

Esri GIS for Road Safety

Miglena Kuzmanova, Esri Bulgaria



World leader in Geographic Information Systems



- NATO
- UN
- EC
- WB
- WHO
- IMO
- NASA
- ...

- Founded in 1969
- Based in Redlands California
- World's 3rd largest private software company

Road Agencies in Europe using ArcGIS by Esri include...



 European Commission
 VEGAGERÐIN
 Statens vegvesen
 Norwegian Public Roads Administration
 TRAFIKVERKET
 SWEDISH TRANSPORT ADMINISTRATION
 VÄYLÄ
 REPUBLIC OF ESTONIA
 ROAD ADMINISTRATION
 REPUBLIC OF BULGARIA
 Ministry of Transport and Communications
 NRA
 An tÚdarás um Bóithre Náisiúnta
 National Roads Authority
 LITHUANIAN ROAD ADMINISTRATION
 MAANTEEMET
 Administration des
PONTS et CHAUSSÉES
 Grand-Duché de Luxembourg
 highways england
 TRANSPORT FOR LONDON
 Rijkswaterstaat
 Ministry of Infrastructure and the Environment
 ASIFINAG
 ŘSD ČR
 ŘEDITELSTVÍ SILNIC A DÁLNIC ČR
 Bayerisches Staatsministerium des Innern, für Bau und Verkehr
 TOLL COLLECT
 service on the road
 Schweizerische Eidgenossenschaft
 Confédération suisse
 Confederazione Svizzera
 Confederaziun svizra
 SLOVENSKÁ SPRÁVA CIEST
 Infraestruturas de Portugal
 Autoroutes du Sud de la France
 anas
 DGT
 Dirección General de Tráfico
 PUBLIC ENTERPRISE
 ROADS OF SERBIA



GIS Enables Smarter Transportation

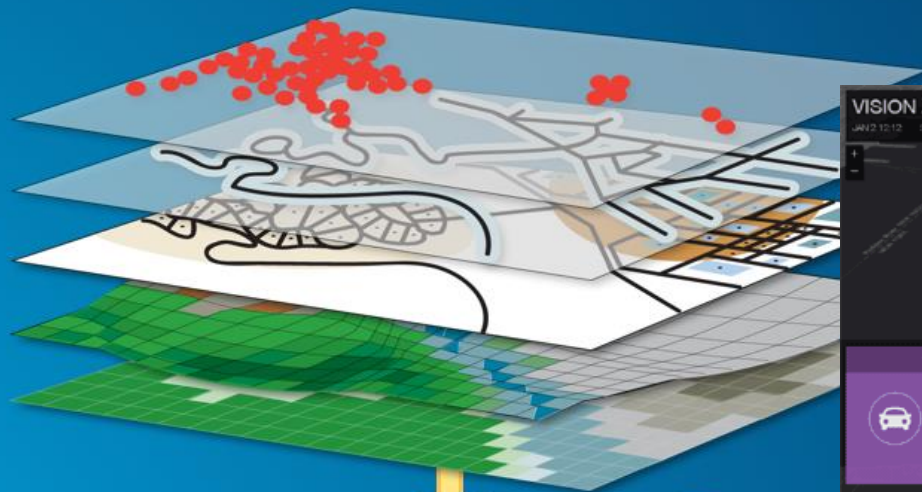
Improving How We Manage and Make Decisions



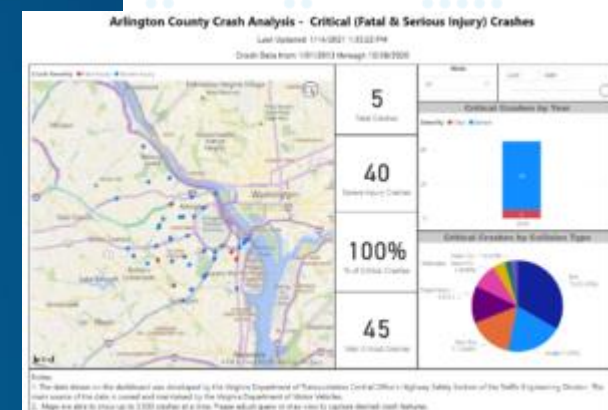
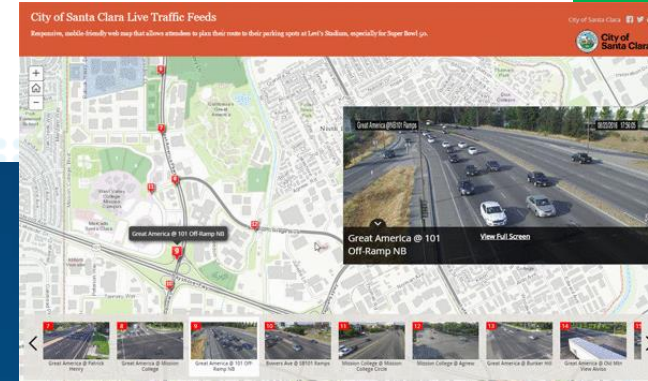
Spatial Information is Crucial for Safety Management

