TRB WORKSHOP FINAL PROGRAM

Improving National Transportation Geospatial Information

December 14, 2007

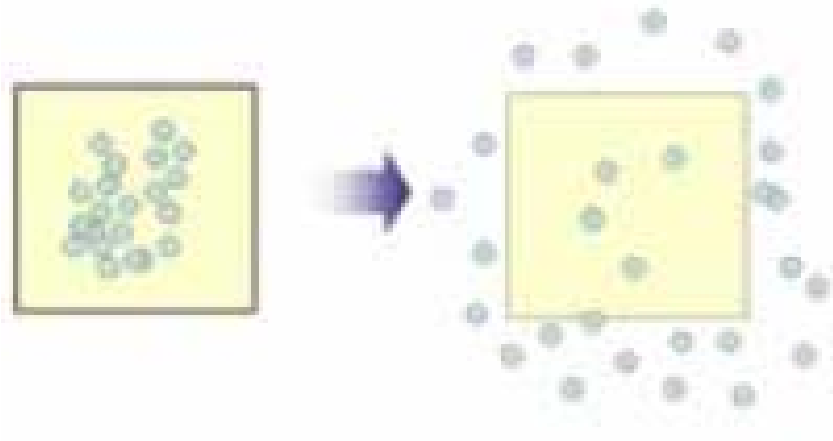
The National Academies Keck Center
Washington, D.C.

The need

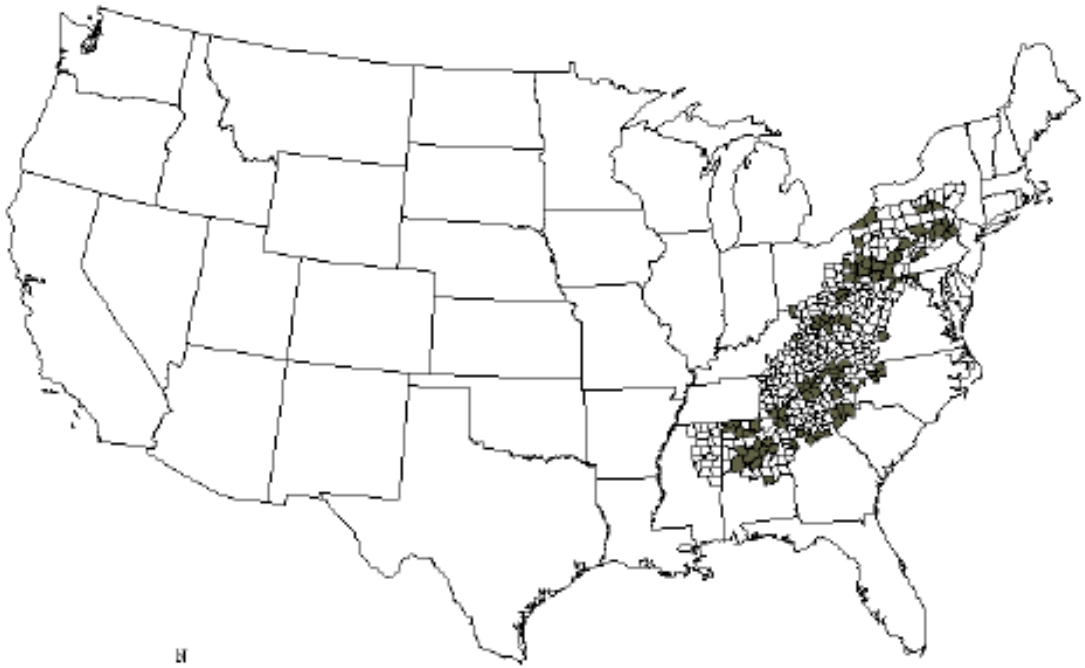
- Accessibility to opportunities,
- Efficient movement of people and goods,
- Environmental Health
- Strength and competitiveness of the economy,
- Availability and cost of energy,
- Safety and Security, and
- Public and private finance

