

AEROSPIKE USER SUMMIT 2018

AEROSPIKE

# How Microservices and a Key-Value Store Transformed India into a Cashless Society

Burzin Engineer  
Founder and Chief Reliability Officer  
PhonePe

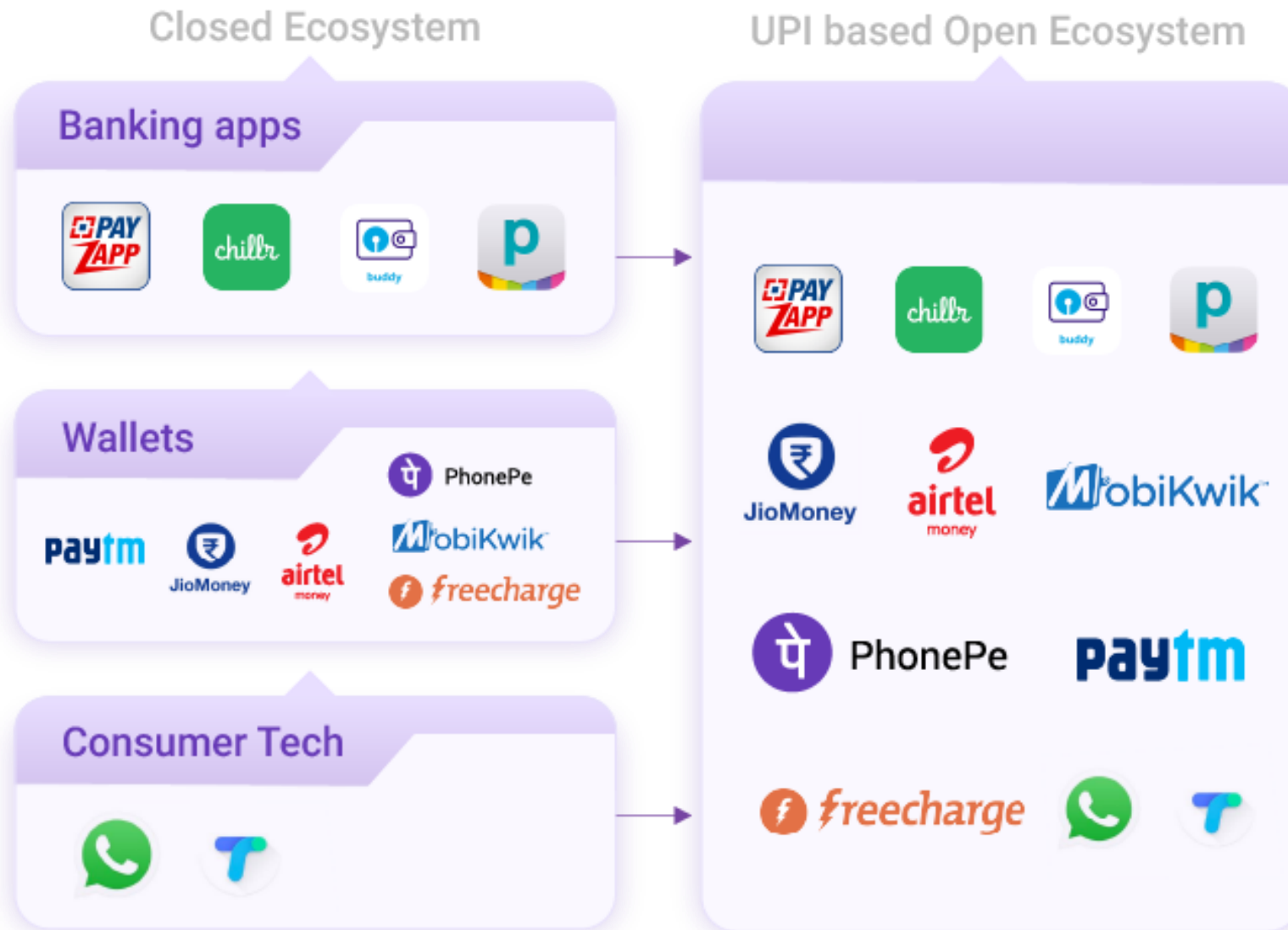
# Indian Market: USD \$15 Tn of payments happen annually today...

