

7th



**Urban Mobility India
Conference & Expo 2014**

Sustainable Transport for Sustainable Cities

REFORMS IN BUS BASED PUBLIC TRANSPORT SYSTEM WITH SUSTAINABLE PPP – The Delhi Example

**Abhijit Sarkar
Chief (Road Transport),
DIMTS**

7th

DELHI : DEMOGRAPHIC DETAILS



- Population 16.8 million (Census of India, 2011).
- Current population of Delhi: 25 million (UN's 2014 Revision of World Urbanisation Prospects)
- Total Area: 1,483 sq. km with 21% of road space.

Project Background

- Till recently: Private Stage Carriages (Blueline) 3200 numbers operated by individual permit holders owning a few buses.
- DTC: Other half of the city's bus fleet
- Blueline buses competed with each other and with DTC buses on road for passengers, seriously compromising safety of road users.
- Delhi High Court October 11, 2007: Delhi Government to revamp existing operation of Blueline buses with focus on safety, security, efficiency, reliability, integration with other modes and better quality of service.
- Delhi Government decision: Scheme for Corporatisation of Private Stage Carriage Services in order to gradually phase out Bluelines.

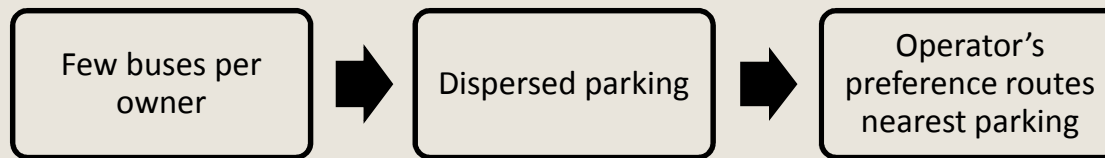
Issues with Erstwhile Private Bus Operation

- Net Cost Model
- Transparent VGF difficult – risk of either providing excessive profit or under-providing.
- In Delhi, there was no VGF to Bluelines
- Entire market risk on bus-owner. (Fares not market driven but regulated).
- Loan financing expensive on account of bus-owner's market risk & single bus
- Changing city pattern adding to market risk of owner



Issues with Erstwhile Private Bus Operation-Contd.

- Main focus on fare-box maximization.
- Cut corners & recover costs ASAP
- On-road competition for passengers – dangerous driving
- Vie for max-revenue routes & time segments
- Inadequate investment in bus-maintenance



- Competition for regulatory attention to corner the most favourable routes
- No focus on operational efficiencies & service volume or quality
- Regulatory flexibility to restructure routes, frequencies and resource-use **constrained by** multiple operators per route & sensitivity of revenues to routes and time slots.



Cluster Bus System – Reform in Public Transport in Delhi

DIMTS conceptualized the scheme of corporatization of private stage carriage buses. 657 bus routes grouped into 17 clusters. Each to be serviced by both DTC and a private operator.

Private Stage Carriage - Bluelines

- A few buses per owner
- Fares set by Government
- Fare box only source of revenue
- Entire market risk borne by operator
- Every reason to cut corners & recover costs ASAP



Delhi Transport Corporation

- State owned
- Fares set by Government
- Gets gap-funding from the Govt.

Cluster Bus System - *Features*

Key Facts

- Routes clustered (657 bus routes distributed into 17 Clusters) so as to leverage network synergies.
- Public Operator (DTC) and Private Operator to share fleet 50 (DTC): 50 Private ratio

Unified Time Table (UTT)

- Public and Private operators to follow Unified Time Table to ensure timely and reliable bus service to public.

Contract Type – Gross Cost

- Resource contract
- No transfer of revenue risk to bus owner
- Revenue goes to a pool

Programme Manager

- An objective & professionally strong Programme Management organisation is essential to monitor SLAs & also inspire confidence of both concessioning authority & concessionaires

Post Contract management of stage carriage operation during concession period as Integrated Mechanism by DIMTS

- **PLANNING AND SCHEDULING** of Service Plan including timetable, its periodic review based on travel-time analysis & traffic conditions in order to make route-timings **RESPONSIVE** to passenger demand.
- **CHECKING** of buses at the time of out shedding from the depot and on route for infractions (including engineering quality monitoring).
- Use **IT**-infrastructure (Operations Control Centre) to discharge function for Program Manager.
- Monitoring departure of buses from the depot/terminal as per Service Plan .
- Monitoring of trip-wise service kms, service hours and other service level parameters with a lot of **PRECISION** and authentication of service kms. and service hours of operation of each trip at various levels (L-1 to L-3).
- Supervision and Monitoring of performance standards of operation of private stage carriage buses as per contract.
- Inspection of buses for **COMPLIANCE** of standards & technical specifications

Post Contract Management of Stage Carriage Operation by DIMTS as Integrated Mechanism & Fare Collection Management

- **REAL-TIME** monitoring of operation of buses on each route for various operational parameters:
 - → Bunching of buses of the same route plying in the same direction.
 - → Route deviation
- Driver Quality/performance Monitoring.
- To manage disbursements through designated account including payment to the concessionaire(s) in terms of concession agreement.
- Ensure compliance of the performance standards, apply performance adjustments on the Concessionaire
- Complaint/Feedback Redress System
- Incident/Accident Management.
- Manage **ADVERTISING REVENUE** of Govt. on display of advertisement on the buses.

