



# MAPPSS

**Management Association for Private Photogrammetric Surveyors**  
An Association of Photogrammetry, Mapping, and Geospatial Firms®

## Geospatial Issues in Transportation



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**TRB - AFB80**

**Indianapolis, IN**

MAPPS members do big things in the profession...and for the profession.

# What is MAPPS?

- + *Nation's only trade association of private sector geospatial firms*
- + *Formed 1982*
- + *Airborne remote sensing & imagery*
- + *Commercial satellite remote sensing*
- + *Photogrammetry, GIS, hydrography, charting, LiDAR, mobile, surveying, etc. and related value-added and geospatial services*
- + *Equipment manufacturers, software providers*



# Unmanned Aircraft Systems (UAS)

MAPPS members do big things in the profession...and for the profession.

# UAS

- + FAA cites surveying, mapping in its UAS "Roadmap"
- + Several MAPPS members firms have Sec. 333 exemptions from FAA
- + Aviation Legal Fund
- + MAPPS on FAA BVLOS committee, NCSL UAS partnership



# UAS: Market & Applications

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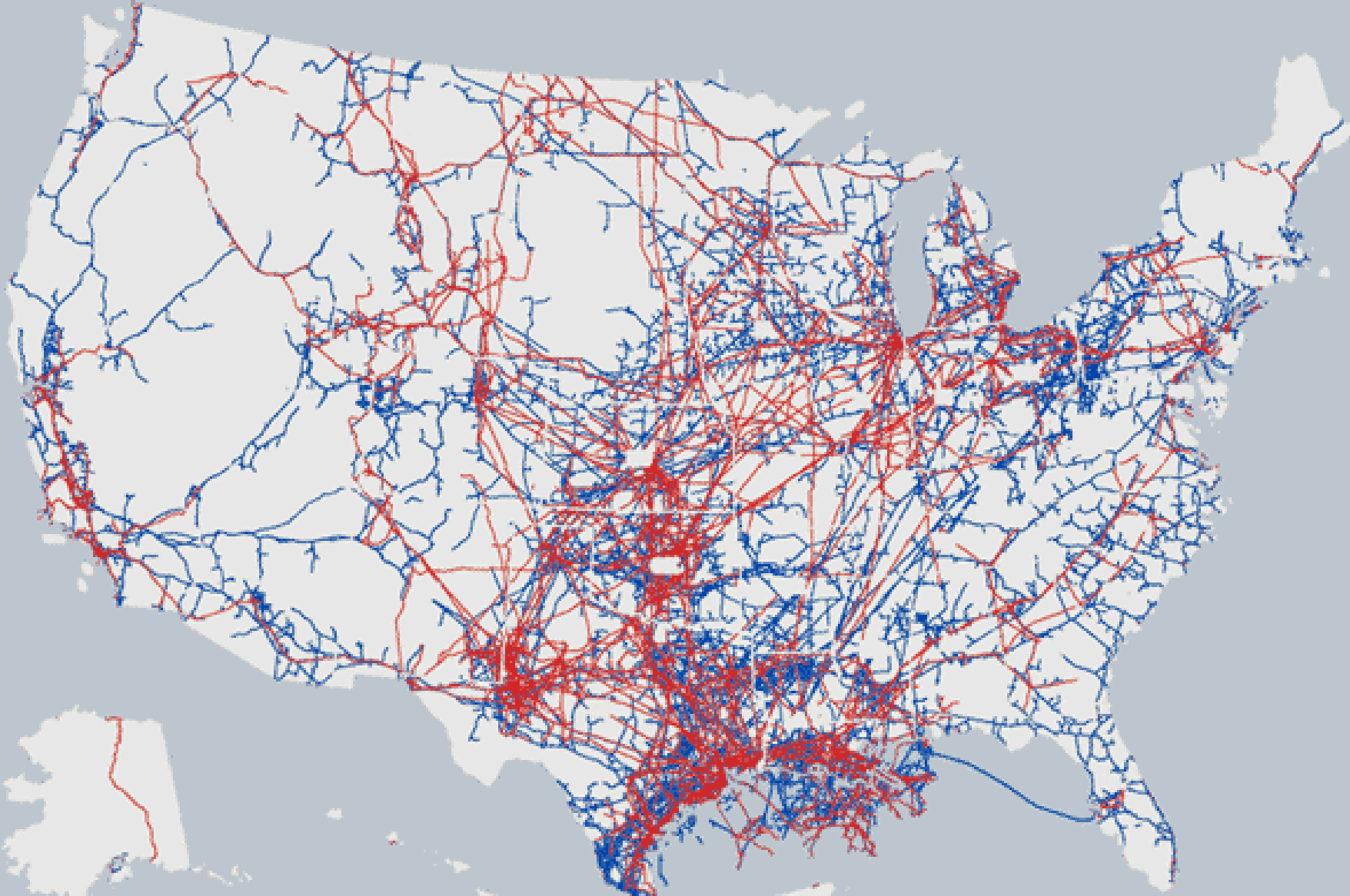
# Pipelines & Underground Infrastructure

