

The Importance of a National Spatial Data Infrastructure to Homeland Security

GITA-JAPAN 14th CONFERENCE
6-7 November 2003
Tokyo, Japan

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Geography:

To Advance Business & Government Using

*The Power of “Place” to Support
Decision Making*

How do we make decisions on these *critical issues?*

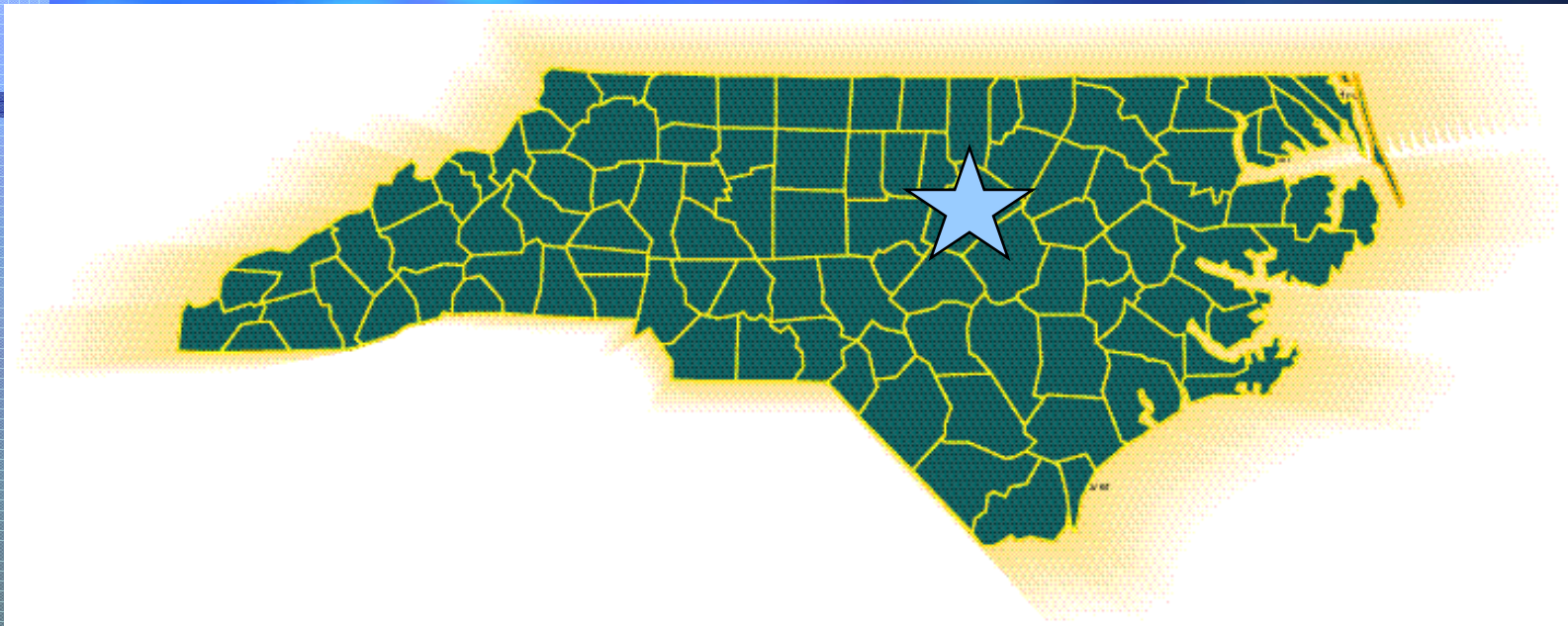
- Reducing crime
- Enhancing public safety
- Containing costs
- Homeland Security
- Managing growth
- Improving accountability
- Protecting the environment

What if there was a **tool** that could **integrate** data from diverse sources — and visually **analyze** data to support decision making — many times **faster** than any other tool?

Geographic Information Systems (GIS)

Giving decision-makers the power
to make more informed decisions.

N.C. Department of Public Instruction wanted to manage school buses more efficiently.



North Carolina Department of Public Instruction

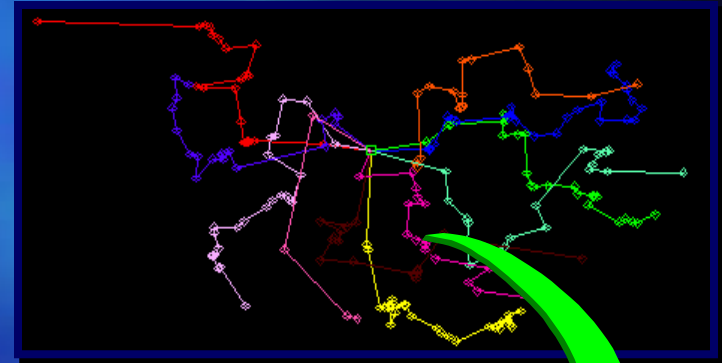
Without GIS:

- Hit-or-miss route mapping in 107 school districts
- Huge inefficiencies
- Inability to contain costs efficiently

North Carolina Department of Public Instruction

With GIS:

- Developed pilot program more than 10 years ago
- Mandated use of GIS by all districts statewide in 1992
- State funding incentives reward efficiency: fewer buses, better routes



North Carolina Department of Public Instruction

Results:

- In the 1994-95 school year:
 - more than 500 fewer buses were needed statewide than originally estimated
 - 15,000,000 fewer miles were driven than originally estimated
- Between 1990 & 1996:
 - the state saved over 2,000,000 gallons of fuel

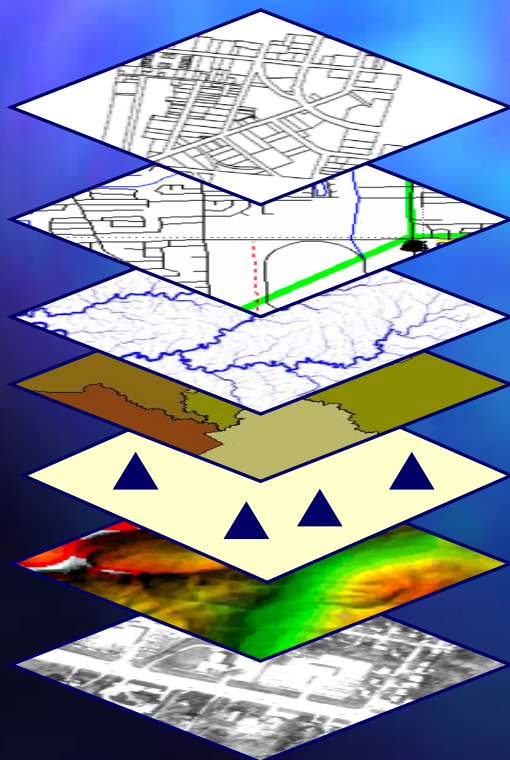
So how does the FGDC and the NSDI fit into the picture???

- Federal Geographic Data Committee (FGDC)
- National Spatial Data Infrastructure (NSDI)

... and how does this all fit into Homeland Security?

Relationships Among Data Build Once, Use Many Times

Framework Data



Land Ownership

Transportation

Surface Waters

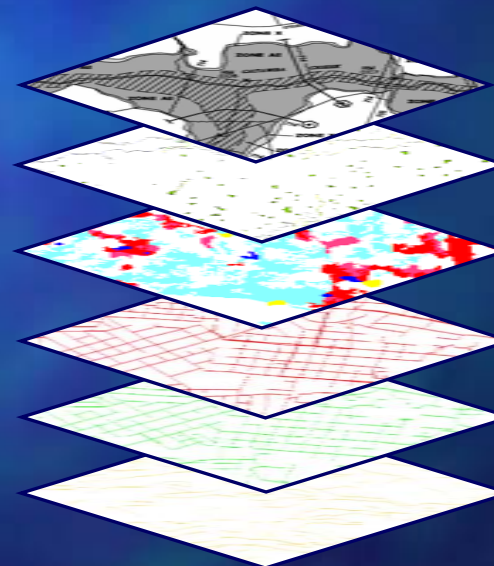
Boundaries

Geodetic Control

Elevation

Aerial Imagery

Other Thematic Data



Flood Zones

Demographics

Power Grid

Water Lines

Sewer Lines

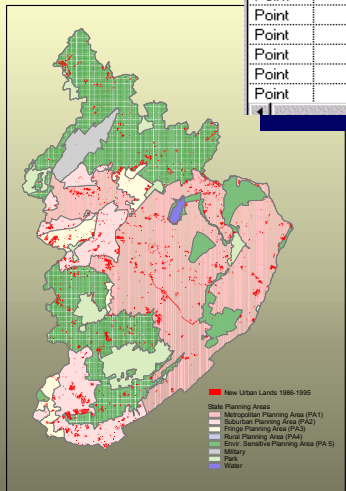
Gas Lines

To make *informed decisions*, we have to gather the right information. ...using the best data available.

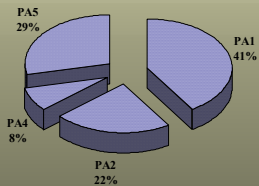
New Jersey Fire Departments				
Shape	Fire_dept	Fire_depar	Fire_mun	Road
Point	1	FD11	Frenchtown	Second Street
Point	2	FD92.1	Milford	Route 519
Point	3	FD15.1	Holland	Route 519
Point	4	FD15.2	Holland	Route 627
Point	5	FD92.2	Alexandria	Route 631
Point	6	FD25	Union	Route 614
Point	7	FD43	Bloomsbury	Brunswick Avenue
Point	8	FD13	Hampton	Main Street
Point	9	FD12	Glen Gardner	Main Street
Point	10	FD19.1	Lebanon	Anthony Road
Point	11	FD19.2	Lebanon	Route 628
Point	12	FD44	Califon	Main Street
Point	13	FD24	Tewksbury	James Street
Point	14	FD31	Readington	Old Route 28
Point	15	FD22	Readington	Route 523
Point	16	FD21.3	Rarit	
Point	17	FD21.1	Rarit	
Point	18	FD49	Flem	