Nearly all information you gather, analyze and report has a location

- Incidents
- Roadway Infrastructure
- Weather Conditions
- Roadway Geometrics
- Traffic Volume
- Pavement Conditions



Spatial Information Provides the Context for Understanding



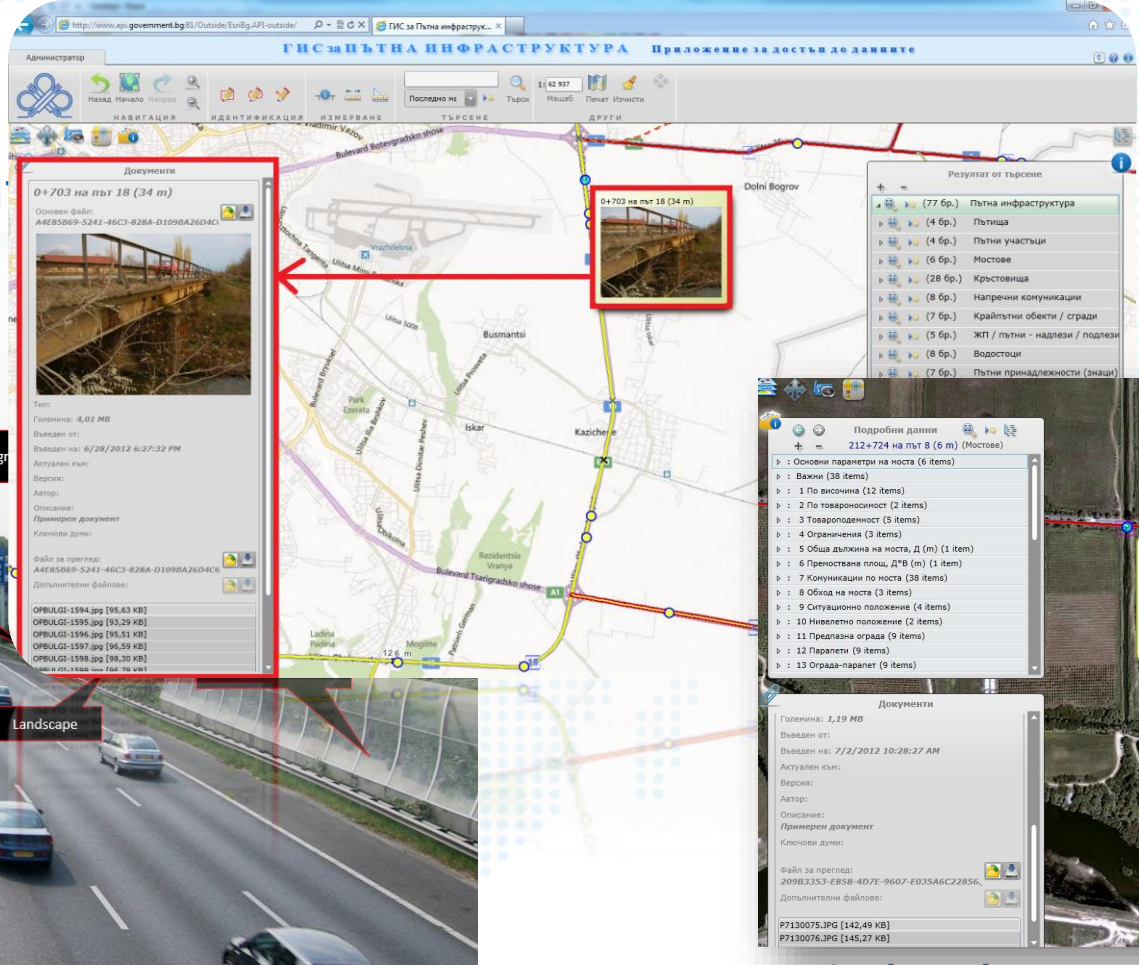
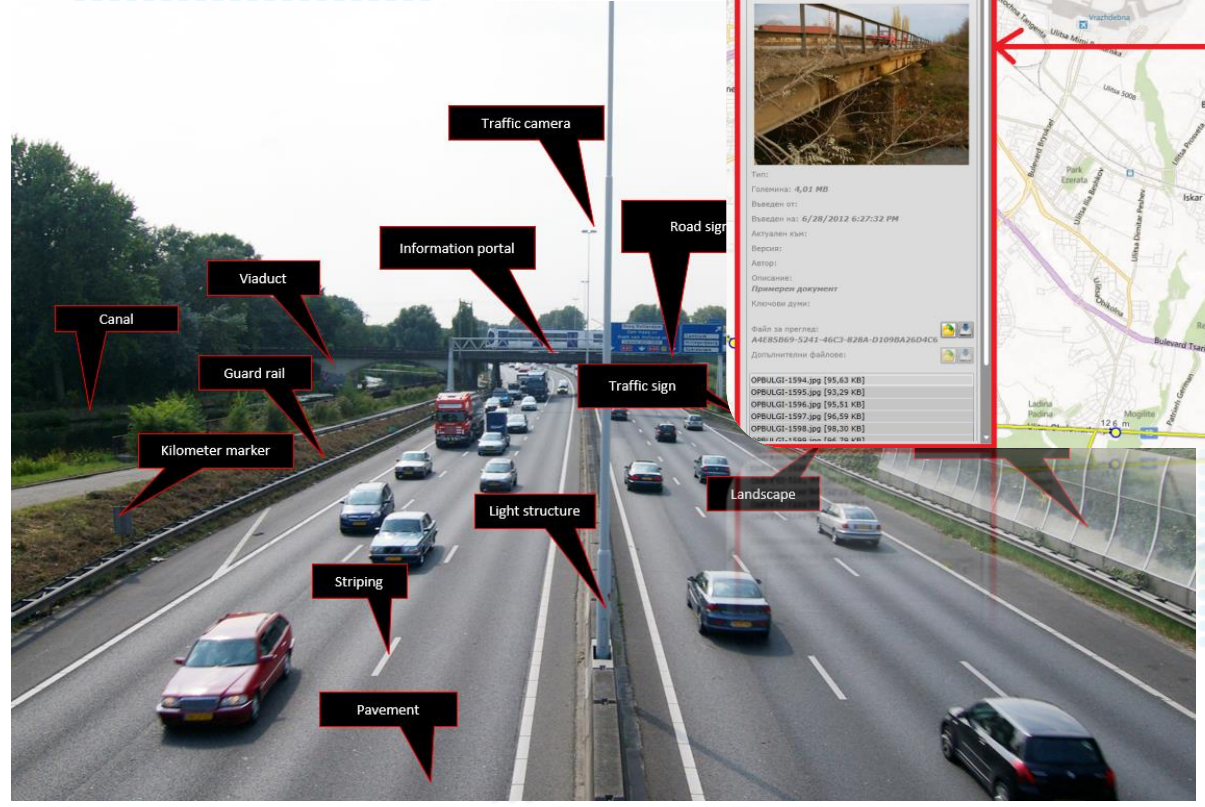
Vision Zero for the Balkans
June 1 – 2, 2022

