Special Needs and Challenges in Developing Countries for Achieving Sustainable Transport

Promising Technological Developments

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DIMTS

Company Overview

DIMTS is a 50:50 Joint Venture Government of National Capital Territory of Delhi (GNCTD) and Infrastructure Development Finance Company Ltd.

Vision

To Create an environment where the Majority of trips take place by public transport in preference to personal motorized Transport

Mission

To provide reliable, safe, accessible, user - friendly and sustainable public transport within walking distance for commuters and set up a mechanism to deliver public Transport that keeps pace with growth in demand .

Core Competence

DIMTS is a knowledge based entity with expertise in urban and transport development.

An advocacy and think tank for best practices in public transport, working with private sector flexibility but solely to further public interest.

Business Divisions

Transport Planning

- Comprehensive Mobility Planning
- Urban Mass Transit Corridor Planning and Design
- Traffic Simulation
- Route Rationalization
- Planning of pedestrian and NMV Infrastructure
- Parking

Engineering

- Design
- Project Management
- Independent Engineering Services

Railways

- Alignment and Track design
- Railway Siding
- Signaling

Transport Technologies

- Automatic Vehicle Location
- Automatic Fare Collection – Payment Solutions
- Passenger Information Systems
- Intelligent Signaling
- Identity Management

Operations

- Bus Concession Management
- BRT Corridor Management
- Smart-card Issuance Management
- Parking Management

Advisory Services

- Feasibility Analysis
- Project Structuring
- PPP Advisory
- Bid Documentation
- Bid Process Management

End to End Solutions in Land Based Transportation

Plan-Design-Supply-Installation-Testing-Commissioning-Operations

What is Smart Mobility?

No one size that fits all	
Varies from city to city	
Depends on	level of development
	Willingness to reform
	Resource availability
	Aspirations
Encompasses institutional, physical, social and economic infrastructure	
Should be incremental and amenable to subsequent addition of layers of smartness	

Smart Mobility (Amsterdam)

Smart mobility connotes "*easy accessibility*" to residents and visitors and "*travel across the city which should be problem free".*

The aim is to provide a multifaceted, efficient, safe and comfortable transport system which is *"linked to ICT infrastructure".*

Trends:	
	from ownership to sharing
	driven by information
	personalisation of travel information
	focus on the travel experience

Transport sub-systems and integration

Urban Transportation System	Vehicles
	Pathways
	Terminals

Integration	Institutional
	Infrastructural
	Fare
	Informational

Stakeholders	People (commuters, citizens)
	Interest groups
	Businesses
	Regulatory authorities

myriad possibilities with IT transforming the Provision and Consumption of transport services

IT transforming the transport Sector

Innovations and technological leaps	IoT in transport sector
	Hand-held devices /mobile computing
	Big data and analytics
	On-demand services and shared economy
	e-Commerce/ m-Commerce
	Co-creation
	Location based services
	Virtualisation – augmented reality
Leading to	Optimising demand – optimising capacity
	Customer centricity – user experience
	Increasing VfM
	Rethinking of business models / institutional architecture

Data : Game Changer for Transport

Bridging the information gap

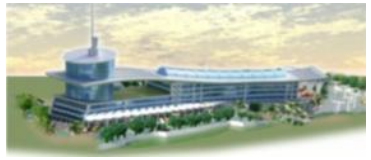
Transport System







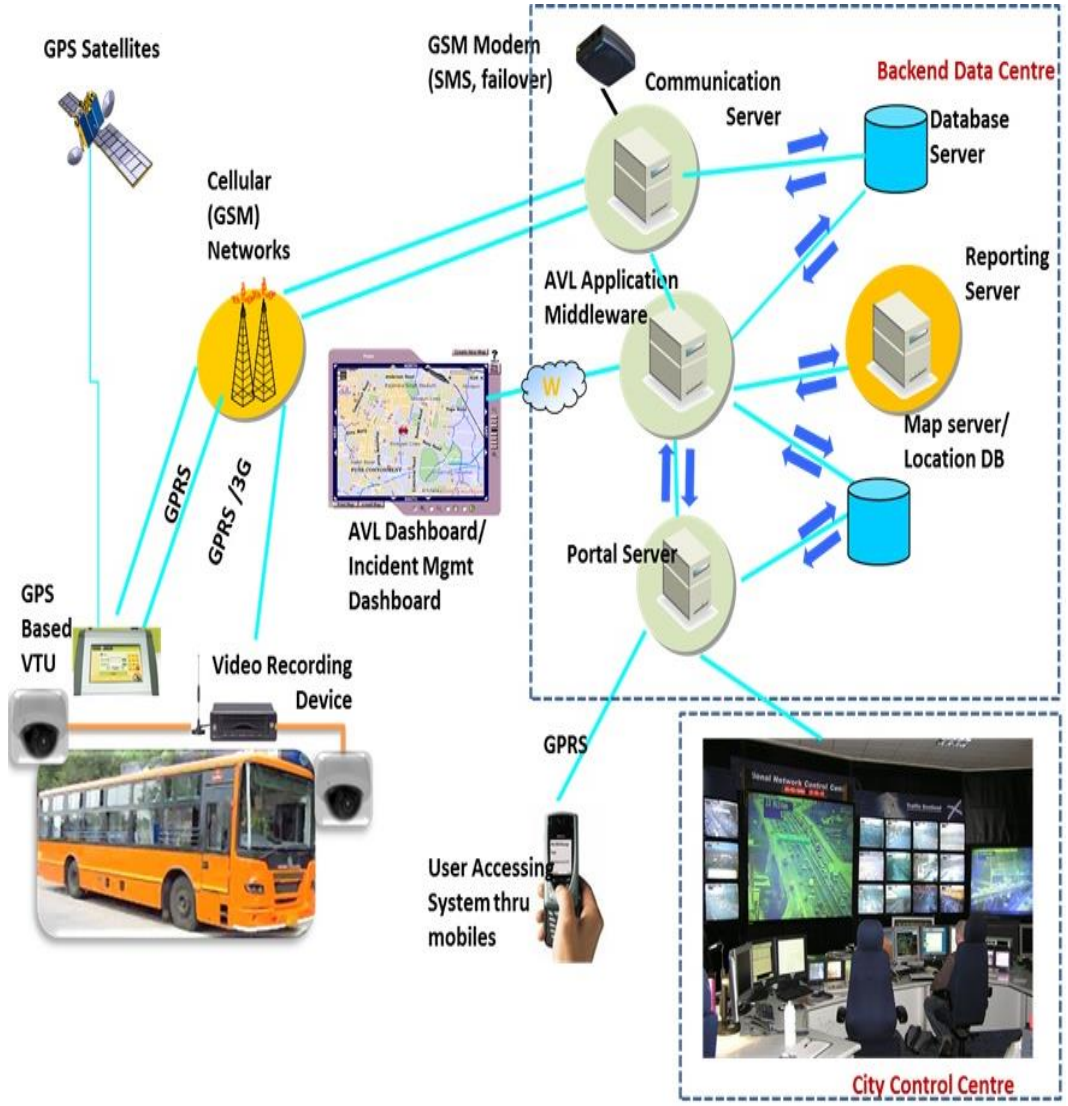
Transport Infrastructure

IT Infrastructure



Vehicle Tracking System – basic building block



Advantages of Vehicle Tracking system

- Reliability and Punctuality of the service
- Safety and Security
- Route Adherence
- Theft Protection & Stolen vehicle recovery
- Asset tracking
- Surveillance

