Chapter 10: CORE Banking Systems (CBS)

What is Core Banking System (CBS)?

- Various **services being offered by the banking system** to its customers and this is done by the whole banking **core branches**.

Facilities offered by CBS	Elements of CBS	Banking Services
• **ATM** • **EFT** • **Tele-Banking** • **Internet Banking** • **Branch clearing facility**	• **Servicing loans** • **Opening new accounts.** • **Cash deposits** • **Withdrawals** • **Processing payments and cheques** • **Calculating interest.** • **CRM** • **Managing customer accounts** • **Establishing criteria for minimum balances, interest rates, number of withdrawals** • **Establishing interest rates** • **Maintaining records for all the bank's transactions**	• **Electronic Clearing Services (ECS)** • **Letters of Credit and Guarantees** • **Back operations** • **Retail Banking** • **HNI** • **Risk Management** • **Special Services**

Electronic Clearing Services (ECS)	Letters of Credit and Guarantees
Used extensively now for **clearing of instruments on behalf of the customer**. **Forms of ECS:** **ECS Credit: A single receiver** of funds from a large number of customers. **ECS Debit: A single account** to be **debited** against which many accounts with a number of banks in the same clearing house area are credited.	**Letter of Credit (LC):** Undertaking by a bank **to the payee** (the supplier of goods and/or services) to pay to him, **on behalf of the applicant (the buyer).** **Guarantee :** Required by the customers of banks for **submission to the buyers** of their goods or services **to guarantee the performance of contractual obligations.**

Enterprise Risk Management for CBS

Challenges of IT in CBS	IT Risk, RAP & ERM in CBS	Risk Management Strategy
1. Fast Moving Technology **2. Complexity of Systems** **3. Multiple Controls** **4. Regulations and Alignment of IT** **5. Dependence on Vendors** **6. SOD** **7. External Threats: Malware, Vendors, Employees, Hackers, etc.** **8. Back-up and Recovery**	**Similar to ERM, RAP and IC as per SA-315 in CIS Environment**	1. **Accept:** Formally **acknowledge that the risk exists** and monitor it. 2. **Avoid:** Eliminate the risk by not taking up or **avoiding the specific business process** which involves risk. 3. **Transfer:** Share risk with partners or transfer to insurance coverage. 4. **Mitigate:** Implement controls.

Some Risks relating to Banking

Some risks relating to Banking

- **Loss** of confidential data
- Inaccuracy of data leading to incorrect decision-making
- Unauthorized access to customer information
- Loss due to errors
- Loss of money or reputation or business due to frauds
- Impact of Non-compliance

Indicators of Higher IT Risk

1. IT **security** is not given required priority.
2. Attitude of '**Computer will take care of everything** – no checking is required".
3. Lack of **transparency** of IT operations and responsibility assigned.
4. Lack of **Input** control.
5. Lack of **output** verification.
6. Lack of **evidence**.
7. Lack of **access control**.
8. Lack of **audit trails**.
9. Lack of **dual checks** for sensitive and high value transactions.
10. Lack of documented **DRP and BCP**.
11. Lack of **controls** leading to temptation **to commit frauds.**
12. **No check on vendors** for reliability of software.
13. **Over-dependence** on long serving – 'trusted' operators, supervisors, managers.

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IT Controls in CBS

(Same as Discussed in Chapter 8 and 9)

Key Indicators of Effective IT controls

1. Upgradation of IT infrastructure	**2. Reliability of IS**
3. Cost effective Projects	**4. Projection against threats and Vulnerability**
5. Resource allocations	**6. Efficient Help-Desk**
7. Clear Communication	**8. Security awareness programs**

Objectives if IC in Banks

(Same as Discussed under SA-315)

IT Controls in Banks	General Controls	Application Controls
1. Maintenance of **Log-in and Log-out records** 2. **Supervisory password** to process transaction 3. **Ledgers** cannot be opened without a supervisory level password 4. **Exception situations** handled only with a valid supervisory level password 5. Checks on **withdrawals within the drawing power** 6. System access on stipulated **days and hours** 7. Individual users can access only **specified directories and files** 8. User **time out** is prescribed	**1. Information Security Policy** **2. Administration, Access, and Authentication** **3. Separation of key IT functions** **4. Management of Systems Acquisition and Implementation** **5. Change Management** **6. Backup, Recovery and Business Continuity** **7. Proper Development and Implementation of Application Software** **8. Confidentiality, Integrity and Availability of Software and Data Files** **9. Incident response and management**	(Similar to the **"Application Controls"** discussed in **"Chapter -9: ISCA)**

