PAYMENT SYSTEM INNOVATION CONTEST
(Sponsored by Reserve Bank of India)
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Prizes Certainly Good – But Collaborations Better

THE Reserve Bank of India has been very effectively playing seemingly opposing roles of regulation and development over several decades. In the space of payment systems too, in addition to putting in place necessary policies to ensure safe and secure transactions, it is encouraging innovation. As part of its support to innovation, RBI has announced the Payment System Innovation Contest and entrusted the responsibility of conducting the contest to IDRBT.

There has been a very good response to the announcement of the contest, with 115 entries, three of which are from outside the country. A shortlisting committee comprising of Prof. D.K. Subramanian, Former Dean and Professor, Indian Institute of Science, Bangalore; Dr. Santanu Paul, Managing Director and Chief Executive Officer, TalentSprint, Hyderabad; and Dr. Y. Raghu Reddy, Associate Professor, International Institute of Information Technology, Hyderabad; selected 12 entries for final presentation. They also selected 14 more entries to be included in this booklet, which provides a gist of the innovations.

On June 24, the 12 shortlisted contestants will be presenting their innovations to the Jury comprising of Prof. D. B. Phatak, Indian Institute of Technology, Bombay; Prof. G. Sivakumar, Indian Institute of Technology, Bombay; Prof. Rajat Moona, Director General, Centre for Development of Advanced Computing (C-DAC); and Shri M. D. Mallya, Former Chairman & Managing Director, Bank of Baroda, and the invited audience, which includes the top management of Reserve Bank of India. Based on the presentations, the Jury would be selecting three best entries for prizes of 5, 3 and 1 lakhs of rupees, sponsored by the Reserve Bank of India.

In the process of organising the contest, we at IDRBT realized the innovative work taking place in the country. There are enthusiastic academicians, bankers and payment service providers, among whom some are startup companies. Some of the ideas are on the drawing board while some others are at a development stage and a few of them are at the stage of implementation.

We, as an Institute focusing on research in banking technology, invite the participants to work closely with our faculty and research scholars to take forward some of the ideas for adoption in the country. We also invite banks and other payment system players to evaluate the innovations and work towards adoption of some of them. We would estimate the success of the contest by the number of active relationships the Institute and the industry can build with the payment system innovators, who have participated in the contest.

The contest has given us both the courage and responsibility to set up a research centre exclusively for Payment Systems in IDRBT. The centre is likely to become active in a few months. All payment systems players are welcome to collaborate with the Centre.

Date: June 24, 2016
Place: Hyderabad

(Dr. A. S. Ramasastri)
Cloud based Mobile On-boarding Enabled by Biometrics and Advanced Cryptography

Team: Ankit Ratan, IIT Delhi; Ankur Pandey, IIT Kharagpur; Arpit Ratan, ILS Law School
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Introduction
Electronic Payment Systems are growing rapidly with wallets seeing over 600 mn transactions (at a 100% YoY growth). Digital Banking is here to stay, but there are concerns and risks. Customers have risk of privacy and identity theft. Banks have potential risk of fraud and reputation risk, while the regulator is concerned about illegal movement of funds.

Current offline manual mechanisms would not fit a digital paradigm and a technology that establishes trust digitally is the need of the day. This technology should further ensure compliance without hampering user’s digital experience.

Innovation
Artificial Intelligence (AI) Assisted On-boarding Process

Majority of frauds in the Indian banking environment are due to human complicity. The on-boarding technology is able to extract information from ID/Documents and provide a forgery score. It replicates human-like intelligence in detecting that the information is true. Further, it’s able to detect digital forgery of documents, which go undetected by human eye. Face recognition algorithms help prove ownership, thus removing the need for in-person verification. The subsequent agreements can be executed online using biometric signatures.

Proprietary BIG Data Algorithms Enabled Background Verification

Current systems lack the ability to make sense of the BIG Data available online. Our algorithms not only crawl through traditional sources such as Global Watchlists, but also via social media, news articles, Indian court cases, etc. Rather than using a simple text match, our

Cloud API creates linkages between entities, thus providing the most comprehensive background check.

Blockchain Technology to Store and Verify Consumer Information

Our blockchain protocol creates a complete digital trail of individual/company’s identity, background information and online transactions. The protocol is so structured that it allows for sharing of information without compromising user privacy or creating a complicated regulatory mechanism.

Advantages

★ Signzy solves critical trust issues for all three stakeholders—customers, banks and regulators
★ Digital verification enhances customer experience and protects user privacy as there is no manual data collection
★ An AI assisted screening approach reduces chances of human fraud and minimizes operation efforts for banks, thereby allowing bank-ops to support a digital banking scenario
★ Cloud API based background checks ensure compliance to strictest Anti Money Laundering (AML)/Combating the Financing of Terrorism (CFT) norms, even with low operation resources

In short, it’s a user-friendly technology that brings greater trust in modern digital banking by reducing risks of identity theft, money-laundering and fraud.
Democratizing Money

Affiliation: Nucleus Software

Represented by: Mr. Ashutosh Pande, Chief Innovation Officer, PaySe™; Mr. Ashish Khanna, Sr. Business Advisor & Product Management, PaySe™

e-mail: apande@nucleussoftware.com

Introduction

PaySe™ is designed and created with an aim to democratize digital money. PaySe™ addresses the single biggest deterrent to cost-effective delivery of financial services to the last mile; the cost of cash. The cost of cash in India stands at 22,000 crores (Cost of Cash Report India) which is only going to increase as the economy grows. PaySe™ has removed the physical cash and created a solution of digital cash by retaining all the security and fungibility of cash. The PaySe™ platform has been built to bring the power of digital money to people at the bottom of pyramid; those who don’t possess a phone.

Innovation

PaySe™ utilizes the latest advancement in mobility, big data, open source and crypto currency (primarily tokenization) to deliver the world’s first secure offline peer-to-peer payment solution.

A PaySe™ solution consists of three key components:

(a) PaySeMint™ that issues the crypto token for every rupee held in escrow by bank.

(b) PalmATM™ application that enables ATM function on a smartphone. This application provides users access to their online account and enables the deposit and withdrawal of funds for offline usage. During withdrawal, crypto tokens equivalent to the withdrawn amount are generated by the PaySeMint™. These crypto tokens carry unique ID and watermarks and, like cash, need to be stored in secure memory. We have built a mobile, called PURSE™, to securely store this crypto token.

(c) PURSE™ is designed to pay or receive digital cash. Users can load the PURSE™ either from their bank account or convert physical cash to the crypto token at any conversion point.

How PaySe™ is Novel

★ World first offline digital cash solution
★ An easy-to-use mobile designed for financial transactions with single press ‘Pay’ and ‘Receive’
★ Crypto token solution works within the RBI guidelines for prepaid payment instrument
★ ATM in your Palm: Convert any smartphone into an ATM
★ Use of ‘CASH’ transaction history to offer various financial services.