Automatic Fare Collection Systems

Pre-printed ticket

Ticket through ETM

DELHI TRANSIT

TOTAL: Rs.15

DL1PB9761 02/07/2011 12:22
No. T9438811011112130 11-0004
Route Number :**411UP**
Mori Gate Trml. - > DDA Flat Kalkaji
Adult : 1 x 15=Rs 15

Advantages of AFCS

1. Reduced human intervention

2. Less possibility of leakage of revenue due to automatic ticket check by control gates.

3. Recycling of ticket fraudulently by staff avoided

4. Efficient and easy to operate.

5. System is amenable for quick fare changes.

6. Management information reports generation easy.

7. Multi-operator capabilities. Same Smart Card can be used for other Applications also, including in other mode of Public Transport .

Intelligent Transport Systems

CCTV BASED JUNCTION SURVEILLANCE

REDLIGHT-STOPLINE VIOLATION DETECTION SYSTEM

Variable Message System

VIDEO INCIDENT DETECTION SYSTEM

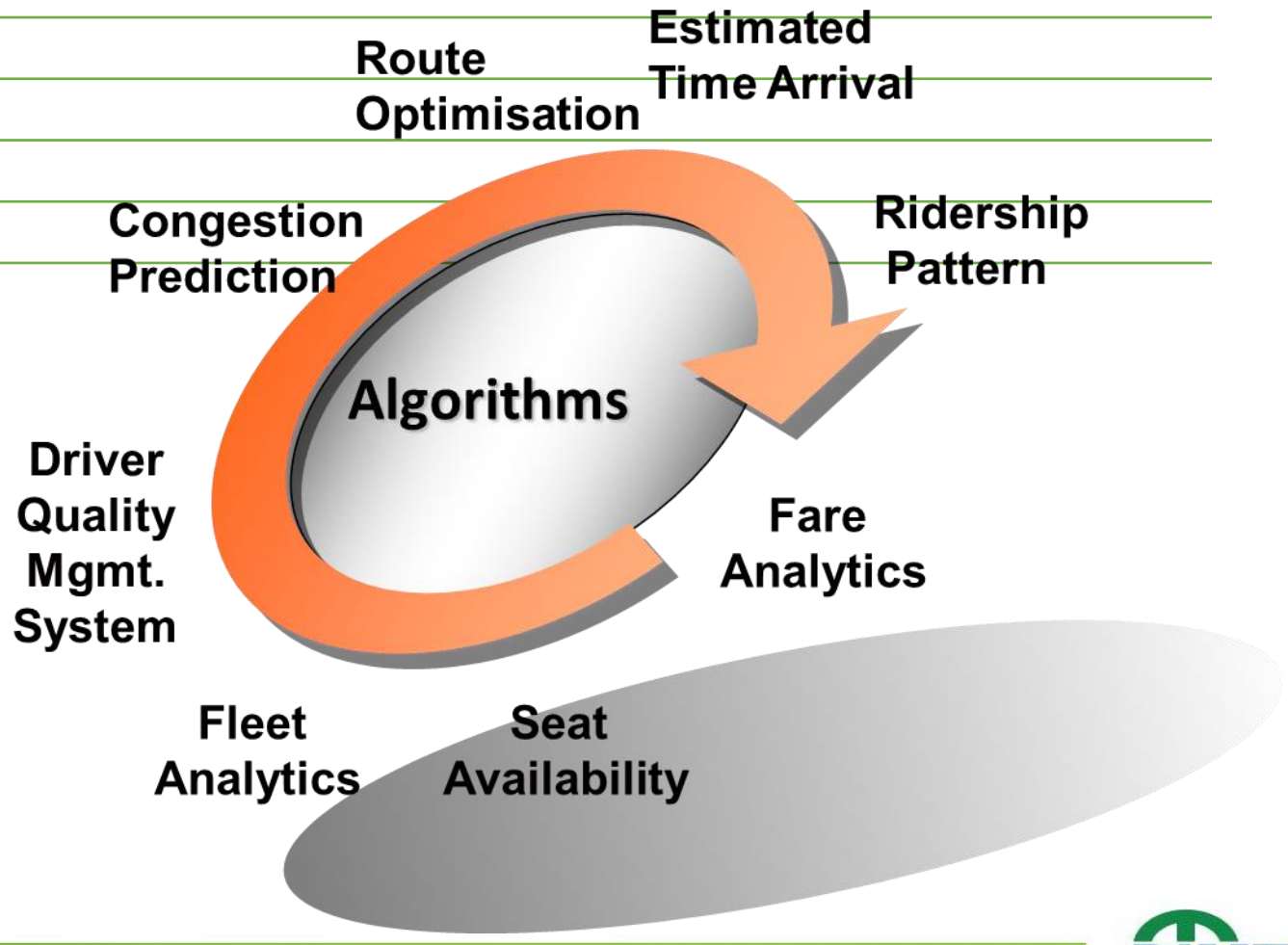
SPEED VIOLATION DETECTION SYSTEM

Traffic Management Control Centre

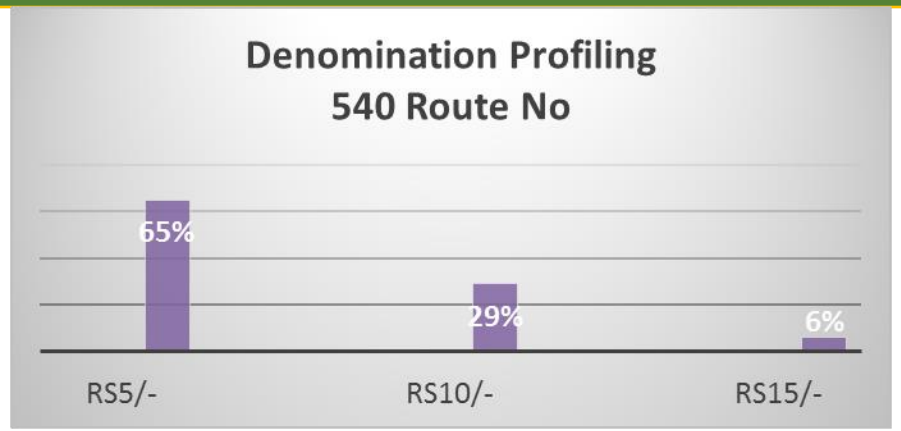
Transit Analytics

Differentiators

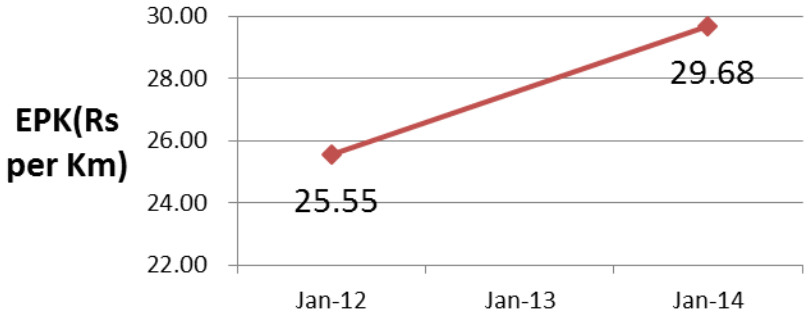
- Business Intelligence
- Big Data Processing
- Advanced Analytics
- Social Media Analytics
- Transit Payment Solutions
- Mobile Apps
- Text Mining



