Encouraging the Regional Cooperation for

Utilization of Transport Big Data from Smart Transport Systems in THAILAND

Office of Transport and Traffic Policy and Planning
Ministry of Transport, Thailand
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PART 1
Introduction

- Thailand in Brief
- Thailand Transport Strategy
Utilization of Transport Big Data from Smart Transport Systems in THAILAND

**Thailand at a Glance**

- **Area**: 513,120 km²
- **Population (2022)**: 66.09 million
- **Urbanization Rate (2022)**: 53%

**PUBLIC TRANSPORT USAGE IN BMR 2017 - 2022**

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Transport</th>
<th>Other Mode</th>
</tr>
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<tbody>
<tr>
<td>2017</td>
<td>79.45%</td>
<td>20.55%</td>
</tr>
<tr>
<td>2018</td>
<td>82.10%</td>
<td>17.90%</td>
</tr>
<tr>
<td>2019</td>
<td>80.58%</td>
<td>19.42%</td>
</tr>
<tr>
<td>2020</td>
<td>84.38%</td>
<td>15.62%</td>
</tr>
<tr>
<td>2021</td>
<td>91.73%</td>
<td>8.27%</td>
</tr>
<tr>
<td>2022</td>
<td>90.21%</td>
<td>9.79%</td>
</tr>
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**% SHARE OF RAIL AND WATERWAY FREIGHT TRANSPORT**

<table>
<thead>
<tr>
<th>Year</th>
<th>Other</th>
<th>Waterway</th>
<th>Railway</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>14.06%</td>
<td>11.44%</td>
<td>1.40%</td>
</tr>
<tr>
<td>2018</td>
<td>14.28%</td>
<td>11.72%</td>
<td>1.64%</td>
</tr>
<tr>
<td>2019</td>
<td>13.88%</td>
<td>12.38%</td>
<td>1.40%</td>
</tr>
<tr>
<td>2020</td>
<td>13.49%</td>
<td>12.75%</td>
<td>1.40%</td>
</tr>
<tr>
<td>2021</td>
<td>14.10%</td>
<td>12.40%</td>
<td>1.40%</td>
</tr>
</tbody>
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20 Years Thailand Transport Systems Development Strategy (2017-2036)

- **Access** to transport services with affordability & equity
- Universal design & service design

- **Inclusivity**

- **Green & Safe Transport**
  - Use of clean/alternative fuels

- **Innovation & Management**
  - Improved transport & logistics efficiency
  - Reduced transport & logistics costs
  - Development of domestic & international transport connectivity

- **Transport Efficiency**

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PART 2
Applications

- Smart Transport Systems
- Transport Big Data
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Innovative Smart Mobility

Mobility as a Service (MaaS)
- Ride-Hailing and Ride-Sharing
- Bike Sharing and Micro-Mobility

Electronic Vehicles (EV)
- EV Development Plan (2022-2037)
  - (Draft) Roadmap to transition public transport to electric vehicle (Road Water and Rail)
- EV Development on Public Transport
  - Expansion of EV on public buses and intercity buses
  - Revise the regulation & Promoting EV-Boat
  - Study on Specification of EV on Trains

Utilization of Transport Big Data from Smart Transport Systems in THAILAND
Transport Data Center

Available Transport Data Centers

- Both real-time and periodic update
  - National Multimodal Transport Integration Center
  - CCTV Data Center
  - Traffic Data Center
  - GPS Tracking Data Center
  - Truck Weight Data Center

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**Data Source**
- Spatial GIS data
- Freight Survey data
- Transportation data
  - Import-Export transportation data
  - Freight Transport behavior data
  - Road network
- Land Use Survey
- GPS Taxi
- GPS Bus
- Mobile Data
- Smartcard

**Freight Transport Analytics**
- Data Mining
- Stop clustering
- Statistical model
- Map matching
- Validation
- Truck Analytics
- Bus Analytics
- Taxi Analytics
- Smartcard Analytics
- Survey app Analytics
- Cell phone data sorting & inference
- Data scale up model

**Passenger Trip Analytics**
- Direct Stat Data
  - Logit coef.
  - Total Data
- Data Scientist
- Batch Data
- DLT GPS

**Output**
- GPS Truck
  - Freight Transport behavior data by product
  - Origin-Destination of freight (by-product)
  - In-Out Trips at Important Place by Hr, / date of week, (Port or Truck Terminal)
  - Truck travel Data in the road network.
  - Transport behavior In-Out at Important Place
  - Average truck speed by district
  - VKT, VHT
- GPS Bus
  - Origin-destination or pick-up and drop-off locations
  - Stop points
  - Daily trip volumes (Working days and holidays)
  - Average speed between stop points
  - Service performance (proportion of travel time with passenger and total daily travel time)
- GPS Taxi
  - Origin-destination or pick-up and drop-off locations
  - Stop points
  - Daily trip volumes (Working days and holidays)
  - Average speed between stop points
  - Service performance (proportion of travel time with passenger and total daily travel time)
- App Survey
  - Origin-destination
  - Trip purpose
  - Transport modes
  - Daily trip volume
- Namtang Applications
  - Number of users for trip planning
  - Number of user traveled by navigating functions
  - Proportion of transport modes selection for trip planning
  - Origin-destination trips
  - Proportion of original zones
- Smartcard
  - The proportion of smart card usage
  - Origin-destination
  - Average trip volume (trip/day)
  - Average travel time (minutes)
  - Average distance traveled (kilometers)
- Mobile data
  - Origin-destination
  - Trip purpose
  - Transport modes
  - Daily trip volume

**Dashboard And Report Application**
- Data User
Utilization of Transport Big Data from Smart Transport Systems in THAILAND

Transport Big Data Analytics Initiatives

• To Support policy, plan and strategy of transport and traffic development
• To improve transport and traffic services
• To apply in transport model analysis and development
• To analyze logistics volume
• To determine infrastructure development plan to support logistics and travel activities
• To determine intensive truck rest area
• To publish information for other stakeholders for further analysis
PART 3

Conclusion

- Key Factors & Challenges
- Way Forward to Improve
Utilization of Transport Big Data from Smart Transport Systems in THAILAND

Development Challenges in Thailand

Expected Outcomes

- Interoperable Smart Transport Platform
- Smart Transport Data Integrated
- Effective Transport & Traffic Management

Tools

Various Data Sources: GPS, CCTV, Smart Card, Socio-Economic Information

Issues of Unsuccessful Development

- Isolated Data System Development
- Non-Architecture & Standard Formulation
- Awareness of Data Management & Data Security
- Lack of Knowledge & Technology
- Lack of Financial Support
Utilization of Transport Big Data from Smart Transport Systems in THAILAND

Way Forward to Improve

- Formulate **National Architecture and Standard for data sharing** with **Common agreement** from stakeholders
- Firm **Data Governance Formulation** in the implementation of policies, rules, and laws for data-related procedures
- **Knowledge transfer** program by collaborating with institutes and associations
- Enhance existing system **follow the Architecture**, utilize innovation from research institute & introduce PPP
Thank you for your attention.

Q & A