Stakeholder Survey on Digital Infrastructure and Dynamic Maps – Initial Results

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PR 11: The INSPIRE transportation pilot as driver for TN-ITS implementation

22nd
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5 to 9 October
2015

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Stakeholder Survey on Digital Infrastructure and Dynamic Maps – Initial Results

- What is needed to support connected and automated vehicles?

- What is the role of government in this work?

The survey was developed and results reviewed by Mike McGurrin and James Moore of Noblis.

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Background

- Trilateral Working Group (WG) on Automation in Road Transport:
  - European Commission DG-Connect
  - Japan Ministry of Land, Infrastructure, Transport, and Tourism
  - United States Department of Transportation

- One topic of interest is coordination and joint research concerning geospatial infrastructure needs for vehicle automation

- The USDOT also investigating needs for connected vehicles and potential synergies between the public and private sector

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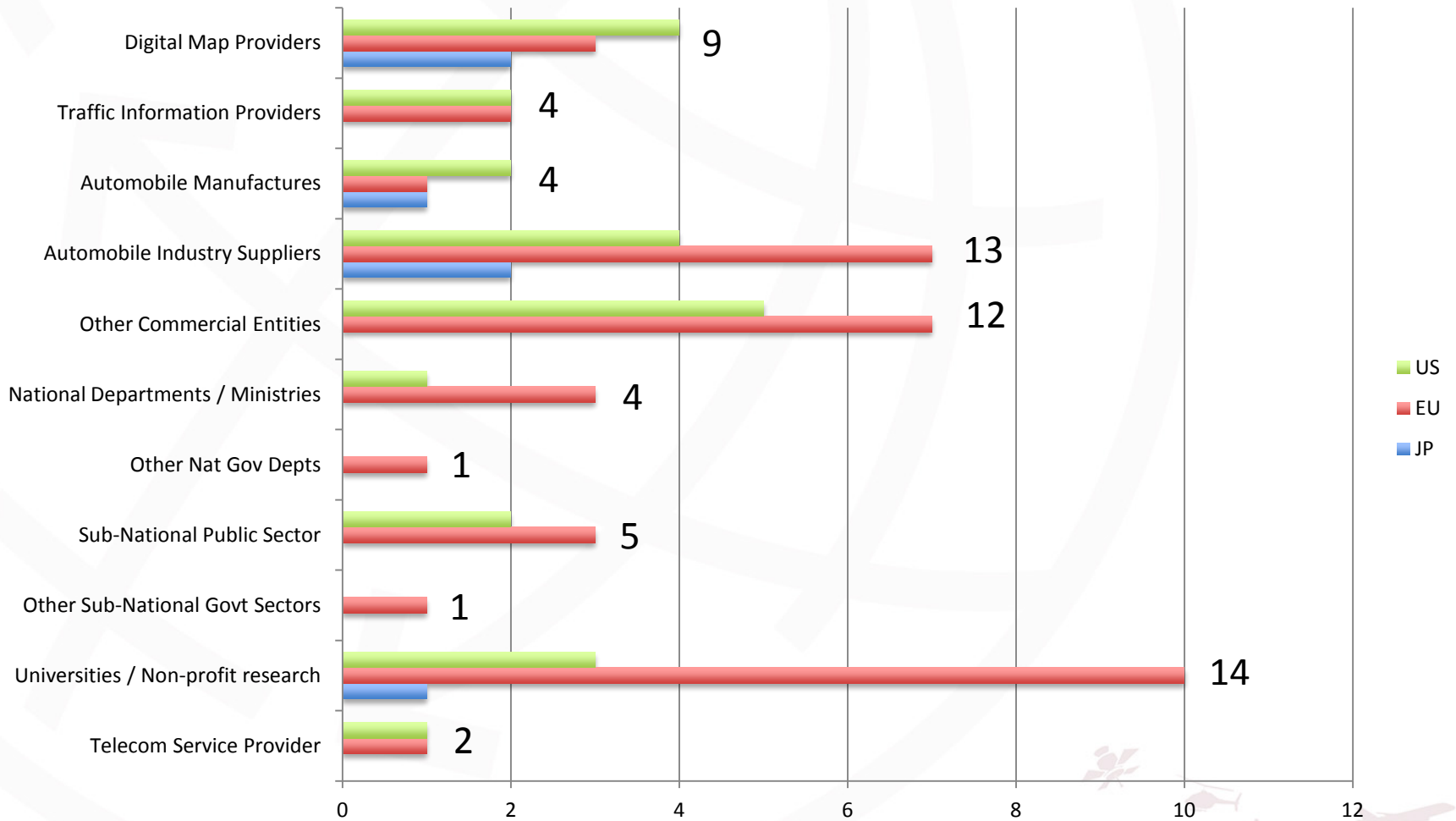*Better use of space*

