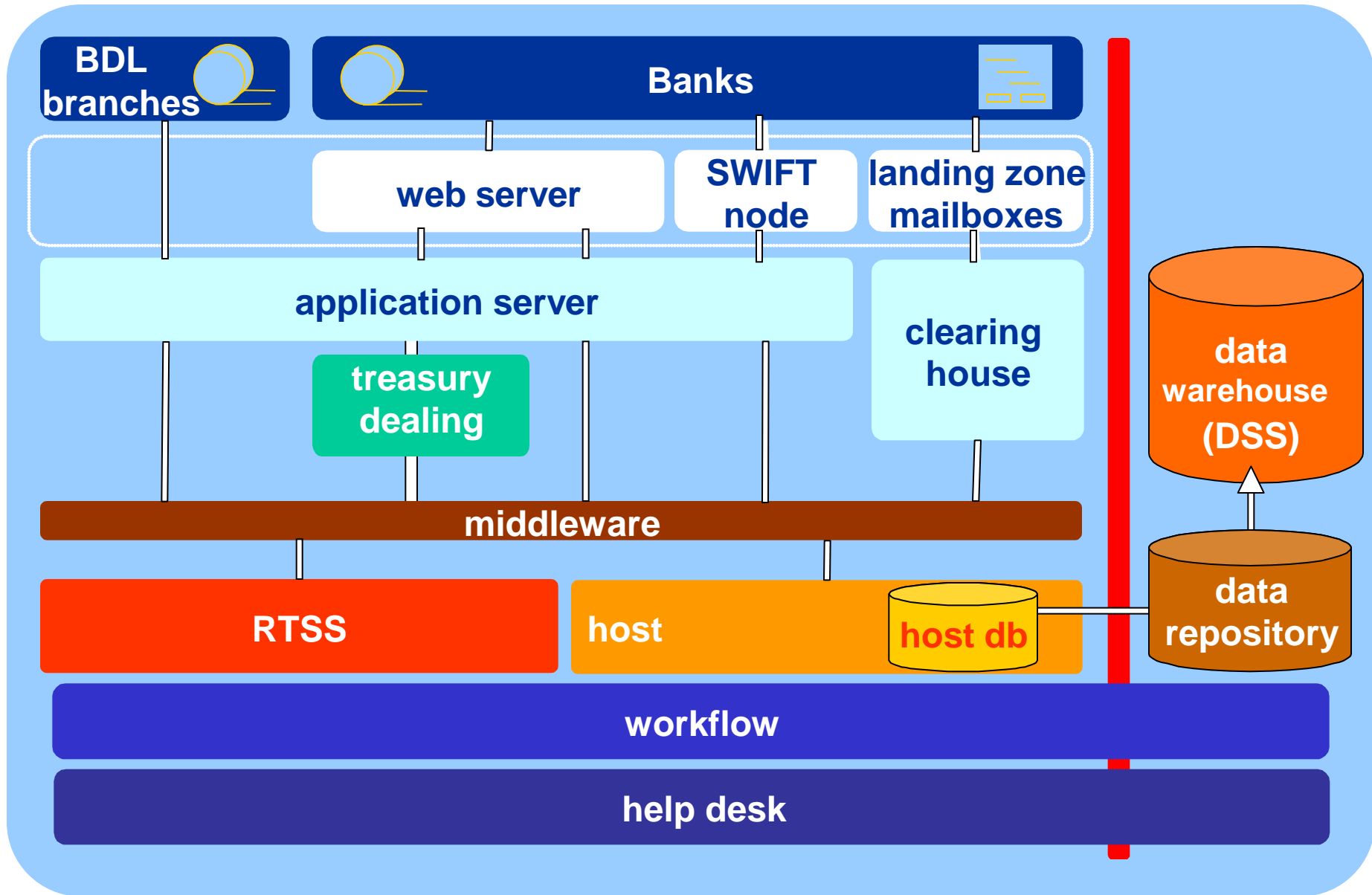
The Application Layer

Reporting , Transactions &
Decision Support Systems

Logical Architecture for Reporting



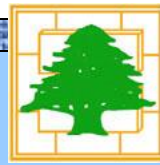
Logical Architecture for Transactions



BDL, BCC: Decision Support System

- Gain new insights on the collected data
- Better control and supervision of the banking system
- Effective monitoring of the financial market and oversight of monetary policy

