<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xiao-Yun Lu</td>
<td>PATH, U. C. Berkeley</td>
</tr>
<tr>
<td>Matt Hanson</td>
<td>Caltrans, DRI</td>
</tr>
<tr>
<td>Michael Graham</td>
<td>FedEx Hub at OAK</td>
</tr>
<tr>
<td>Eugene Nishinaga</td>
<td>BART Res. &amp; Development</td>
</tr>
<tr>
<td>Richard Lu</td>
<td>BART Operations Planning</td>
</tr>
<tr>
<td>Rohit Rai</td>
<td>ITS GSR, U. C. Berkeley</td>
</tr>
</tbody>
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Panel 1

Reasons for the Study

(1) Air Freight Business Growth (Fig. 1)

Fig. 1 MTC: Air Freight Business Growth

![Bay Area Air Cargo Forecasts — Total Cargo Tonnage](image)

Bay Area Air Cargo Forecasts — Total Cargo Tonnage Will Triple by 2020 to 5.5 Million Tons Annually

Source: Bay Area Seaport Plan, 2003

(2) Air Freight Delivery Characteristics

- Package/goods size/amount are relatively smaller but with high value than those of land/sea goods movement.

- Several products require limited time window delivery.

- Mainly truck operation between collection/distribution centers and sorting hub.

(3) Problems for Air Freight Truck Delivery

- **Safety:** 80% of the victims killed in crashes involving trucks are occupants of smaller vehicles.

- **Traffic Congestion:** Trucks contribute more to congestion due to much larger occupancy; and the difference in vehicle dynamics between passenger vehicles and trucks – the latter has longer time to start/stop

- **Air Pollution:** Overall as well as per vehicle, trucks contribute the overwhelming majority of emission from mobile sources (Fig. 2)

(4) Potential Benefits

- **BART:**
  - Possibility of gaining new revenue generating business opportunities
  - To use capacity and thus public facility more efficiently (Ave. 30% used)
  - To gain higher demand and thus opportunities for expanding and system evolving such as ADTS (Advanced Direct Rapid Transit)

- **Air freight carriers:**
  - Reduce cost for truck delivery
Panel 2

- Reduce the delay and uncertainty caused by traffic congestion in limited-time-window delivery service.
- Improve reliability through highly integrated logistics in order to meet the demands from fast development of globalized economy
  - land and air
  - local, regional and global
- **For the public and California State:**
  - Relieve traffic congestion
  - Reduce air pollution
  - Reduce truck activity and to improve highway user’s safety
  - Fully use available system to increase land use efficiency (Integrated corridor management)
  - Improve the state’s economy by expanding and creating a more flexible transportation system

- Working towards State and Nation-wide integrated intermodal transportation system for high mobility

**Research Topics**
- **Infrastructure feasibility**
  - BART
    - Access Points
    - Car and Consist
    - BART train modification
    - BART station design for future development such as Santa Clara
  - FedEx
    - Container size
    - Location of collection/distribution center
    - Non-containerized products such as agricultural produce
- **Operational feasibility**
  - for BART system
    - Logistics to minimize impact on passenger movement
    - Optimize directional dispatch
    - Different train operation scenarios
  - FedEx
    - Collection/Distribution
    - Empty container returning
    - Time frames and Operation Logistics
- **Business case for BART:**
  - Directional line capacity
  - Revenue analysis
- **Business case for FedEx**
  - Revenue analysis
  - Service quality improvement
  - Benefit for future business extension
  - Integrate products from other divisions of FedEx

- **Safety and Security**
Panel 3

- FedEx product security check before loading
- To guarantee security in BART during operation (seamless handshaking)

• Institutional issues
- How to coordinate public entity and private business
- Liability issues for both in operation
- Social, local (Bay Area) and State interests

Facts Discovered

Fig. 3 BART System and FedEx Centers

Fig. 4 BART Concord Yard

Fig. 5 Combine Smaller Container

Fig. 6 Modify Retired BART Car

Fig. 7 Dedicated Freight Train

Acknowledgement

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Caltrans Project Manager: MS. Christine Azevedo