Highly Secure Paperless Banking with high cost optimization using PKI

Going Completely Paperless

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Executive Chairman, eMudhra Limited

- o Going Green..!!
- o Evolution of Automation in Banking
- o Security in Online Banking
    - o Cyber threats
    - o Banking Security Architecture
    - o Use of Digital Signatures
- o Going Paperless
    - o Banking Applications
    - o Paper workflows and Paper to Paperless
    - o India PKI Landscape
    - o Use of e-Sign/Digital Signatures to go paperless
    - o What a paperless office solution must have?
- o Use cases in Banking, Insurance, Mutual Funds & Brokerages
- o About eMudhra

"There is nothing so useless as doing efficiently that which should not be done at all"

PETER DRUCKER

SO WHY PRINT PAPER, SIGN AND SCAN WHEN YOU CAN DIGITALLY SIGN?

Branch Banking

Semi-Automated Banking

Centralized Core Banking

Mobile and Anytime Banking

FINANCIAL INCLUSION

Affordable access to banking even for lower income segments

Ability to provide Savings/Deposit/Payment/Transfer/Credit and Insurance services

CUSTOMER EXPERIENCE

Anytime/Anywhere access to funds

Centralized view of deposits/loans and other products

Competitive deposit/lending as a result of lower operating costs
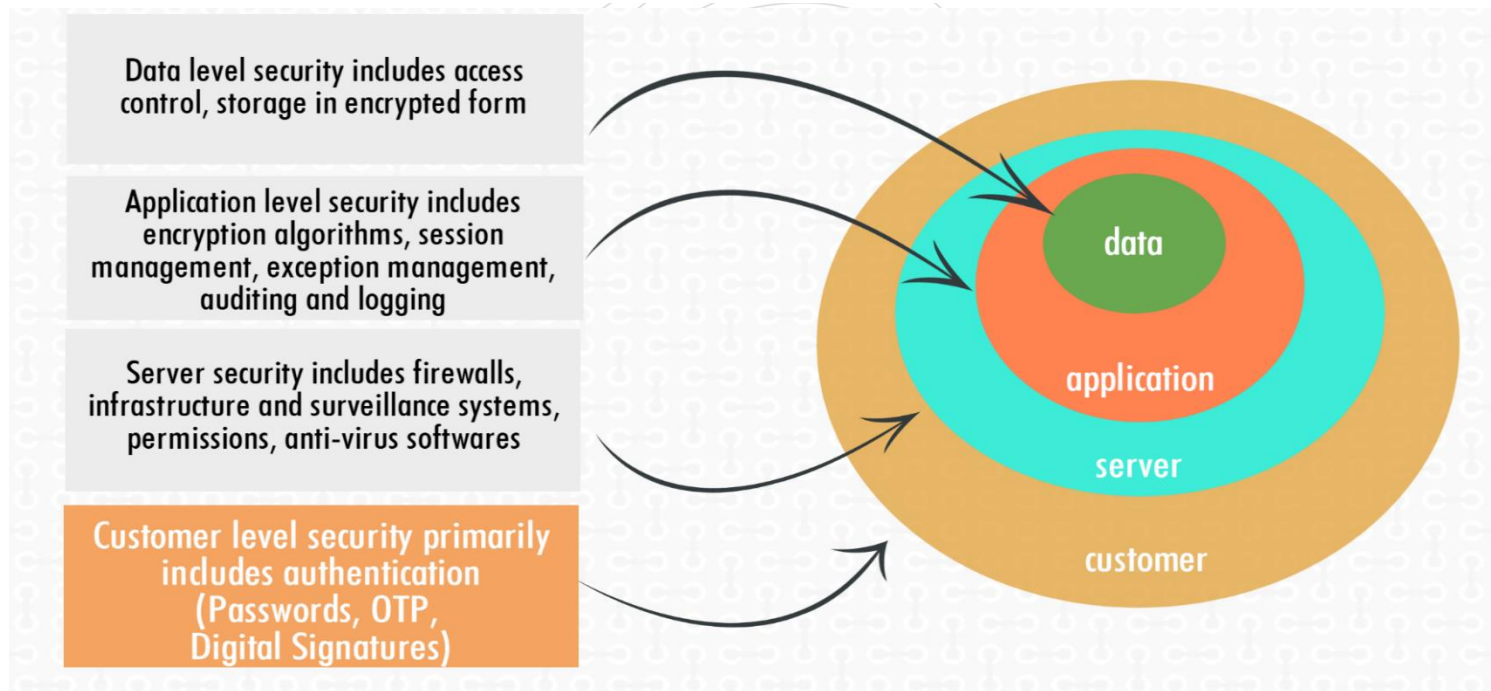
STREAMLINED OPERATIONS

