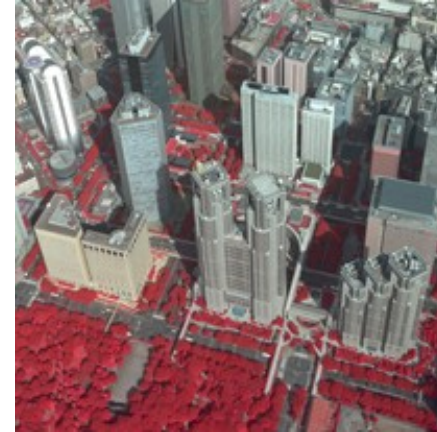


Ingredients for A Geospatially-Enabled Knowledge Economy

Dr. Terry Keating
Map Middle East – April 2005



Mapping and Geospatial Solutions



Today's Discussion

(Geospatially Enabled Knowledge Economy)



- 1. Definition elements...**
- 2. Required focus...**
- 3. Technology enablers...**
- 4. Examples...**
- 5. Summary...**

Examples use this color...

- **“...knowledge has become perhaps the most important factor determining the standard of living...**
- **...more than land, than tools, than labor...**
- **...Today's most technologically advanced economies are truly knowledge-based.”**

Definition Elements

(New Zealand Ministry of Economic Development)



- 1. Exploitation of knowledge plays the predominant part in the creation of wealth**
- 2. Technology is key driver of economic growth**
- 3. Associated with high-technology industries such as telecommunications and financial services**
- 4. Society must have sufficient trained human capital**
- 5. Knowledge workers include architects and bank workers, fashion designers and pharmaceutical researchers, teachers and policy analysts.**
- 6. Commodity easy to export**

http://www.med.govt.nz/pbt/infotech/knowledge_economy/knowledge_economy-04.html

Required Focus

(Ernst & Young – New Zealand Model)

- 1. National focus – with a sense of urgency**
- 2. Vision with clear direction**
- 3. Innovative, knowledge-based industries**
- 4. Access to information superhighways**
- 5. Fair, competitive marketplace**
- 6. Avoid unnecessary regulation**

Without fundamental rights in place, it is difficult to build knowledge based economies.

- 1. Food**
- 2. Shelter**
- 3. Opportunity**
- 4. Security**
- 5. Education**
- 6. Equality**
- 7. Freedom**



Technology Enablers

(Geospatial Knowledge Economy)

- 1. Wireless & Telecommunications...**
- 2. Computers...**
- 3. Internet & world wide web...**
- 4. Standards & interoperability...**
- 5. Web services...**
- 6. Global geospatial data...**
- 7. International partnerships...**

Wireless & Telecommunications...

- 1. Worldwide revenue**
 - **\$2.1 trillion in 2004**
 - **Up 9.4 % from 2003.**
- 2. USA market at \$780 billion**
- 3. Other regions spent \$1.4 trillion.**
- 4. USA industry will grow:**
 - **9.5 % compound annual rate, rising to \$1.1 trillion**
 - **between 2004-2008.**



Cellular Telephone Trend

1. 75% of world population within range of cell towers
2. Universal access – relatively inexpensive
3. Start with phones – computers, internet later
4. Soon GPS enabled
5. Integrated within personal digital assistants



Telecommunications Growth Areas.



- 1. Broadband Technologies
(DSL, Cable, Satellite, Fixed Wireless)**
- 2. Mobile Communications**
- 3. Virtual Private Networks (VPNs)**
- 4. Voice over Internet Protocol (VoIP)**
- 5. Wireless Internet Access (Wi-Fi)**
- 6. Call Centers**

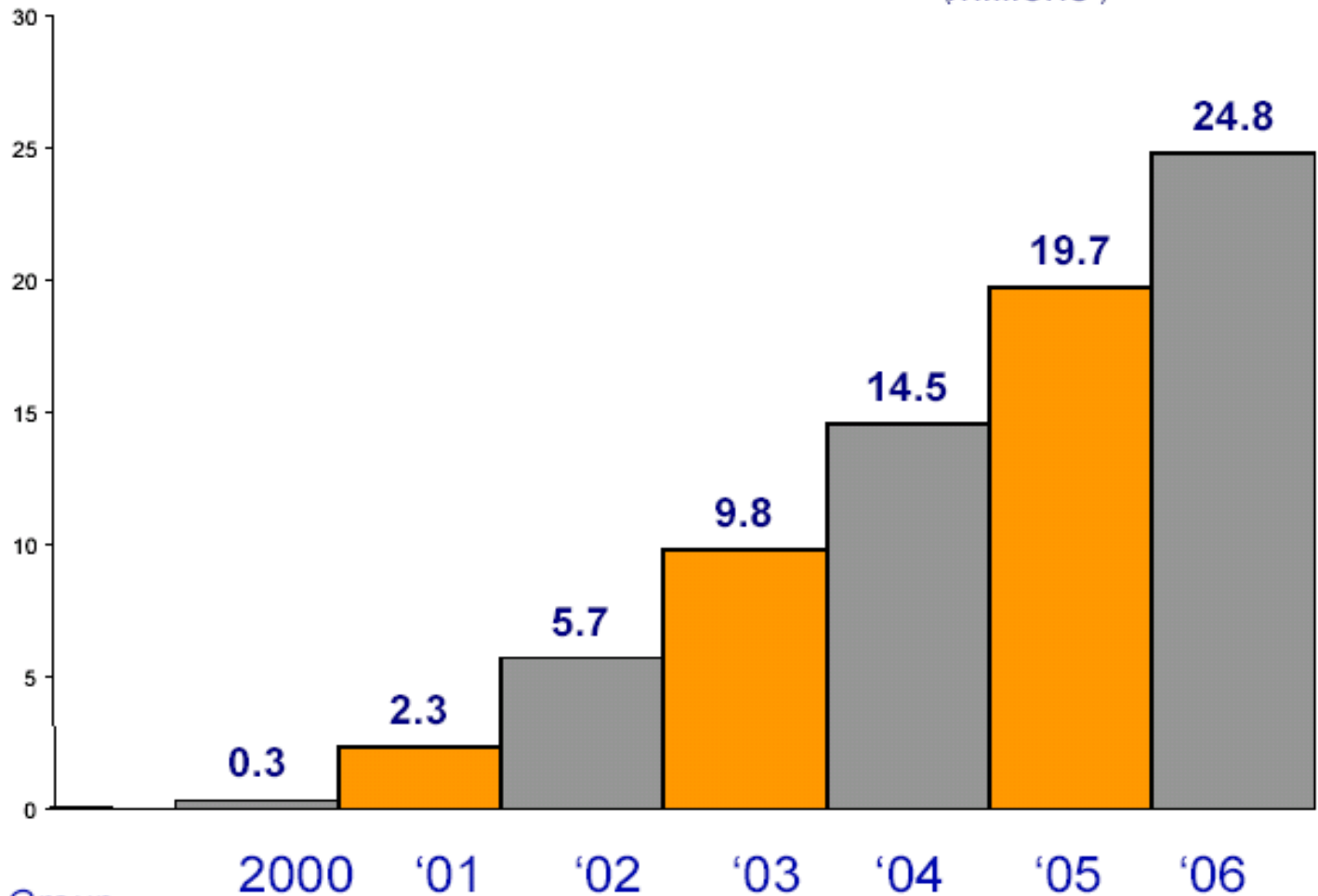


Wireless Subscribers Growth



US Wireless Portal Subscribers

(millions)



Source: The Strategis Group

Smart Phone Shipments

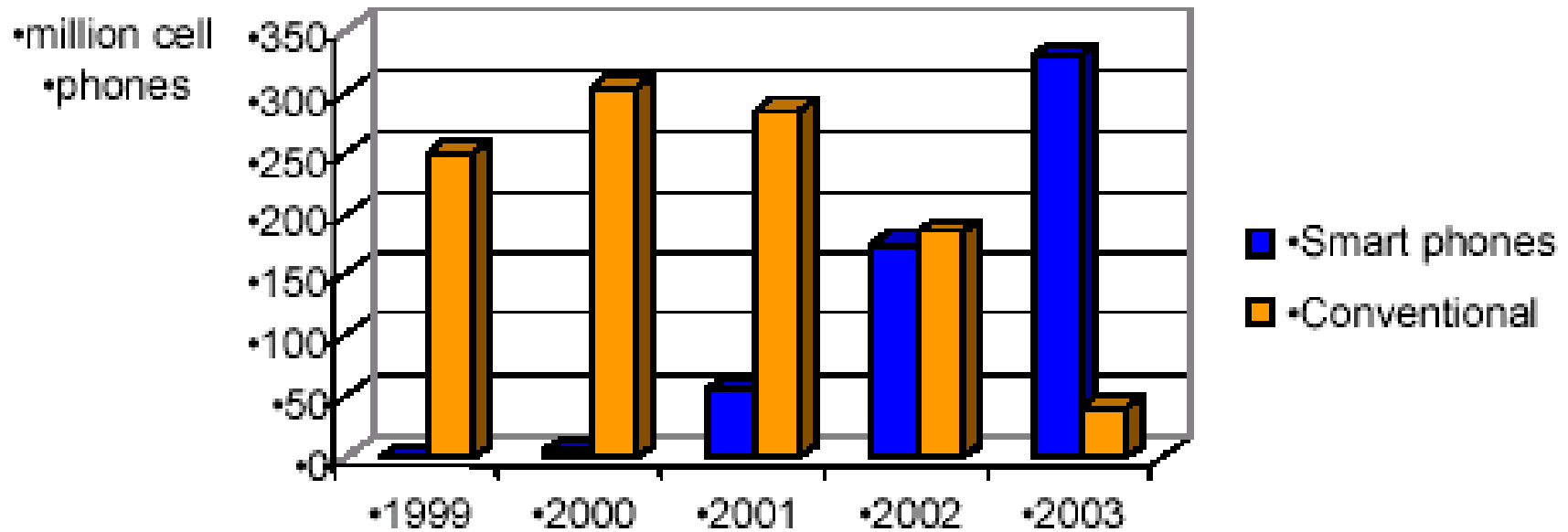
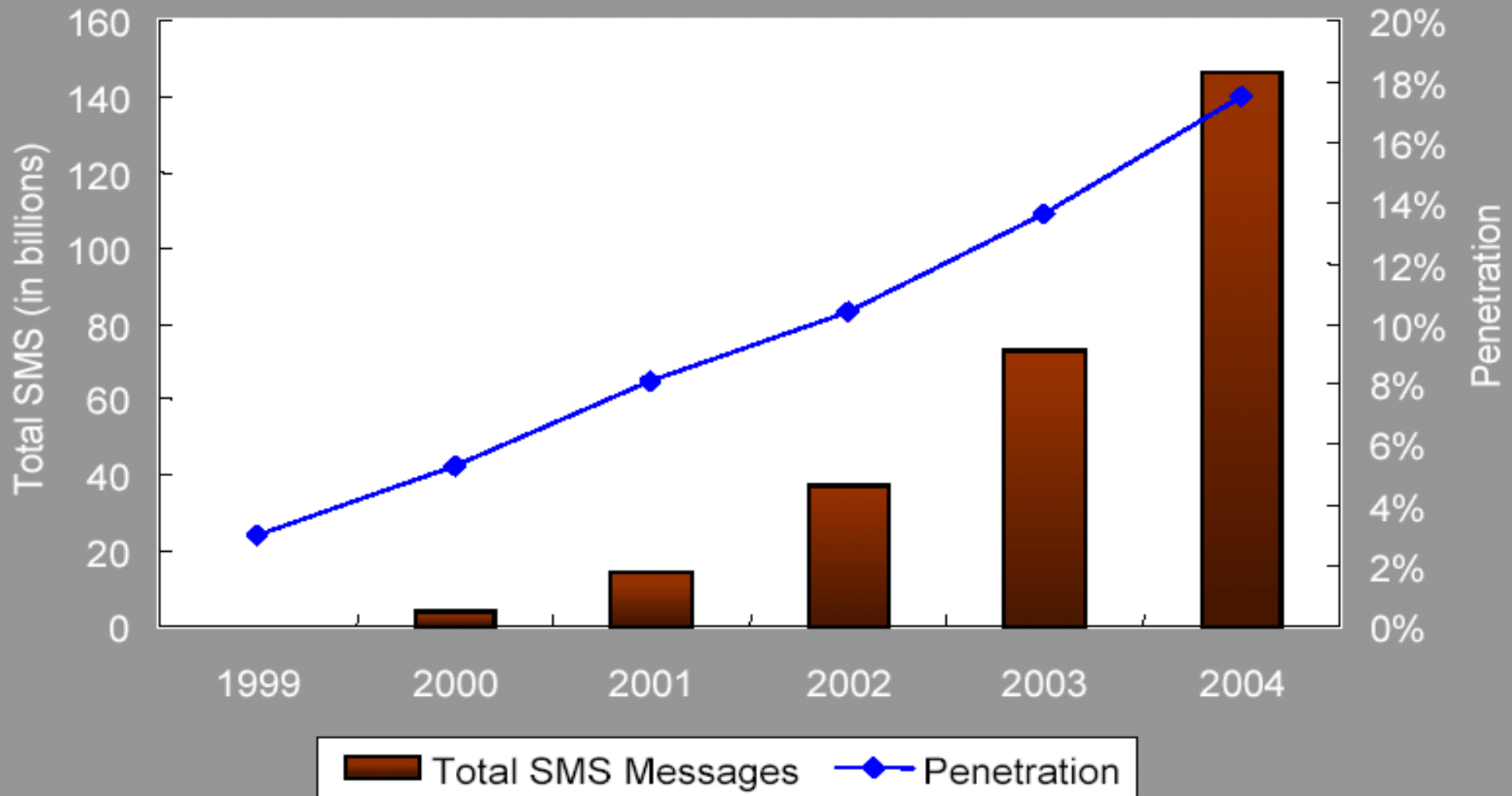


