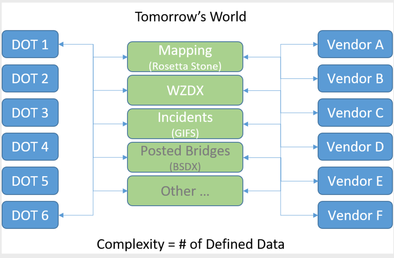
The ABC's of Conflation: TMC, LRS, OSM - What Happens When You Muck It Up Follow Up - September 2021

Thanks to those who participated in The ABC's of Conflation: TMC, LRS, OSM - What Happens When You Muck It Up web event on August 19, 2021. Please click on the links below for more information about the event or visit the TSMO section of the Coalition's website (https://tetcoalition.org/projects/tsmo-events-webinars/) on the TSMO Webinars tab.

- Presentation with Audio
- Slides Only
- Question & Answer Summary

Background

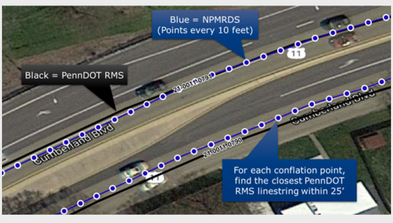
Stan Young of the Eastern Transportation Coalition provided background information on the data challenges faced by agencies today and how conflation can help. Although there are many traffic data sources, each one currently presents a custom data format and are not interchangeable. Industry data sources conveying all sorts of information (route changes, real-time data events, work zones, incidents, closures, etc.) require conflation to convert to different base maps. Agencies and vendors are working to build effective common data exchange formats, but until then, conflation processes need to be managed and streamlined.



Spotlight Presentation #1 – Connecting the Dots: Pennsylvania's Conflation Experience

Steve Gault of Pennsylvania DOT presented how PennDOT created a process for providing a singular speed limit and annual average daily traffic (AADT) for each TMC on the NPMRDS network to facilitate federal PM3 reporting – overriding the default values provided in NPMRDS which in many cases were inaccurate. PennDOT's solution was to overlay TMC segments points generated every 10 feet with RMS segments (PennDOT's existing LRS). Appropriate attributes for the TMC were selected from the RMS segment that captured the most matches (shown below) from the TMC segment points. PennDOT experimented with the granularity of points and achieved the best results from the 10-foot granularity (for instance, sampling the overlaid geometries every 10 feet rather than every 100 feet).

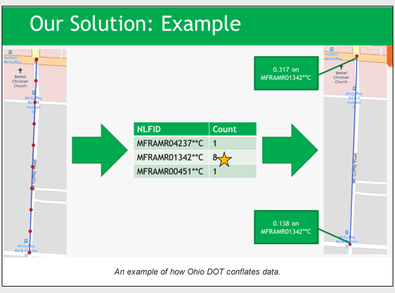
PennDOT is working to formalize their method of overriding NPMRDS-assigned values with corrected values based on this conflation process. PennDOT is also looking to conflate other data, including their Roadway Condition Reporting System (RCRS), weather data, and the TDADS congestion pie chart in a similar fashion. You can track PennDOT's conflation process here.



Spotlight Presentation #2 – Probe Segments and Linear Referencing System (LRS): A Tale of Two Giants and How Ohio Made Them Friends

Bill Welch of Ohio DOT provided an overview of Ohio DOT's solution to probe data challenges in operational uses. Ohio DOT wanted to conflate their LRS system with INRIX XD network. After attempting to match the XD segment start and end latitude and longitude, Ohio DOT realized that this technique often fails because the start and end often fall on intersections, and could be mistaken for the crossing roadway. Instead, they internally developed a Python script that would sample 10 points along the INRIX geometry and compare them to the LRS. The LRS segment (which they call the NLFID) that has the most matches is paired with the XD segment. The next process then identifies the bounds (or length) of the LRS segment applied to the XD segment using logpoints on the LRS network. This conflation process has been optimized to only take about 90 minutes.

In the future, Ohio DOT hopes to refine the QA process. Currently, they randomly sample about 500 segments for manual review of known problems, such as complex geometries with overpasses in urban areas.

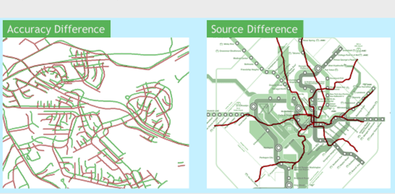


An example of how Ohio DOT conflates data.

Spotlight Presentation #3 - Conflation Software and Its Methodology in Real World Applications

Fred Hejazi of Citygate GIS spoke about their approach to conflation. Citygate GIS is a geospatial software development company that uses a statistical "best match" approach to conflating data. Matches are based on proximity, network connectivity, length of the TMC segment, feature types, and directionality, instead of the traditional method of proximity-only, which fails when map errors are inconsistent. Fred shared many examples to inform that conflation headaches are not limited to just DOTs, but any industry that relies on spatial data.

Fred discussed the benefits and drawbacks of off-the-shelf conflation solutions and the advantages of more bespoke software, which can more adroitly address linear referencing, route and name combinations, and address ranges. Citygate's approach is a semi-automated process integrated into ArcGIS, with software that is capable of learning from manual edits. Citygate provided a comprehensive historic overview of conflation, the issues that arise from basemaps with differing levels of detail, granularity and accuracy, and applications in both transportation and non-transportation industries.



Upcoming Coalition Meetings

- RITIS User Group Web Meeting - September 30, 2021 – register here!
- TDADS National Webinar - November 10, 2021 – more information coming soon!

Follow the Coalition on YouTube and subscribe to be informed!

Recordings from many of the Coalition's webinars are available here - take a look!

Questions or Comments:
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