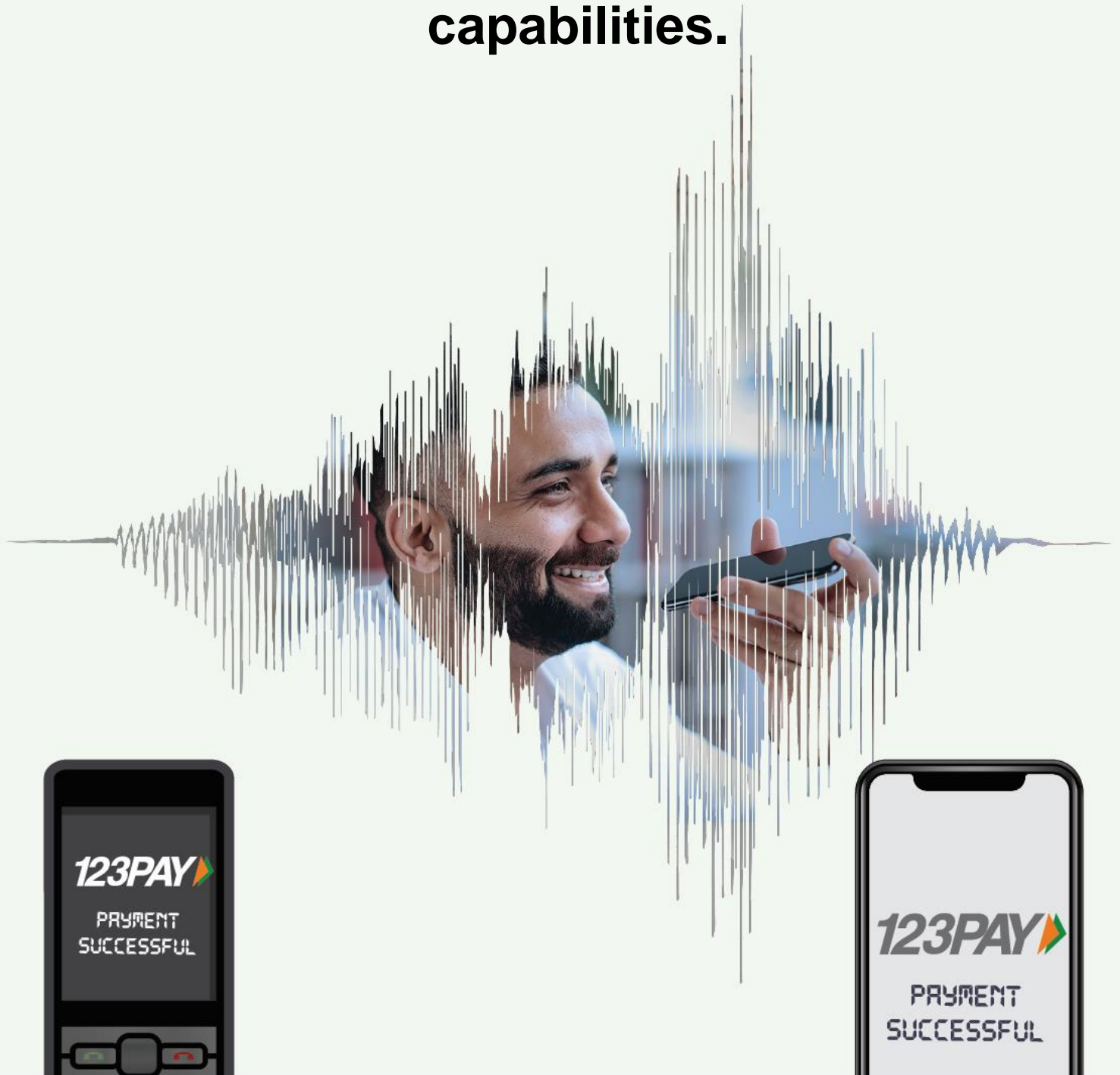


# Empowering feature phones with innovative digital payment capabilities.



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## Contents

Background .....	3
Introduction to UPI 123PAY .....	4
Business uses.....	7
Business benefits.....	7
Participants in the UPI 123PAY ecosystem .....	8
Roles and Responsibilities.....	8
Onboarding.....	11
De-boarding.....	12
Use cases.....	13
Acts.....	13

## 1. Background

### Financial inclusiveness through mobile phones

Since its launch, UPI has transformed the digital payments across the country. Its adaption & the transactions continue to grow. With its “Mobile first” approach, UPI is able to facilitate multiple & new use cases, however feature phone users are still not able to enjoy the benefits of UPI.