Figure 15 Global Shipments of Smart phones

Source: Cabnery Instat 2000

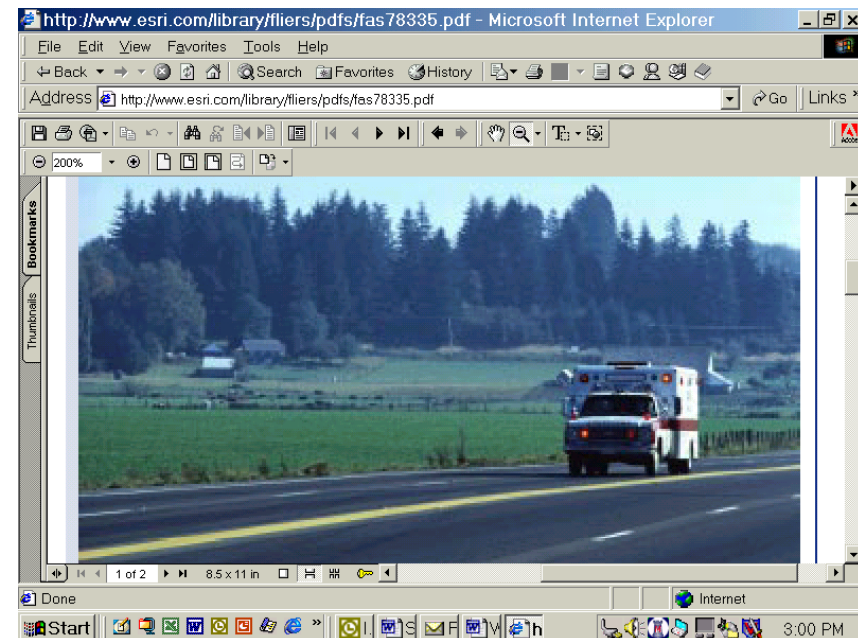
SMS – Short Messaging Services

US Forecast - Total Annual Number of SMS and Penetration

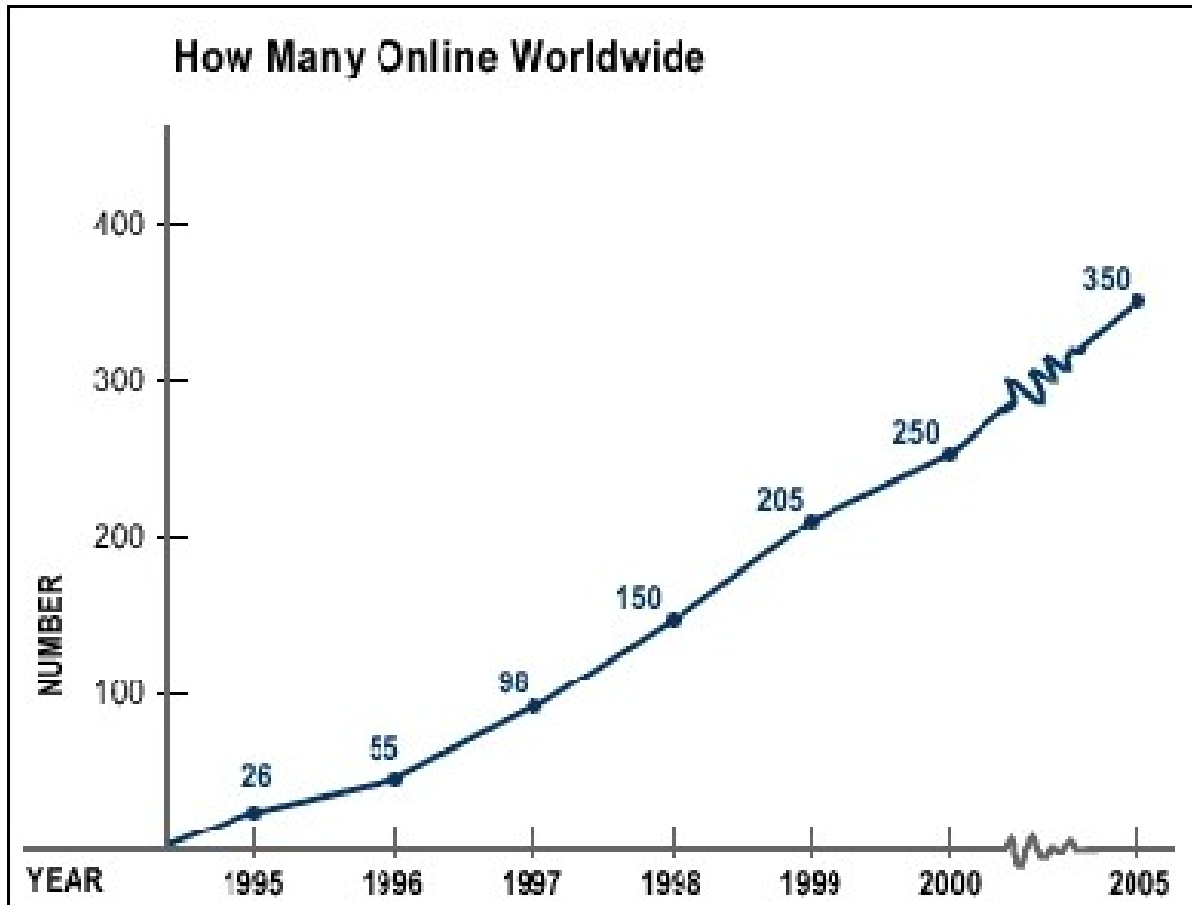


Cell Phones and E-911 Services

- 1. E-911 mandate stipulates centers must be able to precisely locate subscribers**
- 2. More than 50 % of emergency services calls made from mobile devices**
- 3. Impacts the development of location-based services**



Internet and World Wide Web

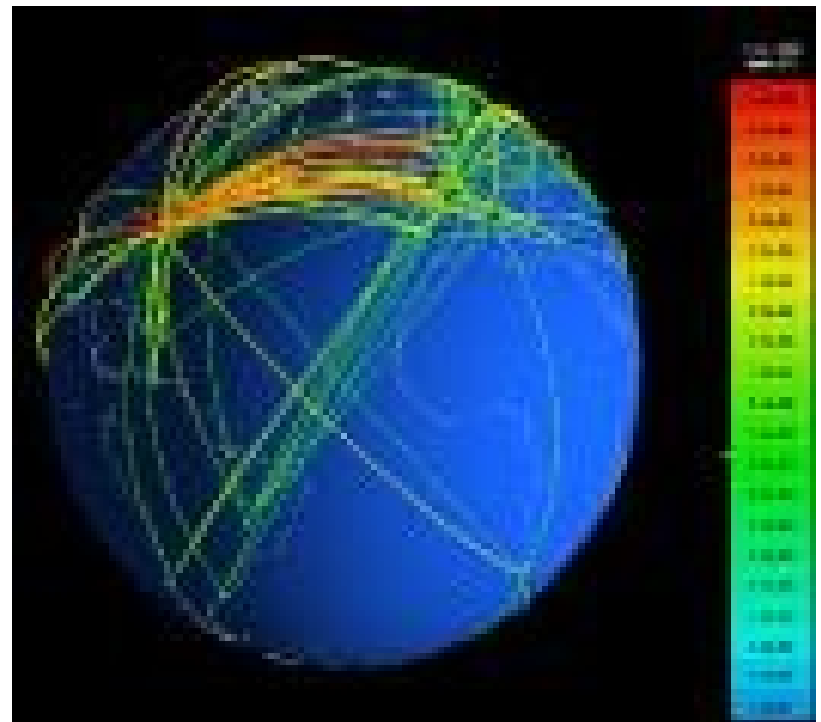


Source: NUA Internet Surveys, June 1999, <http://www.nua.ie/>

NUA Internet Surveys - 1999

Internet (worldwide)

1. Less than 1 % population connected worldwide
2. USA users create 90 % of all web sites

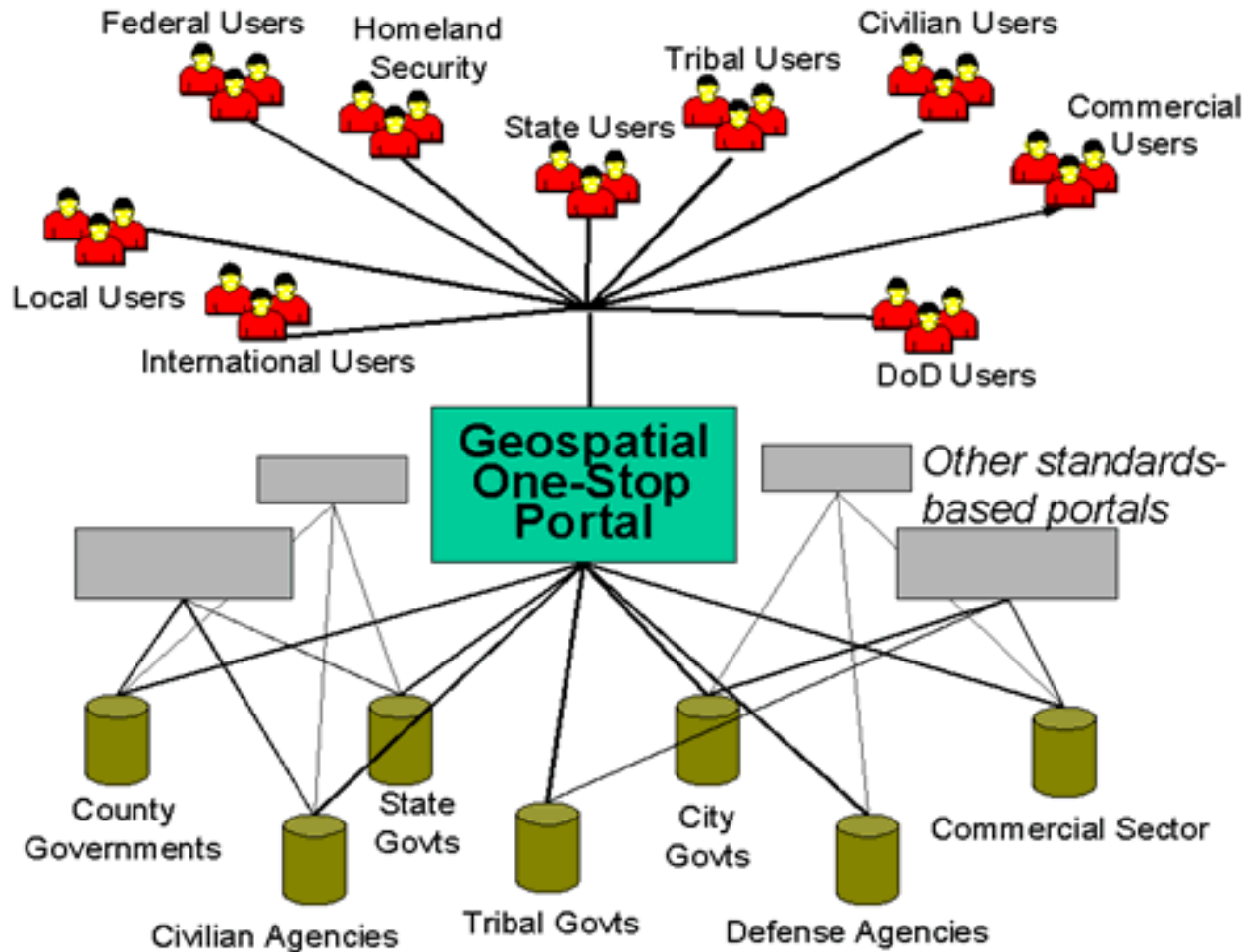


Internet (USA)

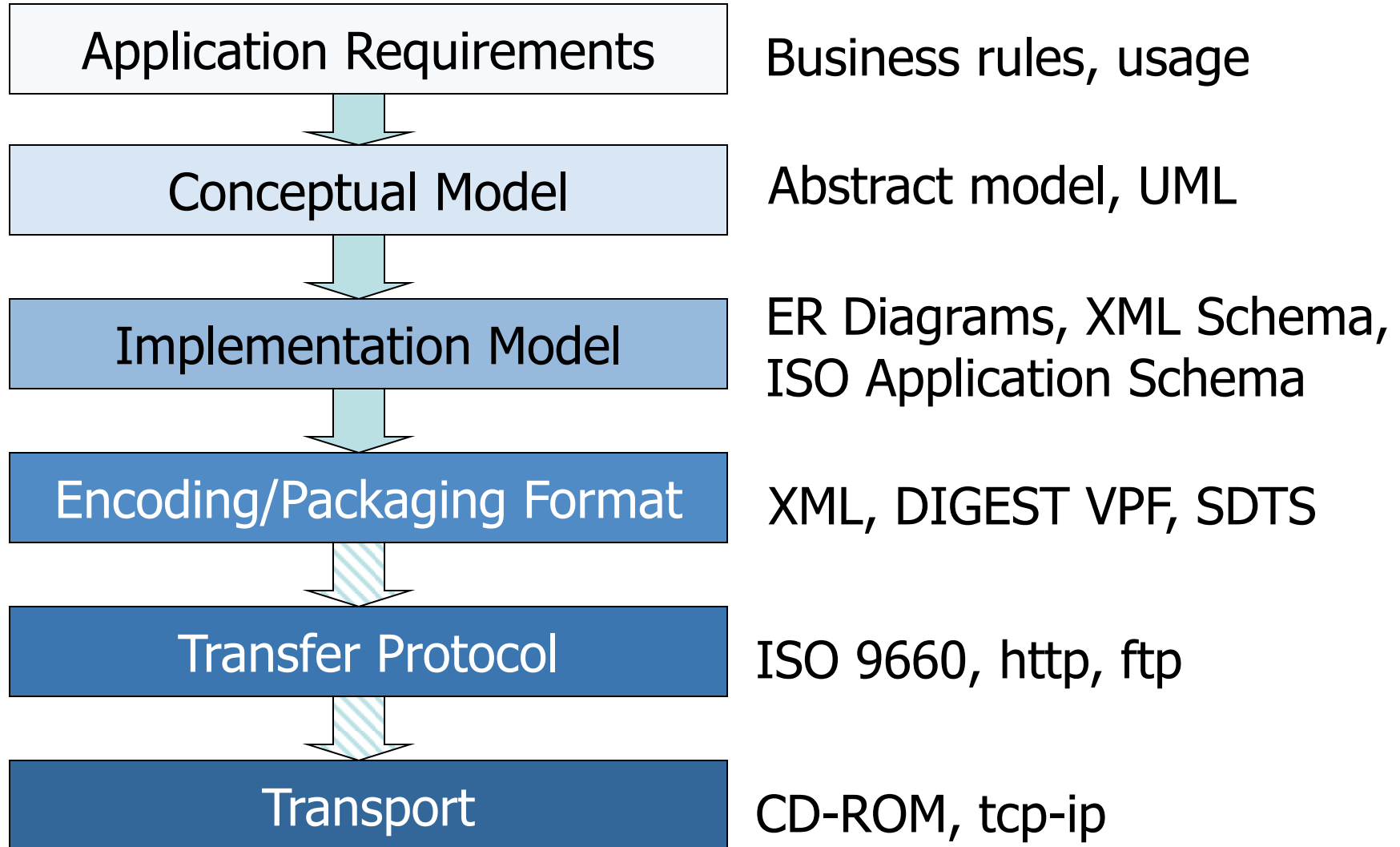
- 1. One-fifth of households (20 million +) are on-line**
- 2. 30 million additional can access the Internet from networks at schools, universities, and workplaces**
- 3. In total, there are 50-60 million on-line**
- 4. 10 % use the Internet to purchase goods and services**
- 5. Internet has now been turned over to the commercial sector by the US government.**

A Framework for Global Electronic Commerce (United States Interagency Working Group on Electronic Commerce, 1997

Standards and Interoperability...



