

# *Geo Information Management Perspectives For the Future*

By  
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## **We Live in a Rapidly Changing World**

*Increasingly Driven by Population Growth & Human Action*

### **Impacting the Natural World**

- Climate - Global Warming
- Biodiversity
- Natural Resources
- Energy
- Economy
- Security



*Challenges Sustainability . . .  
. . . For All of Us*

## GIS Is Addressing These Challenges...

..... by changing everything :

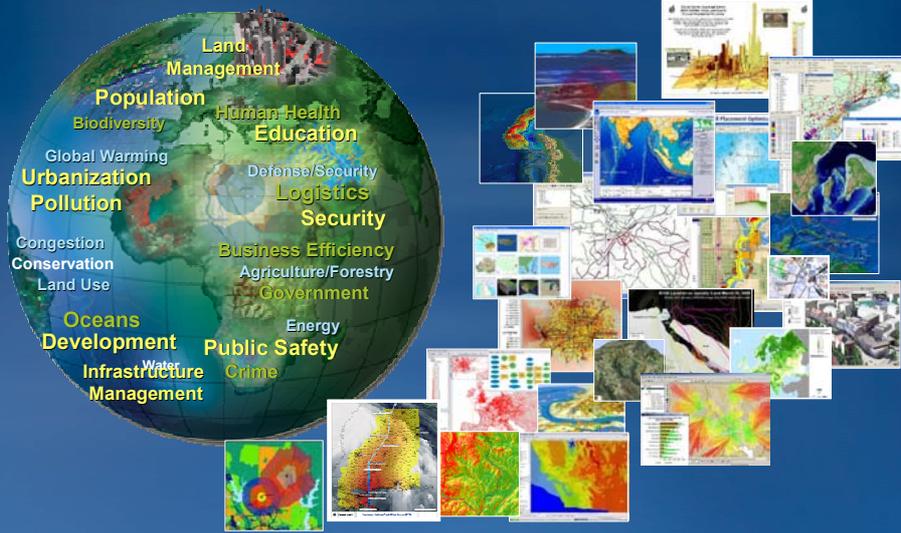


## GIS Is Also Changing How We Work

... from Measuring... to Managing ... to Acting



# Applications Demonstrate The Value Of Geospatial / GIS



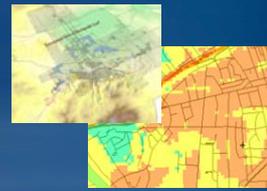
## Planning

Urban Planning  
*Venezuela*



Urban Planning Map  
*City of Yokohama*

Land Use Suitability  
*Montana*



Web Based Suitability  
*North Carolina*

3D Zoning



*Arizona*



Urban Redevelopment  
*California*

Virtual City  
*Bangkok*



Online  
Community  
Planning  
*U.K.*



Olympic Planning  
*City of Beijing*

# Land Information Systems



GIS-Based Information Technology  
Beijing Land Resources Bureau



Analyzing Real Estate Transactions



Tax Mapping



Property Valuation  
Germany

Canada



Pen-Based Sketching  
Timor

Updating Tax Records

# Managing Natural Disasters



Tsunami Forecast  
Japan Coast Guard

Wenchuan Earthquake  
China



Flood Mapping  
Iowa



Floods  
Bihar, India



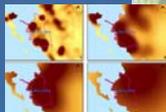
Wildfire  
Idaho



Aftershocks



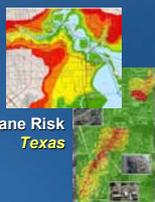
Floods Simulation



Fire History  
Greece



Earthquake Damage  
Japan



Hurricane Risk  
Texas

Tornado  
Alabama



Cyclone  
Myanmar (Burma)