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# Pipelines & Underground Infrastructure

- + 35+ million miles of underground utilities in the U.S. and counting
- + Pipelines in the U.S. could encircle the Earth 25 times
- + An underground utility line is hit somewhere in the United States every 60 seconds





U.S. MAJOR OIL & GAS TRANSMISSION PIPELINE NETWORK

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# Pipelines & Underground Infrastructure

- + NTSB, GAO and others found deaths, injuries, property damage, and billions of dollars in repairs and service disruption due to poorly mapped or located utilities
- + Utility systems often physically parallel and work in tandem with existing transportation corridors, such as railroads and highway rights-of-way

# Pipelines & Underground Infrastructure

- + Need accurate location information to manage existing underground infrastructure and plan for future growth and development
- + Surveys and maps of underground utilities are often inaccurate or don't even exist

# Pipelines & Underground Infrastructure

- + “PHMSA has limited insight into state data on where interstate pipelines actually exist ...”
  - Testimony of Stacy Cummings, Interim Executive Director, Pipeline and Hazardous Materials Safety Administration (PHMSA), USDOT, before the House Energy and Commerce Committee, July 14, 2015

# Pipelines & Underground Infrastructure

- + An Accurate Safe Utility Location + Infrastructure Mapping Reform (ASUL+IMR) is needed for accurate location of America's underground utilities
- + Congress will be reauthorizing the Pipeline Safety Act
- + Obama Administration - *Quadrennial Energy Review*

# Pipelines & Underground Infrastructure

- + White House initiative to modernize energy infrastructure, create a clean energy economy, combat climate change, and increase reliance on domestic energy resources
- + Focus on energy transmission, storage, and distribution (TS&D) infrastructure -- the networks of pipelines, wires, storage, waterways, railroads, and other facilities that form the backbone of our energy system

# Pipelines & Underground Infrastructure

- + A competitive program to accelerate pipeline replacement and enhance maintenance programs for natural gas distribution systems. DOE will establish a program to provide financial assistance to states to incentivize cost-effective improvements in the safety and environmental performance of natural gas distribution systems for enhanced direct inspection and maintenance programs
- + Estimated cost of \$2.5-\$3.5 billion over 10 years

# Pipelines & Underground Infrastructure

- + Grid modernization - DOE investments in foundational technology development, enhanced security capabilities to provide the tools necessary for the evolution to the grid of the future
- + \$3.5 billion over ten years