Component and Architecture of CBS

CBS Software	Key aspects in-built into CBS Architecture
• **Finacle** • **FinnOne** • **Flexcube** • **BaNCS** • **BankMate**	• **Information Flow** • **Customer centric** • **Regulatory compliance** • **Resource optimization**

Core features of CBS	Major Components of the CBS
• On-line real-time processing. • Transactions are posted immediately. • All databases updated simultaneously. • Centralized Operations. • Separate hierarchy for business and operations. • Business and services are productized. • Remote interaction with customers. • Reliance on transaction balancing. • Highly dependent system-based controls. • Authorizations occur within the application. • Increased access by staff at various levels based on authorization. • Daily, half yearly and annual closing. • Automatic processing of standing instructions. • Centralized interest applications for all accounts and account types. • Anytime, anywhere access to customers and vendors.	• Opening new accounts and customer on-boarding. • Managing deposits and withdrawals. • Transactions management from initiation to reporting. • Interest calculation and management. • Payments processing. • Loans disbursement and management. • Processing cash deposits and withdrawals. • Processing and servicing loans. • Accounts management. • Configuring and calculating interest. • Customer Relationship Management (CRM). • Setting criteria for minimum balances, interest rates, withdrawals allowed, limits and so on. • Maintaining records for all the bank's transactions. • Forex Management • Swift Operations.

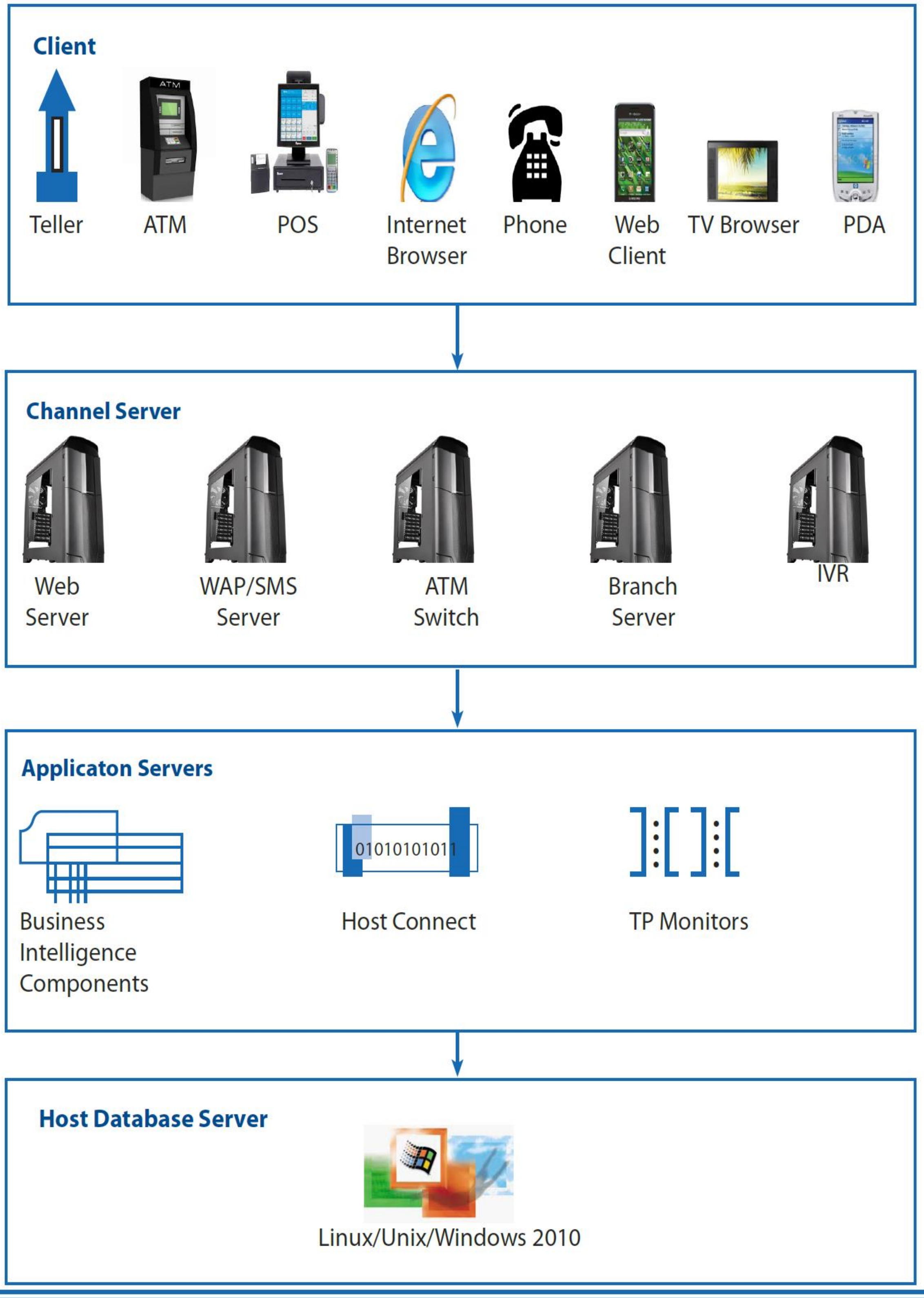
Technology Architecture of CBS

Client
Teller: Browser or Client/Server
Customer: Branch, ATM POS, telephone, Internet; TV browser, PDA mobile phone etc.

