Seoul Metro Line 9 Project

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Korea Development Institute (KDI)
Operation Summary

Map of Seoul Metro Line No. 9

1st Phase 1st step (1 depot, 25 stations, 25.5 km)

[※ Further construction near future]
- 1st phase 2nd step (Expected in 2013) : 4.5 km, 5 stations
- 2nd phase (Expected in 2015) : 8.0 km, 7 stations
Seoul Metro Line 9 Project Summary

Route (Phase I)
Gimpo Airport~Gangnam (25.5km, 25stations & 1 Depot) (Phase II: 12km, 12stn)

Details of Work Scope for private SPC
Design & Construction, E&M, Test & Commissioning, Operation & Maintenance

Budget (Phase I & II)
USD 4.5Bil. Civil by SMG, USD 1.2Bil.(E&M+O&M) by Private SPC

Construction Period (Phase I, Step I)
May 2004 ~ April 2009 (5 years)

Type of Project
Korea’s First Private Investment Metro Project under BTO scheme (under 30 year concession agreement)
## Background for Private Investment Project

### Debt in 1999 (Seoul Metropolitan Government)

- **Total Debt of Seoul Metropolitan Government**: 5,560 billion won
- **Debt related to Subway (construction + operation)**: 4,846 billion won (87.15%)

→ Requires new approach for future subway construction
→ Private Capital Inducement

(Unit: billion won)
## Decision of Scope for Private Capital Inducement

<table>
<thead>
<tr>
<th></th>
<th>Public Sector</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Private Capital Inducement</td>
<td>every construction and operation</td>
<td></td>
</tr>
<tr>
<td><strong>Partial Private Capital Inducement</strong></td>
<td>construction of lower structure</td>
<td><strong>construction of upper structure and operation</strong></td>
</tr>
</tbody>
</table>
Public Support Strategy for Private Investment Project

- In case of partial private capital inducement with upper-and-lower divided structure
  - The public supports fixed rate of cost about rolling stock, system, building, and supplementary in the construction period of upper structure.
  - The private constructs upper structure, and the public provides subsidy in operation period.
## Final Layout of Seoul Metro Line 9 Project

(Unit: billion won)

<table>
<thead>
<tr>
<th></th>
<th>Total Project Cost (2,416)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower Structure (1,566)</strong></td>
<td></td>
</tr>
<tr>
<td>Substructure</td>
<td></td>
</tr>
<tr>
<td>(site preparation and ground consolidation work for depot)</td>
<td></td>
</tr>
<tr>
<td><strong>Upper Structure (850)</strong></td>
<td></td>
</tr>
<tr>
<td>Rolling stock, system, station construction work, track work, depot, traffic control center, etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Public (100%)</strong></td>
<td><strong>Public (31.7%)</strong></td>
</tr>
<tr>
<td>1,566</td>
<td>356</td>
</tr>
<tr>
<td>Total Public Cost (80%) : 1,922</td>
<td>Total Private Cost (20%) : 494</td>
</tr>
</tbody>
</table>
BTO Model

- Forming a consortium to respond to the very first public-private partnership metro project

- Investment scheme
  - SMG: infrastructure (civil engineering)
  - Private consortium:
    - Financing of system,
    - Station construction,
    - Rolling stock, E&M (Electrical and Mechanical),
    - Provision of O&M (Operations and Maintenance)
BTO Contractual Framework

Seoul Metropolitan Government

Implementation Agreement → O&M contract approbation

Seoul Metro Line 9 (SPC)

CI (51%)  FI (49%)

Loan Agreement → Lender

EPC Contract → O&M contract

Construction Committee

Project Manager

O&M Company

Seoul Line 9
Cooperative Structure of Line No.9

SMG
(Responsible Govt. body)

Concession Agreement (16th May 2005)
Approval of SL9 (20th Apr. 2009)

O&M Agreement
(29th Jun. 2007)

SMG
(METRO 9)

(Responsible body)

Rotem 25% & 13 Companies

Maintenance Agreement
(29th Jun. 2007)

Maintenance Agreement
(29th Jun. 2007)

Shareholder Agreement & Partnership Agreement
(29th Jun. 2007)

VTK 80%  Rotem 20%

(Maintrans)

VTK 20%  Rotem 80%

(SPC)