Purpose of the Survey

- There are broad open questions regarding the geospatial information needs for connected and automated vehicles, the appropriate roles for public and private sector entities, and what work the trilateral WG should undertake

- A stakeholder survey was conducted to:
    - Begin to identify needs and issues associated with the use of geospatial and geospatial related data for cooperative (also known as connected) and automated vehicle applications.
    - Collect stakeholder input concerning the appropriate roles of the national and regional public agencies and the private sector
    - Begin to identify possible synergies between public and private sector needs.

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Approach

- Utilized SurveyMonkey to conduct a web-based survey. Stakeholders included representatives from:
    - Digital map providers
    - Traffic information providers
    - Automobile manufacturers
    - Automobile industry suppliers
    - Other commercial entities conducing cooperative and/or automated vehicle research
    - National departments or ministries of transportation
    - Other national level departments
    - Sub-national public sector transportation entities, such as state, county or provincial DOTs
    - Other sub-national public sector entities, e.g., state geospatial offices
    - Universities and other non-profit research centers
    - Telecommunications service providers
- Individual survey responses are confidential.

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Complete Responses by Industry*

* 57 Respondents, but only 40 "complete." Numbers add up to more than 40 since a respondent's organization may align with multiple categories.

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Survey Results

Cross-Sector Familiarity

	Digital map providers	Traffic information providers	Automobile manufacturers	Automobile industry suppliers	Other commercial entities	National departments or ministries of transport	Other national level government departments	Sub-national public sector transportation entities	Other sub-national governemnt entities	Universities and other non-profit research centers	Telecommunications service providers
Digital map providers	high	high	high	medium	high	medium	medium	medium	medium	medium	medium
Traffic information providers	medium	high	medium	medium	medium	medium	medium	medium	medium	medium	medium
Automobile manufacturers	medium	medium	high	high	high	medium	medium	medium	medium	medium	medium
Automobile industry suppliers	high	medium	high	high	medium	medium	medium	medium	medium	medium	medium
Other commercial entities	high	high	high	high	high	high	medium	medium	medium	medium	medium
National departments or ministries of transportation	medium	high	high	medium	high	high	high	medium	medium	high	medium
Other national level government departments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sub-national public sector transportation entities	medium	high	medium	medium	medium	high	medium	high	medium	medium	medium
Other sub-national government entities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Universities and other non-profit research centers	medium	high	medium	medium	high	medium	medium	medium	medium	high	medium
Telecommunications service providers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Infrastructure to Vehicle Information Needs

What types of geospatial related information needs to be sent from infrastructure to vehicles while the vehicle is in motion?

Road Conditions Static Speed Traffic Light Status
Map Road Network Lane GPS Location Survey
Vehicle Work Zone

Vehicle to Infrastructure Geospatial Needs

What types of geospatial related information needs to be sent from infrastructure to vehicles while the vehicle is in motion?