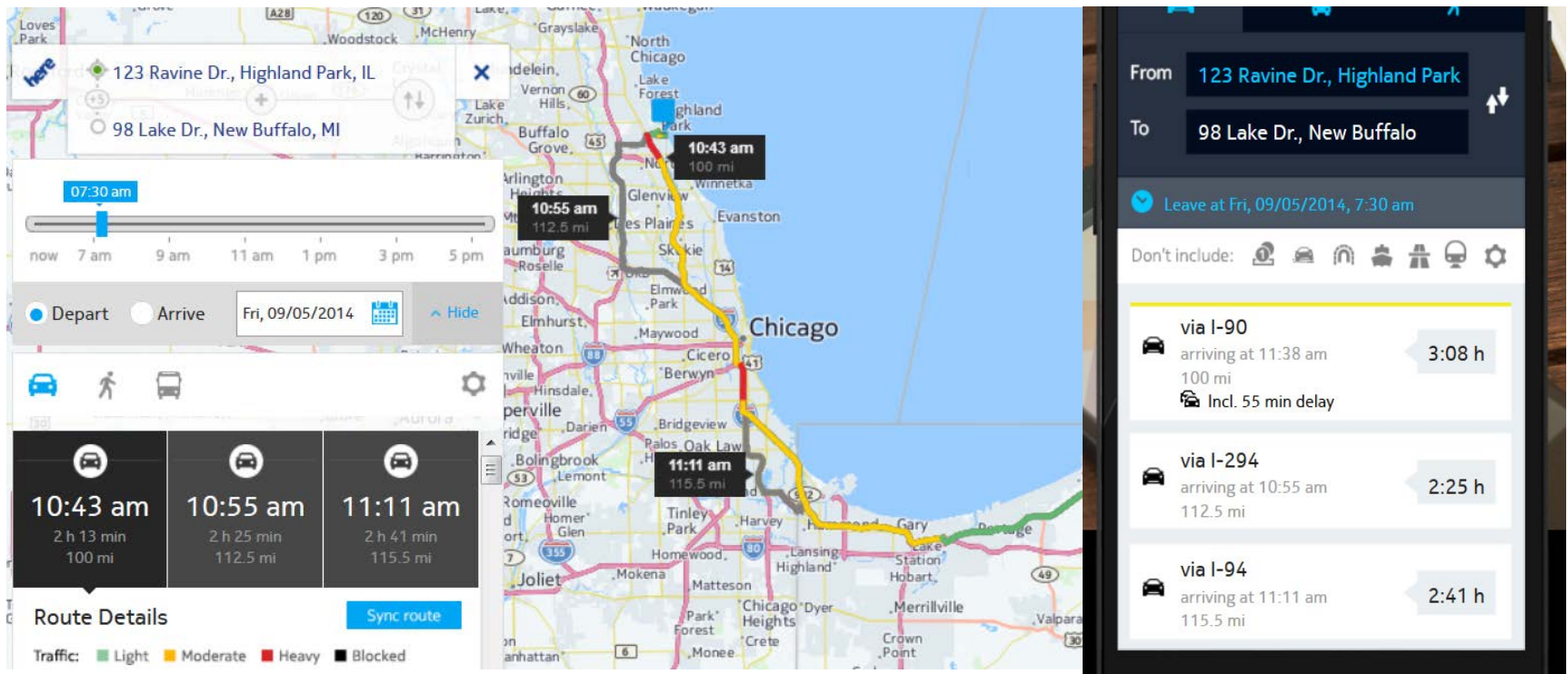


# Pipelines & Underground Infrastructure

- + Shared energy transport systems - a new grant program, Actions to Support Shared Energy Transport Systems or ASSETS, at USDOT in cooperation with DOE
- + To improving energy transportation infrastructure connectors
- + Estimated scale of ASSETS investment should be on the order of \$2 - \$2.5 billion over the next 10 years, which would likely mobilize \$4 - \$5 billion in non-Federal investment, based on typical TIGER cost shares

# Pipelines & Underground Infrastructure

- + Increase the integration of energy data among the United States, Canada, and Mexico - Provide resources for the Energy Information Administration to collaborate with Canada and Mexico to systematically compare and improve data quality
  - Better share geographic information system (GIS) data to develop energy system maps
- + Siting and Permitting of TS&D Infrastructure - Congress should authorize and fund an Interagency Infrastructure Permitting Improvement Center in the DOT, to improve coordination across agencies



# Connected & Unmanned Vehicles

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# Connected & Unmanned Vehicles