Cluster Bus System – *Efficient Management*

Drivers



- The Concessionaire ensures drivers are qualified and medically fit
- Special training sessions organized for drivers with bus manufacturer, Traffic Police and through Driver Training Schools

Conductors

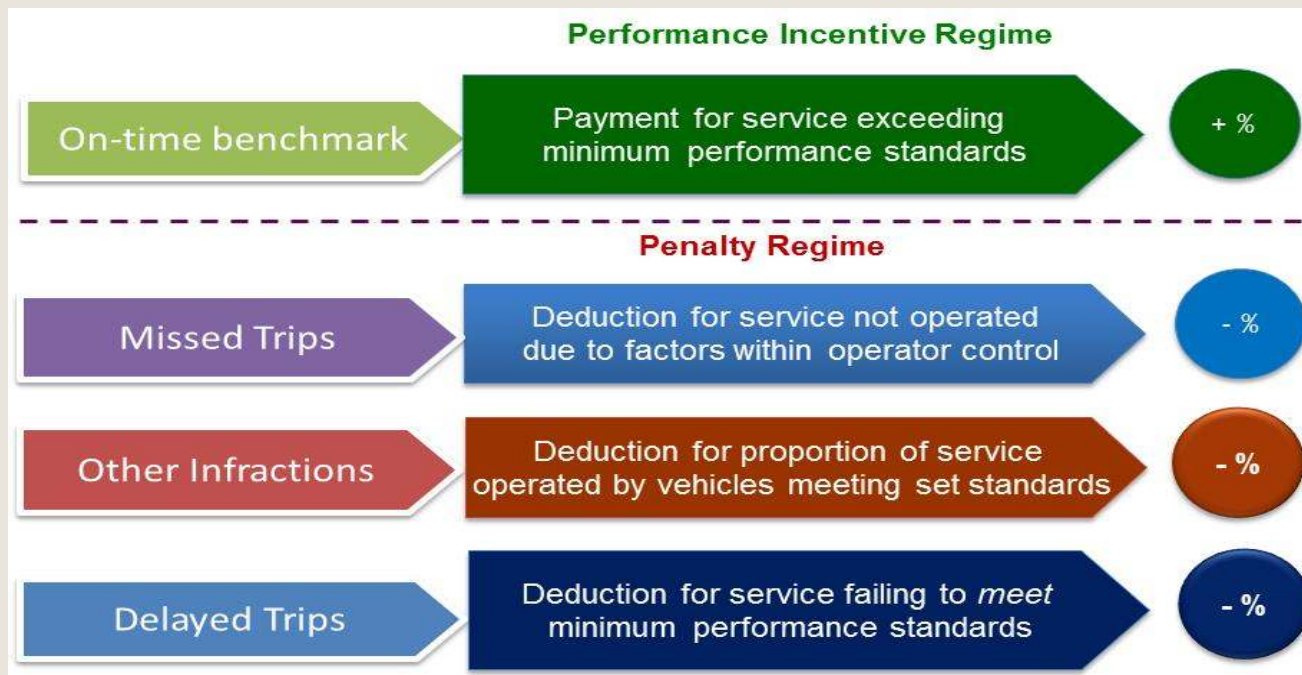


Fare Collection Management by DIMTS on Govt's Behalf

- Conductors are deployed by DIMTS
- All conductors are well trained through rigorous training process.
- Tickets through backend-linked Electronic Ticketing Machines to plug leakages

Advantages - *Quality Incentive*

In the present operations in Delhi (often referred to as Cluster Bus or **Orange Bus Service**), the operator faces performance deduction or get incentive based on performance vis-a-vis benchmarks.



**A professionally strong Programme Management
service provider essential**

Multi-Modal Network - Public Transportation System in Delhi



➤ Around 1300 buses are operating under the Cluster bus system.

➤ Delhi Transport Corporation (DTC) is operating a fleet of 5000 buses.



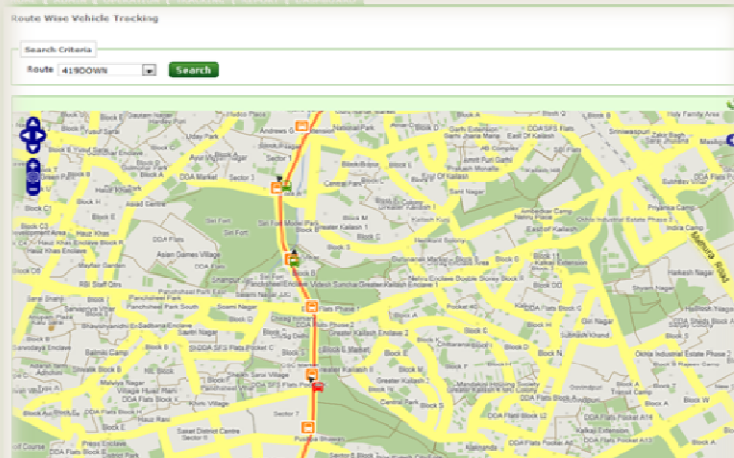
➤ Delhi Metro is operating Mass Transit Rail Service in Delhi with a total length of 189.63 kms (Ph I & II). It plans to extend its network by 138.12 kms in phase III.

Cluster Bus System – *Efficient Management*

Automatic Vehicle Location System

Alerts Dashboard manages alerts and responds to deviation/violations

- Over-speeding reports
- Depot, vehicle and route wise reports
- Bunching alerts
- Missed stops reports
- Route deviation reports
- Trip status reports (Cut/Short/Missed)
- Distance travelled



Solution from AVLS

Is any vehicle
breaching speed
limit?

Where are
the
vehicles?

How much
distance has a
vehicle
travelled?



Has any
vehicle
deviated from
the scheduled
route?

Where was a
vehicle at a
specific time?