(Operation Company)

Rotem 25% & 13 Companies

Revenue & Facility Management

SML 9

In charge of Line9’s Operation & Maintenance

SL9

Maintenance of Cars and Cleaning Services

Maintrans
History of Line No.9

- **2001**: Starting of foundation work for Seoul Line No.9
- **2005**: Contract b/w. Seoul Metropolitan Government (SMG)& Seoul Metro Line 9 (SML9)
  - Starting construction of surface for 1st servicing area of Seoul Line No.9 (SL9)
- **2007**: Operation & Maintenance agreement b/w. SML9 – SL9
- **2009**: SMG’s approval to SL9 as a Line No.9’s operator
  - Opening of 1st servicing area of Seoul Line No.9
Ridership 2009

※ Average Number of Daily Passengers (2009) : 214,623 passengers

<table>
<thead>
<tr>
<th></th>
<th>Number of Runs</th>
<th>Operation Distance (km)</th>
<th>On -Time Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>57,206</td>
<td>1,467,464.5</td>
<td>100</td>
</tr>
<tr>
<td>August</td>
<td>17,750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>39,456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ On-Time Rate(%) : (Number of Runs – Number of Delayed Runs(more than 10 min.) / Number of Runs * 100
<table>
<thead>
<tr>
<th></th>
<th>Metro 9</th>
<th>Current operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Customer-oriented</td>
<td>Production and staff-oriented</td>
</tr>
<tr>
<td>Productivity</td>
<td>~30 staff/km</td>
<td>Over 50 staff/km</td>
</tr>
<tr>
<td>Service</td>
<td>express &amp; all stop</td>
<td>All stop</td>
</tr>
<tr>
<td>HR Policy</td>
<td>Promotion based on performance &amp; seniority</td>
<td>Promotion based on seniority</td>
</tr>
<tr>
<td>Ticket booth</td>
<td>At convenience store</td>
<td>Ticket booths with full staff</td>
</tr>
</tbody>
</table>
Conclusion: Why a private operator?

- Because competition creates incentives to performance & productivity
- To have a professional taking charge of the O&M risks
- To benefit from the diversity of expertise of a worldwide operator
- To ensure transparent relationships between the partners
- To control the evolution of costs and to have a long-term visibility on the required payments
- To improve the image and quality of service and to increase patronage
- To have targeted and responsive solutions to passengers’ needs and expectations
Thank you
Urban Transportation Modes in India
Contents

- Indian Economy
- Urban Transport System in India
- National Urban Transport Policy 2006
- Jawaharlal Nehru National Urban Renewal Mission
- Metro System
- Bus Rapid Transit System
- Buses for City Transport
Indian Economy

Population Growth in India, 2005-10
(Figures in Billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>1.11</td>
</tr>
<tr>
<td>2006-07</td>
<td>1.12</td>
</tr>
<tr>
<td>2007-08</td>
<td>1.14</td>
</tr>
<tr>
<td>2008-09</td>
<td>1.15</td>
</tr>
<tr>
<td>2009-10</td>
<td>1.17</td>
</tr>
</tbody>
</table>

India's GDP at Current Prices, 2005-10
(Figures in US$ Billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (US$ Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>800.0</td>
</tr>
<tr>
<td>2006-07</td>
<td>924.7</td>
</tr>
<tr>
<td>2007-08</td>
<td>1068.0</td>
</tr>
<tr>
<td>2008-09QE</td>
<td>1203.2</td>
</tr>
<tr>
<td>2009-10AE</td>
<td>1330.5</td>
</tr>
</tbody>
</table>

- Second fastest growing economy in the world.
- Second highest population in the world after China.
- The economy is expected to grow at 7.2% in 2009-10 (CSO estimate).
- Foreign exchange reserves of 283.5 billion as in December 2008.
- Sixth largest crude consumer and fifth largest oil importer in the world.
India has witnessed a phenomenal growth in urban population.
Vehicles Growth in India, 1998-2006
(Figures in Millions)

