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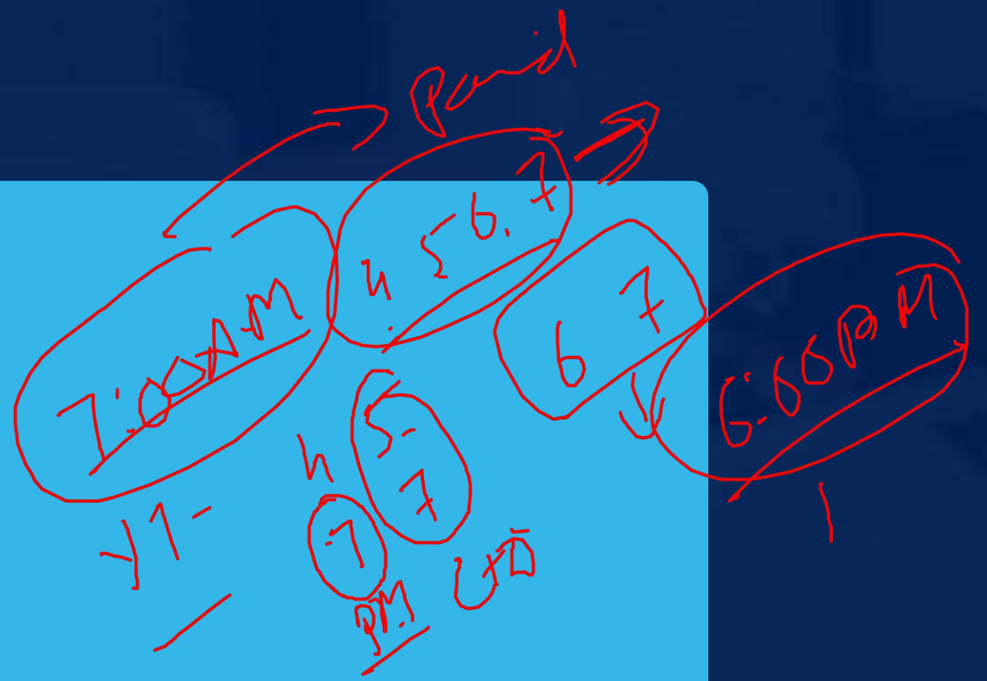
PPB

Capsule batch

Lec-2



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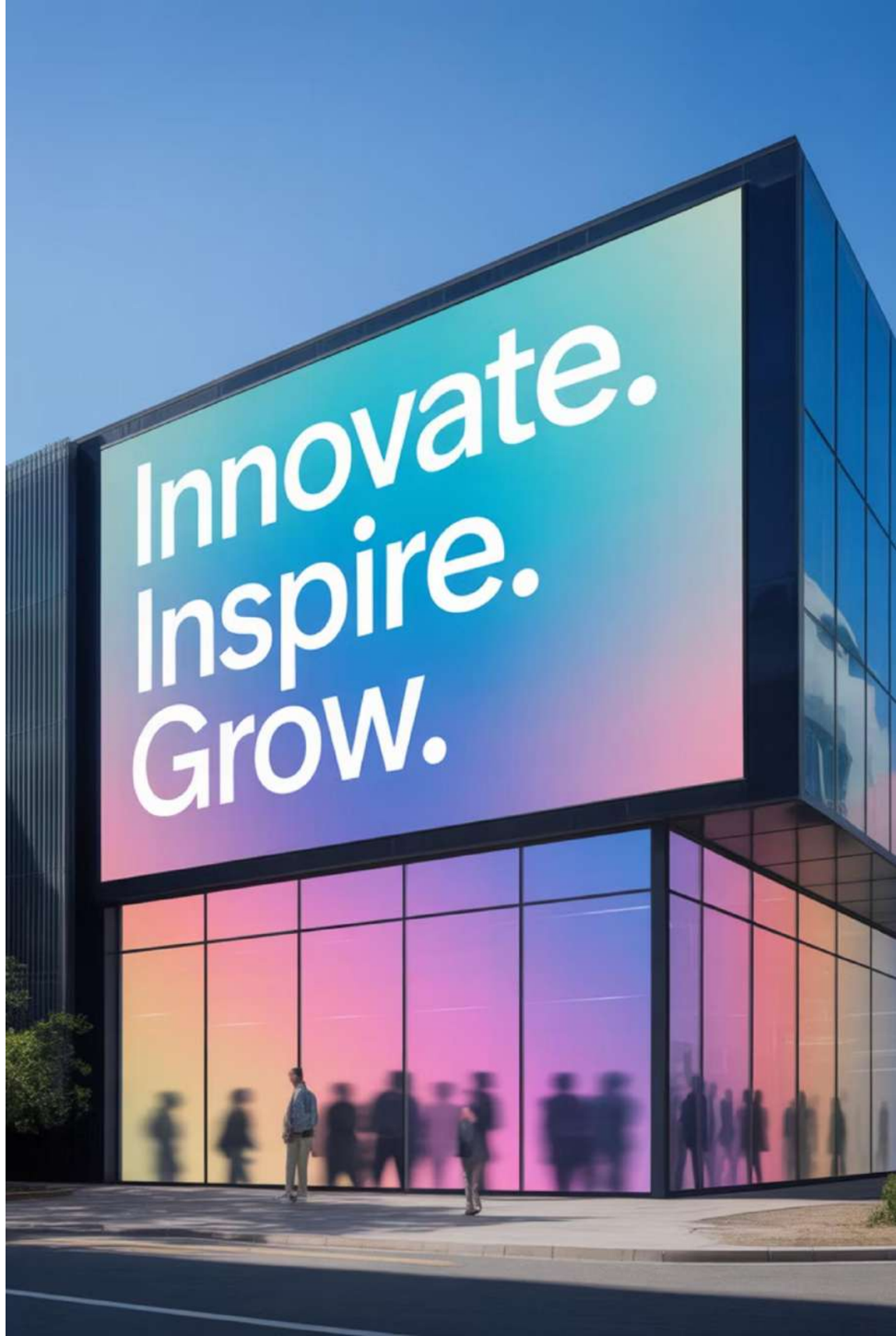
Essentials of Bank Computerisation

Digital Banking Revolution

The transformation of Indian banking from passive computerization to comprehensive digital services, driven by the Rangarajan Committee's 1983 recommendations and liberalization policies.



The Catalyst: 1983 Rangarajan Committee

Before 1983

Banks maintained passive approach to computerization with minimal technological adoption.

After 1983

First Rangarajan Committee Report sparked brisk activities for quick technological changes in banking operations.

Four Pillars of Bank Computerization

Customer Service

Enhanced service delivery and reduced waiting times

Housekeeping

Improved internal operations and data management

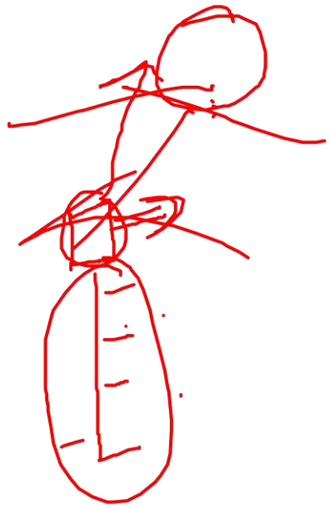
Decision-Making

Better analytical capabilities for strategic choices

Productivity

Increased profitability through operational efficiency

Evolution of Banking Systems



1 Stand-alone Systems

Single-user systems for decision-making processes. Low cost but limited processing speed and storage capacity.

2 Multi-User Systems

Central server supporting multiple terminals through time-sharing, enabling online applications development.

3 Total Branch Automation

Integrated systems enabling single-window concept and Electronic Fund Transfer capabilities.

Centralized Data Processing Benefits

Anywhere, Anytime Banking

Services available across all branches and delivery channels

Resource Optimization

Economical hardware, software, and skilled manpower utilization

Enhanced Security

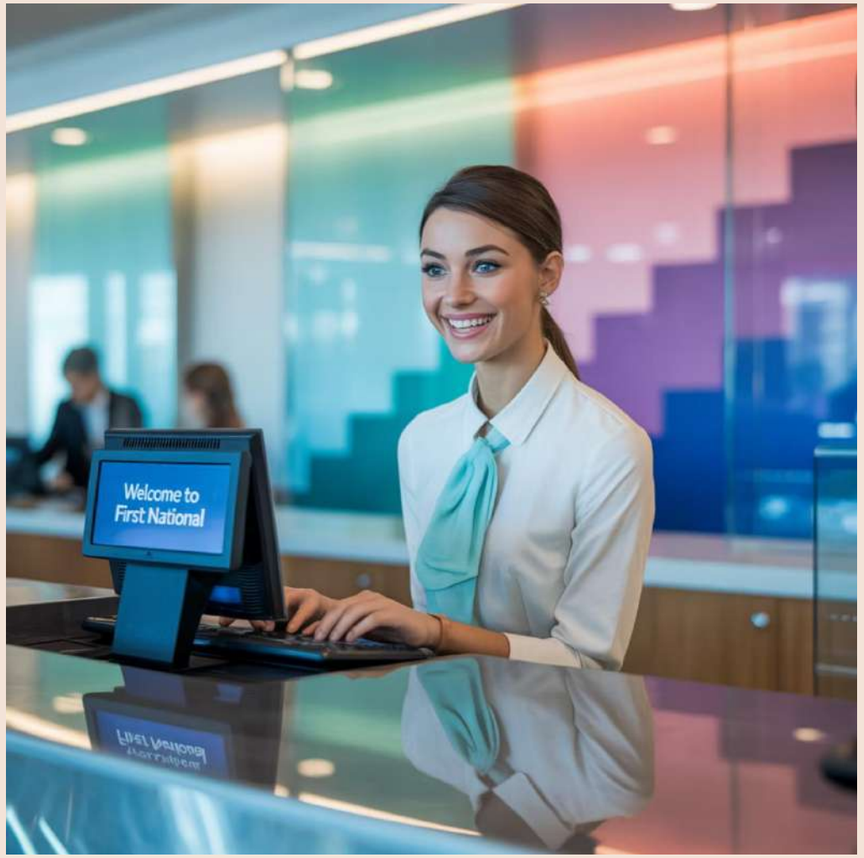
Better data availability and centralized security management

Branch-Level Computerization Impact

Key Advantages

- Better and speedy customer service
- Improved housekeeping operations
- Enhanced branch-level data analysis
- Automated report generation

ALPMs (Automatic Ledger Posting Machines) handled specific products like Savings and Current accounts, though General Ledger remained manual.



Regional Office Functions

Branch Profile Management

Fixed particulars (location, premises) and variable data (performance, income/expenditure statistics)

Credit Monitoring

Decentralized loan supervision with centralized database access for effective control

Personnel Management

Employee database including qualifications, training, transfers, and performance evaluation

Head Office Computerization Areas

HRD & Administrative Support

Payroll processing, PF management, employee loans and advances

Funds Management

Managing RBI balances and government securities within regulatory limits

Investment Portfolio

Mathematical models to maximize returns on approved securities

Credit Information System

Comprehensive borrower data for planning, monitoring, and statutory reporting

Network Infrastructure Foundation

High-performance computer networks form the backbone of financial institutions, requiring security, reliability, scalability, and optimized speed for uninterrupted service delivery.

> "Network infrastructure is essential for maximum speed and efficiency in banking operations."

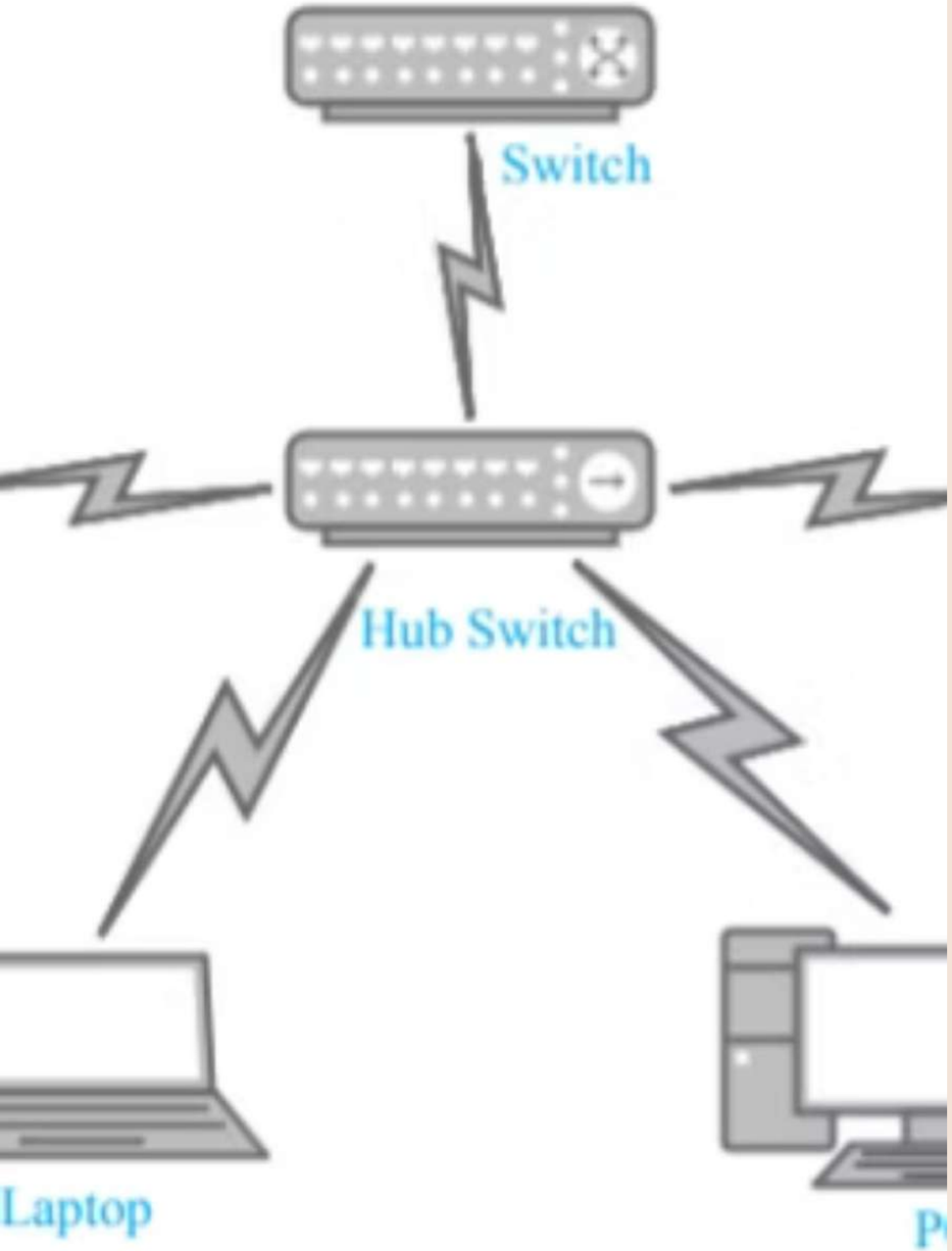


Figure 42.1 Local Area Network

Local Area Network (LAN) Architecture

LANs connect computers and peripherals within localized areas (typically within 100 meters for Cat5e cables). Central server nodes provide network services while client nodes route requests for necessary services.

Network Topologies Comparison

Bus Topology

Single continuous cable, easy setup, limited flexibility

Ring Topology

Closed-loop connection, one-direction data flow, single point failure risk

Star Topology

Central master node, maximum flexibility, traffic bottleneck potential

Tree Topology

Hierarchical structure with root, intermediate, and leaf nodes

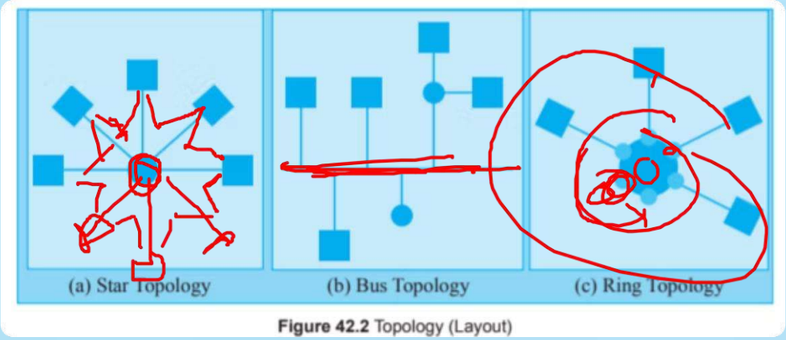
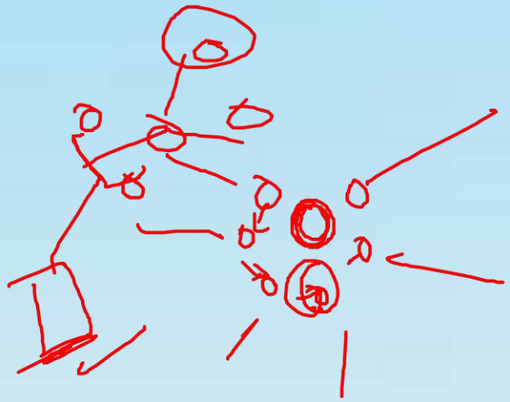


Figure 42.2 Topology (Layout)



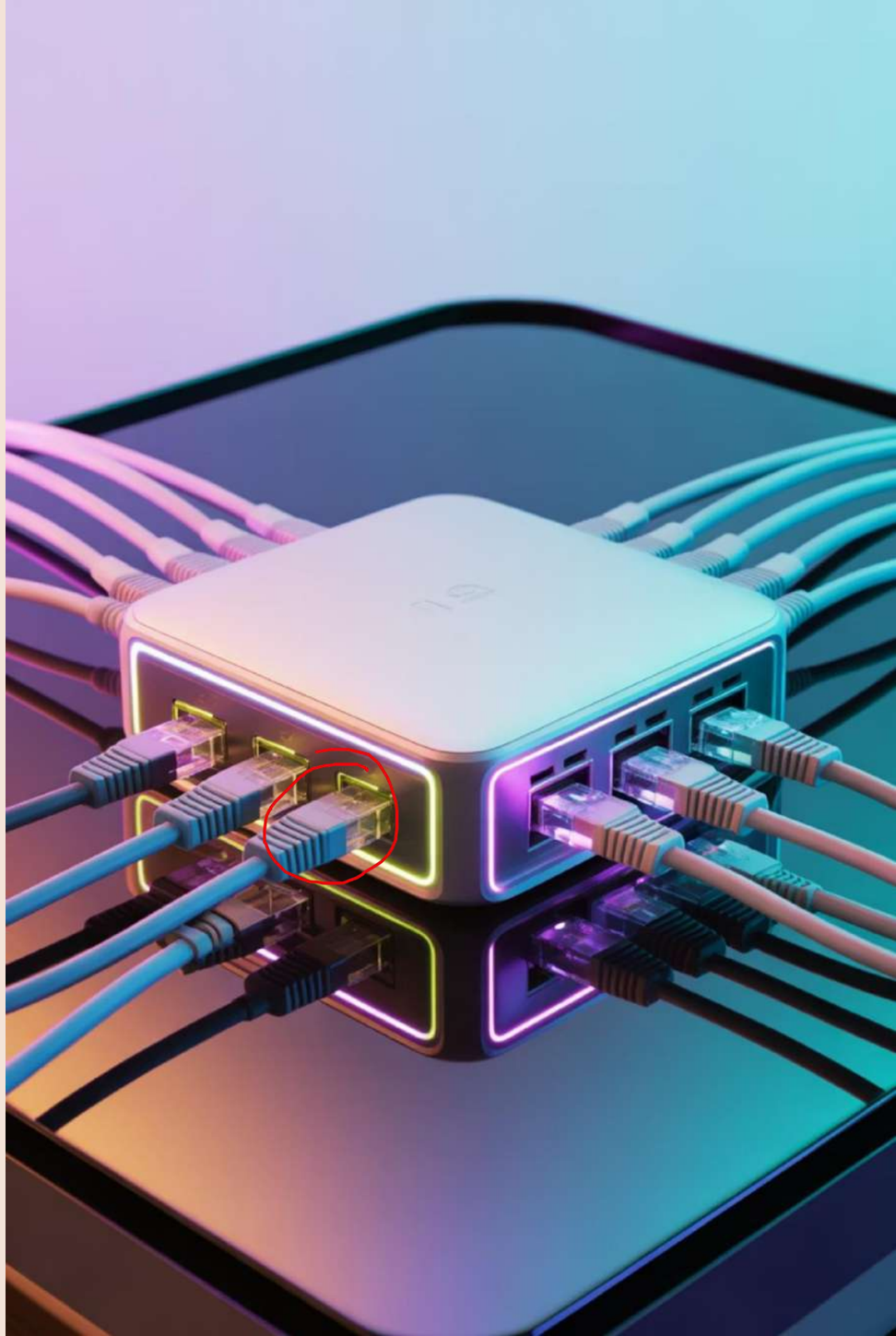
Network Protocols & Communication

Ethernet Technology

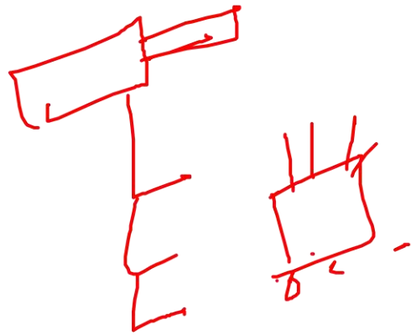
Uses CSMA/CD (Carrier-Sense Multiple Access with Collision Detection) for media sharing. Stations transmit only when channel is clear.

Token-Ring System

Deterministic media-access control using special token frames passed node-to-node for transmission authority.



Essential Network Devices



Network Interface Cards

Hardware components connecting computers to networks

Hubs & Switches

Connect multiple devices, route information intelligently

Routers & Gateways

Forward data packets, connect dissimilar networks

Security Devices

Firewalls, WAP, modems for secure communications

Wide Area Network (WAN) Implementation

WANs interconnect branches with regional offices and head offices across sizeable geographic areas using telecommunications networks including leased lines, dial-up, satellite, and microwave links.

Microwave systems enable broadband transmission up to 40 km with direct line-of-sight between dish antennas.