Collected data should be shared from a single data source



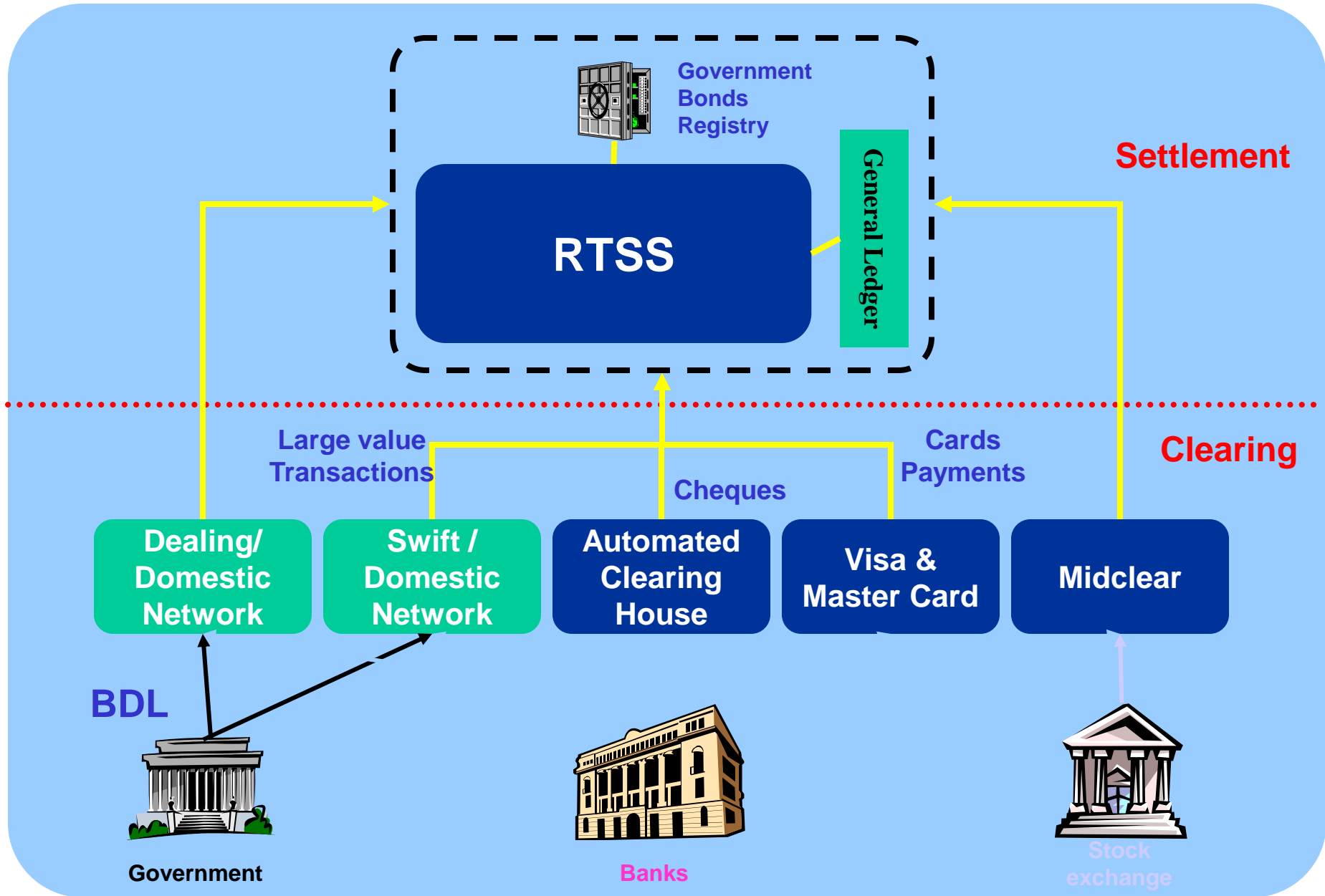
Efficient Payments

The Application Layer
Real Time Settlement System
RTSS

Real-Time Settlement Systems

- Provide efficient, secure, multi-currency clearing & settlement system
- Decrease liquidity, credit, systemic risk in the banking system
- Provide intra-day final transfer of funds
- Increase banks' ability to manage their position

Real-Time Settlement Systems Process Flow



Common Uses of Public-Key Cryptography

- Secure E-mail and other communications
 - Secure electronic communications between individuals
- Secure WWW transactions
 - Consumer-merchant purchases
 - On-line banking
- Business-to-business transactions
 - Electronic Data Interchange
 - Electronic Trading
- Other e-commerce solutions