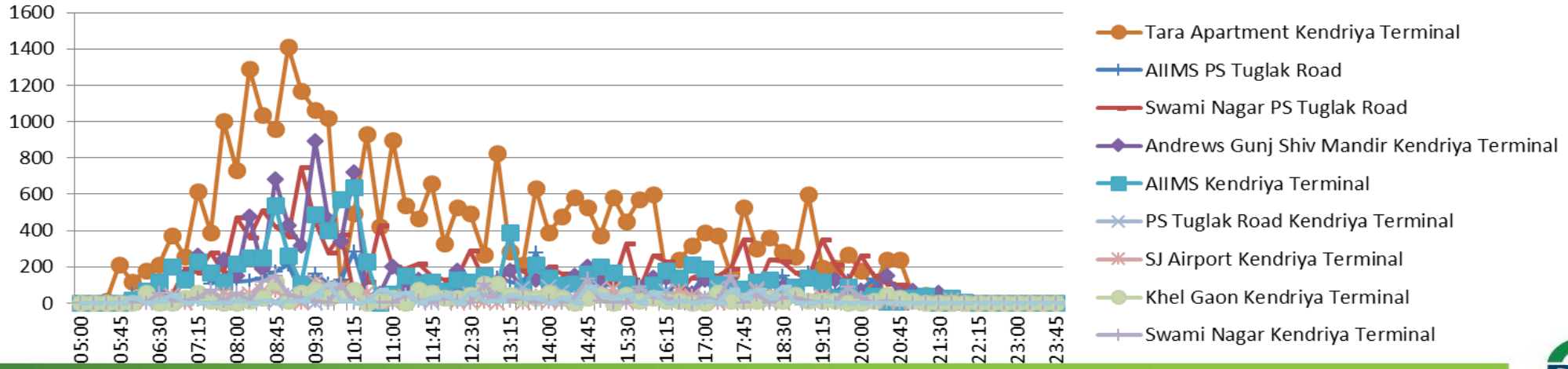
Detailed Analysis of Low Ridership Sectors