Advantages

★ Democratization of money since Institutions can now offer offline e-payments to their rural and semi-urban customer base, who don’t have a bank branch or smartphone users
★ Banks do not need to install big ATM machines and can leverage already penetrated smartphones as their ATMs
★ Banks and Financial Institutions can now use cash transaction details as one of the key parameters for assessing loan applications, thereby driving Financial Inclusion
★ PaySe™ delivers time and cost efficiency to the semi-urban and rural operations of Banks/NBFC/MFI by digitizing cash movement from village to bank.
eazypay – A Consolidated Platform for Collecting Payments

Affiliation: ICICI Bank Limited
Represented by: Girish Sehgal
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Introduction

ICICI Bank has a payment and collection solution titled “eazypay” that can support a biller’s collection requirements across their line of business. eazypay solution is a product suite that has been designed to assist in seamless collections through multiple modes of payment from the billers’ customers spread across a large geography within India. Additional features ensure that administrative work is reduced at the merchant’s end, while at the same time ensuring reconciliation happens seamlessly and single customised MIS is provided to the merchant.

Innovation

Merchants or billers often face difficulties in collecting their bills from multiple locations/payers, with common issues of timely collection from a large customer base, limited modes of payments available for their payers, manual and time consuming reconciliation prone to error and frauds, making collection of payments a cumbersome and costly activity.

eazypay is one-of-its-kind platform that allows merchants/billers to completely automate collections and aims at promoting digital payments in the economy. eazypay is a master solution that aggregates all payment modes into one platform, which is customisable and quick to activate. However, the actual innovation lies in the fact that despite having complexity of multiple platforms at its back end, eazypay provides a single, flexible and plug and play led architecture that can fit any business model, thereby eliminating the need of individual customisations and system integrations. In addition to this, eazypay also has an end-to-end invoice management capability – bill design and upload, sms/email alerts at various stages to merchant as well as its payers, multiple payment options including both offline and online modes and a consolidated MIS for easy reconciliation.

eazypay supports various modes of collection, making it easy for the payers to make their bill payments seamlessly on the go:

★ Bill presentment to payer through bulk upload
★ Online collection through payment gateway
★ Open mode collection without any bill file upload
★ Host to host integration for real time bill fetch.

Use Case

Eazypay has its utility across business segments in both B2C and B2B space:

★ Billers – eazypay offers customised solution for end to end invoicing and collections, with added option of real-time bill fetch
★ E-commerce – eazypay can be integrated as a Payment Gateway, thereby providing multiple modes of payments
★ Any other business – eazypay’s open push mode allows any business, with unscheduled and large no. of payments, to collect payments online through a simple web interface.

Advantages

★ Consolidated collection platform supporting various modes of collection
★ Single consolidated MIS across payment modes
★ Single settlement at end of day.
Trade Finance on Mobile

Affiliation: HDFC Bank
Represented by: Kamal Gurnani
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Introduction
We have taken the 'Trade Finance on Net' product to the next level by launching the 'Trade Finance on Mobile' (TFM) Application – a mobile application, which allows the customer to access transaction details by logging into the application through their mobile smartphones or tablets – both on iOS and Android platforms. The signatories can approve the transactions using this application without having to use their computers.

The mobile application offers the following products:

- Remittance
- Letter of Credits Issuance
- Letter of Credits Amendment
- Bank Guarantee Issuance
- Bank Guarantee Amendment.

Design
The front-end of the App is designed with HTML5 and CSS3. The advantages of these technology platforms are well-utilized during this App development, such as creating refined and accurate pages and more importantly, it can easily be deployed across devices and operating systems. These design considerations have helped to overcome challenges posed by mobile-based Apps such as different operating systems, screen sizes, design layout considerations, etc. With such leverage, bank could quickly roll out the App across iOS and Android and also in smartphones and tablets.

Features and Benefits of Mobile App

- Online and real-time authorization of transactions
- No dependency on desktop/laptops for browser based solution
- OTP based system registration provides high security
- No transaction related information is stored on the mobile device
- 24/7 access
- The application is available on Android phones, iPhones, iPad and all android tablets.
Vayana’s Electronic Acceptance & Payment Network

Affiliation: Vayana

Represented by: Manojit Bhatnagar

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Introduction

Vayana is an electronic financing network that enables businesses and their counterparties to capture their entire receivable and payable trades electronically and finance them through Banks and Financial Institutions. Lenders receive digitally signed payment obligation for every transaction. The entire transaction is end-to-end electronic. Financing is available via factoring, buyer financing, payable financing or reverse factoring with or without commercial cards. Vayana, in partnership with Global Card Networks also offers Commercial Card Solution for Payable Financing.

Backed by leading Institutional Investors, Vayana has facilitated over USD 300 million in financing across 12 different industries, from manufacturing to e-commerce.

Innovation

Supply Chain Finance (SCF) can act as a credible source of financing for MSMEs. Traditional SCF programmes, however, are marked by poor scalability and adoption resulting in very limited financing assets created by the Banks and FI. Vayana addresses the key issues Banks and FI face in SCF by:

★ Reducing transactional risk with authenticated trade documents and electronic payment obligations from the buyer with built in non-repudiation

★ Making the entire process exceptionally simple, so that the smallest of enterprises can participate with no change to their existing processes and systems

Vayana Network connects suppliers who create electronic invoices through their accounting systems and buyers who provide acceptances of invoices to the FI for financing the trade in a fully automated manner. Vayana provides prompt invoice wise reconciliation, updates on daily limits, outstanding payments and settlement information to both buyers and the suppliers. This ensures more accurate forecasting. There is no need for any new infrastructure either at the buyer or supplier end.

Vayana manages the entire programme including Supplier/Dealer negotiation and enablement, structuring of the programme with the FI, managing the transaction flow electronically, financing the transactions through the FI and reporting at individual transaction level. Over the years, we have developed and launched multiple solutions to address the financing needs of different supply chains.

Advantages

With 175+ active Supply Chains and 800+ SME counterparties, nearly 25% of the network originates from locations beyond Tier-II. Vayana Network offers a unique opportunity to all stakeholders (FI, Corporates and Counterparties) to gain from Vayana’s simple structure and electronic documentation, and risk mitigation through non-repudiation; and thus extend the benefit to the smallest of SME participants in the Supply Chain.

The Vayana Advantage

- Automated Invoice to Payment Reconciliation
- No Tech or Process investment required
- Documents are digitally signed and secure
- Global Banks and Networks as partners
- Experienced Team of Bankers, Technologist & Fintech Engineers.
Fastacash – Request to Pay Services

Affiliation: Fastacash
Represented by: Richa Batra
e-mail: richa@fastacash.com

Introduction
Fastacash’s Request-to-Pay enables consumers to send a request to payers, to complete a transaction. The fastacash platform enables businesses to provide services that allow consumers to share and receive values of any kind and make payments through secure, tokenised links called ‘fastalinks’.

Request-to-Pay for Consumers
E-commerce is a driving force in introducing easier and more convenient ways to shop. The merchants or service providers are mandated to find innovative solutions to collect payment. While current implementation of a payment gateway has enhanced payments, there are still challenges that may hinder purchase completion, such as lack of a payment mode and insufficient funds. Request-to-Pay (RTP) addresses these challenges by enabling consumers – the purchasers – to send a request to another to complete their purchase.

The request contains the order information and is sent through the ‘fastalinks’ via a social channel or messaging app of choice of the consumer. The fastacash platform has already integrated key social channels that are preferred by consumers today.

When the purchaser is about to complete a transaction online or via an app, RTP is presented as a payment option. The solution is integrated to the merchant site or payment gateway without impacting the overall transaction flow. When the payer receives the RTP message and clicks the fastalink, they are immediately brought into the merchant’s payment environment to fill out their payment details. The purchaser does not get access to the sensitive payment details and the payer is able to securely complete the purchase on behalf of the purchaser. For example, a student can request his parents to pay for his books without needing their credit card details – a request can be sent via social, to complete the purchase. The fastalinks can be configured with additional security layers such as PIN authentication and an expiry.