Cluster Bus System – *Real-time Tracking*

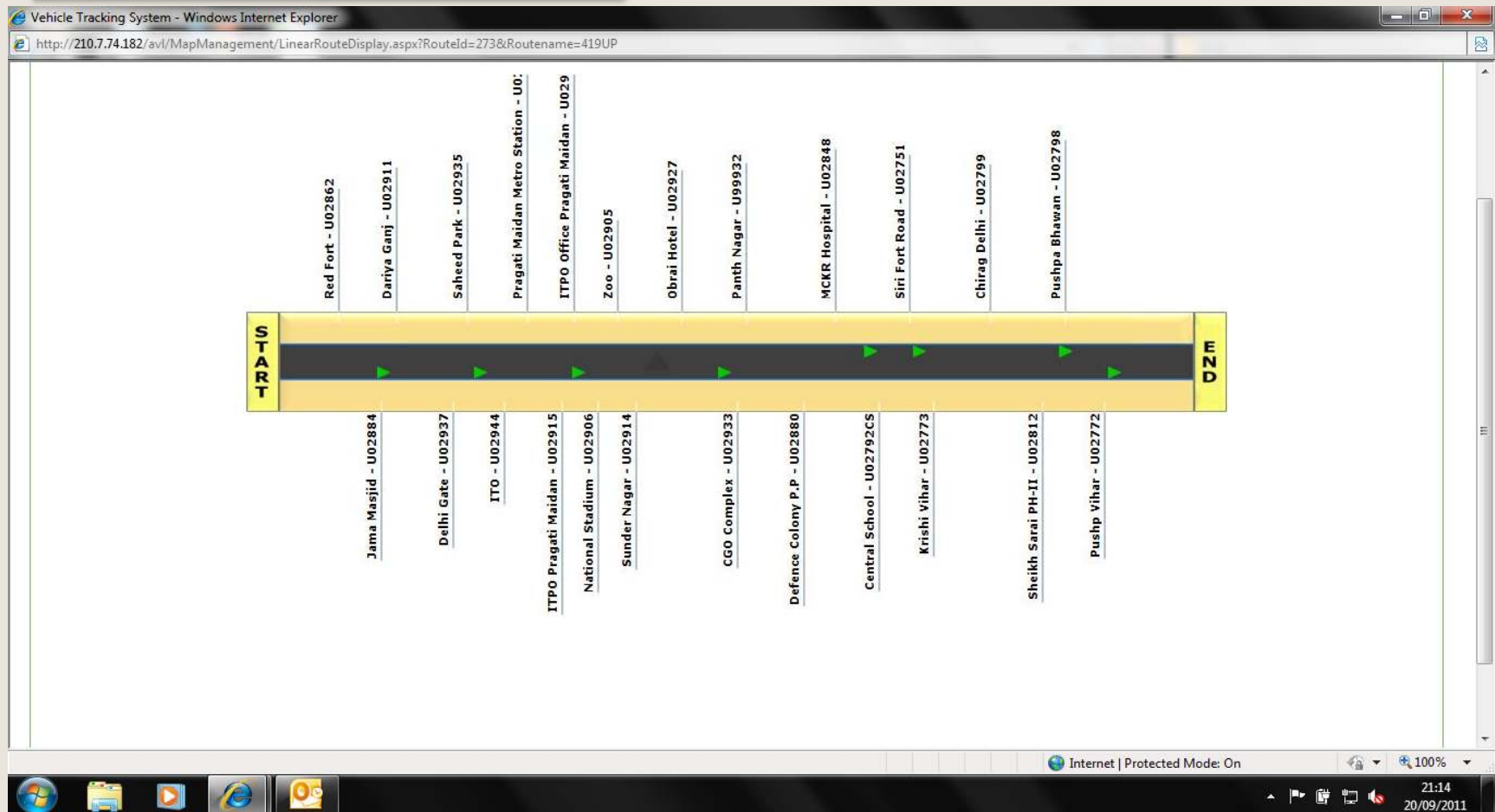
Missed Bus stops Analysis

Missed Bus Stop Report Depot : Millennium Depot :

| S.No | VEHICLE NO-TRIP SEQUENCE-ROUTE NO | DUTYNAME | TotalStop | MISS STOP | PERCENTAGE |
|------|---|----------|-----------|-----------|------------|
| 1 | DL1PC3873,3,469 DOWN | 469/20A | 9 | 1 | 11.11 |

Cluster Bus System – *Real-time Tracking contd*

Bunching of Buses



Cluster Bus System – *Passenger Friendly Initiatives*

AVLS Realtime Passenger Information System

Technology used to provide passengers a more reliable service.
Using the AVLS passengers given information about the ETA:

- Passenger Information System (PIS).
- A free web and mobile application, 'NextBus' lets people view ETA of their buses in realtime. As on date there have been more than 30000 downloads.

Web Based Application

DIMTS Delhi Transit Bus Information

HOME ROUTE DETAIL ETA TRIP PLANNER SCHEDULE SEARCH BUS STOP TRACK

Only for Orange coloured Delhi Transit buses (popularly known as Cluster buses).