Uninterrupted Power Systems (UPS)

1

Online UPS

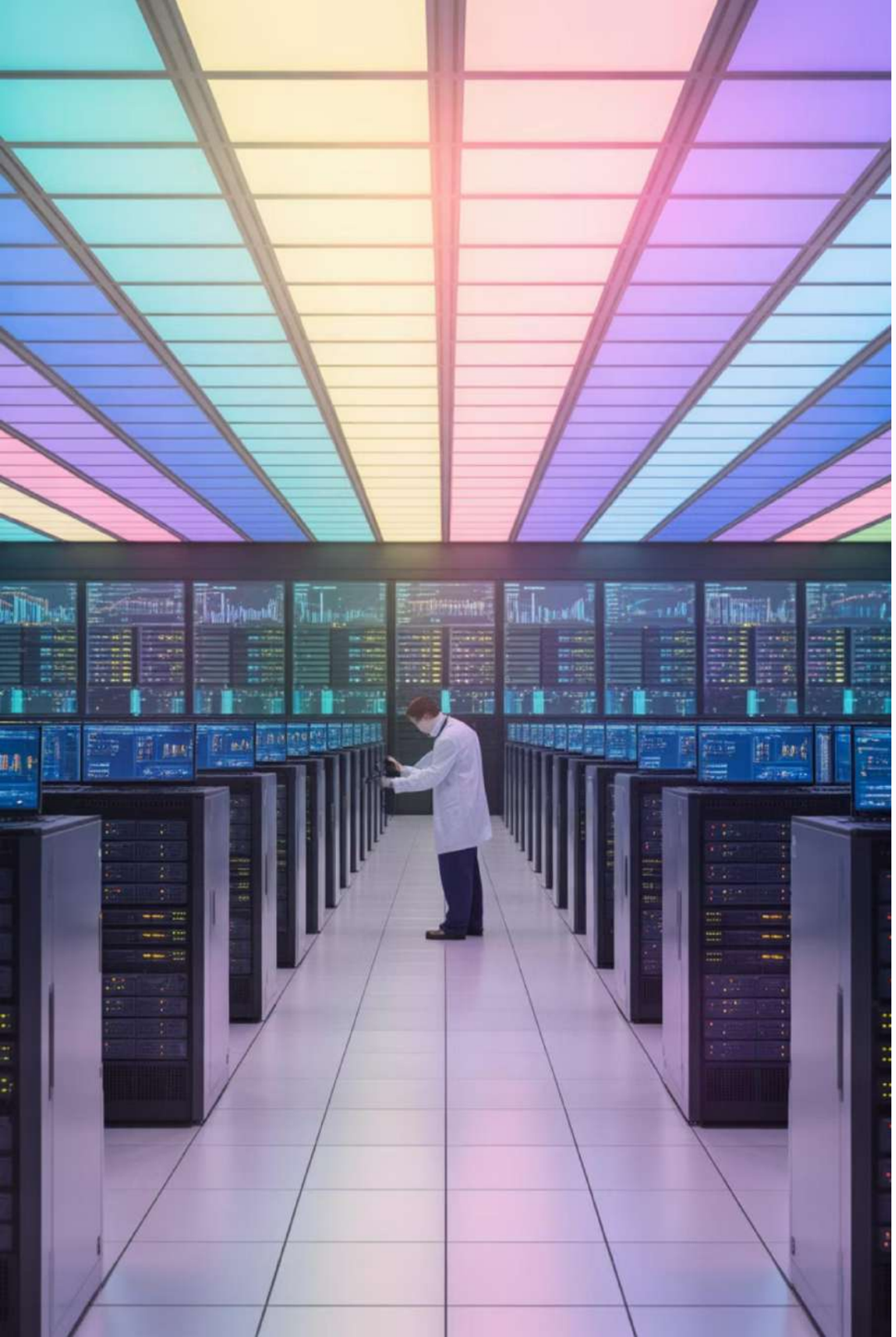
Continuous AC-DC-AC conversion, automatic battery backup during power failures

2

Offline UPS

Separate battery charger and inverter, electronic changeover with millisecond response

UPS systems protect IT assets from blackouts, brownouts, swells, sags, surges, and interference, ensuring business continuity and preventing data loss.



Core Banking System (CBS) Architecture

Centralized branch computerization model connecting branches to central host, incorporating automation modules and online delivery channels under integrated infrastructure using WAN technology.

> "One banking software for all branches operated on the Bank's intranet infrastructure."

CBS Business Components

Customer Banking Modules

Deposits, loans, bills, remittances, lockers, clearing services

Trade Finance & Forex

International business and foreign exchange operations

Government Business

Corporate finance and specialized service branch modules

Business Intelligence

Enhanced MIS and analytics for strategic decision-making

CBS Benefits & Requirements

Key Benefits

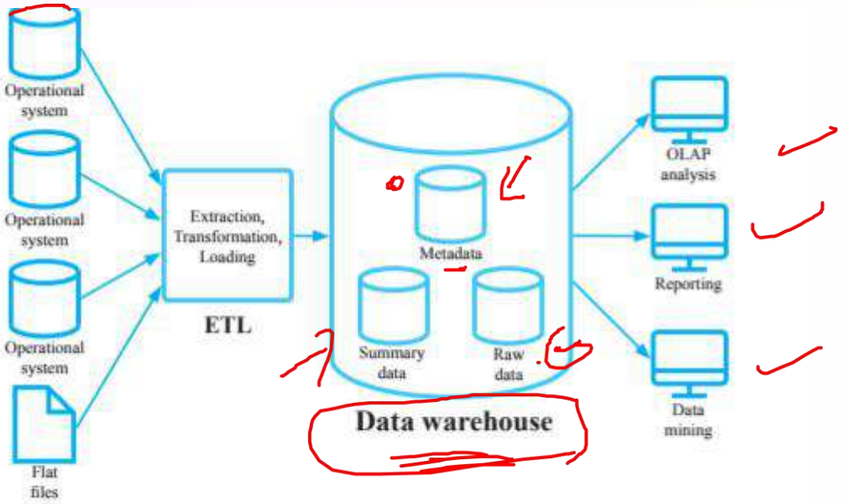
- 24×7 customer services from any branch
- Centralized data repository
- Integrated delivery channels (ATM, Internet, Mobile)
- Standardized software across branches
- Business process re-engineering capabilities

Essential Requirements

- Primary Data Centre with redundant power
- Communication network for all branches
- Disaster Recovery Site (DRS)
- Skilled personnel pool for 24×7 operations

Data Warehousing & Analytics

Banks leverage historical CBS data for analytics through OLAP environments. Data warehouses store subject-oriented, integrated, non-volatile, time-variant information for business intelligence and decision support systems.



Block diagram of a Data warehouse. (Courtesy IBM)

Data Mart: A data mart is a simple form of a data warehouse that is focused on a single subject or line of business, such as sales, finance, or marketing. Given their focus, data marts draw data from fewer sources than data warehouses. Datamart sources can include internal operational systems, a central data warehouse, and external data.

Data Lake: A data lake allows organisations to store large amount of structured and unstructured data (for example, from social media or clickstream data) and immediately make it available for real-time analytics, data science, and machine learning use cases. With a data lake, data is ingested in its original form, without alteration.

Data mining

Data Mining Applications in Banking

5

Key Applications

Loan risk, credit risk, portfolio analysis, demographics, insurance risk

Risk Analysis

Loan performance evaluation and credit card transaction approval decisions

Customer Insights

Demographic analysis for targeted market focus and behavior prediction

Portfolio Optimization

Securities performance analysis and investment strategy development

Operational Aspects of CBS Environment

Core Banking Solutions: The Digital Backbone of Modern Banking

Core Banking Solutions (CBS) represent the convergence of Communication Technology and Information Technology to meet essential banking needs. Banks can be categorized as non-computerized, partially computerized, or fully computerized based on their level of technological adoption.

Under CBS, client software is installed at different branches to connect to a central server for accessing and updating customer information. Branches connect through lease lines, MPLS, VSAT, RF, 3G/4G and other networking technologies.

Leading CBS Software Solutions

Finacle

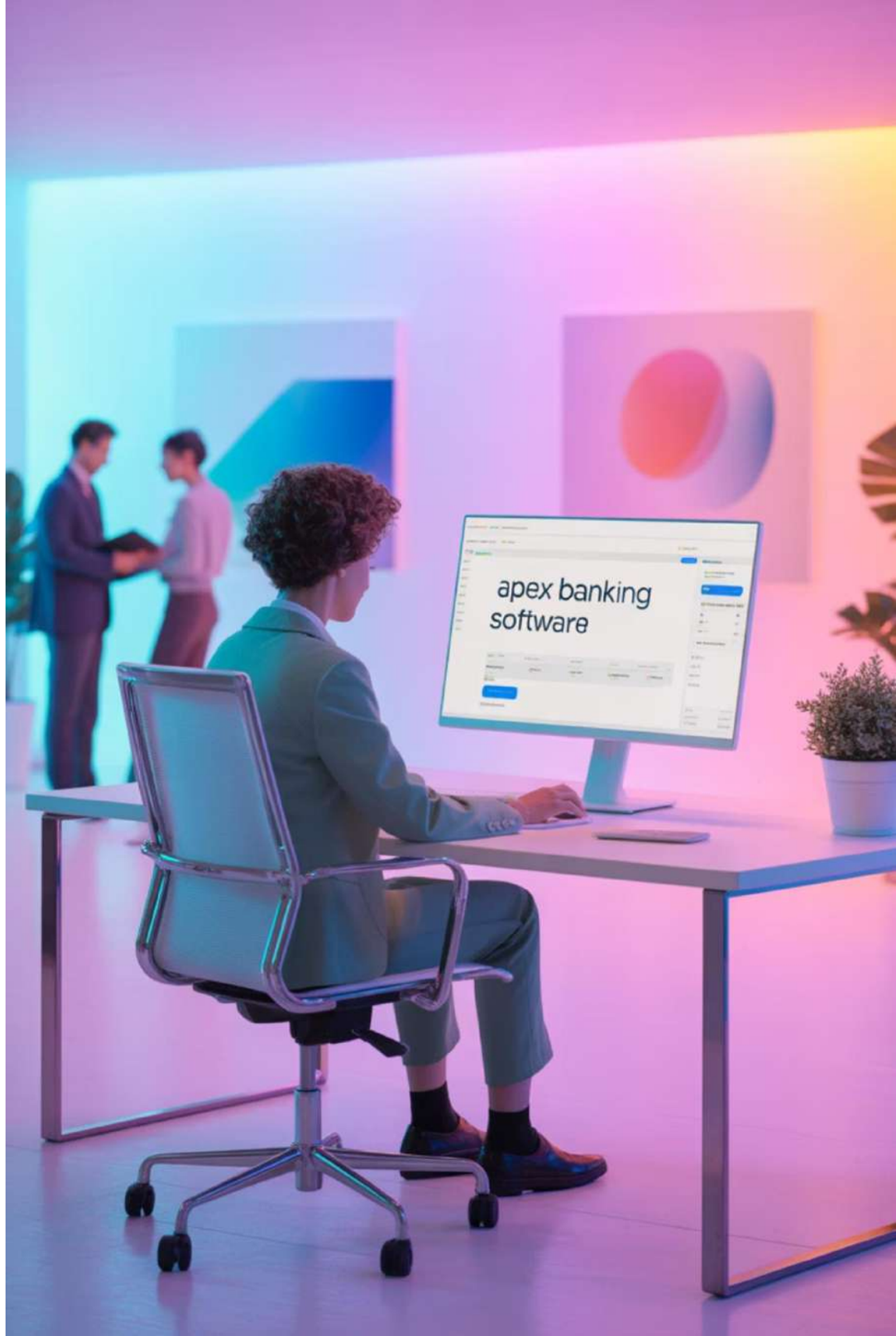
Developed by Infosys, one of the most widely adopted core banking platforms globally

BaNCS

TCS's comprehensive banking solution offering end-to-end financial services

Flexcube

Oracle's robust core banking platform designed for universal banking needs



Comprehensive CBS Functions

CBS has evolved to handle virtually every banking transaction. The system's capabilities span across all critical banking operations, from basic account management to complex regulatory reporting.

Account Management

Customer accounts and office account management with comprehensive tracking

Transaction Processing

Cash deposits, withdrawals, and complete transaction management including history

Loan Operations

Loans disbursal, management, and comprehensive asset classification

Advanced CBS Capabilities

Financial Operations

- Interest calculation on advances and deposits
- Charges and fees application
- Minimum balance and transaction charges
- Asset classification and income recognition

System Integration

- Payment systems interfaces
- Regulatory compliance connections
- Third-party service provider integration
- Alternative delivery channel support

Digital Banking Revolution

One of CBS's prime features is facilitating online banking operations through digital channels like ATMs, mobile banking, and internet banking. This has revolutionized customer experience and operational efficiency.

1

Faster Clearing

Accelerated cheque clearing processes

2

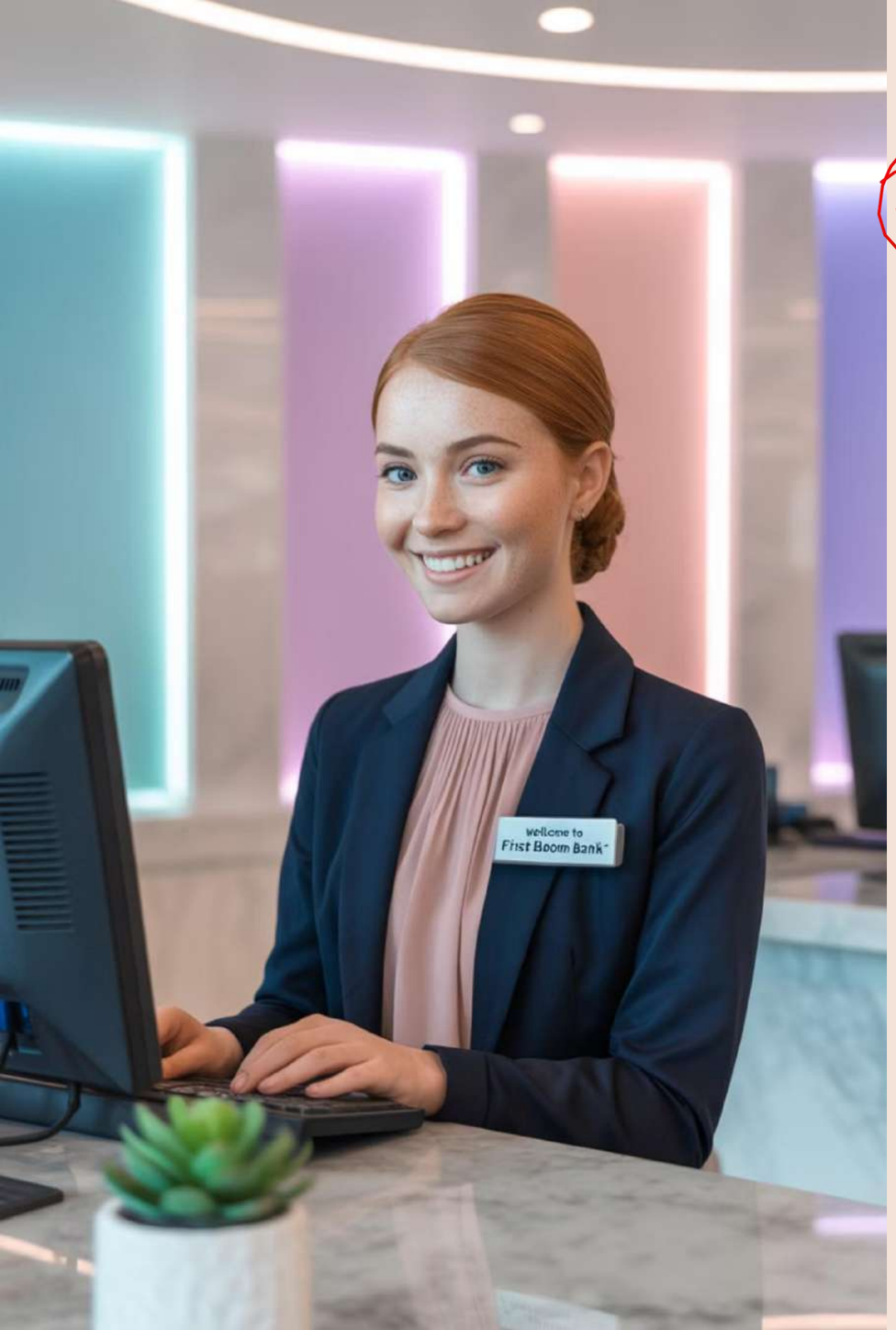
Improved Housekeeping

Prevention of income leakages

3

Automated Reconciliation

Faster, accurate inter-branch reconciliations



Three Types of CBS Transactions

Cash Transactions

Direct cash deposits and withdrawals processed at branch locations

Clearing Transactions

Cheque clearing and inter-bank settlement processes

Transfer Transactions

Electronic fund transfers between accounts and institutions

Transaction Flow Architecture

Transactions from branches, customers through alternative delivery channels, or third-party vendors are ultimately reflected in the central database. Each channel has different workflow requirements and security protocols.

01

User Authentication

Branch users log in with credentials and biometric authentication at CBS terminals

02

Transaction Processing

Transactions follow maker-checker functionality with multi-factor authentication

03

Central Database Update

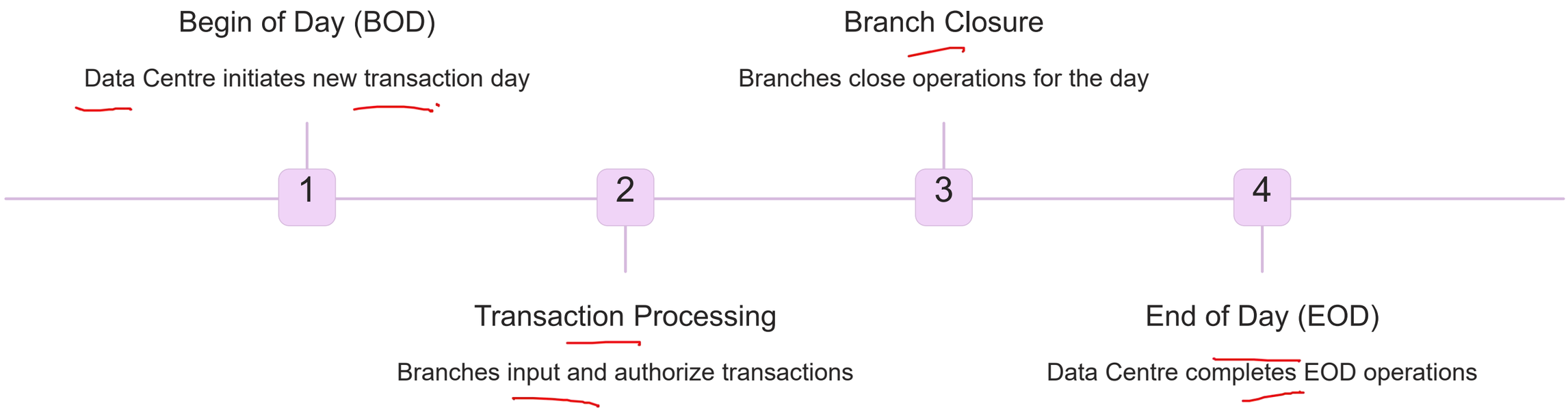
Transactions commit to central database after all legs are completed

Real-Time Transaction Processing

Core banking solutions operate as Online Transaction Processing Systems on a real-time basis. Transactions are simultaneously processed across all sub-systems including customer account ledgers, general ledger, and other accounting books.

The system validates account numbers, balances, teller authority, officer authorization, and other product-level parameters. Transactions also flow from alternative delivery channels and treasury systems into the core banking system.

Critical Daily Operations Cycle



This cycle includes reports checking, backup operations, interest application, standing instructions execution, and generation of various reports including exceptional reports.

Begin of Day (BOD) Operations

BOD process opens a new transaction day and depends on the previous day's EOD completion. Days are business days specified in branch calendars, so BOD runs even if only one branch operates.

New Day Initialization

System starts fresh transaction day

Time Deposit Processing

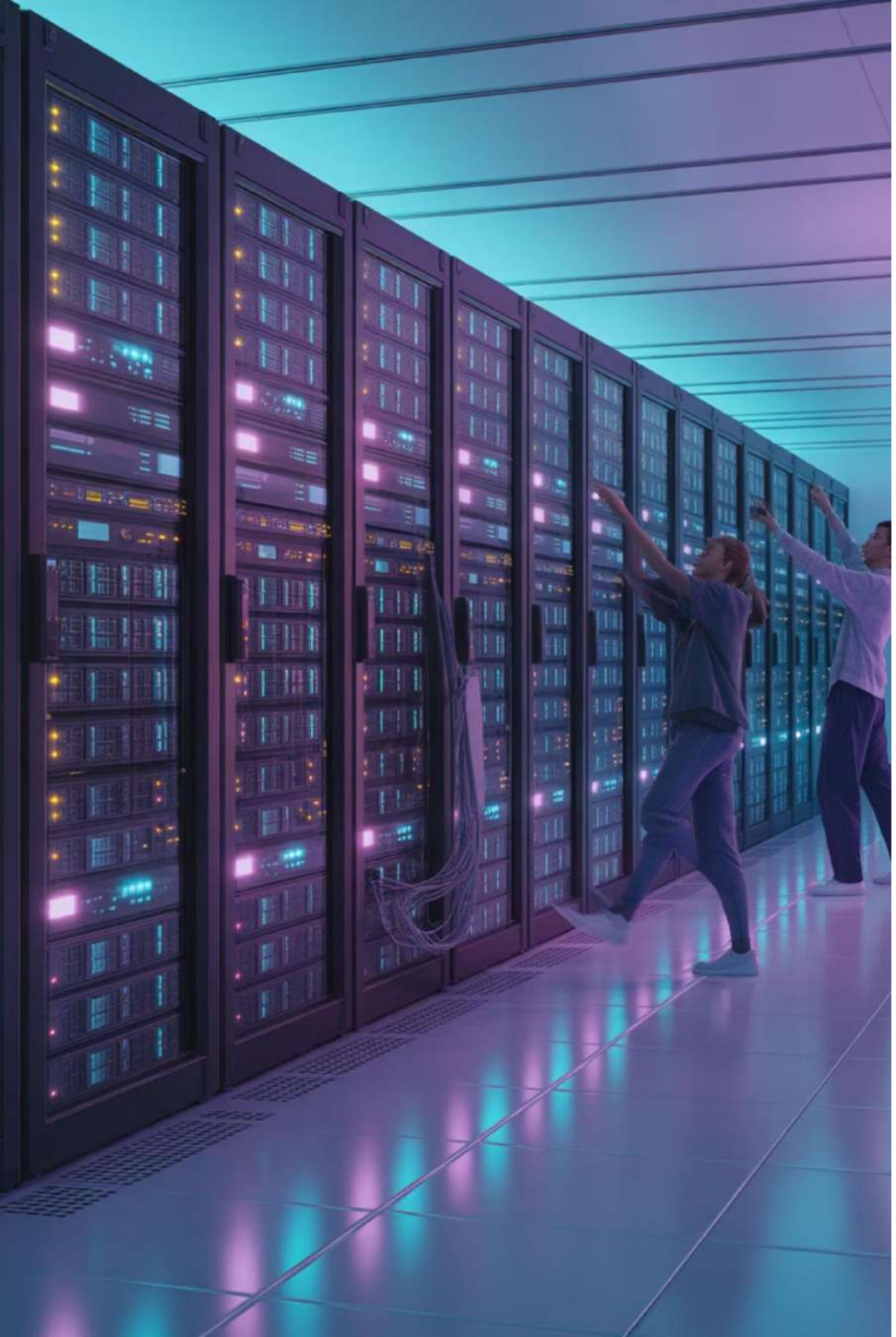
Interest calculations and maturity processing

Standing Instructions

Automated execution of recurring transactions

Value Date Processing

Cheque processing based on system setup



End of Day (EOD) Critical Activities

Banks must ensure EOD activities are carried out regularly and documented. Most activities occur at the Data Centre or Branch depending on CBS architecture.

Financial Processing

- Minimum balance calculations
- Current account product calculations
- Mandatory report generation
- Backup procedures activation

Documentation & Security

- Access log generation
- Audit trail creation
- Transaction numbering
- Secure backup storage

Robust Password Security Framework

CBS supports strong password access control mechanisms with comprehensive security requirements. Basic operational controls include segregation of duties, four-eye principle, rotation of duties, and ownership of systems for access rights.

Password Requirements

- Minimum eight characters with mixed case
- Letters, numbers, and special characters
- No dictionary words or password reuse
- Periodic changes and encrypted storage

Access Control

- Multi-factor authentication for critical modules
- Disabled passwords during employee absence
- Dual control for sensitive operations
- Protected system administrator passwords

Master Files and Parameters

Parameter/Master Files store all relevant account information including interest rates, penal charges, commission rates, and operation limits. This setup occurs during initial computerization implementation.

Account Master Data

Complete customer account information and parameters

System Parameters

Interest rates, charges, and operational limits configuration

Holiday Management

Bank holidays and business day calendars

⚠ Parameter files must be read-only for operators to prevent unauthorized modifications that could lead to revenue leakage.

Operational Security Controls

Key security aspects ensure authorized, accurate, and complete data processing while preventing unauthorized system access and program amendments.