Requirements for Banking & Commercial Applications

- Confidentiality
- Integrity
- Authenticity
- Non-repudiation

Traditional paper-based solutions

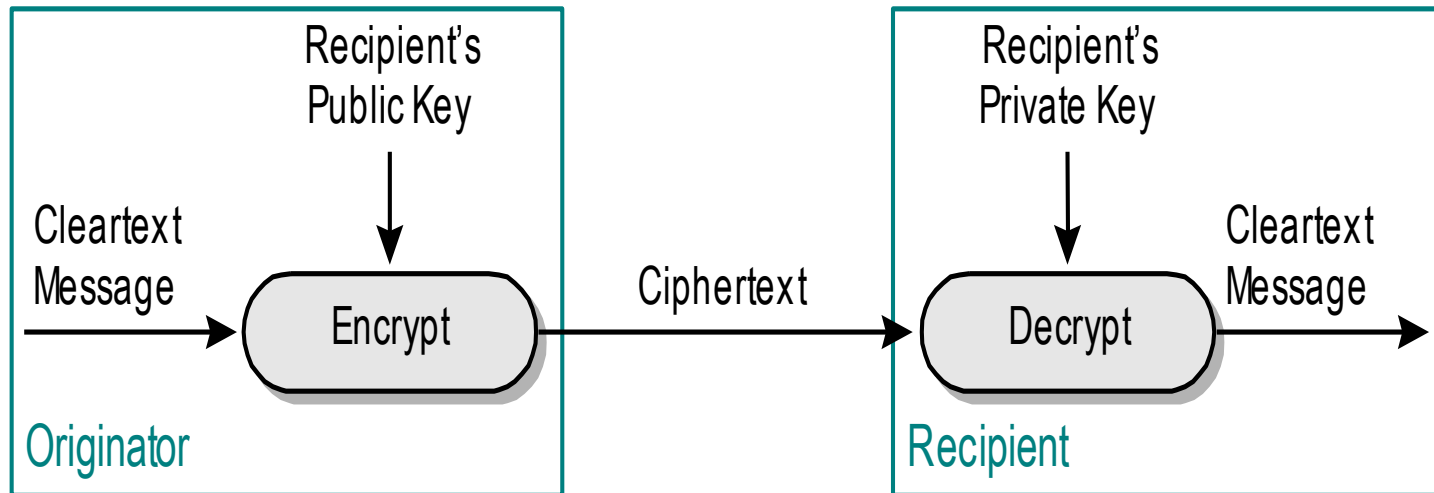
- Confidentiality
 - Integrity
 - Authenticity
 - Non-repudiation
 - Availability
- Envelopes
 - Signatures, Watermarks, Barcodes
 - Notaries, strong ID, physical presence
 - Signatures, receipts, confirmations
 - Alternate routes, sites, etc.

Electronic Solutions

- Confidentiality
 - Authenticity
 - Integrity
 - Non-Repudiation
 - Availability
- Data Encryption
 - Digital Signatures, Certificates, Digital Ids
 - Hash Algorithms, Message Digests, Digital Signatures
 - Digital Signatures, Audit Logs
 - Redundant Systems, Automatic Failover