# Utilities, Public Works & Telecommunications

**Gas Asset Management**  
*Osaka Gas Company*

**Highways**  
*Bedfordshire, UK*

**Signs**  
*Midwest*

**Wireless / DSL Coverage**  
*Ireland*

**Cell Phone Coverage Areas**  
*Santiago Island, Cape Verde*

**Network Infrastructure**  
*Germany*

**Wastewater Call Center**  
*Oman*

**Buildings**  
*Massachusetts*

**Networks**  
*Canada*

**Valve Isolation Trace**

**Electrical Design**  
*Colorado*

# Transportation

**Roadway Planning (M1)**  
*U.K*

**Real Time Traffic**  
*Korea*

**Ride Share**  
*Kansas*

**Drive Time**  
*Saudi Arabia*

**Visual Highway Simulation**  
*Holland*

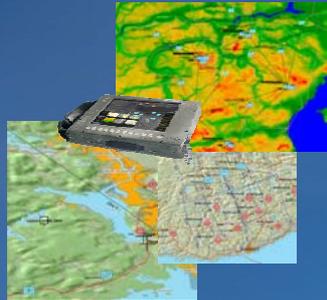
**Transit Analysis**  
*Jamaica*

**Transportation Map**  
*Sichuan Bureau of Transportation*

**Corridor Planning**  
*Puerto Rico*

# Defense & Homeland Security

**Common Operating Picture**  
*Europe*



**Geographical Security**  
*Kingdom of Bahrain*



**Common Operating Picture**

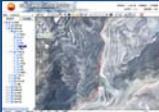


**Global Bio-Surveillance**



# Natural Resource Management

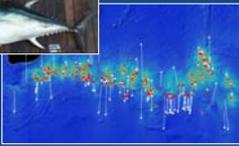
**Pipeline Management**  
*Petro China*



**Well Production**  
*Canada*



**Tracking Analysis of Tuna**  
*Fisheries Research Agency Japan*



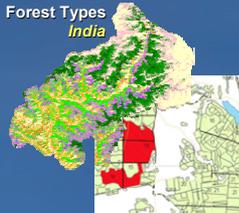
**Mining Tracks**  
*Brazil*



**Oil & Gas Reserves**  
*U.S.*



**Forest Types**  
*India*



**Wells & Pipelines**  
*Mexico*



**Oil Production**  
*Russia*



**Offshore**  
*Brazil*



**Petroleum Resources**  
*Kuwait*



**Forest Inventory**  
*Lithuania*



