



# Driving the Digital Transformation for a Billion People

## Innovation Supported by a Central Digital Platform

India is the second most populous nation on our planet with more than 1.3 billion inhabitants. Currently the number of non-cash transactions per person in India stands at less than 10 per year. To put this in perspective, the number of non-cash transactions per inhabitant in the United States was 391 in 2013.

Broadly speaking, there are two reasons that explain the challenges that have limited the adoption of e-payments in India. First, nearly 75 million households have no existing relationship with a financial institution. Second, only about 10 percent of the entire retail ecosystem in India have access to the card payment processing infrastructure.

To address these challenges, the Government of India has taken a number of steps. With initiatives such as Direct Benefits Transfer (DBT) and Jan Dhan Yojana (JDY), the number of households having bank accounts has increased.

In addition, the government has supported options designed to put India at the forefront of digital innovations. For example, the implementation of the Aadhaar program made India the only country in the world to offer secure, convenient biometric authentication for use in payments.

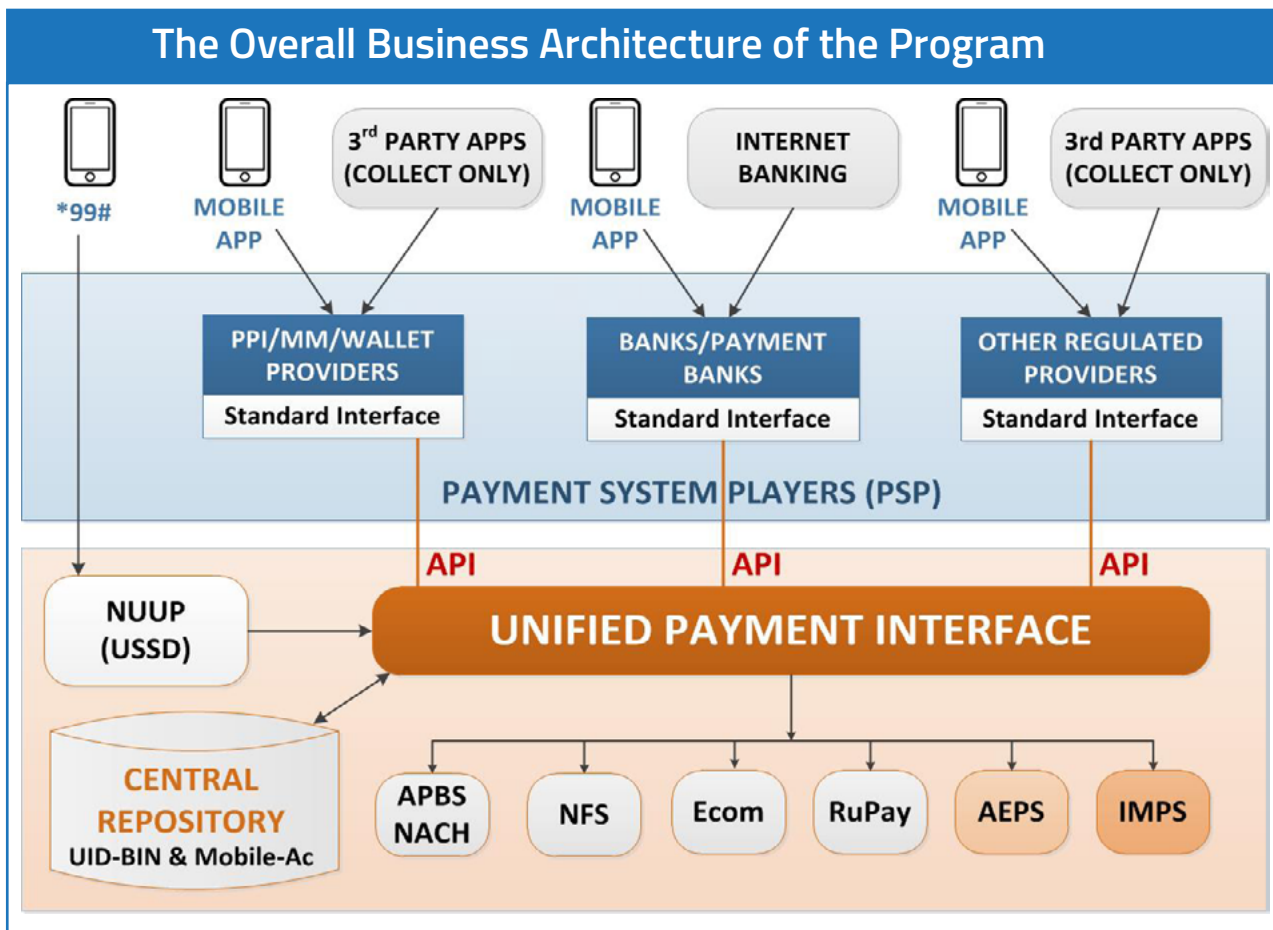
Lastly another factor that has helped accelerate financial inclusion and the introduction of e-payments has been the steady increase in the number of smartphone users in India. Today, more than 150 million people use smartphones and over 900 million individuals own mobile phones. Over the next five years, the number of smartphone users is expected to grow to 500 million.

