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Digital Public Infrastructure
Technology Underpinnings & Policy Perspectives

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Agenda

- Digital Payments
- DPI - An Introduction
- DPI - Fintech Eco-System
- DPI - Emerging Policy Perspectives
- DPI - Regulatory Landscape
- Conclusion

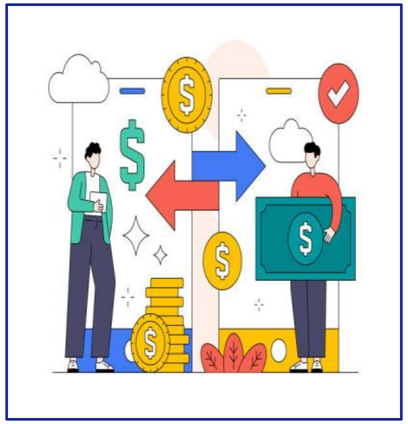
Payments and Frictions

Historically payments space is dominated by commercial banks

The processes followed by commercial banks over time resulted in multiple frictions in payment processes

Food for Classroom Discussion !!!

Accessibility



Affordability

Availability

Features of bank payments

- KYC-Challenges
- Payment Frictions
- Access to Credit

Cross-border payments involved even more frictions compared to domestic payments

Friction Solvers - Banks (with tech entities as enablers)

Initially regulations focused on banking process improvement to solve the payment frictions

Banking technology evolved over the end of 20th Century to support the banks in their journey towards reducing payment frictions

Food for Workshop Discussion !!!

Cash Dealings

Cheque Payments

Card Swipes

Non-Bank Tech Players

- ATM Infra Operators
- CTS Solution Providers
- EDC Machine Suppliers

Resulting in removing certain frictions in payments with fast / quick settlement solutions

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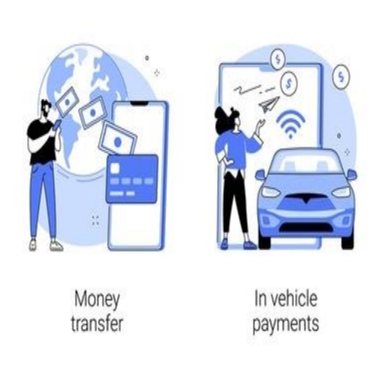
Friction Solvers - Fintech Entities

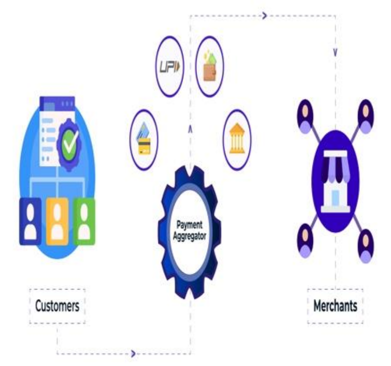
Emergence of fintechs spurred initiatives for solving frictions & promoting digital payments

Fintech firms focused on specific processes and technologies for easing the frictions

Food for Classroom Discussion !!!

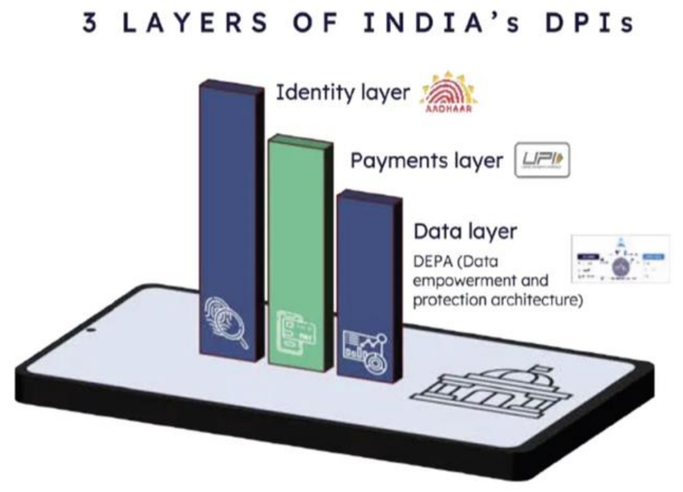


PPIs - Store of Money



PAs - Processing of Payment

LSPs – Digital Lending Facilitation



While fintech firms capture mainstream attention, they are built upon India's Digital Public Infrastructure

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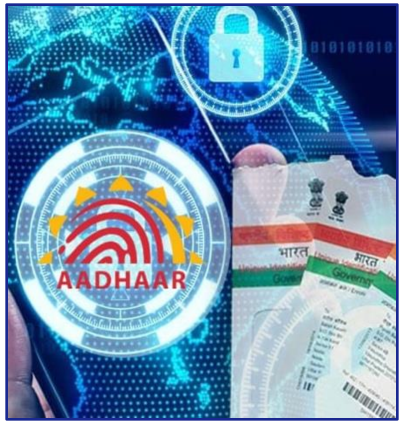
DPI Rail 1: *Identity*

Aadhaar constituted the first component in building the Digital Public Infrastructure

Aadhaar simplified the processes of authentication, verification and validation in the process of generation of data



e-Identity

e-KYC

e-Sign

Food for Policy thought !!!

