GIS Data to Support Transit System Planning

ORIGIN & DESTINATION
TRANSIT TRIP TABLE
FROM FAREBOX DATA
OCTA GIS – WHERE WE FIT IN?

- Capital Programs
- Regional Initiatives
- Modeling & Traffic Operations
- Planning & Analysis

GIS

- External Affairs
  - Marketing
  - Pub Comm
- Construction Engineering & ROW
- Transit Operations
  - Service Planning
  - Facilities
- Finance and Admin
  - Fin Planning
  - Risk Management
HOW GIS INTERACTS WITH DATA WAREHOUSE

Data Warehouse

- Ridership (Farebox)
- AVL
- APC

GIS

- Central DB (Spatial Data)
- Web Server
- Test
- Production Environment
LINKING DATA WAREHOUSE TO GIS

DATA WAREHOUSE:

FAREBOX:
<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>BUS</th>
<th>ROUTE</th>
<th>DIR</th>
<th>TRIP</th>
<th>STOP</th>
<th>FARE TYPE</th>
<th>PASS ID</th>
</tr>
</thead>
</table>

GIS DATA:

ROUTES:
<table>
<thead>
<tr>
<th>ROUTE</th>
<th>DIR</th>
<th>PATTERN</th>
<th>LENGTH</th>
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STOPS:
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<tr>
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<th>RTE</th>
<th>DIR</th>
<th>PATT</th>
<th>LAT</th>
<th>LONG</th>
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</thead>
</table>
## HOW TO BUILD A TRIP TABLE?

### ON-BOARD SURVEY
- Expensive.
- Infrequent.
- Time consuming.
- Small sample size

### APC (Automated Passenger Counts)
- Boardings / Alightings.
- Trip ends not connected.
- Not comprehensive data stream (yet).

### FAREBOX RECORDS
- Boardings (Origins) only
- Time of boarding.
- Location of boarding – bus stop
- Linkages to other data
- Thousands of records per day.
### ORIGINS – GET FROM FAREBOX DATA

<table>
<thead>
<tr>
<th>TRIP</th>
<th>BUS</th>
<th>ROUTE</th>
<th>DIR</th>
<th>STOP ID</th>
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<td>3656</td>
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</tbody>
</table>
¼ Mile Search

Alighting time – Calculate based on Boarding #1 & Boarding #2 farebox times.

TRANSFER
or
DESTINATION ?
### ORIGINS & DESTINATIONS

#### FAREBOX RECORDS

<table>
<thead>
<tr>
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#### TRIP TABLE

<table>
<thead>
<tr>
<th>PASS ID</th>
<th>ROUTE</th>
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<td>DESTINATION</td>
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TRIP PATTERNS & TRANSFER POINTS

[Map of a region showing trip patterns and transfer points]
## TRAVEL TIMES, DISTANCE & SPEED

<table>
<thead>
<tr>
<th>MODE</th>
<th>DISTANCE</th>
<th>TIME</th>
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<tbody>
<tr>
<td>BUS</td>
<td>15.4 MILES</td>
<td>45 MIN.</td>
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<tr>
<td>CAR</td>
<td>14.2 MILES</td>
<td>20 MIN.</td>
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</table>
Example Success Statistics:

- 241,179 daily boardings.
- Re-create 71,740 linked trips (Origins & Destinations).
- Represents 113,048 system-wide boardings.
- 46.9% of total boardings.
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