Real-time settlement systems

Easier regulatory compliance and oversight

- Automation in Banking presents unique Security Challenges as a result of
  - **Need to present large scale customer access across multiple touch points consisting of sensitive information**
- These challenges include
  - Hacking Threats
  - Man-in-the middle attack
  - Phishing attacks
  - Email Fraud
  - Impersonation Fraud

- Centralized and multi-channel banking imposes multiple security threats which can be overcome with the adoption of multi layered security including Digital Signatures
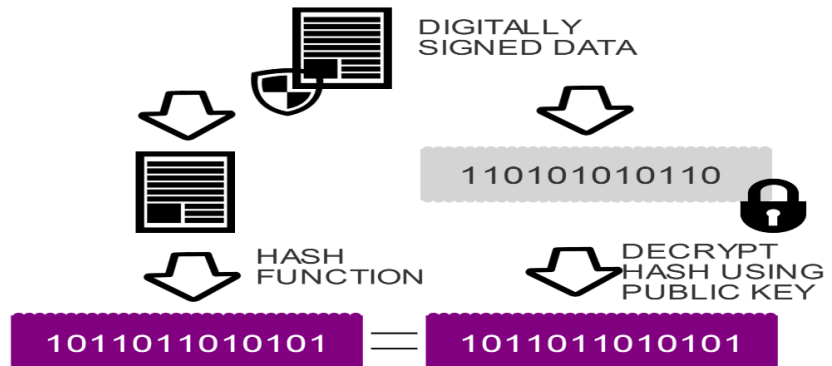
Data level security includes access control, storage in encrypted form

Application level security includes encryption algorithms, session management, exception management, auditing and logging

Server security includes firewalls, infrastructure and surveillance systems, permissions, anti-virus softwares

Customer level security primarily includes authentication (Passwords, OTP, Digital Signatures)

data

application

server

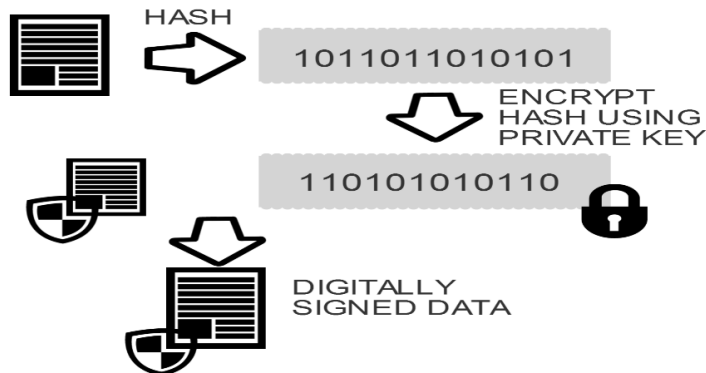customer

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SINGLE FACTOR

Typically only uses a username and password to grant access. Onus on user to create complex passwords to prevent easy access

MULTI FACTOR

Provides userid and PIN plus another form of authentication either using token, card or digital signatures
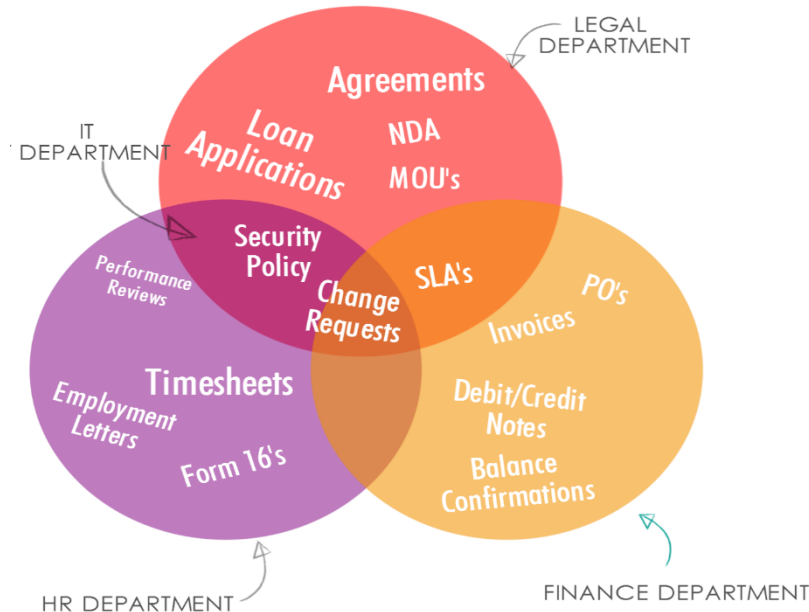
HOW DIGITAL SIGNATURE WORKS?