Bulgarian Road Infrastructure Agency's GIS

Technical details of road infrastructure in GIS

Infrastructure mgmt. is crucial

Maps, images, inspection reports and other documents of roads, bridges, tunnels, etc.



Displayed on ortophoto & satellite images

GIS Simplifies Working With All Types of Data

Using Web Maps, Scenes, and Layers



GIS Provides a Fundamental Platform

For Managing, Analyzing, and Applying Spatial Information

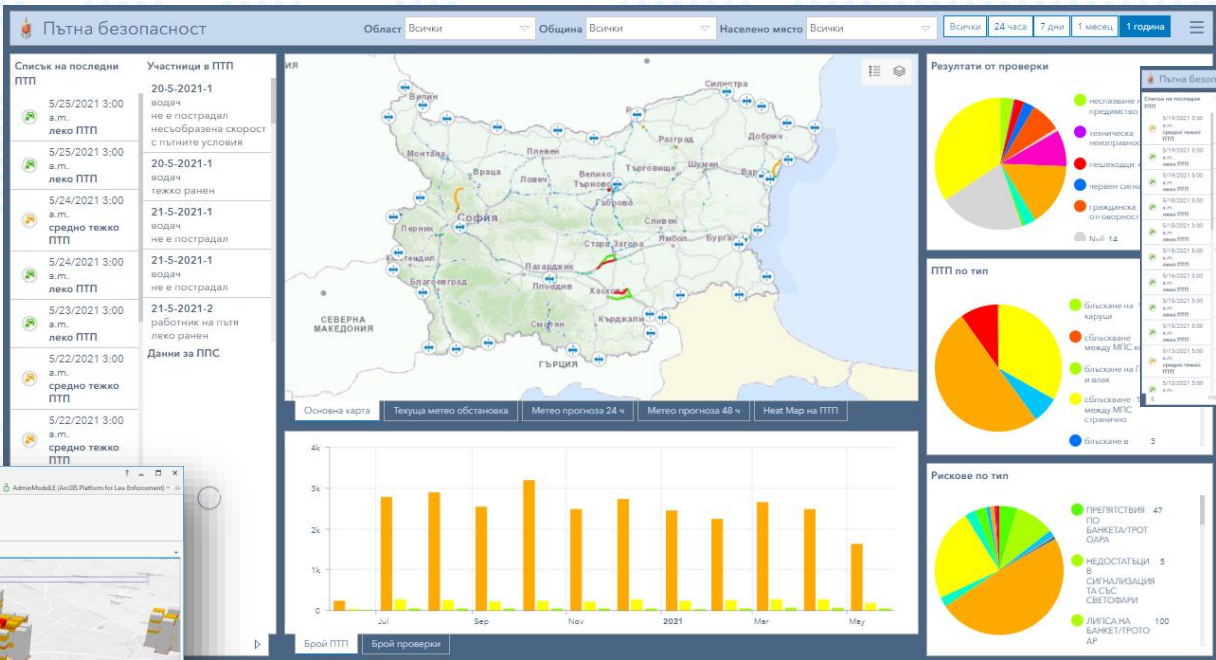
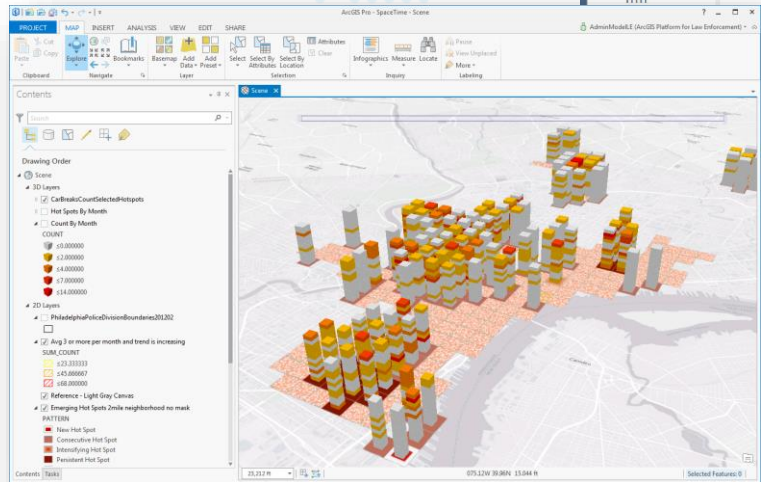
Integrating People,
Processes, Things,
and Data About Them



Using the Power of Where

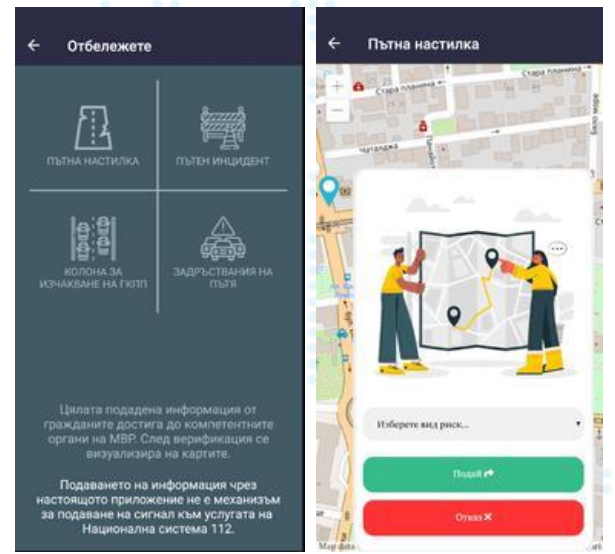
Bulgarian Ministry of Interior – road safety

