INTEGRATED COMPREHENSIVE MOBILITY PLAN
FOR SUSTAINABLE BHUBANESWAR
AUGUST-20, 2013
INTEGRATED COMPREHENSIVE MOBILITY PLAN FOR BHUBANESWAR, CUTTACK AND PURI KONARK

VISION 2030
VISION

TO REGULATE, INCLUSIVELY PLAN AND DEVELOP AN EFFICIENT, EFFECTIVE AND WELL INTEGRATED TRANSPORT SYSTEM, THAT WOULD:

• ENHANCE MOBILITY IN AN ENVIRONMENTALLY, SOCIALY SENSITIVE MANNER

• INDUCE MODAL SHIFT IN FAVOUR OF PUBLIC TRANSPORT

• PROVIDE PEDESTRIAN TRANSPORT INFRASTRUCTURE.

• PROVIDE SEAMLESS CONNECTIVITY
GOALS

• **IMPROVE AIR QUALITY**
  • MASS TRANSIT
  • PEDESTRIANISATION
  • “TRIP NOT MADE”

• **REDUCE URBAN SPRAWL**
  • TRANSIT ORIENTED DEVELOPMENT

• **SOCIALLY EQUITABLE**
  • FARES
  • DURATION OF TRAVEL
  • DISTANCE OF TRAVEL

ENHANCE INCLUSIVE GROWTH
BACKGROUND

• BHUBANESWAR REPLACED CUTTACK AS THE CAPITAL OF ODISHA IN 1948

• OTTO KONIGSBERGER PLANNED FOR THE NEW CITY OF BHUBANESWAR IN 1946

• METROPOLITAN AREA FORMED BY THE TWIN CITIES - POPULATION OF 1.4 MILLION IN 2011

• BHUBANESWAR IS GROWING IT, EDUCATION & INDUSTRIAL HUB, WHEREAS CUTTACK ??
OBJECTIVES

• CONNECT THE TWO CITIES WITH ONE TRANSPORT SYSTEM

• UNIFIED MASS RAPID TRANSIT SYSTEM CORRIDOR

• A COMMON RING ROAD

• RAILWAY STATIONS HSR CORRIDOR

• UNIFIED TICKETING SYSTEM FOR ALL MODES

• INTELLIGENT TRANSPORTATION SYSTEM
INTELLIGENT TRANSPORT SYSTEM

HUMAN

ROAD

Information-Communication Technology

VEHICLES
INTELLIGENT TRANSPORT SYSTEM

Caution to notify traffic congestion beyond curve
60% of collisions have been reduced at Sangubashi Curve.

Caution: Congestion ahead.
INTELLIGENT TRANSPORT SYSTEM

Trend of total traffic accidents in 6 years (2002～2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total accidents per year</th>
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<tbody>
<tr>
<td>2002</td>
<td>75</td>
</tr>
<tr>
<td>2003</td>
<td>135</td>
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<td>2004</td>
<td>143</td>
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</tr>
<tr>
<td>2006</td>
<td>26</td>
</tr>
<tr>
<td>2007</td>
<td>42</td>
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After Service started

SOURCE: –
NATIONAL INSTITUTE FOR LAND AND INFRASTRUCTURE MANAGEMENT
MINISTRY OF LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM, JAPAN
INTELLIGENT TRANSPORT SYSTEM

• INTERSECTION CONTROL
• INCIDENT DETECTION
• VEHICLE CLASSIFICATION
• REVENUE COLLECTION
• PROVIDES CONGESTION MAPS
• TRAVEL TIME ESTIMATES
• PUBLIC TRANSPORT INFORMATION
• INDIVIDUAL VEHICLE MANAGEMENT
• ACCIDENT HANDLING
INTELLIGENT TRANSPORT SYSTEM – FOR FREIGHT
WEB-BASED TRAFFIC PLAN USING GIS

• DISTRIBUTION OF THE PLAN EASIER, WIDER, AND CHEAPER
• OFFERS BOTH STATIC AND DYNAMIC DIGITAL MAPS
• HELP INDIVIDUALS, KNOWLEDGE ABOUT THE TRAFFIC PLAN
• CITY PLANNER - ACCESS THE TRAFFIC DATA

RECOMMENDATION

• IMPLEMENT - DESIGN BUILT MECHANISM.
• INFORMATION OF THE WEBSITE - THROUGH MEDIA.
INTELLIGENT TRANSPORT SYSTEM

- TRAFFIC ENFORCEMENT CAMERAS

- MOTOR VEHICLE DATA BASE - TOOL TO ENFORCE TRAFFIC LAWS.