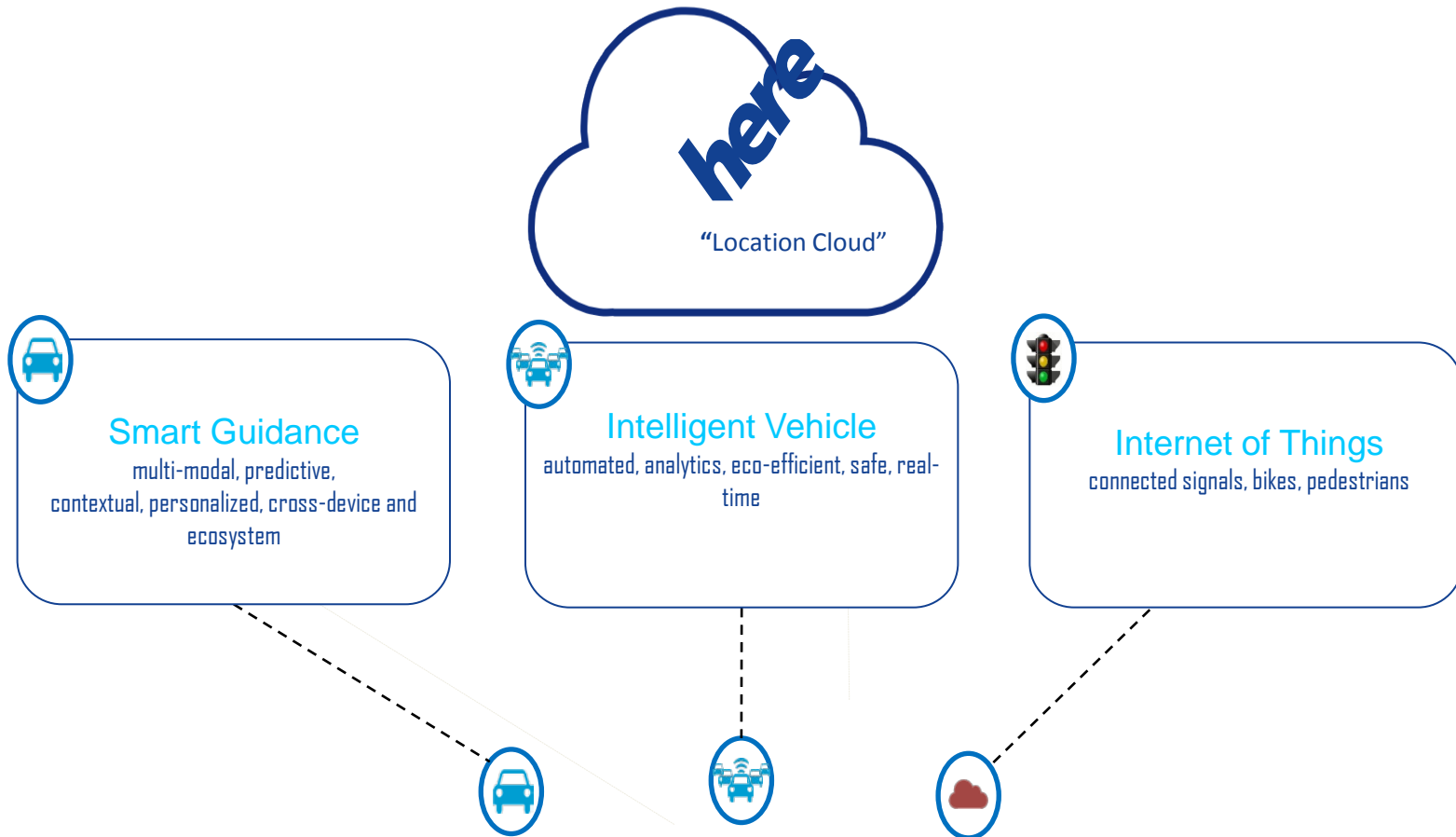
- + Predictive Traffic - Plan ahead, adjust in real-time to anticipate when to leave and how to get there
- + Multi-modal traveler applications for driving, public transit, pedestrian - for in-vehicle, PND, mobile devices and across operating platforms



# Connected & Unmanned Vehicles

- + By 2020, 75% of cars shipped globally will be built with the necessary hardware to connect to the internet to allow people to stream music, look up movie times, be alerted to traffic and weather conditions, and even power driving-assistance services such as self-parking
- + The connected-car market is growing 10 times faster than the overall car market
- + Revenues in the connected car market will nearly quadruple between 2015 and 2020

# Connected & Unmanned Vehicles



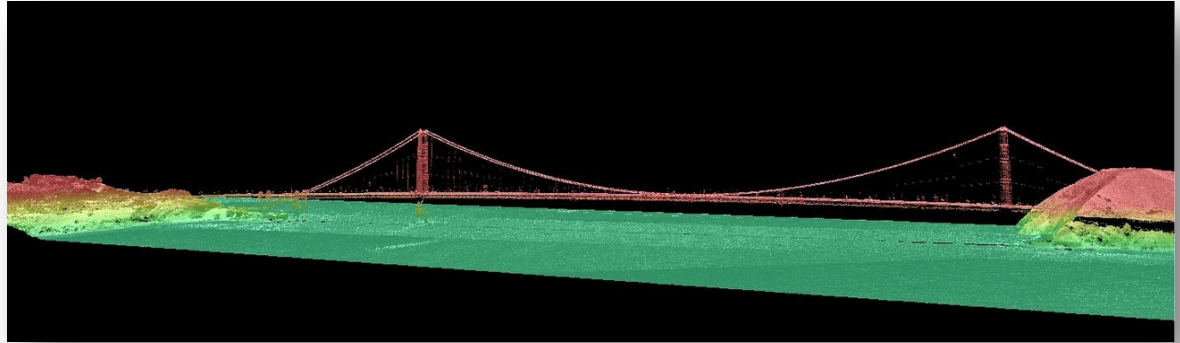
# Connected & Unmanned Vehicles

- + “Vehicle Miles Traveled” or VMT to replace gas tax?
- + Intelligent mapping, GPS, essential for connected and unmanned vehicles