2/3/4D Analysis



Situational analysis

Mobile app



Croatia - Dashboard for Decision Support




World Bank Deploys GIS Dashboard to Improve Railway Safety in Croatia

- Improved data accessibility & analysis
- Streamlined processes
- Easily accessible info to decision-makers
- Better insights for a more informed strategy




European Commission - TENtec Interactive ArcGIS Map Viewer

ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html

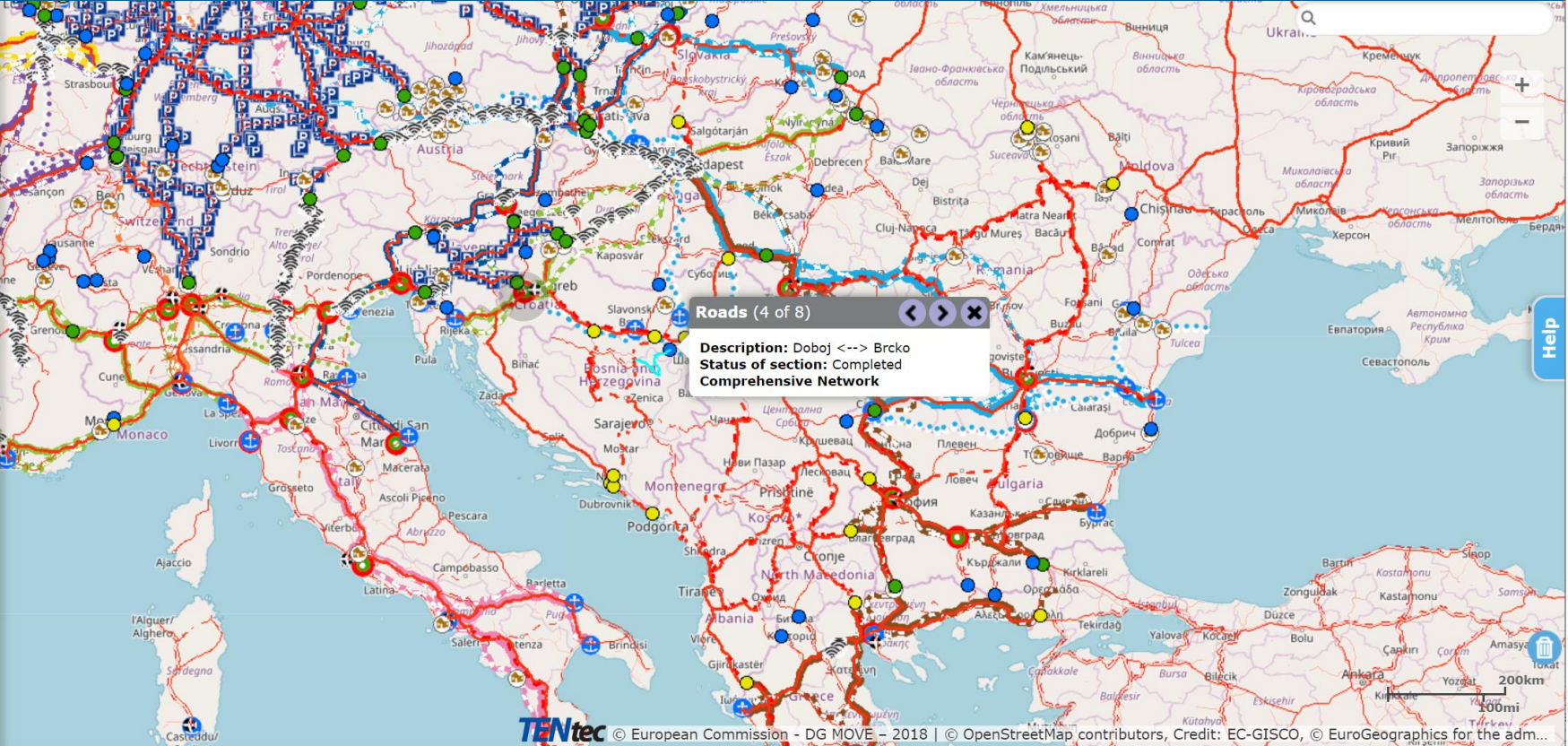


MOBILITY AND TRANSPORT

TENtec Interactive Map Viewer



Corridors	Layers	Backgrounds	Legend
Commission Proposal 2021 (COM(2021)812)			
Comprehensive/Core Network			
Projects/Actions			
Alternative Fuels			
AFIF Eligibility Maps			
<input checked="" type="checkbox"/> Safe & secure parkings for trucks and commercial vehicles			
<input checked="" type="checkbox"/> Border Crossing Points (BCPs)			
<input checked="" type="checkbox"/> C-ITS stations			
<input checked="" type="checkbox"/> Reception, Information, Transfer hubs			
Rail Freight Corridors			
TEN-T Compliance Indicators			