In order to provide a new dimension to digital payments space with feature phone users getting an opportunity to perform safe and secure digital transactions NPCI, CIIE.CO and BMGF launched - The Grand Challenge Payments using Feature Phones in Bangalore in Nov’19. The challenge ran through November 2019 - April 2020 calling upon innovators from around the world to submit ideas and solutions toward a payments system for feature phone users in India.

The Challenge seeks solutions that are customized for feature phones with simplified self-onboarding of users, enhanced user experience, highest security standards and automated dispute resolution mechanisms and help half a billion people to transact easily and securely via their feature phones. Winners were selected on the basis of universal application and usage, security and fraud prevention, and the ability to scale. Unique features of these solutions that will enable people to transact securely and easily.

Various solutions that can be used for feature phone payment solutions are USSD, SMS, IVR, missed call, SIM overlay or a sound-wave communication technology platform enabling payments on any device.

In order to expand UPI’s reach, feature phone and voice-based payments have been introduced where UPI services can be offered. While voice based payments service expected to be used by the feature phone users, however these will be available to all mobile phone users (including smartphone). Also all the necessary safeguards as available in the existing UPI offering such as entering UPI PIN in secured CL shall be applicable. To facilitate feature phone based UPI Payment, NPCI has develop “Server Side Common Library (SSCL)”. The SSCL based payment solution will ensure easy, affordable, simpler & interoperable payment option to the end user.




The document covers complete scope on “Feature Phone and Voice Based Payments” on UPI.

## 2. Introduction

### Easy payment solutions for feature phones

NPCI has designed the UPI 123PAY solution to be a more inclusive mobile phone-driven instant payment solution. While it was developed to offer digital payment capabilities to feature phone users across India, the UPI-powered solution also supports smartphone users who prefer the ability to operate offline or with minimal internet connectivity.

Voice Based Payments: A secure phone call-based extension on UPI infrastructure to make payment available for:

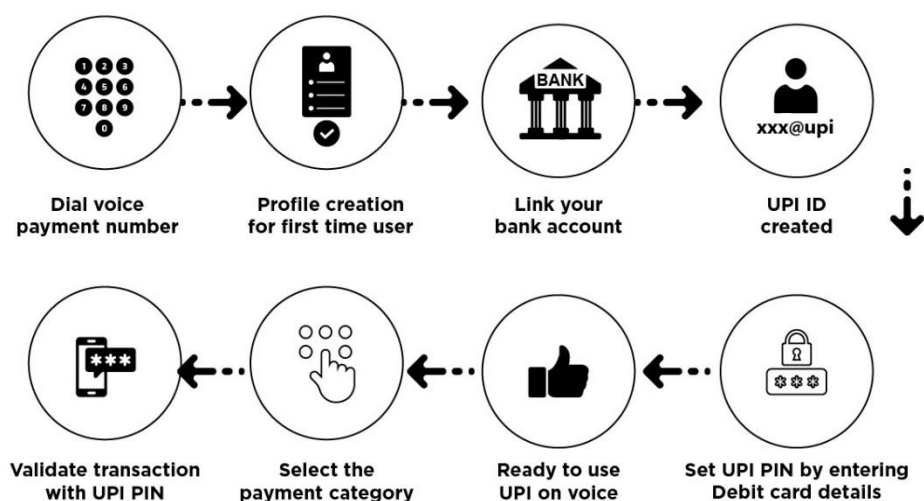
-  Everyone
-  With Any Phone
-  From Anywhere in India

### Types of Payments Solution

#### 1. Voice payment by calling on number

User to initiate a secured call from their phone on a predetermined number and complete UPI on-boarding formalities and start making financial transactions where smartphone and internet connection are not required. This payment functionality is available in 11 regional languages. User can avail this service in their preferred language.

### Indicative user journey on voice payments:



## 2. Missed Call based payment approach

Missed call-based approach will allow smart phone and feature phone users to access their bank account and perform routine transactions such as receiving or transferring funds, regular purchases, bill payments, etc., by giving a missed call on the number displayed at the merchant's place. At the time of billing, the merchant will create a token with the customer's mobile number and the bill amount of his purchase. Customer can then give a missed call on the number prescribed by the merchant and immediately the customer will receive an incoming call from 08071 800 800 asking to authenticate the transaction by entering UPI PIN. This solution is developed by MissCallPay with IDFC First Bank and Bank of India as supporting banks.