- CAMERAS TO CAPTURE - SPEEDING VIOLATIONS, UNAUTHORIZED USE OF A BUS LANE, AND FOR FUTURE CONGESTION PRICING SCENARIOS.

- CAMERAS FOR BUS LANE, RED LIGHT, SPEED LIMIT, STOP SIGN ENFORCEMENT AND NUMBER PLATE RECOGNITION SYSTEM.

- DESIGN BUILD PROCUREMENT
INTELLIGENT TRANSPORT SYSTEM – ADVANTAGES

SAFETY - DIRECT TRAFFIC AWAY FROM ACCIDENTS AND ALERT EMERGENCY SERVICES

PRODUCTIVITY - INCREASE THE CAPACITY OF CURRENT INFRASTRUCTURE

ENVIRONMENTAL PERFORMANCE - REDUCE CONGESTION, FUEL CONSUMPTION AND GHG EMISSIONS

LICENSE PLATE REGISTRATION NUMBER -> OWNERSHIP DETAILS - > PREVENTS CAR THEFT

CITY DIALOGUE ON CLEAN AIR AND SUSTAINABLE MOBILITY
HIGHWAY DESIGNED TO ENCOURAGE PEOPLE TO DRIVE LESS

• CONGESTION PRICING
• SPECIAL LANE FOR HOV
• BRTS
• ELECTRONIC TOLL SYSTEM FOR SINGLE-OCUPANT CARS AND BIKE PATH
PARKING

CITY DIALOGUE ON CLEAN AIR AND SUSTAINABLE MOBILITY
WRAP AROUND PARKING
PARKING INFORMATION SYSTEM (PIS)

• BRIGADE'S SHOPS AND ESTABLISHMENTS ASSOCIATION – B’LORE
• SMS
• 3 DISPLAY BOARDS
ELECTRONIC PARKING SYSTEM

ELECTRONIC PARKING IN BANGALORE AND CHENNAI
(PHONE BASE AND CREDIT CARD PAY SYSTEM)

CITY DIALOGUE ON CLEAN AIR AND SUSTAINABLE MOBILITY
ALTERNATE SIDE PARKING
REVENUE COLLECTION

REVENUE COLLECTION FROM ITS

WB GOVT. COLLECTS RS 17 CR. FROM “ TRAFFIC FINES ” IN KOLKATA

REVENUE COLLECTION FROM PARKING

ELECTRONIC PARKING SYSTEM – B’LORE – 100 SLOTS – RS 1.01 + CR. BETWEEN 2004-2009
COST - RS.36 LAKHS IN 2004
PARKING FEE IN 2004 - RS 10 / HR – MAX 2 HRS
CITY BIKE SHARING PROGRAM

POLLUTION CONTROL MEASURES BY REGULAR MONITORING OF VEHICLES

- BHARAT II BUSES - OFF ROAD
- MONITORED ALL VEHICLE EMISSIONS RANDOM CHECKING
- STRICTLY MONITOR ISSUE AND RENEWAL OF LICENSE
CARPOOLING
TRANSIT ORIENTED DEVELOPMENT

SMART GROWTH - COMPACT CENTERS WITH ACCESS TO PUBLIC TRANSIT.