Data Standardization



Interoperability

1. **Data interoperability** – applications understand the same sets of geospatial data.
2. **Application interoperability** – several applications can work together to solve a problem.
3. **Web interoperability** – Developers and users worldwide can share services



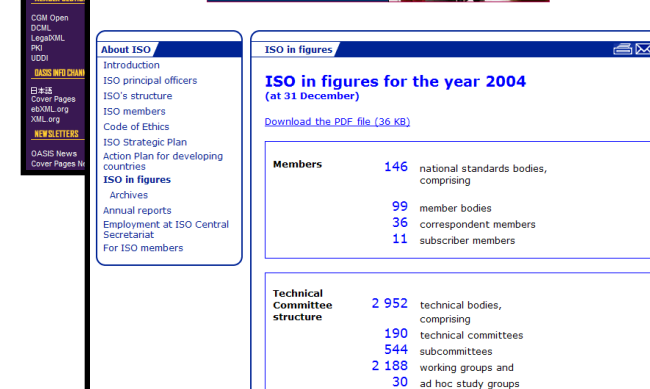
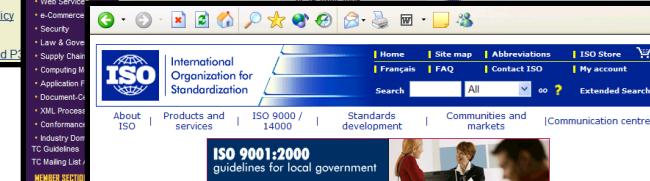
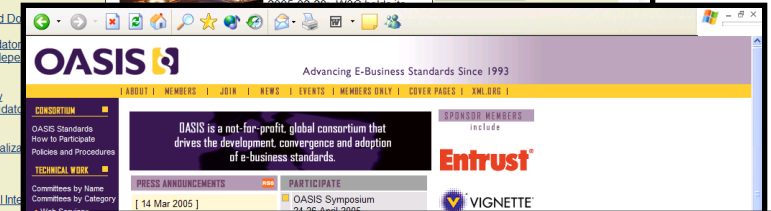
Standards Setting Entities

1. W3C – World wide Web Consortium

a. <http://www.w3.org/>

2. ISO: International Organization for Standardization

3. Open Geospatial Consortium...

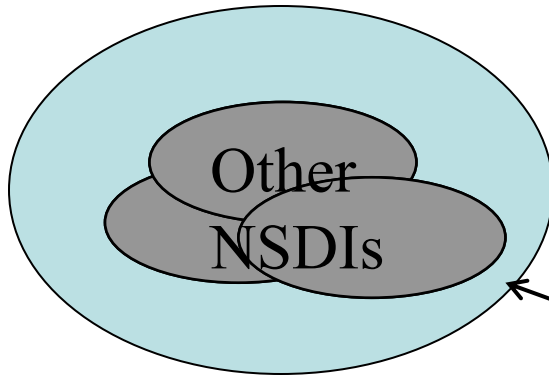


Geospatial Standardization

GSDI

*Interoperability interfaces
(Implementation Specifications)*

Regional Coordination



OpenGIS
Consortium, W3C



SDI

ISO TC 211

National
Standards

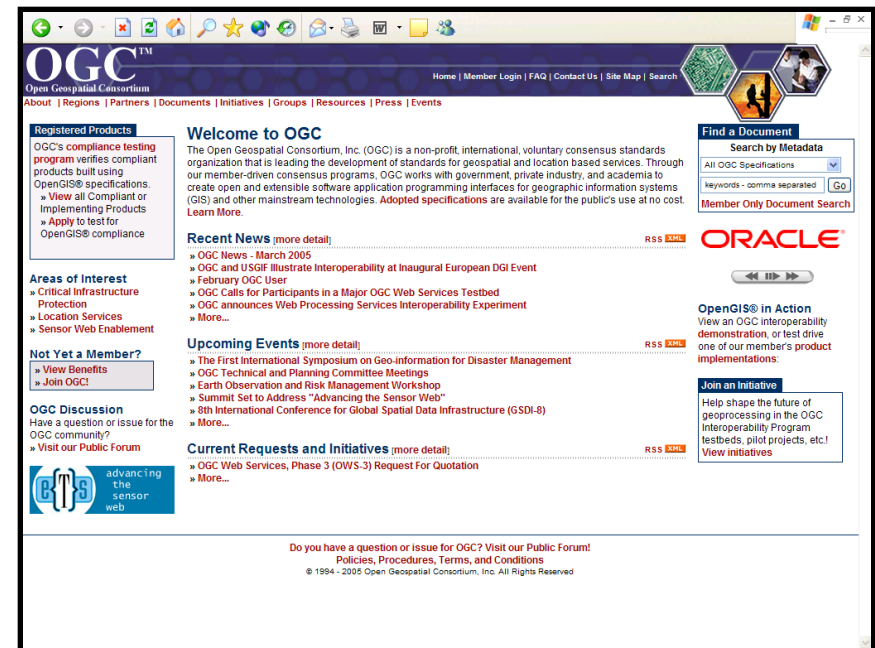
*Foundations for
implementation.
(Abstract standards)*

*Content standards,
Authority for data*

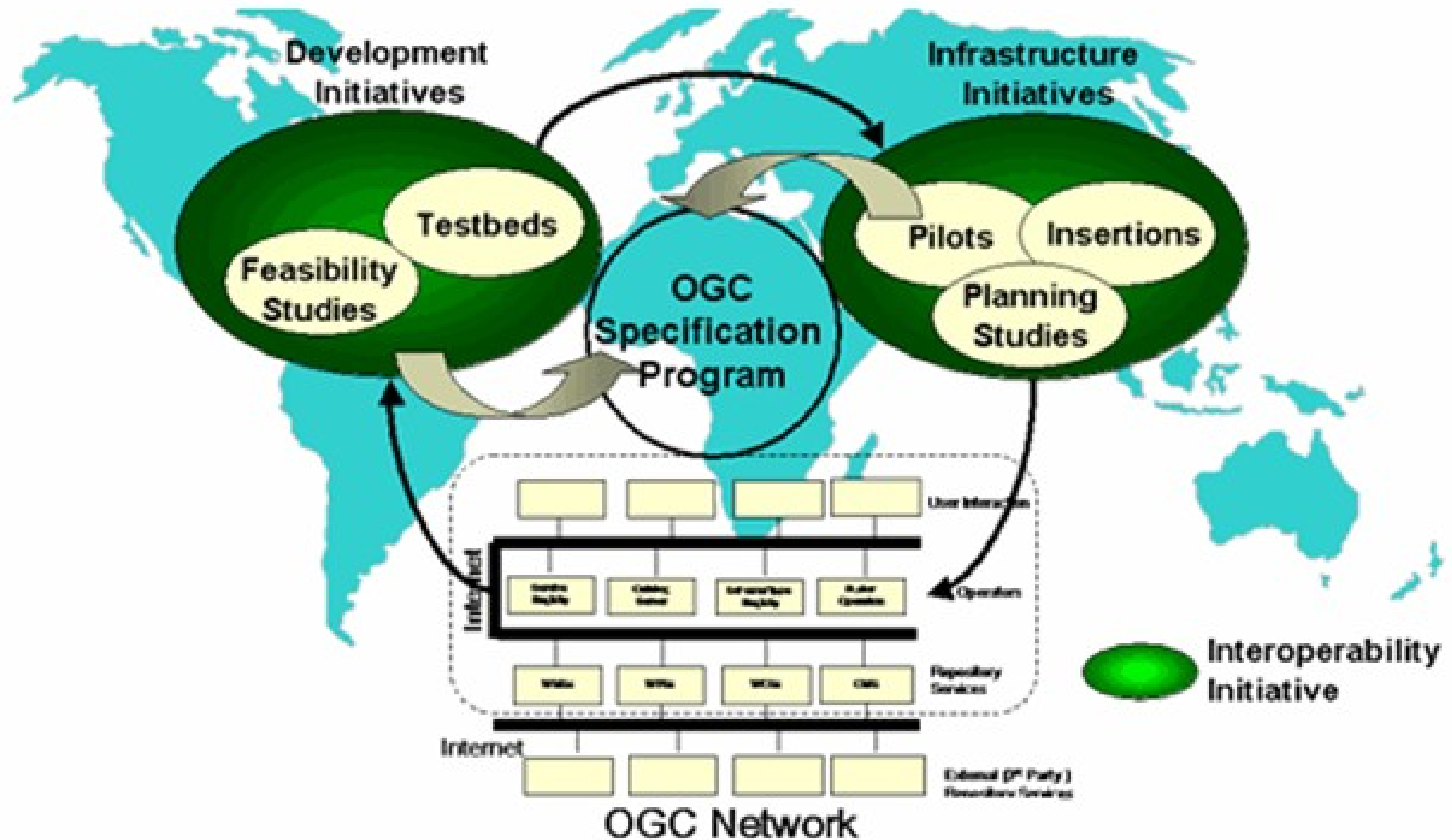
Open Geospatial Consortium (OGC)

International consortium of 250+ companies, government agencies and universities, founded in 1994 in the USA

- 1. Vision:** Complete integration of geospatial data and geoprocessing resources into mainstream computing.
- 2. Mission:** Build interface specifications for accessing and processing geospatial data in an **interoperable** way.
- 3. Approach:** Use a consensus process.
- 4. Certify** participation



OGC Participation



Web Services...

Self-contained, modular applications that can be described, published, located and invoked over the web.



Example: Adding Value to a Mapping Web Service...



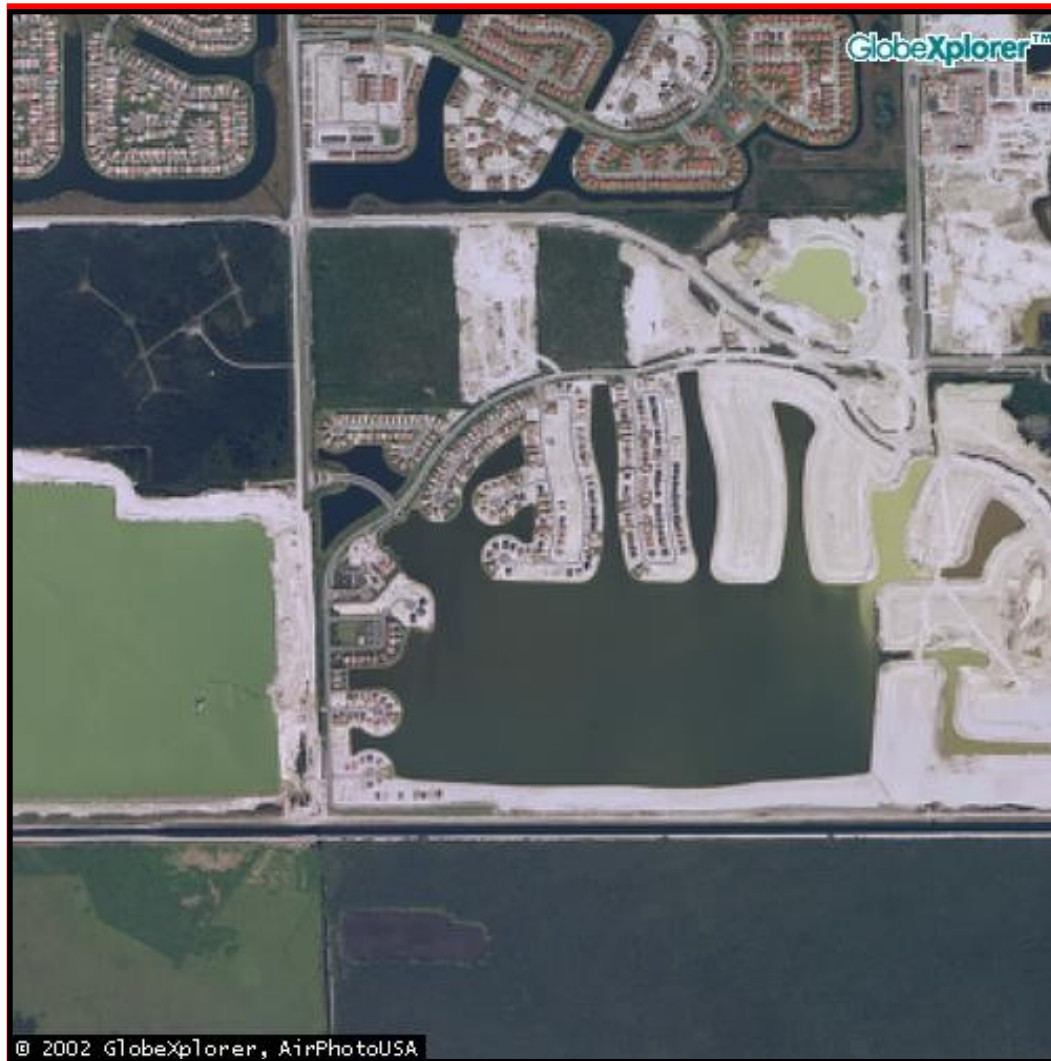
The screenshot displays the MapQuest website interface. At the top, there are navigation tabs for 'MAPS', 'DRIVING DIRECTIONS', 'ROAD TRIP PLANNER', and 'YELLOW PAGES'. The main content area is divided into several sections:

- maps**: A sidebar on the left with a list of map-related options: Address, Airport, ZIP Code, City, Area Code, Lat / Long, Road Atlas Key, and Saved Maps.
- Location:** A central box containing the address '4931 Sw 161st Ave, Miramar, FL 33027-4960, US'. Below this, there are buttons for 'STREET MAP' and 'AERIAL PHOTO', with the latter circled in red. There are also links for 'Map a New Location' and 'Get Directions To This Location'.
- Map:** A central map area showing a street grid in Miramar, FL. A red box highlights the map area. The map includes a scale bar (0 to 300m/900ft) and zoom controls (ZOOM IN, ZOOM OUT).
- What's Nearby:** A section on the left with a search bar and radio buttons for 'KOA', 'SixFlags', and 'Dairy Queen'. A 'Search' button is below.
- City Guide:** A section on the left with links for 'South Florida Dining', 'South Florida News', 'South Florida Movies', and 'South Florida Entertainment'.
- Right Sidebar:** Contains several promotional banners: 'Visit Mapstore.com Netscape Members Save 25% on the Harry Potter DVD', 'Get Netscape 6.2 Browser on CD!', 'Newsletter' (with a sign-up form), and 'MapStore'.

At the bottom of the map area, there are controls for 'CLICKING ON MAP WILL:' (Zoom In, Re-center, Move Location) and 'ADDITIONAL MAP FEATURES:' (Customize Map, Add A Location). The footer includes copyright information and logos for NAVTECH and QN EBOARD.

© MapQuest.com

...Adding Value Through Imagery.



Web Services Evolution

□ Stand-alone (proprietary DBMS)

➔ Client Server (SQL)

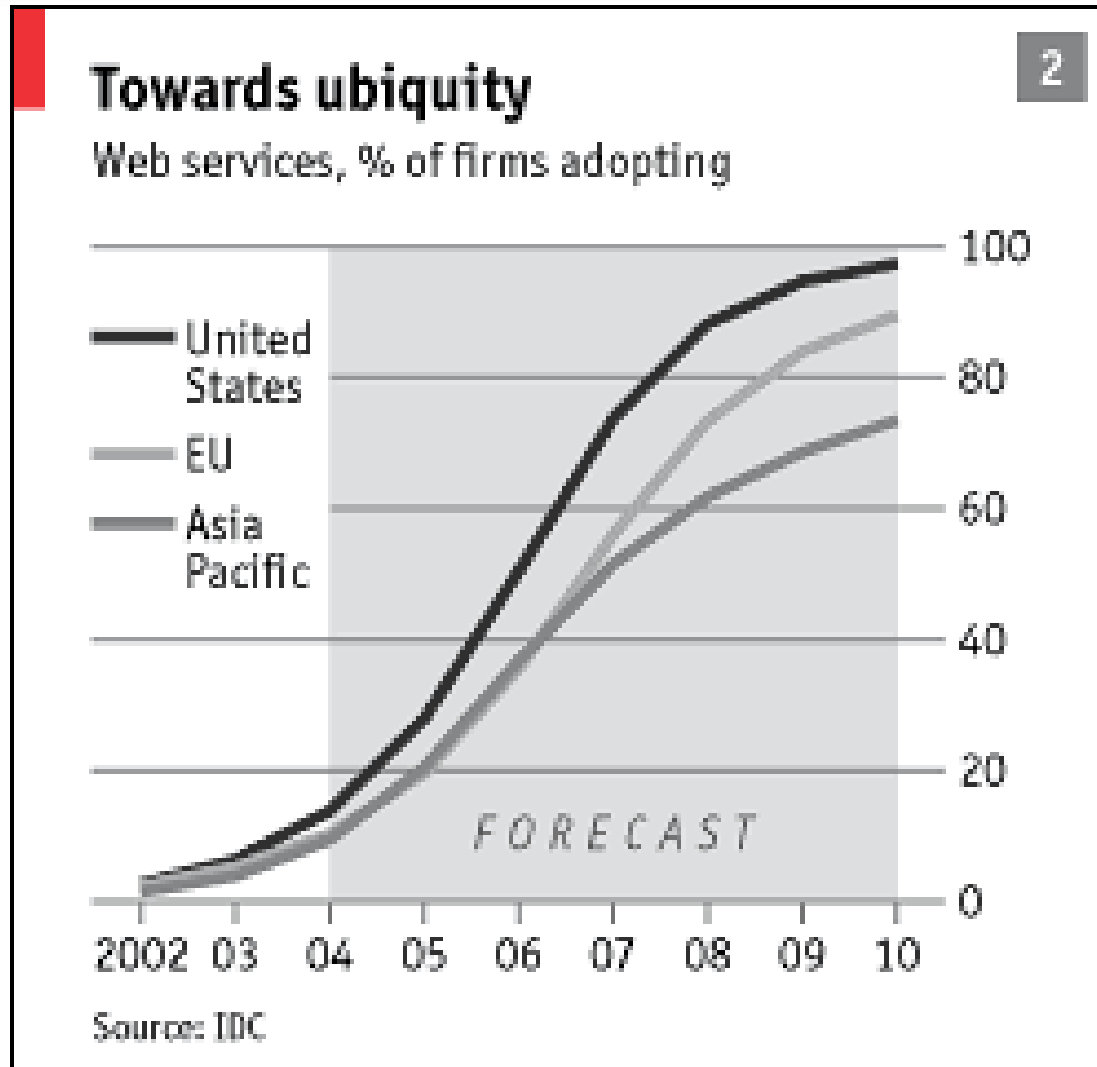
➔ World Wide Web (Web GIS)