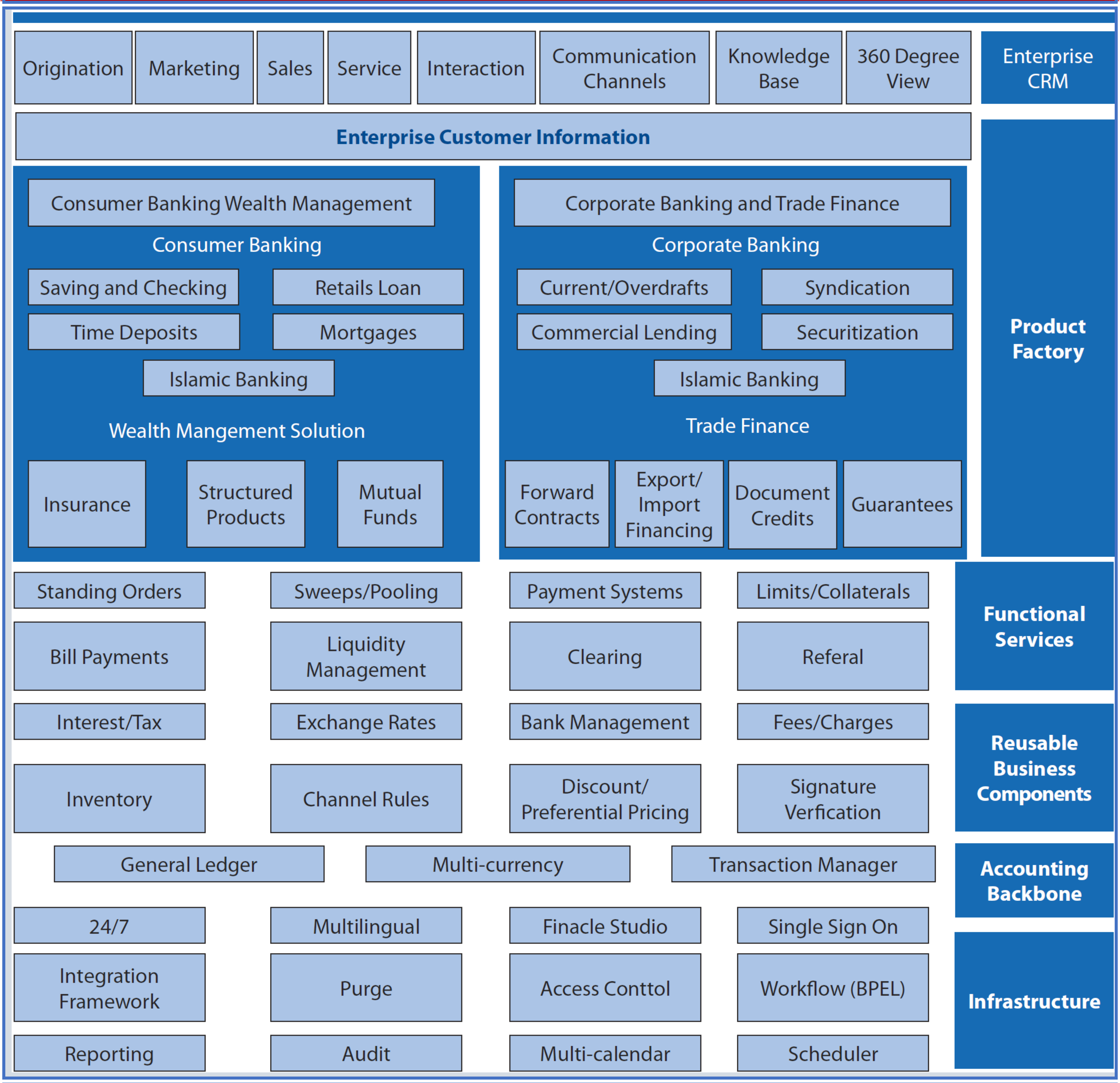
Channel Server
- Brach Server
- ATM/POS Switch
- IVR Server
- WAP or SMS Server
- Web Server