CITY DIALOGUE ON CLEAN AIR AND SUSTAINABLE MOBILITY
TRANSIT ORIENTED DEVELOPMENT

MRTS CORRIDOR TO BE IDENTIFIED BRTS SHOULD COMPLIMENT MRTS

• ‘NO CONSTRUCTION ZONE’ TILL MRTS ALIGNMENT IS FIXED

• TOD AROUND MRTS NODES
Jersey City
Redevelopment in the Shadow
Population Growth

Year | Historic | Projected
--- | --- | ---
1950 | 305,715 | 305,715
1960 | 325,304 | 325,304
1970 | 345,893 | 345,893
1980 | 367,680 | 367,680
1990 | 391,113 | 391,113
2000 | 416,500 | 416,500
2010 | 296,340 | 296,340
2020 | 308,180 | 308,180
2030 | 332,613 | 332,613
2040 | 353,898 | 353,898

Source (1930 to 2000): US Census Bureau
Source (2010 to 2030): NJTPA
Source (2040 to 2050): T&M Associates (Based on NJTPA)
Liberty Harbor North

Peter Mocco
Town Founder

Duany Plater-Zyberk & Co.
Architects & Town Planners
RECOMMENDATION FOR REAL ESTATE AND INFRASTRUCTURE DEVELOPMENT

DETROIT IS A SYMBOL OF THE OLD ECONOMY’S DECLINE.

SPRAWL — MOVEMENT OF JOBS OUT OF THE CITY – TIME CONSUMING TRAVEL & UNECONOMICAL - RESTRICTS SOCIAL MOVEMENT OF POOR

EFFECTIVE PUBLIC TRANSPORTATION SYSTEM NEARLY IMPOSSIBLE

BUT NOT SAME FOR RICH
SEAMLESS
WHY UNIFIED TICKETING

• UNIFIED TICKETING IS A PIECE OF INFRASTRUCTURE THAT PROVIDES THE ABILITY FOR SMART CARDS (AND OTHER TOKENS) TO BE USED ACROSS ALL MODES (RAIL, BUS, FERRY, TAXI) OF PUBLIC TRANSPORT TICKETING AND OTHER PAYMENTS.

• AT THE BOTTOM IS THE USER WITH SMART CARDS AND TOKENS USING IT TO TRAVEL THROUGH VARIOUS MODES.

• ALL MODES HAVE SAME KIND AND INTEGRATED CARD READER BUT VARYING OR SIMILAR FARE SYSTEM

• AT THE END IS A UNIFIED TICKETING SYSTEM WHICH CHECKS, MONITOR AND ASSIMILATES DAILY REGISTERED CARD USES, USER AND REVENUE.
Delhi Case Study, India

Delhi Metro AFC Central Clearinghouse

- Rapid transit light rail (metro) system
- Elevated, at-grade and under-ground sections
- ERG Central Clearing House installed for all metro Lines AFC systems
- Red Line (21 stations), Yellow Line (15 stations) and Blue Line (32 stations)
- Designed for Delhi’s population of 14 million and beyond
BEIJING-CASE STUDY

BEIJING METRO AFC CENTRAL CLEARINGHOUSE IS THE MOST POWERFUL OF ITS TYPE IN THE WORLD

- SUPPORTS EXISTING BUS AND THE NEW TRAIN TICKETS
- FULL APPORTIONMENT & RECONCILIATION OF FINANCIAL POSITIONS PER LINE
- HIGH AVAILABILITY SYSTEM IMPLEMENTATION
- HOT-STANDBY DISASTER RECOVERY SYSTEM
- INTEGRATION AND TRAINING SYSTEMS
- DESIGNED AND TESTED FOR A POPULATION OF 30 MILLION
  - 10 MILLION PASSENGER JOURNEYS PER DAY
  - 25 LINES
  - 500 STATIONS
- SYSTEM WENT LIVE ON THE 9TH OF JUNE 2009
- SUPPORTS RE-USABLE AND PERSONALISED CARDS
Beijing-Systems Architecture
CONCLUSION

• IMPROVE AIR QUALITY
• MASS TRANSIT
• PEDESTRIANISATION
• “TRIP NOT MADE”

• REDUCE URBAN SPRAWL
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• SOCIALLY EQUITABLE
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• DURATION OF TRAVEL
• DISTANCE OF TRAVEL

ENHANCE INCLUSIVE GROWTH

social  environmental  economic
A TRIP NOT MADE

CITY DIALOGUE ON CLEAN AIR AND SUSTAINABLE MOBILITY