540 Earning Improvement After Modifications

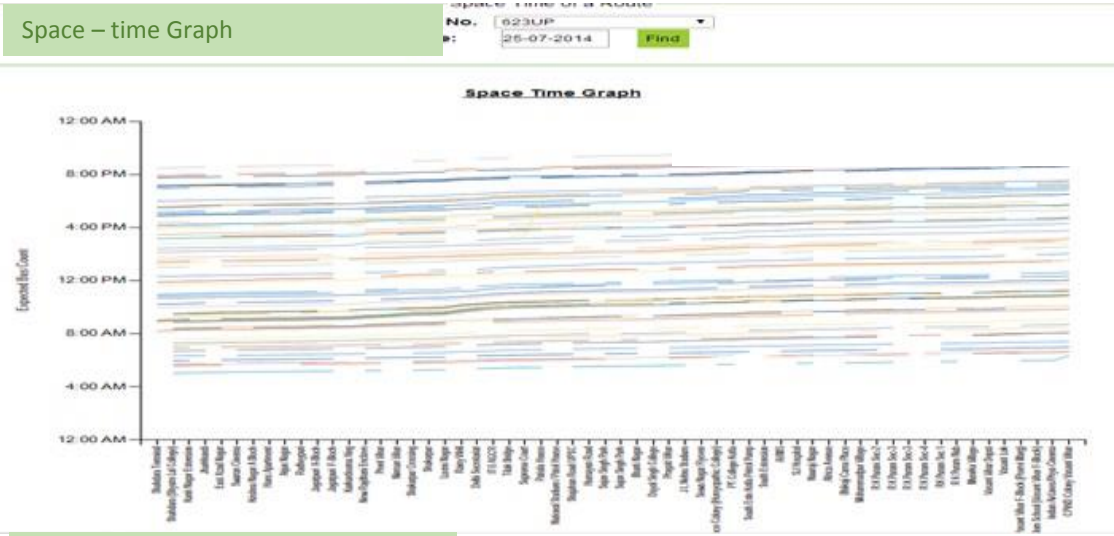


Revenue Generation Rate 540DN Beyond SJ Airport to Central Secretariat segment



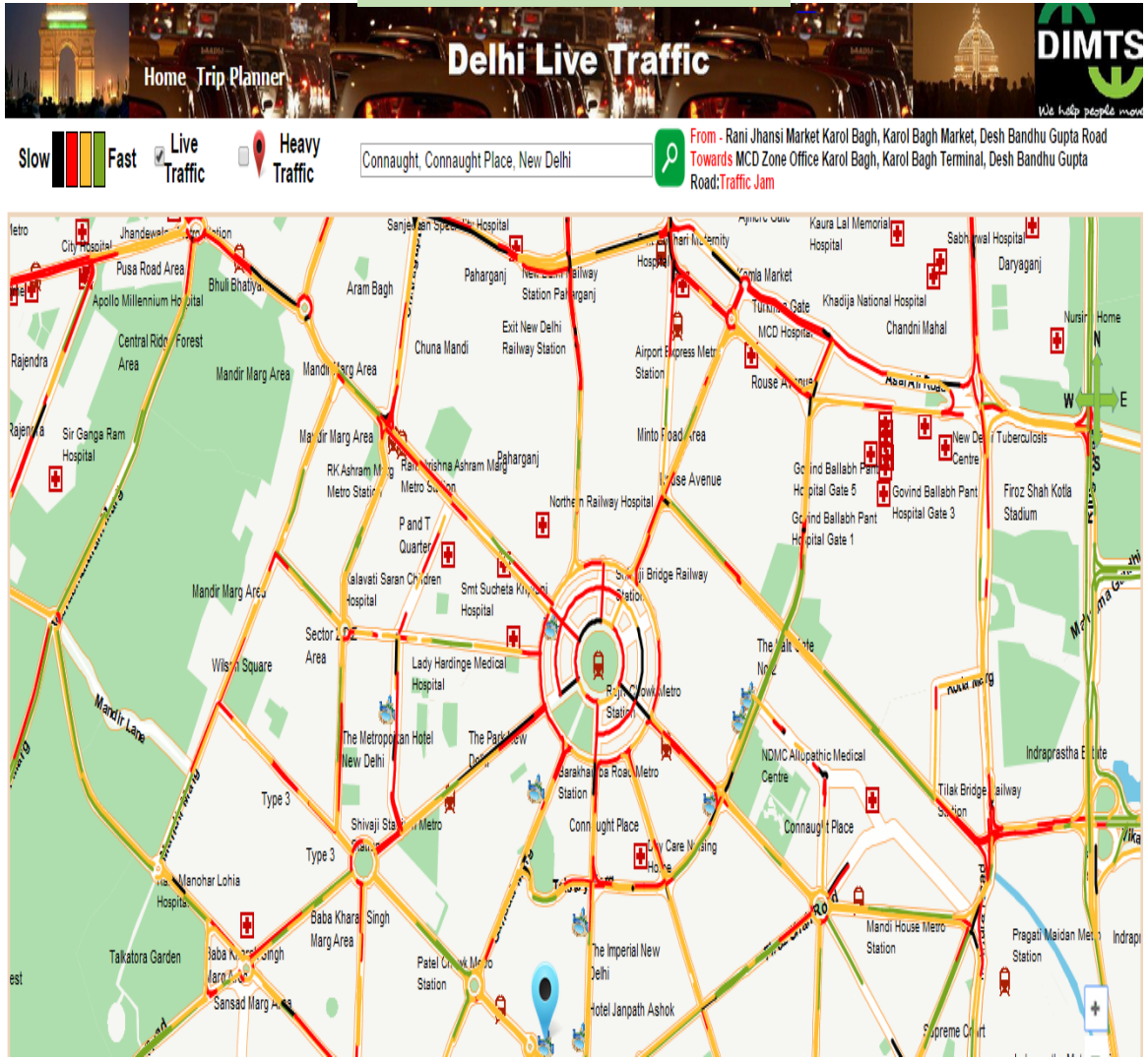
Space Time Graph

Space – time Graph



Trip Analysis

Heat Map



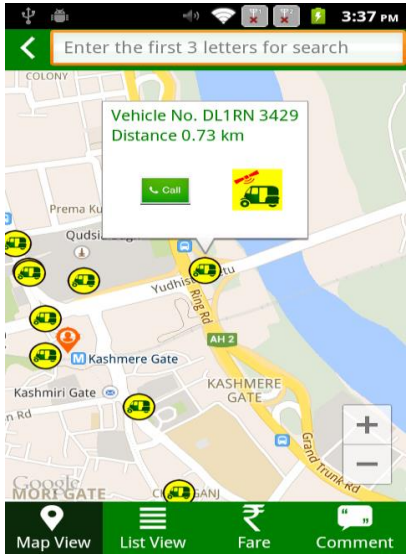
Comparative Performance of Cluster Buses and Public Sector Comparator in Delhi - FY 2013-14

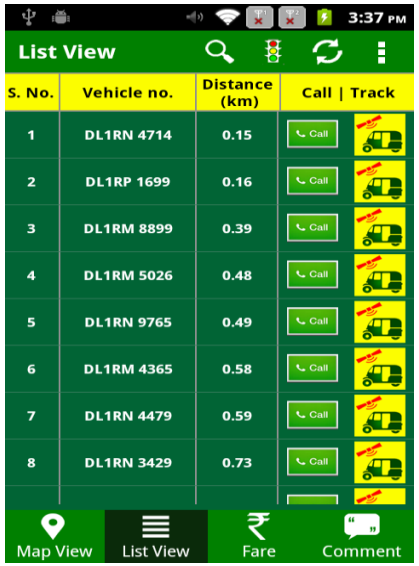
Parameter	Unit of Measurement	Cluster Buses	DTC-City services (published data)
Km Efficiency	Operated/Scheduled (in percentage)	91.23	78.88
Fleet Utilization	Operated/Scheduled (in percentage)	93.48	85.51
Vehicle Utilization	Km/Bus/Day	218	190
Gross Earning	Rs/Bus/Day	7528	6295
Accident Rate	Number per 100000 Km	0.02	0.07
Passenger carried daily	Numbers/Bus/Day	1000 +	952
Fare Collection Management Costs	Rs Per Km	9.38	17.39
Ops Viability Gap (without capital charges)	Rs (in 100000)/ Bus/Month	- 0.42	-1.74

*In 2013-14, DIMTS operated 1200 Buses, resultant savings to the Exchequer are of the order of INR 1900 m . (1.74 - 0.42) * 1200*12 = INR 1900 million*

GNCTD invested ~ 70 millions as equity.

Mobile Apps : PoochO – One-stop Transit App for Delhi citizens





- List View summary

- Indicative Fare

- Concentration of Autos on screen
- Auto Regn #
- Approximate distance from user
- Option to call

Traffic Situation

Congestion Modelling Algorithms

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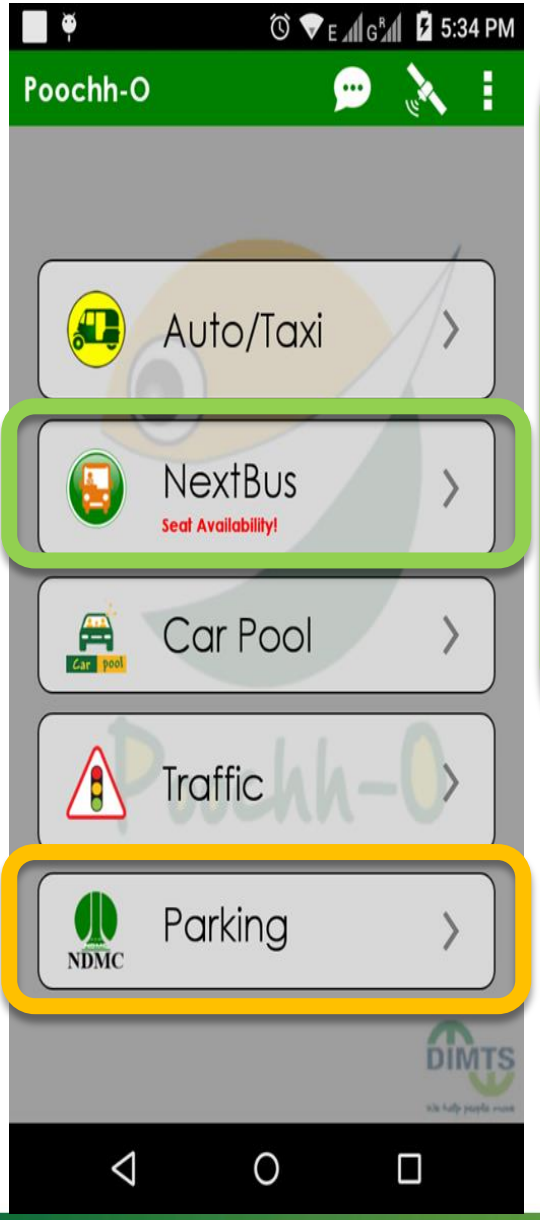
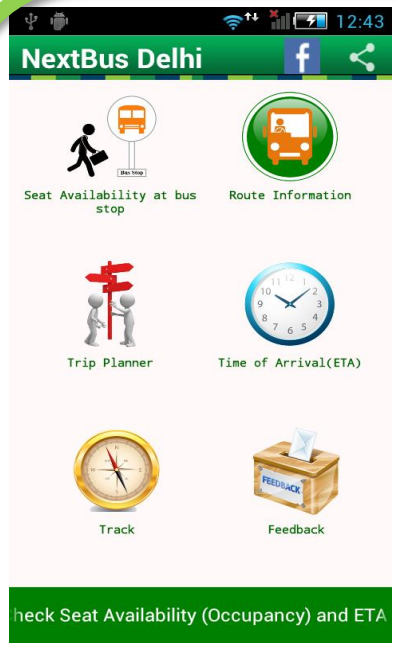
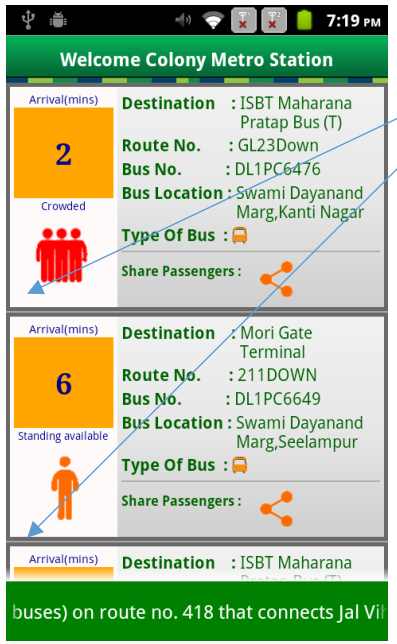