HASH

1011011010101

ENCRYPT HASH USING PRIVATE KEY

11010101010110

DIGITALLY SIGNED DATA

DIGITALLY SIGNED DATA

110101010110

HASH FUNCTION

DECRYPT HASH USING PUBLIC KEY

1011011010101 = 1011011010101

Thus Digital Signatures can be used to reduce fraud and enhance security in online payment systems
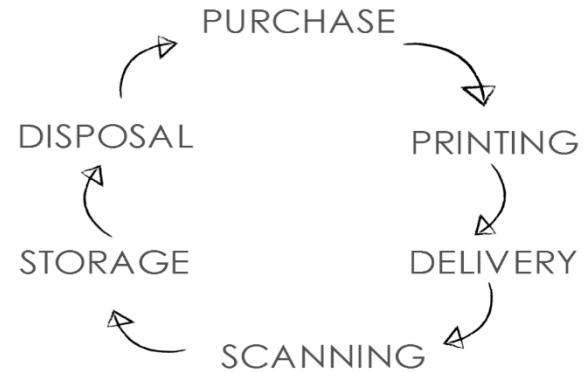
NOW MOVING TO HOW DIGITAL SIGNATURES/E-SIGN CAN BE USED TO GO PAPERLESS

While these applications have automated functions, there is still a lot of paper flow pertaining to customers, employees which gets generated!

TYPES OF DOCUMENTS

Legend from Venn diagram:
- LEGAL DEPARTMENT: Agreements, Loan Applications, NDA, MOU's
- IT DEPARTMENT: Security Policy, Change Requests, SLA's
- HR DEPARTMENT: Performance Reviews, Timesheets, Employment Letters, Form 16's
- FINANCE DEPARTMENT: PO's, Invoices, Debit/Credit Notes, Balance Confirmations

PAPER LIFECYCLE

PURCHASE → PRINTING → DELIVERY → SCANNING → STORAGE → DISPOSAL → PURCHASE

Over and above the actual costs, manual process of accepting documents, workflow processing, approval mechanism results in hidden costs, time delay and compliance failures!

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NEEDS OF A PAPERLESS OFFICE SOLUTION

- Reduce Cost & Time
- Transact from anywhere
- Authenticity
- Non-repudiation
- Traceability
- Validation

E-Sign and Digital Signatures offer a unique solution to go paperless!

- In India, Digital Signatures are governed by the Information Technology Act and administered by the Controller of Certifying Authorities, Ministry of IT

- Under IT Act, Digital Signed documents cannot be repudiated. Thus Digital Signatures is a highly secure and legally valid form of signature

- Types of Digital Signatures actively issued in the market
  - Class 2 – Issued on crypto token after identity verification
  - Class 3 – Issued on crypto token after identity and physical verification

- These digital signatures are being used for MCA filings, Income Tax filing and in Banking for secure online banking etc

- **In 2015, to promote the use digital signature and make it widespread, E-Sign was launched under Digital India vision**

- E-Sign allows any AADHAR holder to authenticate himself and digitally sign documents using Mobile OTP or Biometrics