Value (\$ Bn)

<i>Payments to:</i>	Consumer	Business	Government	Total
<i>Payments from:</i>				
Consumer	21*	1402	228	1651
Business	407	11781	467	12655
Government	224	463	7	694
Total	650	13648	702	15000

Attributes	Business	Consumer
Size of opportunity	✓	
Competition	✓	
Switching costs(Sales Cycle)		✓
Pp/Fk advantage		✓

# Payments ecosystem evolution – Open & Interop

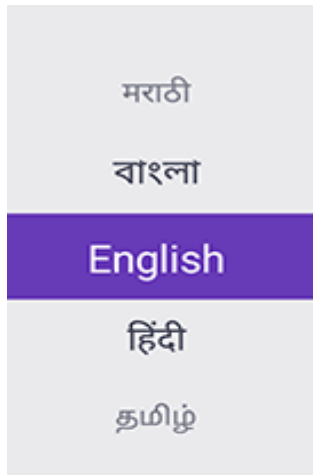


# About PhonePe



- Cashless & seamless payment experience
- Consumers can Pay using UPI, Debit Cards, Credit Cards or Wallets

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- 10+ Languages supported on app



# PhonePe is a Multi-Instrument Payment Container



- 10M+ Bank Accounts Linked
- Best-in-class Success Rates

+



- 20M+ Saved Debit/Credit Cards

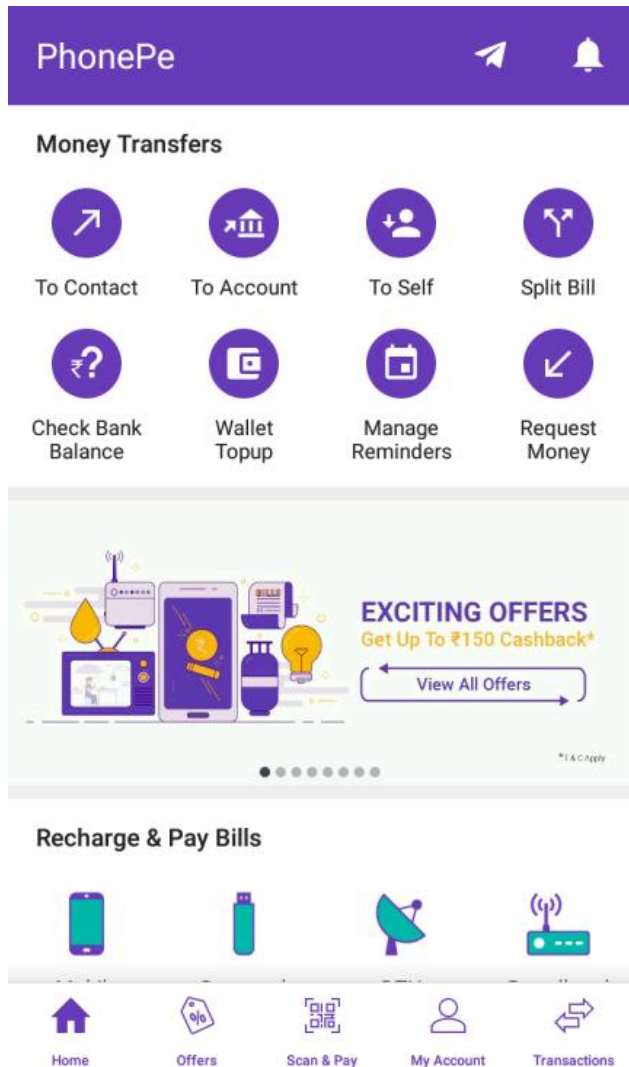
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- 50M+ Wallet Accounts
- High-Ticket Size Transactions on Merchants