Fastacash-Strong Value Proposition
Social Network Reach: Beyond Facebook into the key global social and messaging networks, while also being tailored to country-specific requirements.

Turn-Key Social Solution Partner: Integrates social into all aspects of a partner product – registration, identity confirmation, security, in-app customer acquisition, transactions, sharing and personalisation.

Network Security: Enhanced network security as a single interface for all social and messaging platforms.

Transaction Security: Two-factor authentication in P2P transactions by tying the recipient social identity to the transaction.

Fastalinks: The fastacash link technology provides a richer experience through sharing of personal digital content, marketing opportunities, additional use cases and an increase in receiver trust.

Time to Market: Our APIs allow easy integration with all social networks. In the time it takes to integrate one social network, one integration with fastacash gives a single interface to all social networks and messaging platforms.

Cost Benefit: Fastacash integration cost is similar or less than the cost of integrating one network.

Analytics: Fastacash provides analytics capabilities on user behavior. The fastacash network of global partner fastacash has a global footprint through its partnerships allowing global interoperability of social payments.
Yes Bank, Unique E-Collection Proposition

Team: Anuradha Mohan
Affiliation: Yes Bank
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Introduction

Efficient cash management operations are a key enabler for a corporate to optimize their working capital cycle. In many instances, companies invest significantly in back office operations towards collections and reconciliations with bank statements. This results in cash pile-up and blockage of working capital. The traditional RTGS/NEFT mechanisms do not allow clients to validate their collections on a real-time basis, update of ERP systems and provision of MIS in a specific format to facilitate reconciliation and monitoring of accounts receivables.

To address the above concerns, Yes Bank E-Collection facility enables a corporate to validate their third party collections routed through RTGS/NEFT on a real-time basis along with reconciliation of their ERP systems through web-services integration. Further, the inherent flexibility offered through this product enables collection processing at an organization level, i.e., centralized or decentralized, thus eliminating the need for manual reconciliation.

The E-Collect model offers a parameterized arrangement, file formats and collection window set up to ensure flexibility in terms of service offering and other benefits. This parameterized arrangement validates details based on Invoice number, Agent codes, Sub-codes, Branch codes, Transaction date, Transaction Amount and Other customizable fields.

In the event of the system being unable to validate an incoming transaction on the basis of the parameters set/shared by the corporate, the payment can be diverted to alternate collection account or refunded to the remitter, thereby preventing any unreconciled entries at customer end.

The E-Collect model system logic is built around having a unique Account Number (AN) per remitter. These AN’s are codes, unique to the identity of the remitter, which are different from the bank account number of the corporate/remitter. The AN is a combination of a 6-digit alphanumeric client code followed by unique codes specific for remitters. These unique codes are extremely flexible and can be set as sub-code, remitter code and invoice number, etc. Upon finalization of the AN, the actual client bank account number is mapped to the e-collections code basis, where automated routing of funds is initiated by the said system.

The multitude of system features and flexibility offered ensures the corporate access to on-demand reconciliation of funds in their account thereby further augmenting their control over cash flows and treasury management.

Areas of Impact

The E-Collections product has been built specifically for industries such as Mutual Funds, Insurance, Utility Service Providers, Logistics Solutions providers and Corporates who have a large dealer/vendor and consumer database and where funds are regularly received through RTGS/NEFT. The solution addresses multiple issues such as remitter identification, reconciliation with matching of outstanding dues, online credit of validated amounts, etc. It is a highly scalable, modular, workflow based business rule driven application that is designed to facilitate the bulk collection requirements of any institution.
Key Features

- Alpha-numeric e-collections code unique to each customer
- Validation of remitter details has been inbuilt within the Enterprise Service Bus
- Auto-reconciliation and updation enabled
- In-built Anti Money Laundering (AML) and purpose code checks
- Flexibility to allow clients to incorporate additional validations
- Flexibility to allow businesses to register for the e-collections code as per their requirement.

Benefits

- Streamlines the collection process through real-time ERP updation
- End-to-end reconciliation allows the movement from STP (straight through payment) to straight through reconciliation where all the flows to corporate clients are automated
- Enables standardization in accounts receivables
- Customized MIS generated thereby eliminating the requirement for multiple reports in the collections process.

Offerings

- Data Consolidation – Collection of relevant booked and consumed transaction data from multiple sources
- Transaction-based value pricing model – “Volume to Price” based pricing model promoting scalability
- All development and client customization designed and tested in-house
- Faster collections by enabling quick realization.

Novelty & Potential for E-collections

Priding as an “end-to-end” solution, the product offering is a highly scalable solution offered to corporate clients who have a large consumer and vendor base and regularly remit funds through NEFT and RTGS. E-Collections can be integrated with other platforms such as IMPS to enable real-time payments for utility bill collections, mutual fund remittances, etc., thereby providing immediate credit to corporate clients.

Novelty

- Moving from straight through payments to straight through reconciliations. This allows clients to completely automate their collections thereby optimizing streamlining their cash flows
- Enabling real-time Person to Merchant (P2M) payments by integrating the facility with IMPS
- Enabling corporates to register for short-codes thereby simplifying the payment process for their customers
- Making the MIS flexible through additional validation parameters such as remitter name, amount (including setting variance thresholds), date, etc. This allows corporates to knock-off specific fields in their ERP, thereby completely automating the reconciliation process
- Seamless on-boarding of client ERPs with Yes Bank Ltd. through web services. This is achieved on the basis of existing validations built in the middleware
- Elimination of manual errors in data validation and authorization
- The capability to do away with time-consuming process such as file transfers/uploads.

This solution has rich business functionality and high degree of flexibility to address the dynamic business requirement and is in compliance with the relevant Reserve Bank of India guidelines. It provides dynamic value added services to the internal departments and external clients of any institution.
Digital Payment Service: NoKash

Affiliation: Euronet Services India Private Limited
Represented by: Tilak Raj R Soni
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Introduction
NoKash is an integrated payments service that can enable merchants to offer a secure and fast cashless payment option to their customers. This solution leverages the existing payment infrastructure and systems of banks and essentially crunches the numbers of steps required for the authorization of transactions.

It replaces existing multiple layers with a single level of intermediation between customers, merchants and banks. It is a lean solution offering one click, completely onsite/in-app solution and a viable replacement for Cash-on-Delivery. Key features of this solution are as under:

- NoKash enables a bank’s account holder to make payment via his bank account
- Registration is a simple one time process taking less than a minute
- NoKash can be used in two ways:
  - Payment upon delivery: To eliminate Cash-on-delivery
  - Pay Now : Onsite payment for online merchants on an immediate basis.

Process 1: Pay upon delivery

- At the checkout page of online merchant; customer selects NoKash “Pay-on-Delivery” as a payment option
- Customer enters NoKash ID
- Customer gets message: ‘You will get an OTP 24 hours prior to delivery of the product. Please enter it on device presented by the delivery person to confirm transaction and to take delivery’
- Merchant system intimates Euronet prior to delivery and Euronet sends an OTP to customer
- When the delivery person arrives at the customer’s doorstep, he displays an interface with Order ID and Amount to customer, where customer enters OTP
- Post OTP confirmation, Euronet asks bank to debit account for settlement later
- Euronet confirms payment to merchant / delivery person and delivery personnel makes the delivery
- Bank makes payment to the merchant on T+1.