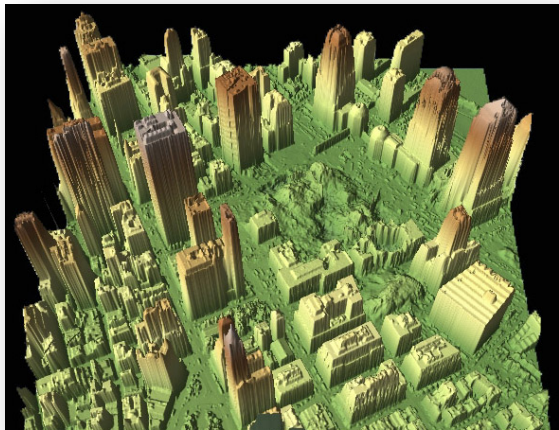
# 3DEP - 3D Elevation Program

Applies ground-breaking  
LiDAR technology to acquire  
and distribute 3D data

Addresses a broad range of  
critical applications of  
national significance



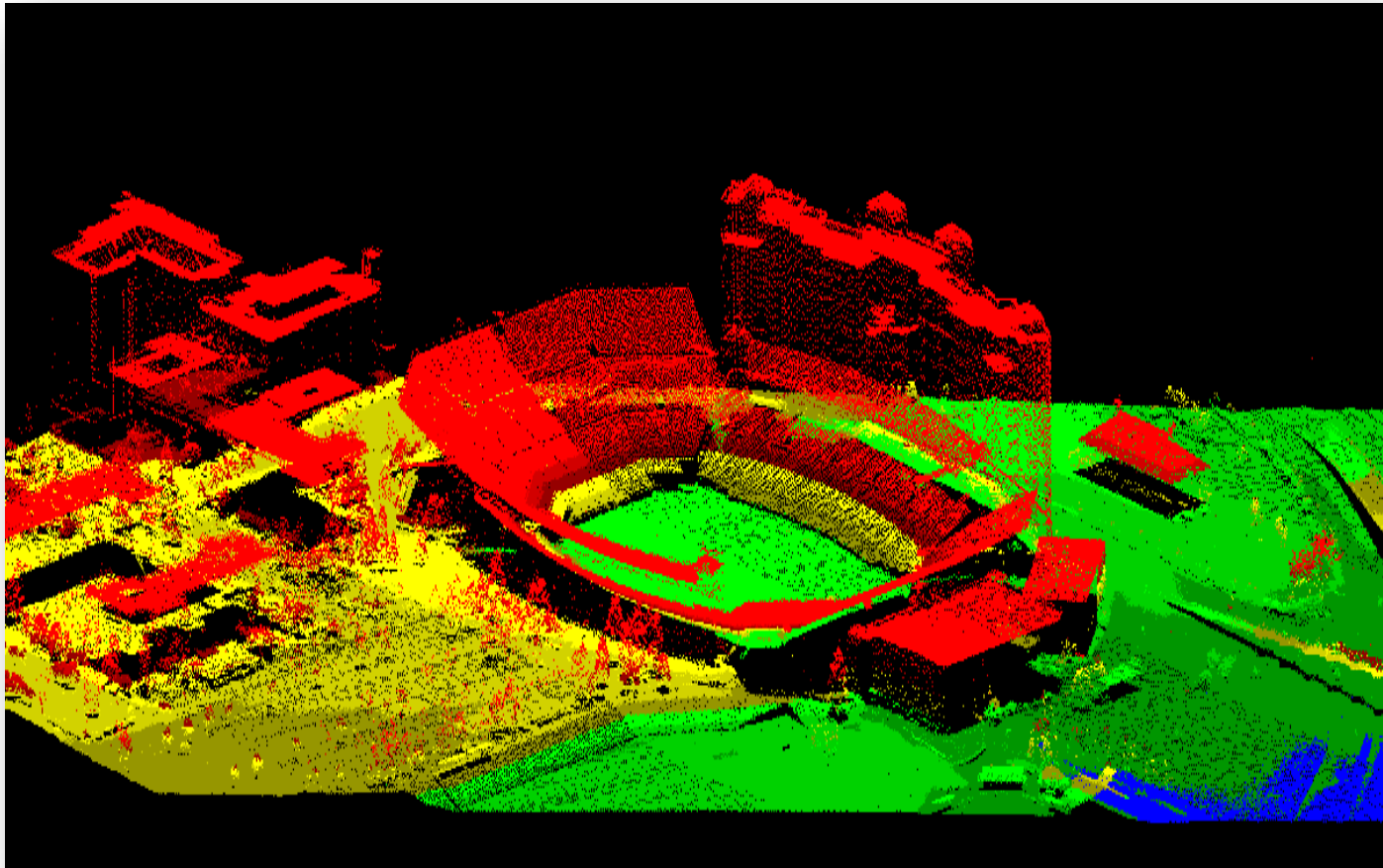
- + 3D data include surface elevations and natural and constructed features
- + 3DEP increases the quality level of LiDAR being acquired to enable more accurate understanding, modeling, and prediction
- + Goal to acquire national coverage in 8 years