# Where and How Consumers Use Us



**Online**

## Checkout on Mobile Apps & Web

E-commerce | Food Ordering | Ticketing | Services | Subscriptions | Digital

**Offline**

## In-store mPOS and Proximity Payments

Home Delivery | Grocery | F&B | Shopping | Fuel Stations | Parking

**In-App**

## Services Offered on PhonePe App

P2P Transfer | Bill Payment | Recharge | Insurance Renewal

**On-The-Go**

## Seamless Solutions

Taxi | Auto | Metro | Buses | Toll

**@Home**

## Cashless Payments at Doorstep

Newspaper | Handymen | Home Services | Domestic Help

# PhonePe is One of the Fastest Growing Payments Solutions



90 MILLION +  
App Installs



\$13BN+  
Annual TPV Runrate  
in March 2018

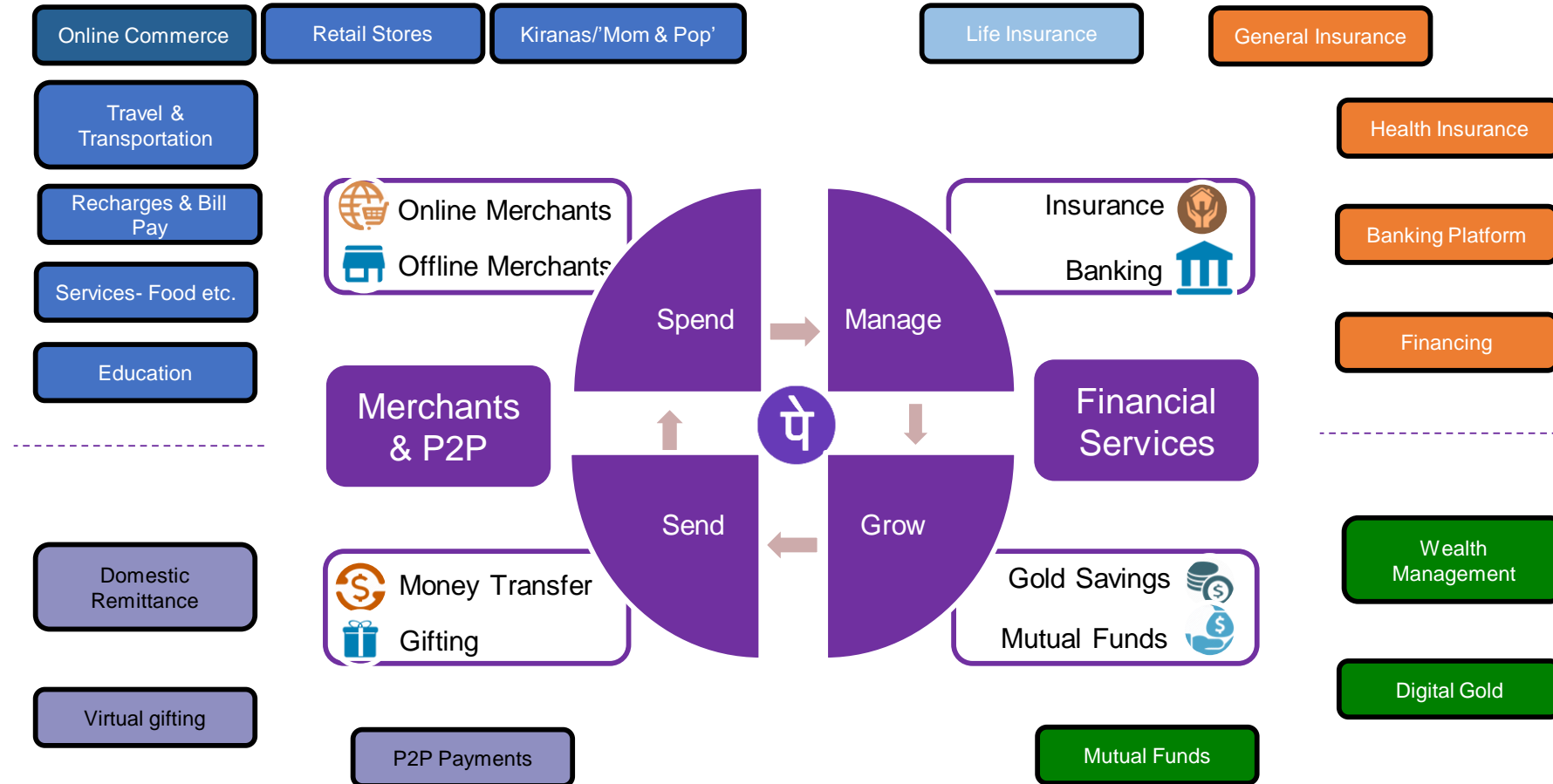


Over 75% Share  
of all UPI Transactions on  
Merchants



Success Rates  
Best in class success rates on  
UPI

# PhonePe Ecosystem: Built around the consumer's money journey





# PhonePe – tremendous growth since inception

**50**  
MILLION

TRANSACTIONS  
A MONTH

**10**  
BILLION

ANNUAL TPV  
RUNRATE

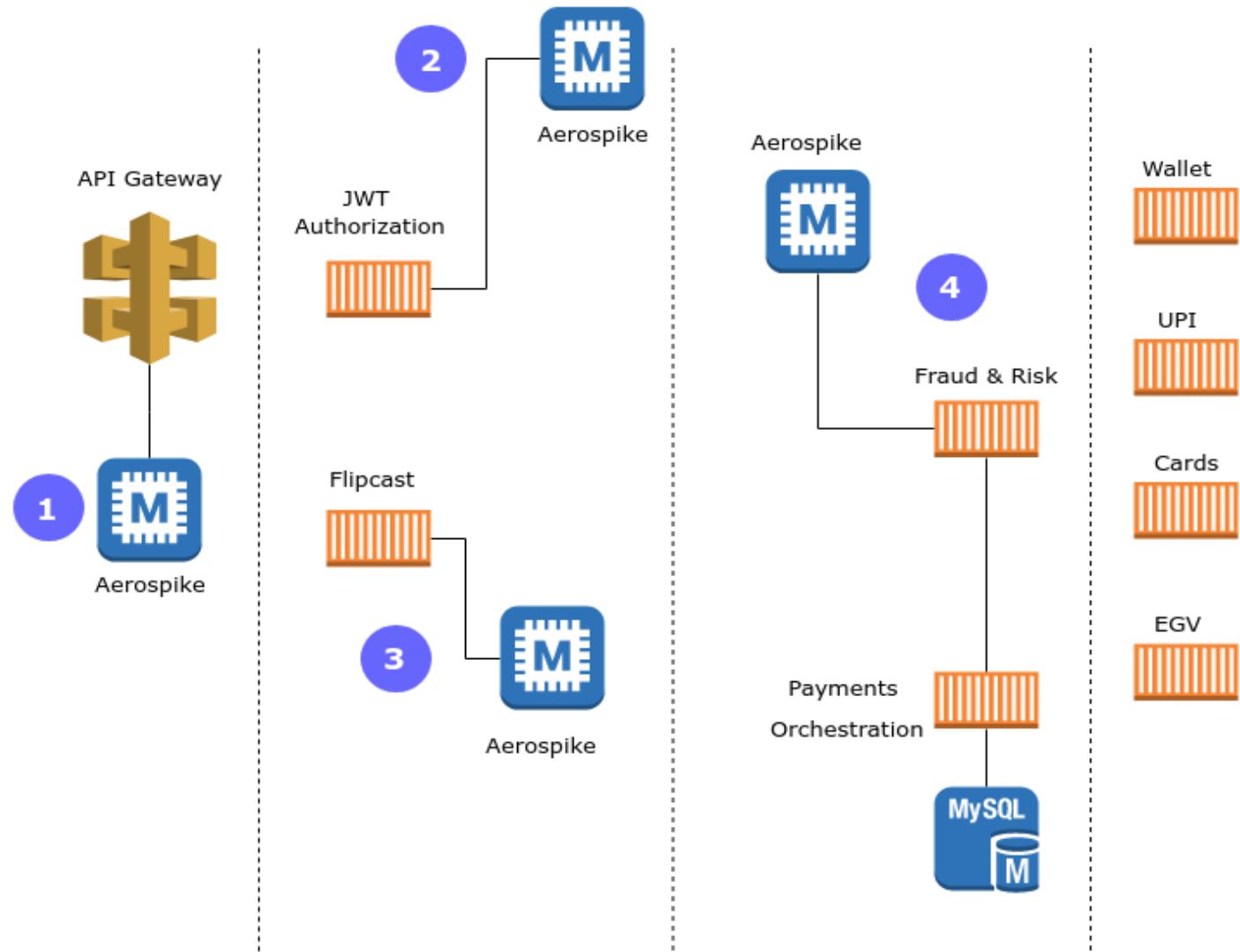
**75%**  
MERCHANT

UPI TRANSACTIONS

**10**  
MILLION

MONTHLY  
ACTIVE CUSTOMERS

# Technology Infrastructure



# Why Aerospike not X, Y, Z

- **Distributed**
  - Aerospike is inherently distributed with sync replication.
- **Hassle-free**
  - No need to manage sharding,
  - No need to manage master-slaves etc with sentinels
  - Simplicity, ease of mgmt
- **Flexible**
  - Support for both disk and ram based storage
- **Speed for Development** - Overall speed and simplicity of client code involved even with relatively complex use cases like expiry and MVCC