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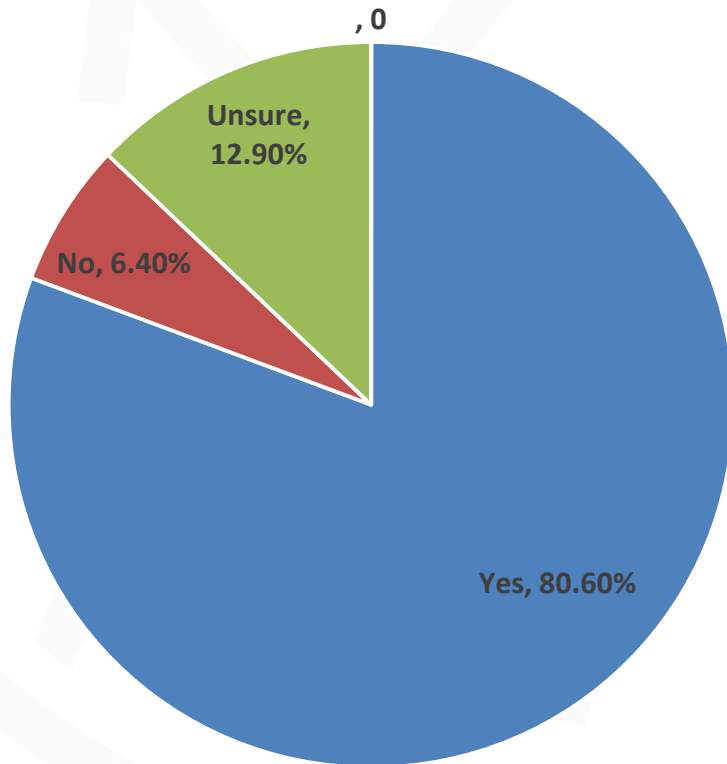# Roles for National Governments

Is there a role for national governments in promoting or facilitating the development of the necessary static and dynamic geospatial infrastructure for *cooperative or connected vehicles*? (31 responses)
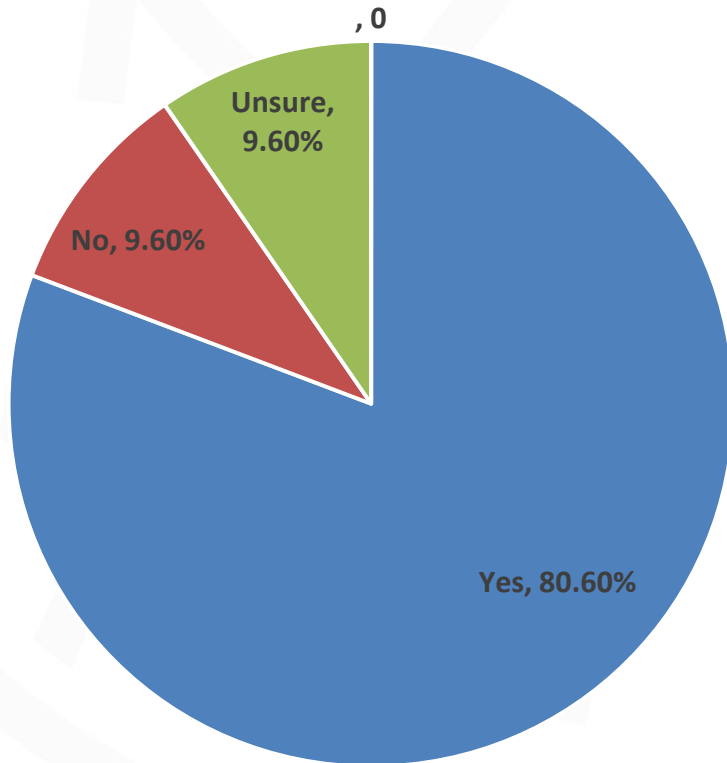
- Yes – 80.6%
- No – 9.6%
  - Digital map provider (1), Auto industry (1), University(1)
  - EU (2), Japan (1)
- Unsure – 9.6%

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Roles for National Governments

Is there a role for national governments to play in promoting of facilitating the development of the necessary static and dynamic geospatial infrastructure for *automated* vehicles? (31 responses)

- Yes – 80.6%
- No – 6.4%
  - Automobile industry supplier (1), University (1)
  - EU (2)
  - Two of the 3 that answered "No" to the previous question
- Unsure – 12.9%

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Roles for National Government

- National governments should:
    - Set policy
    - Set standards / perhaps quality
        - Almost every response that listed standards had a unique list of standards
    - Support funding
    - Support testing
    - Work cooperatively with industry

- National governments should not:
    - Over define or stifle innovation or the industry
    - Design / build the applications

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Need for Common "Core" or "Base" Data

Is some level of common, openly-shared geospatial data set needed to safely and efficiently support *cooperative or connected vehicle* applications, or can data sets used by different vehicles, and by the infrastructure be fully independent from one another? "Openly-shared" means available to all, either at no charge or for a charge set only to recover costs. "Infrastructure" refers to systems and services both at the roadside and anywhere else. (29 responses)