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods Vehicles</td>
<td>2.54</td>
<td>2.55</td>
<td>2.71</td>
<td>2.95</td>
<td>2.97</td>
<td>3.49</td>
<td>3.74</td>
</tr>
<tr>
<td>Buses incl. Omni Bus</td>
<td>0.54</td>
<td>0.54</td>
<td>0.56</td>
<td>0.63</td>
<td>0.64</td>
<td>0.72</td>
<td>0.76</td>
</tr>
<tr>
<td>Two Wheelers</td>
<td>28.64</td>
<td>31.33</td>
<td>34.12</td>
<td>38.56</td>
<td>41.58</td>
<td>47.52</td>
<td>51.92</td>
</tr>
<tr>
<td>Cars, Jeeps &amp; Taxis</td>
<td>5.14</td>
<td>5.56</td>
<td>6.14</td>
<td>7.06</td>
<td>7.61</td>
<td>8.59</td>
<td>9.44</td>
</tr>
<tr>
<td>Others (LMV, Tractors, Trailers etc)</td>
<td>4.51</td>
<td>4.90</td>
<td>5.31</td>
<td>5.80</td>
<td>6.12</td>
<td>6.67</td>
<td>6.80</td>
</tr>
</tbody>
</table>
From 1981 to 2001, population increased in six major metropolitan areas by 1.9 times but motor vehicles increased by 7.75 times.

Forecast of Vehicle Populations in India (Figures in Million Vehicles)

Total on road Vehicle Fuel Consumption (Figures in Million Tons of Oil)

Energy demand in transport sector projected to grow at 5-8% per annum.
India - Urban Transportation Scene

- 2nd Largest urban system
- 60% GDP generated from urban areas
- 5161 towns and cities
  - 7 megacities (4 million + population)
  - 28 cities with population 1-4 million
  - 13 cities in 0.8 to 1.0 million range, will cross 1 million by next census
  - 40 cities in 0.5 to 1 million population range and balance state cities
- Motorization rates are high
- In 6 Metro Cities, during 1981 to 2001
  - Population increased by 2 times
  - Motor vehicles increased by 8 times
- In 2006, organised city bus service - in only 20 cities
Planning Commission Estimated Spends for XIth Plan (2007-12)
(Figures in Percent)

100% = US$ 444.7 Billion

- **Power**: 32%
- **Transport**: 40%
- **Telecom**: 18%
- **Telecom**: 10%

Key Focus Area
- Significant PPP model
- Golden quadrilateral
- Rural Roads
- Privatisation of Ports
- Airports
- Selective opening of railways for container
- Urban Mass Trans
Investments Required in Urban transport in XI Plan (2016-2020)

Total Investment around US$ 30 billion

- 4.0 million plus cities: US$ 4.6 billion
- 1.0 – 4.0 million cities: US$ 5.7 billion
- 0.5 – 1.0 million cities: US$ 1.7 billion
- 0.1 – 0.5 million cities: US$ 1.6 billion

Transport Planning and Capacity Building: US$ 77 million

Modern Buses: US$ 8.4 billion
Transport in the Republic of India is an important part of the nation's economy.

- **Current Problems:**
  - Rapid urbanization & growing transport demand
  - Inadequate public transport and rapid motorization
  - Mix of slow and fast vehicles without segregation
  - Increasing level of congestion and pollution
  - Transport energy demand and carbon emissions rising
  - Uncoordinated management of urban land use/transport

- **Causes of Problems**
  - Poor quality and insufficient capacity of roads
  - Explosive numbers – India’s urban population has grown 4.6 times
  - Numbers have increased 158 times
  - Insufficient road space available to public transport
India launched its first transportation policy in 2006, while focusing on moving people and not vehicles.

- Ensure coordinated planning for urban transport
- Ensure integrated land use & transport planning
- People focused & equitable allocation of road space
- Investments in public transport & Non Motorized modes
- Strategies for parking space and freight traffic movement
- Establish Regulatory mechanisms for a level playing field
- Innovative financing methods to raise resources
- Promote ITS, cleaner fuel & vehicle technologies for efficiency and environment
- Build capacity to plan for sustainable urban transport
- Projects to demonstrate best practices in sustainable transport
Federal Government also launched a new scheme JnNURM (Jawaharlal Nehru National Urban Renewal Mission) to boost urban transportation initiatives.

