Transit Asset Management
Implementing Advanced Public Transportation Systems

So exactly how many and where are they?

Transit Asset Management
Palm Beach County/Palm Tran

Mobile Assets
• 1,971 Square Miles
• 1.3 Million Residents
• 142 Buses
• 34 Routes
• 1,257 Daily Trips
• 22,589 Daily Miles

Fixed Assets
• 3247 Bus Stops
• ADA Accessible
• 17 Timed Transfer Points
• 533 Shelters
• 894 Benches
• 17 Timed Transfer Sites
• 1 Intermodal (18 bays)
Transit Asset Management

Think about what you want and what you will need. Is it:
• collectable?
• analyzable?
• understandable?
• maintainable?
• transferable?

Transit Asset Management
Progression

• Clipboard & Stubby Pencil
• Data List
• Spreadsheet
• TeleRide & G-Sched
• Trapeze (2003)
  o Data options
  o Reports & Queries
  o GIS/GPS
Transit Asset Management
Divergence & Interdependence

Phase One: Trapeze--One System, the Beginning

Trapeze
- Route Traces
- Bus Stops/Infrastructure
- Mapmaker

Fixed Route Definition
Route Traces, Nodes, Stops, Recovery, Patterns
GeoBusStops-Select
Stop Abbreviation, Lines & Direction

GeoBusStops-Detail
Stop Abbreviation, Name, Node, Comment, Facing Direction, Curb Type, In Service, Last Date of Service
GeoBusStop-More

**Can**on: Preferred, Bench, Shelter, Lighting, Garbage, Telephone, Sign
Post, Bicycle, Transfer

**Cus**tom: Bench Adv/Status, Shelter Adv/Status, Municipality, ADA, Bay or
Bulb-out, Schedule, Latitude, Longitude, GeoStatus, StopName

GeoBusStop-Picture
Customized SQL Reports

- All Bus Stops by Line, Direction & Distance
- Benches
- Shelters
- Stop List by Signup & Route
- Stop List Unabridged by Signup
- Stop List w/in Municipality
- Stop List w/in Muni by Signup
- Stop Totals w/in Muni by Signup
- Stops w/o Muni Codes
- Stops w/o Route Definition by Signup

Transit Asset Management

- Roads & Rail (line: CFCC)
- Water Features (area: ocean/lake/canal)
- Boundaries (area: Muni/flood/BCC)
- Footprints (area: hospital/parks)
- Landmarks (point: CFCC)
Transit Asset Management
Divergence & Interdependence

Phase Two: County-wide GIS—Getting the Base

Palm Beach Countywide GIS

Palm Beach County GIS Data Catalog:
www.pbcgov.com/iss/itoperations/cwgis/gisdatasearch/

PBC GIS Forum:
www.gisforum.org/

Broward County GIS Data:
http://gis.broward.org/GISData.htm

Martin County GIS:
www.martin.fl.us/portal/page?_pageid=254,3687495&_dad=portal&_schema=PORTAL
Transit Asset Management

- Get the right tool for the job!
- But don’t spend too much!
- Spend the time on training!
- Verify, Verify, Verify!
- Allow for innovation!
- There is always room for improvement!
### Transit Asset Management

**Divergence & Interdependence**

**FDOT Public Transit Office**
- FGIS
- FIGIS
- ATSIM
- TBest

**County-wide GIS**
- "City/County GIS"
- "ERGIS"
- "GMCB""
Florida Transit Geographic Information System (FTGIS)

Florida Transit Geographic Information System (FTGIS) was developed as a one-stop shop for planning-related GIS data for Florida’s 26 fixed-route transit systems.

Automated Transit Stop Inventory Model (ATSIM)

- ATSIM is a user-friendly mobile-desktop system designed for the collection, update, and management of standard transit stop inventories for transit agencies in Florida (but can be easily adapted for agencies outside Florida).
The mobile component of ATSIM consists of a PDA application designed for easy entry of transit stop data in the field. It is specifically designed to run on the HP iPAQ model hw6945 (or hw6925), which comes with a fairly accurate Global Positioning System (GPS) and a 1.3 megapixel built-in digital camera.

The system allows collection of 56 standard attributes, in addition to one general comment field, eight user-defined fields, and lat/long GPS locations. The system also has the capability to automatically link and store multiple pictures in the database.