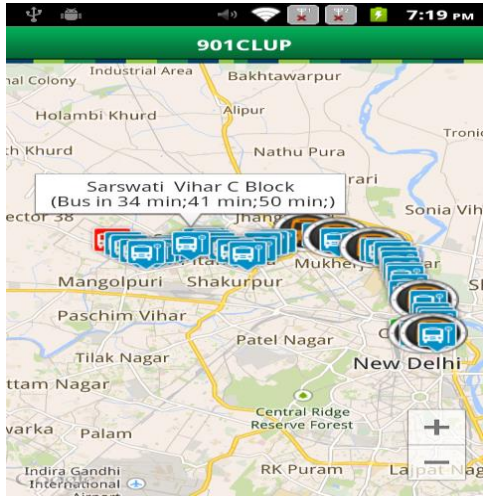


NextBus Delhi App

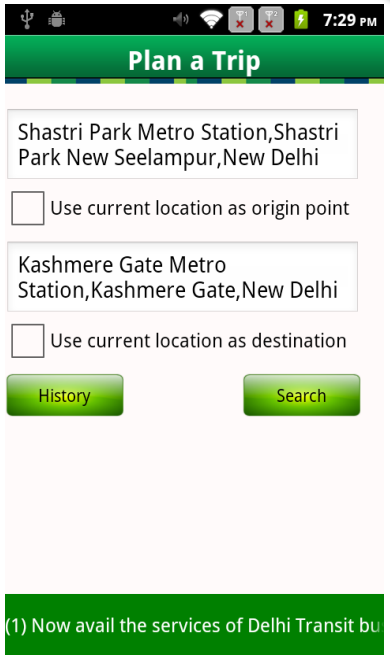


Seat Availability
Estimated Time of Arrival

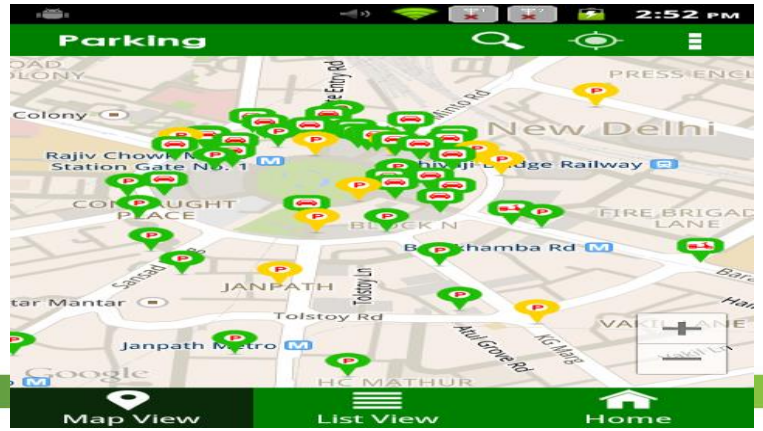
Occupancy/ (Seat Availability)