Journey of Aadhaar so far

- Foundational by Construct
- Acceptability by Consent
- Security by Standards

Aadhaar thus emerged as solution to many other problems associated with identity verification

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DPI Rail 2: *Payments*

Digital payments constituted the second component in the Digital Public Infrastructure

Digital payments have become simple, frictionless, ubiquitous, and Interoperable

Food for Policy thought !!!

Interface

Instant

Infrastructure

Journey of UPI so far

- Popularized by TPAPs
- Powered by QR Codes
- Payment Infra with Customers

Digital payments enabled value exchange for small value transactions and personal merchants

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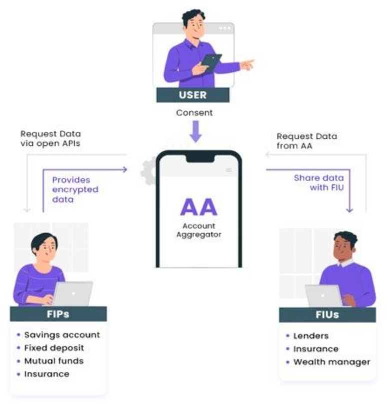
DPI Rail 3: *Data-Sharing*

Automated data sharing constituted the final component in the Digital Public Infrastructure

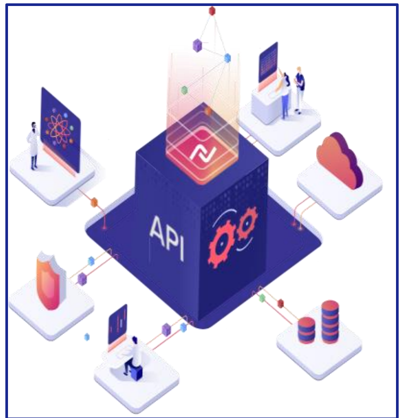
Automated consent through single window points enable easy flow of data and information across stakeholders

Food for Policy thought !!!

Storing



Sharing



Standardizing

Journey of data-sharing so far

- Regulated Lenders
- Loan Service Providers
- P2P Lending Platforms

Consent management framework thus solidifies the data empowerment in the hands of data owners

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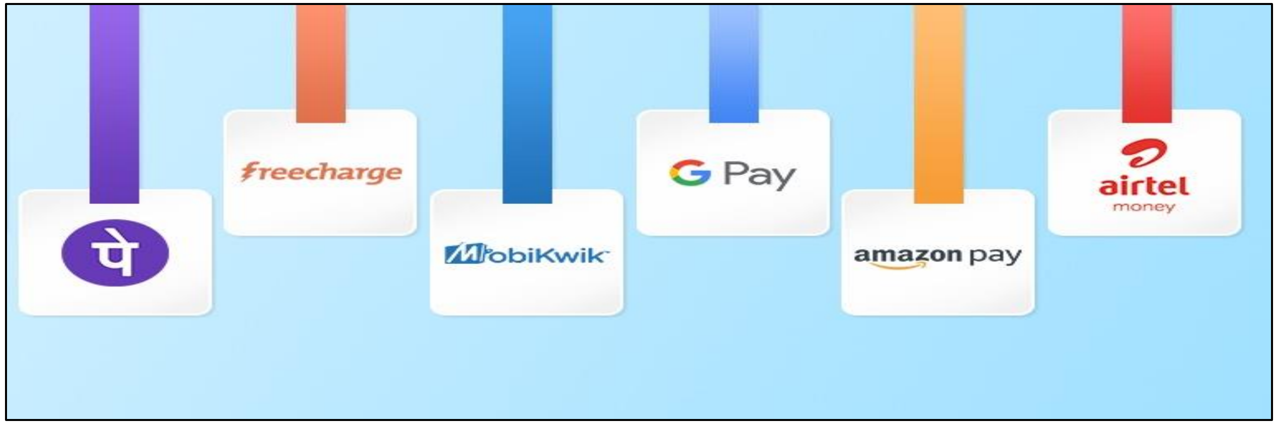
Pre-Paid Payment Instruments (PPIs)

Specialized set of licensing category for electronic wallet providers

Instruments that facilitate purchase of goods and services, financial services, remittance facilities, etc., against the value stored therein.