In order to build on these initiatives, the National Payments Corporation of India (NPCI) commissioned the creation of a digital payments platform. The project provided a Unified Payments Interface that exposes a set of standard APIs that provide a payments infrastructure which is completely independent of the card networks. It allows banks and other players to innovate and offer a superior customer experience to propel easy, instant payments via a mobile app, the web and other applications.

## Key Is Robust, Open, API-Driven Architecture

RS Software was selected to create the vision defined by the NPCI. To maximize the reach of the platform, the interface was based on a standard set of APIs that allowed any-to-any payments (e.g. Aadhaar number, mobile, account, virtual addresses etc.) using any trusted authentication scheme like passwords, PINs, biometrics etc.

The infrastructure was made secure through the entire transaction chain and scalable to allow for planned future implementations in identity, authentication and processing that would allow banks to provide a real-time experience for interactive transactions.



Key elements of the Unified Payments Interface included:

- Two-factor authentication in compliance with the Reserve Bank of India (RBI) guidelines. As biometric-capable smartphones are introduced, payments can be made with no data entry decreasing transaction friction without compromising security.
- Use of virtual addresses and payment addresses in conjunction with the mobile phone to provide the “something you have” authentication factor banks need to create a token-less infrastructure. Use of the mobile phone as the primary device for payment authorization transforms the issuance infrastructure to an easy, low cost and universal environment.
- The basic architecture of the interface is minimalistic but allows innovation from payment service providers in aspects such as user interface, convenience, authentication and security without having to change the core API structure.
- The framework used for the interface delivers the convenience required to drive adoption by the consumer. End users can quickly and safely initiate payments using their mobile phones without having to share any account details or credentials with others.
- With the introduction of new market intermediaries such as payment banks, the interface provides an interoperable mobile payment strategy to allow customers to seamlessly send and receive payments across all present and future payment service providers.

The scope of the Unified Payments Interface project included:

- Design, development, integration and testing of all features and functions of the platform.
- Development of interfaces, including ISO 8583, to integrate with the existing systems such as IMPS, AEPS, RuPay, NFS, and UIDAI.
- Creation of dashboards, reports, audit trails, and workflow tools for accounting and reconciliation of all transactions on a daily basis.
- Establishment of infrastructure required for development, testing, staging, production, high-availability and disaster recovery.
- Validation of the architecture as modern, open, flexible, easy to maintain, high availability, configurable, built for high capacity and throughput, scalable and extensible, secure and platform independent.
- Documentation, training and implementation support for 12 months’ post implementation.

## Igniting a Digital Revolution

RS Software has been designing, building and delivering electronic payments solutions for more than 20 years with a focus on providing core payment infrastructures. We have worked with the leading payment networks to deliver high performance, scalable systems that can process 56,000 transactions per second. This project for the NPCI provides the foundation for a digital payments revolution in India. Delivered on time and on budget, the functionality provided on the system today will be expanded to include a number of additional features designed to provide consumers, financial institutions and merchants in India with a safe, simple and quick way to conduct transactions initiated by a mobile phone.