# 3DEP - 3D Elevation Program

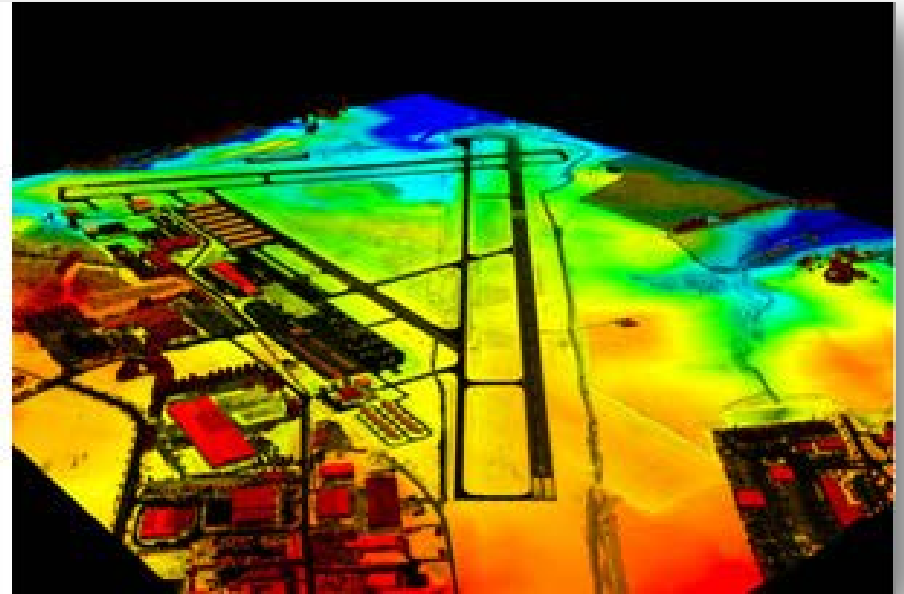
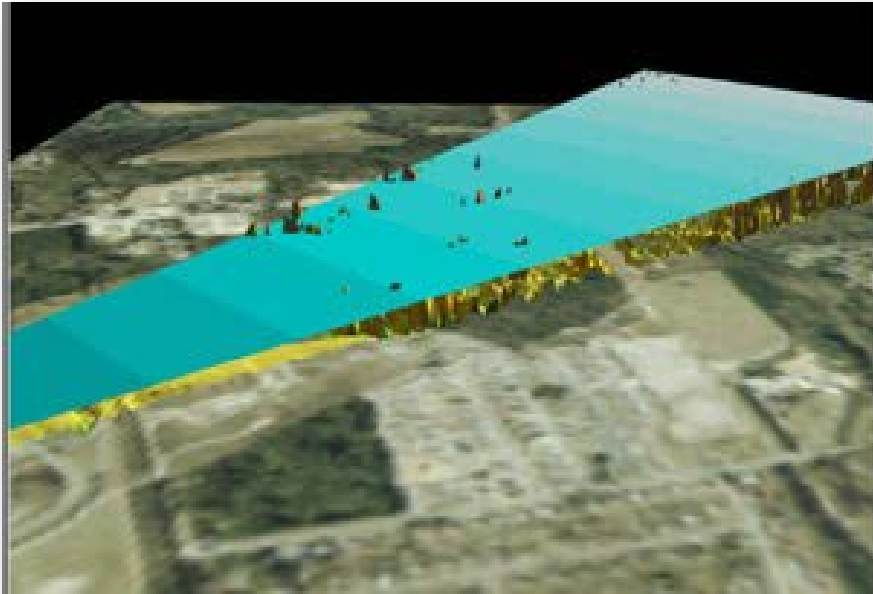
+ Infrastructure & Asset Management



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# 3DEP - Three Dimensional Elevation Program