- This paved the way for rapid digital transformation to eliminate paper for G2C or B2C services
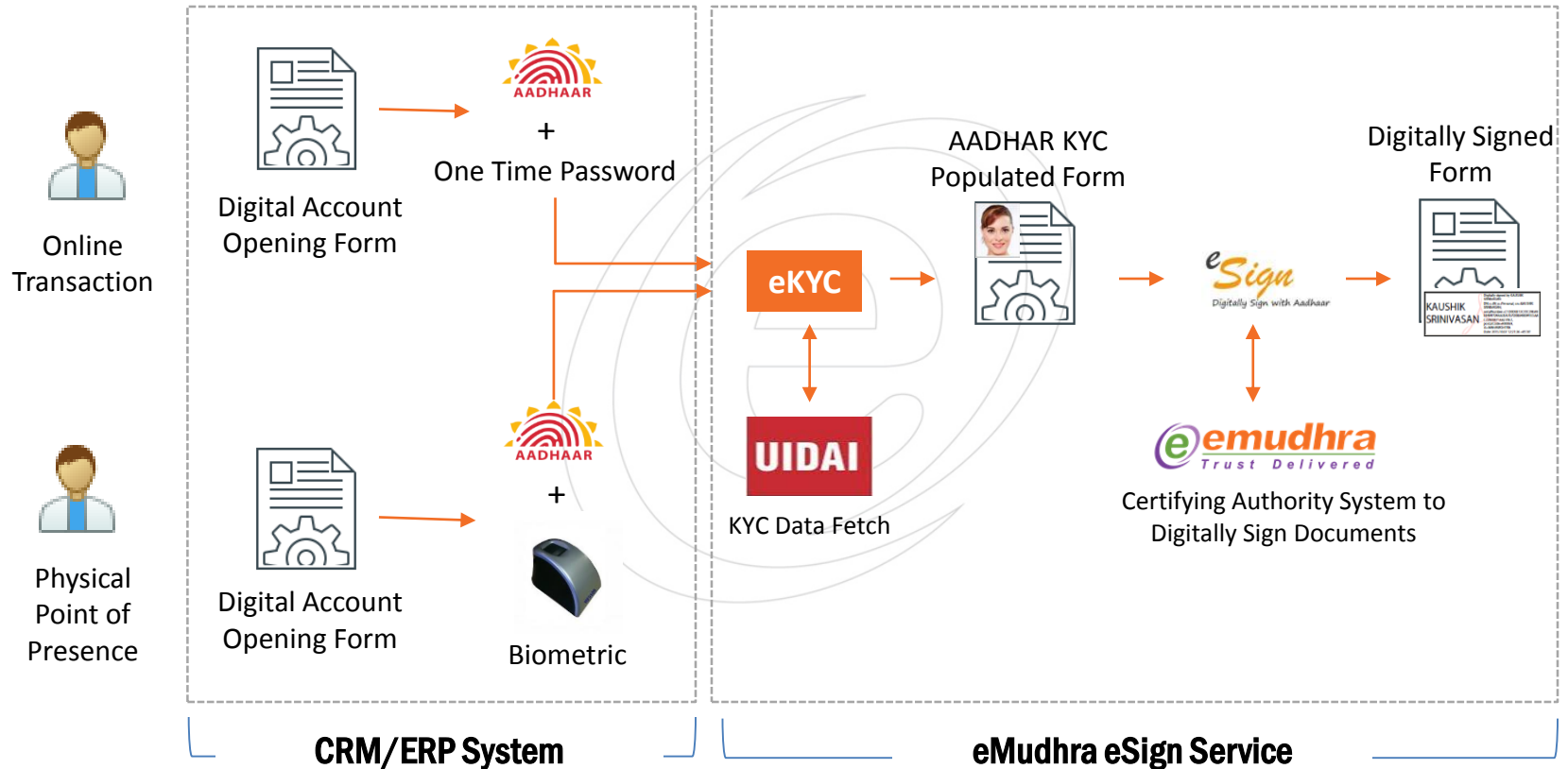
- While Class 2 or Class 3 Digital Signatures are issued for one year or two year validity enabling repetitive use, e-Sign is issued for every transaction. Therefore it has been designed for one time use

- **E-KYC does not substitute E-Sign as E-KYC does not provide document integrity and other properties of Digital Signatures under the PKI infrastructure framework**
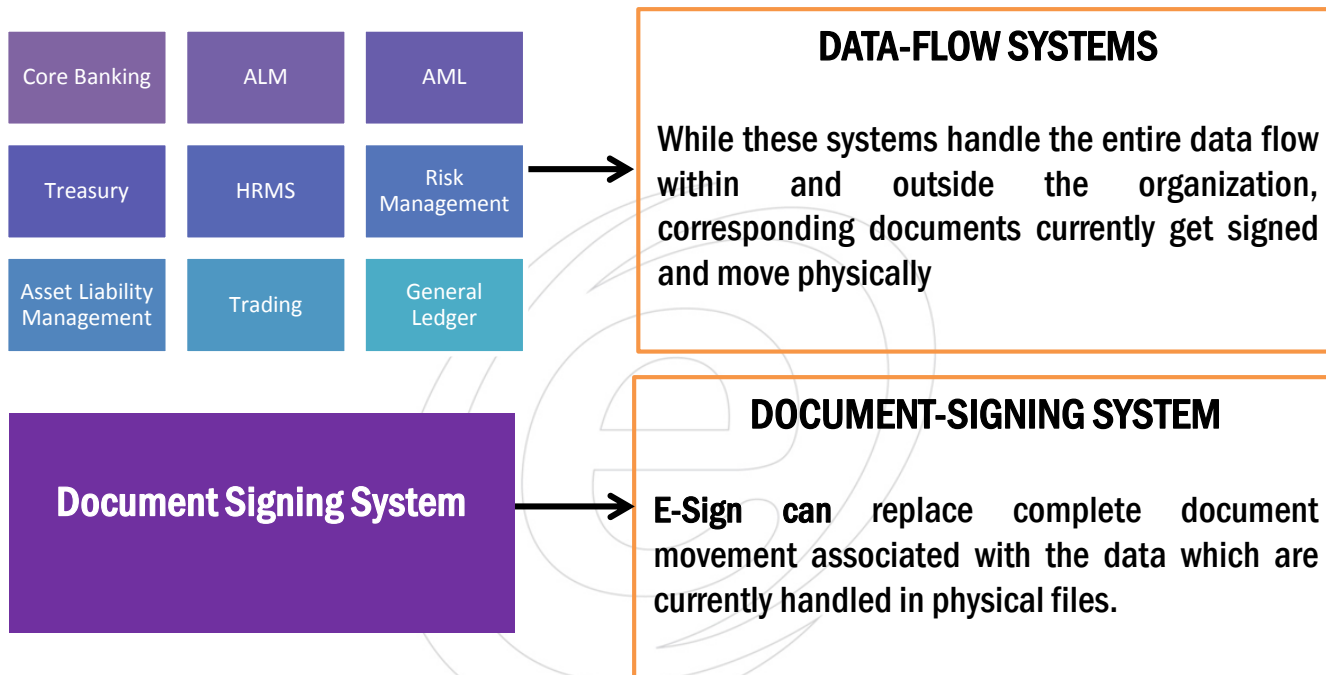
- Regulatory Bodies such as RBI, SEBI etc have issued circulars and notifications for adopting e-KYC and e-Sign

