



The State Perspective on GIS-Based Asset Management

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GIS at VDOT

Roadway Network System (RNS)

- **A web-based, spatially enabled replacement for the Highway Traffic Records Inventory System (HTRIS). Current Modules:**
 - **Roadway System**
 - **Speed zones**
 - **Traffic**
 - **Structures**
 - **Railroad Crossing**
- **Search - Location / Quick Search; Traffic Search**
- **Map - Road Characteristics (RDI Layers)**
 - **Tools & Features**
 - Identify
 - Aerials
 - Swipe
 - Measure
- **Straight Line Diagram (SLD)**
- **Reports**
- **Web Support / Help**

Roadway Network System (RNS)

The screenshot displays the RNS (Roadway Network System) web application interface. At the top, there is a search bar for "Route Name | Address" with a "Quick Search" button. The VDOT logo is visible in the top right corner. Below the search bar, there are navigation tabs: "Map Layers", "Results", "Active Tools", "Tools", "Export Map", "Bookmarks", and "Available Maps".

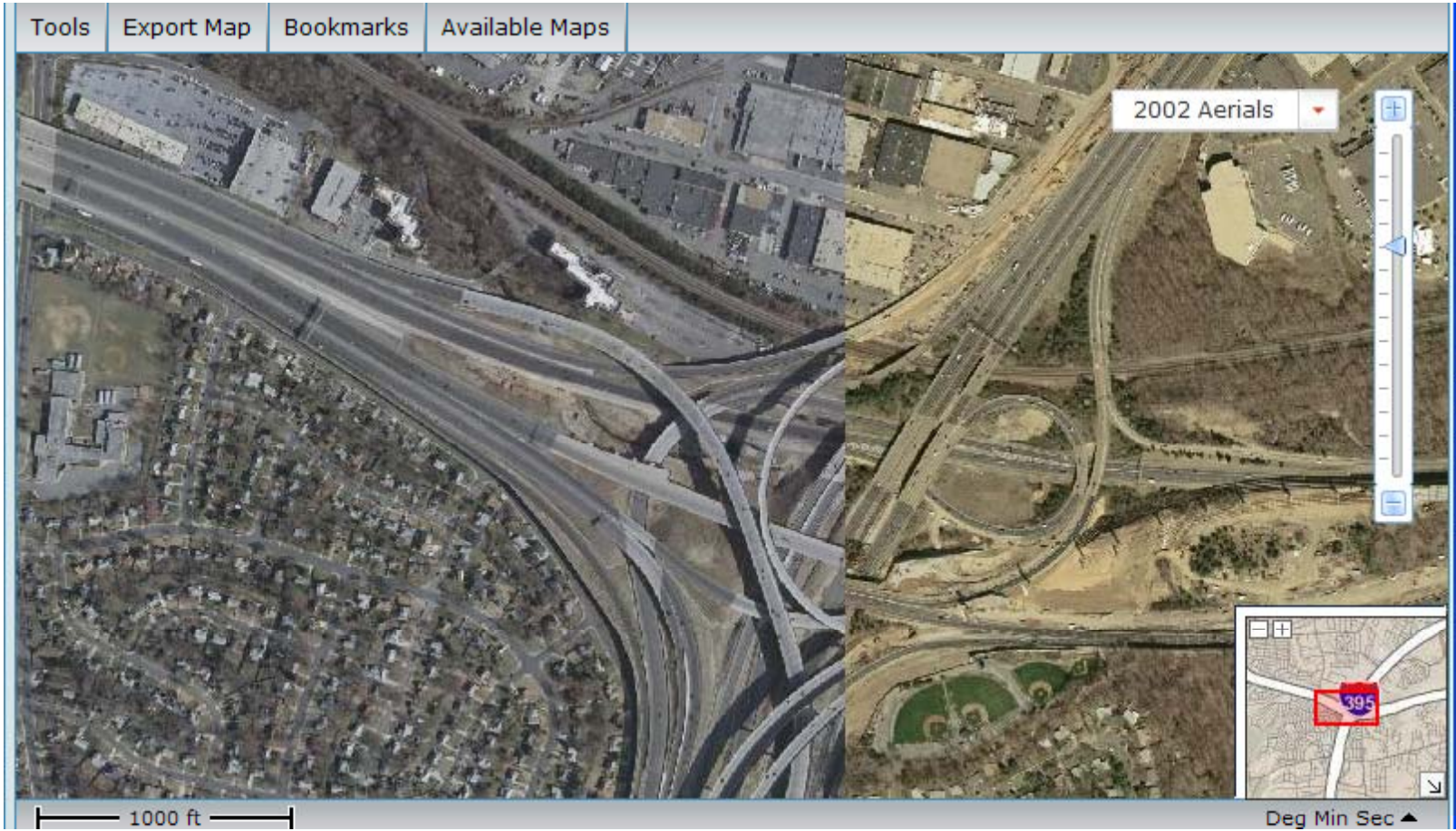
The main content area is divided into two parts. On the left is the "Route Event Editor" sidebar, and on the right is a map of Virginia showing a highlighted route (I-95N) with a red location pin and a green location pin. The sidebar contains the following information:

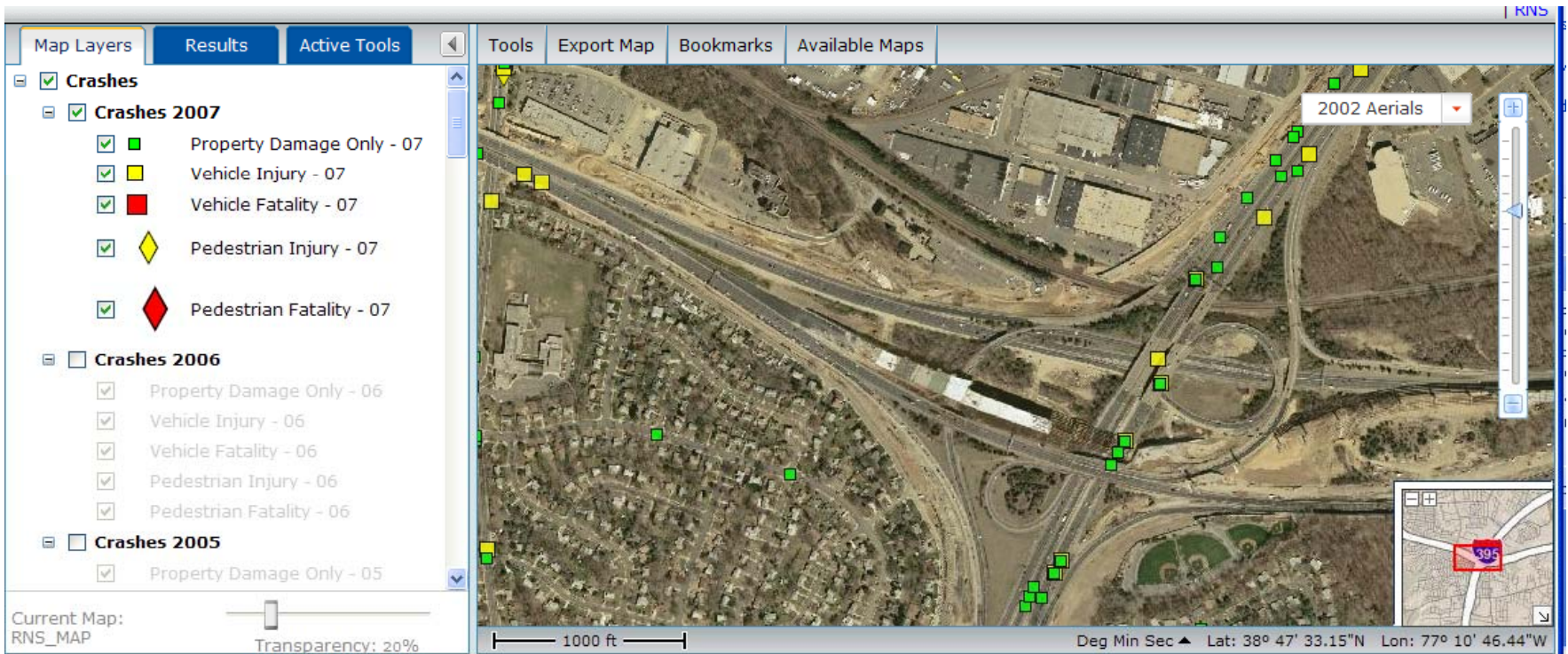
- Route Info:**
 - Route name: I-95N
 - Length: 178.25 Mile(s) NB
 - Units: OSM
- Event Segment:**
 - Start: 101.33 Mile(s) (0 - 178.25)
 - End: 148.18 Mile(s) (0 - 178.25)
 - Measure: 46.85 Mile(s) (0 - 178.25)
 - Direction: with Traffic Flow
- Event Actions:**
 - Auto-Zoom to new routes
 - Choose Here...