Data Integrity Controls

- System restart without record distortion
- Prevention of unauthorized program changes
- Access controls matching staff responsibilities
- Segregation of duties and user monitoring

System Security Measures

- Parameter change authentication
- Manual charge authorization
- Complete module implementation
- Regular exceptional report verification

Backup and Recovery Protocols

Banks must maintain comprehensive backup procedures with proper documentation and secure storage. Daily and monthly backups require specific protocols and custody arrangements.

Daily Backup Requirements

Six sets for weekdays, properly labeled and indexed under joint custody

Monthly Backup Sets

Twelve sets for each month with maintained backup register

Secure Storage

Fireproof cabinets with lock and key, off-site emergency preservation

Cybersecurity and System Protection

Banks must implement comprehensive security measures to protect against cyber-attacks and electronic payment system misuse, following RBI guidelines on information security and technology risk management.

Anti-Virus Protection

Latest version software installed on all servers and PCs, regularly updated for new threats

Security Patches

Timely application of vendor-released security updates and patches

Physical Access Control

Restricted computer room access to authorized personnel only

Comprehensive Bank Responsibilities

Banks must establish robust frameworks addressing increasing cyber-attacks and electronic payment system misuse. RBI guidelines mandate specific policies and procedures for comprehensive risk management.

1 **Policy Framework**

IT Policy, data processing interfaces, integrity, and security protocols

2 **Business Continuity**

Disaster recovery plans and accounting manual procedures

3 **Control Documentation**

E-banking products, MIS reports, and exceptional report generation

4 **Audit Compliance**

System audits, internal reviews, and customer complaint resolution

System Audit Requirements

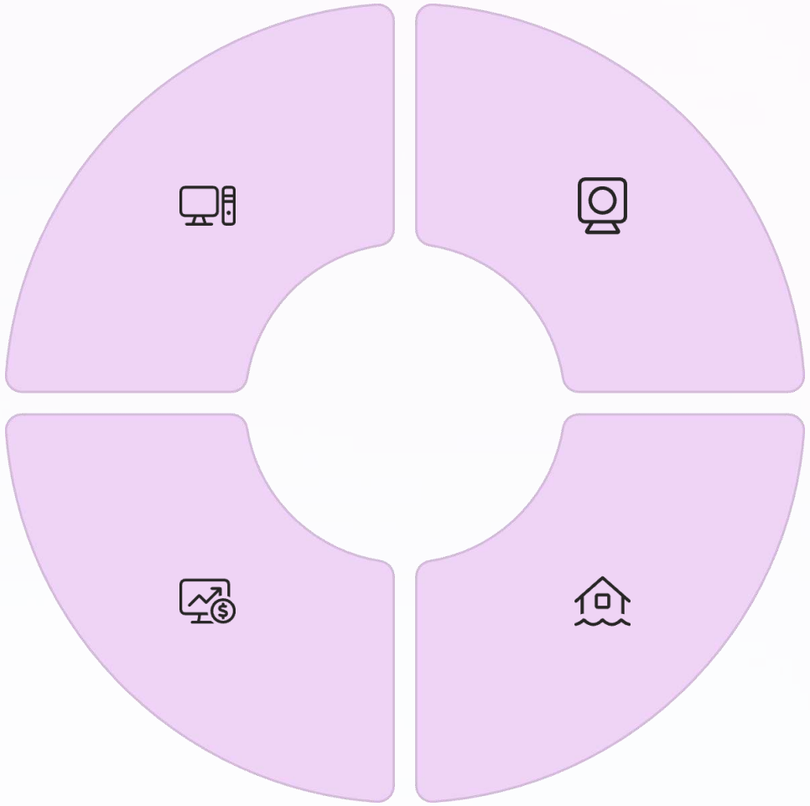
Banks must conduct system audits by chartered accountant firms to ensure safe, secure, sound, and efficient payment system operations according to RBI-authorized process flows.

Hardware Structure

Evaluation of physical infrastructure and operating systems

Security Controls

Access controls on key applications and security measures



Personnel Training

Staff competency in system and application management

Recovery Plans

Disaster recovery capabilities and business continuity

The Payment Revolution

Traditional Era

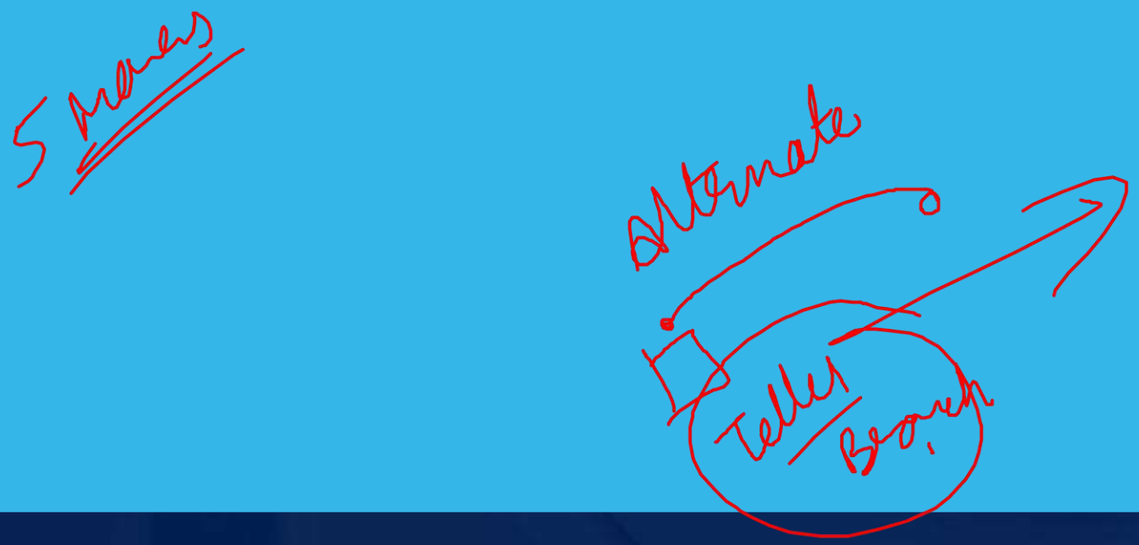
Cash, coins, and paper checks dominated transactions before banking innovation transformed the industry.

Digital Transformation

Electronic devices, ATMs, and mobile banking now enable anytime, anywhere financial services for customers.

Technology advancement has revolutionized payment methods over the past decade, creating unprecedented convenience and efficiency in banking operations.

Alternate delivery channel



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Alternate Delivery Channels

Core banking technology enables banks to handle massive transaction volumes impossible with traditional branch banking.

ATMs

24/7 cash access and banking services at convenient locations worldwide.

Mobile Banking

Complete banking services through smartphones and mobile applications.

Online Banking

Web-based platforms for comprehensive account management and transactions.

E-Wallets

Digital payment solutions for quick, secure money transfers and purchases.

ATM Revolution in Banking

Automated Teller Machine technology emerged from Dr. C. Rangarajan's committee recommendations in early 1990s India. These machines strategically positioned at airports, hospitals, and commercial centers transformed banking accessibility.

Each customer receives an ATM card with a Personal Identification Number (PIN) for secure transactions, enabling unprecedented banking convenience.

ATM Benefits

Customer Advantages

- 24/7 access availability
- Reduced wait times
- Transaction privacy
- Any branch banking
- International card acceptance
- Multiple services beyond cash

Bank Benefits

- Lower setup costs than branches
- Staff freed for productive work
- Cross-selling opportunities
- Product display capabilities
- Reduced cash handling

ATM Operating Models

Online ATMs

Connected to bank databases with real-time account access and daily withdrawal limits monitored by ATM switches.

Offline ATMs

Operate independently without database connection, allowing withdrawals up to pre-fixed limits regardless of account balance.

Networked ATMs

Connected through networks like National Financial Switch (NFS), enabling cardholders to use any networked ATM for true "anywhere banking."

ATM Network Evolution

Indian Banks' Association launched SWADHAN network in Mumbai on February 1, 1997, providing the first 24/7 electronic banking services.

IDRBT established National Financial Switch (NFS) for national-level connectivity. NPCI took over NFS operations in December 2009, creating seamless interoperability across all Indian banks and transforming customers from branch-specific to bank-wide access.

Comprehensive ATM Services

- Core Services

  Cash withdrawal, balance inquiry, statement review, PIN changes

- Deposit Functions

  Cash deposits, check deposits, funds transfers between accounts

- Payment Services

  Credit card payments, utility bills, insurance premiums

- Account Management

  Checkbook requests, term deposit opening, profile updates

- Digital Services

  Mobile recharge, DTH top-ups, Aadhaar updates

White Label ATMs (WLA)

Non-bank entities own and operate White Label ATMs under RBI's Payment & Settlement Systems Act, 2007. Four authorized operators currently manage WLAs: India1 Payments, Tata Communications Payment Solutions, Hitachi Payment Services, and Vakrangee.

These ATMs display no bank branding and serve all banks' customers, expanding financial inclusion in Tier 1-6 cities and rural areas.

WLA Operating Framework

Location Freedom

WLA operators choose locations while meeting RBI's annual targets and tier-city distribution ratios.

Revenue Structure

Operators earn through interchange fees and additional revenue from advertisements and value-added services.

Transaction Charges

Five free monthly transactions don't apply to WLAs. All charges must be displayed before transaction initiation.

Regulatory Compliance

Same operational guidelines as bank-operated ATMs, including compensation for failed transactions.

Brown Label vs White Label ATMs

Brown Label ATMs

Service providers own hardware and lease ATMs to banks. The sponsor bank handles cash management and network connectivity while displaying their brand.

- Bank branding displayed
- Bank manages cash and connectivity
- Service provider maintains hardware

White Label ATMs

Non-bank operators own and manage everything independently, serving all banks' customers without displaying any specific bank brand.

- No bank branding
- Operator manages all aspects
- Serves all bank customers

Cash Recyclers: Advanced ATM Technology

Cash Recycler machines accept customer deposits and dispense the same cash, immediately crediting accounts in real-time with transaction receipts.

Dual Function

Both accepts and dispenses cash efficiently

Currency Validation

Ensures genuineness and identifies counterfeits

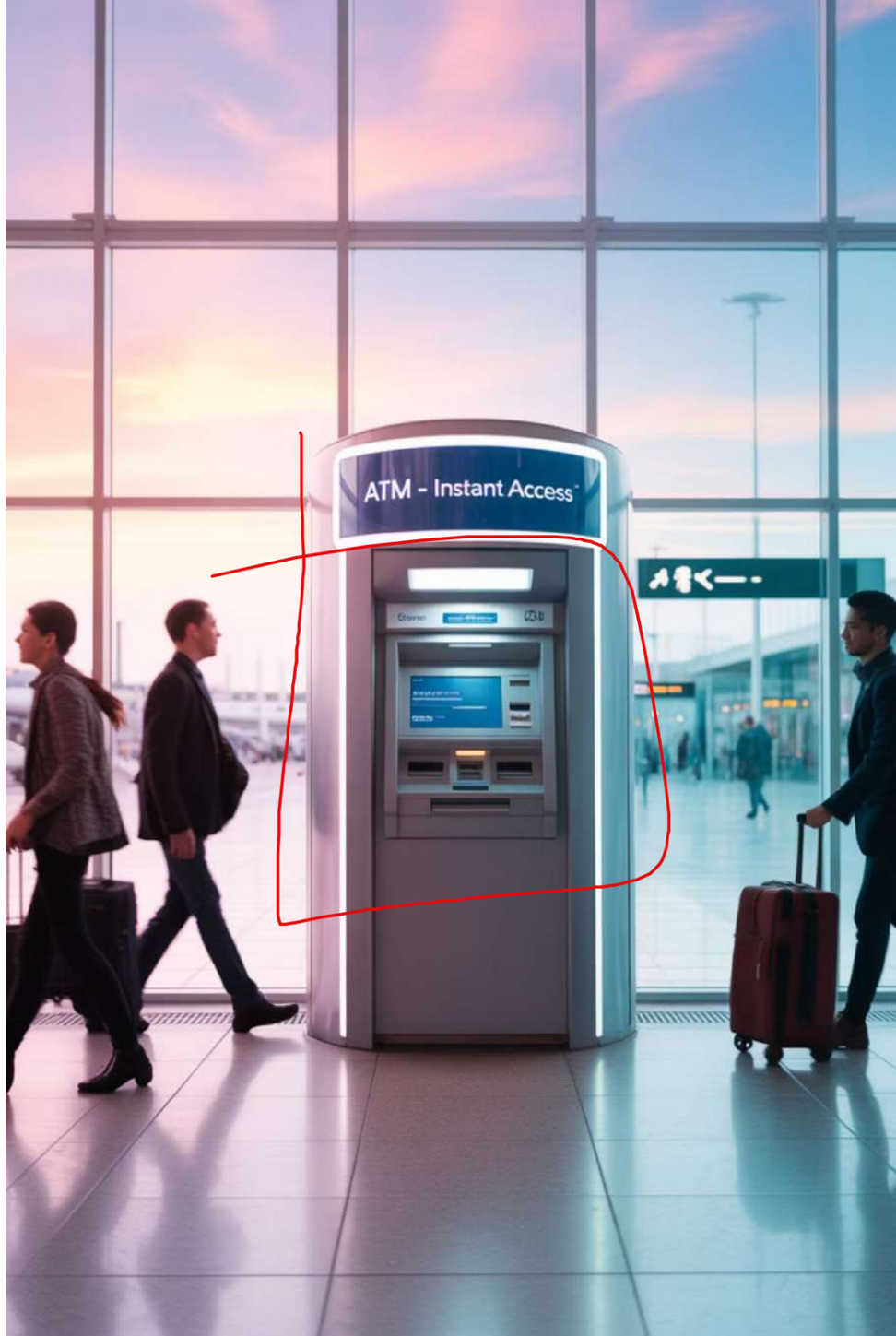
Cardless Transactions

Up to ₹20,000 daily without debit card

Kiosk Banking Revolution

Electronic kiosks in high-traffic areas like airports and malls provide unmanned banking services with artificial intelligence capabilities.

These self-service terminals offer primary banking services at strategic locations, especially benefiting remote areas lacking nearby bank branches. Multi-functional kiosks leverage technology for hassle-free, customer-friendly banking while marketing bank products effectively.



Specialized Banking Machines

Passbook Printing Kiosks

Automated 24/7 passbook updating using magnetic strips, with auto-flip and alignment capabilities for customer convenience.

Cash Deposit Machines

Self-service terminals for instant money deposits using debit cards, eliminating queues and deposit slip requirements.

Bulk Note Acceptors

Round-the-clock bulk deposit processing with sorting, counting, and instant crediting up to 200 mixed notes.

ATM Security Framework

RBI mandated comprehensive cybersecurity controls for ATM operations and third-party service providers effective December 31, 2019.

1

System Security

BIOS passwords, disabled USB ports, latest OS patches, and terminal security solutions

2

Anti-Fraud Measures

Anti-skimming solutions, whitelisting applications, and forensic examination capabilities

3

Data Protection

Secure storage, processing, and transmission of sensitive customer information

4

Incident Response

Robust incident response mechanisms and continuous surveillance systems

PIN Security and Green PIN

Personal Identification Numbers secure ATM and POS transactions through numerical digit combinations. Traditional PINs came sealed on paper, requiring separate storage from cards.

Green PIN initiative enables instant PIN generation through ATM, Internet Banking, IVR, and SMS using One Time Passwords. This paperless approach reduces carbon footprint, eliminates physical custody requirements, and provides immediate convenience.

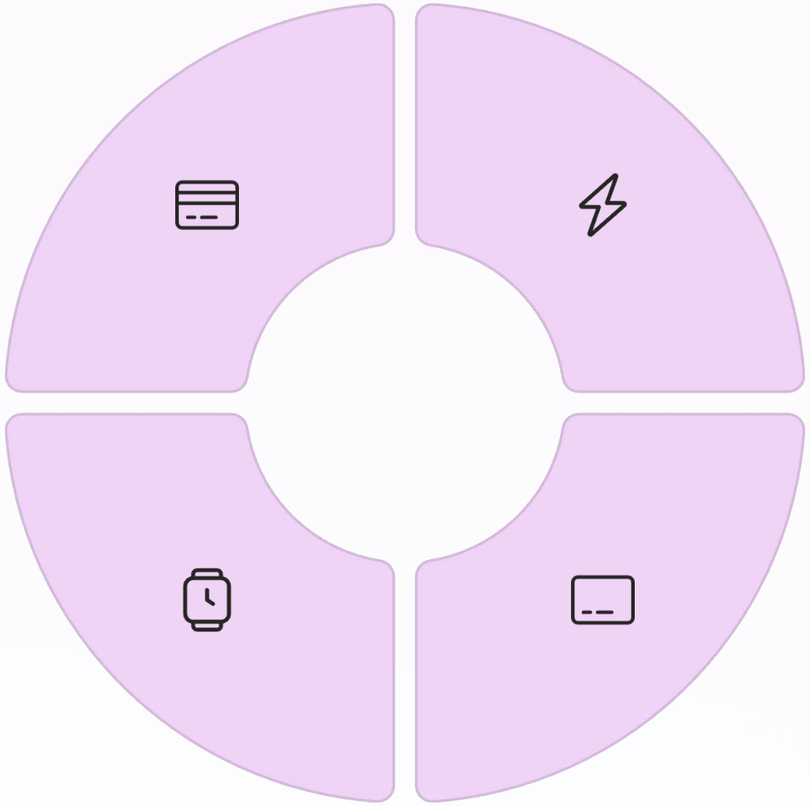
Payment Card Types

Credit Cards

Monthly billing with installment payment options and service fees on deferred amounts

Smart Cards

Integrated circuits with memory, processors, and advanced security features



Charge Cards

Full balance due monthly without interest, typically carrying high annual fees

Debit Cards

Immediate fund deduction from account for merchandise and cash transactions

EMV and Contactless Technology

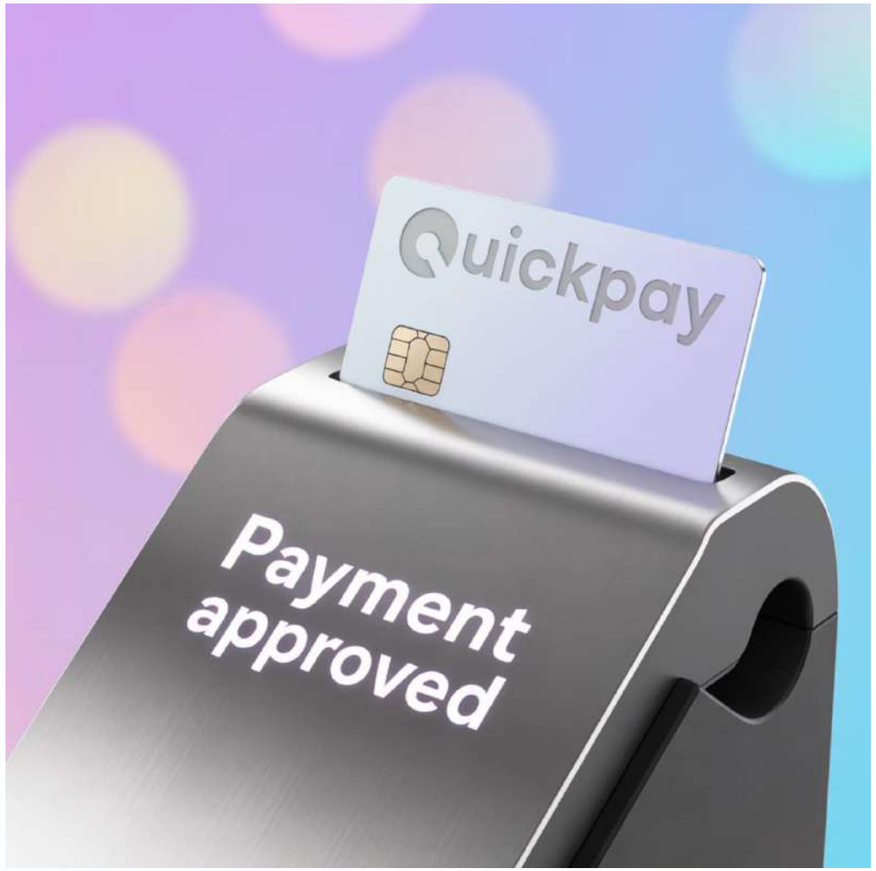
Europay, MasterCard, and Visa (EMV) standards ensure global chip card interoperability with embedded microchips providing enhanced security.

EMV Advantages

- Prevents card counterfeiting
- PIN authentication prevents misuse
- Secure transaction messaging
- Compliance with ISO standards

NFC Contactless Cards

Near Field Communication enables "tap and go" payments within 10cm range, offering faster, more secure transactions without physical card handling.



Mobile Wallets and Digital Payments

Mobile wallets like PayTM, MobiKwik, and PhonePe represent digital versions of physical wallets, storing payment information securely for online and offline transactions.

10cm

NFC Range

Communication distance for contactless payments

24/7

Availability

Round-the-clock digital payment access

1-tap

Payment Speed

Quick transaction processing time

Future of Banking Technology

Banking continues evolving toward complete digital integration with artificial intelligence, biometric security, and seamless customer experiences.

Mobile-First Banking

Smartphones becoming primary banking interfaces with comprehensive service capabilities

Advanced Security

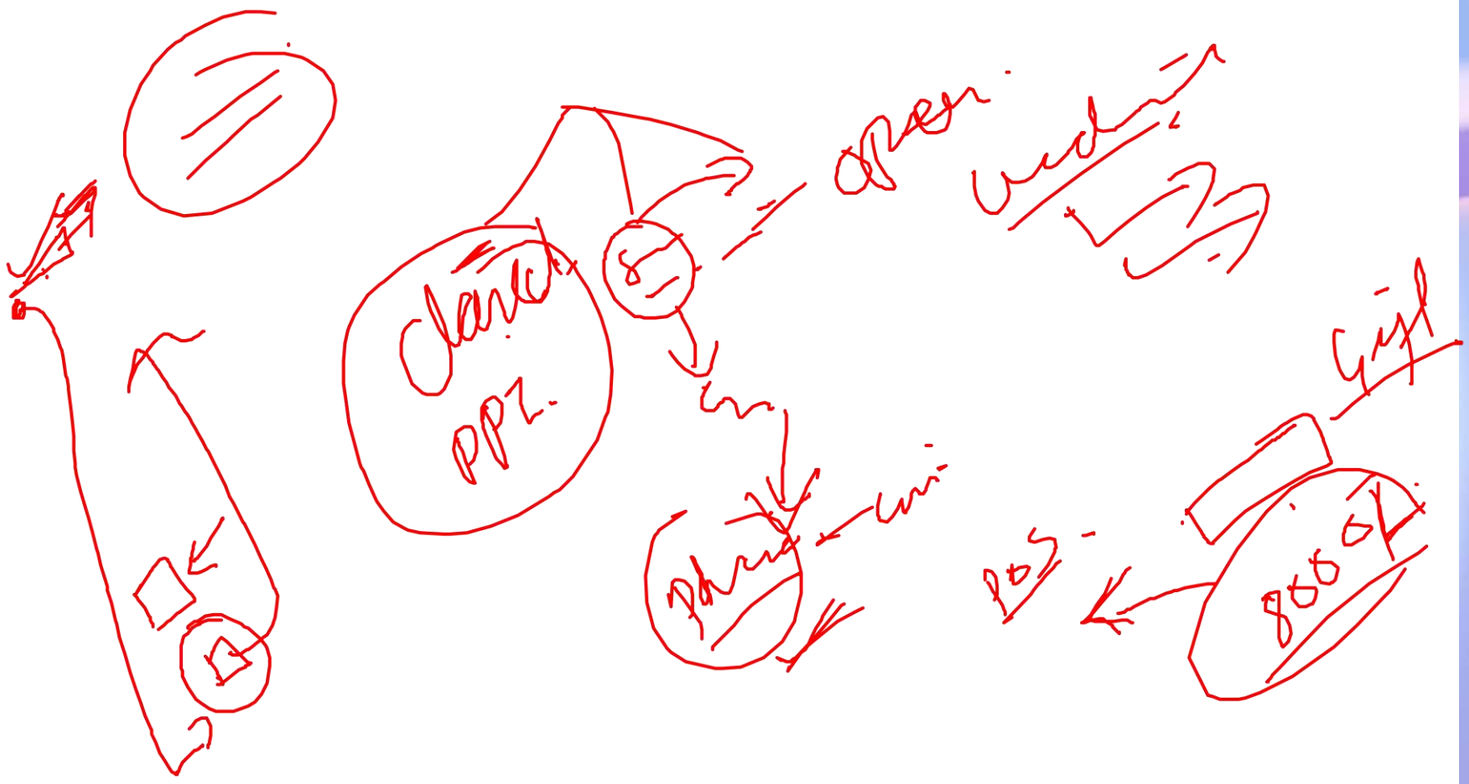
Biometric authentication including fingerprints, voice recognition, and retinal scanning

AI Integration

Intelligent systems providing personalized services and fraud detection capabilities

The convergence of these technologies creates unprecedented opportunities for financial inclusion and customer convenience in the digital economy.