Process 2: Pay Now: Online payments

- At the checkout page of online merchant; customer selects NoKash “Pay Now” as a payment option
- Customer enters NoKash ID and Euronet identifies the customer
- Euronet sends an OTP to customer instantly and customer enters the same on merchant’s payment page
- Post OTP confirmation, Euronet asks bank to debit customer’s bank account for doing settlement later
- Euronet confirms payment to merchant and merchant displays appropriate message to the customer
- Bank makes payment to the merchant on T+1.

NoKash – Use Case and Advantages

Pay Upon Delivery

- Customer: Customer can make cash-on-delivery payment via digital payment mode using bank account. Customer may or may not be a registered internet banking customer, but s/he will still be able to transact online using NoKash. Also ensures that the end user pays for the product s/he ordered online once he receives it (Touch, Feel and then Pay)
Banks: Currently, 60% orders through online merchants are booked by customers on cash-on-delivery payment mode and NoKash provides an opportunity to banks to increase their participation in growing e-commerce trend in India.

Merchants (Online): NoKash is an integrated payments solution that can enable partner merchants to offer a secure and fast cashless payment option to their customers. Currently, 62% of e-commerce transactions are cash-on-delivery mode and NoKash will help in eliminating the cash handling issues for merchants.

Pay Now

Due to increase in smartphone penetration, online purchase in India initiated from smartphones is increasing rapidly. Many online shoppers who opt for cash-on-delivery, do so, due to inconvenience of going through multiple steps on a mobile phone with unreliable internet connection. NoKash enables those transactions without the customer having to draw out his/her debit card.

NoKash will reduce the transaction hops and in turn transaction time for an instant online transaction.

LEOPARD – Integrated Tablet POS/MicroATM

Affiliation: Evolute Systems

Represented by: Mr. Shashikumar J V, Associate Vice President; Mr. Dhananjay Dixit, Head - Business Development

e-mail: dhananjay@evolute-sys.com

Introduction

Evolute Systems is a leading technology conglomerate with a focus on revolutionizing millions of lives across India. With leading solutions in the FinTech world, Evolute Systems is making firm strides with intelligent and affordable technology solutions across payment and non-payment verticals.

Evolute Systems has commercialized various products for local and global markets with our ingeniously designed products in our DSIR recognized R&D lab in Bengaluru and local manufacturing capabilities near Mumbai.

Innovation

Conventionally for Financial Inclusion and Microfinance, the solution has been typically discrete in the form of a suitcase with a netbook/laptop, internet dongle, smart and magnetic card reader, thermal printer, fingerprint scanner connected via USB and extra power source. The solution was expensive, heavy, and inconvenient for the banking correspondent and user.

Evolute Systems conceptualized and innovated LEOPARD – an integrated smart device with 7”Android tablet, 2” thermal printer, fingerprint and IRIS scanner, close loop magnetic card and smart card reader, with GSM/GPRS, Wi-Fi and Bluetooth complying with MicroATM standards using an external pinpad for carrying out chip and pin based financial transactions and this requires no special training for the banking correspondent.

The smart device was designed to facilitate highly secure banking transactions, rugged to operate in rural environment, portable, easy to use and maintain. It was made an affordable solution to penetrate across 6.5 lakh villages along with urban and semi-urban geographies of India.
Thought process was to impact all stakeholders in the value chain.

Beneficiary
Availability of financial and transaction services with expanding Business Correspondents (BC) network and transaction outlets.

User
- Amazing user experience
- Quick On-boarding
- Empowered for offering omni-channel services.

Technology Solution Provider
Multiple applications can be developed on open source Android platform.

Banks and Financial Institutions
Enabling banks for PAN India expansion for payment acceptance infrastructure.

Regulators
Achieving high level goals for various mission mode projects.

Advantages
- Create new employment opportunities, 1 MicroATM = 1 new JOB!
- It is a comprehensive and highly configurable solution empowering multiple verticals like FI, MFI, BFSI, retail, E-governance, etc., giving superb user experience
- Contributes directly in bringing various national drives and initiatives like Financial Inclusion (PMJDY), Jandhan Aadhaar Mobile(JAM), UIDAI, e-KYC, Direct Benefit Transfer (DBT), e-Governance (PDS, eChallan, Voter Registration), Digital India, MAKE in INDIA and support electronic payment for making our society “Cash Less”
- Accelerate growth in adding “Payment Acceptance Infrastructure” for electronic payments.

Evolute Systems plans to make a commercial deployment of over two lakh MicroATMs within next three years in target markets.

FSS PoSability – Integrated POS Payments Solution

Affiliation: Financial Software and Systems

Represented by: Mr. Suresh Rajagopalan, President - Software Products; Mr. Hari Gopal Kashyap, Head - Product Engineering; Mr. Rajagopal J, Head - Product Management; Mr. Jayant Pandit, Head - Product Marketing

e-mail: jayantp@fss.co.in

Introduction
FSS PoSability enables merchants to acquire and manage card payments across multiple POS device variants like Mobile POS, PC POS, Web POS and Conventional POS. It is an integrated Point of Sale solution that helps banks to enable their merchants to handle billing and payments through a single solution. FSS PoSability offers a variety of Point of Sale configurations, payment modes, and connectivity options, making the solution versatile.

Verticals addressed: Retail, Healthcare, Hospitality, BFSI.

Innovation
FSS PoSability is a single and the only integrated solution which supports Mobile POS, Web POS, PC POS and also supports driving conventional POS. It provides merchants and Financial Institutions a terminal driving middleware layer that enables super flexibility with multi-layer of security to deploy new generation POS terminals.

It supports multiple payment instruments including interactive payment support for EMV, Bar Code, QR Code and NFC. FSS PoSability supports Go-Green
initiative by supporting e-signatures, PIN-based authentication and paperless e-receipts functionality.

Intelligent routing module allows to route the acquired transactions to preferred acquiring institution based on BIN based, Merchant category based and Priority based routing logics. This removes the device to bank binding/dependency, where today’s deployments are hard bound and static in nature.

Geo-fencing is another innovative feature of FSS PoSability, which helps merchants to control the boundary of their sales agent, thus reducing risk.

Unlike the present solutions existing in the market, FSS PoSability has features which can help super and bigger merchants to efficiently handle customer traffic at their stores by using the faster checkout options.

Use Cases

★ Retail chain owners can work with multiple acquiring banks and be able to dynamically allocate transactions to acquirers of their choice

★ Banks can drive the different POS channels and new delivery channels with minimal customization to the payment Switch. Transaction load on the switch can be reduced by configuring transaction preprocessing rules in FSS PoSability

★ Merchant Service Providers can offer billing and transaction processing as a ‘managed service’ to merchants while being able to work with multiple acquiring banks

★ Large merchants with different lines of business can manage billing and processing services centrally, but with logical separation of the entities.

Ezetap, Universal Wallet

Affiliation: Ezetap

Represented by: Tamal Das

e-mail: tamal@ezetap.com

The smartphone revolution in India is creating hundreds of millions of mobile and digital savvy consumers who are looking for speed and convenience in their everyday interactions. This demand has ushered in a new class of digital payment options, particularly the Mobile Wallet.

A Mobile Wallet allows consumers to preload cash into it and then use the same for both online and over-the-counter payment transactions at points that accept Mobile Wallet, thereby leading the way towards a cashless payments ecosystem.