Watershed Management Area 6
 Upper Passaic - Whippany - Rockaway Watershed
New Urban/Built-Up Land in Relation to State Planning Areas

Planning Area	Total Acres	Acres of New Urban/Built-Up	Percent of PA's New Urban/Built-Up	Percent of New Urban/Built-Up
Metropolitan Planning Area (PA 1)	92,892,232	3,362,901	3.6%	40.9%
Suburban Planning Area (PA 2)	26,664,177	182,218	0.6%	22.2%
Range Planning Area (PA 3)	61,641,724	466,827	0.7%	5.7%
Rural Planning Area (PA 4)	1,943	6,000	0.0%	0.7%
Remote, Scenic Planning Area (PA 5)	38,862,514	231,159	2.7%	28.4%
Military Lands	6,025,724	1,706	0.0%	0.0%
State	14,533,000	40,665	0.3%	0.5%
Other Water	793,776	2,094	0.3%	0.0%
Totals	236,921,140	8,219,930	3.5%	98%

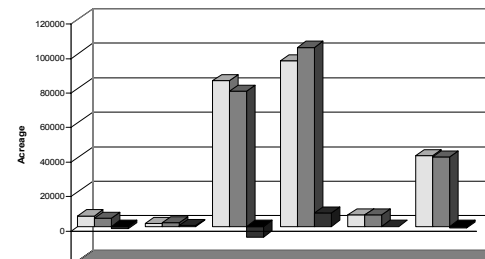


Percent New Urban/Built-Up Land Per State Planning Area



Watershed Management Area 6 (WMA6)
 Whippany-Upper Passaic-Rockaway Watershed
 Land Use/Land Cover Change, 1986-1995

Drift Results



	Agriculture	Barren Land	Forest	Urban Land	Open Water	Wetlands
1986 Acres	6145.088	1646.023	84530.739	95994.809	6750.856	41153.568
1995 Acres	4795.853	2085.018	78449.861	103764.238	6788.643	40337.470
Net Change	-1349.235	438.995	-6080.878	7769.429	37.787	-816.098
Percent Change	-21.96%	26.67%	-7.19%	8.09%	0.56%	-1.98%

Realities Among Data

- Relevant data is often hard to find and in incompatible forms.
- Information describing data is often non-existent.
- Framework data does not exist for broad geographic areas.
- Data sharing across organizations is inconsistent.

Create a National Spatial Data Infrastructure (NSDI)

To encourage the collection, processing, archiving, integrating, and sharing of geospatial data and information using **common standards** and **interoperable systems and techniques**

..... and accessible **via the web**

So, how does all of this fit into homeland security?????

- Homeland security needs accurate geo-referenced data and information on a timely basis
 - Disparate data
 - Easily accessed
 - From local, regional, national as well as private and utility sources
- **And without it, homeland security will be a failure**

Accurate, comprehensive data
are at the heart of information
technology

....and geographic location is the key
feature in 80-90% of all government and
utility data/information

Why is Geospatial data so critical?

It is an invaluable tool for handling, displaying, and analysis for:

- Detection
- Preparedness
- Prevention
- Protection
- Response and recovery

We are fortunate because....

The US implemented the Federal Geographic Data Committee (FGDC) to raise the awareness of and need for organizing geospatial information

- Staff of about 22 people supporting the Secretary of the Interior
- Committee of 19 Cabinet Offices

The FGDC already has

- Well established network with federal , state, local, tribal, and related partners to collect framework data
- Existing clearinghouse network for rapid data discovery, sharing, and protection of critical information
- **e-gov portal** now in place
- Close collaboration with industry and international standards organizations

From a NSDI standpoint, there are gaps that need attention.....

- Several standards for a number of framework data sets that need refining
- All the NSDI framework themes are not complete
- Still inconsistent road data local to national
- Still some data not openly shared

Newly created Department of Homeland Security (DHS).....

Bills in Congress identifying the duties for the CIO of DHS for geospatial preparedness

- Manage geospatial information needs for DHS
- Establish standards for data/metadata and systems interoperability
- Liaison with the FGDC
- Provide financial incentives to state, regional, local, and tribal governments

This is an opportunity!!!

An opportunity for the FGDC to carry on with the critical work of building an NSDI

.....to keep the pressure on!

Opportunities such as.....

The FGDC, Geospatial One-Stop (e-gov), and the National Mapping Program working together to provide a unified grant program

The National Mapping Program is concentrating on keeping the mapping for 133 cities current

In short we need to ensure....

- A comprehensive NSDI
- Interoperable systems that process the data and information
- Common processes for collection, processing, archive a distribution
- Willingness to share the data or at least information about the data
- Policies the allow/encourage sharing

Additional Information

- www.fgdc.gov Federal Geographic Data Committee
- www.geo-one-stop.gov Geospatial One-stop (e-gov)
- www.opengis.org Open GIS Consortium
- www.gsdi.org Global Spatial Data Infrastructure
- www.permcom.apqis.gov.au PCGIAP