Prepaid Payment Instruments (PPIs)



Understanding PPI Categories

Closed System PPIs

Entity-specific instruments for internal goods and services only. No RBI authorization required.

Small PPIs

Minimum-detail instruments with ₹10,000 outstanding limit. Two variants available.

Full-KYC PPIs

Complete KYC-compliant instruments with ₹2,00,000 outstanding limit and transfer capabilities.

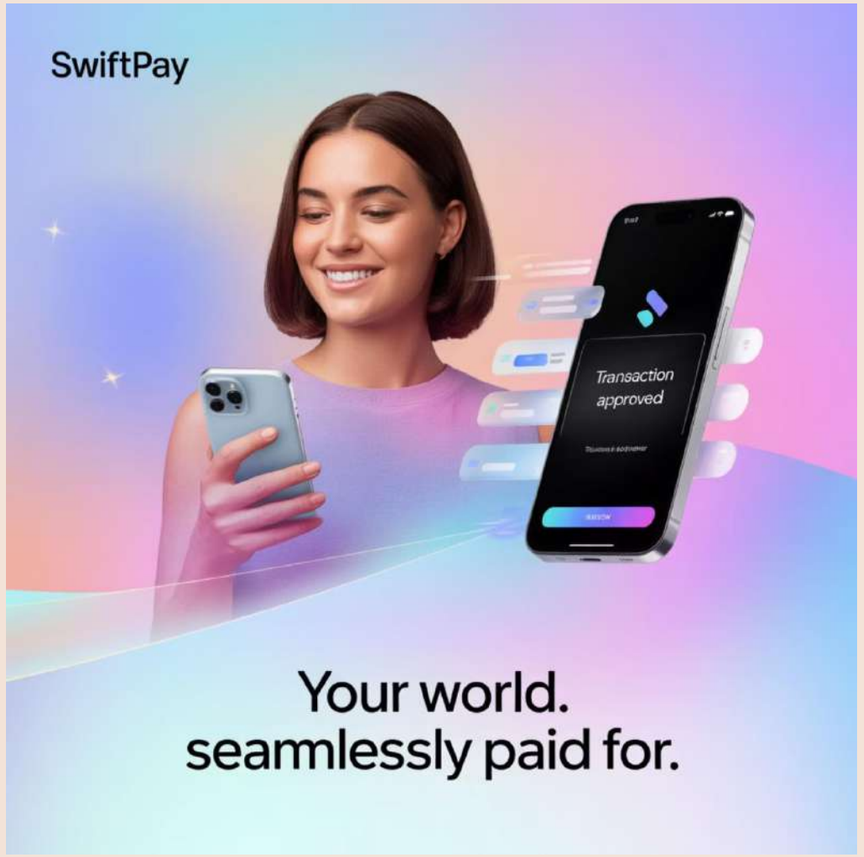
Small PPIs with Cash Loading Facility

Key Requirements

- Mobile number verification with OTP
- Self-declaration of identity documents
- Maximum ₹10,000 monthly loading
- ₹1,20,000 annual loading limit
- Conversion to full-KYC within 24 months

Usage Restrictions

Purchase of goods and services only. No cash withdrawal or funds transfer permitted.



Small PPIs Without Cash Loading

Loading Sources

Funds must originate from bank accounts, credit cards, or full-KYC PPIs only.

Same Limits Apply

₹10,000 monthly and ₹1,20,000 annual loading limits maintained.

Closure Flexibility

Holders can close accounts anytime with balance transfer options.

Full-KYC PPI Features

Complete KYC Compliance

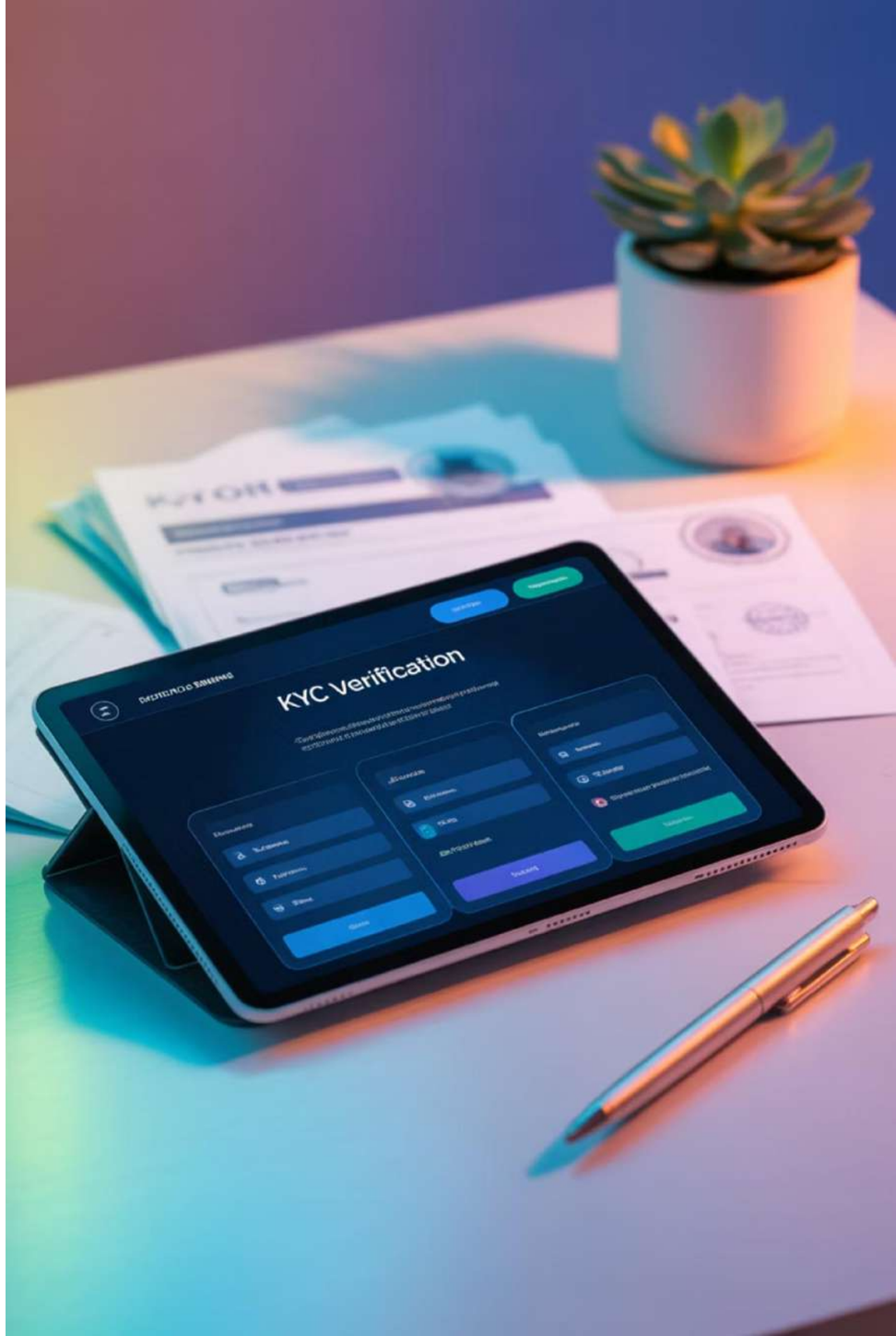
Video-based Customer Identification Process (V-CIP) permitted for account opening and conversion.

Enhanced Limits

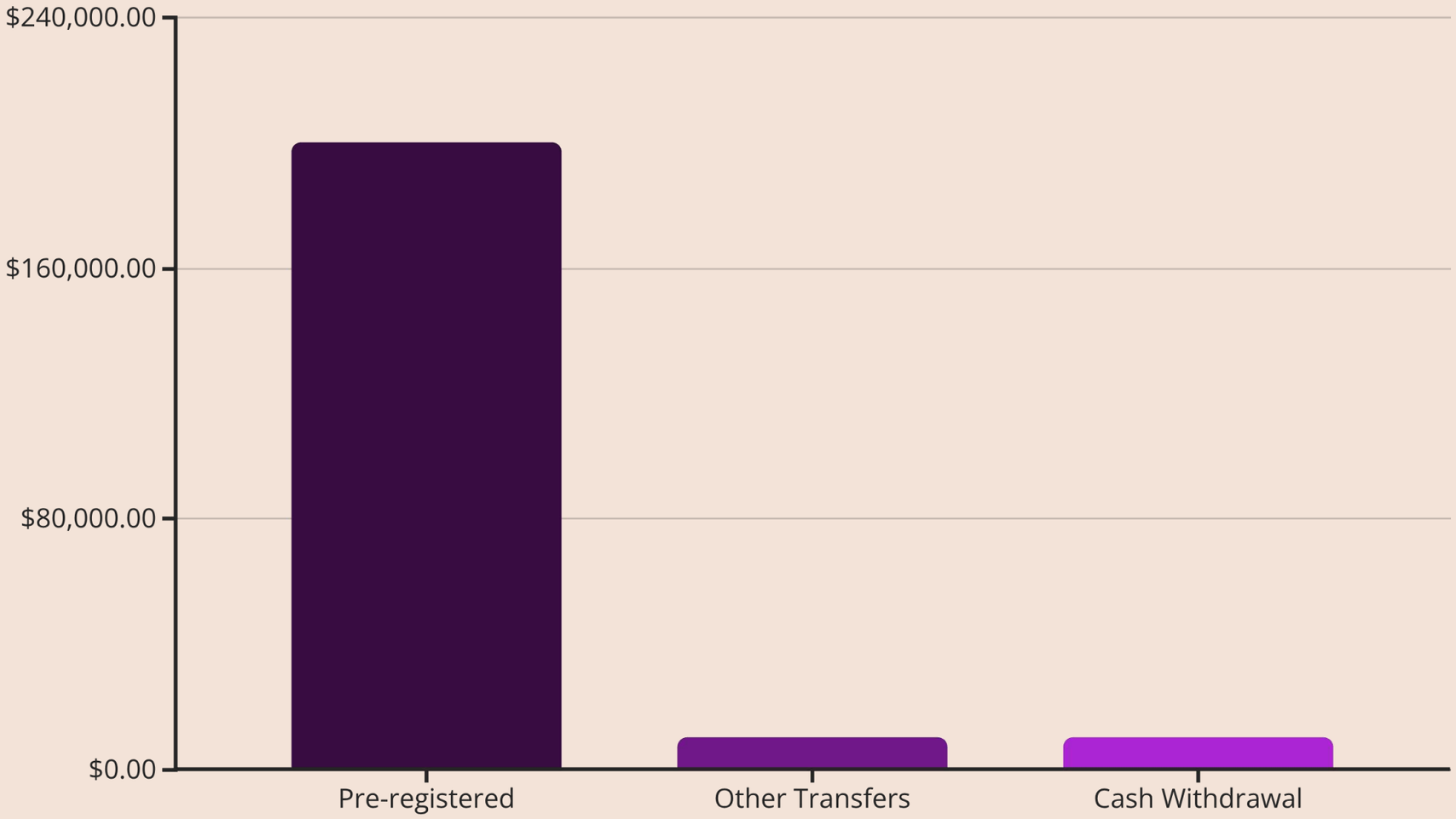
₹2,00,000 maximum outstanding balance with risk-based transfer limits set by issuers.

Pre-registered Beneficiaries

Up to ₹2,00,000 monthly transfers per beneficiary with bank account verification.

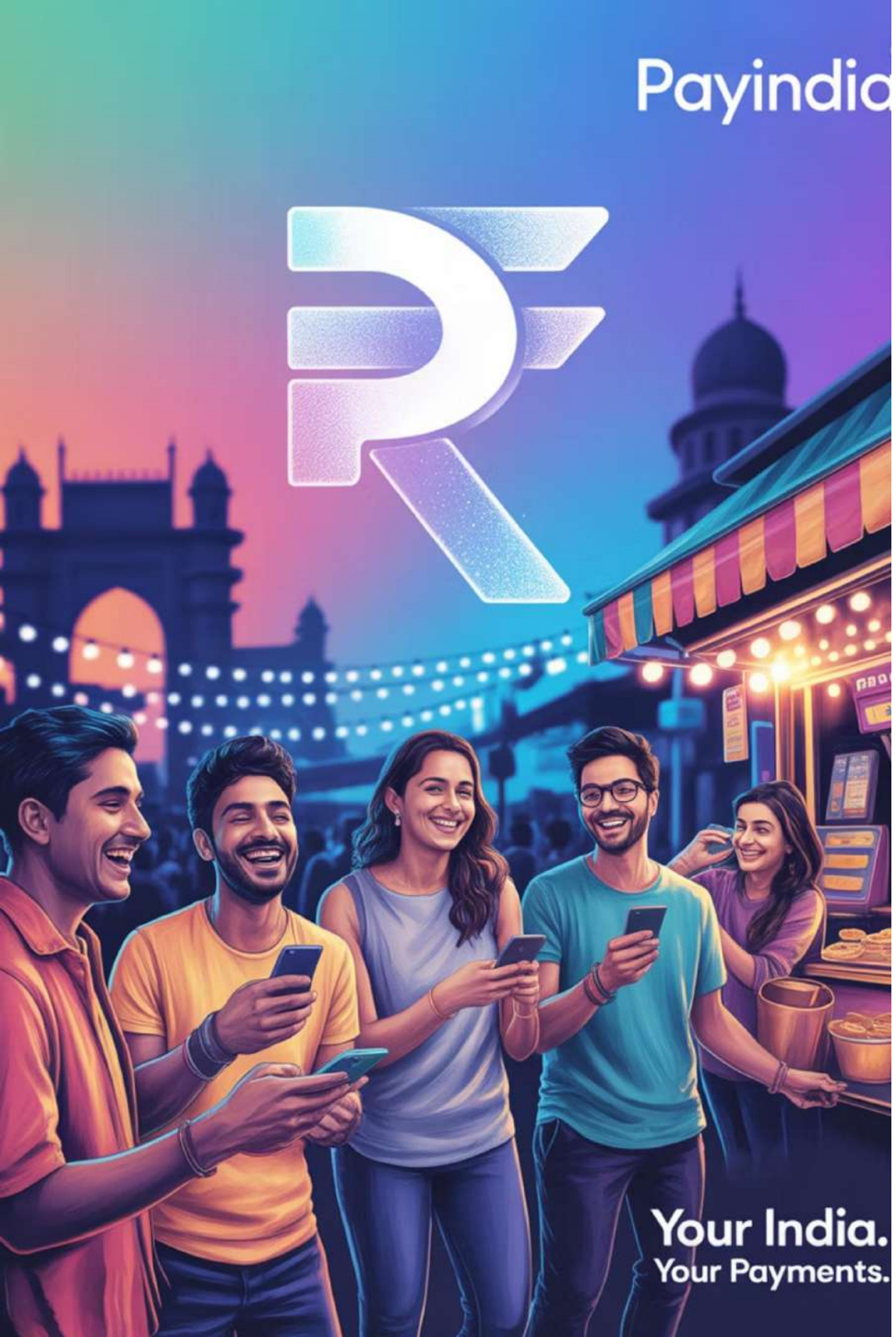


Transfer Limits and Cash Withdrawal



Bank-issued PPIs permit cash withdrawal across all channels with ₹2,000 per transaction limit.

Digital Payment Systems – NPCI



India's Payment Systems Revolution

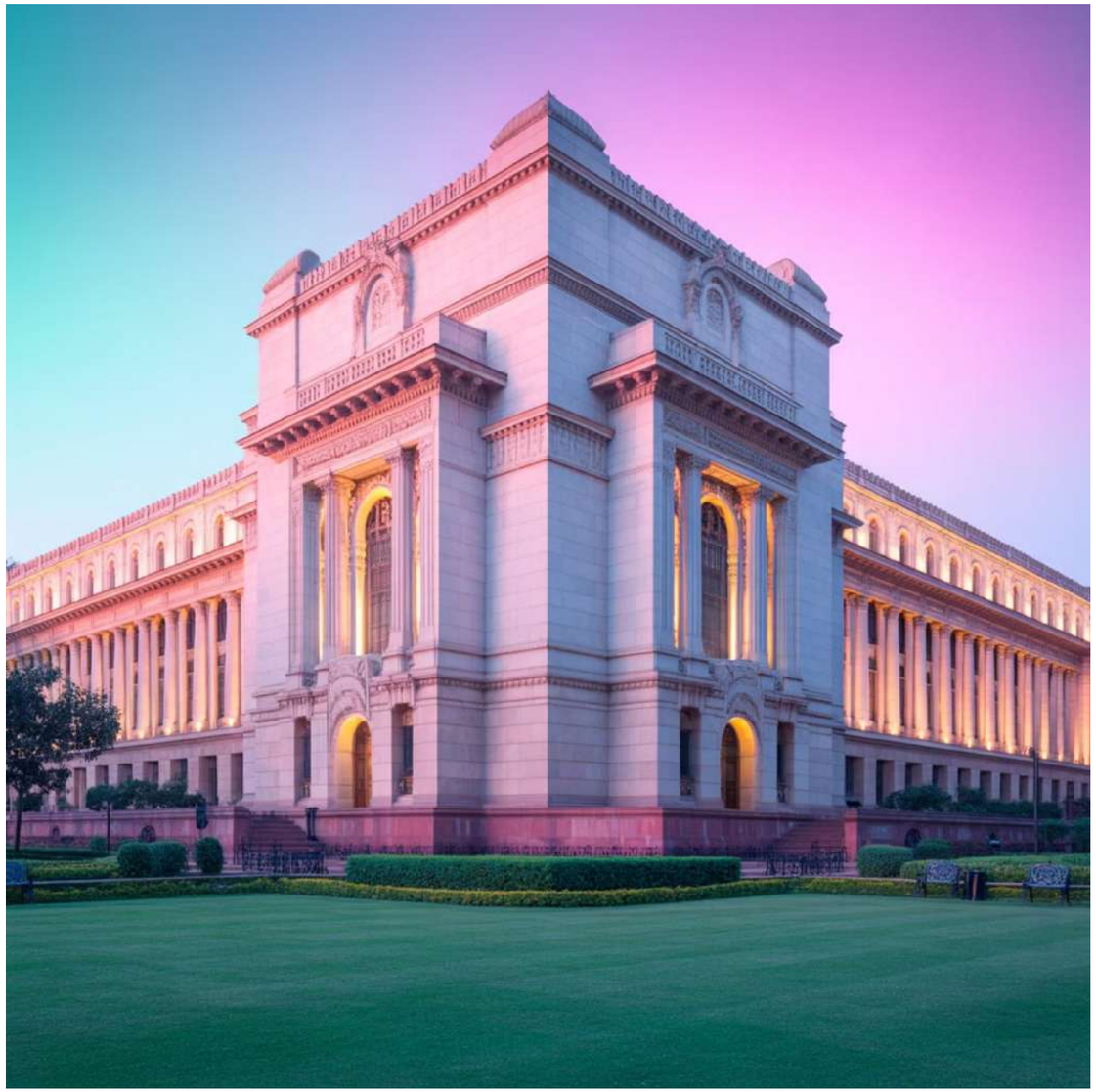
A comprehensive journey through India's transformation into a digital payment powerhouse, exploring the systems that enable seamless financial transactions for over 1.4 billion citizens.

The Foundation: RBI's Vision

Historical Leadership

The Reserve Bank of India pioneered India's payment infrastructure, establishing critical systems like ECS, NEFT, and RTGS that formed the backbone of modern digital payments.

In 2005, the Board for Payment and Settlement Systems was created to consolidate fragmented payment systems into a unified national framework.



12 Core Electronic Clearing Systems

ECS

Electronic Clearing Service

NEFT

National Electronic Fund Transfer

RTGS

Real-Time Gross Settlement

CTS

Cheque Truncation System

IMPS

Immediate Payment Service

UPI

Unified Payments Interface

These systemically important financial market infrastructures (SIFMIs) include NACH, Credit/Debit Cards, PPIs, and specialized clearing systems for government securities and forex.

NPCI

The Game Changer

Founded in December 2008, the National Payments Corporation of India emerged as a not-for-profit organization with a revolutionary mission: provide "anytime, anywhere payment services that are simple, easy to use, safe, secure, fast and cost-effective."

NPCI's Founding Vision

01

Consolidation

Unite multiple systems with varying service levels into a nationwide uniform standard

02

Standardization

Create consistent business processes for all retail payment systems

03

Innovation

Transform India into a 'less-cash' society through cutting-edge payment solutions

Backed by ten core promoter banks including SBI, PNB, ICICI, and HDFC, NPCI operates for the benefit of all member banks and citizens.

NPCI's Product Portfolio

National Financial Switch

India's largest shared ATM network connecting over 2.55 lakh ATMs nationwide

UPI & BHIM

Revolutionary real-time payment systems enabling instant bank-to-bank transfers

RuPay Cards

India's domestic card scheme offering lower costs and customized solutions

BBPS & Digital Services

Comprehensive bill payment ecosystem and mobility solutions

National Financial Switch: ATM Revolution

Massive Scale

Launched in 2004 and managed by NPCI since 2009, NFS connects over 1,203 members to 2.55+ lakh ATMs across India, creating the world's most extensive shared ATM network.

Core Services

- Cash withdrawal and balance inquiry
- PIN changes and mini statements
- Interoperable cash deposits
- Card-to-card fund transfers

Advanced value-added services include mobile banking registration, Aadhaar seeding, and statement requests across all participating banks.

NACH: Automated Clearing Powerhouse

National Automated Clearing House revolutionizes bulk transactions for banks, corporates, and government agencies. This web-based solution handles high-volume, repetitive transactions like salary distributions, subsidies, and utility payments.