Mobile Wallets have gained significant traction in India, with one of the leading Mobile Wallet providers, Paytm, claiming 100M subscribers, driving 75M transactions per month, in a market estimated to be over Rs. 350 crore and growing annually. At last count, there were at least three dozen Mobile Wallets.

While the choice and flexibility of Mobile Wallets is a positive for consumers, it poses a unique challenge for businesses, especially the over-the-counter ones. They must register with, download, learn, and manage payments and settlements for each of these Mobile Wallet providers, or risk losing a sale. This learning curve presents a significant deterrent to the acceptance of Mobile Wallets by merchants, and more importantly takes their focus away from “just conducting business”.

Ezetap’s Universal Wallet Acceptance solution with Mobile Wallet Interoperability built-in allows any merchant using the Ezetap Mobile POS to automatically accept any wallet payment from the convenience of their familiar Ezetap, or own mobile application (with which Ezetap SDK has been integrated).

Ezetap offers a single point of aggregation of all Mobile Wallets to the merchant, who sign up only once with Ezetap for wallet acceptance. Whenever a new Mobile Wallet is launched, the new option becomes immediately available to all Ezetap merchants through the same application. Ezetap manages the settlement process with the merchant directly, thereby offering a single point of reconciliation of all digital payments for the merchant.
mobiquity® Wallet Hybrid HCE

Affiliation: Mahindra Comviva
Represented by: Amrita Banerjee; Harishankar V; Rajasekhar Reddy P
E-mail: amrita.banerjee@mahindracomviva.com

Introduction
The two major NFC mobile (contactless) payments approaches prevalent in markets are secure element (SE) and host card emulation (HCE). Both of these suffer from challenges. SE has limitation in terms of SIM swaps (requires a UICC SIM Card) and challenges with card provisioning in the SIM card. HCE carries higher security risk as it is a pure software based solution.

Mahindra Comviva has created mobiquity® Wallet Hybrid HCE solutions, which enhances the security of transactions (without compromising on consumer experience) by leveraging assets available with telcos without the overhead of Trusted Service Manager (TSM) or the challenges that were inherent in a UICC—SE based solution.

Innovation
To make the existing HCE-based contactless payments more secure the following aspects have been added:

1. Hybrid HCE with SIM: Splitting crypto creation into two steps with one algorithm being provisioned on a hardware secure element—
   - SIM takes part in the transaction
   - Eliminates the need for SP TSM
   - Part of cryptographic algorithm resides in the SIM
   - No need for network connection at the time of payment
   - High level of security. Need to clone the SIM to compromise the system.

2. Hybrid HCE with Identity Authentication: Establishing user’s identity through a telco partner—
   - MNO can reliably identify the customer’s mobile number

   - The token is strongly linked to the handset and mobile number
   - Simplified payment ecosystem, without the involvement of TSMs
   - Enhanced Security, comparable to Secure Element based implementation
   - Can also work with any Open ID system to reliably authenticate the customer.

3. Hybrid HCE with Location based Authentication:
   Establishing user’s location through a telco partner—
   - Service Provider can reliably identify the customer’s location based on last known location of the device
   - System validates the co-location of POS and Consumer handset to authorize the payment
   - Simplified payment eco-system, without the involvement of TSMs
   - Enhanced Security, comparable to Secure Element based implementation.

4. Vectorial cross-correlation, using two or three of the above options.

Advantages
- Reduce OPEX costs and increase margins per card provisioned to wallet
- Software + Hardware based security to better manage risk for transaction keys
- High scalability – Ability to issue virtual cards to unlimited users in real-time
- Modular offering – Can enhance existing Mobile Wallet App
- Same consumer experience as other NFC proximity payments (fast and one-click pay)
- Hybrid HCE compared to other m-payment systems (e.g. Apple Pay, and other new entrants)
OnTheGo Pin

Affiliation: FreeCharge

Represented by: Vidhi Nangia

e-mail: saraswathi.m@freecharge.com

In a nutshell, the objectives of coming up with OnTheGo Pin were:

★ To create sub-10 second seamless transactions
★ To eliminate the wait time associated with OTPs. In other words, to create a pin that wasn’t dependent on a device’s internet connectivity or network quality in order to reach the end user
★ To reduce frauds and chargebacks. We have observed that reducing expiry time of a PIN to three minutes reduces fraud by ~80% and chargebacks by ~45%. OnTheGo pin has a configurable expiry, which at present is set at three minutes
★ Payment success rates improve by around 50% if a bank OTP arrives in 20 seconds as opposed to two minutes. OnTheGo pin is available at all times unlike the wait for an OTP to arrive based on SMS gateways.

Chillr: Multi-Bank Mobil Payment App

Represented by: Backwater Technologies

Team: Nikhil Joy

e-mail: nikhil@chillr.in

Chillr addresses two key issues that customers face:

★ Getting rid of the need to carry cash
★ Making money transfers secure and extremely easy.

With Chillr, customers can securely send and receive money to/from anyone in their phone book without having to know any details of the recipient such as account number, branch code, etc., which previously proved as a key hindrance in online money transfers.

Innovation

The Chillr App provides a user-friendly wrapper/interface over the IMPS platform making it really easy for customers to send money to their peers – by just selecting them from their contact list. No need to remember complex bank a/c details or pre-register beneficiaries. With banks having control of the sensitive data, the end users remain assured that their money is safe within their bank account. A secure 4-digit PIN (bank issued) becomes an authentication requirement for performing any transaction just like in the case of a card transaction.
**Benefits for Customers**

- Ability to send money instantly to anyone in their phone book 24x7 including on weekends and bank holidays
- No need to add beneficiaries and ask for their bank details
- There’s no need to load a wallet. Money stays in customer’s bank account thereby earning interest
- **Proximity Payments:** Customers can send money without sharing mobile numbers using ‘Near Me’ option

**Merchant Payments:** With an increasing number of merchants coming on-board the Chillr platform, customers now use Chillr for Peer-to-Merchant (P2M) payments in canteens, cafeterias and smaller shops which do not have credit card machines.

**Chillr’s Performance**

Chillr was launched on April 2, 2015 and as of January 11, 2016, i.e., within just 11 months of launch, Chillr has recorded:

- Total number of downloads = 1.18 Mn
- Total value of cashless money transfers = INR 1.16 Bn.

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**Eko – pinTwin**

**Affiliation:** Eko India Financial Services  
**Represented by:** Saurabh Mullick  
**e-mail:** saurab.mullick@eko.co.in

At Eko, we realized that the future of payments lay in ensuring that payments happen on every interface that we use to communicate while at the same time, ensuring that our shared secret PIN stays a secret forever. pinTwin goes a step further by providing secure two-factor authentication even over untrusted, open channels. pinTwin is the next stage in the evolution of the humble nimble PIN.

Through pinTwin, we are able to tokenize a PIN for every authentication. So, instead of sharing the PIN, the customer could share the pinTwin instead. Since, the tokenization requires customer’s access to two things:

- customer’s PIN (what you know factor)
- customer’s pinTwin key through the pinTwin mobile app (what you have) apart from the customer’s identity itself as a factor, this is a strong two-factor authentication system.