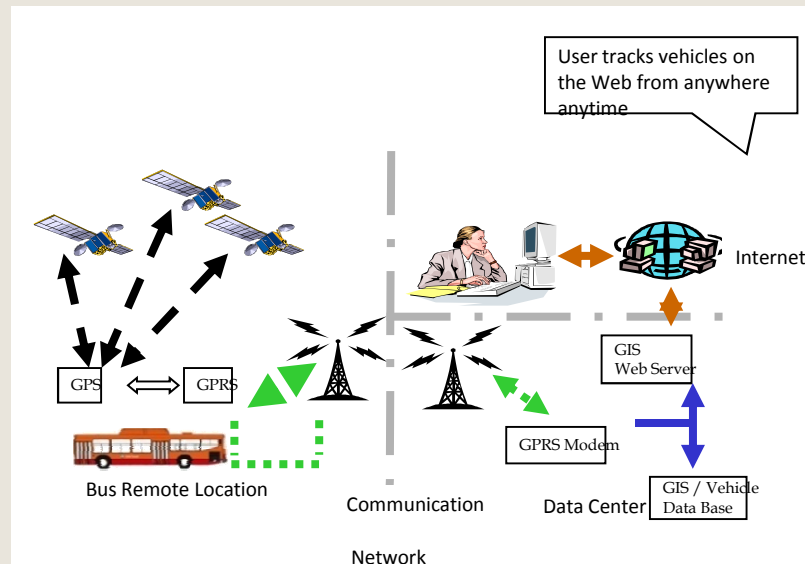
ETA By Bus Stop on a Route

Select Route Number:

Select Bus Stop:

Find

| ETA at CGO Complex | Going Towards |
|----------------------|---------------------------|
| Update Time: 3:47 PM | |
| 3:48 PM | Old Delhi Railway Station |
| 4:00 PM | Old Delhi Railway Station |
| 4:07 PM | Old Delhi Railway Station |



Mobile Application



Electronic Ticketing Machine

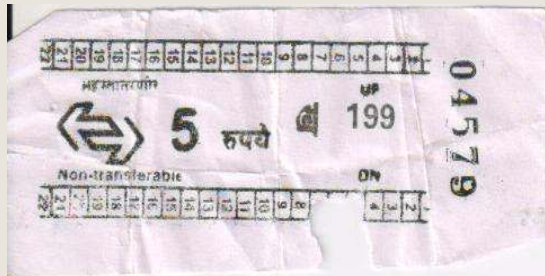


- Real Time data transfer through GPRS
- Smart Card Enabled
- Over the air configuration & update of master data, configuration data and application

- E-mail Operational & Revenue details to key stakeholders
- Performance analysis of routes and conductors
- Display health status of the field devices to take proactive action
- Day-end revenue reconciliation

Pre-printed Ticket Vs. Ticket through ETM

Pre-printed ticket



- Only ticket number and fare amount are printed.
- Stage codes are punched by conductor, which are not clear to commuters

Ticket through ETM

| | |
|--|--------------|
| DELHI TRANSIT | |
| Rs.5 | |
| Dilshad Garden /DL1PC6476 | |
| 03/11/2014 | 12:56 |
| No. T1136103111412000811-0035 | |
| Route Number : GL-23DOWN | |
| Shyam Giri Mand. - > ISBT Maharana P | |
| Adult | : 1 x 5=Rs 5 |

- Date and time
- Bus number
- Route number
- Valid from and to (bus stop names)
- Unique ticket number
- Number of passengers
- Fare amount

Key Features of Electronic Ticketing using ETM System

- ETMs communicate directly with Backend for data upload and download through GPRS
- Over the air configuration of ETM application, master data, route information and fares
- No need to configure ETM before issuing to conductor for operations - any ETM can be used by any conductor on any route
- No physical download of data from ETM to a computer in a depot, after operations

Innovative Features of DIMTS ETM Solution

- Completely online, real-time solution
- ETMs have data of all routes, fare-stages, conductors and all business rules - **ANY ETM CAN BE DEPLOYED ON ANY ROUTE, CAN BE ISSUED TO ANY CONDUCTOR**
- No need for configuration of ETMs before issue - **NO DEPENDENCY ON COMPUTER AND OPERATOR IN DEPOT IN 3 SHIFTS**
- The transaction data is downloaded through GPRS in real-time mode – **REAL TIME REVENUE REPORTS**

ETM Status Monitoring Dashboard

ETM Alert Dashboard - Windows Internet Explorer

http://www.afcsdelhi.com/ETMSPortal/ETMTracking/ETM_Alert/ETM_Dashboard_NEW.aspx

File Edit View Favorites Tools Help

ETM Alert Dashboard

Automatic Fare Collection System
Electronic Ticketing Machines

Welcome monitor [Change Password](#) [Log Out](#) [Contact Us](#)

Home ETM Tracking

You are here: ETM Tracking: ETM Alert Dashboard

Total No of Records:-86
Total ETM : 271
Total Red ETM : 13

Status as of Date at : 11-11-2011 12:49:09 PM
Total ETM Deployed : 87
Total Amber ETM : 25