Application Servers
- Business Intelligence
- TP Monitors
- cHost Connect

Host Database Server
- Oracle (RDBMS)
- Execution Logic



Functional Architecture of CBS



CBS Stages

• **Planning**	• **Implementation**
• **Approval**	• **Maintenance**
• **Selection**	• **Support**
• **Design**	• **Updation**
• **Build**	• **Audit**
• **Testing**	

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CBS IT Environment

Servers

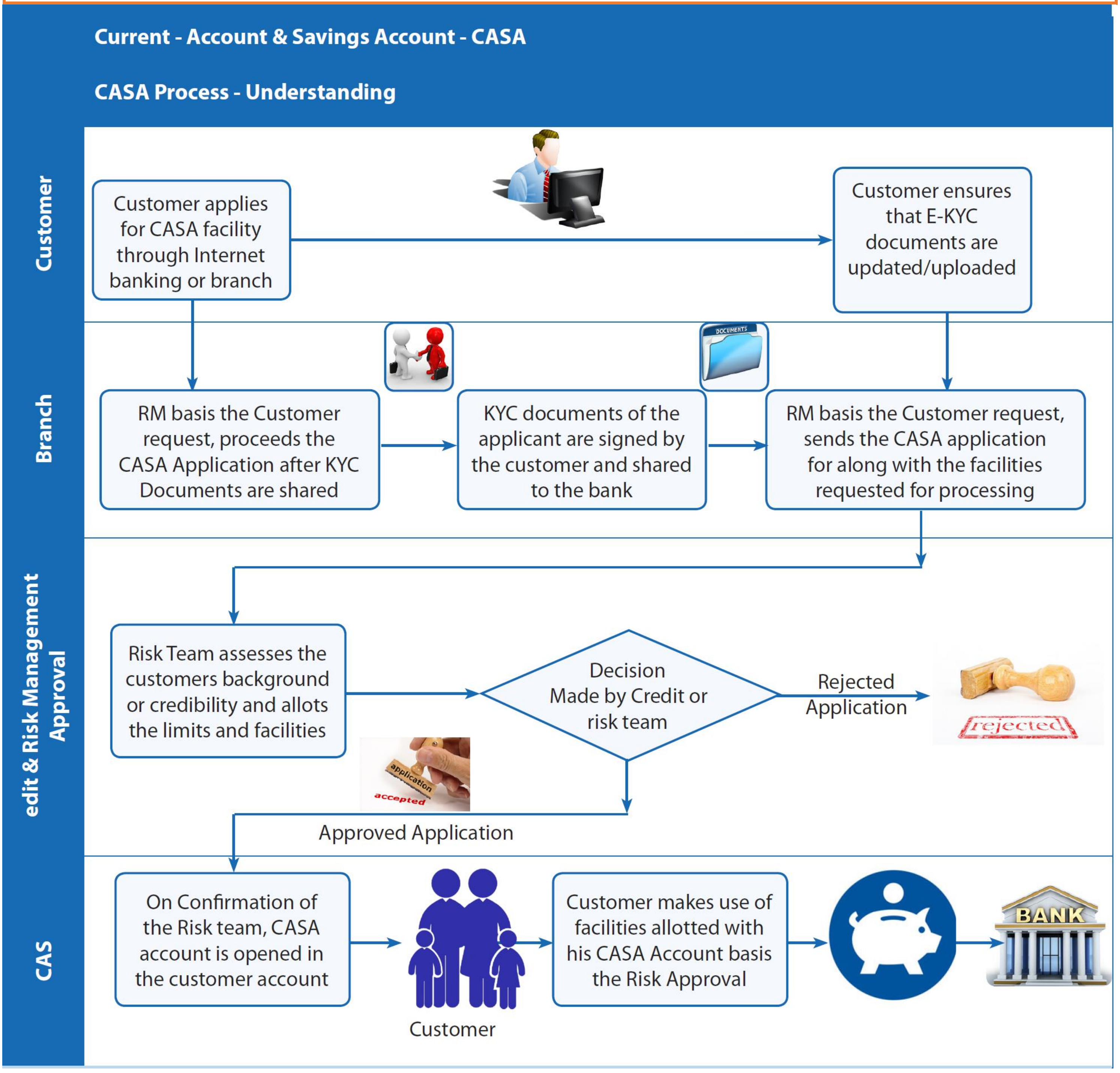
- **Server** is a system **(software and/or hardware)** that responds to requests across a computer network to **provide, or help to provide, a network service**.

Automated Teller Machine (ATM) server	Internet Banking Application Server (IBAS)	Internet Banking Channel Server (IBCS)
• Contains the **details of all ATM account holders**. • File containing the **account balance of the customer** is sent to the **ATM switch. (PBF- Positive Balance File).** • **ATM Switch provides PBF** data to ATM server	• **Internet Banking Software** is stored in the IBAS. • **Authenticates the customer** with the login details stored in the IBCS.	• Stores the **user name and password** of all the internet banking customers. • Also contains the details about the **branch to which the customer belongs**.