1

Government Benefits

Direct benefit transfers and subsidy distributions

2

Corporate Payments

Salary, dividend, and pension disbursements

3

Utility Collections

Loan EMIs, insurance premiums, and bill payments

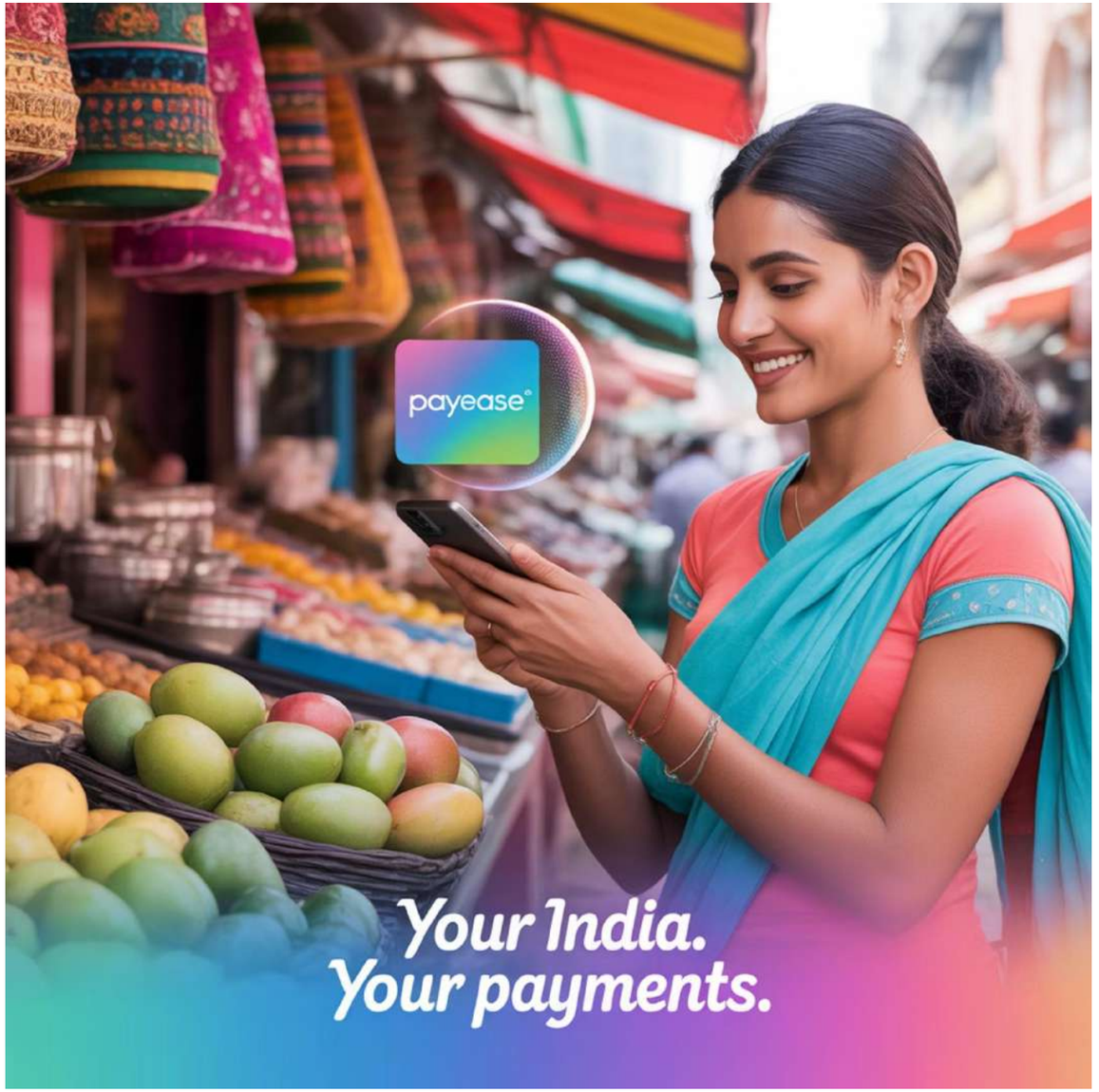
IMPS: Instant Payment Revolution

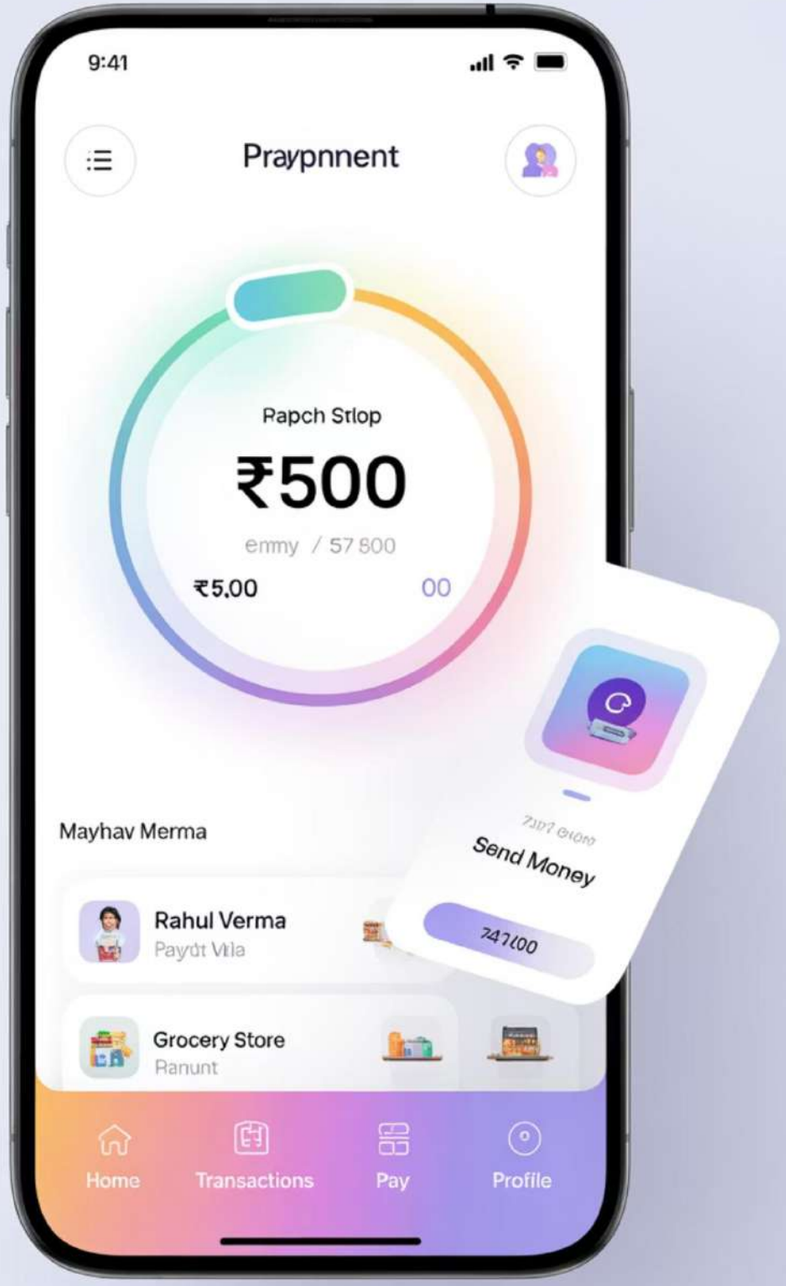
24x7 Availability

Immediate Payment Service delivers instant, inter-bank fund transfers available round-the-clock, including holidays. Built on NFS infrastructure, IMPS supports multiple channels: mobile, internet, ATM, SMS, and USSD.

Key Features

- Real-time fund transfers
- Multi-channel accessibility
- Mobile Money Identifier (MMID) system
- Two-factor authentication





UPI

The Game-Changing Innovation

Unified Payments Interface transforms multiple bank accounts into a single mobile application, merging banking features, fund routing, and merchant payments seamlessly. Available 24x7x365 with single-click, two-factor authentication.

UPI: Technical Architecture

Bank Integration

Multiple bank accounts linked to single virtual address

Transaction Types

Push payments, pull requests, and merchant transactions

Mobile Registration

SMS-enabled mobile numbers create secure payment addresses

Authentication

UPI PIN and two-factor security protocols

UPI 2.0: Advanced Features

One-Time Mandate

Pre-authorize transactions with fund blocking capability for delayed debits, enabling secure "pay later" scenarios with digital signature validation.

Overdraft Integration

Link OD accounts showing both available and actual balances, expanding payment options for eligible customers.

Invoice Attachments

Review invoices securely before payment authorization through verified merchant attachment links.

Signed QR Security

Enhanced security with signed QR codes and intents, reducing tampering risks and unauthorized entities.

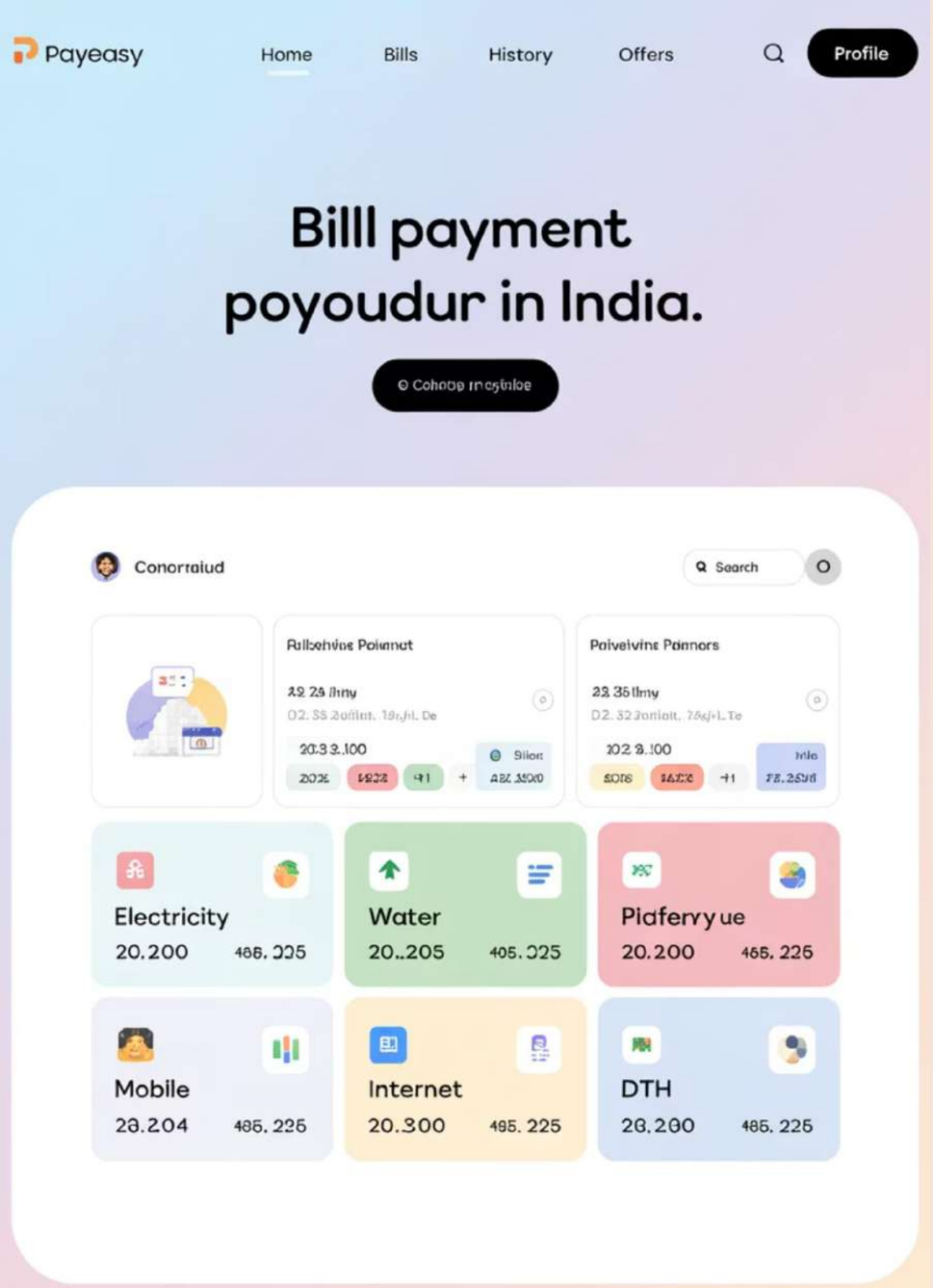
BHIM: Empowering Digital India

Universal Access

Bharat Interface for Money democratizes UPI payments through a government app supporting 20 regional languages and comprehensive payment features.

Key Capabilities

- Send/request money via VPA or QR codes
- Transaction limits: ₹1,00,000 per transaction/day
- Split bills and payment reminders
- IPO applications and UPI Autopay



BBPS: One-Stop Bill Payment

Bharat Bill Payment System creates an interoperable ecosystem for "Anytime Anywhere" bill payments with certainty, reliability, and safety. Multiple payment modes with instant SMS confirmations.

BBPCU

NPCI as central clearing unit setting standards and procedures

BBPOU

Banks and non-banks authorized as operating units

Agents

Customer touchpoints across retail outlets and branches

RuPay: India's Card Revolution

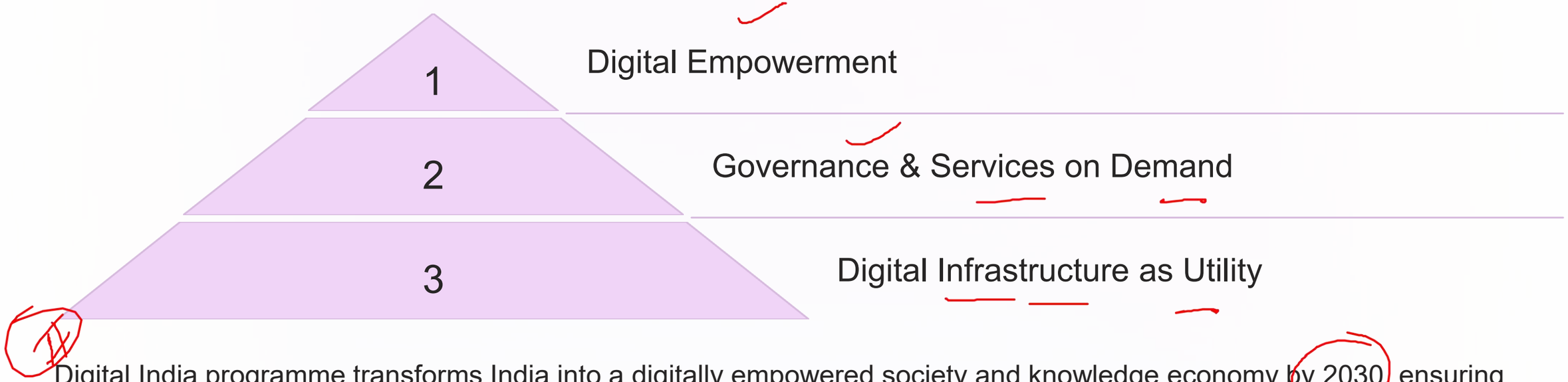
Domestic Advantage

"Rupee + Payment" = RuPay represents India's sovereign card scheme, reducing transaction costs through domestic processing while protecting Indian consumer data within national borders.

Product Range

- Classic, Platinum & Select variants
- Contactless and tokenization technology
- International acceptance and lounge access
- Insurance coverage and cashback schemes

Digital India: Government's Vision



Digital India programme transforms India into a digitally empowered society and knowledge economy by 2030, ensuring electronic access to government services for all citizens through robust internet infrastructure and digital literacy.

Key Digital Infrastructure

Bharat Broadband Network

National Optical Fiber Network connecting 2.5 lakh Gram Panchayats across 641 districts with high-speed internet infrastructure.

DigiLocker Platform

Secure cloud-based digital wallet for storing and sharing verified documents, eliminating physical paperwork through Aadhaar-linked storage.

GeM Portal

One-stop government procurement platform ensuring transparency, with average buyer savings of 9.75% through cashless, contactless transactions.

Security & Cloud Infrastructure

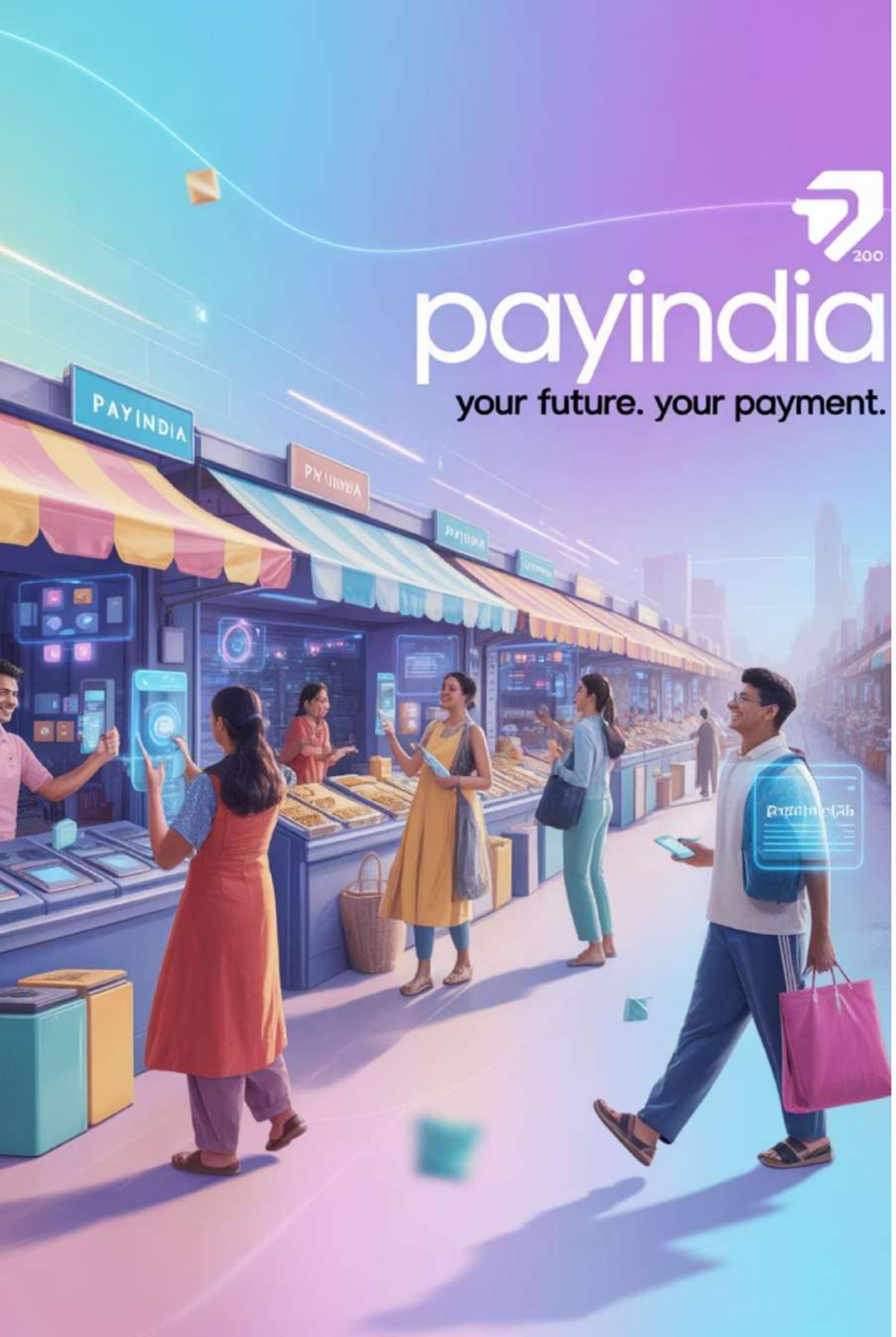
CERT-IN Protection

Indian Computer Emergency Response Team serves as the nodal agency for cybersecurity, providing incident prevention, response services, and security quality management under IT Amendment Act 2008.

MeghRaj Cloud Initiative

Government's "GI Cloud" programme optimizes ICT spending while accelerating e-service delivery through distributed cloud environments with standardized protocols.

Multiple cloud services including PaaS, IaaS, SaaS, and specialized security services



Payments Vision 2025: Future Roadmap

3x

Digital Transaction Growth

Target increase in digital payment volume

50%+

UPI Growth Rate

Average annualized expansion target

8%

Payment-to-GDP Ratio

Transaction turnover target

0.25%

Cheque Usage Limit

Maximum share of total retail payments

RBI's vision: "E-Payments for Everyone, Everywhere, Everytime" through Integrity, Inclusion, Innovation, Institutionalisation, and Internationalisation.

India's Digital Payment Success Story

From fragmented systems to unified digital excellence, India has created the world's most comprehensive payment ecosystem. NPCI's innovations—UPI, BHIM, RuPay, and BBPS—serve 1.4+ billion citizens through secure, instant, and inclusive financial services.

> "Today's India demonstrates how technology improves access to education, healthcare, and agriculture while promoting transparency and accountability through faceless, cashless, and paperless governance."

The foundation for a robust, secure Digital India is now reality, transforming how a nation conducts commerce and connects communities.

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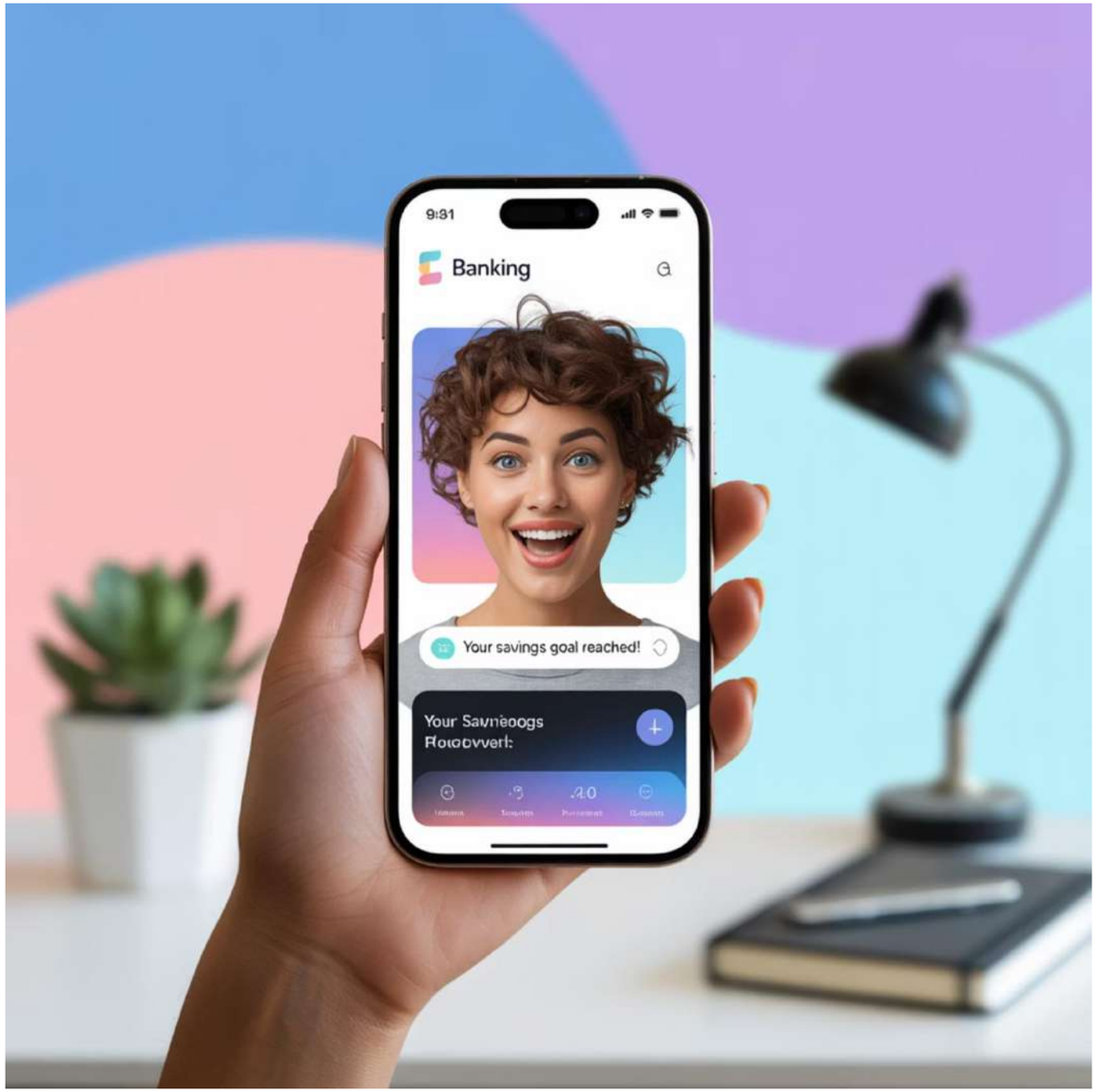
Technology Trends In Banking, E-Rupi, Fintech – Regtech, Suptech, Hashtag Banking Etc.