- Therefore the enabling environment has been put in place for adoption of e-Sign to go paperless

- Some challenges still continue

  - Originals Seen and Verified requires physical presence

  - Acceptance of Video Verification as an alternate for In Person Verification

  - Acceptance of Digitally Signed ECS/ Other mandates by Banks

  - Digitally Signed E-Stamp paper for end to end Digital Contracts

- These challenges are being taken by CCA/Ministry of IT with various regulators

- While these challenges are being addressed, e-Sign has seen significant offtake across

  - Banking

  - Insurance

  - Capital Markets

  - E-Governance

Core Banking	ALM	AML
Treasury	HRMS	Risk Management
Asset Liability Management	Trading	General Ledger

DATA-FLOW SYSTEMS

While these systems handle the entire data flow within and outside the organization, corresponding documents currently get signed and move physically

Document Signing System

DOCUMENT-SIGNING SYSTEM

E-Sign can replace complete document movement associated with the data which are currently handled in physical files.

The above solution can offer a last mile solution towards truly eliminating paper by 100%.

WORKFLOW

Handles single and multi signature workflow both within and outside the organization

TIMESTAMPING

Time-stamping of documents thus eliminating possibility of back dating, fraud etc.

ENCRYPTION

Ability to encrypt confidential documents which can be decrypted only by authorized persons.

VALIDATION

Validate identity of Signatories ensuring that the organization is dealing with people who can be traced easily

E-VAULT

Inbuilt facility to store and archive data

DOCUMENT TAGGING

Allows tagging of documents based on department, function etc for easy retrieval

EASY INTERFACE

Can be interfaced with any core application or cloud storage such as google drive and completely interoperable.

- emSigner is a unique secure paperless office solution from eMudhra that can completely eliminate the paper flow between all the stakeholders in an organization i.e, customers, employees, suppliers and partners

- With emSigner any document can be signed by single or multiple parties using digital signatures e-Sign there by enabling a digital transaction management platform that

  - That operates independently of your current IT-systems.

  - Is Secure and Legally Valid

  - Eliminates need for paper printing, signing and scanning thus reducing costs and time

  - **Provides for high level of compliance, traceability for audit and reduces fraud**

emSigner works in 3 simple steps

Upload Documents to Sign

Select Document Signature Positions and Signers

Digitally Sign or E-Sign Documents and Initiate Workflow

![emudhra - Trust Delivered]

RETAIL BANKING	CORPORATE BANKING	TREASURY & INVESTMENTS

LOANS,CREDIT CARDS, SAVINGS ACCOUNTS, DEPOSITS

- Applications forms
- Sanction Letters
- Balance Confirmations
- Closure requests
- All associated correspondence

- Deposits Application forms
- Loan Applications forms
- LC Applications
- Bill Discounting Applications
- Guarantee Applications
- Stock Statements
- Balance Confirmations
- All associated correspondence
- Miscellaneous documents

- Investment Applications
- Confirmation letters
- Redemption requests
- Transfer Instruments
- Depository & Custodial related papers
- Balance Confirmation
- All related documents

All paper workflows in these areas can be eliminated using Digital Signature.