Thus, pinTwin = tokenized, one-time use twin of a customer’s PIN = f(user’s identity, one-time-use pinTwin key, customer’s PIN).
**REL-ID Distributed Digital Trust Platform**

**Affiliation:** Uniken  
**Represented by:** Abhijeet Deepak Joshi, Bimal Gandhi, **CEO; Sanjay Deshpande**, Executive Vice Chairman; Eashwar Ganapathy, CTO; James Villarrubia, Product Manager  
**e-mail:** swati.gulpadia@uniken.com

**Introduction**

Today’s enterprises are struggling to find a solution that is both usable and secure, relying on outdated technologies that create cumbersome systems and poor user experiences.

**Simplicity:** Tokens, one-time passwords (OTPs), multiple passwords, and strict security policies complicate the end-user experience and creates a complicated infrastructure which makes it difficult to bring new services to market swiftly.

**Scalability:** Higher security means lower scalability – solutions like VPN-IPSEC cannot be deployed for retail consumers.

**Safety:** The core of today’s security technology is 40 years old – repurposed and tweaked over and over in an attempt to meet today’s digital demand.

**Innovation**

REL-ID is a game-changing platform for distributed digital trust for the enterprise, mobile applications, and IoT. With REL-ID, organizations can deliver safe, simple, and scalable digital experiences to customers, partners and employees.

**Features**

- **Relative Identities:** The contemporary technologies are based on absolute identities. The Relative Identity model creates a shared identity between two endpoints. By using this split identity to authenticate end-points, both sides can be confident in the absolute trust of the other side.

- **Distributed Trust:** As the power to authenticate lies with both endpoints, trust is distributed – eliminating reliance on any third party certificate or authority.

- **Invisible & Whitelisted Connections:** With REL-ID, enterprise resources are hidden behind the REL-ID gateway and can only be accessed through whitelisted apps, users, and devices. This greatly reduces the enterprise’s attack surface. Hackers can’t hack what they can’t see.

- **Integrates with Emerging Technology** like biometrics, facial recognition, voice, etc.

REL-ID does not rely on any existing technology or framework. Thus, REL-ID has no direct, comparable competitors. With REL-ID installed, clients are safely removing large components of their security stack. These legacy technologies typically include VPN, SSL, and OTP – none of which provide the simplicity, safety, and seamless user experience of REL-ID.

**Use Case – Securing Mobile Payments**

India’s largest Mobile Payment Solutions company was trying to set up semi-closed payment system in India. The existing app was prone to MITM attacks and put data at risk. Users were downloading fake applications and risking personal information.

**Advantages with REL-ID**

- The REL-ID API SDK integrated seamlessly with the existing app without impacting user experience.

- The Relative Identity provides complete protection against MITM attacks, using an App-to-App tunnel with end-to-end encryption.

**Benefits with REL-ID**

REL-ID helped protect against MITM threat vectors without impacting the user experience, scalability and performance of the payment app.
VCOD – Virtual Cash on Delivery

Team: Anantha Padmanabha, BankBazaar; Nishanth Upadhyaya, Walmart Labs
e-mail: ananth.mg@gmail.com

Introduction

Cash on Delivery (CoD) has been an inventive solution for Indian e-commerce consumers who can’t or don’t want to pay online. But, traditional CoD causes some problems and inconveniences for all parties involved – e-commerce sites, online buyers and sellers.

We introduce a product called “Virtual Cash on Delivery” which is a secure and hassle free method that allows a user to do online shopping combining the benefits of both cashless payments and payment on delivery.

Innovation

VCOD allows merchant seller to get money immediately after successful delivery of product and allows online buyers to pay for product only after delivery in cashless fashion.

Flow of transaction is listed below:

- User makes online payment using Virtual Cash on Delivery (VCoD) option
- The amount is marked but not released to the seller
- Once the package is received, the user releases the amount (instantly)
- The release of money can happen by many means like click of a button within app, scanning QR code or entering a temporary PIN and authorizing money transfer.

<table>
<thead>
<tr>
<th></th>
<th>User Bank Balance</th>
<th>User VCoD Outgoing Balance**</th>
<th>Merchant Bank Balance</th>
<th>Merchant VCoD Incoming Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Balance</td>
<td>5,000</td>
<td>0</td>
<td>3,00,000</td>
<td>0</td>
</tr>
<tr>
<td>User does online transaction of Rs. 2075 using VCoD</td>
<td>2,925</td>
<td>2,075</td>
<td>3,00,000</td>
<td>2,075</td>
</tr>
<tr>
<td>Case a) Item received by user</td>
<td>2,925</td>
<td>0</td>
<td>3,02,075</td>
<td>0</td>
</tr>
<tr>
<td>Case b) User cancels/returns item *</td>
<td>4,960</td>
<td>0</td>
<td>3,00,040</td>
<td>0</td>
</tr>
</tbody>
</table>

* Rs.40 has been considered as return/cancel charge
** VCOD Incoming/Outgoing balance can be maintained at same bank, if a bank allows this functionality to “hold” the money till completion of delivery. Otherwise, this can be achieved by transferring CoD amounts to another escrow account.

Advantages

- **To buyers:** Removes the inconvenience of handling exact cash at time of delivery
- **To e-commerce site:** Allows websites to charge delivery charge for cancellations/returns which will force users to not do fraudulent CoD transactions. Incurs lower costs compared to handling cash
- **To SME merchants:** Merchants get the money faster and don’t need to wait for the cash to go through full chain (user to delivery boy; delivery partner to e-commerce site; e-commerce site to SME merchant) which typically takes few weeks
- **To banks:** Removes the burden of managing online refunds – as payment happens only after customer receives item and is satisfied.
**eConsig Platform – An Innovative Solution to Make Sustainable Personal Loans a Reality in India**

**Affiliation:** India Brazil Chamber of Commerce  
**Represented by:** Alvaro Amorim; Astha Chowdary  
**e-mail:** commercial02@indiabrazilchamber.org

Econsig Platform is a unique platform through which loans are made by a bank to an employee, with the repayments deducted directly from the employee's payroll and made to the bank.

So, if an employee wishes to take a loan, s/he approaches the bank, which using the platform analysis quickly establishes the credit worthiness of the employee. If the loan is given by the bank, a small fee is paid by the bank to the digital platform – eConsig – on every monthly payment received directly from the company, deducted from the paycheck through our platform, sharing the risks on success with the banks on every single payment.

By having the payment deducted at source from the company’s payroll, the bank is able to lower its transaction costs and the default rates. Moreover, the company can provide significant information about market tendencies and constraints.

The employee benefits from lower interest rates as the bank is confident that the loan will not be defaulted on.

In Brazil, the platform accounts for approximately 85% of the market share for payroll deducted loans. To give an idea of the scale of the market, approximately £10 billion are currently lent through the platform.

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**Apnakhata – Toll Payment for Large Fleet Operators using IMPS**

**Affiliation:** Apnakhata  
**Represented by:** Chandra Sekhar Rao Kuthyra  
**e-mail:** cs@apnakhata.in

**Solution Overview:** The proposed solution by ApnaKhata Labs aims to take away the burden of Toll Payment from the drivers altogether. All toll payment for all routes will be paid centrally from the KSRTC main bank account to the respective toll operators who may be maintaining bank accounts in different banks. The payment shall get initiated electronically within few minutes or few hours after the bus has been allowed to depart from the respective bus depot after duly being authorised by the depot manager.

The toll operators would get e-mail notification or an MIS record of amount paid for different buses in the order in which the buses arrive at the toll booth. Since our focus is long-distance buses starting at night, all payment has to be done only through IMPS. We will be using the IMPS Reference Number as the primary key for preparing the MIS to all the say 500+ toll operators. In addition, the driver and conductor would get an SMS with details of payment made for all the toll gates for that particular route for that journey.