Note: **ATM server does not hold the PIN numbers of the ATM account holders.**

Core Business Processes Flow and Relevant Risks and Controls

Current and Savings Accounts (CASA)



Points of Risks and Controls around CASA

• Credit Line Set-up	• Interest Calculation
• Authorization	• Approval of CASA by Authorised Personnel
• As per Bank's Policy	• SOD
• Customer Master	• Accurate Accounting

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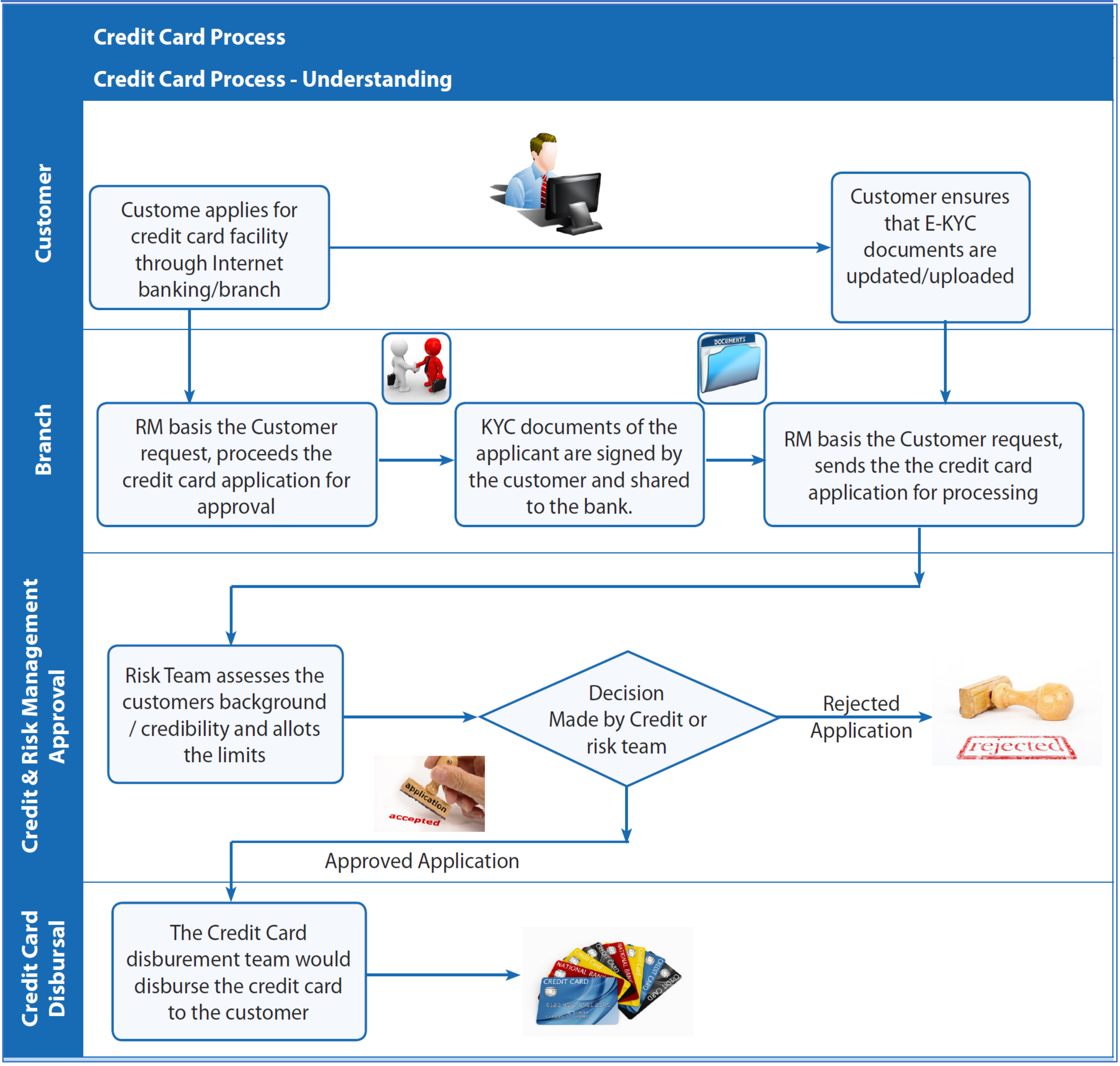
Credit Cards