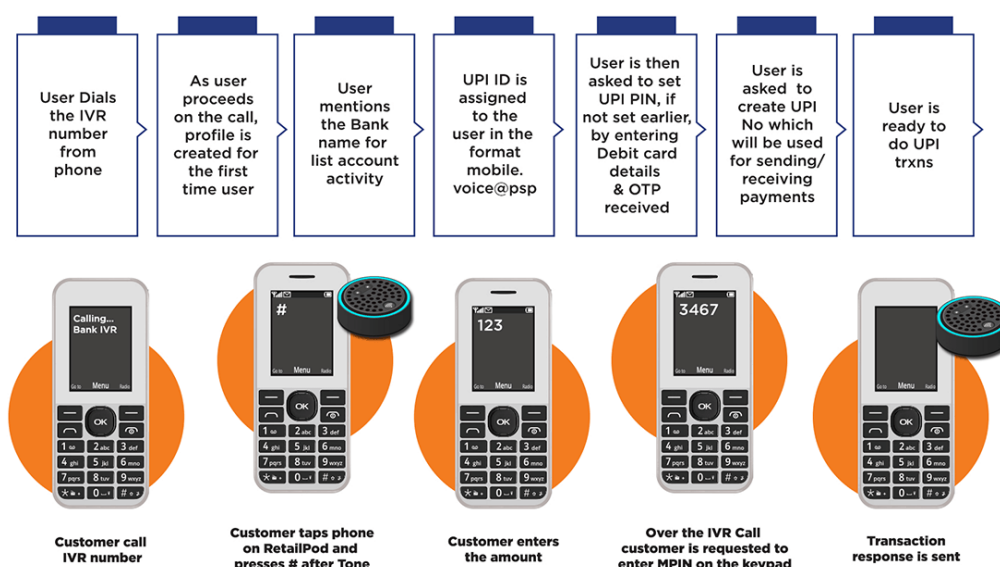
### Indicative user on-boarding journey:



### 3. Sound-based technologies

The technology uses sound waves to enable contactless, offline, and proximity data communication on any device. User can tap any phone and make UPI payments to merchants using ToneTag's VoiceSe payment solution. User calls the IVR number 6366 200 200 and chooses the Pay to Merchant option. They tap their mobile phone on merchant device (POD), and press # once the POD emits the unique tone. The user then enters the amount to pay, followed by their UPI PIN to complete the transaction. The POD acknowledges the transaction status and the user receives confirmation through the IVR call.

#### Indicative user on-boarding journey:



### 4. App Functionality in a feature phone

In this type, the interested solution providers will need to partner with the feature phone mobile manufacturers (OEM) to enable a native payment app developed in embedded C language (or as supported). This UPI app will have look and feel similar to a smartphone-based app, however with certain limitations of the feature phone. Currently, it can offer the majority of UPI functionality including Scan and Pay in feature phones with camera support.

## 3. Business Uses

### What are the business uses of UPI 123PAY?





#### Feature phone based digital payments

UPI 123PAY enables customers to use their feature phones for quick and easy cashless and contactless digital payment transactions. The solution is accepted for a wide variety of payment choices using the UPI solution.






## 4. Business Benefits

### What are the business benefits of UPI 123PAY?








#### 1. For Banks

-  Greater reach and penetration of payment services in remote locations
-  Low cost of onboarding and operations as existing UPI protocols are used
-  Seamless merchant transactions
-  Scalable across the country

#### 2. For Merchants

-  Merchants can onboard themselves by dialing a predefined number.
-  Safe and secure customer payments from feature phone users and can receive the money online even in low/no internet connectivity areas.
-  Ability to accept payments from customers not having access to other forms of digital payments
-  Suitable for most e-com, utility, and small retail purchase transactions.
-  Resolves the challenges of exact change cash payments, cash security/portability, or Cash on Delivery issues.

### **3. For customers**

-  Round-the-clock availability.
-  Two Factor Authentication.
-  Ability to use inexpensive feature phones as well as smartphones
-  Does not require an Internet connection.
-  Widely accepted by merchants through UPI.
-  Ability for IVR service access in a preferred local language.
-  Intuitive and easy to use with no great need for technology literacy.