ETM Deployed but Not Cleared: 0
Total Green ETM : 48

| ETM SR NO/ETM STATUS | CONDUCTOR ID | CONDUCTOR NAME | CONDUCTOR MOB NO | DUTY ID | ROUTE NAME | BUS NO | LAST TICKETING TIME | TICKETING STATUS | PRINTER STATUS | BATTERY STATUS | DEPOT NAME |
|-----------------------------|--------------|-----------------------|------------------|---------|------------|-----------|------------------------|------------------|----------------|----------------|------------------|
| 320-121-545 | 01222 | Roshan | 9278396380 | 46944M | 469UP | DL1P3964 | 11/11/2011 10:54:33 AM | NO | NO ERROR | 67% | MILLENNIUM DEPOT |
| 320-004-140 | 01096 | AJAY KUMAR | 9718550721 | 41116M | 411UP | DL1PC3625 | 11/11/2011 11:14:33 AM | NO | NO ERROR | 73% | MILLENNIUM DEPOT |
| 320-004-183 | 01105 | YOGESH KUMAR | 9718106261 | 41112M | 411DOWN | DL1PC3622 | 11/11/2011 11:36:30 AM | NO | NO ERROR | 100% | MILLENNIUM DEPOT |
| 320-004-159 | 01085 | DEEPAK DUA | 8860539394 | 46932M | 469DOWN | DL1PC3879 | 11/11/2011 11:06:00 AM | NO | NO ERROR | 64% | MILLENNIUM DEPOT |
| 320-004-191 | 01309 | Neeraj Kumar | 9818040851 | 41114M | 411UP | DL1P3618 | 11/11/2011 10:56:57 AM | NO | NO ERROR | 86% | MILLENNIUM DEPOT |
| 320-121-365 | 01375 | Dinesh Kumar | 9718958114 | 41117M | 411UP | DL1PC3643 | 11/11/2011 11:58:37 AM | NO | NO ERROR | 62% | KANJHAWALA DEPOT |
| 320-004-129 | 01170 | Kuldeep Sharma | 9899810483 | 46928M | 469DOWN | DL1PC3877 | 11/11/2011 11:19:27 AM | NO | NO ERROR | 63% | MILLENNIUM DEPOT |
| 320-004-164 | 01251 | Krishan Kumar | 9958928515 | 46926M | 469DOWN | DL1PC3888 | 11/11/2011 11:10:29 AM | NO | NO ERROR | 84% | MILLENNIUM DEPOT |
| 320-004-181 | 01245 | Lalit Kumar Sharma | 9990881810 | 46936M | 469DOWN | DL1PC3900 | 11/11/2011 11:56:07 AM | NO | NO ERROR | 100% | MILLENNIUM DEPOT |
| 320-121-592 | 01357 | Karamveer | 9990342636 | 53224M | 534DOWN | DL1PC3961 | 11/11/2011 7:53:51 AM | NO | NO ERROR | 100% | KANJHAWALA DEPOT |
| 320-004-205 | 01156 | Devender Kumar Pandey | 9015535815 | 46910M | 469UP | DL1PC3869 | 11/11/2011 11:44:28 AM | NO | NO ERROR | 56% | MILLENNIUM DEPOT |
| 320-004-197 | 01198 | Harjinder rana | 9868124180 | 46904M | 469UP | DL1PC3866 | 11/11/2011 10:59:24 AM | NO | NO ERROR | 79% | MILLENNIUM DEPOT |
| 320-004-123 | 01207 | Amit Chiller | 9289683167 | 46930M | 469DOWN | DL1PC3552 | 11/11/2011 8:28:02 AM | NO | NO ERROR | 76% | MILLENNIUM DEPOT |
| 320-121-540 | 01074 | RAMA KANT | 9990463199 | 53444M | 534DOWN | DL1PC3876 | 11/11/2011 11:52:05 AM | NO | NO ERROR | 58% | MILLENNIUM DEPOT |
| 320-004-212 | 01223 | Naveen | 9312830735 | 46943M | 469DOWN | DL1PC3887 | 11/11/2011 12:44:36 PM | YES | NO ERROR | 28% | MILLENNIUM DEPOT |
| 320-004-190 | 01311 | Anand Kumar | 9212600429 | 41118M | 411UP | DL1PC3614 | 11/11/2011 12:17:29 PM | YES | NO ERROR | 100% | MILLENNIUM DEPOT |
| 320-004-222 | 01317 | Sheeshpal | 9891421691 | 46940M | 469DOWN | DL1PC3884 | 11/11/2011 12:14:42 PM | YES | NO ERROR | 62% | MILLENNIUM DEPOT |
| 320-121-594 | 01371 | Sarbind kr. | 9910821791 | 53441M | 534UP | DL1PC3969 | 11/11/2011 12:49:20 PM | YES | NO ERROR | 41% | KANJHAWALA DEPOT |
| 320-004-127 | 01183 | Ravinder Singh | 9971417422 | 53439M | 534UP | DL1PC3963 | 11/11/2011 12:43:50 PM | YES | NO ERROR | 44% | MILLENNIUM DEPOT |
| 320-004-177 | 01092 | PAWAN PAL | 7503876466 | 41934M | 419UP | DL1P3615 | 11/11/2011 12:28:36 PM | YES | NO ERROR | 47% | MILLENNIUM DEPOT |
| 320-004-187 | 01211 | Sanjeev Kumar | 9891884977 | 46942M | 469DOWN | DL1PC3865 | 11/11/2011 12:12:04 PM | YES | NO ERROR | 60% | MILLENNIUM DEPOT |
| 320-121-591 | 01301 | Anil Kumar | 9310912563 | 41932M | 419DOWN | DL1P3589 | 11/11/2011 12:07:04 PM | NO | NO ERROR | 56% | KANJHAWALA DEPOT |
| 320-004-139 | 01192 | Gajender Kumar | 9211955961 | 41926M | 419DOWN | DL1PC3564 | 11/11/2011 12:45:06 PM | YES | NO ERROR | 48% | MILLENNIUM DEPOT |

Done

Internet 90%

Start Inbox - Microsoft Outlook ETM ETM Alert Dashboard... Microsoft PowerPoint - [...]