➔ Open Interoperability

➔ Seamless Computing

Peter Woodsford Keynote ISPRS Turkey

Web Services Adoption



Web Services With Interoperability

- 1. XML industry standard as technology enabler.**
- 2. Build on current web-based applications**
- 3. Software spontaneously discovered, combined, and recombined to provide solutions to users' problems and requests.**
- 4. Moves users from map displays and 'file transfers' to transactions in real time.**

Sun Journal: <http://www.sun.com/executives/sunjournal/v5n1/feature1.html>



WMSviewer.com (free to everybody that wants to implement a open standards based spatial data portal)

- Includes source code
- Implements WMS and Context interfaces

- 1. Open (metadata)**
- 2. Accessible (catalog)**
- 3. Served (web services)**
- 4. Licensed (in many cases, free)**
- 5. Standardized**

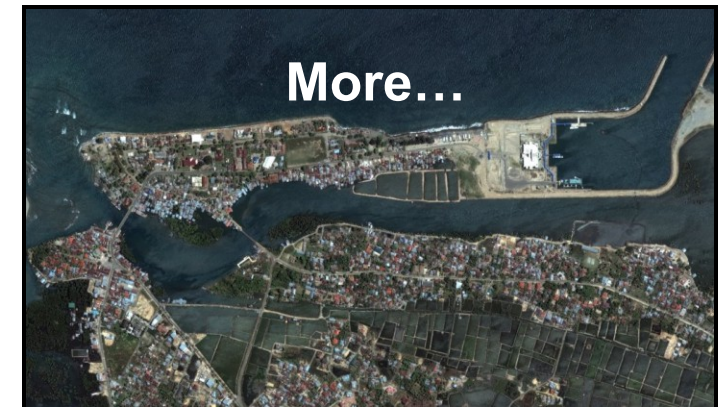
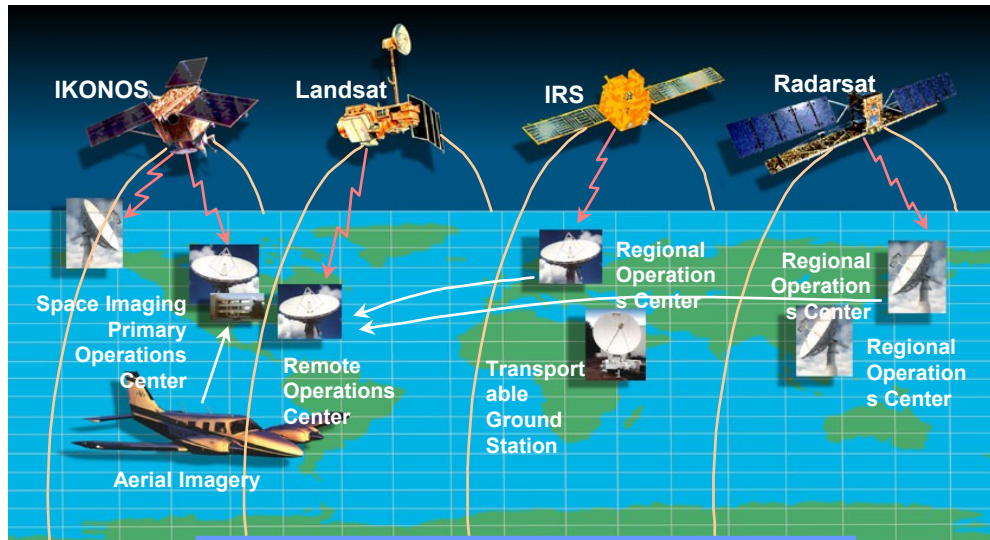
Global Data -CitySphere



<http://www.globexplorer.com/>

Global Access (Tsunami)

1. Fair market value
2. National & commercial data providers
3. Web delivery mechanisms



Why global data is important.

26-Dec 2004

Elevation Data Repositories.



<http://www.globalterrain.com/>



GTLocator - Microsoft Internet Explorer
Address: <http://www.gtlocator.net/website/gtlocator/viewer>

NEXTMap Home Page - Microsoft Internet Explorer
Address: <http://www.globalterrain.com/NEXTMAP/>

GTLocator
Map created by Global Terrain - 2002

NEXTMap BRITAIN
the next generation in topographic elevation data

GT PRODUCT DISTRIBUTORS
INTERMAP
GLOBAL TERRAIN

AVAILABILITY
PRICING
SPECIFICATIONS
REQUEST INFORMATION

Visit Getmapping PLC Web Site

NEXTMap Britain brings you the most current, accurate and affordable digital elevation and image data of England, Wales and Scotland. NEXTMap Britain utilizes Intermap's STAR-3/0 IFSAR, which is able to collect large areas of high-resolution data quickly and affordably no matter what the conditions, nightfall or clouds. Our product offerings include elevation data and orthorectified radar imagery (ORRI).

Digital Elevation Models (DEMs) include two options for your elevation needs, Digital Surface Model (DSM) and Digital Terrain Model (DTM). ORRI is designed to provide our users with an enhanced image up to 1.25 m ground resolution.

NEXTMap Britain provides you with the most comprehensive terrain elevation information, making your projects a guaranteed success.

Map: -65.51, 29.57 - Image: 384, 149 - ScaleFactor: 0.33260

Start | Internet | 2:43 PM

Image Data Repositories.



1. Satellite Images.
2. Aerial Imagery.
3. LIDAR and Radar Images.
4. Federal, State and Local data repositories.

Released MAPdata World, a three-part set of royalty-free GIS map data covering the world at 1:15 million scale.



products

- [MAPublisher 6.x](#)
- [MAPublisher 5.0](#)
- [MAPublisher 4.0](#)
- [MAPublisher Lt](#)
- [MAPdata USA](#)
- [MAPdataWorld](#)
- [Major Cities USA](#)
- [pdfPLUS](#)

[Demos](#)
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MAPdata World is a 3 part set of GIS map data covering the world at 1:15 million scale.

This detailed world vector dataset was initially created by Avenza UK reseller and digital data experts, [The XYZ Digital Map Co., Ltd.](#), and was specially created / designed for Avenza and the MAPublisher user. As a result it contains many data and design elements you will not find anywhere else in a world data set.

MAPdata World comes complete with ESRI Arcview project and shapefiles, MapInfo tab and workspace files and a set of MAPublisher-optimized mid/mif files which have been fine tuned and simplified for optimum performance with MAPublisher, whether working in Adobe Illustrator or Macromedia FreeHand.

Screenshots
(click to enlarge)

In Arcview

This new vector dataset is based on 'The Digital Chart of the World (DCW)' and has been extensively improved and attributed. And of course, the MAPublisher-optimized layers were especially created for MAPublisher users. This data set has everything you need to make

<http://www.avenza.com/products.mapdataworld.html>

Microsoft - Terraserver

Download | E-mail | Info | Print | Order Photo

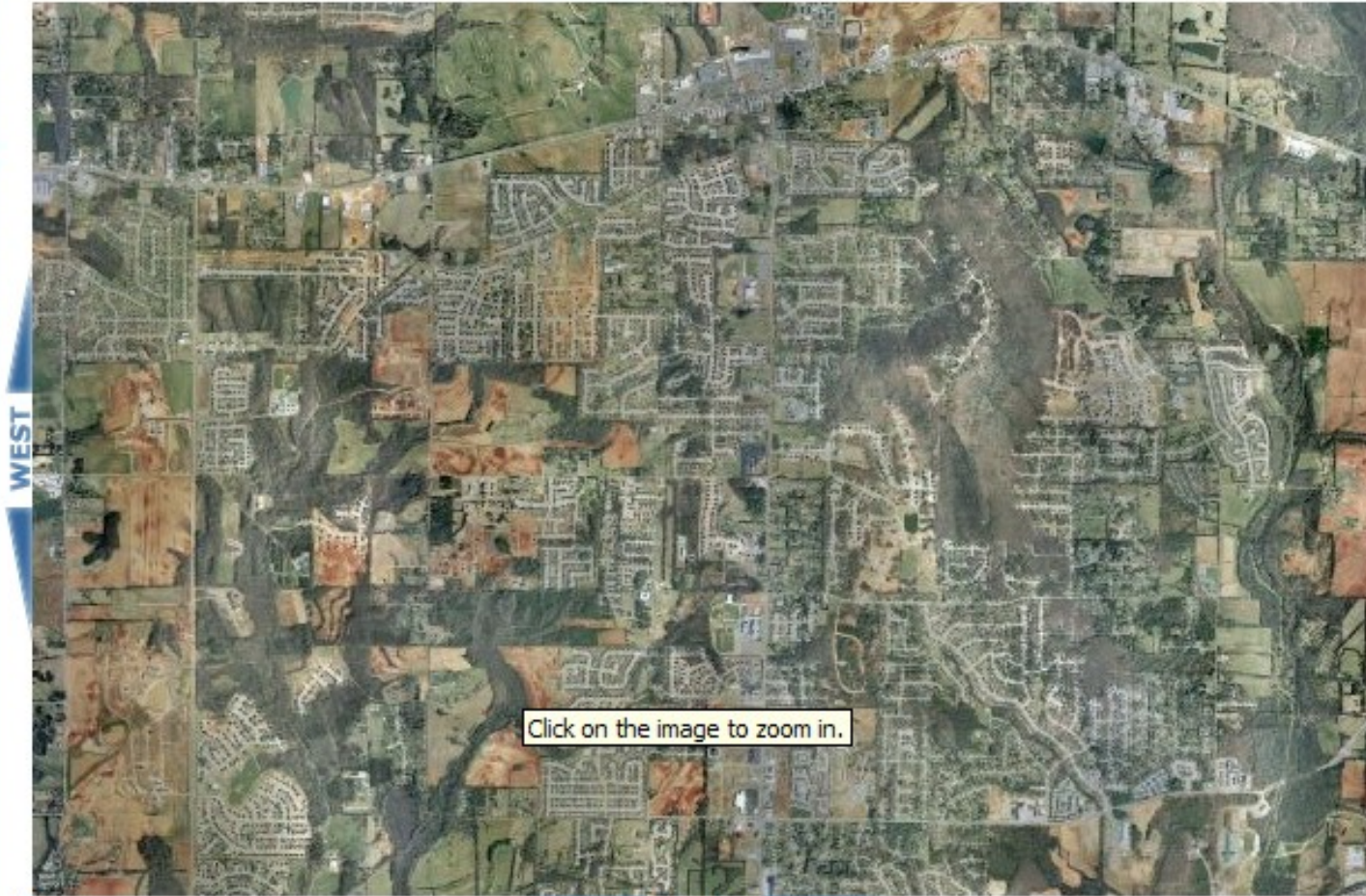
Urban Areas

Aerial Photo

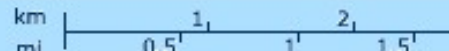
Topo Map

NORTH

SOUTH

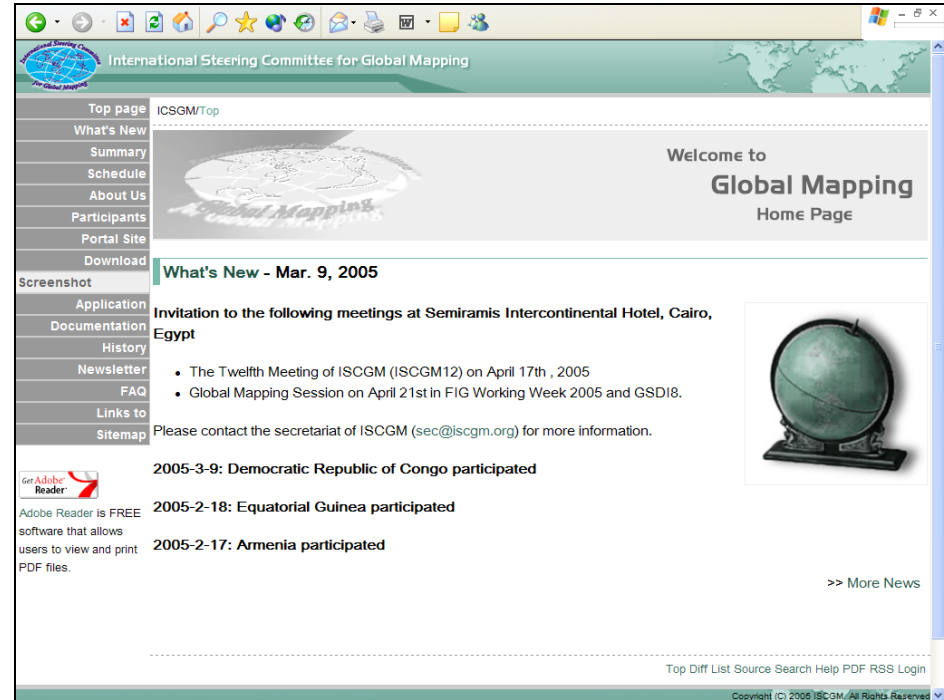


Click on the image to zoom in.



Global Mapping (1992-2007)

1. Develop free digital maps of world
2. 1:1 million scale; 1 Km resolution
3. Layers:
 - a. Transport
 - b. Frontiers
 - c. Hydro
 - d. Population
 - e. Elevation
 - f. Vegetation
 - g. Land cover
 - h. Land use