## **5. Participants**

### **Who are the participants in the UPI 123PAY ecosystem?**

- **Bank as Acquirer on UPI 123PAY:** Bank should be certified as Acquirer on UPI 123Pay and have active transaction being done on UPI 123PAY. Assisting bank customers in onboarding, doing payment, balance enquiry etc. on UPI 123PAY.
- **Merchant Acquiring on UPI 123PAY:** Banks to ensure merchant onboarding / acquisition on digital payments mode (i.e. UPI 123PAY) in rural areas.
- **Digital Payment Transactions on UPI 123PAY:** Banks to on-board customers on UPI 123Pay and transactions be done on same.
- **Digital / social media campaign** for promotion/awareness highlighting benefits, growth, use cases through posters, banners, digital screens etc. in bank branches.
- **Training Bank employees** to encourage and promote payments using UPI 123PAY.

### **Roles and Responsibilities**

#### **NPCI**







- a. NPCI is the owner, network operator, service provider, and coordinator of the UPI Network.
- b. NPCI reserves the right to either operate and maintain the UPI network on its own or provide or operate necessary services through third party service providers.



- c. NPCI will provide and maintain the network infrastructure relevant to the operation of the UPI platform, maintain uptime, and ensure timely settlements to banks.
- d. NPCI may revise the UPI architecture and its procedural guidelines as and when required.
- e. NPCI has the right to call for documents relating to the architecture, operating model, and other technology related aspects of the UPI solution which the bank/PPI/PSP is planning to develop or has developed.
- f. All certification stages will require sign-off from the concerned UPI team.
- g. NPCI may notify PSP and TPAP of any problems encountered on the UPI platform that are attributable to the telecommunication network, as well as any complaints received from customers from time to time.
- h. NPCI issues circulars from time to time, to disclose major decisions, to relevant stakeholders, which all banks/PPIs/ PSPs will have to adhere to.




#### Third Party Solution Provider (Similar to TPAP in App):

These are the entities who provides solution or customer facing interface such as IVR, call back, SMS etc. The entity can be a Third party or Bank. The analogy can be similar to SDK based TPAP. The TSP will integrate with UPI PSPs to offer solution to end customer.

-  All the solutions providers will adhere to NPCI Guidelines for UPI Payments, RBI guidelines for payments and guidelines for telecom authority & regulator.
-  For voice based payments, solutions shall be able to support and recognize user's input and there shall be fallback option incase user's voice is not captured.
-  UPI PIN and Debit Card details of the user set during on-boarding process or if previously enabled, shall not be stored by solution provider for any of the solutions.
-  Solution provider shall have the user related & user input information encrypted.
-  Solution provider should provide proper dispute management process and gradually implement NPCI UDIR process for dispute resolution.
-  Solution provider should have checks in place so that call conferencing while making the payment is prevented.

#### Payer/Remitter PSP (Bank):





A PSP Bank shall provide UPI Interface for the solution. The SSCL will reside at NPCI premise. PSP may extend the usage of the service to the third party solution provider with the suitable agreement on Risk & Security. These solutions in discussion will always be at payer end and the PSP will act as Payer PSP (No change in the transaction flow).

-  All other roles of Payer PSP will remain same as per UPI Procedural Guidelines.
-  PSP will assist in implementing UDIR for all the feature phone solutions.
-  Per transaction limit for UPI transactions on feature phone solutions shall be capped at ₹ 5000 /transaction. Per day transaction limit for P2P & P2M remains same. PSP needs to have check on this.

#### Server Side Common Library (SSCL):

NPCI developed standalone service that is to be deployed at NPCI premise. It will do following activities;







1. Registration of customer accessing UPI
2. User token creation and rotation as per existing Common Library flow
3. Encryption of UPI PIN received to SSCL by PSP
4. Device fingerprinting

-  Whenever a SSCL jar is shared with PSP, NPCI will assign a SSCL ID to it. While initiating any request, PSP needs to pass the CL Id. CL Id will be same for all the request from that PSP to SSCL.
-  All communication from PSP to CL will be synchronous https:// calls.
-  PSP signer certificate will be embedded into SSCL during Onboarding.
-  All the solutions using SSCL will assist feature phone users for enabling UPI payments. Smartphone users will also be able to use these solutions.