Real Time Bus Location



Trip Planner



DIMTS

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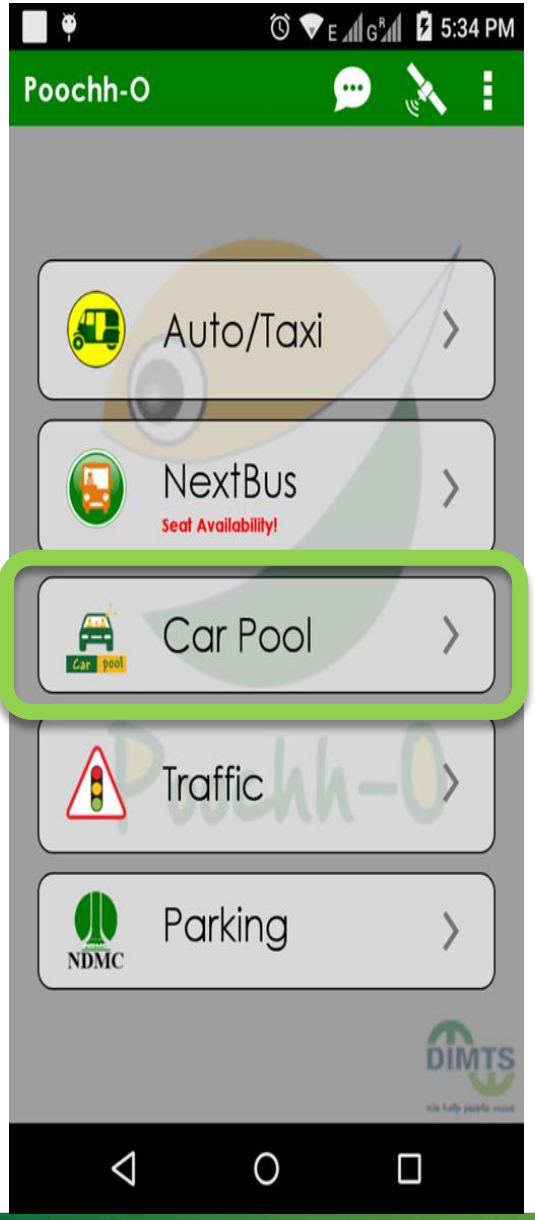
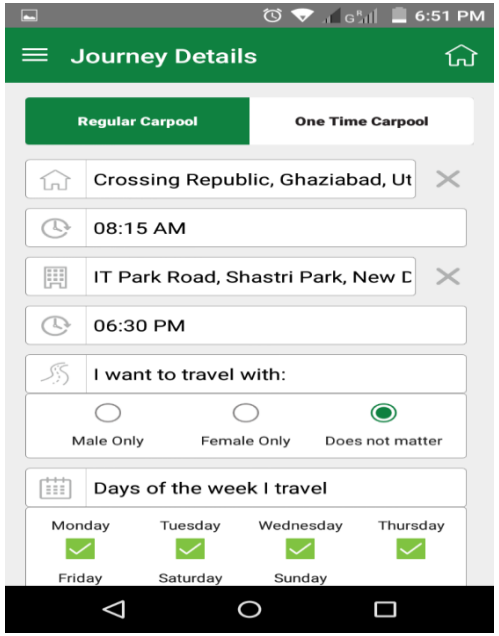
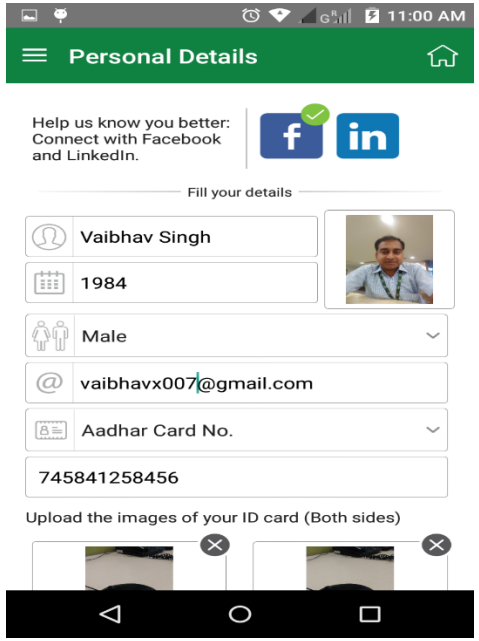
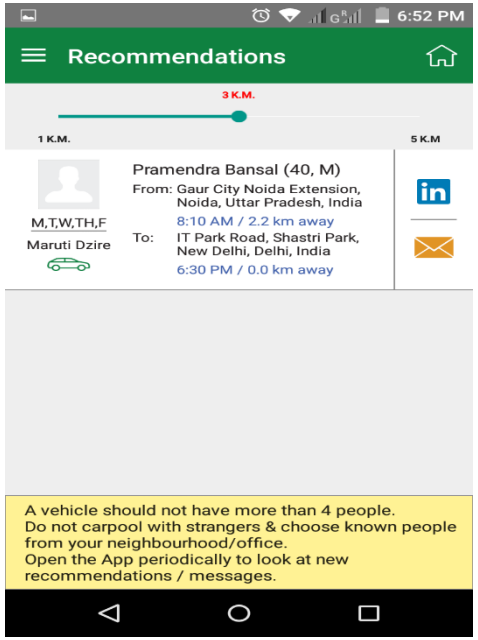
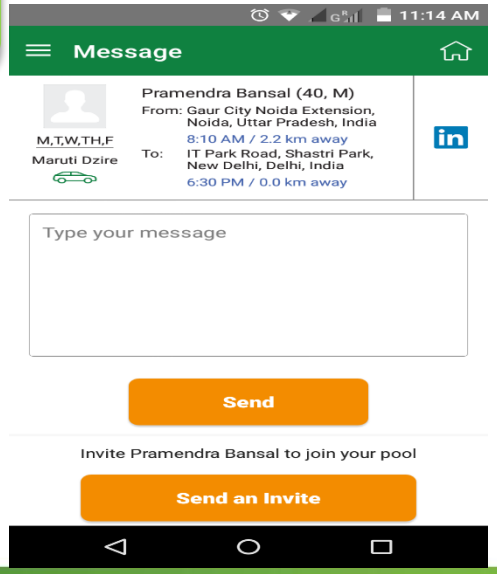
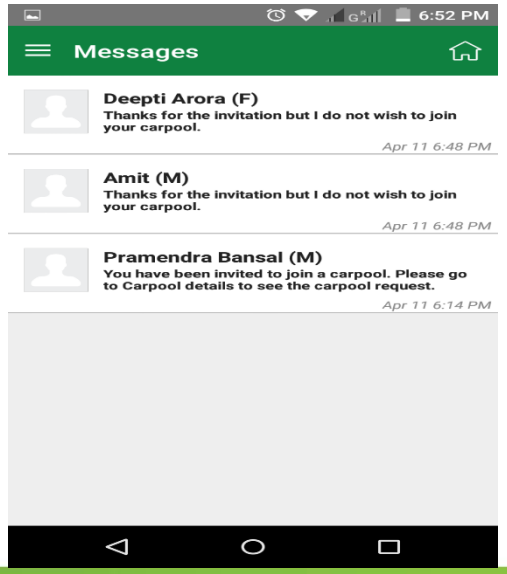


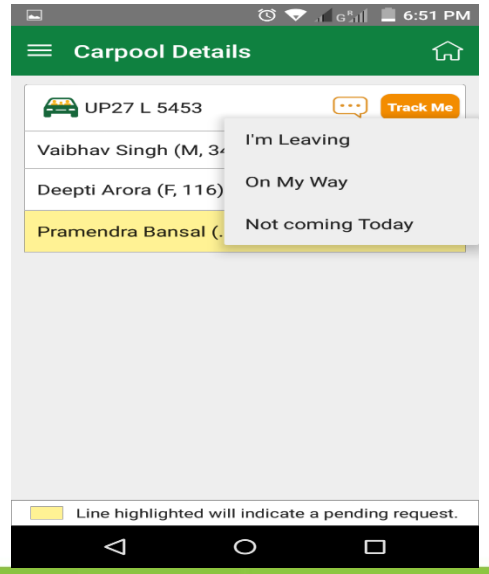


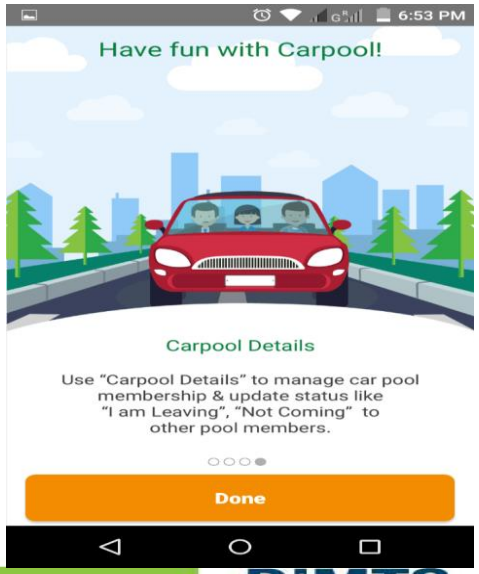












Mobile Apps : TellTail

For Citizens Security..

- A security application that allows the user to be tracked
- **Main Features**:
  - Track using the GPS in a vehicle OR
  - Track through GPS in user's phone.
  - User Opens the application on the phone while commuting (voluntary option with user safeguarding privacy)
  - Send alerts (SIREN and SMS) to friends and family in emergency situations on the press of a single **icon** on the phone.
  - Tracking information visible on a map.