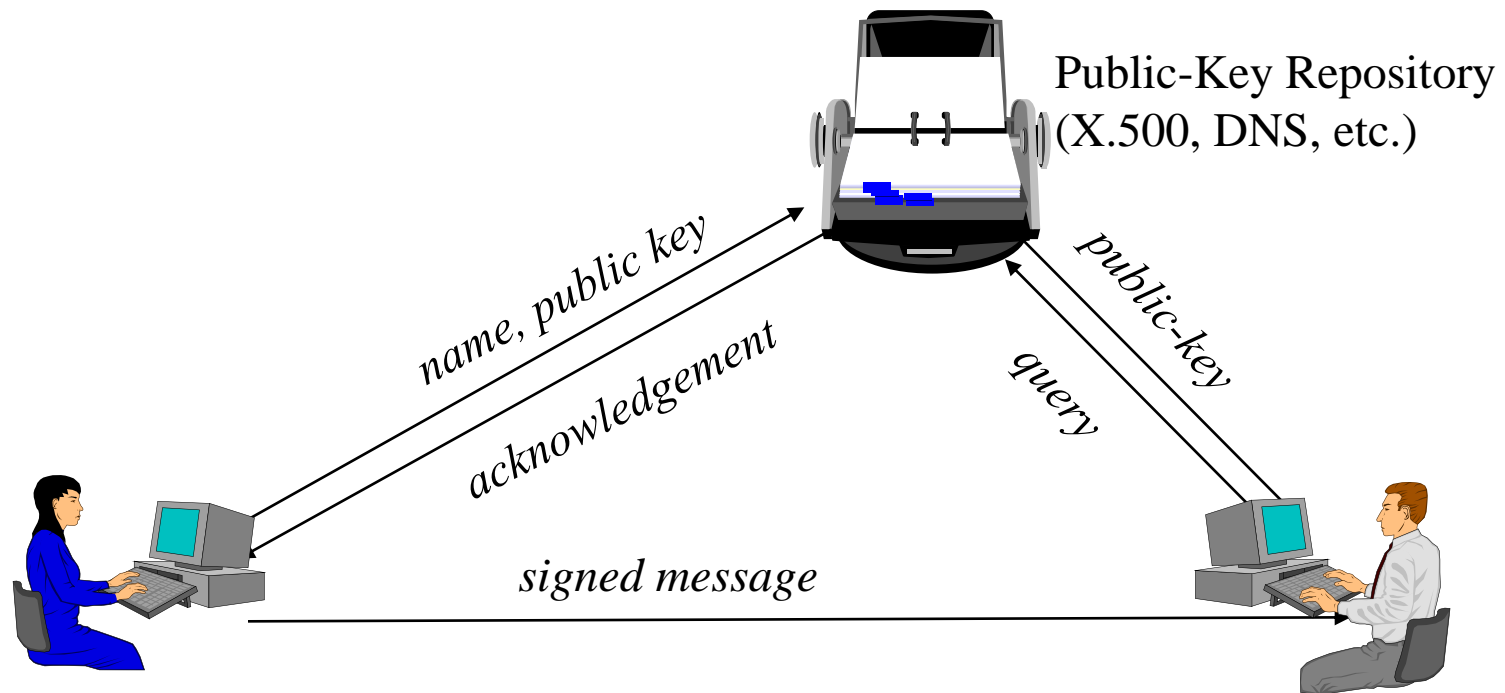
Adding Confidentiality

- Asymmetric (public-key) cryptography
 - Two keys used: public key and private key
 - Either can be used for encryption/decryption