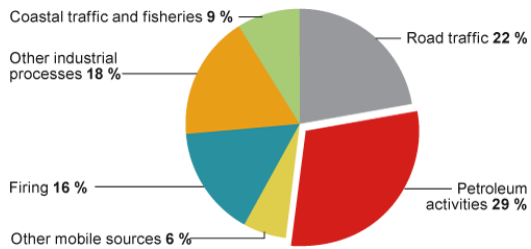
The opportunity

- 39,000 governmental units own highways in the United States
- 6,000 agencies operate transit services
- Tens of thousands of private companies provide services to transport agencies
- There are thousands of private trucking firms



why is a national or regional context important?





National GIS Data Efforts

From US Fish and Wildlife Service: http://www.fws.gov/data/2mdata.html

- Geodata.gov (part of the Geospatial One-Stop E-Gov initiative)
- Seamless Data Distribution System (the ultimate location to explore and retrieve data "The National Map")
- National Atlas of the United States (Census, cities, counties, dams, fed lands, water, roads, railroads, states, …)
- National Elevation Dataset
- National Hydrography Dataset
- National Land Cover Dataset and Multi-Resolution Land Characterization (2000)
- USGS/National Biological Information Infrastructure (NBII) GAP Analysis Program
- USGS Water Resources Division GIS Data
- Census Bureau Cartographic Information (including TIGER)
- Bureau of Transportation Statistics
  - National Transportation Atlas Data (facilities, networks, and services of national significance)
  - North American Transportation Atlas Data (Canada, Mexico, and the United States –includes border crossing facilities)

NSGIC efforts – the catalyst

NATIONAL STATES GEOGRAPHIC INFORMATION COUNCIL

DIGITAL Imagery for the Nation

The Vision

The nation will have a sustainable and flexible digital imagery program that meets the needs of local, state, regional, tribal and federal agencies.

NSGIC is working with the National Digital Orthophoto Program Committee (NDOP) and the Federal Geographic Data Committee (FGDC) to create a new nationwide aerial imagery program that will collect and disseminate standardized multi-resolution products on "set" schedules. Local, state, regional, tribal, and federal partners will be able to exercise "buy-up" options for enhancements that are required by their organizations. The imagery acquired through this program will remain in the public domain and archived to secure its availability for posterity.

Aerial and satellite imagery, in the form of **digital orthoimagery**, is the foundation for most public and private Geographic Information Systems (GIS). It is an essential commodity that is being developed by hundreds of different entities across the Nation leading to higher costs, varying quality, duplication of effort and a patchwork of products. Large area contracting methods will keep the cost to the taxpayer as low as possible and improve the availability of standardized, high-quality products.

states except Alaska. This program will typically collect imagery during the growing season (leaf-on) in natural color.

A companion program will be administered by the U.S. Geological Survey (USGS). Under this program, Alaska will receive 1-meter imagery for the entire state once every five years. This program will also produce 1-foot resolution imagery once every three years for all states east of the Mississippi River and for all counties west of the Mississippi River with population densities greater than 25 people per square mile. In addition, 50% matching funds will be available for partnerships to acquire six-inch imagery over urban areas identified by the U.S. Census Bureau that have populations of at least 50,000 and overall population densities of at least 1,000 people per square mile. This program will typically acquire imagery during winter and spring months (leaf-off) in natural color.

Other Details

- Each statewide GIS coordination council will specify its digital orthoimagery requirements in a business plan, including the following information:
  - Required Resolutions
  - NSSDA Accuracy Requirement and Confidence Interval
  - Frequency of Coverage