- **A mission for integrated development of urban infrastructure with the assistance of the Centre, state and local bodies**

- Set up with US$ 20 billion outlay to cover 60 cities with a million population in next seven years

**Objective:**

- Provide basic services to urban poor (housing, water supply, sanitation, slum improvement, community toilets); and

- Enhance overall urban infrastructure
Focus of the Ministry of Urban Development

- Public Transport / NMT
- CMP (Comprehensive Mobility Plan)
- UMTA (Unified Metropolitan Transport Authority)
- Capacity Building
Urban ministry is supporting metro rail projects also in brownfield to serve high demand corridors.

### City-wise Metro Systems – Kms & Investment

<table>
<thead>
<tr>
<th>City</th>
<th>Kms</th>
<th>App. Cost (US$ Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi</td>
<td>121.26</td>
<td>4085</td>
</tr>
<tr>
<td>Mumbai</td>
<td>62.89</td>
<td>3915</td>
</tr>
<tr>
<td>Bangalore</td>
<td>42.30</td>
<td>1736</td>
</tr>
<tr>
<td>Kolkata</td>
<td>14.67</td>
<td>1037</td>
</tr>
<tr>
<td>Chennai</td>
<td>46.50</td>
<td>3106</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>71.00</td>
<td>2638</td>
</tr>
<tr>
<td>Cochin</td>
<td>25.30</td>
<td>0617</td>
</tr>
</tbody>
</table>

- Delhi is successfully operating 8 Lines with daily ridership of 9 million passengers / per day.
  - 86 km is under operation
  - Another 100 km is under construction
- Metro rail projects promote public ownership with the concerned state governments in Delhi, Bangalore & Chennai
  - 20% Viability Gap Funding for transport projects on PPP
uses contribute as the most important mode of Public transport across all cities.

<table>
<thead>
<tr>
<th>City</th>
<th>Kms planned</th>
<th>App. Cost (US$ Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pune</td>
<td>101.77</td>
<td>204.00</td>
</tr>
<tr>
<td>Pimpri Chinchwad</td>
<td>42.22</td>
<td>--</td>
</tr>
<tr>
<td>Indore</td>
<td>11.45</td>
<td>20.00</td>
</tr>
<tr>
<td>Bhopal</td>
<td>21.71</td>
<td>--</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>88.50</td>
<td>196.00</td>
</tr>
<tr>
<td>Jaipur</td>
<td>39.45</td>
<td>44.00</td>
</tr>
<tr>
<td>Vijaywada</td>
<td>15.50</td>
<td>--</td>
</tr>
<tr>
<td>Vizag</td>
<td>42.80</td>
<td>--</td>
</tr>
<tr>
<td>Rajkot</td>
<td>29.00</td>
<td>--</td>
</tr>
<tr>
<td>Surat</td>
<td>29.90</td>
<td>--</td>
</tr>
<tr>
<td>Delhi*</td>
<td>121.00</td>
<td>--</td>
</tr>
</tbody>
</table>