Two options
- Track by Vehicle
- Track me (self)

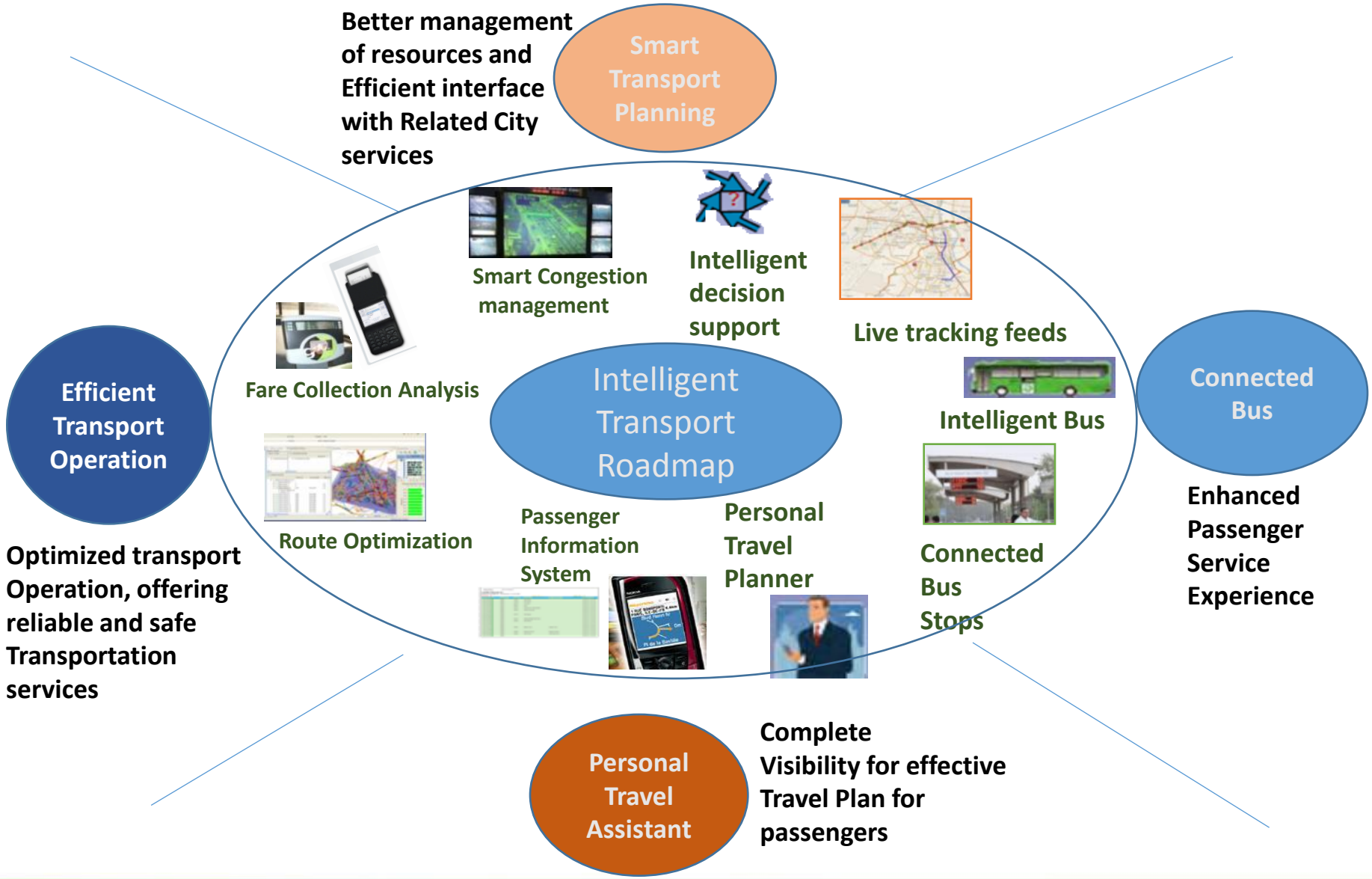
Track Me Screen

Vehicle tracking started

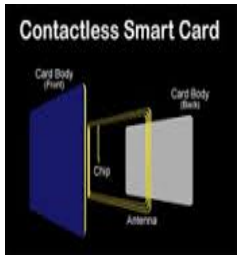
Panic Button can be pressed in case of Emergency

Panic SMS to near and dear ones sent with location details, instantly

Bridging the information gap in transit space – improves service levels, system wide efficiencies



National Common Mobility Card (convenience, savings to PTAs, financial inclusion, bundled incentives …)