Roads (4 of 8)

Description: Doboj <-> Brcko

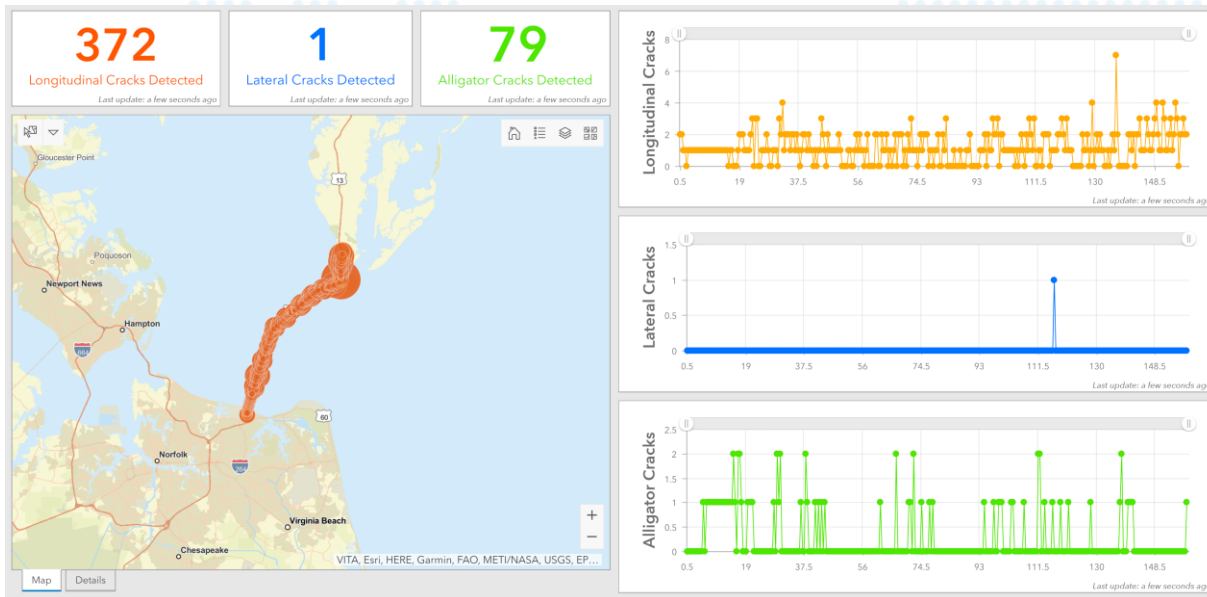
Status of section: Completed

Comprehensive Network

TENtec © European Commission - DG MOVE - 2018 | © OpenStreetMap contributors, Credit: EC-GISCO, © EuroGeographics for the adm...

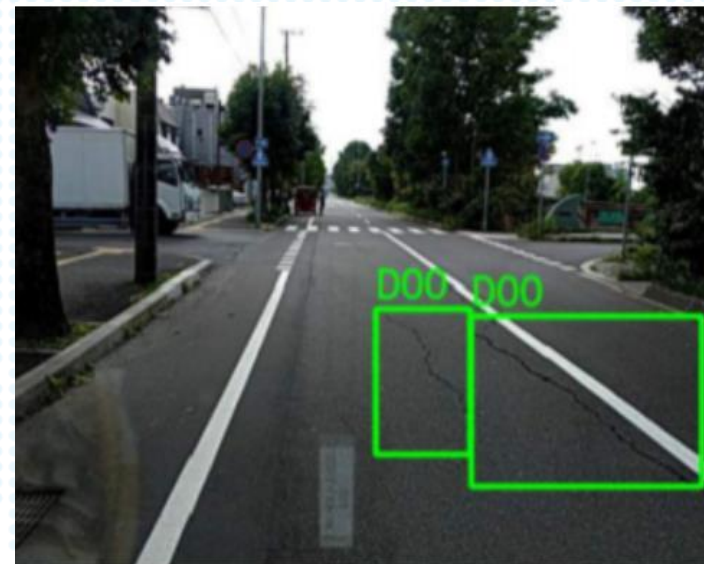
Road Crack Detection - Object detection

Automates road crack detection for DOTs and Public Works
 Type of crack, and possibly its length and width