- Current Status – 17 Cities are planning or implementing bus rapid transit projects.
- 10 of the 17 are being funded under JnNURM.
  - BRTS Projects for 422 Kms, for 9 mission cities at US$ 1,016 million (@ US$ 2,400 per km).
<table>
<thead>
<tr>
<th>Cities</th>
<th>Challenges Faced</th>
</tr>
</thead>
</table>
| Ahmadabad | 1. Design modification to accommodate NHAI concerns,  
             2. Presence of underground utilities hampered work during construction, high tension  
             3. Price escalations due to rise in steel and cement,  
             4. Viability gap in operations,  
             5. Poor response from bus manufacturers |
| Rajkot    | 1. Negative Media Publicity (especially Delhi and Pune BRTS)  
             2. Apprehensions of Car / Two Wheeler users about reduction in road space  
             3. Lack of knowledge of BRT System amongst various stakeholders  
             4. Steep rise in cost raw material (Steel, Cement) may impact the construction cost   |
| Bhopal    | 1. Road widths are not uniform throughout the Corridors  
             2. On street parking need to be restricted along the BRTS corridors. |
| Indore    | 1. Project Implementation in City condition involves delay due to provisions of multiple schemes.  
             2. Negative press in other cities regarding BRTS causes doubts in the minds of local politicians.  
             3. Non-availability of funds for subsidizing induction of world class technology including capacity modern rolling stock. |
| Pune & Pimpri Chinchwad | 1. Due to lack of a full understanding of a BRT system, initial cost estimates as presented were too low.  
             2. Demand for underpasses/foot over bridges at bus stops  
             3. Enforcement of BRT lanes, Narrow streets  
             4. Training of bus drivers  
             5. Hawkers, encroachment, parking, and Access control from adjoining properties  
             6. Demand to allow other high capacity modes, Media strategy |
<table>
<thead>
<tr>
<th>Cities</th>
<th>Challenges Faced</th>
</tr>
</thead>
</table>
| Vijaywada | 1. Land Acquisitions  
             2. Integration of planned and existing ROBs and Flyover  
             3. Encroachments  
             4. Integration issues with NHAI, APSRTC and other agencies |
| Vizag     | 1. Land Acquisition  
             2. Mixed composition of traffic of both MV & NMV  
             3. No park and ride facilities  
             4. Integration with existing flyovers and FOBs  
             5. Bad media publicity due to problems in BRTS projects already in operation |
| Jaipur    | 1. Re routing of 1800 mini buses  
             2. Lack of understanding of BRT elements by contractors  
             3. Inadequate RoW on few sections  
             4. Land acquisition delays the implementation process & land acquisition issues  
             5. Unavailability of lands for provision of parking near bus stops  
             6. Unacceptability of one way traffic movement  
             7. Shopkeepers/property owners habitual to free on-street parking (consider it as the norm)  
             8. Shifting of existing utilities services  
             9. Monopoly of bus manufacturers  
            10. Low floor buses are costly to operate and procure  
            11. Financial sustainability of overall operational costs |
| Delhi     | 1. Signaling  
             2. Heavy traffic in motorized lane in certain stretches, specially some intersections  
             3. Enforcing traffic discipline  
             4. Jay walking  
             5. Inappropriate design features |
Buses for City Transport

- In February 2009, MoUD (GOI) launched the bus financing scheme for Urban Transport System under the second stimulus package through a scheme for 63 mission cities.
  
  - The financing was meant exclusively for city bus service and BRTS (Bus Rapid Transits System) for all Mission cities.

- MoUD classified all the cities as millennium cities with the population greater than one (1) million and a second level of cities with a population between one (1) million to one (1) million. Public Transport is one of the most significant segments in this revitalization plan.

- MoUD is also contemplating go extend this scheme to 118 more cities (200,000+ population cities) which is possible only after the buses sanctioned are put on road as per the 100 Days Action Plan.
<table>
<thead>
<tr>
<th>S. No.</th>
<th>STUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Karnataka State Road Transport Corporation (KSRTC)</td>
</tr>
<tr>
<td>2.</td>
<td>Andhra Pradesh State Road Transport Corporation (APSRTC)</td>
</tr>
<tr>
<td>3.</td>
<td>Tamil Nadu State Road Transport Corporation (SETC)</td>
</tr>
<tr>
<td>4.</td>
<td>Maharashtra State Road Transport Corporation (MSRTC)</td>
</tr>
<tr>
<td>5.</td>
<td>Goa Transportation (Kadamba Transport Corporation - KTC)</td>
</tr>
<tr>
<td>6.</td>
<td>Delhi Transport Corporation (DTC)</td>
</tr>
<tr>
<td>7.</td>
<td>Himachal Pradesh Road Transport Corporation (HRTC)</td>
</tr>
<tr>
<td>8.</td>
<td>Rajasthan State Road Transport Corporation (RSRTC)</td>
</tr>
<tr>
<td>9.</td>
<td>Gujarat State Transport Corporation (GSRTC)</td>
</tr>
<tr>
<td>10.</td>
<td>PEPSU Road Transport Corporation (PRTC)</td>
</tr>
<tr>
<td>11.</td>
<td>Uttar Pradesh State Road Transport (UPSRTC)</td>
</tr>
<tr>
<td>12.</td>
<td>Jammu &amp; Kashmir State Road Transport Corporation (JKSRTC)</td>
</tr>
<tr>
<td>13.</td>
<td>Arunachal Pradesh State Transport services (APSTS)</td>
</tr>
<tr>
<td>14.</td>
<td>Assam State Transport Corporation (ASTC)</td>
</tr>
<tr>
<td>15.</td>
<td>Bihar State Road Transport Corporation (BSRT)</td>
</tr>
<tr>
<td>16.</td>
<td>Kerala State Road Transport Corporation (KSRTC)</td>
</tr>
<tr>
<td>17.</td>
<td>Mizoram State Road Transport (MST)</td>
</tr>
<tr>
<td>18.</td>
<td>Orissa state Road Transport Corporation (OSRTC)</td>
</tr>
<tr>
<td>19.</td>
<td>Uttarakhand Transport Corporation (UTC)</td>
</tr>
</tbody>
</table>
Buses for City Transport