Food for Policy Discussion !!!



Full-KYC PPI

Small-PPI (2 Types)

Closed-System PPIs

Other Specialisations

- FASTags
- NETC Travel Cards
- Gift Cards

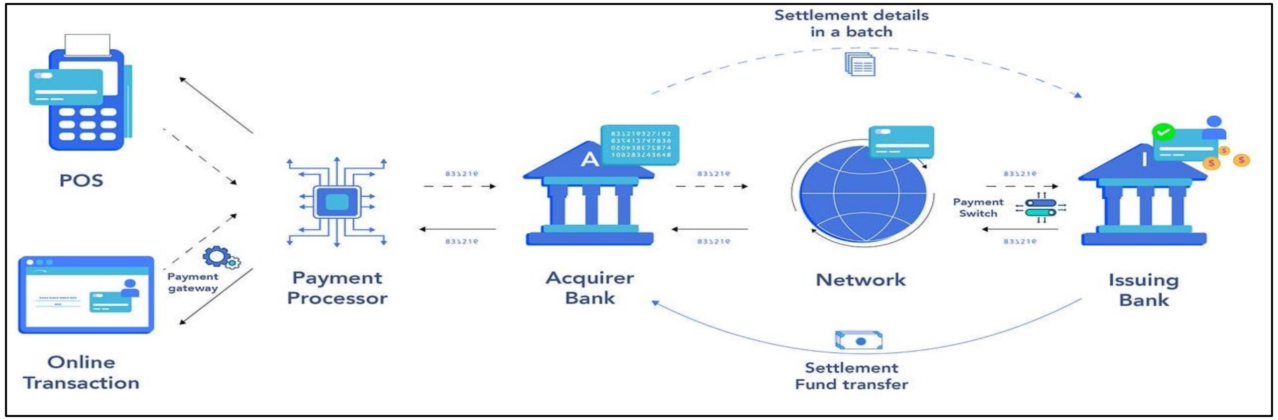
PPIs acted as a training ground for India's cashless journey - expanding access, fueling fintech innovation, and driving regulatory maturity.

Payment Aggregators

Specialized set of licensed players regulated by RBI in Payments space

PAs enable merchants to accept credit and debit card payments by connecting them to the broader financial infrastructure.

Food for Policy Discussion !!!



Online | Offline | Cross-Border

Technology

- Point-of-Sale (PoS) Machines
- Payment Gateways
- Payment Soundboxes

A rapidly emerging payment orchestration service is occupying the news headlines in recent times

Digital Lending Service Providers (LSPs)

Specialized set of entities to facilitate digital lending by regulated lenders

LSPs leverage their technology and data for facilitating digital lending through innovative algorithm credit scoring models

Food for Policy Discussion !!!

Loan Origination | Loan Management | Loan Collection

Data-based lending

- Financial Data
- Payments Data
- Alternate Data

LSPs finally circle the fintech entity life-cycle - providing opportunities for monetizing payments data, scalability as neo-banks, and transformation into commercial banks.

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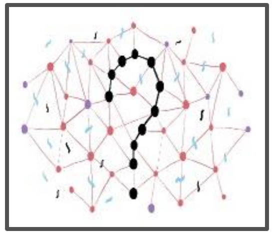
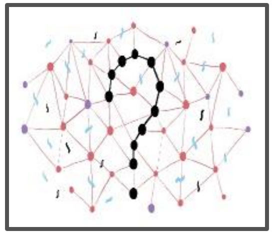
Data Protection: How to protect the data handled by fintech firms?



The passage of the Digital Personal Data Protection Act in 2023 is a landmark event in the fintech regulatory and policy landscape. It facilitates orderly development of data protection standards in the Industry.