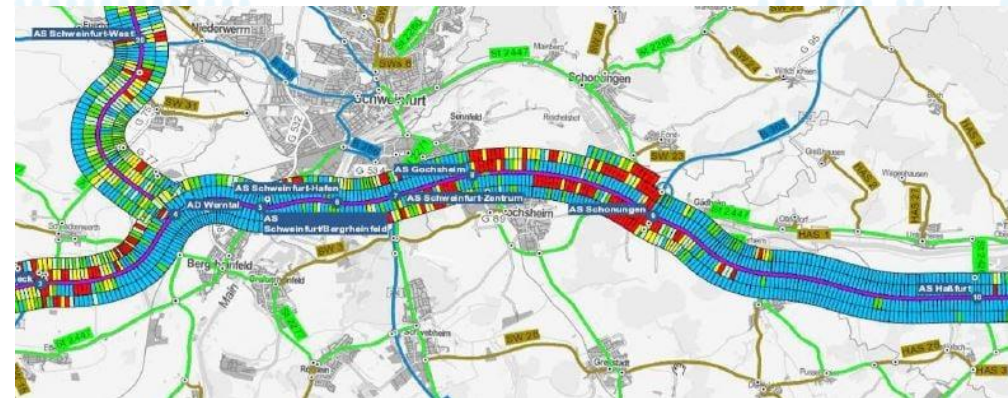
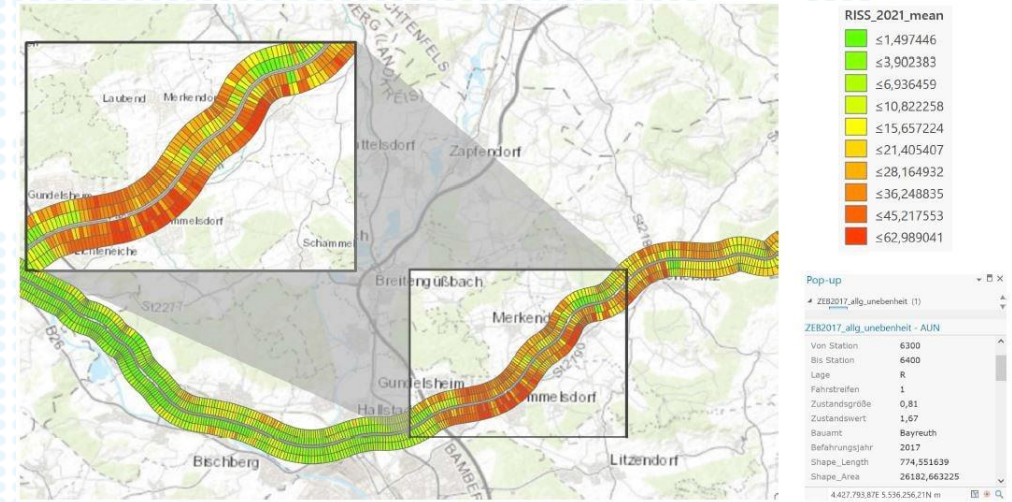
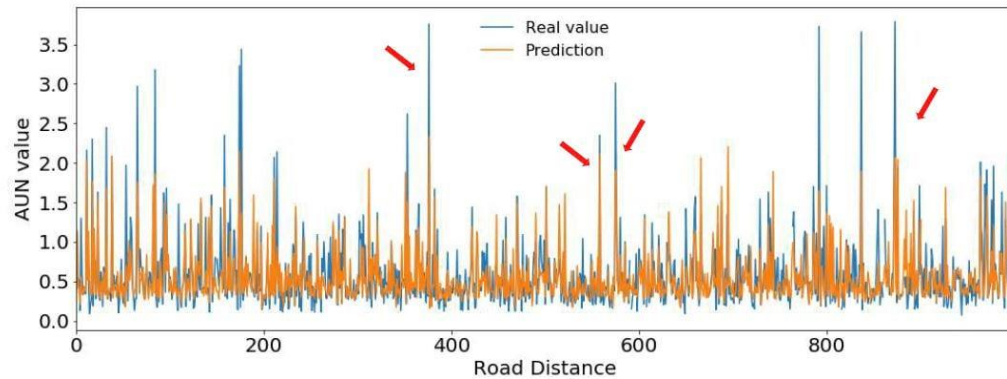
Road Surface Investigation - Object detection