Economic stimulus package
• 15,260 modern buses sanctioned under economic stimulus package of US$ 1,020 Million
• Waive state & local taxes on public transport (upto 16%)
• 61 mission cities Covered; about 4000 buses are on road as on 31st March 2009
• 34 new cities to get organised city bus service

Urban Bus Specifications
• Low floor (400mm), semi low floor (650mm) and standard buses against prevailing 1100mm floor height (truck chassis)
• ITS features
  • LED sign boards
  • Audio visual passenger information
  • Multiplexing, On board diagnostics
  • Cameras, integrated controller
  • GPS, GPRS, Smart card ticketing machines
<table>
<thead>
<tr>
<th>S. No.</th>
<th>States</th>
<th>Number of Buses</th>
<th>Total Funding (Rs. In Millions)</th>
<th>Centre Share (Rs. In Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Andhra Pradesh</td>
<td>1,500</td>
<td>3529.0</td>
<td>1455.9</td>
</tr>
<tr>
<td>2.</td>
<td>Arunachal Pradesh</td>
<td>N.A.</td>
<td>43.2</td>
<td>38.9</td>
</tr>
<tr>
<td>3.</td>
<td>Assam</td>
<td>200</td>
<td>158.0</td>
<td>142.2</td>
</tr>
<tr>
<td>4.</td>
<td>Bihar</td>
<td>N.A.</td>
<td>266.5</td>
<td>253.5</td>
</tr>
<tr>
<td>5.</td>
<td>Chandigarh</td>
<td>200</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>6.</td>
<td>Chhattisgarh</td>
<td>N.A.</td>
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Buses sanctioned under JnNURM with the following reforms and conditionalities

1. Set up an SPV to manage bus services, set up an UMTA to coordinate transport and use PPP for operations
2. Use of ITS and integration of multi-modal systems
3. Bus prioritisation at intersections, dedicated/demarcated lanes for buses
4. Designate a nodal department for urban transport
5. Formulate a policy on parking and its implementation plan
6. Formulate a policy on advertising and its implementation plan
7. Formulate a policy on Transit Oriented Development
8. Set up an Urban Transport Fund
9. Waive/reimburse state and local taxes on public transport
10. Mechanism for periodic revision of public transport fares
11. Set up a Traffic Information and Management Center
## Proposed Strategic Reforms - Status

<table>
<thead>
<tr>
<th>S. No.</th>
<th>States</th>
<th>SPV</th>
<th>UMTA</th>
<th>Transport Fund</th>
<th>Helpline Number</th>
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## Proposed Strategic Reforms - Status

<table>
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<th>S. No.</th>
<th>States</th>
<th>SPV</th>
<th>UMTA</th>
<th>Transport Fund</th>
<th>Helpline Number</th>
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</tbody>
</table>
Unified Mass Transit Authority

- Ahmedabad Janmarg Limited (AJL)
- Bangalore Metropolitan Land Transport Authority (BMLTA)
- Delhi Integrated Multi-Modal Transit System Limited (DIMTS)
- Indore City Transport Services Limited (ICTSL)
- Jaipur City Transport Services Limited (JCTSL)
- Pune Mahanagar Parivahan Mahamandal Limited (PMPML)
Ahmedabad Janmarg Limited (AJL)

- Ahmedabad Municipal Corporation floated a Special Purpose Vehicle (SPV), named Ahmedabad Janmarg Limited (AJL), to run the BRTS in 2007.
- AJL is heading the planning and designing of 88 km of BRTS in Ahmedabad.
  - It is in charge of floating tenders, finalizing contracts and operations as the BRTS moves towards completion.
- Currently, AJL is operating BRTS on a stretch of 12.5 km (from Ring Road to Chandranagar).