Further it can be used in HR, Finance, Legal and all Internal workflows

CUSTOMER

Quotation request →

Quotation ←

Policy Request →

Policy Issuance ←

Claim Submission →

Claim Settlement ←

INSURANCE COMPANY

(CORE ERP/ CRM SYSTEM)

Re-Insurance

RE-INSURANCE COMPANIES

Settlements →

THIRD PARTY:

Vendors, Third parties

INVESTMENTS

All paper workflows in these areas can be eliminated using Digital Signature.

Further it can be used in HR, Finance, Legal and all Internal workflows

CUSTOMER SIDE	INVESTMENT SIDE

CUSTOMER SIDE
- Account opening
- Investments in different funds
- Redemption/ Switch requests
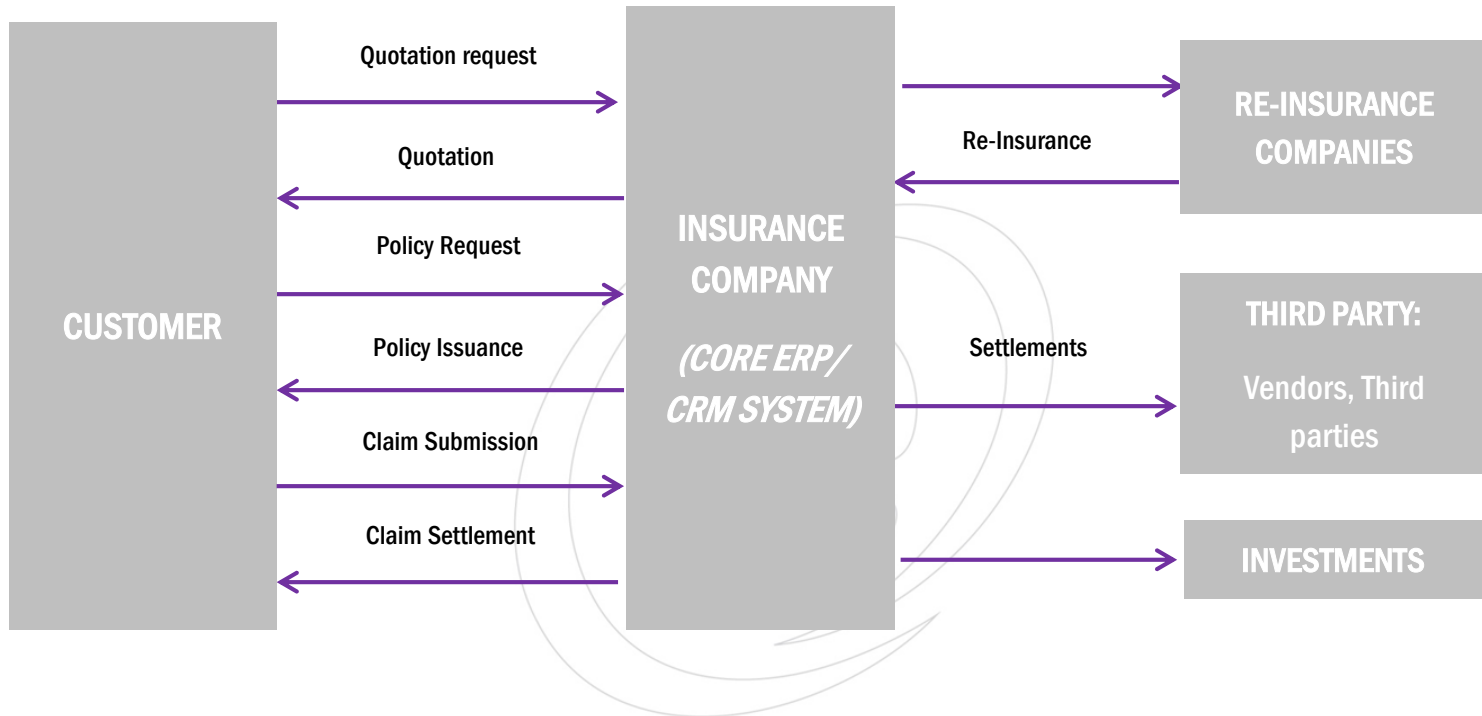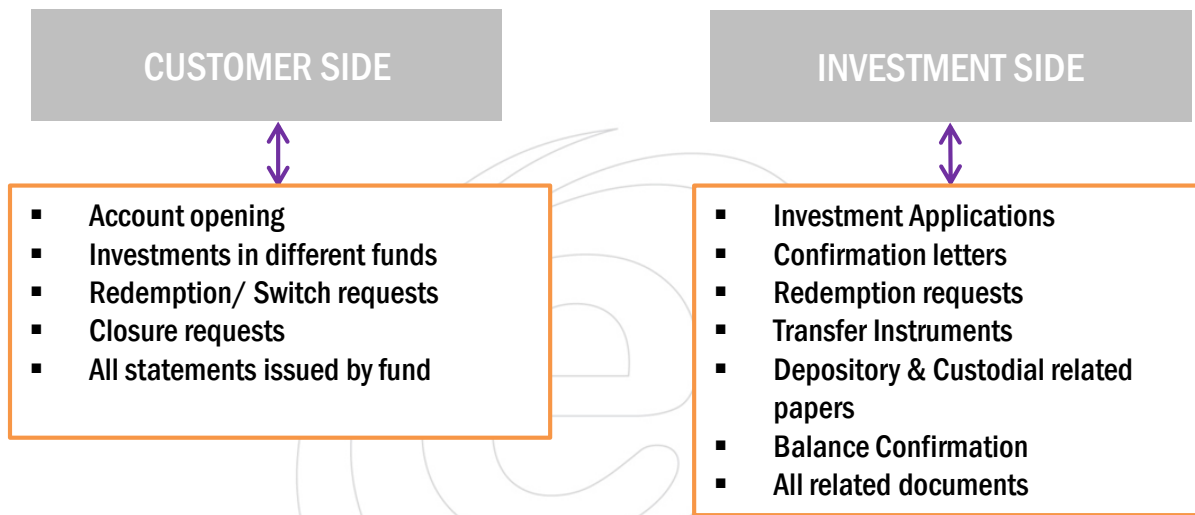- Closure requests
- All statements issued by fund