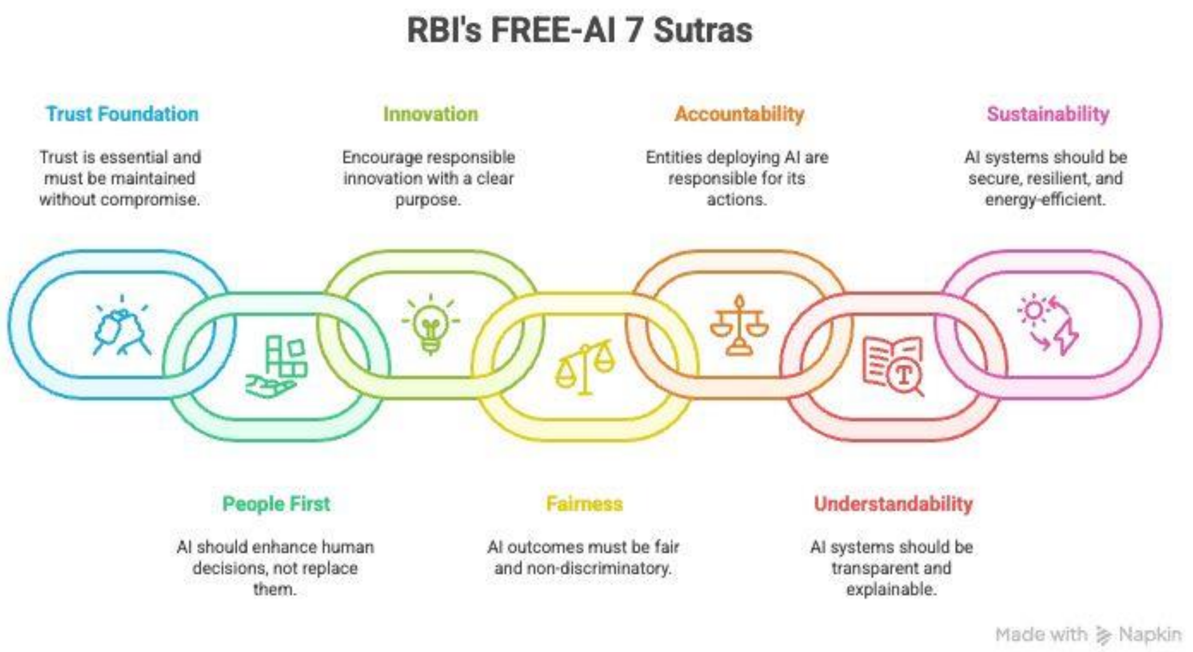
- Data Principal
  - Notice / Consent
  - Rights Management
- Data Fiduciary
  - Technical Safeguards
  - Impact Assessment
- Data Processor
  - Domestic
  - International

Algorithms: How to regulate AI algorithms used in fintech industry?

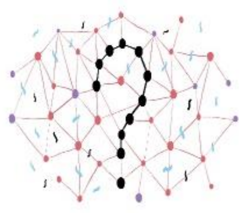


The passage of the EU Artificial Intelligence (AI) Act in 2023 is a significant step in the regulation of AI algorithms. Fintech firms using AI algorithms henceforth will be monitored for compliance as similar regulations are rolled out internationally.

- Fairness
  - Algorithm bias
  - Algorithm grooming
- Transparency
  - Training datasets
  - Algorithms deployed
- Auditability
  - Accountability
  - Explainability

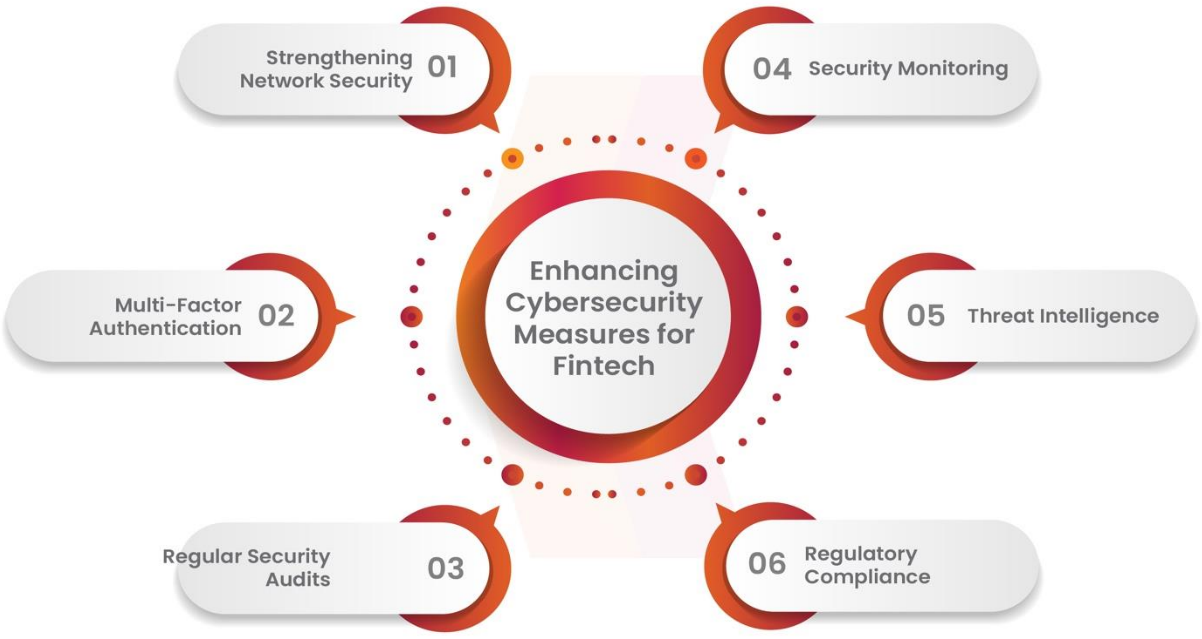


Security: How to foolproof fintech eco-system from cyber attack?