<table>
<thead>
<tr>
<th>Bus Operator:</th>
<th>Charted Logistic Pvt. Ltd.</th>
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<tr>
<td>ITS and Ticketing:</td>
<td>Kaizen Engineering Systems Pvt. Ltd.</td>
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<td>Automated Doors:</td>
<td>Technocrats Systems Pvt. Ltd.</td>
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<td>Automated Traffic Signal System:</td>
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<tr>
<td></td>
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<tr>
<td>----------------------</td>
<td>------------------------</td>
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<tr>
<td><strong>Bus Operator:</strong></td>
<td>Bangalore Metropolitan Transport Corporation</td>
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<tr>
<td><strong>ITS and Ticketing:</strong></td>
<td>Siemens Limited (Pilot – 100 buses)</td>
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<td><strong>Automated Doors:</strong></td>
<td>NA</td>
</tr>
<tr>
<td><strong>Automated Traffic Signal System:</strong></td>
<td>NA</td>
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</table>

- BMLTA was created in 2005 to co-ordinate all land transport matters in the BMR.
  - The authority is also responsible for the preparation of the Plan for Transport Infrastructure and to oversee implementation of all transportation projects.
- Currently, there is no plans to introduce BRT System in Bangalore. However, Bangalore city’s bus operation is rated as one of the best in India, managed by Bangalore Metropolitan Transport Corporation.
Delhi Integrated Multi-Modal Transit System (DIMTS) was established as a Special Purpose Vehicle (SPV) in June 2006, named Delhi Integrated Multi-Modal Transit System Limited (DIMTS) to run the operation of BRT Corridor System.

- In July 2007, Infrastructure Development Finance Company Ltd. (IDFC) bought 50% stake in DIMTS from the government.
- DIMTS is set up to provide integrated public transportation services in Urban transport infrastructure development.
- Currently, DIMTS is managing a number of transportation related projects in Delhi on behalf of Transport Department.
### Bus Operator:
- Dayajeet Nimay Logistics
- Rama jyoti Travels
- Anam Travels
- Priyadarshani Transport

### ITS and Ticketing:
- R-Square Systems & Solutions

### Automated Doors:
- NA

### Automated Traffic Signal System:
- Tender under progress

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- Indore Municipal Corporation and Indore Development Authority (IDA) jointly created a Special Purpose Vehicle (SPV), Indore City Transport Services Limited (ICTSL) to operate and manage the public transport in the city with private sector participation.

  - ICTSL is currently operating 130 buses in urban area and 25 buses in sub-urban area.

- ICTSL has planned to have a network of BRT corridors with a total length of 88.4 km.
- Jaipur Development Authority (JDA) is responsible for BRTS infrastructure creation in the corridor to Jaipur City Transport Services Limited (JCTSL) for operation & maintenance.
  - JCTSL is a SPV jointly owned by JDA & JMC (Jaipur Municipal Corporation) in August 2015.
- Under the JnNURM scheme, JDA has sanctioned 400 buses for bus operation, of which 100 shall be utilized as BRTS.
- Pune Mahanagar Parivahan Mahamandal Limited (PMPML) was formed by merging the PMT (Pune Municipal Transport) and PCMT (Pimpri-Chinchwad Municipal Transport) into one company in 2007.
  - Since 2008, it is also responsible for the BRT services in Pune.
- Pune inaugurated a pilot corridor on December 6, 2016, with a stretch of 14.8 km.
Market Opportunity for ITS and AFC projects:

- iMoUD Specification
- Key Market Drivers
- Key Players
  - Cubic Transportation Systems India Pvt. Ltd.
  - Siemens Information Systems Ltd.
  - Vix-ERG Pty. Ltd.
MoUD Specification

MoUD, GoI through the Urban Bus Specification mandated:

• Provision of Destination Boards on Front, Service Door side, as well as internal board with audio-visual Passenger Information and Vehicle Tracking Systems in buses procured under JnNURP.

• The system on the bus should be such that a single controller compatible with Ticketing Machine and Smart Card reader, should be able to control passenger information system (audio & visual), tracking system, Drivers bus route guidance and multiplex with vehicle system and two cameras on the bus.

  – The camera recording for atleast 48 hours should be available on the bus or recorded in the back office system.