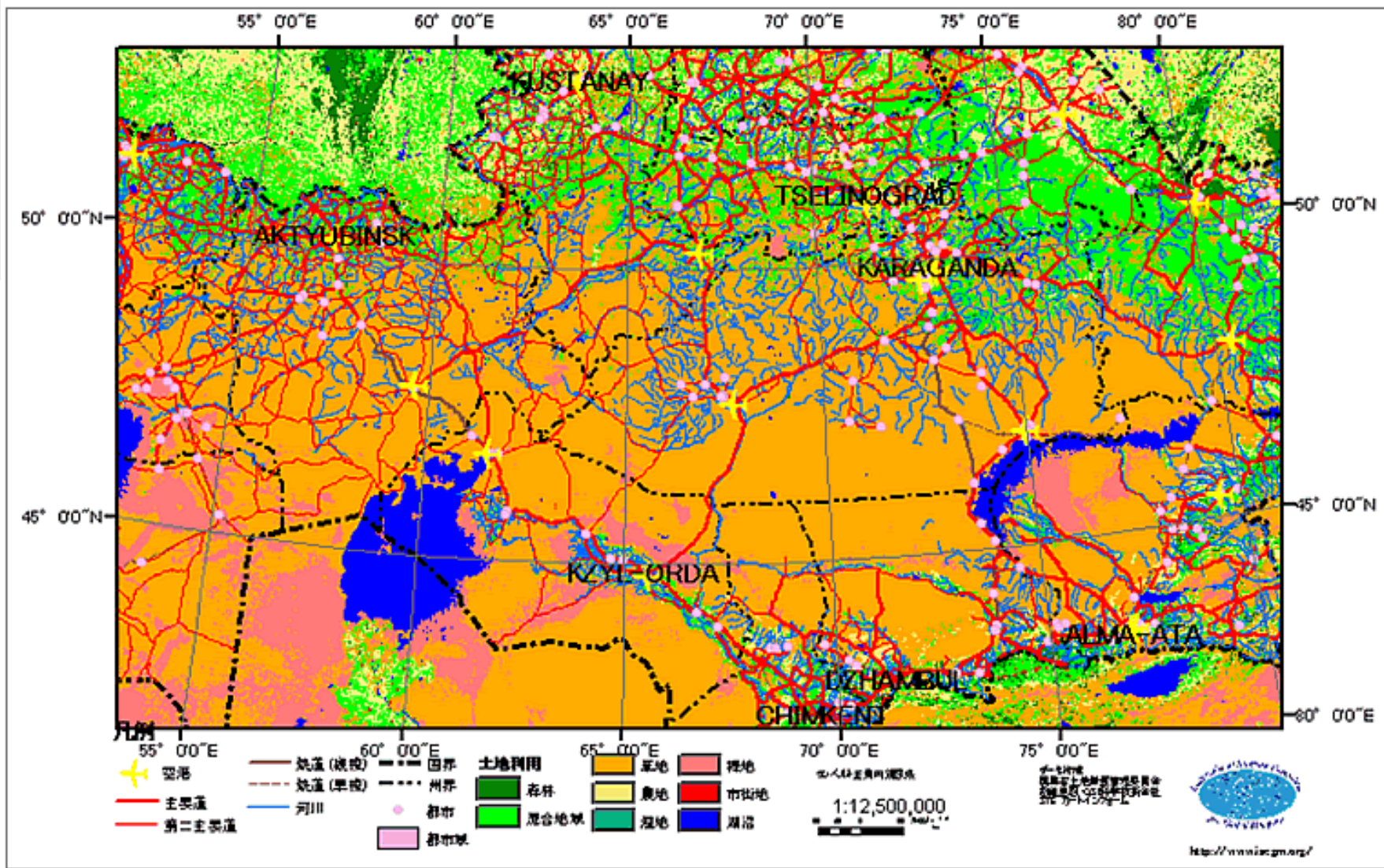
<http://www.iscgm.org/>

<http://www.iscgm.org/>

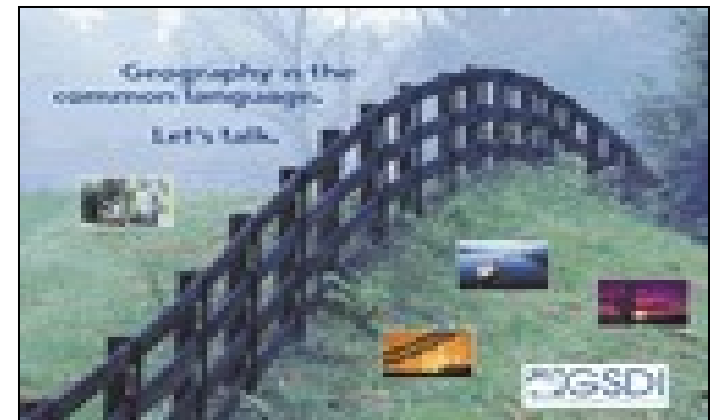
7. Kazakhstan

Data source: Land use, Boundary, Drainage

Kazakhstan



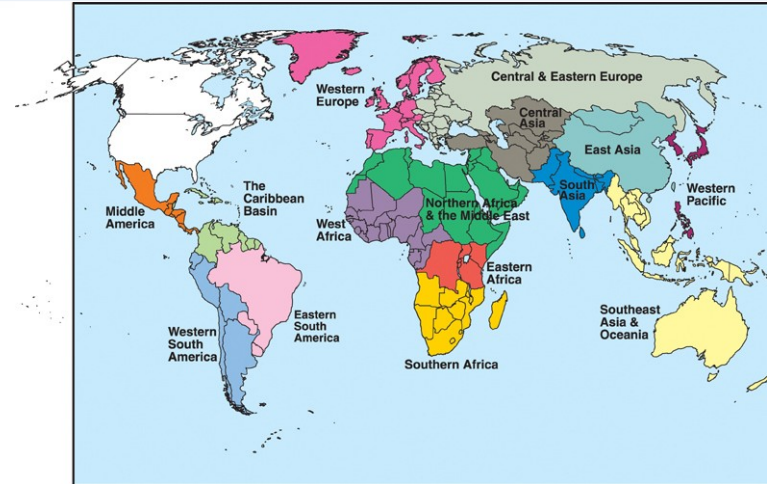
1. Academic
2. Private
3. Local
4. National
5. Global



Geospatial Partnerships



1. Global Spatial Data Infrastructure Association
2. INSPIRE – Infrastructure for SPatial Information in Europe
3. The USA National Map concept



Examples

- 1. The US National Map initiative**
- 2. Location-based services (LBS)**
- 3. Road centerlines (USA)**
- 4. Dubai municipality – LBS**

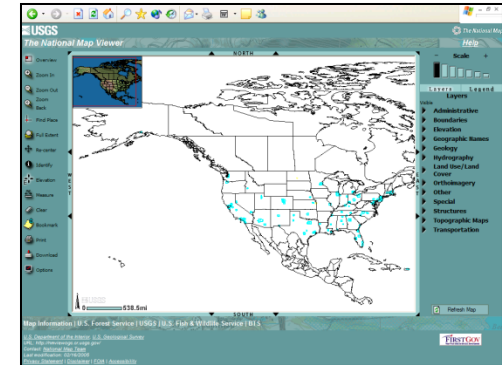
The National Map Example (USA)

The screenshot displays the USGS National Map Viewer interface. At the top, there is a standard Windows taskbar with various application icons. The main window title is "The National Map Viewer" with the USGS logo on the left and "The National Map" and "Help" on the right. The central map area shows a map of the United States with state boundaries and a grid of cyan-colored data points. To the left of the map is a vertical toolbar with icons for Overview, Zoom In, Zoom Out, Zoom, Back, Find Place, Full Extent, Re-center, Identify, Elevation, Measure, Clear, Bookmark, Print, Download, and Options. To the right is a panel with a "Scale" slider, "Layers" and "Legend" tabs, and a list of visible layers including Administrative, Boundaries, Elevation, Geographic Names, Geology, Hydrography, Land Use/Land Cover, Orthoimagery, Other, Special, Structures, Topographic Maps, and Transportation. At the bottom of the map area, there is a scale bar showing 0 to 538.5 miles and a "Refresh Map" button. Below the map, there is a "Map Information" section with text: "U.S. Forest Service | USGS | U.S. Fish & Wildlife Service | BTS", "U.S. Department of the Interior, U.S. Geological Survey", "URL: <http://nmviewwgo.cr.usgs.gov/>", "Contact: [National Map Team](#)", "Last modification: 02/16/2005", and "Privacy Statement | Disclaimer | FOIA | Accessibility". A "FIRSTGOV" logo is also present in the bottom right corner.

The National Map Example (USA)

1. Partnering

- a. National Spatial Data Infrastructure (NSDI)
- b. Federal Geographic Data Committee (FGDC)
- c. Geospatial One-Stop Initiative



2. Federal, State, local and private partners

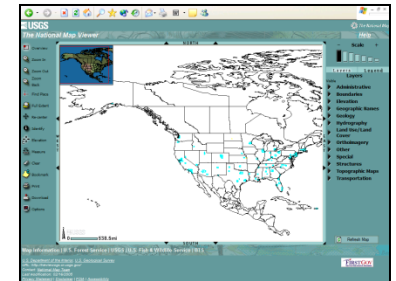
3. Access, integrate, and apply geospatial data at global, national, and local scales.

4. Providing data and tools over the Web, and making updated topographic maps from the digital data.

Multi-agency Data Contributors

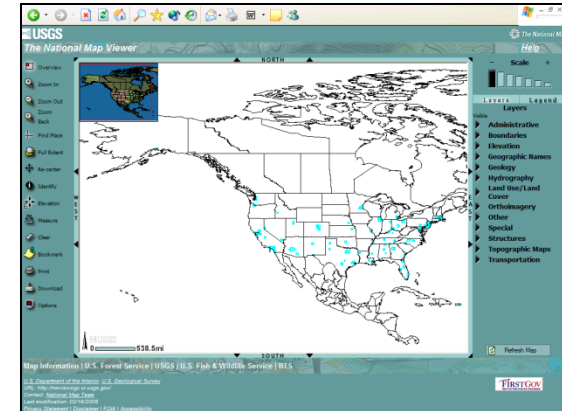


- 1. Nationwide coverage of transportation, hydrography, elevation, land cover, and cultural features.**
- 2. Political boundaries**
- 3. Digital Chart of the World (1:1m)**
- 4. Geographic Data Technology road centerlines**
- 5. National Hydrography Dataset**
- 6. Digital Terrain Elevation Dataset**
- 7. National Elevation Dataset.**
- 8. National Land Cover Dataset**
- 9. Cultural features include populated places and cities**
- 10. Geographic Names Information System**



Geospatial Issues Considered

1. Data licensing
 - a. NRC Data Licensing Report
2. Partnering effort
3. Incentives,
4. Roles and responsibilities,
5. Research, and
6. Product dissemination.

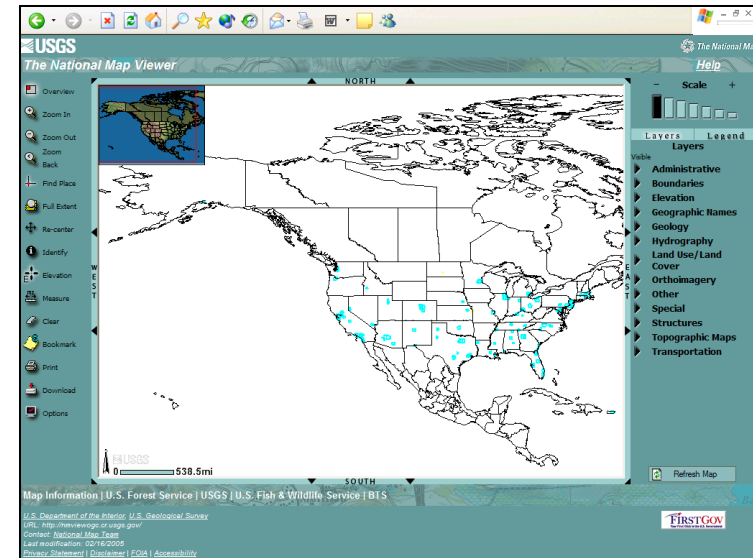


<http://www.nap.edu/catalog/11079.html>

Research Grants Provided



1. Database development
2. Data distribution
3. Exchange of data/products
4. Feature generalization
5. Standards development
6. Web mapping services
7. Workshops, training, technology transfer





Who's Involved

- ▶ [Board of Directors](#)
- ▶ [Federal Partners](#)
- ▶ [E-government](#)
- ▶ [Geodata.gov Staff](#)

GeoData Marketplace

- ▶ [NSDI Clearinghouse](#)
- ▶ [Existing Inventory](#)
- ▶ [Data Investments](#)
- ▶ [State Links](#)
- ▶ [Regional and Local Governments](#)
- ▶ [Private Sources](#)

Best Practices, Data Sharing

- ▶ [Create and Publish Metadata](#)
- ▶ [Geospatial Standards](#)
- ▶ [Portal Development](#)
- ▶ [Metadata](#)

Geospatial One-Stop:

Facilitating Partnerships and Access to Geospatial Information

Visit the [Geospatial One Stop Portal](#)

An intergovernmental project managed by the Department of the Interior in support of the President's Initiative for E-government, Geospatial One Stop builds upon its partnership with the Federal Geographic Data Committee (FGDC) to improve the ability of the public and government to use geospatial information to support the business of government and facilitate decision-making.

In conjunction with the FGDC and its 19 member interagency membership established under OMB Circular A-16, Geospatial One-Stop helps improve access to geospatial information:

- Through the Geospatial One Stop portal (www.geodata.gov), anyone can access geospatial information from federal agencies and a growing number of state, local, tribal and private agencies through one comprehensive and comprehensible portal
- Advanced information on future investments in geospatial information can provide opportunities for collaboration, intergovernmental partnerships and reduce needless duplication of data investment
- Building communities around data categories through the efforts of "data stewardship leaders" and teams to seek out and highlight new and preminent ways to utilize geospatial tools
- In conjunction with FGDC, Geospatial One Stop facilitates standardization and intergovernmental agreements on standards and interoperability

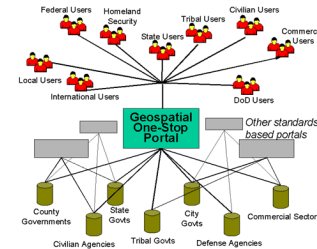
[Geospatial One-Stop Project Awards Portal Contract](#)

[Implementing GIS Portals](#)

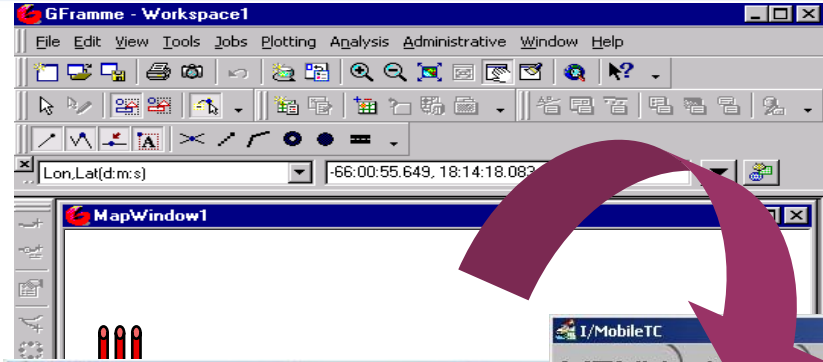
[Geospatial One-Stop awards c](#)

<http://www.geo-one-stop.gov/>

[geodata.gov](#) posts special channel highlighting maps and information on tsunami



Location-Based Services...



I-MobileTC

MENU JOBS INBOX MAP

Event Information

Number: **J0345001** Type: **DA**

Premise Information

Device #: **J0170** Dev

of Ops: **2**

Phase: **B**

Completion Information

Category: []

Details: []

Off Date: **7 /26/2002**

Restore Date: **7 /26/2002**

Res

Condition:

Found OK Inside Trouble C/O

0	ARRIVE	BKFLOW	
Inbox: 0 Unread: 0		Jobs: 3 Unread: 0	

I-MobileTC

MENU JOBS INBOX MAP

Tags

Get Abnormal Devices

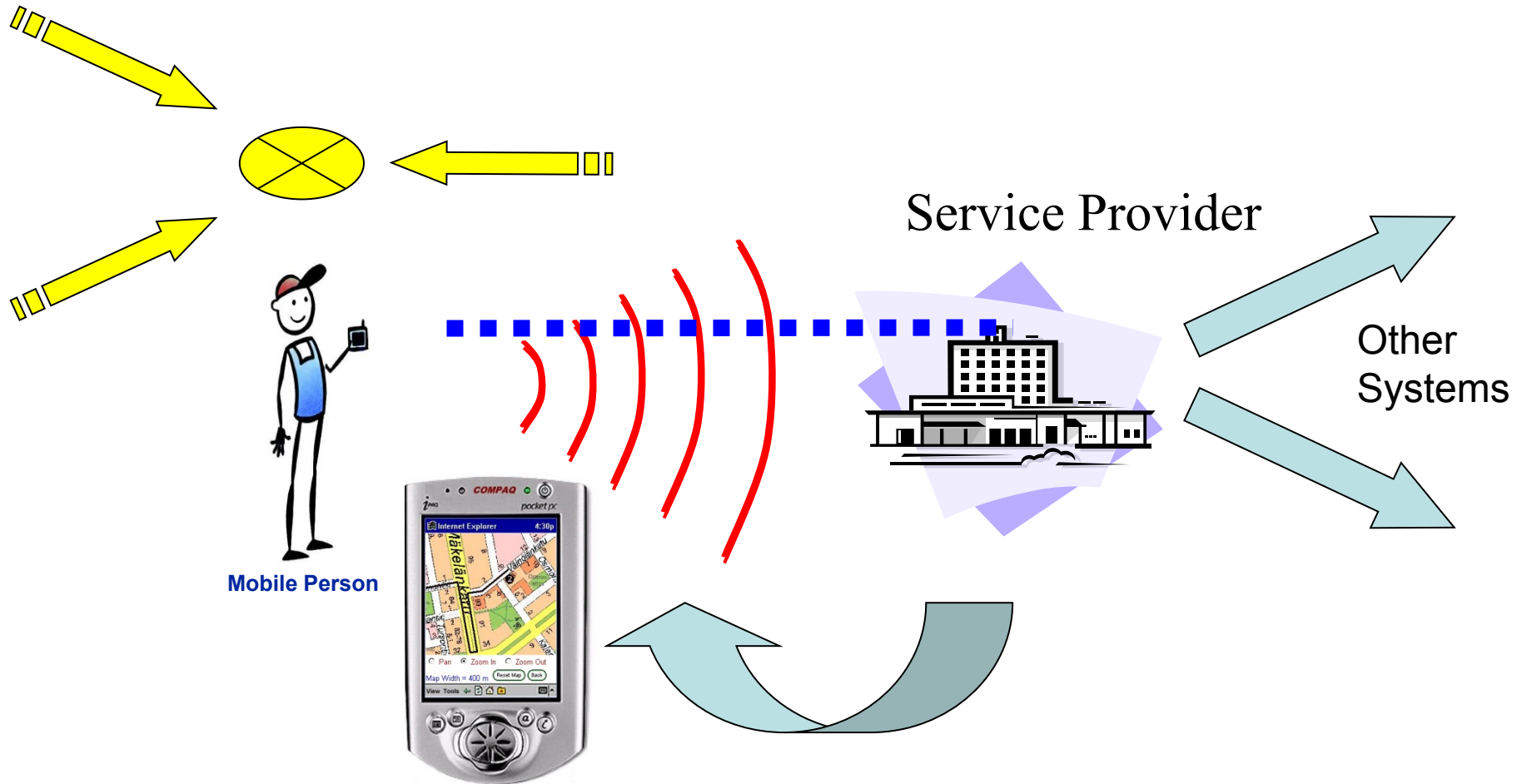
No Lockout

Inbox: 17 Unread: 17	Jobs: 0 Unread: 0	Outbox: 0	Signed On -3661	ONLINE
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April 2005

What is a Location Based Service?