12:47 PM

Cluster Bus System – *Realtime Reporting*

Hourly ETM Revenue Reporting Screenshot

| Depot Name | Revenue | Passenger | Duties | Trips | Kilo Meter (App) | EPK(App) |
|-----------------------------|--------------|-----------|--------|-------|------------------|----------|
| Total | 3,830,035.00 | 444733 | 1824 | 6475 | 122,873.4 | 31.10 |
| BBM Depot | 286,130.00 | 35409 | 137 | 612 | 8,882.7 | 32.20 |
| Dilshad Garden | 391,705.00 | 46716 | 182 | 739 | 12,366.2 | 31.70 |
| KAIR | 283,685.00 | 31739 | 131 | 439 | 9,367.6 | 30.30 |
| KANJHAWAL A DEPOT | 458,757.00 | 53243 | 232 | 733 | 16,456.6 | 27.90 |
| KUSHAK NALLAH | 900,394.00 | 98981 | 403 | 1430 | 27,762.1 | 32.40 |
| MILLENIUM DEPOT | 419,805.00 | 48301 | 177 | 523 | 10,707.9 | 39.20 |
| OKHLA 4 | 315,130.00 | 38429 | 144 | 511 | 9,640.7 | 32.70 |
| OKHLA 5 | 128,064.00 | 12592 | 60 | 211 | 4,931.2 | 26.00 |
| RAJGHAT | 155,325.00 | 18636 | 72 | 242 | 5,100.8 | 30.50 |
| SUNEHRI PULLAH DEPOT | 491,040.00 | 60687 | 286 | 1035 | 17,657.6 | 27.80 |

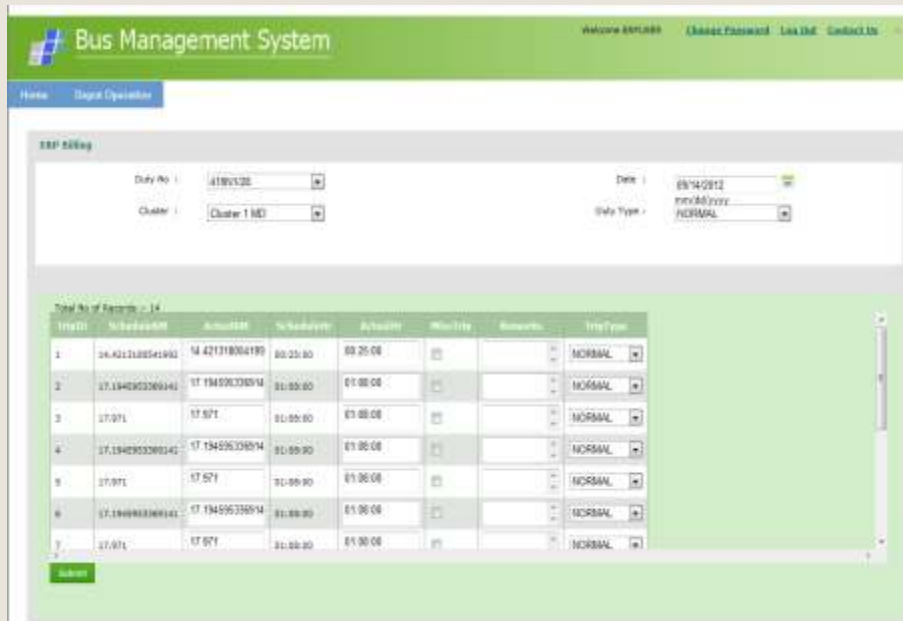
Bus Management System – Comprehensive IT Backbone

- Biometric verification of crew & Web Based Duty Allocation.
- Waybill Submission Module (WBS)-Revenue Recording system maintains-
 - Web Based Online System.
 - Records Complete Revenue Collection data.
 - ETM Revenue details pinging Backend, No need to Download.
 - Pre-printed tickets (fall back arrangement) records in electronic form.
 - Fine Recoveries recording system.
 - Revenue Reconciliation.
 - Reduces manpower size in depots - enables cutting costs & fast processing.
- Infraction Monitoring - Records Deviations from Benchmark Standards.

Cluster Bus System – *Comprehensive IT Backbone*

Bus Management System (BMS)

Bus Management System (BMS) **developed in-house** – a single application for integration of all the sub-systems of cluster operation, such as AVLS, AFCS, Waybill Submission, Biometric verification, infraction monitoring etc. **Billing Process is done based on these inputs.**



The screenshot displays the BMS interface with a green header bar containing the system name and user information. Below the header, there are navigation tabs and a main content area. The main content area features a form for trip selection and a table of trip logs.

Form fields:

- Driver No: 41805328
- Date: 08/04/2012
- Cluster: Cluster 1 (M)
- Only Type: NORMAL

Table of Trip Logs:

| Trips | ScheduleID | ActualID | ScheduleTime | ActualTime | Remarks | TripsType |
|-------|----------------|----------------|--------------|------------|---------|-----------|
| 1 | 16421218054190 | 16421218054190 | 00:00:00 | 00:25:00 | | NORMAL |
| 2 | 17194093306946 | 17194093306946 | 01:00:00 | 01:00:00 | | NORMAL |
| 3 | 171971 | 171971 | 01:00:00 | 01:00:00 | | NORMAL |
| 4 | 17194093306946 | 17194093306946 | 01:00:00 | 01:00:00 | | NORMAL |
| 5 | 171971 | 171971 | 01:00:00 | 01:00:00 | | NORMAL |
| 6 | 17194093306946 | 17194093306946 | 01:00:00 | 01:00:00 | | NORMAL |
| 7 | 171971 | 171971 | 01:00:00 | 01:00:00 | | NORMAL |

Buttons: Submit



The screenshot displays the BMS login interface with a green header bar containing the system name. Below the header, there are input fields for User ID and Password, and buttons for Sign In and Cancel. A small image of a bus is visible on the right side of the login form.

Form fields:

- User ID: [Input Field]
- Password: [Input Field]

Buttons: Sign In, Cancel

Copyright: © 2008 - 2012 SPMIS Ltd. All rights reserved.