  – The controller should have inbuilt GPS, GPRS capability to integrate with back office Intelligent Transport System (ITS) requirements and signs on bus stops and BRT’s.
Key Market Drivers

- As per MoUD guidelines, all buses procured through JnNURM scheme should incorporate ITS.
- As per its reform agenda, MoUD also directs states to need to implement ITS through city specific plans preferably on PPP model.

- Availability of funding under JnNURM has pushed many cities to construct infrastructure for city bus services.
  
- ITS is now become essential component of city bus service rather than just a operation.
- For better future planning, the data can be generated through ITS components.
Contact Details

Cubic Transportation Systems India Pvt. Ltd.
Address: H-08, Level 1, Module 1, L&T Phoenix Infoparks Pvt. Ltd.
Special Economic Zone, HITEC City 2, Gachibowli
Hyderabad, India
Phone: 91-40-44605151
Fax: 91-40-44605152
Website: www.cubic.com

Projects in India

- In November 2009, Cubic launched a pilot project for the trial run in Delhi in collaboration with the Delhi Integrated Multi Modal Transit System.
- AFC system is installed in 6 buses running on Dwarka Mudrika route operated by the Delhi Transport Corporation.
  - Cubic plans to sell approximately 125,000 smart cards to passengers which will be processed by Cubic’s Dynamic Access Control Unit, an on-board processing unit that integrates automatic fare collection, passbook based vehicle tracking, payment and accounting and security.
  - Conductors are responsible for the issue, refund and top-up of the cards in the system.
- Currently, around 500 cards are in use by passengers and system is working smoothly.

Company Details

- Cubic Transportation Systems India is a subsidiary of Cubic Corporation.
- The company currently provides fare collection systems and services in London, Germany, Sweden, Italy, Australia, Atlanta, New York-New Jersey, Philadelphia and Los Angeles.
Siemens Information Systems India Pvt. Ltd.

**Address:** IFFCO Tower, Plot No.3, 3rd floor, Sector 29, Gurgaon - 122001, Haryana, India

**Phone:** NA

**Fax:** NA

**Website:** www.siemens.co.in

---

### Contact Details

Siemens Information Systems India Pvt. Ltd. (SISL) is a wholly owned subsidiary of Siemens Ltd.- the regional company of Siemens AG in India. SISL is the IT arm of Siemens Ltd. SISL also uses its Gurgaon facility to serve the international clients related to transportation sector.

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### Projects in India

- Siemens Information system is authorized by BMTC to conduct the trial of 20 buses in one depot with 20 PIDS.
  - The installation of hardware and BQSs have been completed.
  - The server room has also been built at the corporate office of BMTC at BMTC Nagar by Siemens. BMTC one room with electricity connection.
  - The trial (Proof of Concept) is expected to commence w.e.f. November.
  - The initial trial was planned on free of cost basis (including the PIDS).

- Siemens has also supplied 20 PIDS to BMTC on trial basis. The company is willing to install validators in permanent basis.
Contact Details

Vix-ERG Pty. Ltd.
Address: Block V10, Regents Park Industrial Estate
391 Park Road, Regents Park
NSW 2143, Australia
Phone: + 61 414 653 183
Fax: + 61 2 8760 1601
Website: www.vix-erg.com
Contact Person: Mohamad Kader, Head of Sales
(email: Mohamad.Kader@vix-erg.com)

Projects in India

ERG is currently executing two projects in India:

- **Mumbai Smart Card Based AFC**
  ERG is executing AFC projects for Mumbai’ and planning to install smartcards in 3,700 buses and all 108 trains. The company has already issued smartcards. The scope of the project includes Design, Build, Install, Support, AFC for BEST buses and for Commuter Western Railways. The company is also setting up Central system for Mumbai Transport and Central Clearing House.

- **New Delhi Metro Smart Card**
  The company is executing other important project for Delhi Metro Corporation Limited. The project is expected to be completed by 2010. The key responsibilities include Design, Configure, Test, Commission, Warrant and Maintain, fare collection system.

Company Details

- Vix-ERG is offers solutions and services for Unified Ticketing (UT), Central Clearing House systems.
- Its main focus is city infrastructure projects for public transport ticketing.
- In July 2009, the company sold its U.S. operation to Cubic Transportation Systems.

(VIX-ERG does not have local office in India. The company manage its operation through its Australian office and one branch in the U.S.)