- **Multi-Datacenter Capabilities**
- **Consistent performance**
- **TTL**

# Key Aerospike services

## Durable Mailbox

- Integral part of PhonePe API Gateway
- Mobile client friendly
- Fire and forget
- Callback / Polling
- Index lookup and key lookup
  - Index lookup for all pending messages for a client (doing something and app crashes)
  - Key lookup per request id (start polling it)
- 50K to 100K QPS (99% is 1ms)

# Key Aerospike Services...

## Authorization

- Opensource JWT stack for mobile scale
- Multi tenant (Supports multiple apps)
  - Different merchant SDK's and support different scope
  - Allows to create a set on the fly
- Static and Dynamic Tokens (With expiry)
- Transparent assert and authorize with zero code (Well almost)
  - Automatically injects declarative calls (e.g. allow GET not POST)
- 100K to 200K QPS

# Key Aerospike Services...

## In-app engagement

- Messaging
  - In app notifications
  - Alerts
- Offers & Deals
  - Offers
  - Deals
  - Personalization (Targeted)
- Localization
  - Regional Languages
  - Messaging
- Av Latency 3-5ms, 250 qps



# Key Aerospike Services...

## Fraud & Realtime Risk

- Store user behavior
- Velocity checks
- Payment instrument specific behavior
- Compute risk score
- Auto actions (Block, alert)
- 30M w/d, 40-45M r/d, 12K qps
- Av. latency 3ms

# Right or Wrong?

## It works but does it?

- No special FS
- Decentralized
  - Micro services
- Some cases are VM's
- Governance

# Challenges

- **Talent**
- **What business problem are you trying to solve?**
- **Enterprise or community?**

Q & A

**Thank You**

**Questions?**