INVESTMENT SIDE
- Investment Applications
- Confirmation letters
- Redemption requests
- Transfer Instruments
- Depository & Custodial related papers
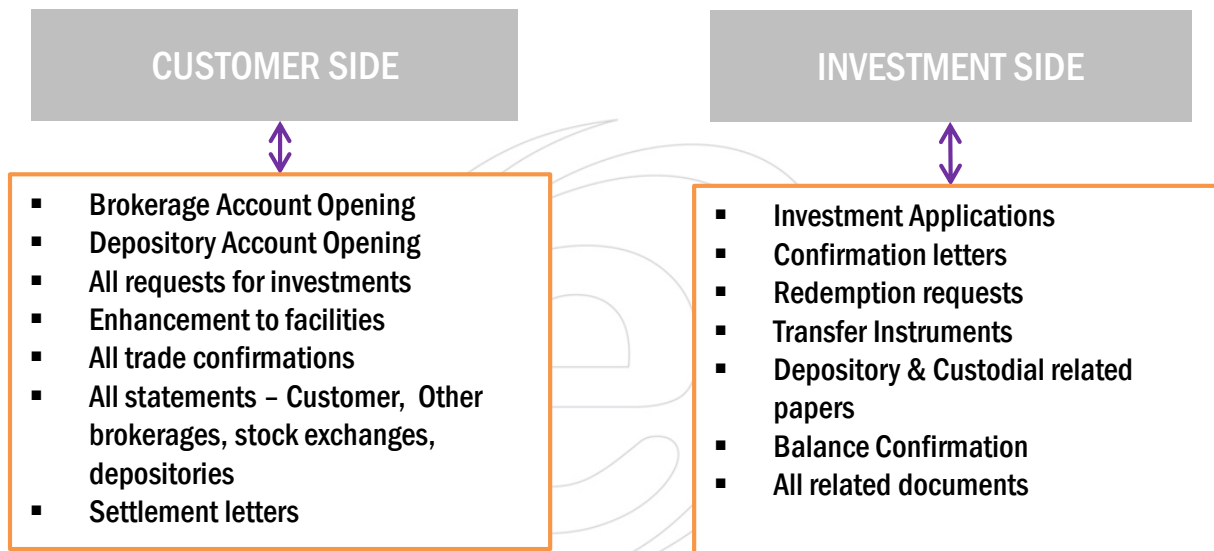- Balance Confirmation
- All related documents

All paper workflows in these areas can be eliminated using Digital Signature.