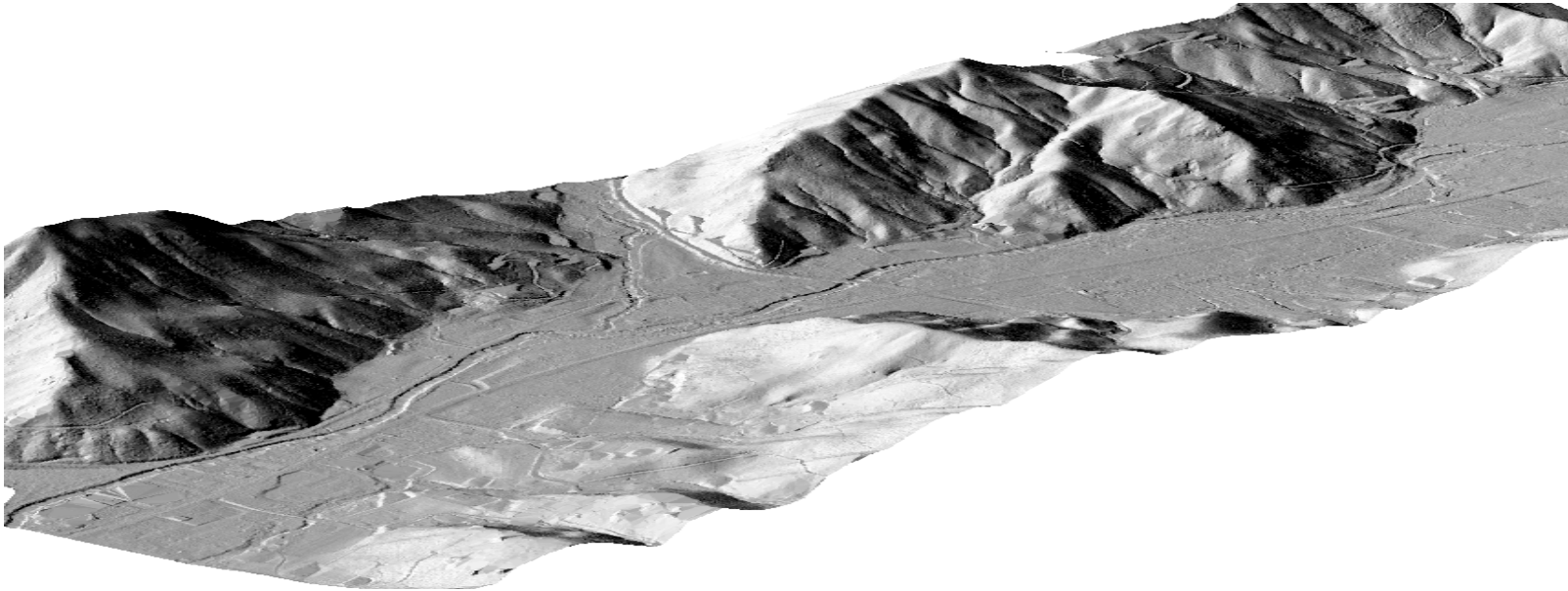
- + Aviation Navigation and Safety
  - Detect Obstacles to Air Navigation



# 3DEP - Three Dimensional Elevation Program

## + Energy & Utilities

Routing transmission lines and pipelines, construction planning, encroachment control, and asset inventories