The map shows major highways (I-66, I-81, I-95, I-64, I-85, I-77) and a scale bar for 50 miles. The map is titled "VDOT Basemap". At the bottom of the map, the coordinates are displayed: "Deg Min Sec Lat: 37° 05' 27.75"N Lon: 75° 52' 24.83"W". The status bar at the very bottom shows "Done", "Local intranet", and "100%" zoom level.

Tools | Export Map | Bookmarks | Available Maps

2002 Aerials

The image shows a screenshot of a web-based map application. The main view is an aerial photograph of a complex highway interchange with multiple overpasses and ramps. The terrain is a mix of asphalt, concrete, and some greenery. In the top right corner, there is a dropdown menu labeled "2002 Aerials" and a vertical zoom slider with a blue triangle in the middle. In the bottom right corner, there is a small inset map showing a street grid with a red rectangle highlighting the current view's location. At the bottom left, there is a scale bar labeled "1000 ft". At the bottom right, there is a coordinate display showing "Deg Min Sec" with an upward-pointing triangle. The interface has a light gray background with a blue border on the right side.



GIS Integrator

Geo-Spatial Database – Enterprise Server, ESRI 9.3.1

- Provides enhanced analytical functions RNS does not provide
- Will develop web services to expose data and analytical functions to users and other applications
- New Integrator will use Silverlight front end and ArcGIS server back end

Other presentations this week on VDOT GIS:

- Archer Carr – *A SOA Web Based Map Road Network System Application*
- Melanie Seigler – *Supporting VDOT's Enterprise GIS*

Asset Management Systems

- **Bridges – Pontis (implementing web-based version)**
- **Pavements – Agile Assets Pavement Management System (deploying now)**
- **Other assets – VDOT Asset Management System**
 - **Developed in house in 2004**
 - **Utilized specific data set and random sampling as input to decision trees to derive extrapolated inventories, work quantities, and needs (\$) – Not GIS based**
 - **Exploring use of RNS, Integrator, SharePoint and other tools currently available as part of next generation Asset Management System with GIS capabilities**
 - **The vision and functional requirements remain essentially the same**
 - **The technology offers new possibilities for design, configuration, integration, presentation, and ease of use**

Data Standards

Who's Standards?

- **Establishing Communities of Interest to focus on:**
 - Documenting the business case for data and services
 - Identifying data needed to support business functions
 - Identifying data sources, systems and owners
 - Developing data models for each data product
 - Developing recommendations for improvements to systems and data collection and management processes

- **COIs, So Far...**
 - Work Planning and Tracking
 - ITS Assets

- **Next**
 - Traffic and Safety Assets
 - Drainage Assets
 - Travel Time
 - Incidents

Challenges

Raise awareness and support

- Build the business case for what GIS-based asset management can do
- GIS is more than a mapping tool
- Increase communication to executives and the commissioner
- Increase involvement of experts in other business areas who are producers or consumers of the data and services

Effective presentation of spatial data

- Concepts are still foreign to many people at all levels
- How can data and analysis be presented most effectively for executive level communication?

Implementation of an effective mobile technology

- Reliable data viewing and data entry in the field

Challenges

Demonstrating the potential uses of GIS to advance Asset Management

- Corridor based asset management – coordinating work across multiple types of assets located along the same corridor
- Risk based asset management – incorporating environmental and other factors that vary locally and impact maintenance decision making
- Coordinating with operations for winter weather, emergency response, and other roadway management functions
- Support the spatial dimension of cross-asset performance modeling

Developing the institutional capabilities

- Transitioning more responsibilities for data capture, data quality, and data management from IT to business units
- Changes in business processes
- Changes in staffing levels
- Updating job descriptions
- Training



QUESTIONS?