- a. Roles of other parties involved in a transaction such as UPI switch, Issuer Bank, Beneficiary Bank, Payee PSP will remain same
- b. Per transaction limit for UPI transactions on UPI 123Pay solution shall be capped at ₹ 5000/transaction. Per day transaction limit for P2P & P2M remains same. PSP needs to have check on this
- c. Solutions which are on-boarding as an extension of Banking UPI payment service, an undertaking will be taken from Payer PSP Bank for responsibility related to UPI 123Pay Solution

Solutions which are on-boarding as Third Party Service Provider (TPSP), tripartite agreement will be signed with TPSP, its PSP and NPCI. This TPSP shall have multiple PSP for the solution.

### On-boarding

-  The Payment Service Provider/member should be a regulated entity by RBI under the Banking Regulations Act 1949, and be authorised by RBI to provide mobile banking services.
-  The member should comply with the Procedural Guidelines, certification requirements operating and risk guidelines and circulars issued by NPCI from time to time.
-  The bank should be live on IMPS. (PPI is not required to be part of IMPS)
-  Additionally, any bank which intends to participate in UPI as a PSP, should ensure that while the bank's technology platform can be outsourced, its functions 'as a PSP' cannot be outsourced.
-  This implies that the PSP Bank has an equal ownership of other banks' customers' data as its own customer base. Furthermore, the PSP has to provide an audit report for the data centre and PSP App by a CISA equivalent auditor.
-  Qualified Security Assessors (QSAs) empaneled by the PCI Council will conduct audits at least once annually. The QSA will verify the app and the following:
  - a. System level Security
  - b. Network / Data Centre Security

- c. Risk tools to be adequate
- d. Procedures and Policy
- e. Annual Certification process



In addition, the member has to provide a declaration in writing to abide by:

- a. All the terms and conditions of the Unified Payments Interface Procedural Guidelines and Circulars, notifications, and directions are issued by NPCI from time to time.
- b. All the guidelines issued by relevant authorities from time to time with respect to payment system operations.

User on-boarding in UPI: Customers can be on-boarded onto UPI through the platforms mentioned below:

- 1) The BHIM Mobile Application
- 2) UPI Bank PSP Apps
- 3) Third Party UPI Compliant Apps
- 4) \*99# (USSD)
- 5) Each bank's mobile banking apps that support UPI
- 6) UPI 123Pay – Unified Payment Interface (UPI) for feature phone and voice-based payments

The tools listed above cover the complete gamut of mobile devices in India and also cover both the data base of customers connected to mobile data and customers not connected to mobile data.

### **De-boarding**

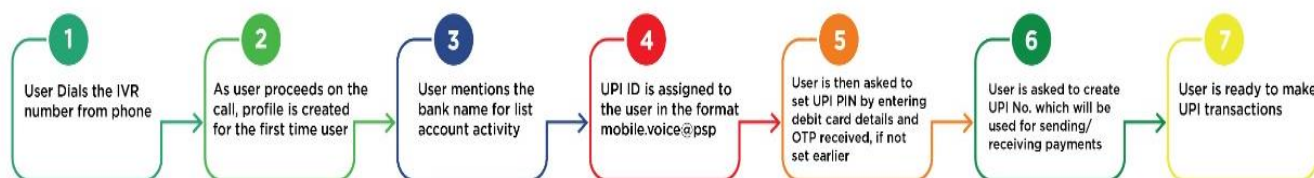
As per NPCI policy.

## 6. Use Cases

### How is the UPI 123PAY service used?

#### A. Money transfer across India

Jai is a parent in a remote village. His daughter Shalini is studying engineering in a large city. Jai wants to send his daughter some money using his trusty feature phone. As a UPI registered customer, he can quickly complete the onboarding for UPI 123 PAY services by calling the IVR number. He is able to select the language he prefers so that he can easily follow the directions on making a digital payment transfer to his daughter.



#### B. Refilling a FASTag for tolls

Sukhi is the owner-driver of an intercity truck. As he is always driving the highways and resting at remote spots, he avoids carrying a smartphone. Instead he carries a basic feature phone, which also has a long lasting battery. Now he can use his feature phone to reload his FASTag simply by calling the pre-defined IVRs number and following the steps to authenticate his transaction.

## 7. Acts

Banking Regulations Act 1949

Payment and Settlement Systems Act, 2007 (PSS Act)

Section 43A of IT Act, 2000 and the IT Rules, 2011

Section 25 of the Payment and Settlement Systems Act, 2007 (PSS Act)