- ➢ Yes – 82.7%
- ➢ No Opinion / further research needed to answer – 17.2%

Need for Common "Core" or "Base" Data

In your professional opinion, is some level of common, openly-shared geospatial data set needed to safely and efficiently support *level 2 or higher automated vehicles*, or can data used by different vehicles, and by the infrastructure, differ from one another? (30 responses)
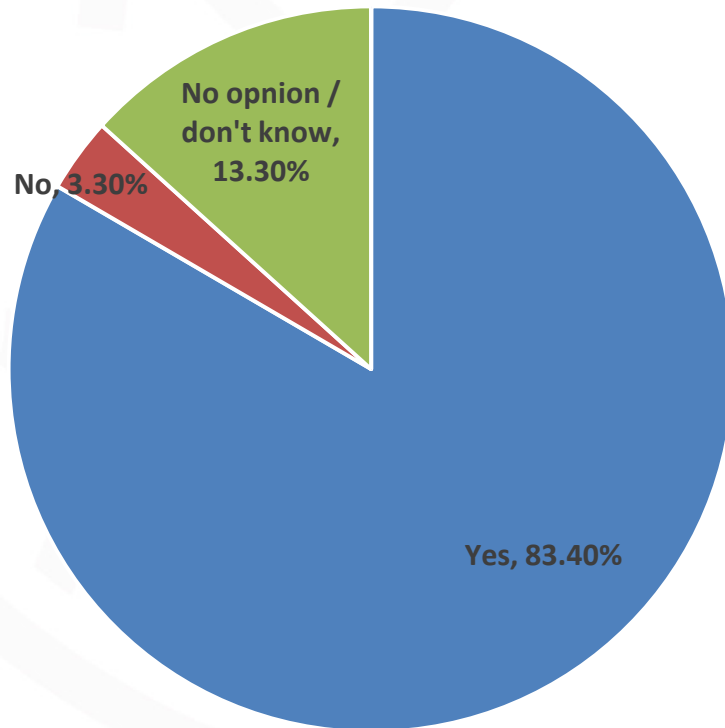

- Yes – 83.4%
- No – 3.3%
  - ➤ 1 representing auto industry supplier / digital map provider
  - ➤ 1 representing auto industry supplier / traffic information provider
- No opinion/ further research needed to answer – 13.3%

Open Data and Data Sharing

- Open data
  - Government data was more open / freely available than commercial systems (all government respondents replied either open or did not know).
  - Private sector generally does not provide open data: only commercial respondent sharing data stated it was limited to "Road section identification data set."

- Data sharing
  - Some sharing of data between public and private sector, but quite limited.

Private Sector Use of Public Sector Data

Do you utilize any geospatial related data obtained from public agencies? (13 responses)
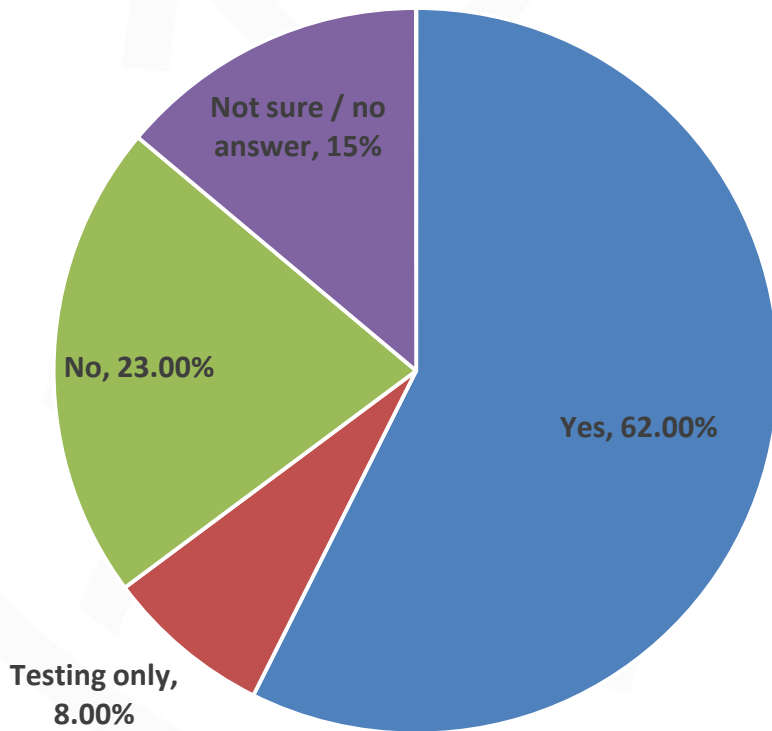
- Yes – 62%
- For testing only – 8%
- No – 23%
- Not sure or no answer – 15%
- Types of data used:
  - ➤ Road data
  - ➤ Real-time traffic
  - ➤ Weather
  - ➤ Civil engineering drawings
  - ➤ Weigh station locations, inspection site locations, in road sensor (WIM) locations, parking availability for trucks