Technology Drivers - convergence

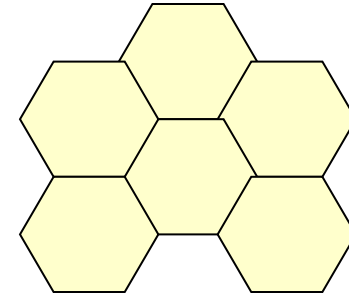
GPS enabled
Handsets



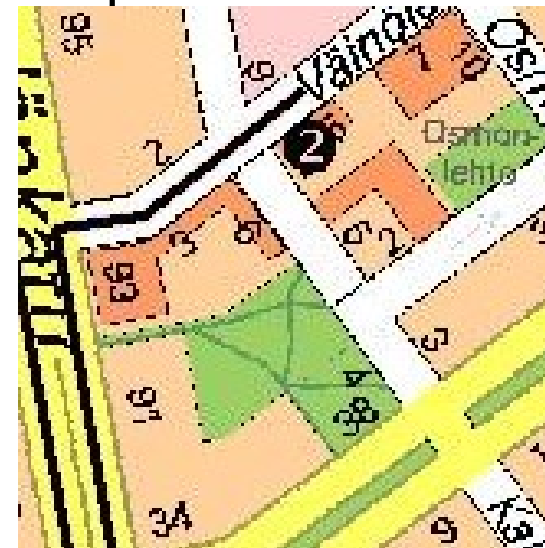
Data Networks



Mobile Positioning



Spatial Datasets



By 2006...



You (and a billion others) will:

1. Have a smart phone, Bluetooth enabled, on at least a 2.5G network
2. Your smart phone will be positioning capable to 50-100m.
3. You will have access to a wide range of Location Based Services, many using accurate, navigable map datasets.



Location-Based Services Applications



- Lifestyle Information
- Business Information
- Traffic Information

- Vehicle Tracking
- People Tracking
- Assets Tracking

Information Services

Emergency Services

Tracking Services

Employee Services



- Medical
- Crime
- Distress

- Information to field
- Enterprise Integration
- Customer Service

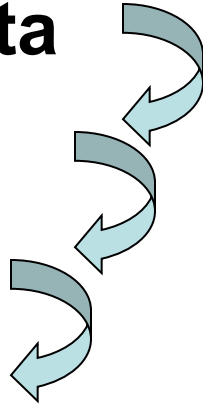


April 2005



Road Centerlines Example

1. Tier 1: Census Bureau road centerline data
2. Tier 2: Private sector enhancement
3. Tier 3: Transportation industry adoption
4. Tier 4: Further data sets enhance usage



Leveraging geospatial data and technology to create wealth

Tier 1 – US Census Bureau Road Centerlines



U.S. Census Bureau

[Census 2000 Gateway](#) | [U.S. Gazetteer](#) | [Census 2000 Geography Glossary](#)



TIGER®, TIGER/Line® and TIGER-Related Products

TIGER

Topologically Integrated Geographic Encoding and Referencing system

MAF/TIGER Enhancements Program (MTEP)

- [Partnerships and MTEP](#)
- [MAF/TIGER Accuracy Improvement Project](#)
- [Accurate Coordinate Datasets Collection](#)

TIGER/Line® Files

- [108th CD Census 2000 TIGER/Line® Files](#)
- [2004 First Edition TIGER/Line® Files](#) -- Released January 28, 2005
- [Previous Versions of Census 2000 TIGER/Line files](#)
- [TIGER/Line 1992](#) A Link Between 1980 and 1990 Census Geography
- [TIGER/Line Metadata](#)

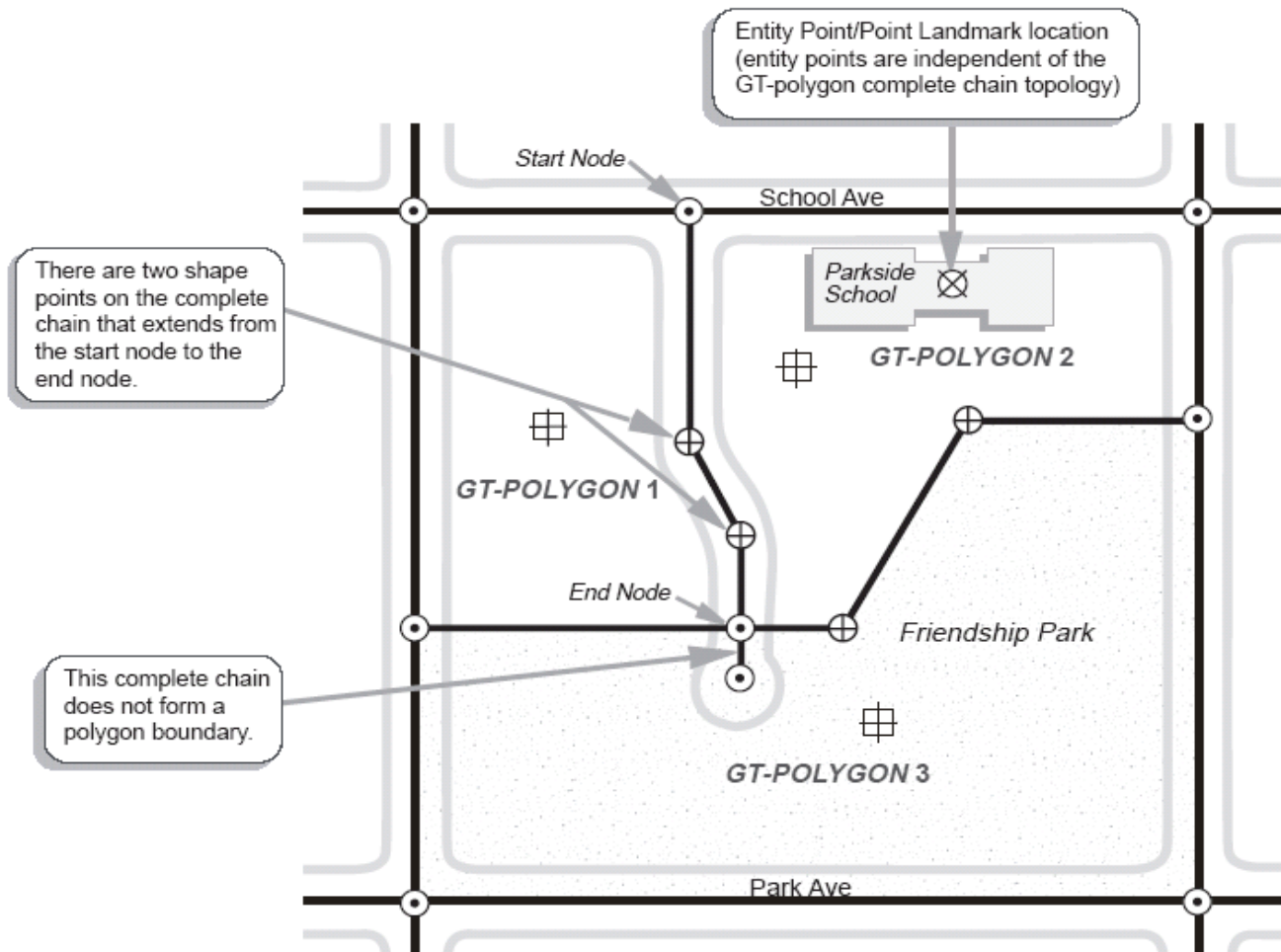
<http://www.census.gov/geo/www/index.html>

Census Geography Menu

► TIGER®, TIGER/Line®

- [Census Bureau Maps](#)
- [Cartographic Boundary Files](#)
- [Online Mapping Applications](#)
- [Census Tract Data](#)
- [Urban/Rural Classification](#)
- [Census](#)

TIGER Road Centerline Topology



<http://www.census.gov/geo/www/tiger/tiger2004fe/TGR04FE.pdf>

Tier 2 – Navteq Intelligent Roads



- 1. NAVTEQ data is onboard most in-vehicle navigation systems sold in North America and Europe.**
- 2. Supports a new generation of navigation services**
 - a. Internet websites**
 - b. Enterprise/Fleet/GIS solutions**
 - c. Location Based Services (LBS).**



MARKET SOLUTIONS

- Vehicle Navigation Systems
- Internet/Wireless
- Fleet / GIS / Enterprise
- Government



- Helpful Resources**
-
- What Is NAVTEQ Data
 - The NAVTEQ Difference
 - Advanced Solutions
 - Support Services
 - Contact Us
 - Extranet Logins

IMAGINE

Your cell phone rings as you head out to dinner. A table has opened up early while you're in route. Traffic is running smoothly.

Market Solutions
Building the markets of the future.

NAVTEQ has built one of the most comprehensive, accurate geographic databases in the world. Today, we stand on the threshold of solid expansion and opportunity in the industries we serve. And we're investing in the resources that will help ensure these markets grow.

<http://navteq.com/markets/market.html>

- [Vehicle navigation systems](#)
- [Internet/Wireless](#)
- [Fleet/Enterprise/GIS](#)
- [Government](#)

Tier 3 – Vehicle Navigation Systems



- NAVTEQ DATA
- MARKET SOLUTIONS
- MAP UPDATES
- BUSINESS SUPPORT
- COMPANY INFORMATION
- INVESTOR RELATIONS
- CONTACT US

- MARKET SOLUTIONS
 - Vehicle Navigation Systems**
 - Why NAVTEQ
 - Technology Leadership
 - Partnerships
 - Coverage
 - Benefits
 - Getting Started
 - Internet / Wireless
 - Fleet / GIS / Enterprise
 - Government
-
- SEARCH



Vehicle Navigation Systems The guiding force in an exciting new world.

NAVTEQ digital map data is, unquestionably, the leader in this critical market. Our database drives most of the in-vehicle navigation systems sold in the U.S. and Europe. And our technology continues to drive the industry forward; we're developing and introducing new solutions and partnerships for today's world, and for the world that's down the road.

Current business customers can access our corporate extranets, including one containing coverage plans, on our [extranet access](#) page.

To view a navigation system demonstration, visit the [Tools for Dealers](#) section.

<http://navteq.com/markets/vehicle.html>



XLR

- Home
- STS
- XLR
- SRX
- CTS
- ESCALADE
- ESV
- EXT
- DEVILLE
- V-SERIES
- All Vehicles
- Certified Pre-Owned

MEDIA SYSTEMS

XLR is equipped with a very sophisticated—yet easy to use—DVD-based entertainment and information system.

DVD Entertainment System

DVD Navigation

Premium Bose® Stereo

- > All of the continental U.S. and Canada is contained on 1 disc
- > Navigation features can be personalized for 2 drivers
- > Hands-free voice command
- > Select turn-by-turn or map assistance to a destination*
- > Find restaurants, stores, gas stations easily



Request Your Dedicated Personal Assistant >>

[Click Here >>](#)



Notable Feature:
Automatic Retractable Hardtop >>

From coupe to an open-air roadster in <30 seconds.



CLICK A FEATURE:

- ▶ Automatic Retractable Hardtop
- ▶ 4.6L Northstar V8 VVT
- ▶ Performance Car Architecture
- ▶ Keyless Access System
- ▶ Heated/Cooled Seats
- ▶ **Media Systems**
- ▶ Driver Controls

MSRP
starting at
\$76,650[^]

[Request A Quote](#)

[XLR Offers](#)

[Build Your XLR](#)

[Standard & Optional](#)



- **SIRIUS Satellite Radio**
 - NAVTEQ to provide traffic data
 - SIRIUS First Traffic audio service
 - Accidents
 - road closings
 - Incidents
 - Integrated with in-car navigation systems.

Initially, the service will cover 30 markets but will expand to more than 50 markets in the near future

Tier 4b –Roadside Assistance



CORPORATE INFO DEALER LOGIN FLEET CONTACT US PRIVACY POLICY

US-Español OnStar Canada-Français OnStar Canada-English

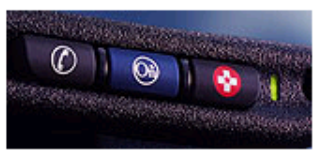
HOME EXPLORE ONSTAR PLANS & SERVICES ONSTAR-EQUIPPED VEHICLES MYONSTAR RENEW SUBSCRIPTION

Experience OnStar in Action.
Real people in real situations share their stories.

Click here

Find out more about OnStar – the in-vehicle safety and security system.

How To Get OnStar



OnStar requires a factory-installed system.

- ▶ Is your vehicle OnStar-equipped?
- ▶ Activate your OnStar service.

OnStar Plans and Services*



All new OnStar-equipped vehicles include one year of OnStar service.

- ▶ Safe & Sound Plan

OnStar-Equipped Vehicles



More than 50 GM models offer OnStar.

- ▶ 2005 Vehicles

Current Subscribers

Keep your OnStar subscription active.

Renew

Manage traffic, weather, and stock updates.

MyOnStar

http://www.onstar.com/us_english/jsp/index.jsp

New At OnStar

GM Extends OnStar Offer to Seniors and Disabled.

Another LBS example...

MapPoint Home

MapPoint for Business

- Overview
- Industries
- Products
- Partners
- Case Studies

The power of location
 MapPoint mapping and location intelligence solutions have the latest mapping technology built-in.