Fintech platforms require continuous protection from cyber security incidents that threaten the integrity of financial system. Regulatory guidelines / industry standards contribute to this effort with multiple frameworks.

- Cyber Frauds
  - Social Engineering
  - Spoofing Techniques
- Cyber Attacks
  - Ransomware
  - DDOS Attacks
- Cyber Resilience
  - National Center
  - Incident Reporting



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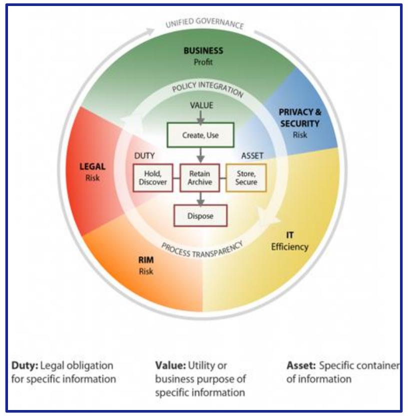
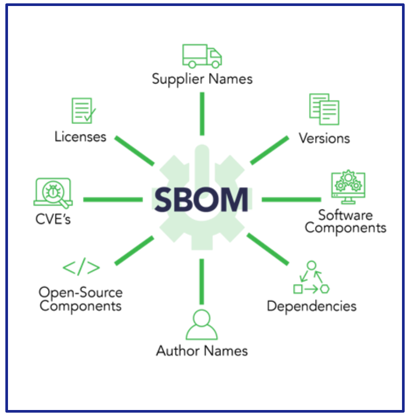
Policy Responses - Govt.,

Govt., has in recent years enhanced its enforcement framework for digital transactions

Extending requirements for cyber security and cyber resilience in telecom industry and cracking down on cyber crimes

Food for Classroom Discussion !!!





Loan Apps

Crypto Scams

Online Gaming

Policy Measures

- Telecom KYC
- Telecom Cyber Security
- Telecom Fraud Intelligence

Working on the recommendations of the Parliamentary Standing Committee

Regulatory Responses - RBI

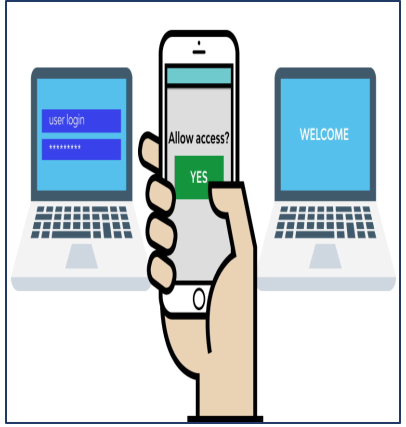
RBI has in recent years enhanced its regulatory framework for digital payments

Extending requirements for consumer protection in digital payments and while dealing with non-bank payment system operators

Food for Classroom Discussion !!!

Mobile Banking

Card Tokenization



Multi-Factor Auth

Protecting financial system

- Digital Infra (NPCI)
- Digital Trust Agency (DIGITA)
- Digital Payments Intelligence

Extending the perimeter of regulation to service providers and agency entities

Policy Responses - Others

Govt. has in recent years enhanced cyber security focus through new laws & regulations

Extending requirements for cyber security in telecom industry and ramping up focus on national strategy for cyber security

Food for Classroom Discussion !!!

FIU-IND

CERT-IN

Critical Infra

Other Industry Bodies

- RBI-IH (mulehunter.ai)
- IDRBT (Bank.in)
- Self-Regulatory Organizations

With new policy frameworks further in progress in IT Regulation through Digital India Act (Proposed)

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Conclusion

Digital Payments

Friction Sources (Process / Systems)	Friction Solutions (Banks / Fintechs)

Powered by Digital Public Infrastructure

Identity Layer	Payments Layer	Data Layer

Extended Use Cases

PPIs	PAs	LSPs

Emerging Policy Perspectives

Data Protection	Algo-Accountability	Cyber Security

Policy Response by

Govt.,	RBI	Others

Thank You

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