Yes, 62.00%

No, 23.00%

Testing only, 8.00%

Not sure / no answer, 15%

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Standards Gaps

Are you aware of gaps where standards are needed for the exchange of geospatial related information, but such standards don't exist? If so, what are these gaps? (28 responses)
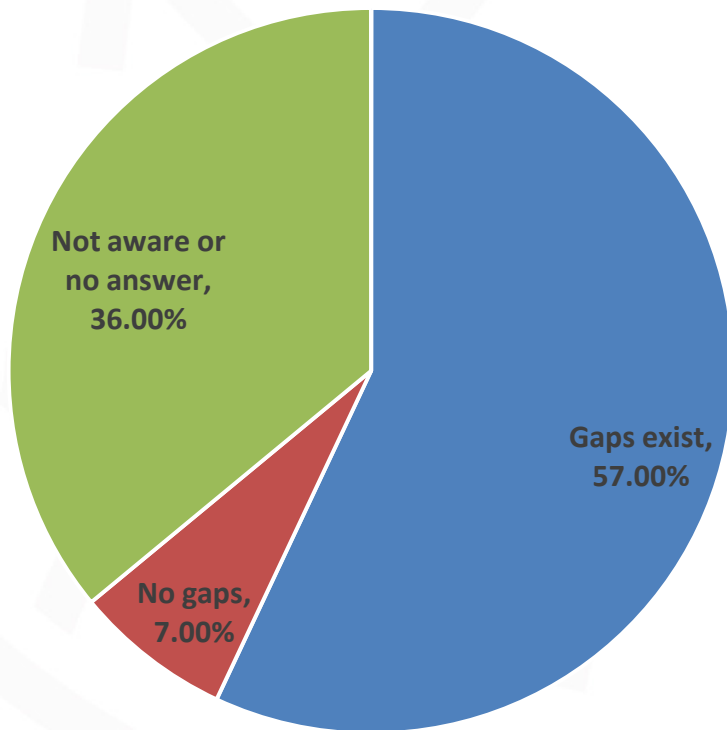
- Gaps exist – 57%
  - ➢ Very large gaps
  - ➢ Current standards or quasi-standards not sufficient
- No gaps – 7%
  - ➢ No gaps
  - ➢ "If any, industry solutions will emerge"
- Not aware or no answer – 36%

"Crowdsourcing" Geospatial Data

For automated vehicle applications, what role, if any, do you see in obtaining data updates from the general vehicle population? Through an automated process or other methods? (12 responses)

- 100% saw a role, and all at least partially automated
- Uses include:
  - Changes from base map
  - Danger-Spot or adverse weather detection
  - Traffic Flow
  - Lane level road geometry
  - "Absolutely critical. We believe it is impossible to maintain a map of the quality required for safety of life applications without extensive probe data and automated processing without human intervention and the resulting human errors."
  - "Data updates from general vehicle population may be useful for cooperative/connected vehicle safety, however more research as to the useful content, methods for authentication is necessary before large scale deployment."

Summary

- Stakeholder survey provides useful insights on general needs and direction; *however*:
  - Survey was not in any way a scientific representative sample
  - The more detailed the question, the fewer responses

- Consensus among respondents:
  - There are roles for national governments
  - Significant work is needed on standards
  - Some sort of common, shared basemap / data set is desirable

- Next steps:
  - More detailed survey results will be made available in some form at a later date
  - Follow-up telephone interviews are planned for a subset of survey respondents
  - Survey has useful information to be mined as more specific questions and issues arise

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