Road Marks investigation supporting lane assist systems



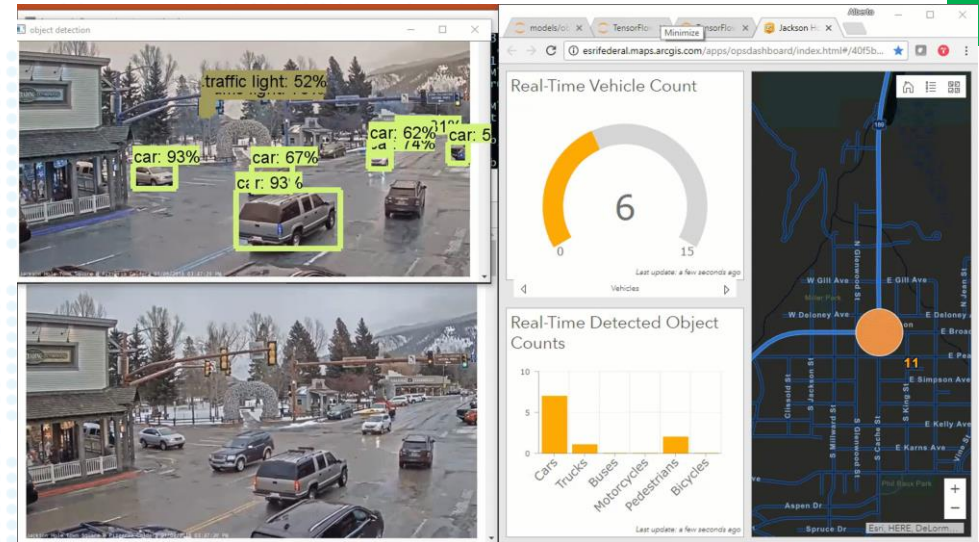
Road Condition (Deterioration) Forecasting - Prediction

- Prioritize road infrastructure investment
- Efficiently plan road maintenance at the proper time and location
- Forecast road deterioration based on historical condition data, along with other data sets like traffic density, weather, and road type



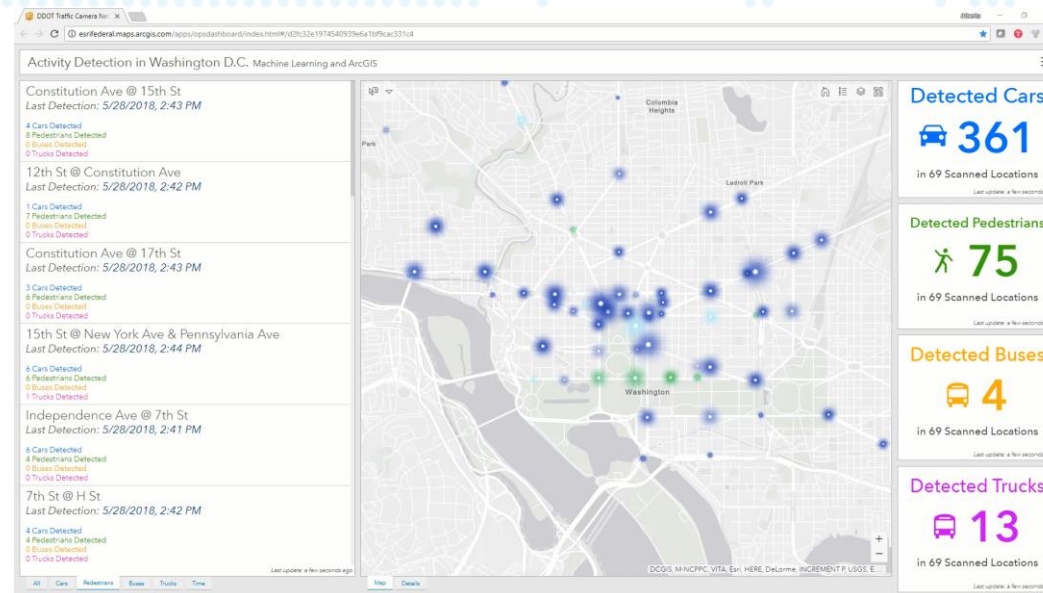
Traffic Analysis from CCTVs - Data analytics

- Detect pedestrians and vehicles by type city-wide
- Can infer accidents, sudden stops, and traffic anomalies
- Understand traffic patterns, respond to incidents quickly, and support event planning



Relate maintenance to KPI's of asset:

- Capacity
- Safety
- Environmental impact



Thank you!

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