Validation

Transit

Museum

Tolling

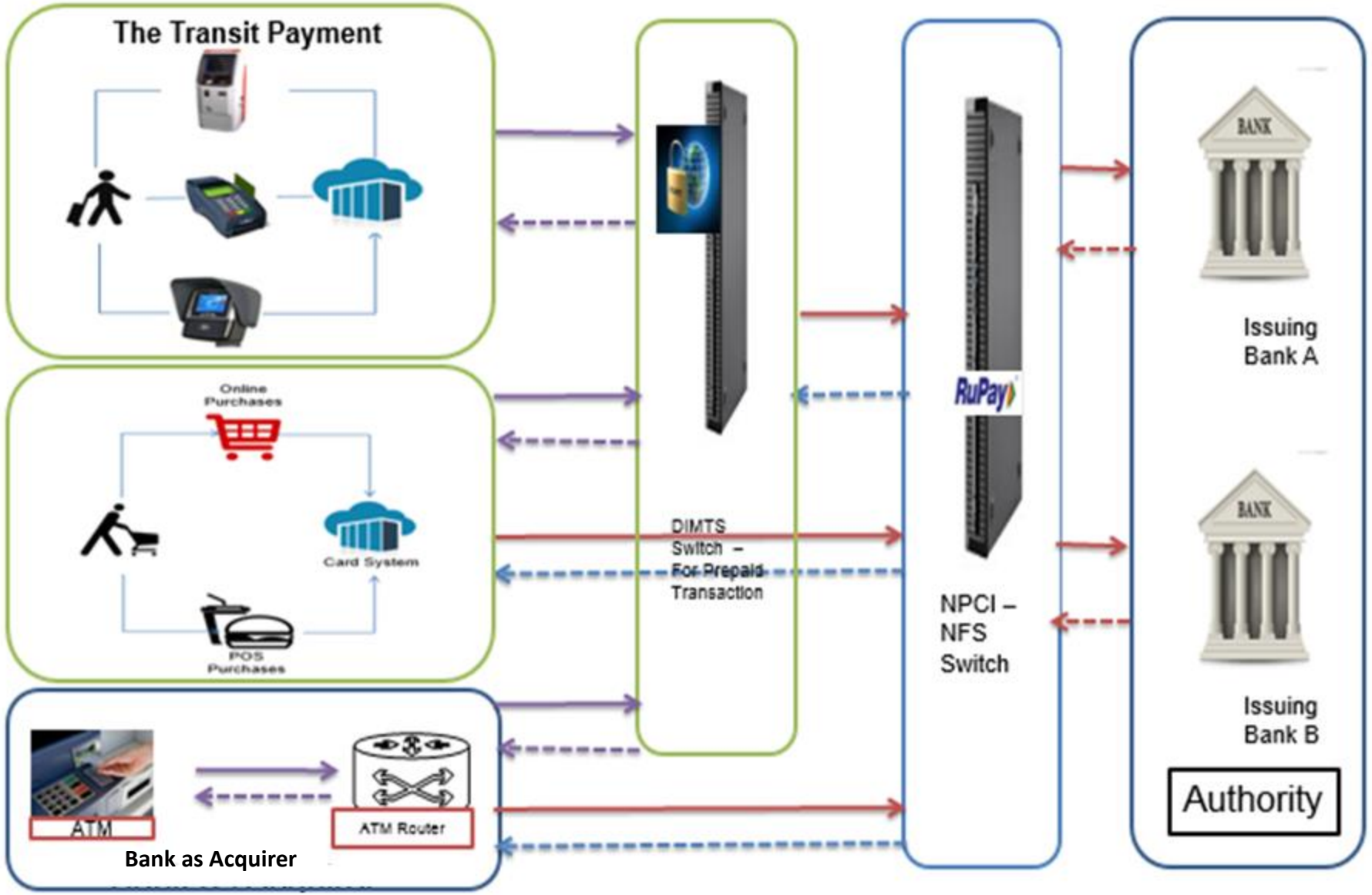
E- Wallet : Online and Offline

Direct Benefit Transfer

Government and Utility Payment

DIMTS

Common Mobility Card Solution



MoRTH Project

Installation of GPS, Emergency Buttons and CCTV (in buses only) in specified public transport vehicles in 32 cities in India having population of more than one million

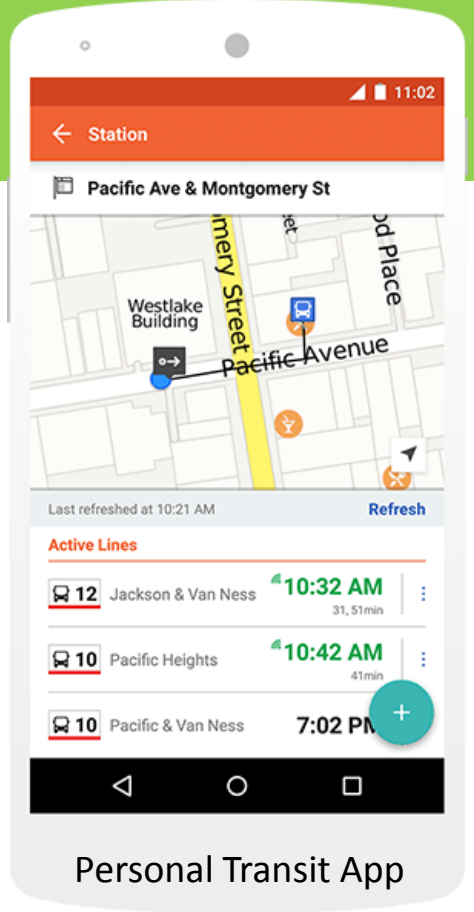
No. of vehicles (estimated)- 3 million.

National Backend Data Centre with centralized architecture.

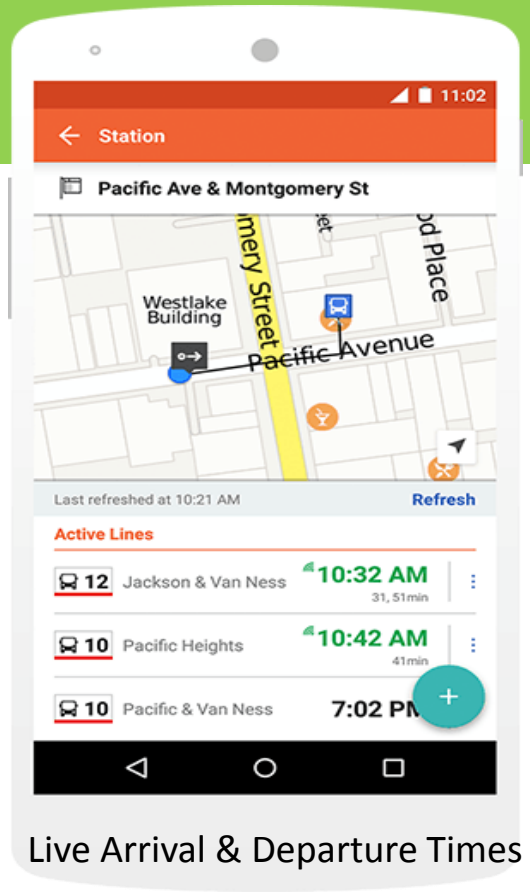
City Command and Control Centre (Transport & Police) in each city. Acts as Control Centre for Transport & Traffic Enforcement Activities

On-board Vehicle Security and Tracking Device	National Backend Data Centre	City Command and Control Centre (Transport + Police)
• GPS Device • Emergency Button • CCTV System	• Permit Mgmt • Data Centre • Help Desk -Technical • NOC (Central Operations) • Disaster Recovery	• Help Desk (Emergency) • Multi-channel communication • Operator Consoles • Video Wall

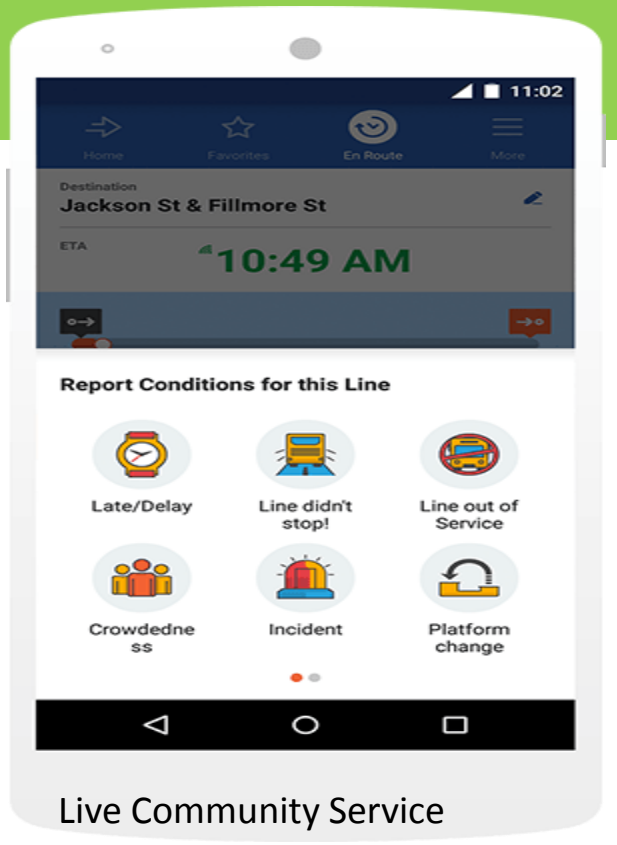
Case Study : Moovit



Personal Transit App



Live Arrival & Departure Times



Live Community Service

30 million riders helping improve transit routes in cities worldwide

Needs, Challenges, Next Steps

Needs:	
	System wide efficiencies
	Optimal use of infrastructure
	Commuter focus
	Scientific Planning

Challenges:	
	Absence of Capacity
	Organizational restructuring
	Professionalisation

Next Steps:	
	Technical Assistance programme with the help of multilateral organizations
	Familiarisation of best practices
	Capacity Building: State/ City level Public Transit Operators, Transport Authorities

Thank You