The Technology-Finance Convergence

Driving Forces

- Growing smartphone penetration worldwide
- Inefficiencies in traditional financial systems
- Evolving consumer behavioral patterns
- Demand for instant, digital-first services



e-RUPI

India's breakthrough digital voucher system revolutionizing targeted payment distribution

Understanding e-RUPI Technology

Launch & Authority

Launched August 2, 2021 by National Payments Corporation of India (NPCI) as an innovative digital payment solution

Mechanism

QR code or SMS string-based e-voucher delivered directly to beneficiaries' mobile devices

Redemption

Users redeem at participating merchants without digital payment apps, cards, or internet banking

e-RUPI Key Features & Benefits

Contactless & Secure

Maintains beneficiary confidentiality with pre-stored amounts, ensuring faster and more reliable transactions than traditional methods.

Offline Capability

Functions without smartphones, making it ideal for remote and rural areas where digital infrastructure is limited.

Wide Adoption

Over 1,600 hospitals and 16 banks now support e-RUPI, with 11 banks actively facilitating transactions.

e-RUPI Ecosystem Stakeholders

01

Issuer Bank

Authorized bank that initiates e-RUPI creation requests and manages the voucher issuance process

02

Sponsor

Corporate entities, government departments, or business customers requesting voucher creation

03

Designated Merchant

Specific acceptance points where beneficiaries can redeem their e-RUPI vouchers

04

Acquiring Bank

Financial institution providing merchants with e-RUPI acceptance and redemption capabilities

e-RUPI Technical Specifications

Authorization & Limits

- Only RBI-authorized PPI banks can issue
- Maximum voucher value: ₹100,000
- Up to 10 vouchers per beneficiary
- No cash-out or cashback permitted

User Benefits

- No charges for beneficiaries
- Digital-only distribution
- No bank account required
- Prepaid gift voucher functionality

Corporate Benefits of e-RUPI

1

Employee Well-being

Enable targeted employee benefits and wellness programs through secure digital vouchers

2

Cost Reduction

End-to-end digital transactions eliminate human intervention and reduce operational costs

3

Tracking Capability

Real-time monitoring of voucher redemption provides valuable usage analytics

4

Distribution Efficiency

Quick, safe, and contactless voucher distribution streamlines benefit programs

Merchant & Consumer Advantages

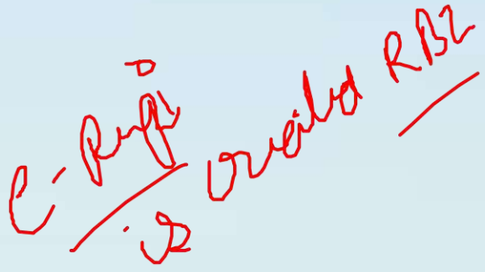
Merchant Benefits

- **Secure Authorization:** Verification code system ensures transaction security
- **Contactless Payments:** No cash handling required
- **Quick Redemption:** Pre-blocked amounts reduce decline rates

Consumer Benefits

- **Privacy Protection:** No personal details shared during redemption
- **Easy Process:** Simple 2-step redemption
- **No Prerequisites:** No digital payment app or bank account needed

Difference between e-RUPI and UPI	
e-RUPI	UPI
e-RUPI is one time cashless and contactless payment mechanism.	UPI is an application used for receipt or payment of money
e-RUPI is an e-voucher.	UPI is an application used for receipt or payment of money.
The Reserve Bank of India operates e-RUPI.	The National Payments Corporation of India operates UPI.
e-RUPI vouchers can be redeemed at service providers counters.	UPI is used for receipt or payment of money.



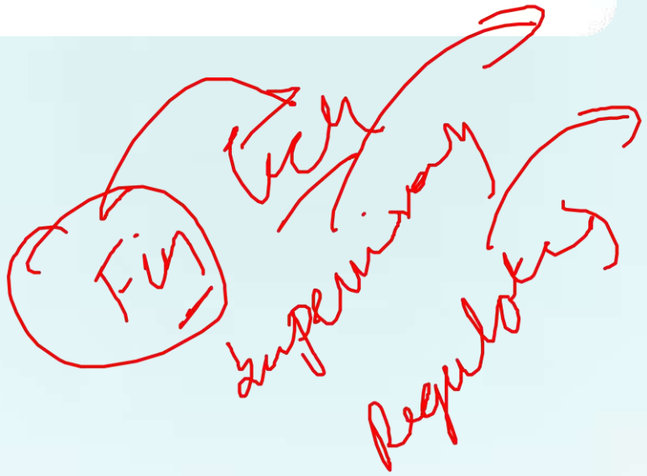
e-RUPI vs UPI: Key Distinctions

UPI

Real-time payment application for money transfer operated by NPCI, requiring bank accounts and digital apps

e-RUPI

Purpose-specific digital voucher system that works offline without bank accounts or payment apps



Fintech Ecosystem

Exploring the convergence of RegTech and SupTech in modern financial services

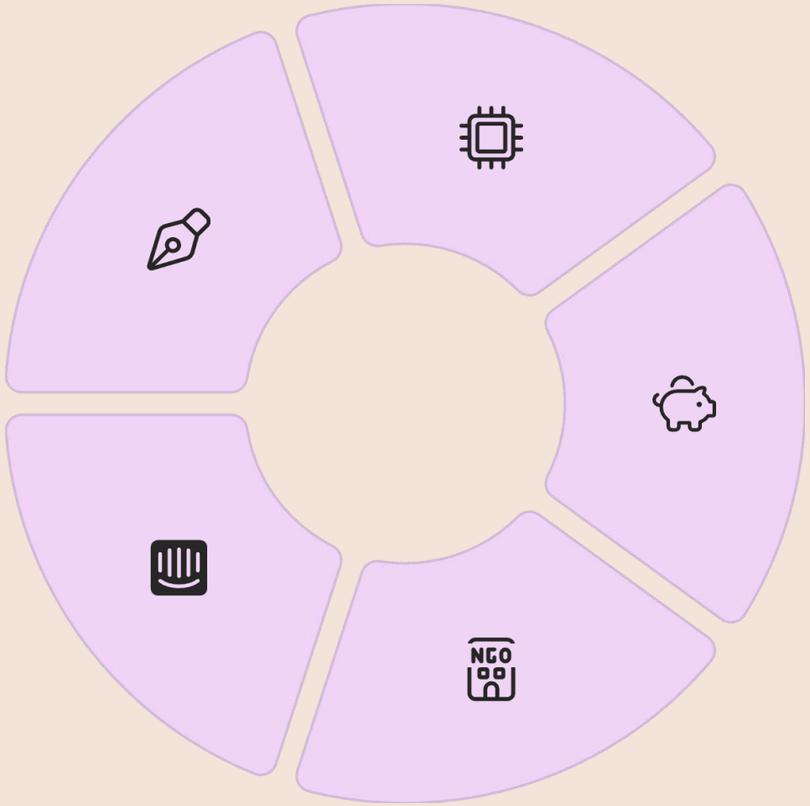
Defining Financial Technology

Startups

Innovative companies developing new financial solutions

Customers

End users driving demand for digital financial services



Big Tech

Large technology companies entering financial services

Traditional Banks

Established financial institutions adopting new technologies

Government

Regulatory bodies and policy makers enabling innovation

Fintech leverages specialized software and algorithms to improve financial operations, procedures, and customer experiences across all ecosystem participants.

Core Fintech Technologies

Peer-to-Peer Lending

Direct lending platforms connecting borrowers with investors without traditional intermediaries

Blockchain & DLT

Distributed ledger technologies enabling secure, transparent transactions and smart contracts

Big Data Analytics

Advanced data processing for risk assessment, customer insights, and automated decision-making

Robo Advisors

AI-powered investment management platforms providing automated financial planning services

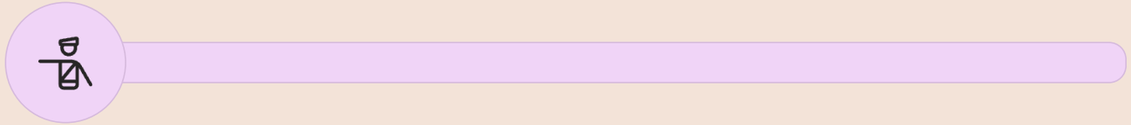
Banking Benefits from Fintech Adoption

Reduced Operational Costs

Automation and digital processes significantly lower overhead expenses

Faster Time to Market

Rapid deployment of new financial products and services



Enhanced Customer Experience

Improved service delivery leading to increased revenue opportunities

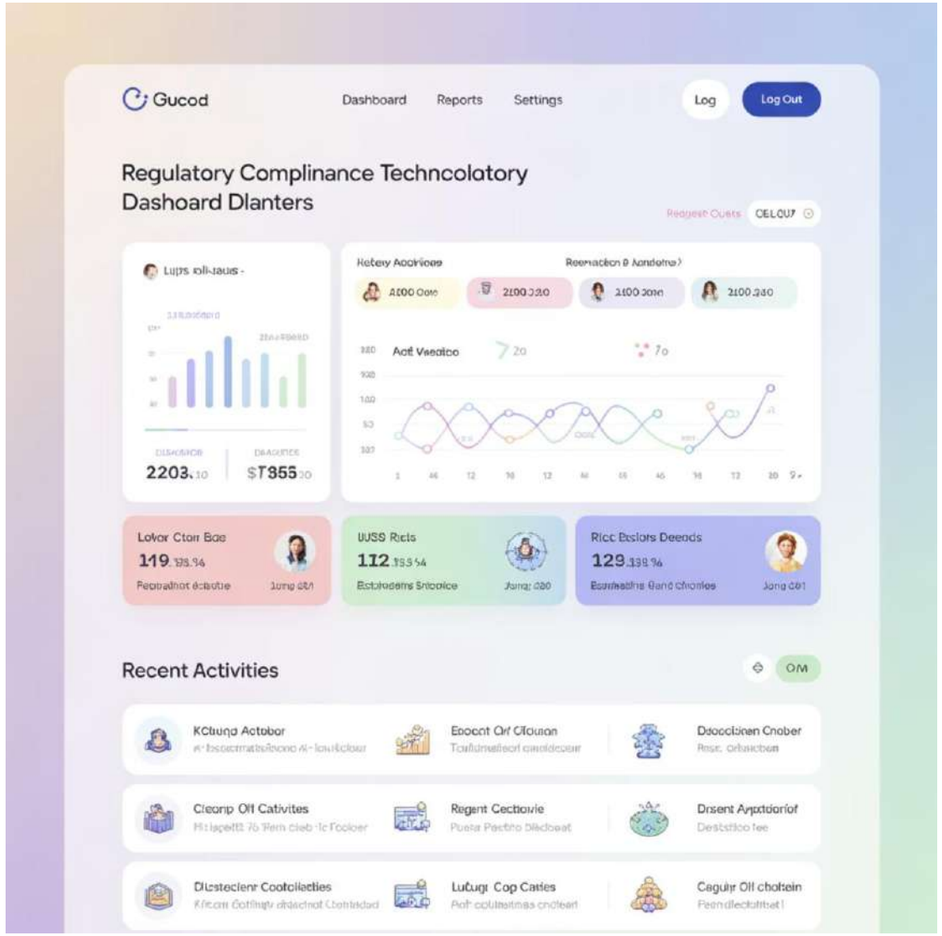
Advanced Security

World-class compliance systems and robust security frameworks

RegTech: Regulatory Technology Revolution

What is RegTech?

Technology solutions that streamline regulatory processes, helping financial institutions manage compliance more efficiently through automation and advanced analytics.



Key Applications

- Regulatory monitoring and reporting
- Compliance management automation
- Risk assessment and mitigation
- Real-time regulatory tracking

RegTech Implementation Areas

Regulatory Monitoring

Real-time tracking of regulatory changes and requirements

Compliance Management

Automated systems for managing regulatory obligations

Risk Management

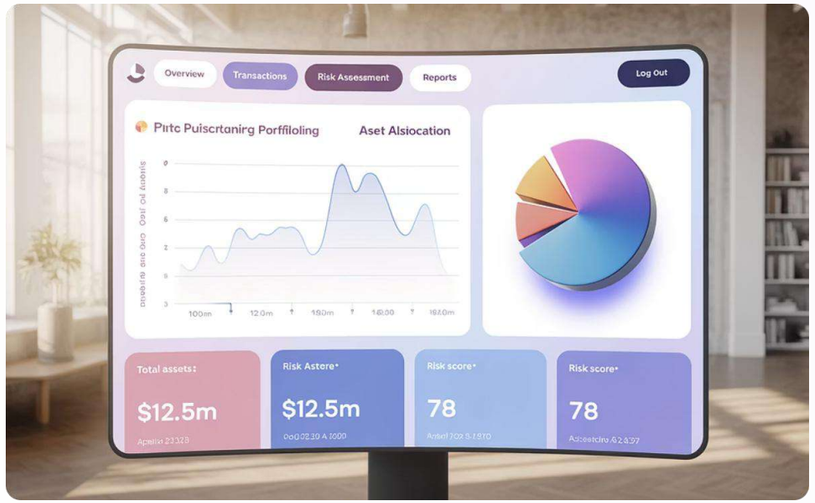
Advanced analytics for identifying and mitigating compliance risks

Transaction Monitoring

AI-powered systems for detecting suspicious activities

RegTech leverages AI, machine learning, big data, and cloud computing to minimize human error while enabling rapid adaptation to new regulations.

SupTech: Supervisory Technology



Enhanced Supervisory Efficiency

Technological tools that help regulatory authorities improve oversight through automation and data analytics

RBI Implementation

Reserve Bank of India uses systems like IDPMS, EDPMS, and CRILC for comprehensive data collection and analysis

Social Media Banking Evolution

Market Reality

Billions of users globally rely on social media platforms like Instagram, Facebook, LinkedIn, and Snapchat, making social media presence essential for modern banking.

Hashtag Banking Services

Core Banking Operations

Fund transfers, balance inquiries, and account management through Twitter hashtags

Credit Card Services

Card management, payment processing, and customer support via social platforms

Digital Payment Integration

FASTag services, mobile recharges, and digital wallet management

Product Services

Loan applications, fixed deposits, and card blocking/unblocking functionality

Customers follow their bank on Twitter to access these services, appealing especially to socially active younger demographics.

The Future: Account Aggregators & Open Banking

1 Account Aggregators

RBI-regulated entities enabling secure digital sharing of financial information between institutions with customer consent

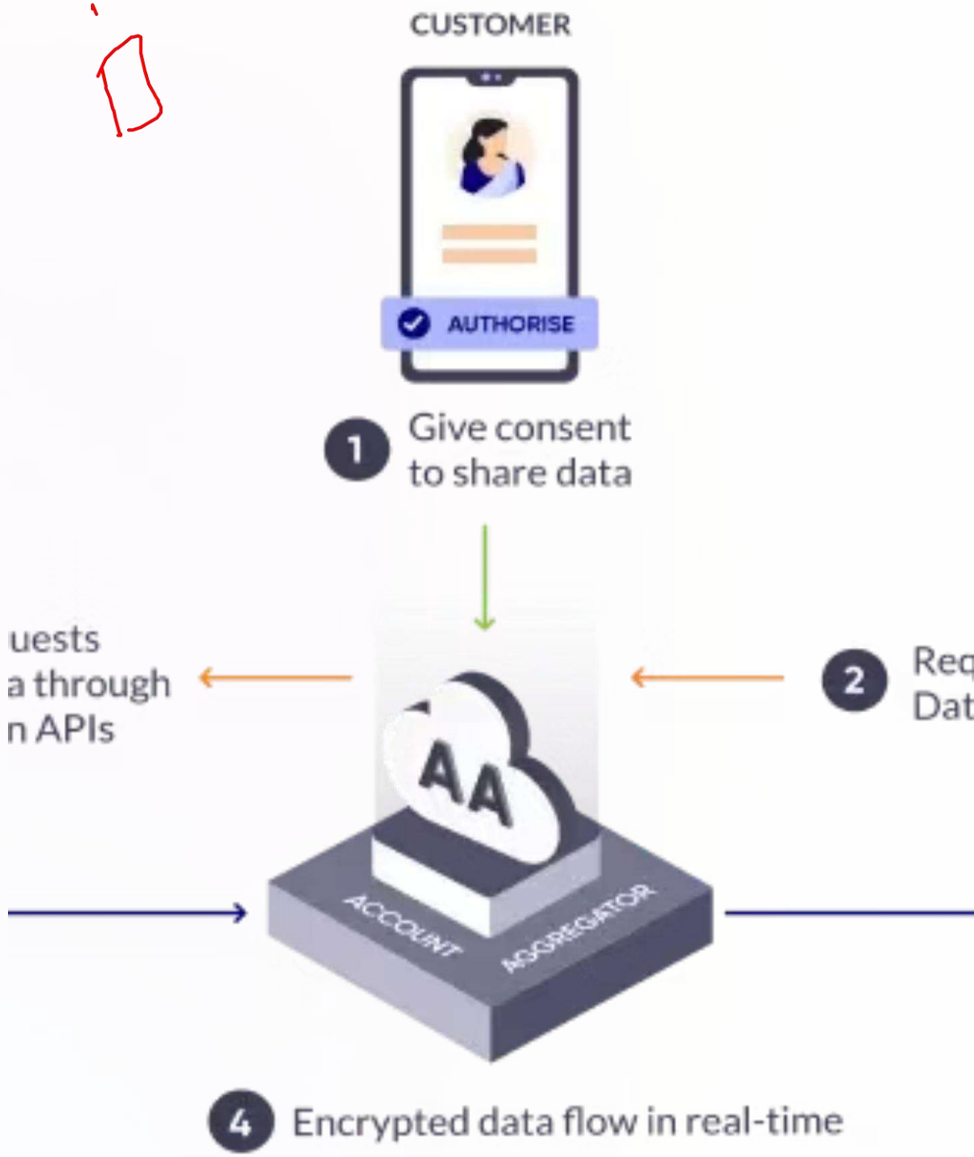
2 Open Banking

API-driven ecosystem allowing third-party providers access to banking data, fostering innovation and competition

3 API Integration

Application Programming Interfaces enabling seamless data exchange and service integration across financial platforms

These technologies create interconnected financial ecosystems that prioritize customer control, data security, and innovative service delivery.



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Impact of Technology Adoption and Trends in Banking Technology

Learning Objectives

1

Technology Trends

Understand current and emerging information technology trends transforming the banking landscape globally.

2

Digital Delivery Systems

Learn about innovative banking product and service delivery mechanisms enabled by technology.

3

Electronic Data Systems

Grasp concepts of electronic data interchange and their applications in modern banking operations.

4

Global Impact Analysis

Examine technology's transformative effects on banking systems worldwide and data privacy implications.

The Digital Banking Revolution

Traditional Banking

Conventional brick-and-mortar banks relied on physical branches for customer service delivery and face-to-face interactions.

Virtual Banking Era

Technology has transformed banking into virtual, accessible services from customers' perspective, enabling 24/7 connectivity.

Banks are enthusiastically absorbing latest technological innovations to devise new products and enhanced service delivery mechanisms.

Technology Driving Banking Innovation

Indian banks have aggressively invested in digital technologies, promoting innovative, robust, and secure solutions optimized for tech-savvy customers.

Digitalization Benefits

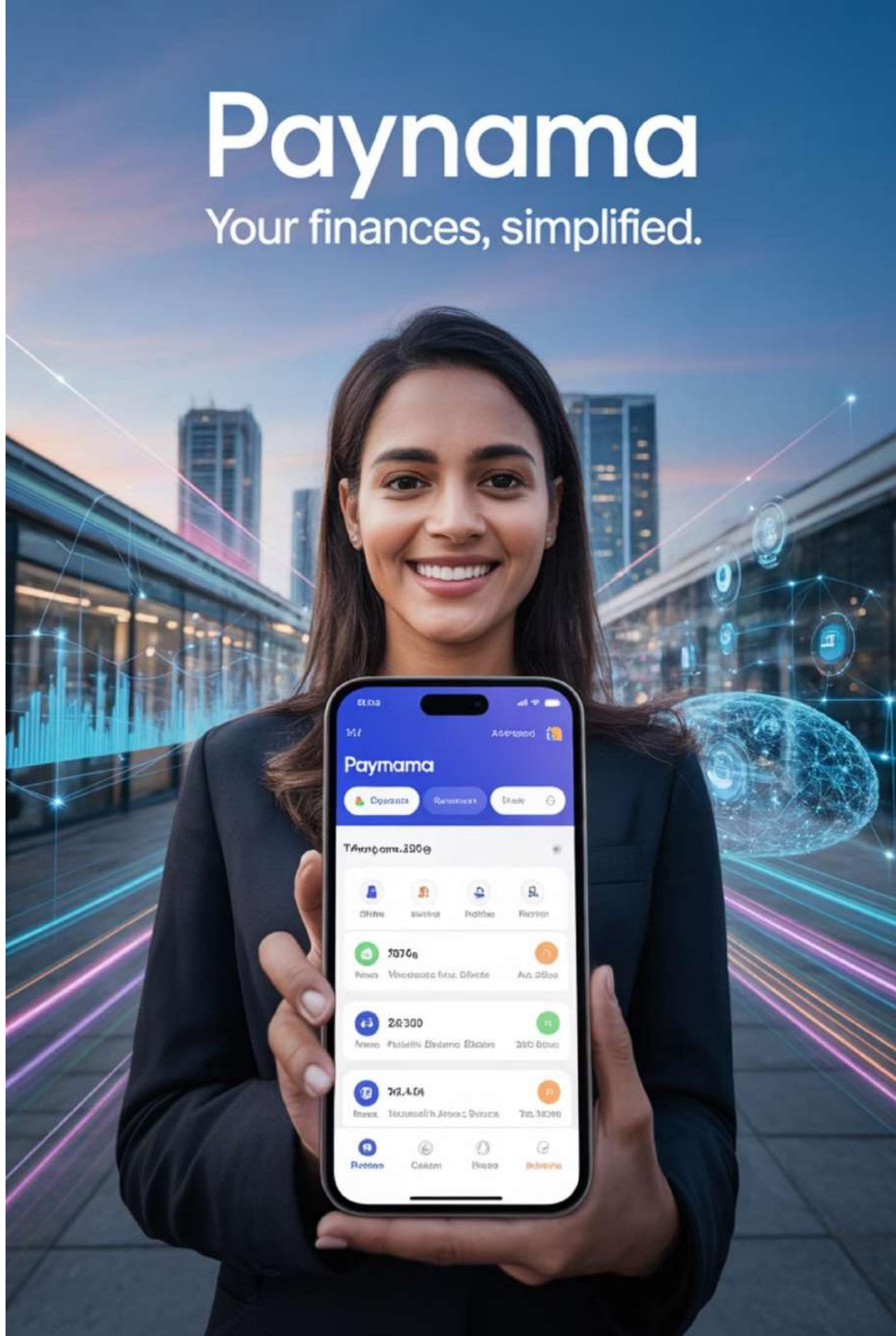
Branch-less banking through Internet banking, digital wallets, mobile banking, and chatbots has revolutionized customer access.

Cost Reduction

Cheaper broadband internet and reduced bandwidth costs enable banks to roll out extensive mobile and internet banking services.

Smart Analytics

CRM tools, data analytics, and AI target customers based on lifestyles and aspirations, enabling ultimate personalization.



Anytime, Anywhere Banking

24/7 Access

Technology has transformed banking from demographic-based clusters to lifestyle-driven, personalized services. Banks now offer card access, telephone banking, ATMs, credit cards, debit cards, and POS access worldwide.