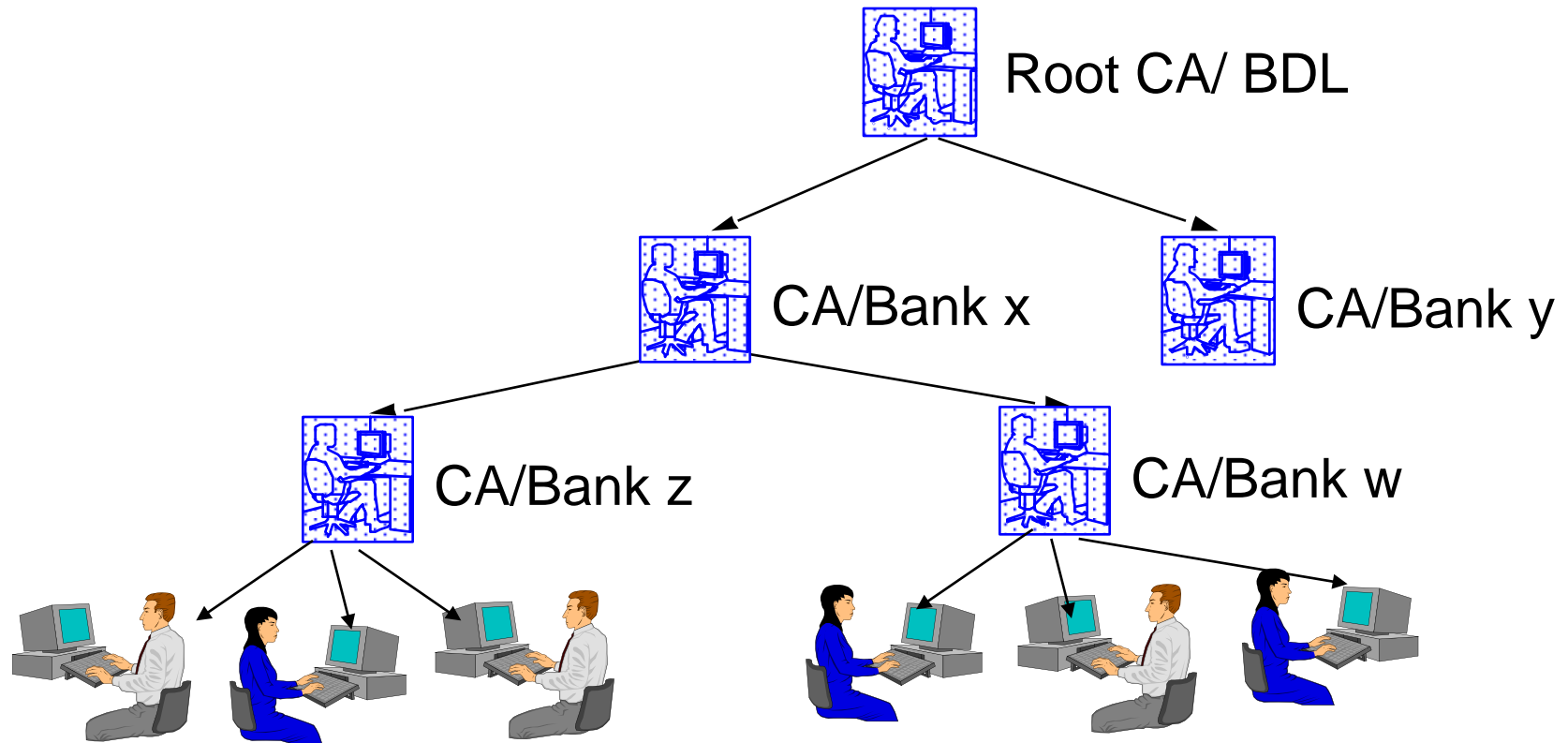


Retrieving Public Keys

- Public keys stored in repositories
- Keys can be retrieved on demand



BDL-Banking System: CA Hierarchy





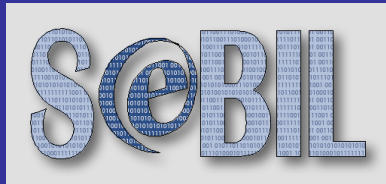
The Application Layer

Automated Clearing House

ACH

ACH Vision

LONG TERM



- RTSS
- STP => T+0

Appealing to banks

PROPOSED FIRST STEP

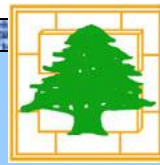
Pilot Automated Clearing House

Building Pre-requisites

- Network infrastructure
- Secure VPN (PKI, directory)
- Integrated Risk management
- Messaging standards
- Facilitate interbank services (e.g. Cheque truncation) **with compliance to Secrecy Law**
- Business model