Cluster Bus System – *Evaluation of Conductor Performance*

ABC Analysis of Comparative Performance of Conductors in a given Period

http://www.afcsdelhi.com/ETMSPortal/ETMTrackir Delhi Integrated Multi-Modal ... ETMS

File Edit View Favorites Tools Help

Home Depot Operations Reports ETM Tracking

Conductor Wise Earning

From Date: 01/02/2014 To Date: 28/02/2014
Example 25/03/2010 Example 25/03/2010

Cluster: Delhi Transit Region: DIMTS_NORTH

Depot: MILLENIUM DEPOT Conductor: All

Category: ALL

Web : ☒ Excel : ☐

A : Top 20 % B : Middle 70%
C : Bottom 10 %

Search Cancel

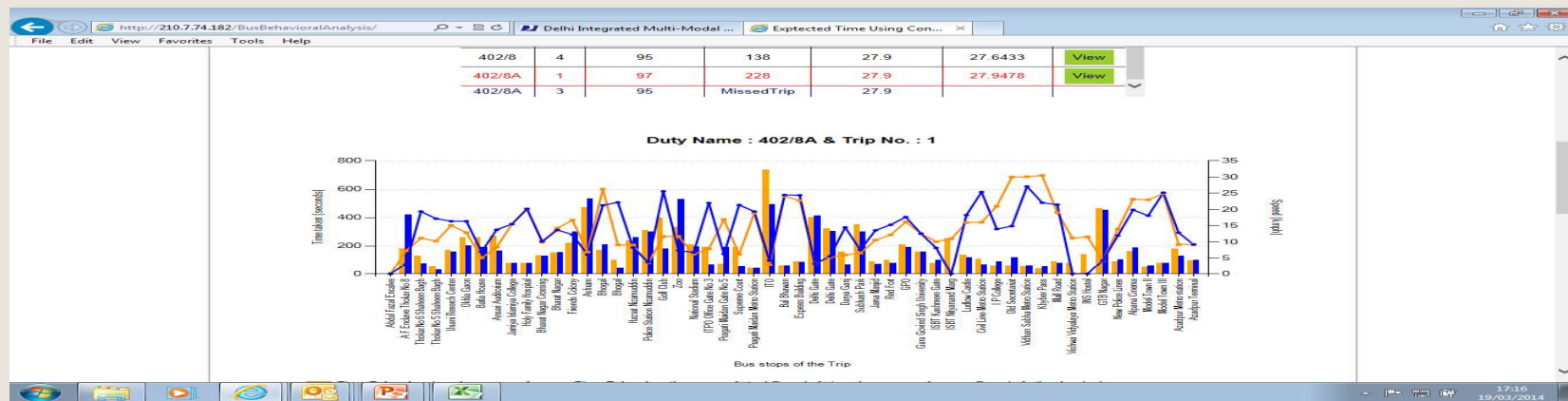
Total No of Records -679
Total No Of Records(A Category) : 135
Total No Of Records(B Category) : 475
Total No Of Records(C Category) : 67

| | | | | | | |
|-----|-------|----------------|--------|-----|----|------|
| 132 | 02194 | MANJU KUMAR | 94261 | 91 | 22 | 4285 |
| 133 | 01160 | Raju | 115700 | 105 | 27 | 4285 |
| 134 | 01083 | BHAGIRATH | 214170 | 200 | 50 | 4283 |
| 135 | 01354 | Naveen Kr. | 34263 | 39 | 8 | 4283 |
| 136 | 06018 | KISHAN KUMAR | 77065 | 72 | 18 | 4281 |
| 137 | 01282 | SANJAY KUMAR | 213905 | 199 | 50 | 4278 |
| 138 | 06208 | MOHD. MUZAMMIL | 102678 | 91 | 24 | 4278 |
| 139 | 01225 | Vishal Bedi | 183668 | 172 | 43 | 4271 |
| 140 | 01090 | SAQIB HUSSAIN | 187759 | 205 | 44 | 4267 |

16:58
19/03/2014

Cluster Bus System – Congestion Analytics Tool

Analysis of a Trip to Verify Claimed Traffic Jam



Kushaknalah Cluster Bus Depot -February, 2014 Data

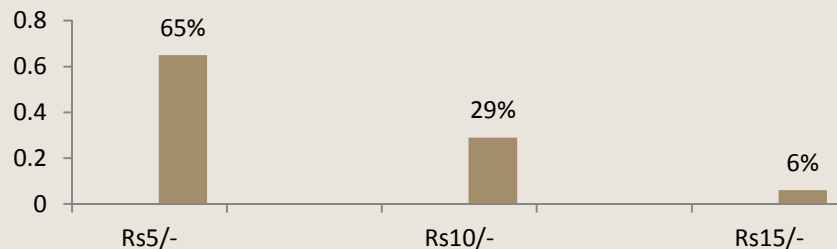
| Month | Claimed Traffic Jam Trips | Validated Traffic Jam Trips | Claim Rejected after Verification |
|----------------|---------------------------|-----------------------------|-----------------------------------|
| February, 2014 | 2207 | 2019 | 188 |

