MTRI has developed a desktop GIS tool to enable transportation agency users to easily apply high-resolution imagery to creating "road furniture" asset management databases. This "Road Furniture Desktop GIS Tool" operates in an ArcGIS environment and provides a logical workflow to accessing and interpreting imagery to finding road asset features. The tool has been tested and validated in helping to find and inventory over 40 types of road asset features, including guardrails, signs, billboards, rumble strips, light poles, pavement markings, gores, traffic signals, and many others.

Figure 1: An example of an intensive road furniture inventory collected using the imagery-based methods captured in the Road Furniture Desktop GIS Tool.

MTRI has designed the tool to bring in imagery data sources shared via web services, in addition to being able to quickly bring up related imagery from Google and Microsoft when interpreting features. Users can access an "image library" of what road furniture assets typically look like in imagery to aid with interpretation. Also included is a comprehensive help manual to aid users with any tool process questions. A key part of creating a more efficient workflow is the inclusion of

an automated linear referencing capability that significantly speeds up the attribution of point and line road furniture features with their milepost and unique road identifier values.
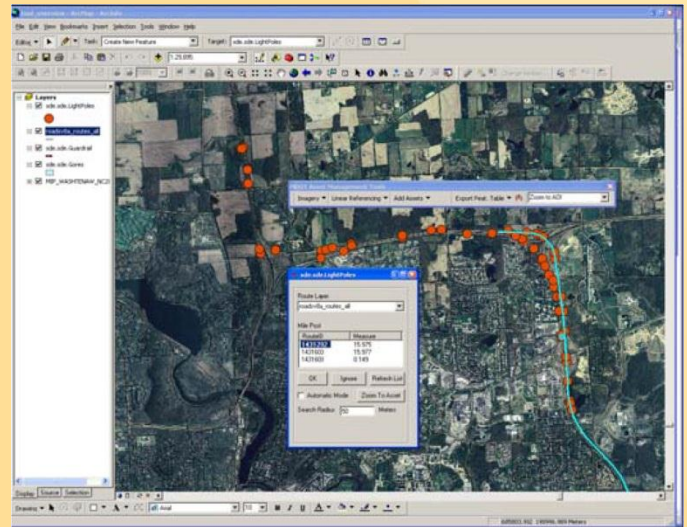
Figure 2: The tool's linear referencing functionality is being used to rapidly assign milepost and road identifier values to road furniture data collected with the tool.

Underlying the tool is code that enables users to connect to any standard GIS data format for storing the road furniture data, including shapefiles, personal and file geodatabases, and spatially-enabled relational database formats such as PostGIS spatial types and Oracle Spatial via ArcSDE. The flexibility of using enterprise-level relational databases, such as PostgreSQL and Oracle means that transportation agency users can select the storage format that best meets their data architecture plans while taking advantage of the tool capabilities and versioning and reconciliation functionality of ArcSDE.
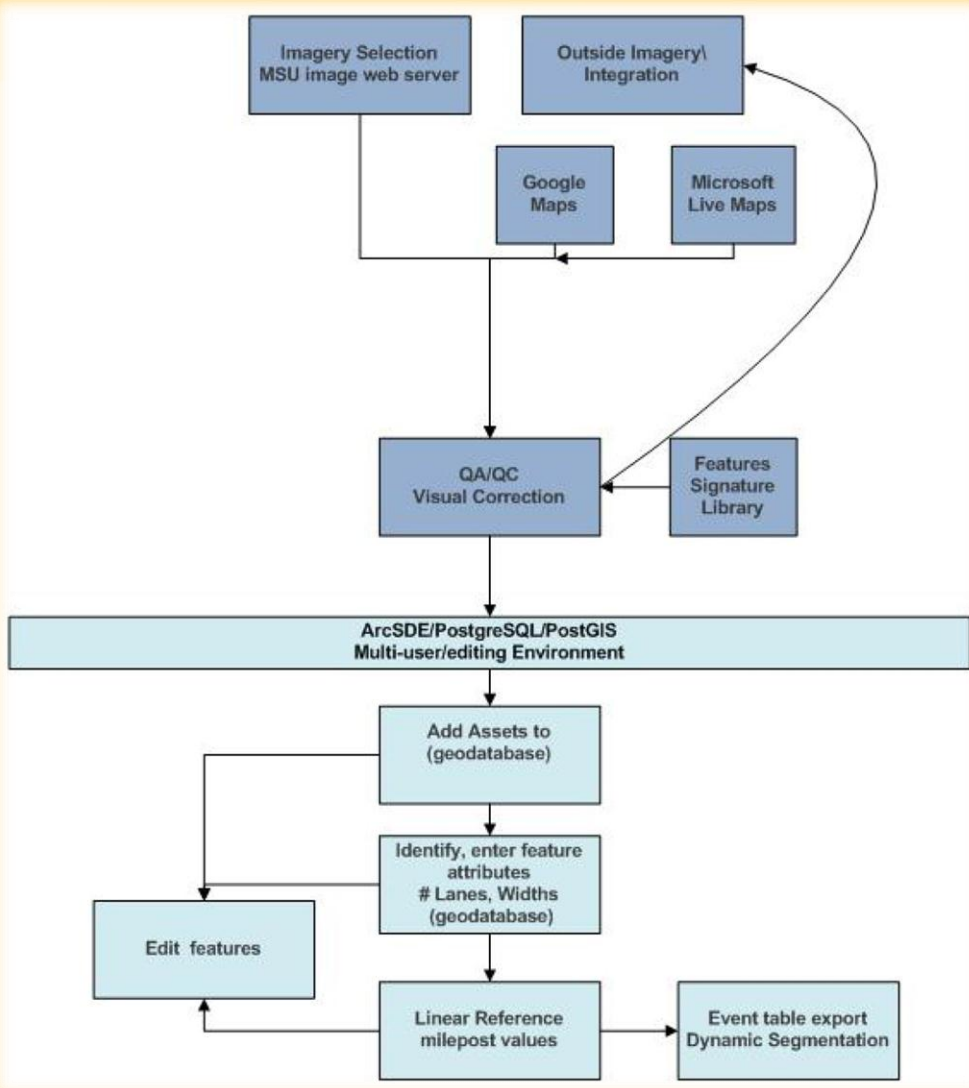
Figure 3: The imagery-based asset management data collection workflow captured with the Road Furniture Desktop GIS Tool.

The tool can be rapidly customized to include access to standard GIS base layers appropriate for different areas, such as roads, political boundaries, and existing road furniture data layers. The tool's includes the ability to integrate existing data, such as those collected with GPS based field methods, and then apply tool functionality such as adding linear referencing milepost values for all features. This customization capability makes the tool applicable to both local and state transportation agency needs whenever imagery-based interpretation and collection of road furniture features is helpful to meeting the growing need for more detailed and more extensive asset management data. The tool is designed to be used by transportation agency staff that are not GIS or remote sensing experts, and MTRI can provide help with database setup and provide training to integrate the tool into asset management workflows.

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