**Benefits of Apnakhata Toll Payment Solution for Large Fleet Operators:**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Feature</th>
<th>Remarks and Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Toll Payment done from Central Location</td>
<td>No queue at toll-Booth. Separate gate could be given for vehicles which have already made the payment.</td>
</tr>
<tr>
<td>2.</td>
<td>Toll Payment done through IMPS</td>
<td>Most buses start around 9 pm for overnight journey. NEFT is not possible. IMPS is an excellent system for initiating payment at night and on weekends.</td>
</tr>
<tr>
<td>3.</td>
<td>Toll Payment responsibility has been taken away from Drivers</td>
<td>Driver can focus on his driving. He need not fumble with the money and cash. He need not keep any record of bills.</td>
</tr>
<tr>
<td>4.</td>
<td>Toll Amount is automatically decided by the Central Software</td>
<td>Whether Single-trip or Round-Trip, whether it is a normal bus or a multi-axle bus, these details are decided through business rules and coded in the programme.</td>
</tr>
<tr>
<td>5.</td>
<td>Toll Operators can have their own Bank Accounts</td>
<td>With IMPS, there is no need to force Toll Operators to open new bank accounts.</td>
</tr>
</tbody>
</table>

---

**Using our Platform**

```
<table>
<thead>
<tr>
<th>Step</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Employee accesses the interface to consult his/her financial statement, to simulate loans offered and send an electronic loan request.</td>
</tr>
<tr>
<td>2</td>
<td>Financial institution accepts the request.</td>
</tr>
<tr>
<td>3</td>
<td>Loan contract is formally agreed.</td>
</tr>
<tr>
<td>4</td>
<td>Company’s payroll management system sends the electronic loan agreement, loan repayments and repayment values to be deducted.</td>
</tr>
<tr>
<td>5</td>
<td>The company transfers the repayment deductions to the financial institution.</td>
</tr>
<tr>
<td>6</td>
<td>System keeps a record of the transaction history.</td>
</tr>
</tbody>
</table>

4 quick steps!!!

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**Payment System Innovation Contest**
Introduction

We create a method of payment which is all about creating one of a kind, “Payment at Fingertips” adhering to the rules of the Government of India and the Reserve Bank of India. This is a unique method of hassle-free and paper-free transaction, where the user can make payment by using his fingerprints on the POS terminal, which signify his peculiar identity. Payment can be done designating one amongst the multiple accounts with just one touch; these multiple accounts won’t be linked with credit cards and debit cards, thus making it a unique system for payment.

Innovation

Initially, we will use this concept for Payment at POS terminal. Customer can use his/her fingers on the BIO-POS terminal for making payment. Basically, we will create “A Unique Payment Network” in which multiple bank accounts of user will be linked with user’s fingerprints. We won’t use any credit cards or debit cards for linking multiple accounts. The prototype is at the final stage of making.

In this model, bank and credit card provider would have to add their services in our system just one time linking to the customer account. After which, the customer can easily access the services anytime. There would be no need of wallet, cards, mobile and internet. Customers can shop anytime with just one touch. No need of carrying different banks credit cards, debit cards and no need of remembering different PINs for different cards.

With this method of payment, deceit is beyond the bounds of possibility. Fingerprints cannot be falsified, and as per our design; the terminal will promptly reject fake fingerprints (in case if anyone tries misusing an individual’s identity), hence leaving no room for deception. Most importantly, a 4-digit PIN is required for a successful transaction. Thus, a nonpareil combination of fingerprints and 4-digit PIN makes this mode of transaction to be one of the safest methods of payment.

Advantages

★ Main feature of this system will be Cash Deposition. Customer can deposit limited amount of money to their account via this BIO-POS

★ No need to use cash, cards, mobile, internet. So, customer can buy anytime he wants

★ There is multiple accounts feature, hence customers don’t have to worry if they have not enough balance in an account. They can use another account option from the list

★ Customer can see all transaction details which would be done by this POS terminal through a website and a mobile application

★ They don’t have to worry about misplacing or losing cards and cash and remembering multiple PINs. No need to worry about replacement of cards after the expiry date

★ Authentication Process will be done in the first step, then transaction details will be transmitted to Merchant Bank so transaction time would be less

★ For bank, no need to set up payment gateway from POS to Bank Server.
MCSPU – Secure Transactions and Secure Authentication using Multimedia-Content Set & Parameters Particular to User

Affiliation: IIT Delhi

Represented by: Dr. Puneet Goyal; Assistant Professor (CSE),IIT-Ropar; Dr. Nitin Khanna, Assistant Professor (EE), IIT Gandhinagar

e-mail: dr.puneet.goyal@iitdalumni.com

Introduction
Phishing and Man-In-The-Browser (MitB) attacks are serious security threats, leading to several billion dollar losses to global organizations every year. The earlier proposed solutions to these attacks were either abnormally very highly priced or not so user-friendly for requiring the user to carry additional hardware token or virtual OS, etc. For protecting against these severe cyber threats and to provide users secure authentication and secure transactions, we have developed a novel and efficient solution where some random and user-specific parameters are well-integrated into some of the extremely challenging problems in the area of multimedia processing.

Innovation
To prevent against severe cyber threats like phishing and MitB, we propose an efficient, dynamic and novel security approach that is based on hard Artificial Intelligence (AI) problems. Initially, at the time of the registration, the user provides/shares a set of Multimedia Contents (that may be a set of images, videos, etc.) Particular to User (MCSPU) and a set of user specified parameters (font style, font color, language, curve shape, etc.) via some secure communication medium or by visiting the nearest branch of the host institution. On any authentication/transaction request, the host system uses the contextual information (like OTP, beneficiary account number, etc.) as the critical information, embeds this critical information within one of the elements belonging to MCSPU using user-specified embedding parameters, and sends this transformed multimedia to the user for verification. User proceeds with the authentication session/transaction only after verifying this authenticating multimedia.

In the proposed approach, MCSPU elements in their original forms are never revealed by the host system/bank, and therefore the adversary cannot succeed in mimicking the behavior of authentic website. This innovative solution makes use of concepts like text extraction from natural scene images, image in painting, etc. (which are still very hard problems to solve). Also, extracting the original multimedia content is much harder problem then just extracting the embedded text. Security can be further enhanced by making it more adaptive; the user may be presented with some other random images/videos as well and user has to select/click the image/video associated with him/her account.

Advantages
Our MCSPU based innovative approach is user-friendly and highly secure for it uses hard Al problems for which there exists no state-of-the-solution to the best of our knowledge. For usage, it is similar to CAPTCHA, but for adversaries, it is much more complicated than CAPTCHA. The immense success enjoyed by CAPTCHA gives us the confidence in the market potential of our security solution. We also conducted a user-study with participants belonging from four different states. The participants indicated their strong preference for this compared to existing solutions and also indicated their willingness to pay premium charges (mean value=Rs. 82/annum).
Paperless Personal Loans in 10 Seconds from Net Banking and ATM

**Affiliation:** HDFC Bank

**Represented by:** Kamal Gurnani

**e-mail:** Kamal.Gurnani@ hdfcbank.com

**Overview**

The Personal Loan (PL) 10 seconds process is a first in industry process where the Personal Loan gets disbursed to the customer’s account within 10 seconds. This is a completely paperless process where the customer can avail the loan 24X7 through an end-to-end digitized process made available through the bank’s Net Banking and ATM platform.