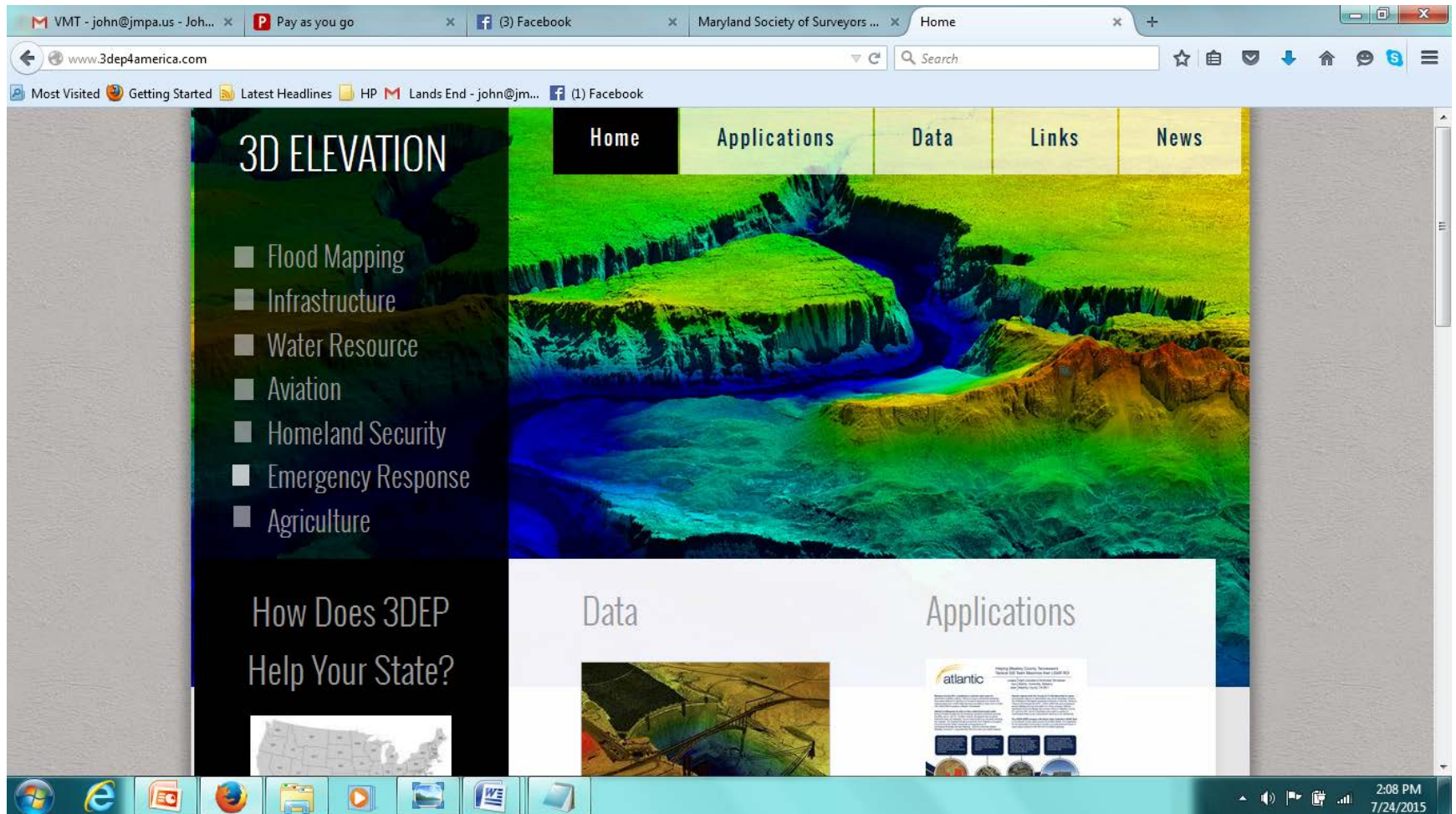


# 3DEP - 3D Elevation Program

- + Address the mission-critical requirements of 34 Federal agencies, 50 states, and a sampling of local governments, tribes, private and not-for profit organizations documented in the National Enhanced Elevation Assessment
- + Increase the overall investment in 3D data from about \$45M to \$146M annually to return more than \$690 million annually in new benefits
- + Leverage collaboration among Federal, states, local and tribal partners to systematically complete national 3D data coverage in 8 years
- + Leverage the capability of private sector mapping firms, create jobs
- + Achieve a 25% cost efficiency gain by collecting data in larger projects
- + Completely refresh national elevation data holdings with new LiDAR and IFSAR elevation data

# 3DEP - 3D Elevation Program

www.3DEP4America.com



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# Roles & Responsibilities

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# Roles & Responsibilities

- + “Private cartographic contract capability is not being used sufficiently. We found this capacity to be broad and varied and capable of rendering skilled support to federal MC&G programs. Contract capability is a viable management alternative ... Its use should be encouraged in lieu of continued in-house build-up.”
  - Report of the Federal Mapping Task Force on Mapping, Charting, Geodesy and Surveying, OMB, July 1973

# Roles & Responsibilities

- + “The past decade has shown that it is impractical for federal and state transportation agencies to collect, maintain, and develop comprehensive geospatial data sets to support broad decision-making activities. A more viable approach appears to be to encourage agencies -- public or private -- that are closest to the source to collect and maintain data necessary for their missions and to facilitate sharing of these data while developing expertise to integrate them into broader decision-support environments.”
- + “The role of government should shift from implementer to facilitator/enabler and role model, allowing agencies to become more flexible and responsive.”



# Roles & Responsibilities

- + “Different relationships should be established, both horizontally across functions and vertically across levels of government and the private sector, to ensure that resources are used most effectively.”
  - Transportation Research Board (TRB) , "Geospatial Information Infrastructure for Transportation Organizations: Toward a Foundation for Improved Decision Making" (2004)



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Questions?