- Customizable stop info.
- Easy file transfer between a PDA and desktop computer (but not to FX).
- Automated synchronization.
- One-touch map display.
- Quick street name entry with pop-up lists.
- Easy stop record updates.
- Fl St Plane E NAD 1983.
- Bundled Census and network layers.
PDA Field Data Collection

- **Location:** Stop Number; Bte/Facing Direction; Lat & Lon; On & At Street; Placement; Distance; Municipality; Status; Landmark
- **Amenities:** Shelter/Bench; Number, Vendor, Condition, Type, Width, depth, WC access, Lighting, Graffiti, Seats, Advertisement; Trash Can; Schedule; Map; Newspaper; Lighting; Bike Rack; Vending Machine; Restroom; Telephone; Parking; Electric Message; Info Kiosk
- **ADA:** Sidewalk; Landing Pad; Obstructions; Curb Cuts; Pedestrian Crossing; Terrain; Surface; Accessibility
- **Misc:** Bike Lane; Time Point; Stop Sign; Speed; Trees; Bus Bay/Bulb Out
- **Other**
- **Photograph**

VisualGPS, LLC
www.visualgps.net/VisualGPSce/default.htm

A free PocketPC application that displays GPS data graphically as well as record the raw GPS data (NMEA 0813) to a file. Other features include satellite azimuth/elevation, GPS signal quality, analog gauges and statistical position averaging.
Verification with Google Earth

Transit Boardings Estimation & Simulation Tool (TBEST)

- TBEST is an ArcGIS-based software program that provides comprehensive transit analysis and ridership forecasting. TBEST is also capable of simulating travel demand at the individual stop level, while accounting for network connectivity, spatial and temporal accessibility, time-of-day variations, and route/stop competition.
### Transit Asset Management

**Divergence & Interdependence**

**Phase Four: AVAIL—Collecting Statistical Operating Data for Planning and Customer Service**

#### Software Module License

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Data Communications System

- Data is independent of voice communication
- On Board Vehicle Area Network (VAN)
- Cumulative data retrieved from bus at Garage
- Utilize GPS & AVL to monitor
  - vehicles,
  - schedule adherence, and
  - provide real time information.

System Benefits

- Data and reports available in real time or later retrieval,
- Spatial (location) and temporal (time) data available:
  - To improve on-time performance, or
  - To identify time and location of particular events.
- Safety, Security, Quicker responses, Improved Efficiencies & Reliability
- Automatically collected data can provide enough information:
  - To provide better bus service to Palm Tran customers, and
  - To make better use of resources.
Trigger Action Location Editor (TALE)

AVL Systems Overview

• AVL/CAD system monitor and manage fleet
• Real Time events transmitted via Cellular Tech
• CAD/AVL data archived
• Real Time Information on Map Display-internal
• Real Time Info for Customer Service:
  – World Wide Web,
  – Smartphone/PDAs,
  – Dynamic Message Signs.
APC Systems Overview

- Automate individual bus stop boardings and alightings
- Track ridership and improve on-time performance
- Provide data to support for Infrastructure improvements and consolidations

Replay/Real Time
Rider Overview
• Dynamic real time information on delays, arrival estimates, next stop & transfer possibilities
• Facilitate transit usage by providing real time bus arrival information
• Reduction in waiting time & improved customer satisfaction

InfoPoint (Hybrid)
InfoPoint-by Bus Stop (Map)

InfoPoint-by Bus Stop (Satellite)
All About GPS

Trigger Boxes:
- Can not work with bays or other close bus stops
- Can not distinguish between Timepoints on multiple routes

Error Messages--Bus is Full

"Engineering is working on that"

Analyzing Geographic Patterns

- MapInfo not ArcGIS
- 16 Character Bus Stops
- No Letters in Bus Stop Number
- No Special Characters other than @ (at) or & (opposite)

"Engineering is working on that"
Using Web Hosted Mapping Services

Will it work with?
- Google Maps
- Google Transit

“Engineering is working on that”

Digital Mapping on Your Computer

Finally, just because you got it to work in Albany NY, and it works for Volusia County, FL (for the most part),

Doesn’t mean that it is a perfect fit for Palm Beach County

“Engineering is working on that”