Need To Align With Business CSFs, Strategies, KPIs

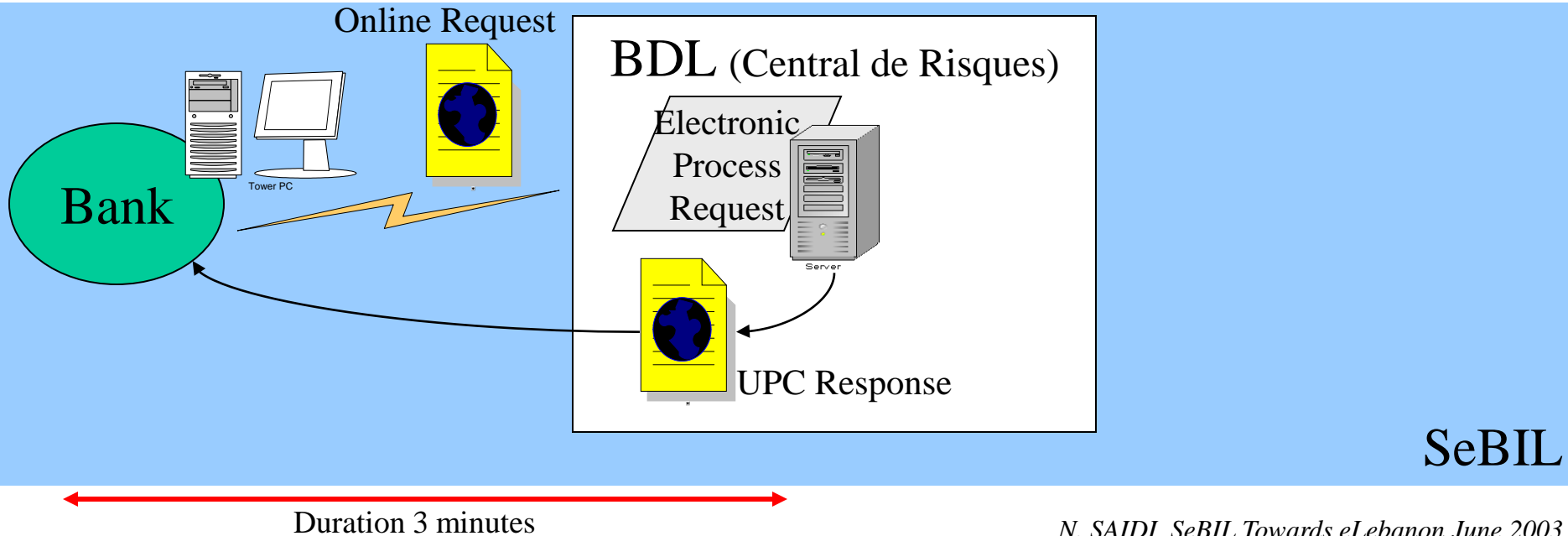
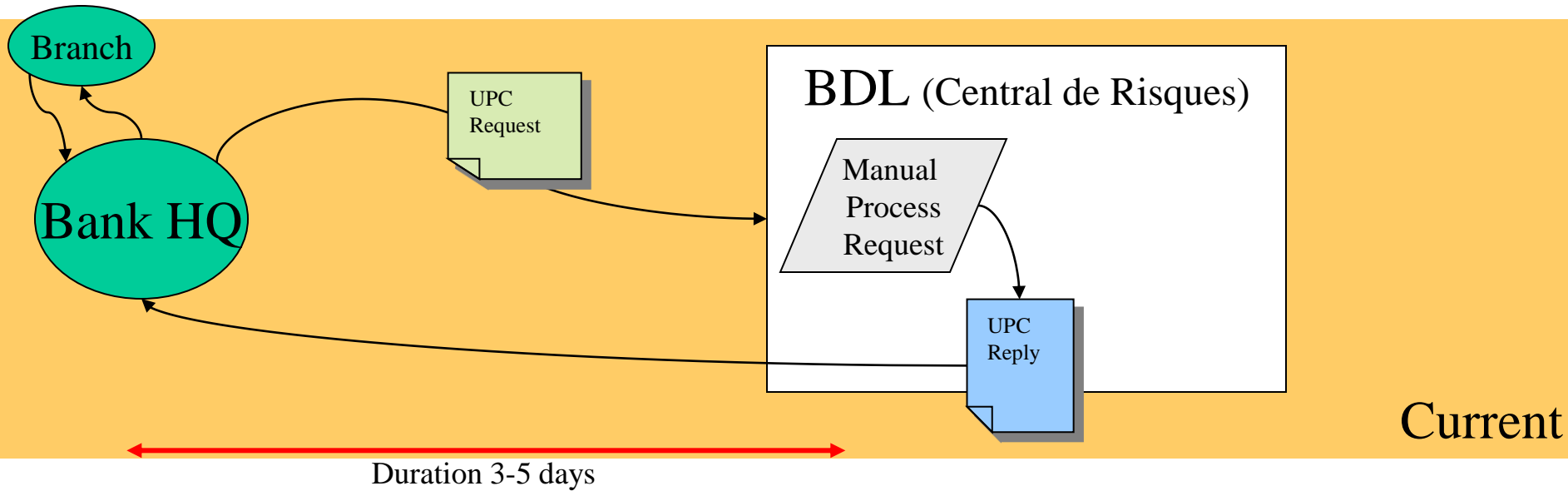
Stakeholder	Critical Success Factors (CSF) "What"	Strategy "How"	Key Performance Indicator (KPI) "How much"
BDL	Automated clearing house Integrated risk management Reduce cost of operations	Create virtual clearing house	Reduce Cost per cheque processing by 50% Eliminate the current need for sessions per CCY Reduce time cycle for return checks and Unpaid cheques risks
BDL Depts	Simplified reporting and statistics Integrated risk management		Online access to reports
MOF	Secured framework for all financial related activities, directly to the FIs		Public sector Salary payments to the civil service, via the banks in T+X days
Banks, FIs	Reduce cost of operations Reduce time to market STP	Consolidate cheque processing	Reduce Cost per cheque processing by 50% Reduce headcount on cheque processing by x % Reduce time cycle for FCY (t+2) and LCY(t+1) to T+0