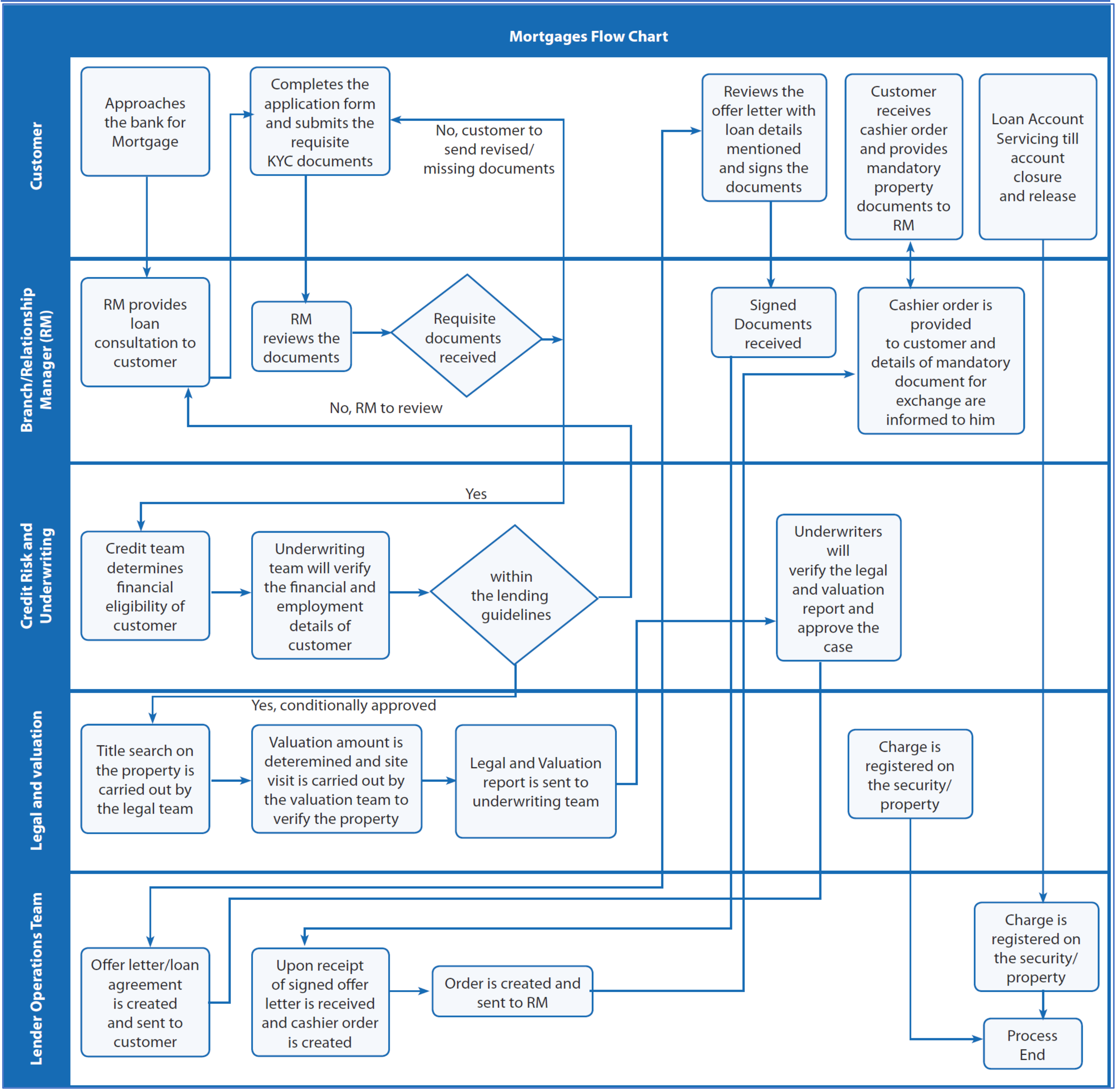


Points of Risks and Controls around Credit Cards

• **Credit Line Set-up**	• **Interest Calculation**
• **Authorization**	• **Disbursement Certificate**
• **As per Bank's Policy**	• **Accurate Accounting**
• **Customer Master**	• **Balance Reconciliation**