Program Specifications and Buy-up Options

Ground Resolution	6"	1'	1-meter
Image Type	Natural Color	Natural Color	Natural Color
Leaf On or Off	Off	Off	On
Cloud Cover	0%	0%	10%
Horizontal Accuracy	2.5' @ 95% NSSDA	5' @ 95% NSSDA	25' @ 95% NSSDA
Location and Threshold *See the following web page for maps of Urbanized Areas http://www.census.gov/geo/www/maps/ua2kmaps.htm	Footprints* of U.S. Census Bureau Urbanized Areas defined in state business plans with populations generally >50,000 & >1,000 per square mile	All areas east of Mississippi River and all counties west of the Mississippi River with >25 people per square mile	Entire Nation, including all insular areas & territories
Frequency	Every 3 Years	Every 3 Years	– Every Year in Lower 48 States – Every 5 Years in Alaska – Every 3 Years in Hawaii, Insular Areas, and Territories
Local Cost Share	50%	None	None
Buy-up Options These are improvements over the standard base products that can be exercised by local, state, regional, tribal and other federal agencies. "Buy-ups" will require the requesting organization to pay the differential costs above the standard base product for each buy-up requested.	1) 100% cost for CIR or 4-band digital product 2) 100% cost for increased frequency 3) 100% cost for increased footprint 4) 100% cost for increased horizontal accuracy 5) 100% cost for 3" resolution 6) 100% cost for better elevation data products 7) 100% cost for removal of building lean (true ortho)	1) 100% cost for CIR or 4-band digital product 2) 100% cost for increased frequency 3) 100% cost for increased footprint 4) 100% cost for increased horizontal accuracy 5) 100% cost for sampling the product to lower resolution 6) 100% cost for 6" resolution 7) 100% cost for better elevation data products	1) 100% cost for CIR or 4-band digital product 2) 100% cost for increased horizontal accuracy

Workshop Goals and Objectives

- Bring users and producers together
- Facilitate communication between NSGIC state/federal
- Bring roadway transportation information stakeholders together to:
  - Investigate
  - Identify
  - Discuss
  - Suggest
  - Explore

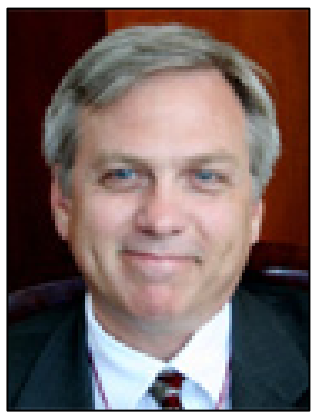
Workshop Process

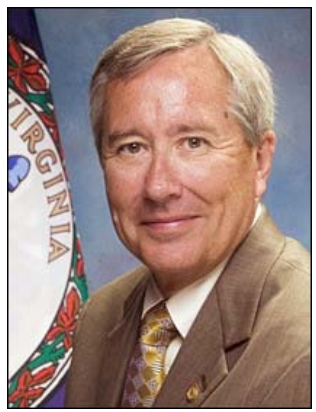
- Committee developed background white papers in advance
  - Emergency management and security
  - Improving national geospatial safety data
  - Corridor management and congestion
  - Routing and navigation
  - Environment and planning
- Industry representatives introduced application areas stressing major points from white papers




Setting the Stage
Introductory Remarks

- Stu Davis, NSGIC
  - "…a coordinated effort that supports the development of a nation-wide dataset, comprised of the best available data that is sustainable and maintained."
- David Ekern, Commissioner Virginia DOT





Breakout Sessions

- Brainstorm potential applications
- Prioritize listing
- Focus on one or two applications for:
  - Quick wins
  - long term potential
  - solving current problems
  - addressing anticipated future challenges
- Include as much detail as possible

Example Application Characteristics

- Logistical support
- “All roads” GIS
- changes over time
- integration of multimodal data
- consumer navigation
- historical information for planners, real-time information for traffic managers

- first pass screening tool to ID “fatal flaws”
- second pass screening tools
- changes impacting the road network
  - New roads
  - Road realignments
  - Renaming
  - Municipality boundary changes
  - Evacuation routes

Improved National Geospatial Transportation Information

- Success in improving National GTI depends on a cooperation
- Agencies depend on others for many data needs