[Learn more](#)

MapPoint For Home

- Overview
- Streets & Trips 2005
- Pocket Streets 2005
- MSN Maps & Directions

[Business](#) [Home](#)

Limited Time Offer!
 Save \$129

Buy MapPoint® 2004 and Get Streets & Trips 2005 with GPS

[Learn More >>>](#)

MapPoint for Business

The MapPoint System is an integrated set of products, servers, and services that helps businesses to improve their results by applying the power of location. By enabling customers to locate and track key enterprise assets, as well as analyze geospatial data, the MapPoint System enables customers to increase revenue, reduce operational cost and complexity, and improve business decisions. [Learn more...](#)

MapPoint Technology for Business

- [MapPoint Web Service](#)
- [MapPoint Location Server](#)

News and Events

- [MapPoint 2004 Fleet Edition Released](#)
- [Register for Location Technology and Business Intelligence 2005](#)
- [Register for Mobile & Embedded DevCon 2005](#)
- [Location is Everything with New Streets & Trips 2005 with GPS Locator](#)
- [MapPoint Virtual Press Room](#)
- [More news...](#)

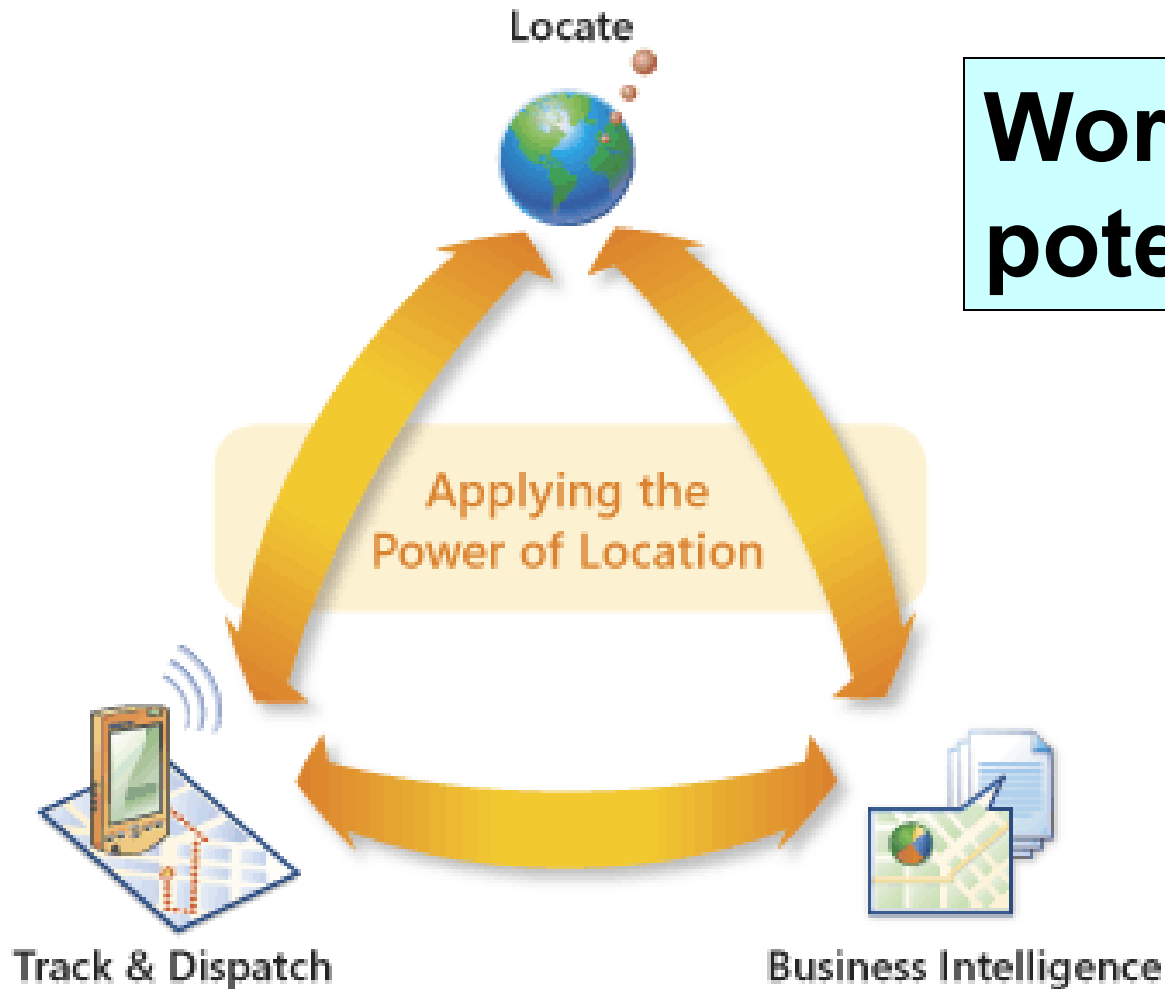
Need more information?
 Contact a MapPoint sales specialist today!

<http://www.microsoft.com/mappoint/default.msp>

MapPoint for Home

[Request Evaluation](#)

MapPoint Location Server...



**Worldwide
potential**

Microsoft's MapPoint Location Server



- 1. Connects to wireless networks extracts latitude-longitude**
- 2. " ... provide real-time location services (including) mobile operators Sprint, Bell Canada, O2, and TeliaSonera**
- 3. ...about the relationship between the Federal Communications Commission's E-911 mandate and these technological developments. "They are absolutely married,"**
- 4. "Many operators are ... working with us, to monetize the investments made" to comply with the FCC..."**

GIS Monitor – March 2005 Matteo Luccio

AutoDesk...

Offering a
Complete
Location Services
Solution



Autodesk Location Services provides a complete solution that enables wireless network operators to quickly and reliably offer location-based services to their subscribers.

Our solution consists of a highly scalable and standards-based platform, market-ready applications, content integration and professional services.

Pa
ca <http://locationservices.autodesk.com/index.htm>

Learn about our [platform](#), [content](#), [applications](#), [services](#) and [partners](#).

In a hurry? Get the  [Solution Brochure](#) or  [Solution Overview](#) paper

AutoDesk's Location Services



- 1. "light weight solutions" ...to make existing applications more "location-centric"**
- 2. "All they need is a URL and a password and their employees' cell phone numbers."**
- 3. For \$15 per month, companies with 20 to 50 employees can have a working system.**
- 4. "...that \$15 per month investment can generate \$600 per month in additional revenue."**

Joe Astroth, AutoDesk interview GIS Monitor – March 2005

Consumer Maps Example...

Now you can get driving conditions, incident reports, and more.

Traffic VIEW

VIEW TRAFFIC ON MAP

SmartView™

See Locations on this Map

- + [Food & Dining](#)
- + [Recreation & Entertainment](#)

Step 1:

Click on the traffic "View" link in the upper right section of your Maps page.

Traffic HIDE

Incidents	Speed (mph)
Minor	55+
Moderate	35
Severe	0

Last Updated: 12:01 PST
Source: LOS ANGELES

SmartView™

Step 2:

Your map will display icons that show:

- construction sites
- incident reports

It will also display color-coded indicators that represent:

ed Locations

has traffic

information for most cities across the country and we're adding new locations all the time so check back frequently for your town.

Get traffic for your area:

City, State, or ZIP:

Get Traffic

Or select one of the major cities below:

- [Albany, NY](#)
- [Atlanta, GA](#)
- [Austin, TX](#)
- [Baltimore, MD](#)
- [Boston, MA](#)
- [Charlotte, NC](#)
- [Chicago, IL](#)
- [Cincinnati, OH](#)
- [Cleveland, OH](#)
- [Columbus, OH](#)
- [Dallas-Ft. Worth, TX](#)
- [Denver, CO](#)
- [Detroit, MI](#)
- [Hartford, CT](#)
- [Houston, TX](#)
- [Indianapolis, IN](#)
- [Kansas City, MO](#)
- [Las Vegas, NV](#)
- [Los Angeles, CA](#)
- [Memphis, TN](#)
- [Miami, FL](#)

★ Washington, DC

[Change Location](#) | [Save this Address](#) | [Driving Directions: To this location](#) or [From this location](#)

Zoom In

- [1](#)
- [2](#) street
- [3](#)
- [4](#) city
- [5](#)
- [6](#)
- [7](#)
- [8](#) state
- [9](#)
- [10](#) country

Zoom Out

Make Map Larger

Clicking on Map:

- Zoom in & Re-Center
- Re-Center Only

[Map Legend](#)



Traffic HIDE

Incidents	Speed (mph)
Minor	55+
Moderate	35
Severe	0

Updated: 12:52PM EST
Source: Virginia, Maryland, and DC Dept. of Trans.

SmartView™

- See Locations on this Map
- + [Food & Dining](#)
 - + [Recreation & Entertainment](#)
 - + [Community Services](#)
 - + [Shopping & Services](#)
 - + [Travel & Transportation](#)
 - + [Financial & ATMs](#)
- [What's this?](#)

[Find more nearby...](#)

See the following business locations on this map:

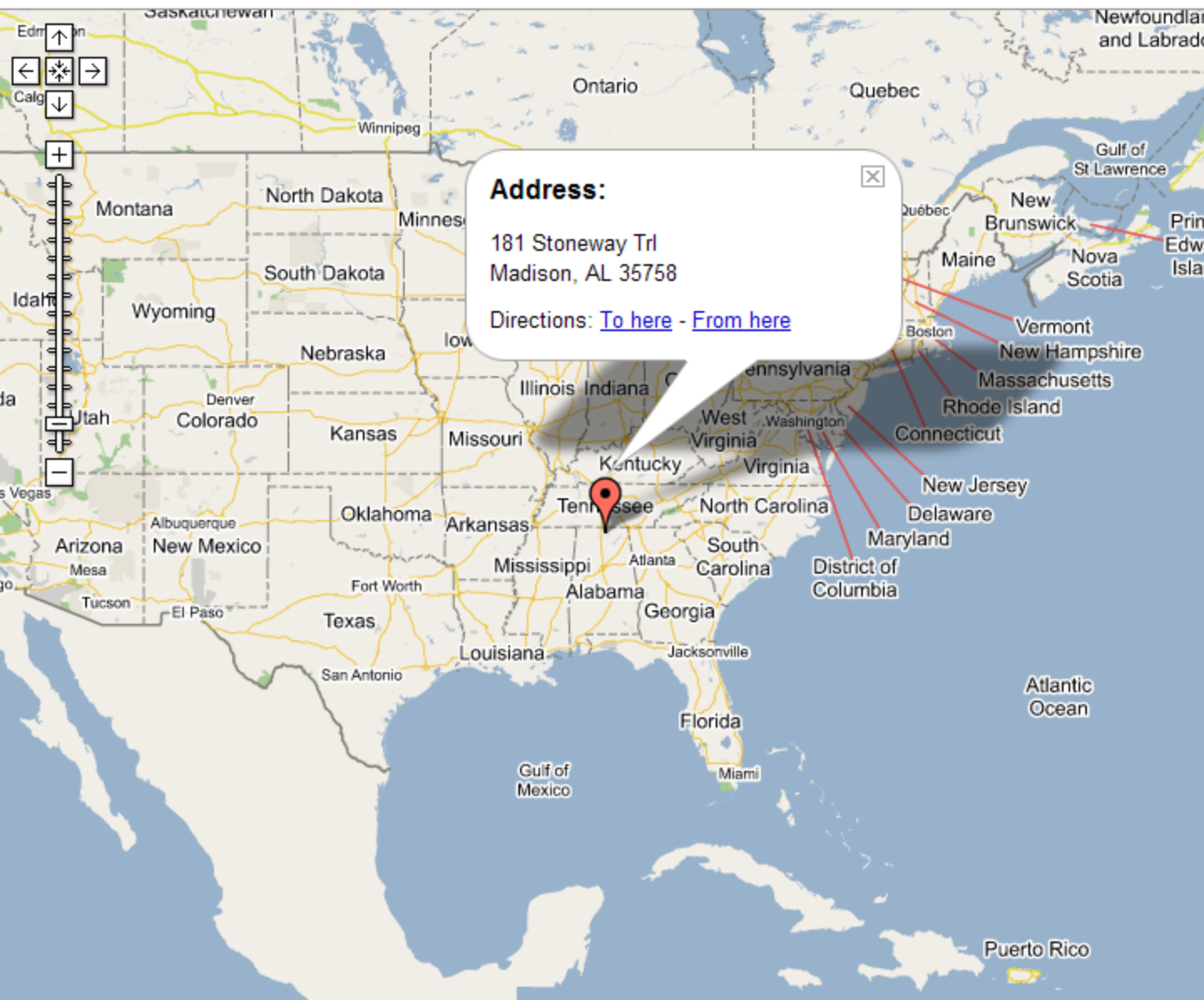
181 Stoneway Trail, Madison, AL 35758

Search

[Help](#)

Maps

Map - [Satellite](#)



Address:
181 Stoneway Trl
Madison, AL 35758
Directions: [To here](#) - [From here](#)

[Print](#) [Email](#) [Link to this page](#)

181 Stoneway Trl
Madison, AL 35758

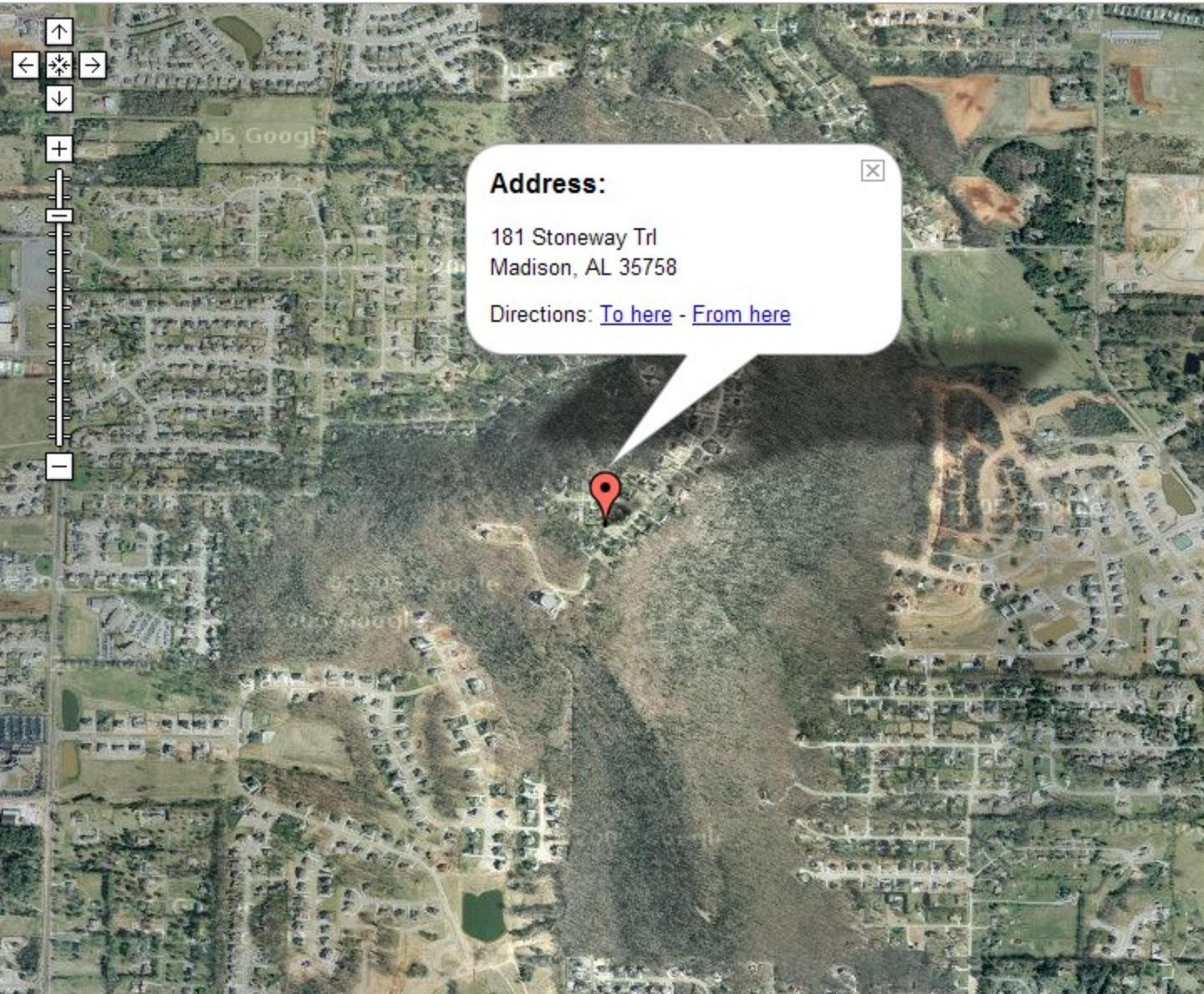
181 Stoneway Trail, Madison, AL 35758

Search

[Help](#)

Maps

[Map](#) - [Satellite](#)