The Application Layer

Unpaid Cheques

Current and Future UPC Solutions





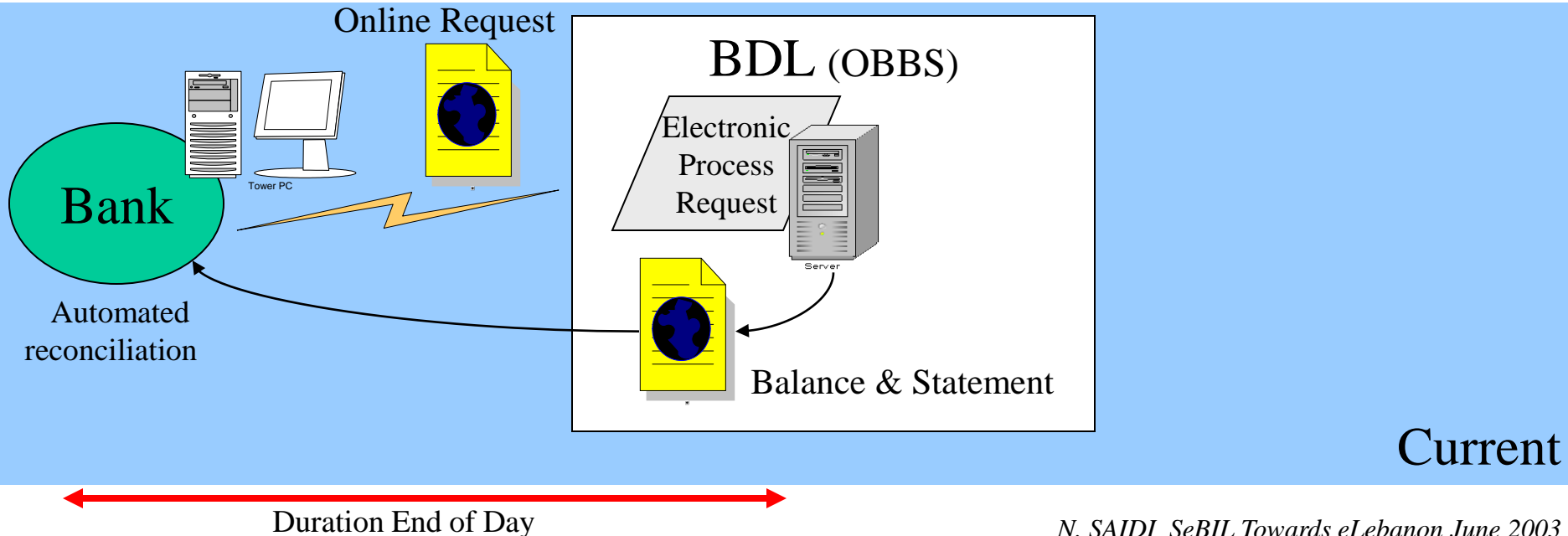
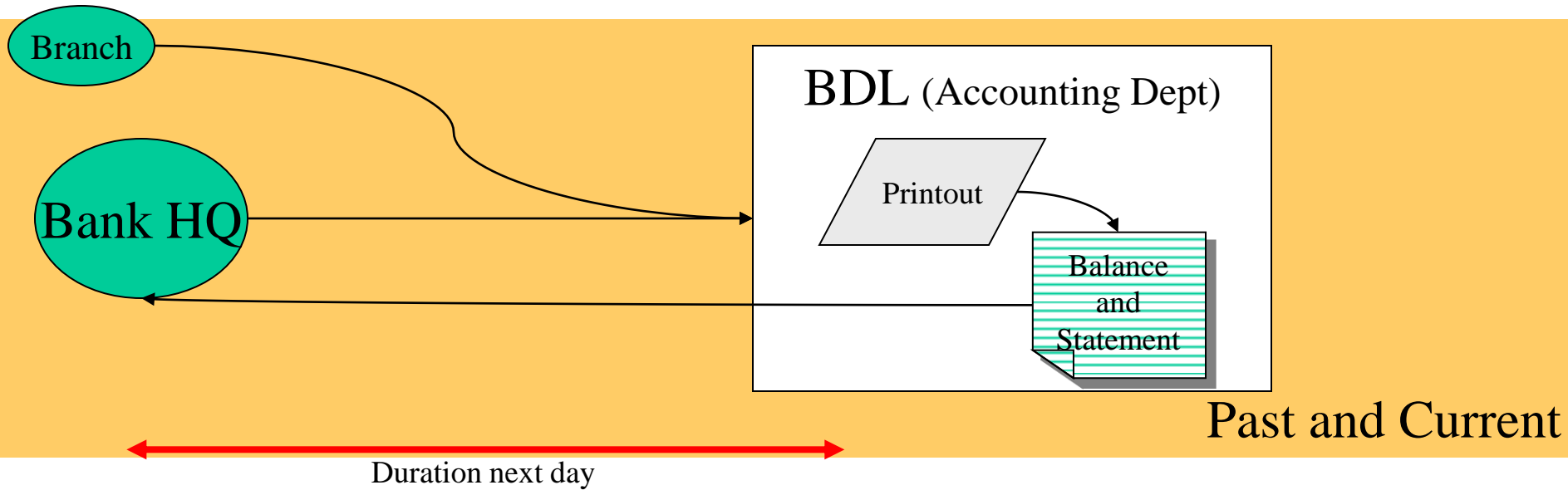
The Application Layer