Approaches to Integrate Data from Multiple Sources

- Keep data in hands of owners
- Staging, integration, synchronization, and standardization
- Metadata
- Linear referencing
- Conflation
- Proof of concept
- Facilitation of people and organizations
- Appropriate boundaries
- Policymakers
- Education

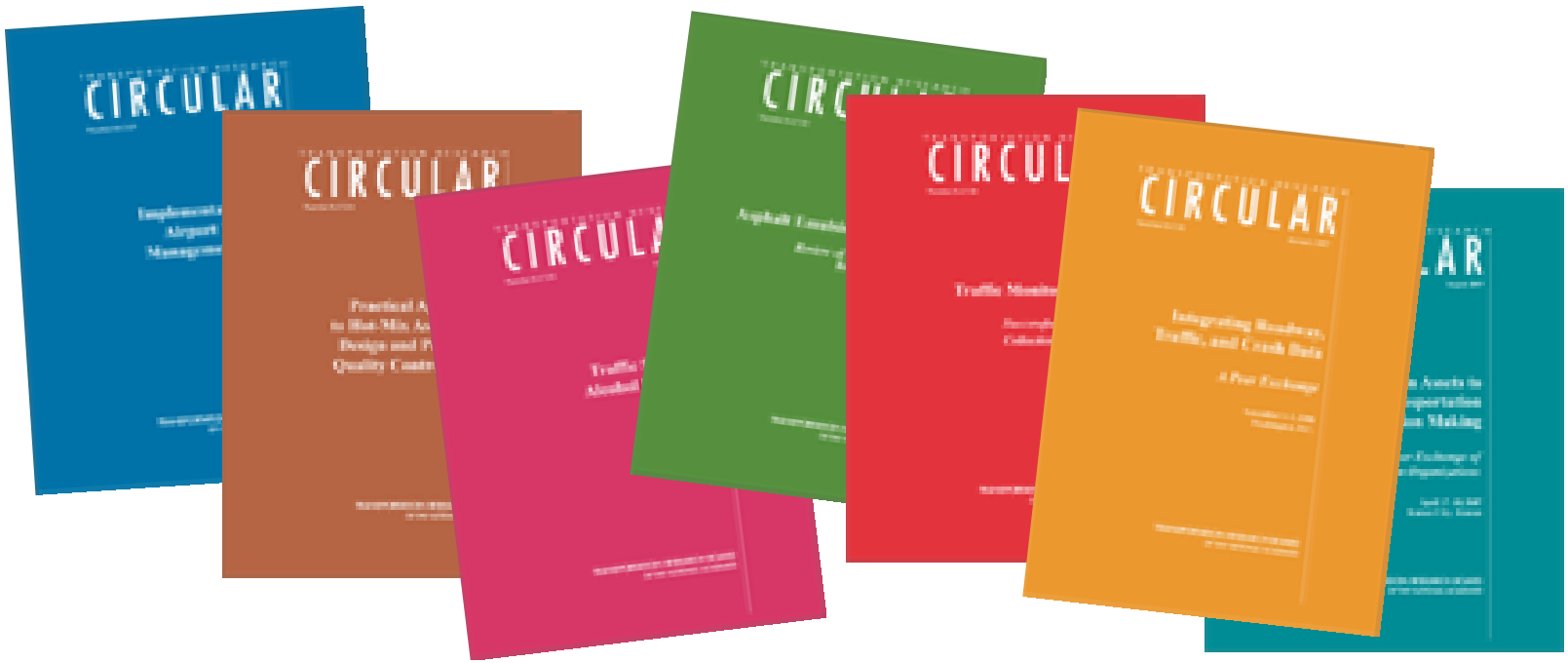
Institutional Arrangements

- Review roles
- Coordinating committees
- Partnerships
- Public/private partnerships
- Purchased or collect?
- Incentives

Benefit Cost Analysis (BCA) for National GTI

- Who should be involved?
- A national, multiyear effort
- $200-400 million per year???
- Funding programs

For More Information



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