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CUSTOMER SIDE	INVESTMENT SIDE

CUSTOMER SIDE
- Brokerage Account Opening
- Depository Account Opening
- All requests for investments
- Enhancement to facilities
- All trade confirmations
- All statements – Customer, Other brokerages, stock exchanges, depositories
- Settlement letters

INVESTMENT SIDE
- Investment Applications
- Confirmation letters
- Redemption requests
- Transfer Instruments
- Depository & Custodial related papers
- Balance Confirmation
- All related documents

All paper workflows in these areas can be eliminated using Digital Signature.

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![eMudhra - Trust Delivered logo]

Licensed Certification Authority in India and Mauritius

8
Years of excellence in Digital Security, Authentication and Analytics

3mn
Digital signature issuance in India

7
Patents and several awards

60
Customers including Large Banks and Government Agencies

1bn
National ID holders of India can electronically sign using our solution

- 23 large Banks in India including both the largest Public Sector and Private Sector Banks use eMudhra's solutions

- Offices in 18 cities in India with International presence in Dubai and Mauritius

- 3 Tier Data Centre in Bangalore with Disaster Recovery Centre in Salem, Tamil Nadu

- ISO 27001 Certified Company

- Gartner recognized for Text Analytics

- Asia PKI Innovation Winner and e-Asia Award Winner for Bridging Digital Divide

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Security Solutions

Identity and Transaction Management Solutions

Secure digital identity and transaction management for people, devices and applications

Hardware and Software based authentication

Deployment and management of electronic signatures based on Citizen Id's

Roaming PKI solutions for mobile based authentication

Paperless Office Solution

Secure paperless workflow solution with electronic signatures and mobile signing

On-cloud and On-premise deployment models

End-to-End data protection, fraud prevention

Workflow integration with ERP such as SAP

Analytics

Real Time Predictive Analysis

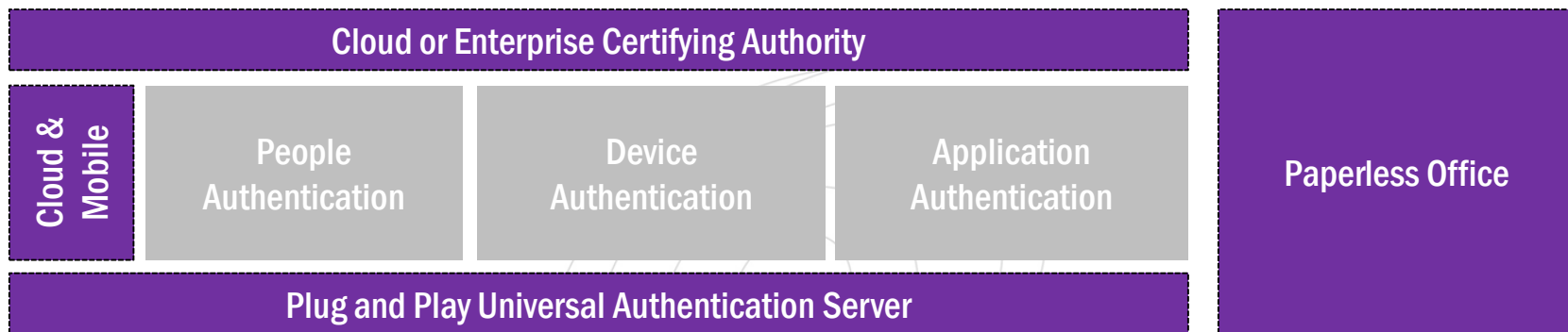Voice of the customer analysis using Semantics from internal and online channels from structured and unstructured data

Powerful language processing capabilities to get customer intents, problems, sentiments

Predictive Analytics capabilities for next best action

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Enabling people, device and application authentication and signing on cloud or on premise for secure identity and transaction management using PKI

Cloud or Enterprise Certifying Authority

| Cloud & Mobile | People Authentication | Device Authentication | Application Authentication |

Plug and Play Universal Authentication Server

Paperless Office

○ **Digital Signatures**
Issuance of digital signatures to individuals as a Certifying Authority in India and Mauritius

○ **Internet of Things (IoT)**
Device certificates for strong authentication using PKI

○ **emAS**
Plug and play universal authentication server

○ **emSigner**
Cloud based paperless office solution to go paperless

○ **emID**
Citizen e-ID projects
Electronic Signatures based on National ID

○ **Application Certificates**
SSL, Code Signer, Document Signer certificates for application level authentication

○ **emCA**
Private/Public CA Implementation on cloud or in enterprise

○ **emLocker**
Secure signing, storage and sharing of documents.

E-SIGN DEMO FOR GOING PAPERLESS

Highly Secure Paperless Banking with high cost optimization using PKI

Presentation by

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Thank you!