The current trend toward home banking fully exploits technological communications innovations, leading toward a cashless society through cyberbanking.

Core Banking Applications

Fund Transfers

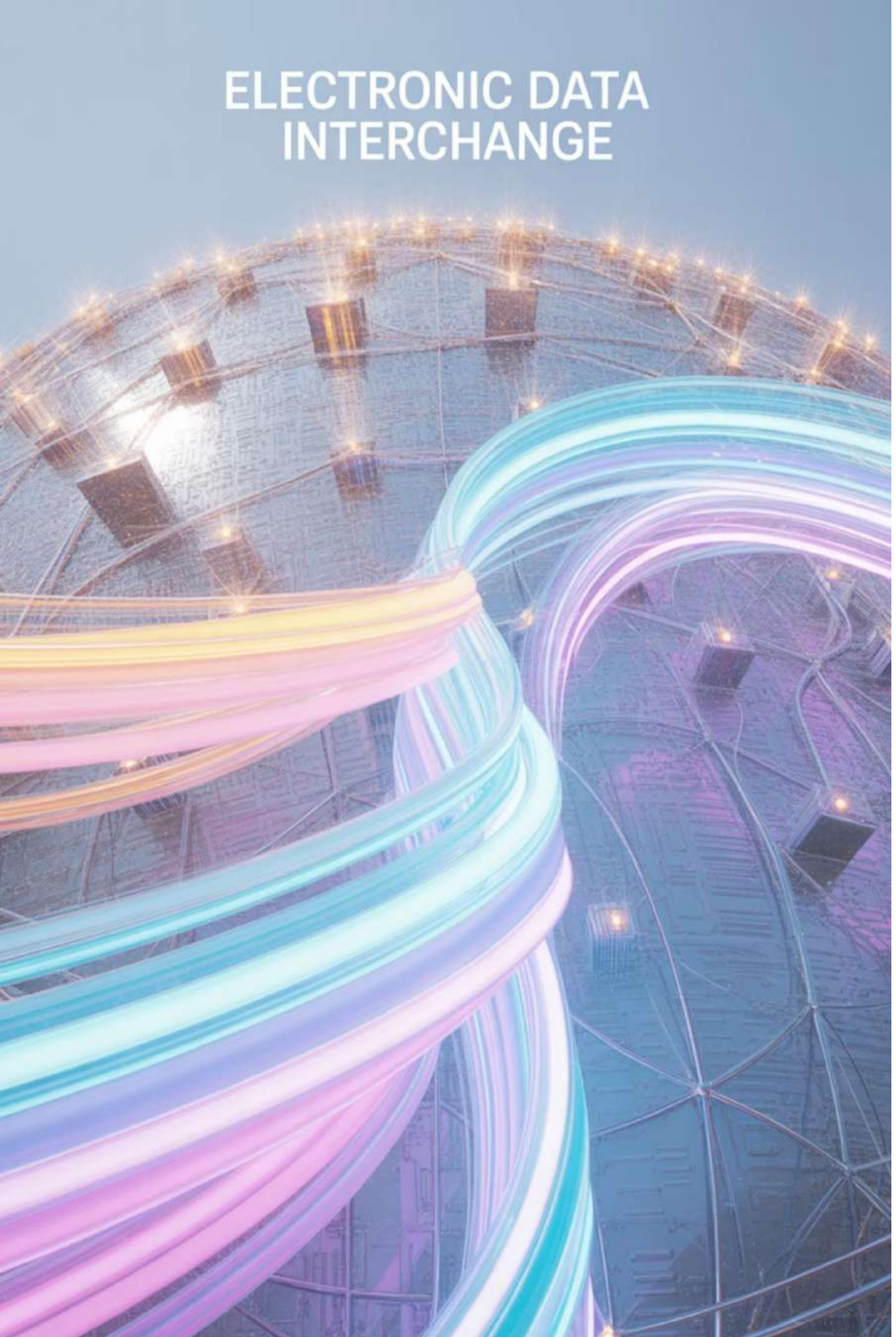
Networks facilitate fund transfer messages, inter-bank settlements, and foreign exchange payment netting with unprecedented speed.

Communication Systems

Email services and inter-branch reconciliation systems enable instant communication and data synchronization across banking networks.

Information Management

Customer databases, MIS systems, and decision support systems provide comprehensive organizational and customer insights.



Electronic Data Interchange (EDI)

EDI represents inter-organizational exchange of business documentation processed by computers with minimal manual intervention. Banks extensively use EDI through SWIFT messages.

01

Electronic Funds Transfer

Credit and debit clearing systems facilitate electronic fund transfers using standardized EDI protocols.

02

EDIFACT Standards

Universal standards and guidelines for EDI communication covering document formats, information sequences, and transmission protocols.

03

Credit Card Networks

Comprehensive EFT systems utilizing EDI standards for seamless transaction processing and settlement.

Digital Communication Revolution

Email Systems

Nearly instantaneous communication between users regardless of system location. Banks use email for inter-office correspondence and important data file transmission, dramatically reducing physical delivery times.

Corporate Websites

Internet platforms for marketing products and services, offering information dissemination, financial advice, account services, and online application processing for banking products.

Management Information Systems

MIS emphasizes data availability and transformation into meaningful information for managerial decision-making. Computer-based systems offer consistent data, reduced redundancy, and enhanced flexibility.

1

Data Collection

Automated gathering of customer demographics, spending habits, and savings patterns.

2

Analysis & Processing

Fast, accurate processing for operational control and management insights.

3

Decision Support

Scientific decision-making in marketing, product development, and strategic planning.

Decision Support Systems (DSS)

Key Features

- Interactive computer-based systems
- Simulation capabilities under various conditions
- Query languages and statistical analyzers
- Complex mathematical modeling

Global Banking Technology Trends

1

Infrastructure Expansion

More ATM installations and non-branch collection points like supermarkets and video kiosks.

2

Digital Payment Systems

Mobile banking, debit/credit cards, smart cards, and comprehensive internet banking solutions.

3

Fee-Based Services

Insurance sales, financial planning, mutual funds, and trusteeship services generating new revenue streams.

4

Advanced Technologies

RTGS, cheque truncation, automated clearing systems, and customized corporate solutions.

Emerging Payment Technologies

Next Generation

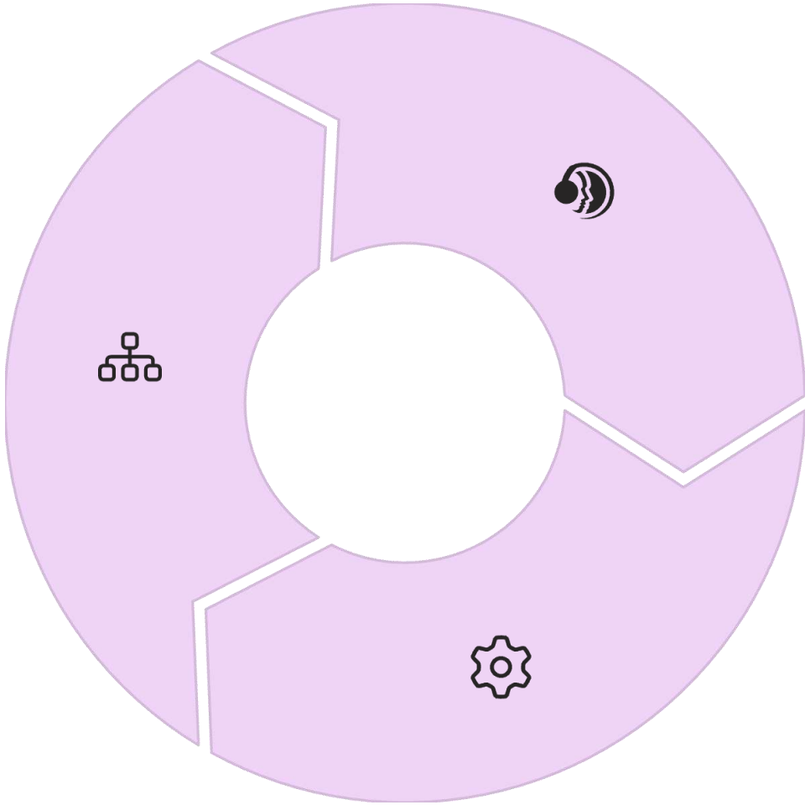
Technologies range from sophisticated EMV and NFC cards to mobile services, wearables, and social media networks. Cryptocurrencies and alternative e-cash forms are emerging, eliminating traditional paper-oriented payment systems.

These advances will intensely impact payment systems, giving new dimensions to banking products, services, and delivery mechanisms globally.

Organizational Impact of IT

Flatter Structures

Reduced hierarchical tiers enable direct liaison between top management and field functionaries.



Self-Managing Groups

Autonomous teams with information access reduce middle management dependency.

Process Changes

Operating procedures adapt to IT needs while maintaining privacy and security standards.

Technology's Impact on Service Quality

Level Playing Field

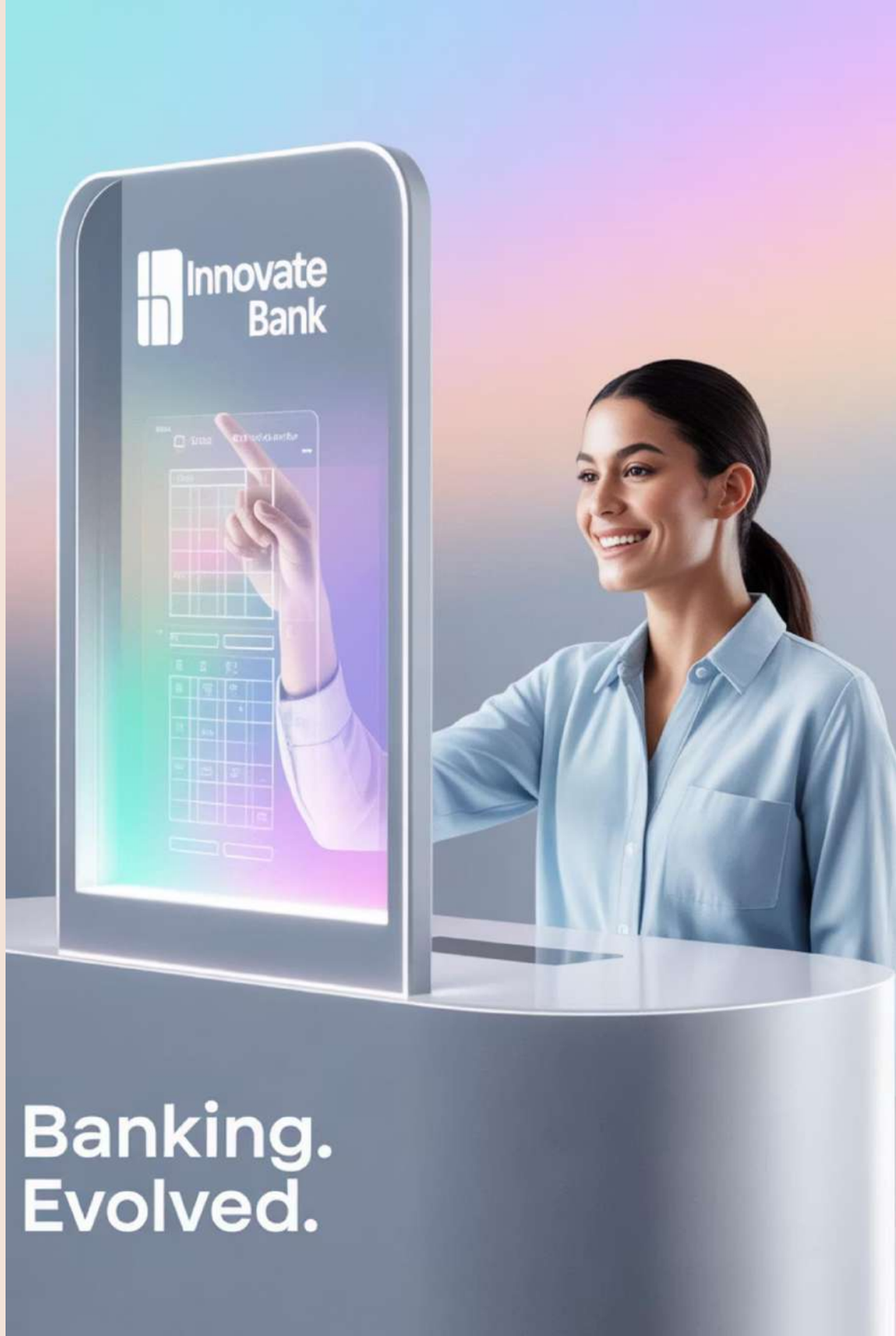
Small banks compete effectively with established institutions using state-of-the-art digital technologies and pricing strategies.

Service Commoditization

Technology forces banks to develop online delivery strategies for broader customer relationships and loyalty retention.

Depersonalization Risk

Reduced personal interaction may negatively impact relationship banking despite technological advances.



EASE 5.0 Initiative

Program Focus

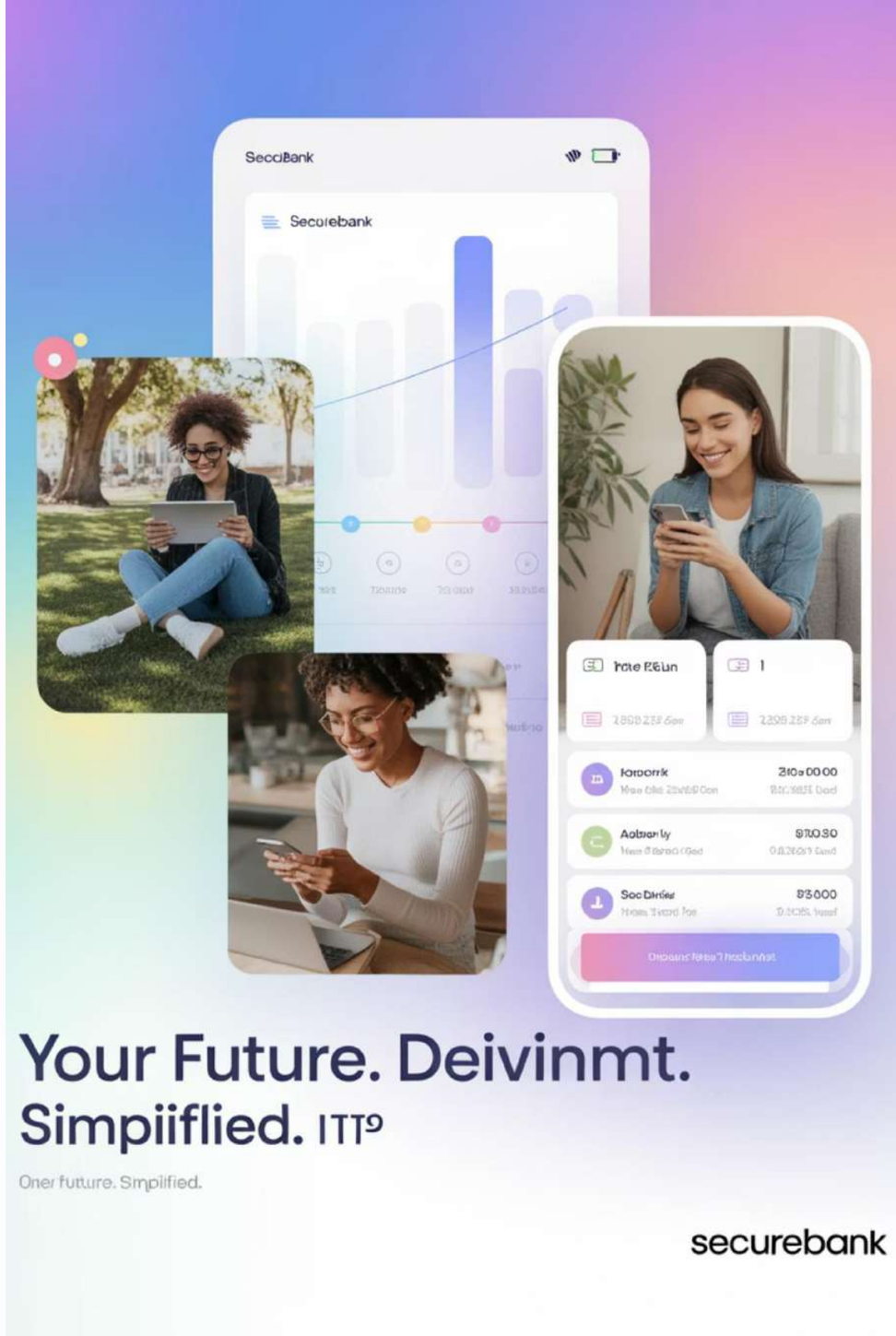
Enhanced Access and Service Excellence program drives data analytics, automation, and digitization in Public Sector Banks to improve profitability and customer service.

Changing Customer Expectations

24x7 Demands

Customers demand fast, accurate, reliable services with high standards. They no longer want physical location constraints, preferring banking facilities at home/business rather than branches.

Ever-evolving disruptive technologies with cheaper telecommunications enable innovative, real-time, 24x7 customer-centric banking services online.



Human Resources Transformation

Enhanced Productivity

Improved efficiency through better employee placement and specialized IT management personnel demand.

Skill-Based Recruitment

Banks recruit specialized IT personnel while managing high turnover rates of computer-skilled professionals.

Continuous Training

Extensive training programs for data scientists, analysts, network administrators, and cybersecurity professionals.

Data Privacy and Security

Customer concerns about financial transaction data misuse and inadequate privacy maintenance create suspicion toward computerized systems. Banks implement data encryption, leakage prevention, and database monitoring.

Access Authority

Individuals should discover automated personal data system existence and infer whether their information exists in systems.

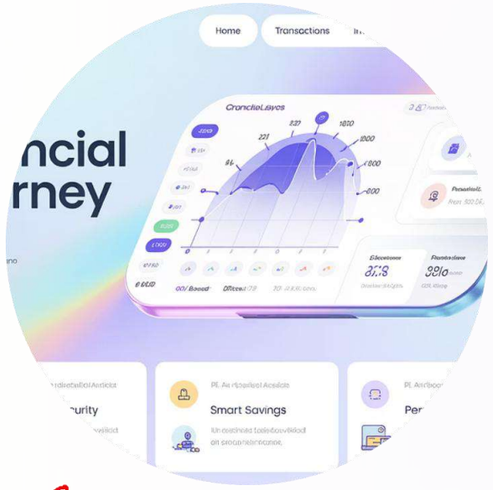
Data Accuracy

Information must be obtained fairly for specific lawful purposes, kept accurate, up-to-date, and no longer than necessary.

Purpose Limitation

Data must be used only for specific stated purposes with disclosure limited to those same purposes.

Emerging Technologies in Banking

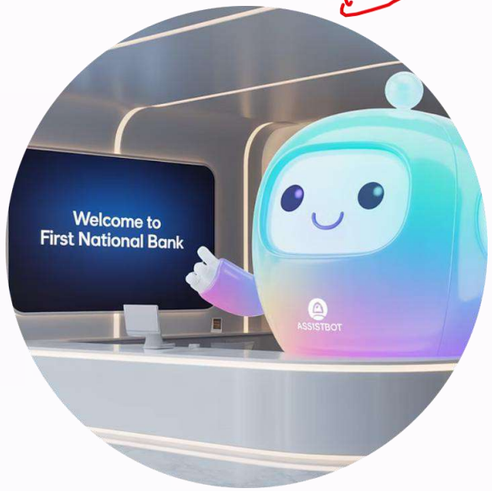


Artificial Intelligence

AI enables personalized customer services, predictive analysis, voice recognition, risk management, and fraud prevention through machine learning and natural language processing.

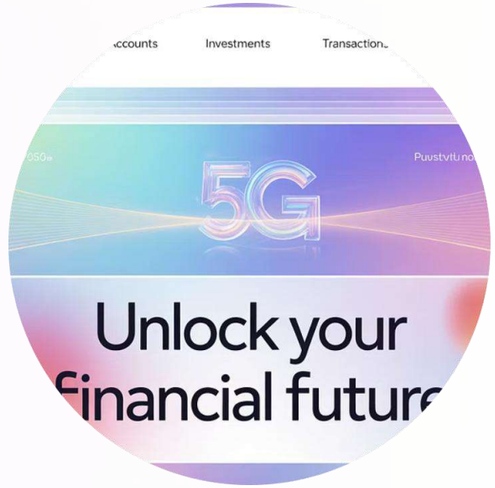
Robotic Process Automation

RPA automates routine business tasks like transaction processing and customer service, allowing employees to focus on complex operations requiring human interaction.



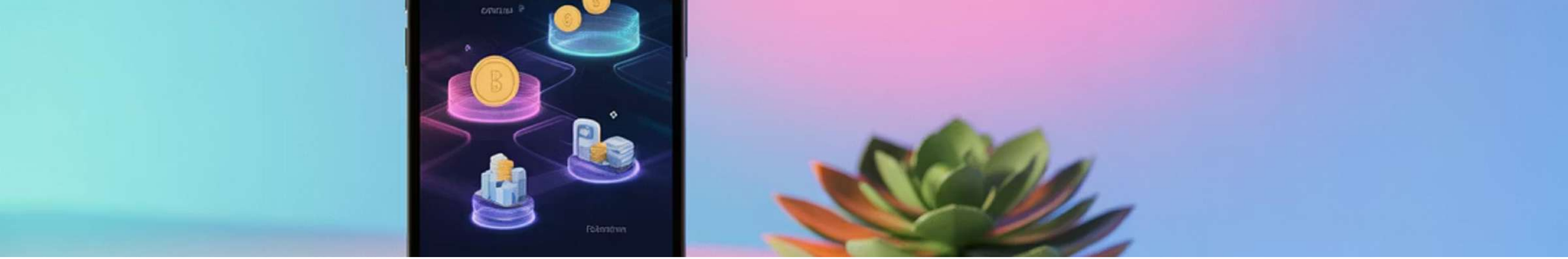
Chatbots

AI-driven conversational agents simulate human interaction for customer service, becoming increasingly sophisticated and responsive despite speech parsing limitations.



5G Networks

Fifth-generation cellular technology offers low latency, high data capacity, and reliability, enabling new mobile banking services and real-time fraud detection.