Online Banks Balances and
Statements - OBBS

and

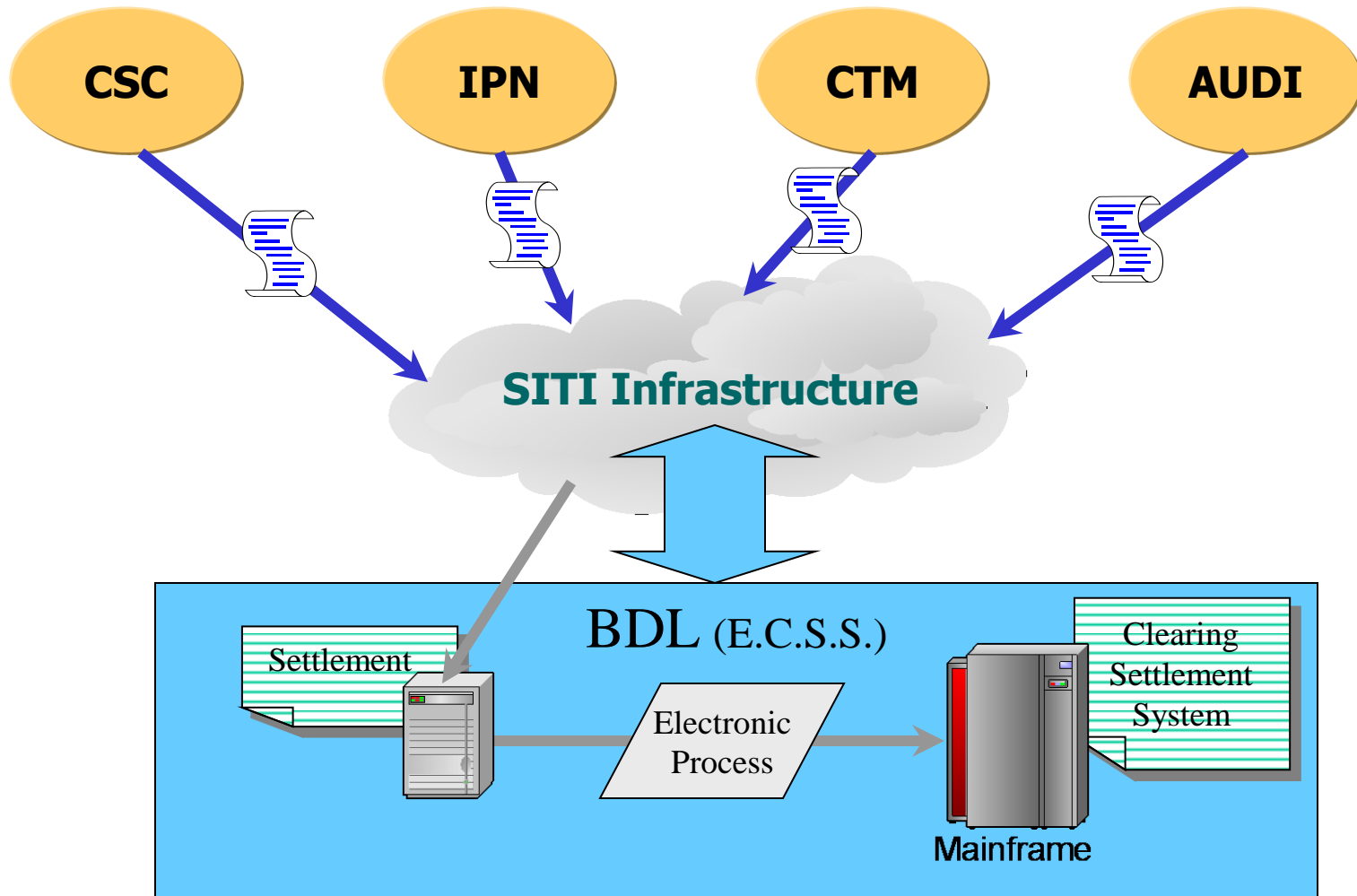
Electronic Clearing and
Settlement System - ECSS

Past and Current OBBS Solutions



ECSS Solution

Electronic Clearing Settlements System



Towards e-Lebanon

- Secure e-Payments and e-Banking are the foundations for e-Commerce and e-Services
- An e-Identity and e-Signature imposed in the banking system will become the standard for the rest of the economy



- We should aim to ‘leapfrog’ in developing our banking, payment and financial systems to support eBanking & eFinance, e-Services & e-Commerce
- SeBIL will be Lebanon’s platform for a new regional eBanking, ePayments and eFinance role: it will allow us to leapfrog
- We should aim to develop Arab regional payment networks and integrate national payment networks: essential for fostering trade and investment
- We should aim to integrate European Payments Network

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