The PL 10 SEC product has resulted in a paradigm shift in the way the PL business is done today and has been an instant success with the customers. This also being an end-to-end paperless digital process has resulted in zero incremental cost. The product has delivered customer delight in the market place in true sense and the bank has received numerous testimonials from customers supporting the same.

**Payment Security including Fraud Prevention**

- Highest level of security with mutual authentication (SSL)
- OTP Validation
- Captcha
- Pan Validation with NSDL
- Identification of customers for such offer basis:
  - Algorithms to approve personal loans
  - Pre-scrubbed HDFC Bank customers with CIBIL
  - Bank Internal Data Dedupe (Posidex)
  - Completely doing away manual intervention of the credit officials.

**Benefit of the Process**

- Customer Delight with unmatched process of availing PL through HDFC Bank Net Banking
- 24×7 availability of Unsecured Loans

- India's first product of its kind with 10 seconds disbursement through Net Banking

**Acceptance/Electronic Payment Infrastructure**

- Loans on ATM
- Loans from Net Banking
- SMS based Communication.

**Use of Emerging Technologies**

- User ID, Password and Channel-based authentication for web services
- State-of-the-art technology platform (Dot Net, ASP, SQL Server, SOAP-based web service, AJAX, Security Filter)
- ISO standard message code
- OTP Authentication on registered mobile number
- CAPTCHA.

**Empays IMT**

**Team:** Ravi Rajagopalan

**Affiliation:** Empays Payment Systems

**e-mail:** ravi@empays.com

Instant Money Transfer (IMT) is a payment system that allows bank users, both individuals and corporates, to send money to any recipient in India by utilizing a single identifier – recipient’s mobile number. The recipient can then walk into any of the IMT-enabled network points (ATMs, BC outlets and bank branches) to perform a cardless cash withdrawal.

IMT enables a payment to be made from the bank account (individual/corporate) held at a member bank to beneficiaries that can be withdrawn from ATMs/BCs without the requirement of a card/account for the beneficiary. The beneficiaries only need to have mobile phones capable of receiving SMS messages. While the
SMS messages are sent in English by default, additional vernacular languages can also be enabled.

IMT can be initiated across all bank customer channels such as ATMs, Internet Banking, Mobile Banking or even BC/POS terminals. If the bank desires, the facility can also be extended to all or selected (e.g. Tier-III, IV and rural) bank branches.

Completely interoperable, the IMT transactions can be paid out through initiating bank’s own network and at any other IMT member bank ATM/BC/Branches as well.

Finance & Markets Global Practice,
World Bank Group - Government to Person Health Payment Project

Affiliation: World Bank Group
Represented by: Arun Sharma
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The World Bank Group (WBG) is implementing a government to person (G2P) health payments project in Bihar, India in association with the Bill and Melinda Gates Foundation (BMGF); Public Financial Management System (PFMS); Ministry of Finance, Government of India (GoI) and Government of Bihar. The programme will also be implemented in Uttar Pradesh once Government of India’s approval is obtained. The project was initiated in response to a diagnostic study that showed the current process of providing G2P health payments had a number of deficiencies and weaknesses, resulting in cost overruns, leakages, and recipient dissatisfaction.

WBG led the development of a web based payments solution called the PFMS Health Module (developed as a module of the Public Financial Management System (PFMS) of the Ministry of Finance, Government of India), to digitize all health payments being made by state governments. The system is also available as a mobile app for data entry and event approvals for system users, providing easy system access to health officials to allow remote entry of data into PFMS, thereby further reducing the processing time. The system has been developed to be scalable and extensible across all states within India, as well as across multiple programmes and schemes of both state and federal governments. To the extent possible, implementation of new programmes is configuration driven, allowing for a faster, efficient, and more cost-effective implementation process.

Scope of Project

The core elements include launching an automated G2P payments system that links payments to bank accounts and enhances access to other financial services in Bihar and UP. The project outcome is improved efficiency, transparency and accountability of payments made to health workers and programme participants.

The project has the following components –

★ Development of a web based payments system (PFMS Health Module) to automate recording, verification and computation of various payments. Apart from the web based desktop version, a mobile app is available for approval of payments by health officials.

Further, another mobile app is being developed for authorized users to enter data into the G2P payment system directly, thus reducing this time further. The mobile apps work on smartphones with the android platform.

Citrus Sellie

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Solution

★ A payment platform to collect payments across multiple social and commerce channels through a simple link
★ A social platform for buyers and sellers to transact
★ Sellers pay TDR for each transaction of 5%.

Product Features

★ Sell and collect payments on social networks, instant messengers, SMS or e-mail
★ Increase repeat sales through social following and social sharing tools
NOTABLE SUBMISSIONS

- Increase trust among buyers through “Escrow Payments” and Chat
- Available on Web, Android and iOS platforms
- 30 seconds on-boarding with zero documentation.

Process
- Create a Product/Payment Link
- Publish the product on social channels/Sellfie with buy button/link
- Buyers checkout/chat using Citrus wallet.

Smart POS & Electronic Payment Switch

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The Solution and the Innovation
- There were more than one lakh touch points, which uses the TCS solution in the last mile as against the total 1.3 lakh touch points created for the delivery of services by the government through various banks and institutions. These are called MicroATM’s infrastructure which is connected online, real-time with banking payment infrastructure of the country.
- Parallely, there are around 15,00,000 merchant terminals that are used in various shops across the country where merchants use POS terminals to swipe the debit/credit card to enable purchase related payments to buyers across the country. This is called Merchant POS infrastructure.
- With the rapid expansion of digital initiatives, the current trend is to use their mobiles/tablets to perform card present transactions using a PCI certified pin entry device in the form of mPOS transactions.
- TCS innovatively created a solution strategy to leverage all the above streams through a common solution framework and thus created the Electronic Payment Switch solution, which once implemented, not only addresses the unbanked segment, but also enables convergence of Merchant POS, mPOS and MicroATM solutions to get converted into single payment acceptance infrastructure called as “Smart POS”.
- This TCS “Smart POS” innovation enables banking, merchant, retail transactions all in a single payment infrastructure, thus reducing the need of multi-institutional infrastructure deployment at the last mile by various service proving entities.

Solution Features
- TCS designed Smart POS applications authenticate agents as well as beneficiaries with biometric validation (fingerprints) linked to Aadhaar identities, bank owned fingerprint authentication mechanism, debit cards (RuPay, Master, Visa), mPIN, passwords, OTPs, etc. The Smart POS connects to bank’s CBS through TCS’ FI gateway platform, which already has the reach.
- An all-in-one digital infrastructure at the last mile to cater to banking transactions and purchase transactions in addition to customer acquisition and e-KYC, account opening (assets, liabilities, payments, collections and remittances)
- Payment Card Industry’s Certified solution (PCI – PADSS). Solution listed in the PCI Council Website in November 2015.
- CardPay interface with all the standard PIN pad devices available in market.
- EP Switch interfaced with standard ATM Switches in market as well as NPCI and Aadhaar.
- Solution is platform agnostic and can be deployed in any platform as per the bank’s choice/existing platforms e.g., as an extended, but independent deployment as same as FI gateway solution.
- Solution already implemented in major banks and under implementation in many other banks in India.
FRAMEWORKS FROM IDRBT

These Frameworks can be downloaded from www.idrbit.ac.in

Payment System Innovation Contest