Digital Lending and Future Outlook

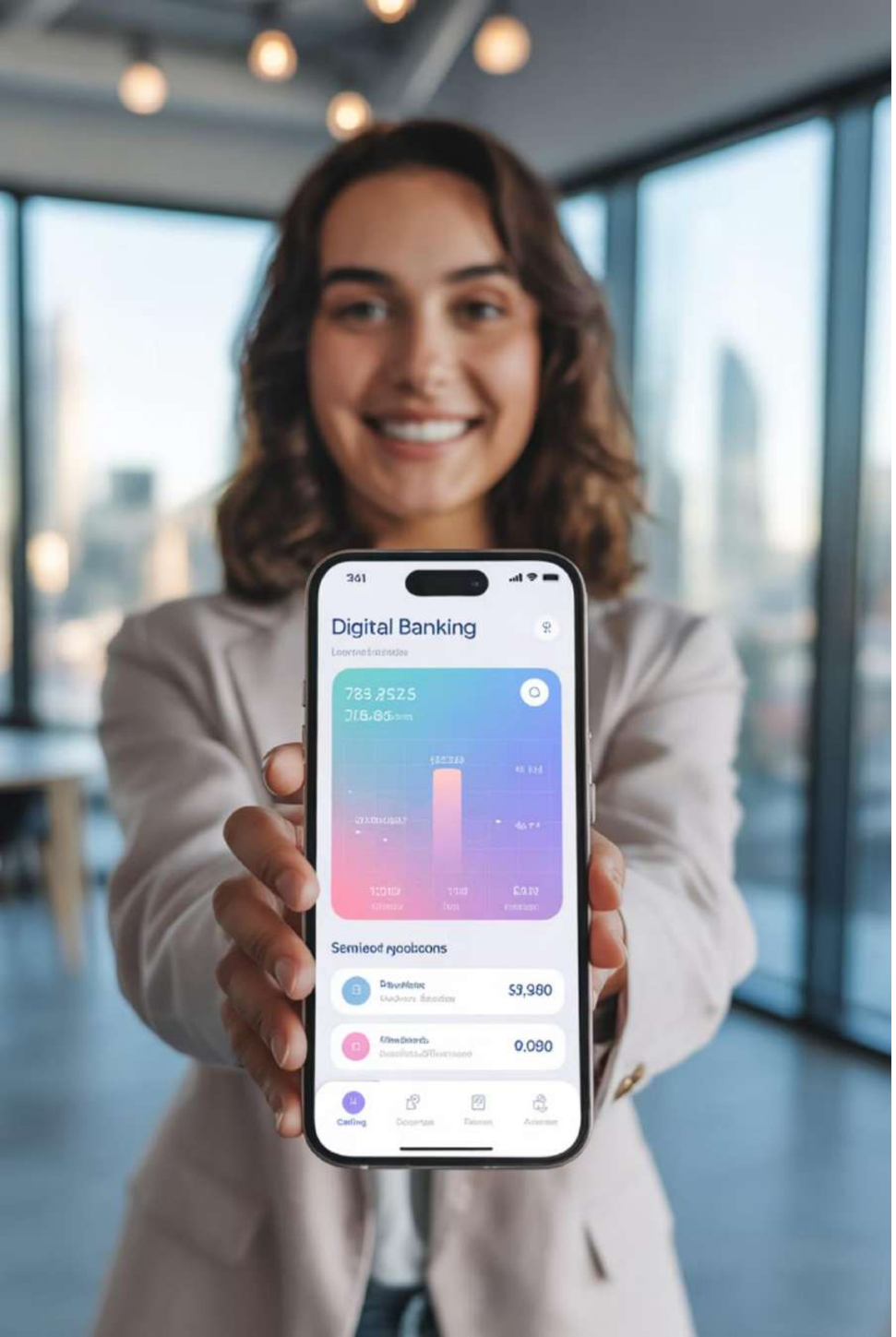
Digital lending platforms utilizing machine learning reach $20 billion market by 2026. RBI guidelines ensure customer protection through standardized processes, transparent pricing, and grievance redressal mechanisms.

20B	19.6%	24x7
Global Market Size	Annual Growth Rate	Service Availability
Digital lending platforms market value by 2026	Compound annual growth over seven years	Continuous banking operations through technology

The banking industry continues evolving with blockchain, cryptocurrencies, virtual reality, and wearable technologies, creating unprecedented changes we can't yet fully imagine.

oliveboard

Security Considerations and Mitigation Measures in Banks



The Digital Banking Landscape

Technology Transformation

Banks have revolutionized operations through digital platforms, mobile banking, wallets, and 24x7 services. Government's push toward a cashless economy has accelerated adoption.

Rising Cyber Threats

Unprecedented growth in digital payments brings renewed focus on cybersecurity. Criminal sophistication and organization produce ominous results for financial institutions.

Critical Risk Areas

Data & Software

Critical resources vulnerable to tampering, unauthorized access, and fraudulent modifications that bypass security controls.

Infrastructure

Hardware components, power systems, and environmental controls requiring regular maintenance to prevent service interruption.

Peopleware

Human resources managing systems face risks from skill stagnation, high turnover, and potential insider threats.

Major Threat Categories

Accidental Damages

Human failures, natural calamities, and improperly tested systems leading to higher failure rates and processing errors.

Environmental Hazards

Fire, power instability, humidity, water damage, and radio interference affecting system operations and data transmission.

Malicious Attacks

Disgruntled employees and cybercriminals exploiting system vulnerabilities for financial gain or service disruption.

Common Cyber Attack Methods

1

ATM Card Skimming

Fraudsters install skimming devices and cameras to capture card data and PINs, creating duplicate cards for unauthorized withdrawals.

2

Phishing/Vishing/Smishing

Spoofed communications designed to extract confidential banking details through emails, phone calls, or text messages.

3

Social Engineering

Imposters pose as bank officials or government agents to pressure customers into revealing sensitive authentication credentials.

Advanced Fraud Techniques

Account Takeover

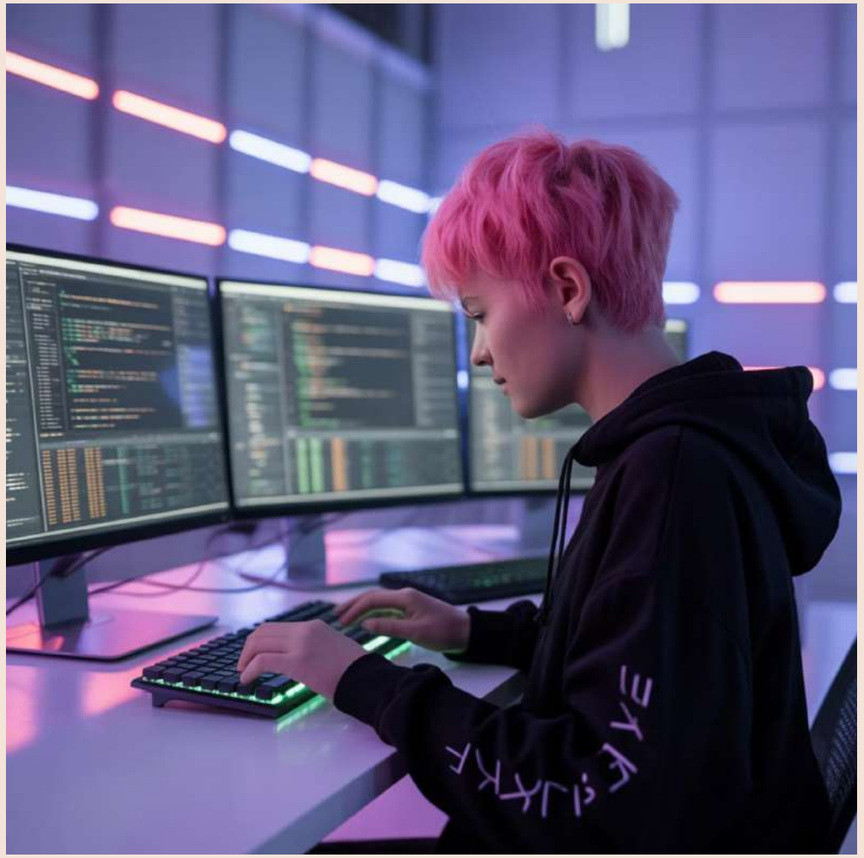
Criminals obtain access through data breaches and impersonate cardholders to request replacement cards or change account details.

Business Email Compromise

Attackers impersonate business networks to fool targets into transferring money to criminal accounts, particularly targeting cross-border payments.

SIM Swapping

Fraudsters collect personal information to obtain duplicate SIM cards, intercepting OTP codes for unauthorized digital transactions.



Control Mechanisms Framework

01

Preventive Controls

Eliminate errors before they occur through good user interface design, input validation, and security protocols.

02

Detective Controls

Identify irregularities after occurrence through monitoring systems, audit trails, and anomaly detection.

03

Corrective Controls

Remove or reduce effects of identified problems through automated recovery processes and incident response.

Physical Security Controls

Access Control

Restrict physical access to computer rooms, media, and documentation. Implement password protection, PINs, and biometric verification systems.

Output Security

Preserve hard copies of critical reports with proper access controls and maintain secure storage protocols.

Environmental Protection

Regular checks of fire extinguishers, smoke detectors, and hardware failure protections to ensure operational continuity.

Logical & Internal Controls

Authentication & Authorization

Operating systems and databases control access at directory, file, record, and field levels. Systems administration manages user authentication and authorization.

- User identity verification
- Minimum access privileges
- Session management

Application Controls

Built-in accounting and administrative controls ensure data accuracy and operational efficiency.

- Dual controls and authorizations
- Data validation checks
- Numerical sequencing
- Transaction limits verification

Data Protection Mechanisms

Data Encryption

Systematic conversion of data into ciphertext using algorithms and keys. Message authentication codes (MAC) verify data integrity during transmission.

Audit Trails

Chronological records of all system events, maintaining accounting and operations trails for monitoring and irregularity detection.

Checksums

Generated numbers based on key data items to ensure file integrity, particularly critical in branch banking environments.

Computer Audit Approaches

Audit Around

Examine input/output without direct software examination. Suitable for simple systems with clear audit trails.

Audit Through

Use computers to test logic and controls within systems. Essential for complex applications with large data volumes.

Audit With

Deploy Computer-Aided Audit Tools (CAATs) for efficient evaluation of computerized files and internal controls.

Information System Security Objectives

Confidentiality

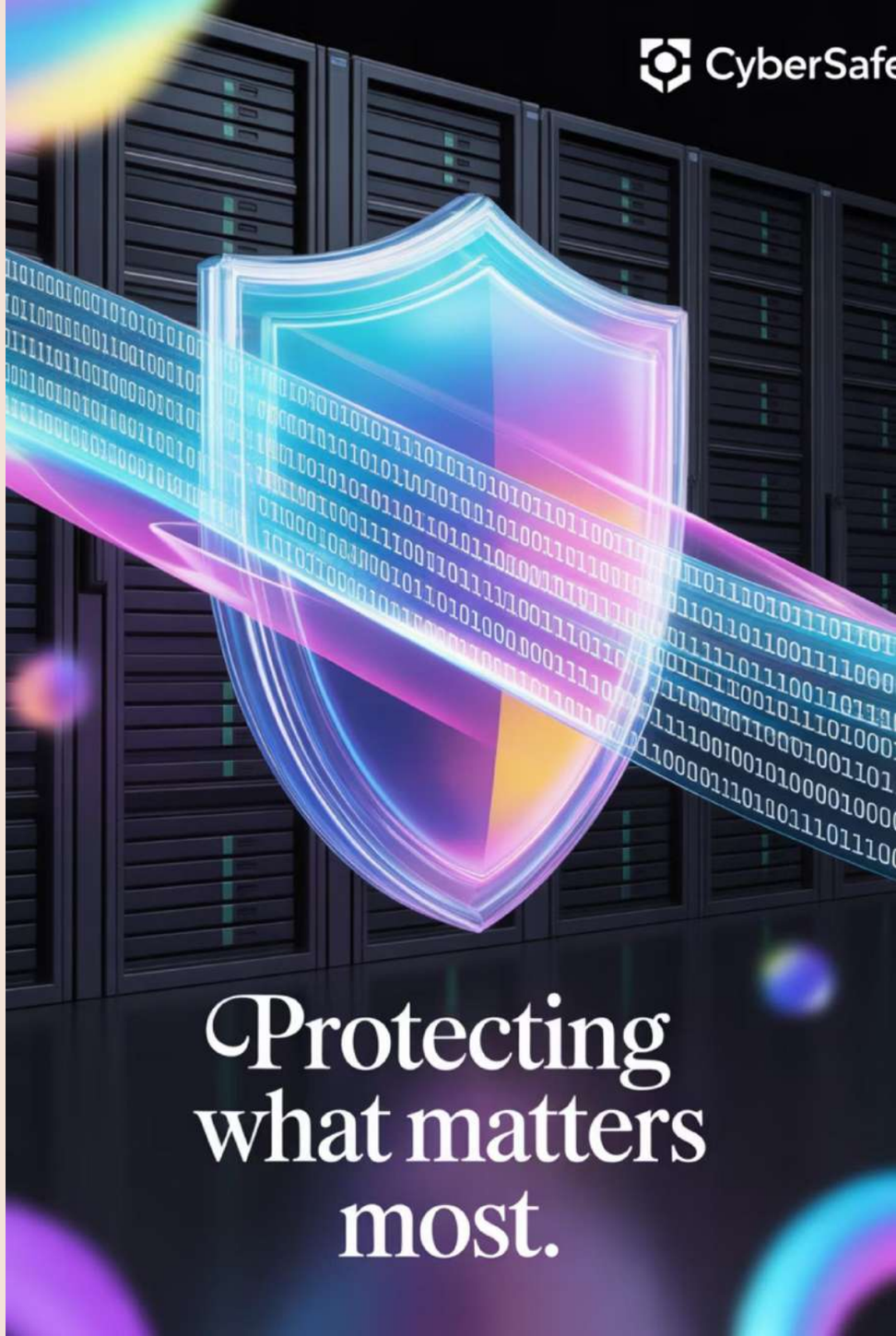
Ensure information disclosure only to authorized users through access controls and encryption protocols.

Integrity

Guarantee that information modifications occur only by authorized users in authorized manners.

Availability

Maintain information accessibility to authorized personnel when required for business operations.



Authentication Methods

Knowledge Factor

Something the user knows - passwords, PINs, or cryptographic keys that verify identity through secret information.

Possession Factor

Something the user possesses - ATM cards, smart cards, or tokens that provide physical authentication credentials.

Biometric Factor

Something the user is - fingerprints, iris scanning, facial recognition, or voice patterns for unique identification.

Major Cybersecurity Threats

1

Malware & Viruses

Malicious software programs designed to harm computers, steal data, and destroy information systems.

2

DDoS Attacks

Distributed denial-of-service attacks using compromised systems to overwhelm and shut down target services.

3

Ransomware

Malicious software that blocks data access or threatens to publish victim information unless ransom is paid.

Safe Banking Practices

Password Security

- Change passwords regularly
- Create strong, complex passwords
- Disable auto-save features
- Never share credentials

Online Behavior

- Avoid public computer banking
- Type URLs directly
- Monitor accounts regularly
- Use licensed antivirus software

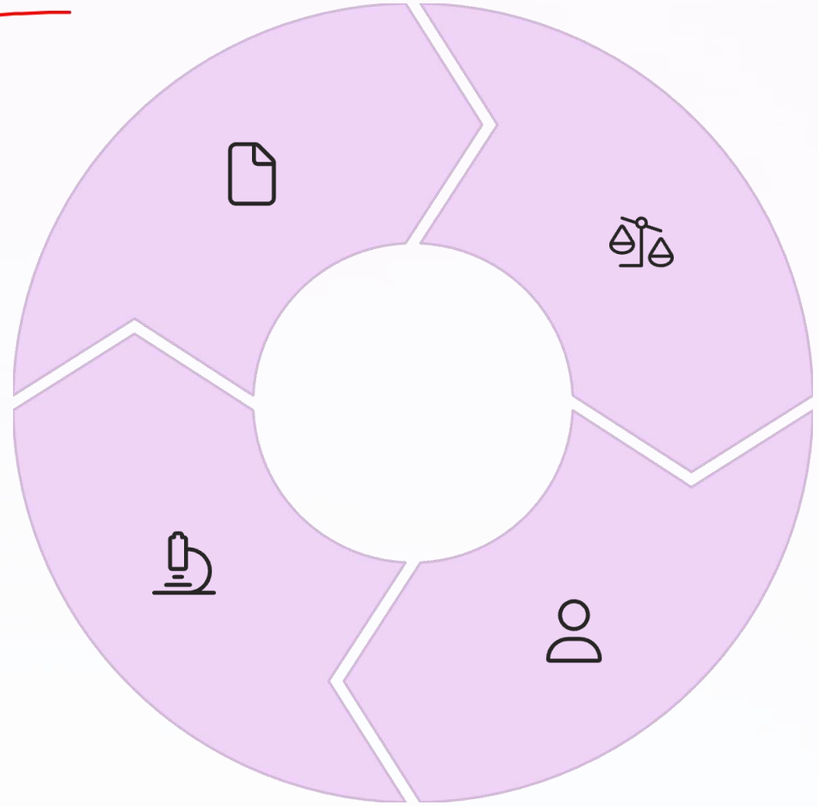
Disaster Recovery Planning

Awareness

Identify critical activities, systems, and resources necessary for business continuity during disasters.

Testing

Conduct regular exercises including tabletop drills and live migration tests to verify plan effectiveness.



Legal & Financial

Maintain proper inventory, insurance coverage, and warranty documentation for all IT assets.

Preparation

Establish core teams, alternate sites, data backups, and comprehensive recovery documentation.

Recovery Objectives

0

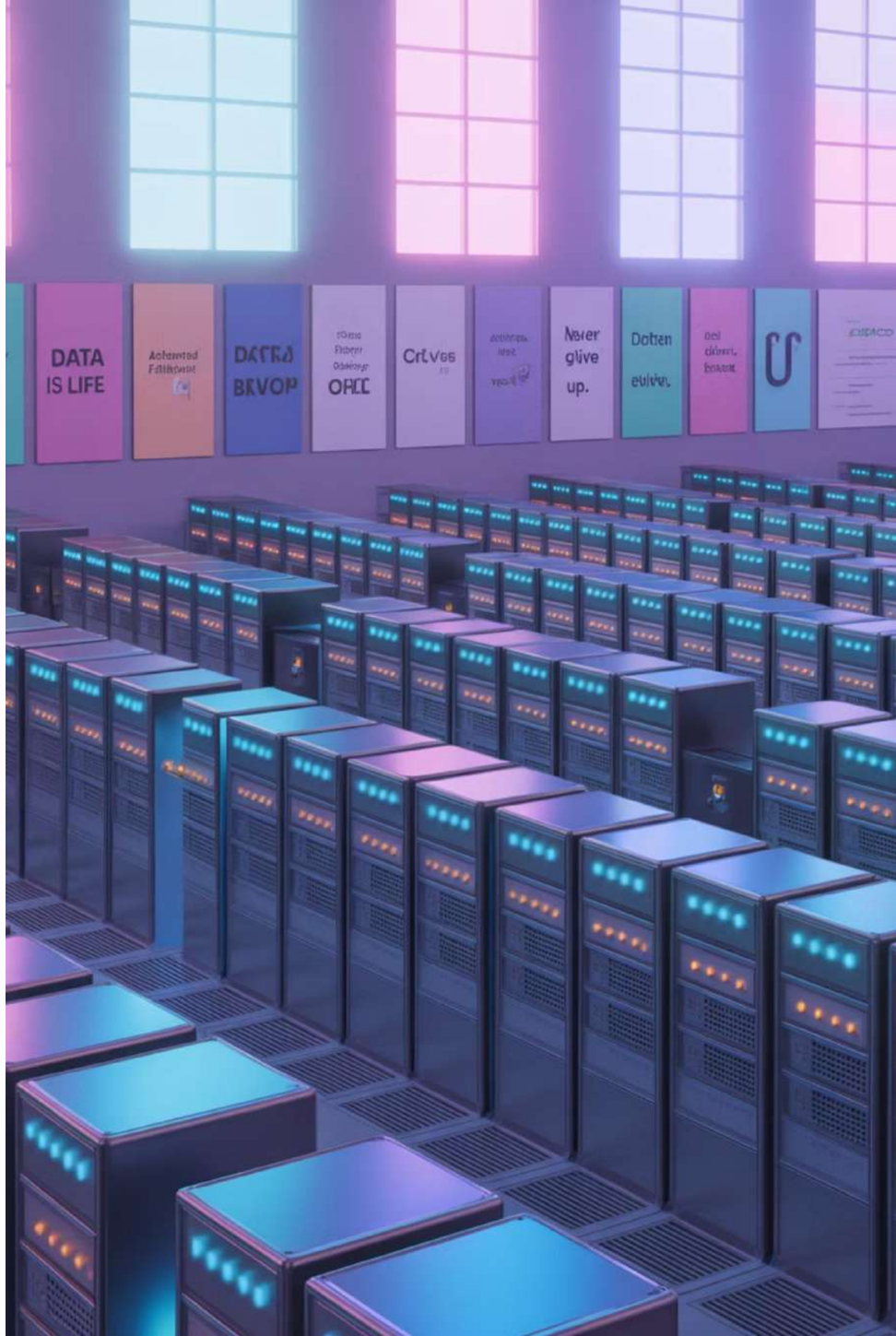
Recovery Point Objective

RPO represents the maximum acceptable data loss measured in time. Banks should ideally maintain zero RPO.

24/7

Recovery Time Objective

RTO defines the maximum acceptable downtime. Critical banking services require minimal recovery time.



Legal Framework: IT Act 2000

1

Electronic Recognition

Provides legal validation for Electronic Data Interchange, Electronic Records, and Electronic Signatures with non-repudiation assurance.

2

Cybercrime Definitions

Identifies IT offences including hacking, data tampering, obscenity, unauthorized access, and breach of confidentiality.

3

Legal Amendments

Updates Indian Penal Code, Evidence Act, and RBI Act to include electronic records and digital signatures.

RBI Cybersecurity Framework

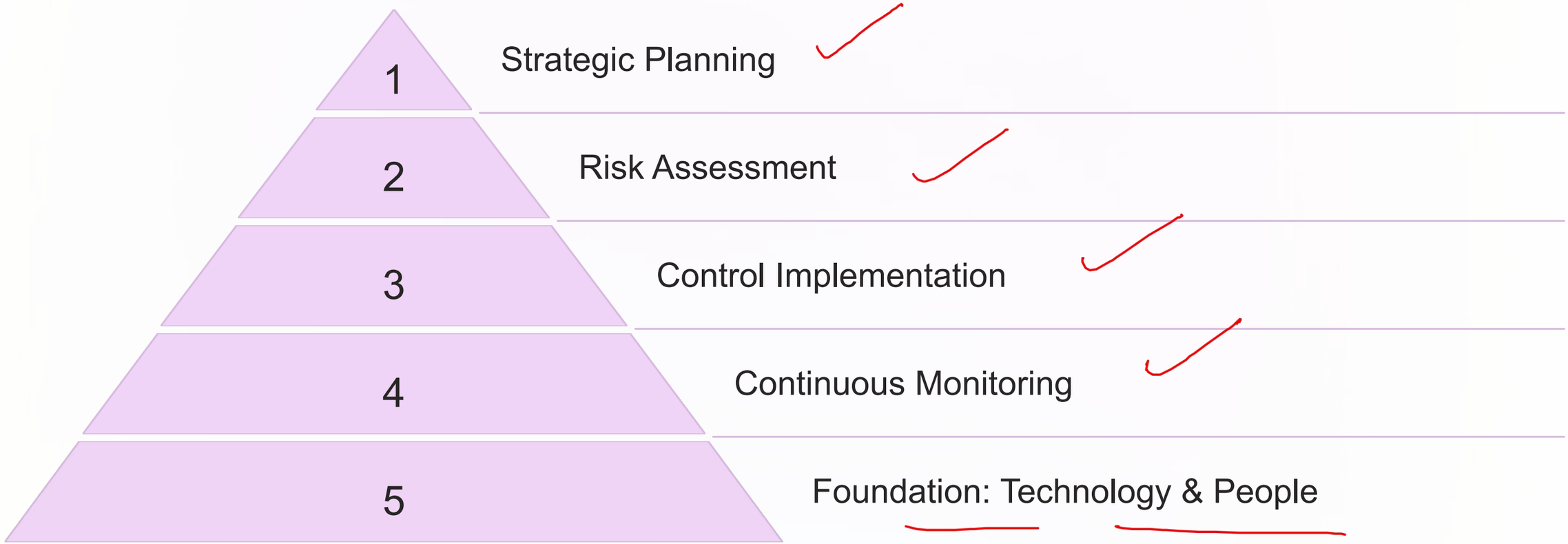
Key Requirements

- Board-approved cybersecurity policy
- Security Operations Centre (SOC)
- Secure IT architecture design
- Customer information protection

Governance & Reporting

- Cyber Crisis Management Plan
- Preparedness indicators
- Incident reporting to RBI
- Stakeholder awareness programs

Building Cyber Resilience



Banks must embed cybersecurity into strategic business planning, treating risk management as value creation rather than cost. Effective cyber resilience requires comprehensive approach combining technology, processes, and people development.

Thank You

Comment Your Feedback

90%