Mortgages

- Home Loan
- Top-up Loan
- Loan for Under-construction Property

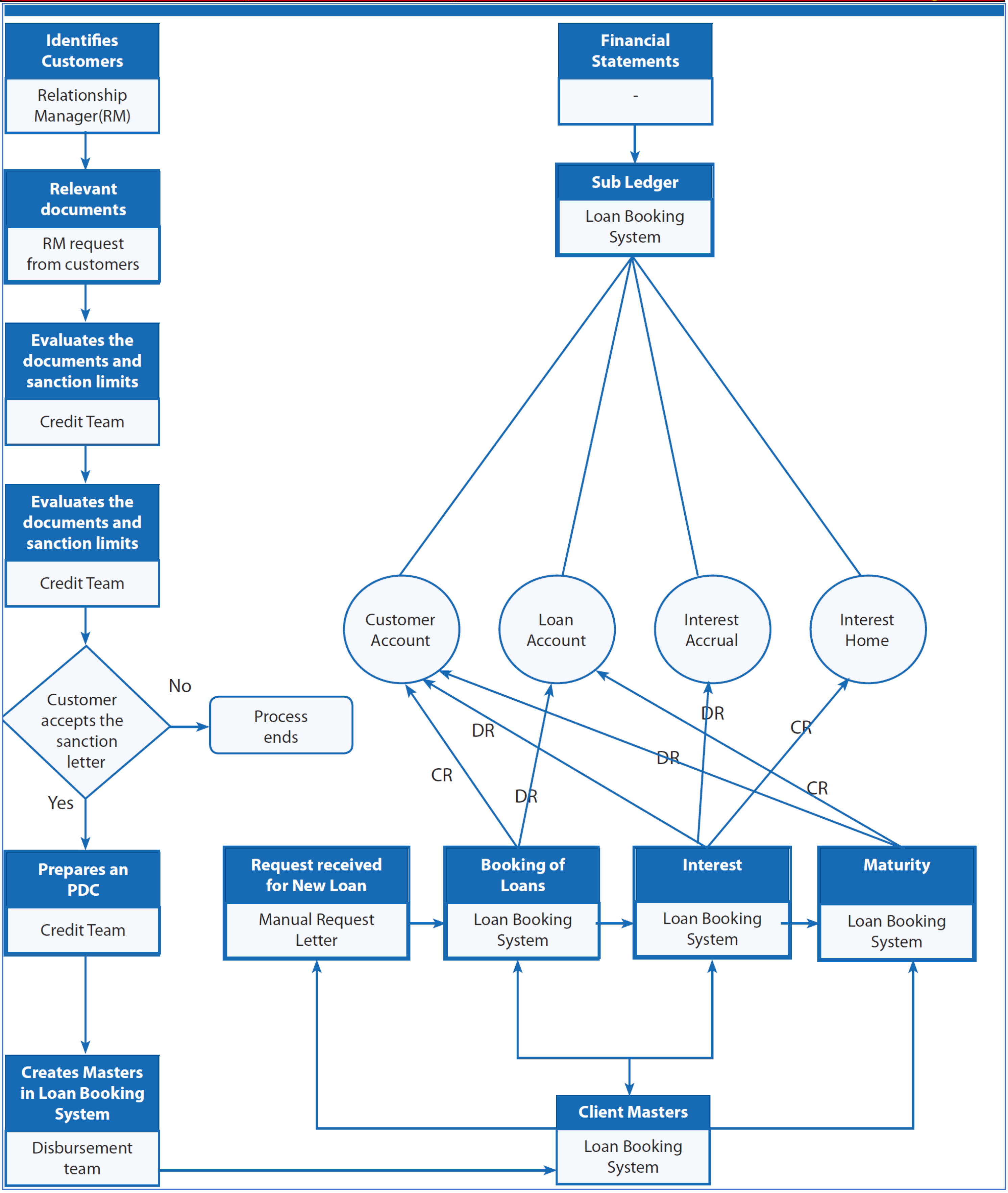


Points of Risks and Controls around Credit Cards

• Customer Identification	• Interest Calculation
• KYC	• Disbursement of Amount
• As per Bank's Policy	• Accurate Accounting
• Loan Master	• Authorization to change Loan Master

