Using Enterprise GIS to Support Transit Safety and Emergency Management

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• Use Cases of Safety and Emergency Management in Public Transit
• GIS Support for Transit Safety and Emergency Management
• Use Cases of GIS Support for Transit Safety and Emergency Management in WMATA
Use Cases of Safety and Emergency Management in WMATA

• Transit Safety Incidents Reporting and Analysis
  – SMS (Safety Measurement System)

• Police Incidents Reporting and Analysis
  – CAD/RMS
  – Crime Analysis

• Emergency Evacuation Planning
  – Emergency Asset Mapping

• Emergency Response
GIS Support for Transit Safety and Emergency Management

• Situation Awareness
  – Provides current locations and status of Transit Infrastructure and Assets
  – Provides Dynamic Map to Display Real Time Locations of Trains and Buses
  – Provides Dynamic Map to Display Real Time Locations and Status for Transit Incidents

• Development of Location Referencing Framework to Display Real Time Data on Map Fed from Non-GIS Systems
  – Linear Referencing System for Trackside Incidents Fed from Maximo
  – Coordinate Based Referencing System for Police Incident Records Fed from CAD/RMS (SQL Server)
  – Highway Based Location Referencing System for Safety Incident Records Fed by Safety Measurement System
  – Feature Based Location Referencing System for Workorder Information Fed by Maximo

• Development of Standard Location Hierarchy to Provide Standard Location Information for Safety and Emergency Management Systems
• Mapping for Emergency Evacuation Planning
• Mapping for Crime Analysis
Use Cases of GIS Support for Transit Safety and Emergency Management in WMATA

• Incident Reporting and Analysis
  – Police Incident Reporting and Analysis
  – Safety Incident Reporting

• Situation Awareness
  – Real time train/bus locations
  – Real time system outage

• Emergency Asset Mapping and Evacuation Planning
Incident reporting from Metro Transit Police Department (MTPD)

- MTPD compiles information into spreadsheets with basic location
- Geocode (composite address locator) based on:
  - Address
  - Street intersection
  - Rail station
  - Bus route and stop (by intersecting street)
  - WMATA facility (rail yards and bus garages)
- Various analytical products
  - Heat map and Kernel density maps of all crime and/or dispatches
  - Maps of specific crimes by locations (thefts at Metrorail stations)
  - Maps of crime change over time (month to month, year to year)
- Maps and charts products are used to aid in re-allocating officers
Use Cases of GIS Support for Transit Safety and Emergency Management – MTPD Incident Reporting

Dispatcher calls at Metro Stations

Crime reports at Metro Stations
Use Cases of GIS Support for Transit Safety and Emergency Management in WMATA- SMS Interface
Use Cases of GIS Support for Transit Safety and Emergency Management in WMATA – Customer Services

Customer Services Scenario:
- Incident Event at a location (e.g., street intersection, bus stop)
- Define impact zone (e.g., radius of 1500 feet)
- Find impacted bus routes and bus stops
- Find real time buses and trains in the impact zone
Use Cases of GIS Support for Transit Safety and Emergency Management in WMATA – Emergency Responses

ROD Map Display with Dummy Testing Data
Station maps for evacuation purposes

- Station exterior and interior
  - Exterior (aerial imagery, command posts, assembly areas, bus bridges, triage, EMS, etc.)
  - Interior (all rooms, areas, and vertical circulation for every level in station)