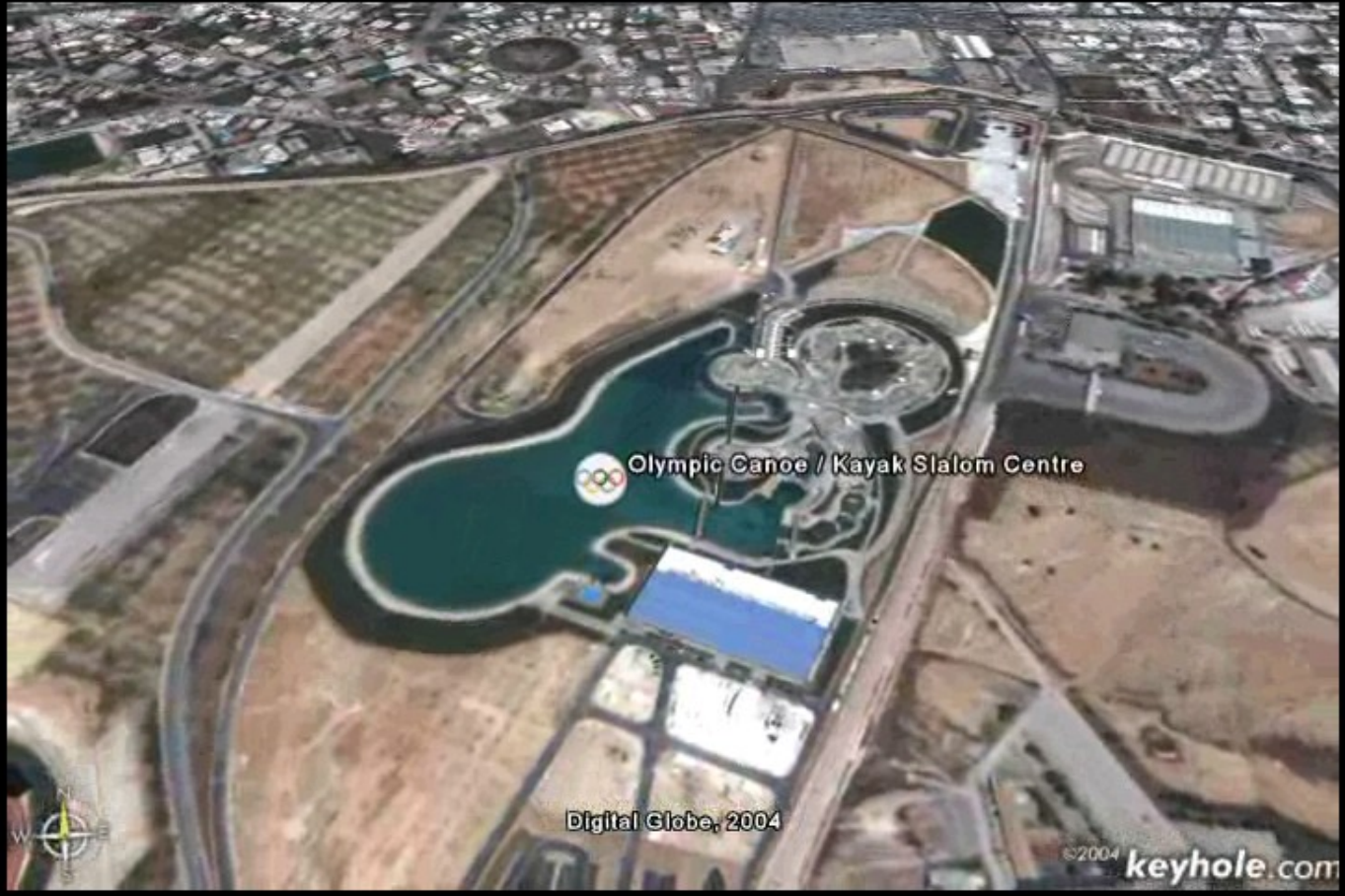


[Print](#) [Email](#) [Link to this page](#)

181 Stoneway Trl
Madison, AL 35758

Address: ✕
181 Stoneway Trl
Madison, AL 35758
Directions: [To here](#) - [From here](#)

Google (Keyhole)



Media player controls including play/pause, stop, previous, next, and volume buttons. A progress bar is visible above the controls. The playlist area shows 'Playlist Playlist1' and the current time is '01:02'.



- ...ing / ASP
- ...s
- ...hotos
- ...igation Data
- ...ket Research
- ...a
- ...o-Services
- ...ownload
- [Deutsche Version](#)
- [Česká verze](#)

Aerial Photographs

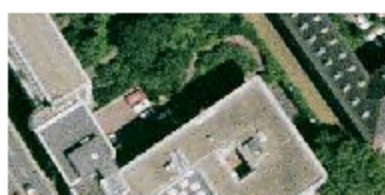
A few examples of different providers of orthophotos (restituted aerial photographs). By clicking the images, you can access our online shop direct (German version). More detailed information may be found under [Products](#).



"DOB5" orthophoto series (restituted aerial photographs) issued by the State Surveying Authority of North Rhine-Westphalia (also available in black and white)



"DOB5" orthophoto series (restituted aerial photographs) issued by the State Surveying and Geo-Related Information Authority of Lower Saxony



"DOB5" orthophoto series (restituted aerial photographs) issued by Kommunalverband Ruhrgebiet, the umbrella organisation covering all towns and cities within the Ruhr conurbation

Transportation Web Services...

Routing vehicles

5/4/2004 9:45:03 AM

Nebraska Department of Revenue Enterprise Web Portal



NDOR NECTAR Intranet Web Application - Microsoft Internet Explorer

Address: http://drisd126/stenew/

NECTAR

Mat/Research Construction Districts I H I Pilot Apps

IHI Bridge Locations

Type: All

Area of Interest: Counties

County: Otoe - 66

Optional Data:

Railroad Crossings: State

ADT's: None

Crash Locations: None

Secondary Output Data:

Click on Feature

Report

Digilog (State Hwy Fea.)

Log Book

Backgrounds:

Will not appear until view is in to approx. 4 mi. x 4 mi.

None

DRG

DOOG

Farm Services

Local Roads & Streets

Legend

- State Bridges
- Local Bridges
- Interstates
- US Highways
- State Routes
- Links and Spurs
- Local Arterials and Collectors
- State Crossings

NDOR NECTAR Intranet Web Application - Microsoft Internet Explorer

Address: http://drisd126/stenew/

MATERIALS & RESEARCH CONSTRUCTION DISTRICTS IHI

Materials & Research

Surface Type: All

Surface Area:

- Statewide
- US Congressional Districts
- NE Legislative Districts
- NDOR Districts
- NDOR Main Superintendents
- Cities
- First Class Cities

District: 1

Optional Data:

Railroad Crossings: None

Railroad Crossings: None

ADT's: None

Secondary Output Data:

- Click on Feature
- Digilog (State Hwy Fea.)
- Log Book

Backgrounds:

- Will not appear until view is in to approx. 4 mi. x 4 mi.
- None
- DRG
- DOOG
- Farm Services
- Local Roads & Streets

Home Outside Links Bookmark This Site!

NDOR NDOR Home Page Highway Reference Post Log Book Diging 511 Website 511 Website RWIS Website

Mandiri Roadview Explorer 2.0 - Microsoft Internet Explorer

Address: http://dorimage4/Roadview/Roadview.asp?route=067&offset=052.06&district=1

Search Help Settings Export

District: 1

Rtleno: 0670

Rtspc: REGULAR

Sign: +

Cycle: Cycle_09

Type: STH

Date: 07/01/2003

Session_name: 1_0670_STH_REGULA

Frame: 4664

Ref post: 52.060

Increment: 1

Done Local intranet

Ability to display imagery and inventory images – for example link to bridges and intersections

South Carolina DOT

Evacuation Decision Support Solution

Implementation by



Real-time updates of weather, routes, traffic counts presented graphically.



SCDOT - Evacuation Data - Microsoft Internet Explorer

Address: http://www.

Last Updated: 9/15/99 4:14:13 PM

Zoom Out | Zoom In

Update Interval: 15:00 | Next Update: --N/A-- | Start | Stop | Update Now

[Base Map](#) / [Weather Map](#) / [Tracking Map](#) / [Active Detours](#) / [En](#)

South Carolina Department of Transportation

Evacuation Information System

Instructions

Move your cursor across map features. Intelligent features will highlight. Click the highlighted feature to get more information.

Legend

- Interstate Hwy.
- SC State Hwy.
- Evacuation Route
- Closed Route
- Automated Traffic Recorder

Click on RED Features for More Info.

Help - Mouse Buttons

SCDOT Detours - Microsoft Internet Explorer

Active Detours

- I-526 Closure Cooper River Bridge Closed ([Full Size / Printable](#))
- Grace Bridge Closed ([Full Size / Printable](#))
- I-526 Closure ([Full Size / Printable](#))

[Show Detour List](#)

Internet zone

Pennsylvania DOT Integrated Web Applications



Online video logs with roadway following



Cyber Systems



PENNDOT VideoLog - Microsoft Internet Explorer provided by PENNDOT

Online VideoLog 22 - DAUPHIN 3014 0070 Secondary DIR Segment Options Help

SLD PDF Report GIS Map ISLE Local Map Interval Videolog data is supplied as is. Refer comments/questions concerning location to the Bureau of Maintenance and Operations.

Bring left frame to front or back Bring right frame to front or back

County: 22 Rte: 3014 Seg: 0070 Dir: 1 Date: 11/2001 Offset: 1267 ft. Interval: 0 ft. Speed: ↑ ↓ 10

← STOP GO →

Offset Map Open Report Window

Place mouse on map and use Right Mouse button for Pan/Zoom options. Zoom-in on GREEN area (current segment) and click on an offset to update the videolog images. You can also click on a RED segment to change current segment images.

Click on "Open Report Window" to open a NEW window (rather than replacing map) showing pavement data (these are the same data shown using the "Report" button above).

USA Military Traffic Management...

Geospatial Web Information Portals



The screenshot displays a web browser window titled "IRRIS Demo - Intergraph UK Limited Internet and Intranet (Microsoft Internet Explorer)". The address bar shows the URL: http://www.geodecisions.com/irris/tour/maindemo_viewlet_swf.html.

The application interface includes a navigation menu with the following items: Home, News, ListServ, Alerts, Feedback, Links, Tutorial, and Help. The current page title is "Fort Eustis to Port of Norfolk".

On the left side, there is a logo for the "TRAFFIC MANAGEMENT COMMAND" (TEA) and the "TRANSPORTATION ENGINEERING AGENCY". Below the logo, it says "INTELLIGENT ROAD/RAIL INFORMATION SERVER" and a "Start" button. A "Layer List" section contains several options: PDD-63 Layers, Add Theme, Routing Tools, Query Data, Weather Maps, Track Vehicle, and Print Mode.

The main content area features a "Map Legend" with a list of map elements and their corresponding symbols. The legend items are:

- Terminals
- Cities
- Designated Hazard
- Routes
- Installation Names
- Installations
- NavTech Highway
- NavTech Major
- Road Labels
- Overhead Photos
- Real Time Info
- Restricted Hazard
- Routes
- Route Cameras
- Selected Route
- Water
- Road Shields
- Railroads
- Precip Intensity
- Precip Type
 - Rain
 - Snow
 - Mix
- Airports
- City Names
- Overhead Flight 13

The map itself shows a route from Fort Eustis to the Port of Norfolk, passing through Langley Air Force Base, Newport News, and Fort Monroe. Other labeled locations include Naval Station, Norfolk, Little Creek Naval Amphibious Dockyard, US Coast Guard, Portsmouth Regional Med. Ctr., and Stanley Island US Naval Res. Major roads like VA-32, WESTERN FWY, VA-106, VA-156, and VA-225 are also visible. The map includes a scale bar (0 to 12 miles), a north arrow, and various navigation controls like zoom in/out, pan, and fit.

At the bottom left, the system status shows: "Tue, 8 Oct 2002 18:51:32 Zulu 2:51:32 EST". The system administrator information is: "System Admin: irristech@tea-emh1.army.mil".

IRRIS Route Cameras - Microsoft Internet Explo...

IRRIS Route Camera print close

Fort Eustis to Port of Norfolk
I-64
Tue Oct 08 08:02:55:03 AM

Feedback Links Tutorial Help Fort Eustis to Port of Norfolk

Home Zoom in Zoom out Last Pan Fit Road ID Over-view

Uses satellite communications

Updates each 15 minutes

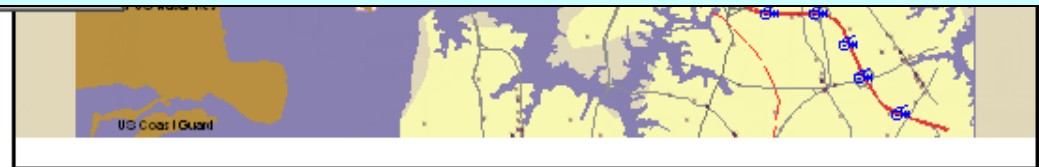
Tracks 800 vehicles

Across the USA

Tue, 8 Oct 2002
18:59:23 Zulu
2:59:23 EST

System Admin:
irristech@tea-emh1.army.mil

- Precip Type
 - Rain
 - Snow
 - Mix
- Airports
- Overhead Flight 13



Dubai Municipality Example

Traffic Cams - Bur Dubai - Microsoft Internet Explorer


File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Mail Print

Address <http://vgn.dm.gov.ae/DMEGOV/webcam/burdubai.html#>

MAPQUEST - Address - City - Alabama - ZIP Code -

Google Search Web 36 blocked AutoFill Options

 **بلدية دبي**
Dubai Municipality

home directory of services contact us careers site map about

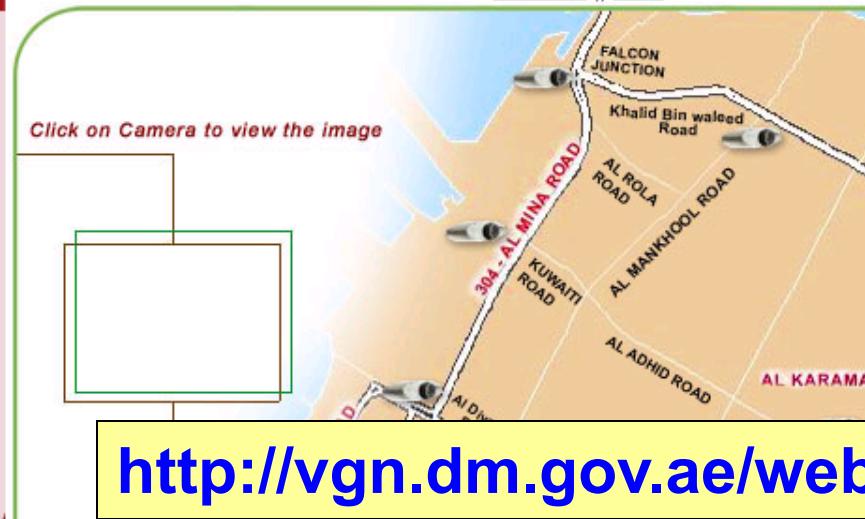
الصفحات العربية search: eServices business public Dubai

Discover more about..

- Building Regulations (Arabic)
- Customer Inquiry Service
- Customer Service
- Emergency Services
- Thermal Insulation System
- Transportation Services
- Women Action Team
- Your Eyes Over Dubai

Main Map | Deira


Click on Camera to view the image



Umm Hurair - Microsoft Internet Explorer

Umm Hurair

Fri Jan 7 18:28:39 2005



(Image will self refresh every 30 seconds)
Close Window

<http://vgn.dm.gov.ae/webcam/burdubai.html#>

...And Visualization Tools



- 1. Fundamental human rights required**
- 2. Technology infrastructure in place**
- 3. Standards & interoperability**
- 4. Market-driven economy**
- 5. Private - public partnerships**
- 6. Global access**
- 7. Critical for economic development**

Contact Information



**Dr. Terry Keating, Executive Vice President
Chairman, Z/I Imaging
230 Business Park Blvd.
Madison, AL 35757 USA
terry.keating@intergraph.com
P: +1 (256) 730-5688**