Process Flow for Fund Based Loans

- Cash Credit/OD
- DD/Term Loans
- Bill Discounting



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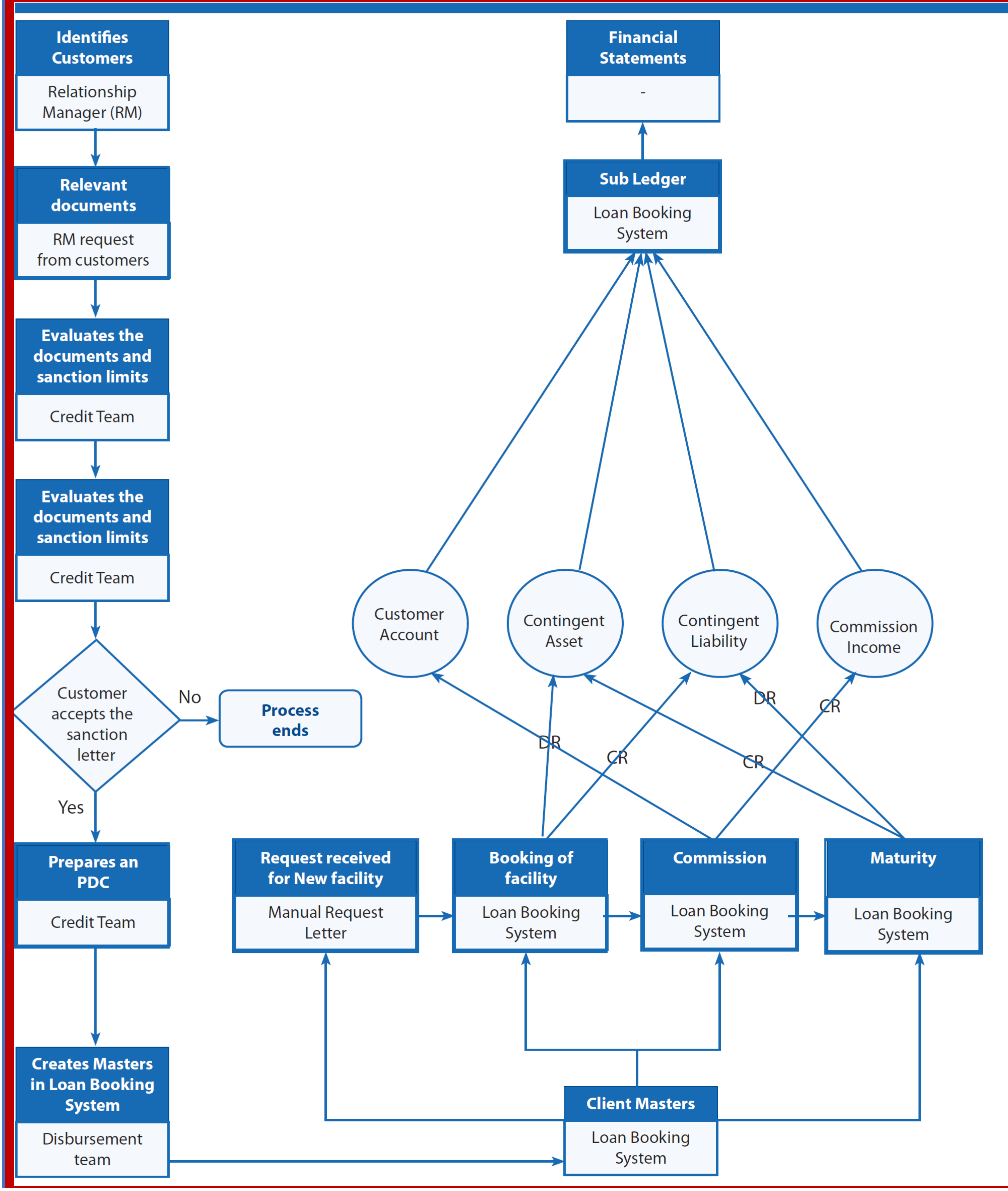
Process Flow for Fund Based Loans

- Bank Guarantee - Letter of Credit



Risk and Controls in the Loans and Advances Process

S. No.	Risk	Key Controls
1.	Credit Line setup is unauthorized and not in line with the banks policy.	The credit committee checks that the Financial Ratios, the Net-worth, the Risk factors and its corresponding mitigating factors, the Credit Line offered and the Credit amount etc. is in line with Credit Risk Policy and that the Client can be given the Credit Line.
2.	Credit Line setup is unauthorized and not in line with the banks policy.	Access rights to authorize the credit limit in Loan Booking system/CBS should be restricted to authorized personnel.
3.	Masters defined for the customer are not in accordance with the Pre Disbursement Certificate.	Access rights to authorize the customer master in Loan Booking system/CBS should be restricted to authorized personnel. Segregation of duties exist in Loan Disbursement system. The system restricts the maker having checker rights to approve the loan/facilities booked by self in loan disbursal system
4.	Credit Line setup can be breached in Loan disbursement system/CBS.	Loan disbursement system/CBS restricts booking of loans/ facilities if the limits assigned to the customer is breached in Loan disbursement system/CBS.
5.	Lower rate of interest/ Commission may be charged to customer.	Loan disbursement system/CBS restricts booking of loans/ facilities if the rate charged to the customer are not as per defined masters in system.
6.	Facilities/Loan's granted may be unauthorized/in-appropriate.	Segregation of duties exist in Loan Disbursement system. The system restricts the maker having checker rights to approve the loan/facilities booked by self in loan disbursal system
7.	Inaccurate interest / charge being calculated in the Loan disbursal system.	Interest on fund based loans and charges for non-fund based loans are automatically calculated in the Loan dis-bursal system as per the defined masters