Cluster Bus System – *Business Analytics... contd*

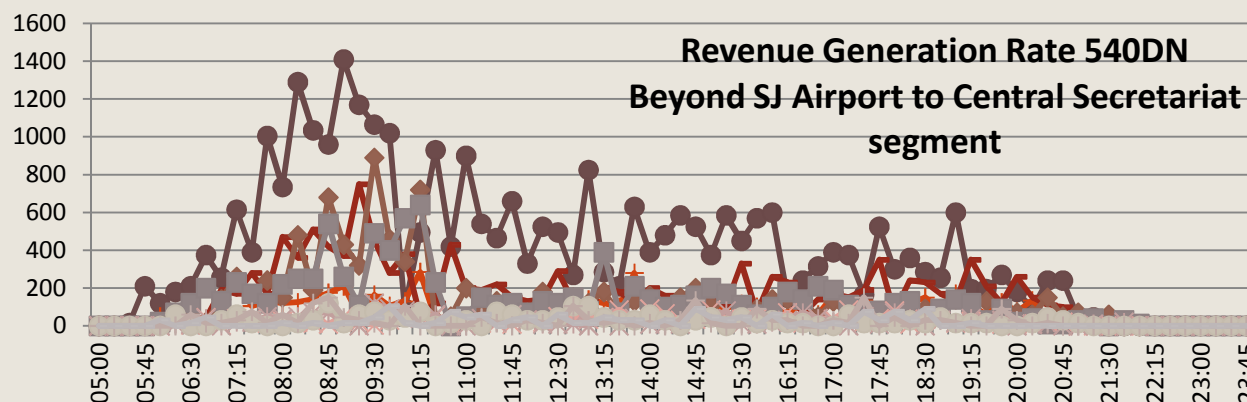
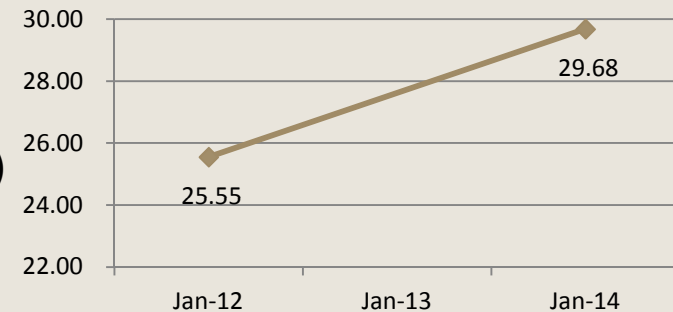
Detailed Analysis of Low Ridership Sectors

540 Earning Improvement After Modifications

Denomination Profiling 540



EPK(Rs per Km)



- Tara Apartment Kendriya Terminal
- AIIMS PS Tuglak Road
- Swami Nagar PS Tuglak Road
- ◆ Andrews Gunj Shiv Mandir Kendriya Terminal
- AIIMS Kendriya Terminal
- × PS Tuglak Road Kendriya Terminal
- ✱ SJ Airport Kendriya Terminal
- Khel Gaon Kendriya Terminal
- Swami Nagar Kendriya Terminal
- Savitri Cinema Kendriya Terminal

Comparative Performance of Cluster Buses with Public Sector Comparator (PSC)

| | Unit of Measurement | Cluster Buses | PSC-City services |
|-------------------------|-----------------------|---------------|-------------------|
| Km Efficiency | % | 91.23 | 78.88 |
| Fleet Utilization | % | 93.48 | 85.51 |
| Vehicle Utilization | Kms / Bus / Day | 218.43 | 190 |
| Gross Earning | Rs. / Bus/ Day | 7427 | 6295` |
| Accident Rate | Number per 1 Lakh Kms | 0.02 | 0.07 |
| Passenger carried daily | Numbers/Bus/Day | +1000 | 952 |

Current Scenario

- At present **9 Clusters** are operational with total fleet of **1300 buses operated from 9 depots on 78 routes** spread across Delhi
- 12500 Trips rendered daily
- 0.3 Million Service Km operated daily
- **1000 passengers** per bus per day
- Fleet size by mid-2015 can be 2000, subject to depot space.

The Debate is Over ...

- On what is a better bus contracting model. Four years back when we introduced in Delhi :
 - Quality Incentivized,
 - Gross Cost,
 - Contracting System (Private Sector Companies),
- There was some scepticism about the model
- But now, statistics vindicate model.

Independent Findings...

In a statistical analysis of 135 French Urban Transport Networks, it was found that :

- Contracting Model :
 - Private operators outperform public administered entities on efficiency score
 - Mixed ownership is the worst option !! (e.g. Govt. owned buses operated by Pvt. Sector)
- Gross vs Net Cost :
 - Private operators under gross cost are more technically efficient than operators under net cost (since their objective is revenue increase vs cost management)

Overall Assessment :

- Private operators regulated by Gross Cost reach the highest efficiency score

Source : Ownership, Contractual Practices and Technical Efficiency: The Case of Urban Public Transport in France Author(s): William Roy and Anne Yvrande-Billon, Source: Journal of Transport Economics and Policy, Vol. 41, No. 2 (May, 2007), pp. 257-282

Independent Findings...

- London Bus Contracting and Tendering
- How contracting has evolved in London Bus Services :
 - Gross Cost Contract : 1985 and 2000
 - Net Cost Contract : 1995 and 1998
 - Quality Incentive Contract : 2000 onwards (A combination of gross cost with quality Incentive)
- Profitability Of Companies rose to average of 12.5% under Net Cost contract regime (some >17%)
- TfL believed that windfall gains were realised by operators due to benefits of public investment in bus priorities, information and marketing
- Since introduction of Gross Cost margin has fallen to between 5-10% (current avg 7.5%)

*Source : Steer Davies Gleave Report
on Options for Bus Contracting in
Delhi*

Key Issues and Challenges

- Government support to meet Viability Gap funding under Gross Cost model in perspective of city's economic and social liability
- Availability of land for development of bus depots
- Government needs to appoint an agency which has Sectoral Expertise and at the same time seen as neutral by the operators, to be the Moderator
- Active, constant and continuous program management leads to very high efficiency scores and more than pays for itself
- **Quality Incentivized Gross Cost Contracting System** requires that :
 - Cash flows are stable and predictable for the operator
 - Simple and low management cost for the Program Manager
 - High reliance on IT
- A strong **Program Manager** is essential for **Quality Incentivized Gross Cost Contracting System**.

Thank You