**Oil & Gas Leases**  
*Gulf of Mexico*

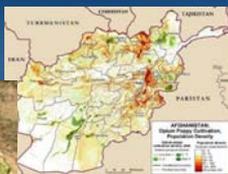


## Social Issues & Human Health

Epidemic Monitoring  
*China Disease Control Center*



Opium Cultivation  
*Afghanistan*



Lead Hazards  
*Buffalo, New York*

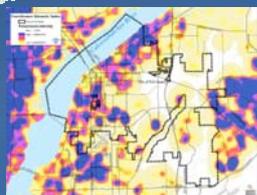
Reconstruction  
*Iraq*



Humanitarian Aid  
*Darfur*



Children Out Of School  
*Ethiopia*



Housing Foreclosures  
*Florida*

Teenage Births  
*King County, Washington*

## Climate & Renewable Energy

Wind Turbine Sighting - Visibility  
*U.K.*



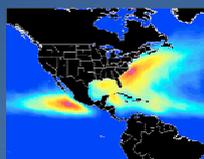
Wind Generation Potential  
*U.S.A.*



Wind Farm Design  
*Massachusetts*

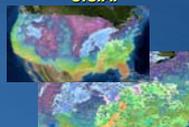


Tropical Cyclones  
*National Hurricane Center*

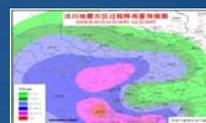


Weather Forecast System  
*National Meteorological Center*

Weather Monitoring  
*U.S.A.*



Wind Modeling  
*California*

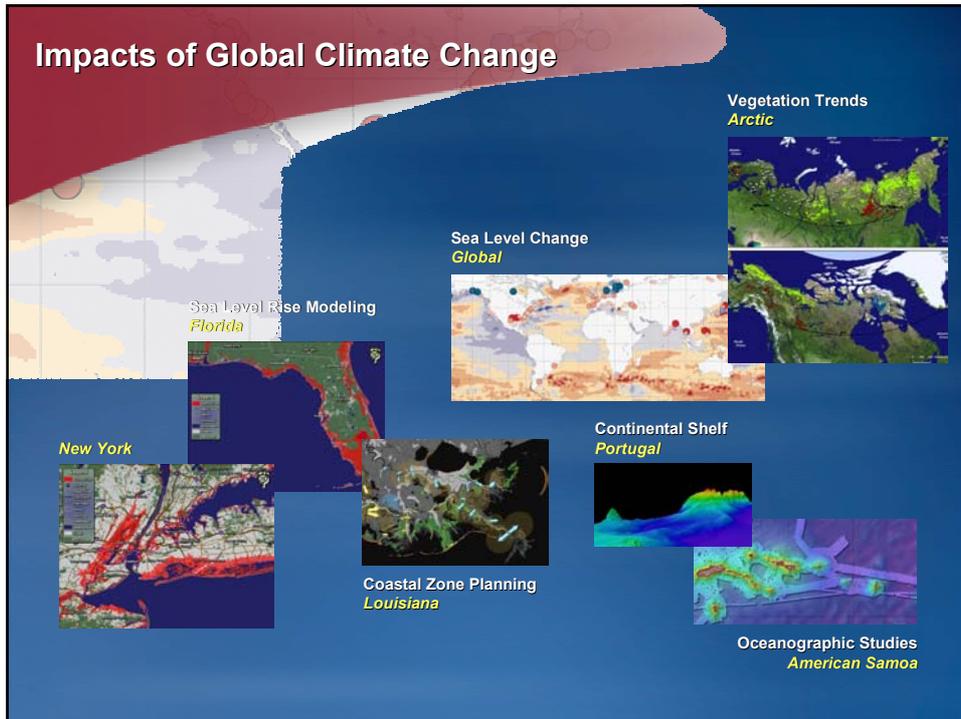


Rainfall Forecast  
*China Meteorology Bureau*

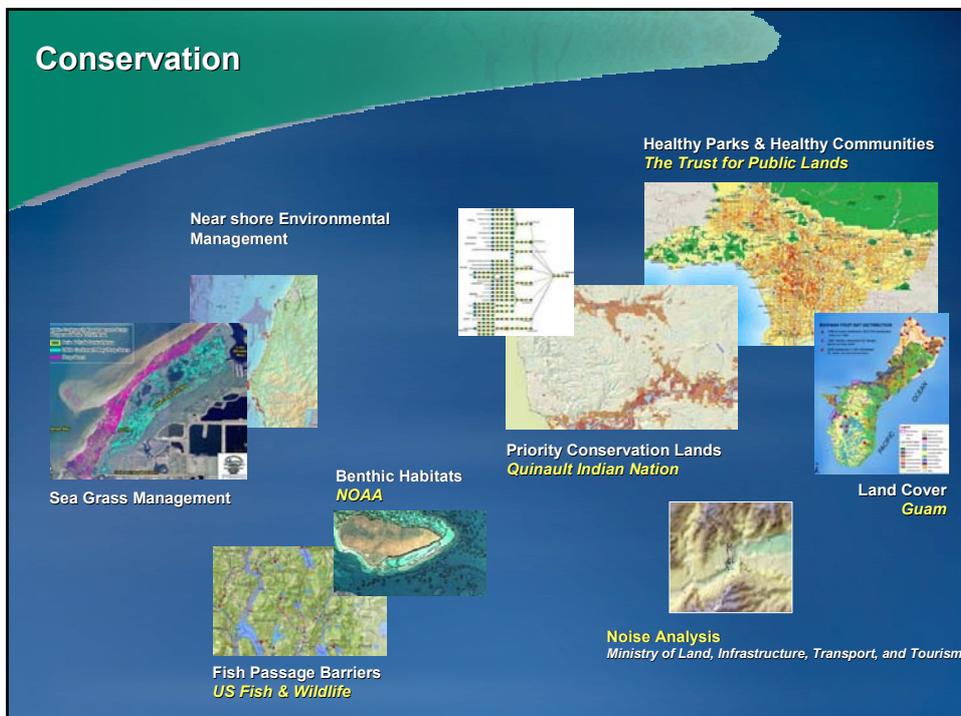


Solar Energy Potential  
*Washington*

# Impacts of Global Climate Change



# Conservation



# Data & Imagery

Oblique Imagery  
*Pictometry*

Housing Foreclosures  
*RealtyTrac*

Basemaps  
*DeLorme*

Risk Analysis Data  
*First American Proxix Solutions*

Oil & Gas Wells  
*WhiteStar*

Digital Terrain Data  
*Intermap Technologies*

Satellite Imagery (Presidential Election)  
*GeoEye*

# Imagery is Central to GIS

..... It Makes your GIS Real-Time

Vegetative Analysis

Feature Extraction

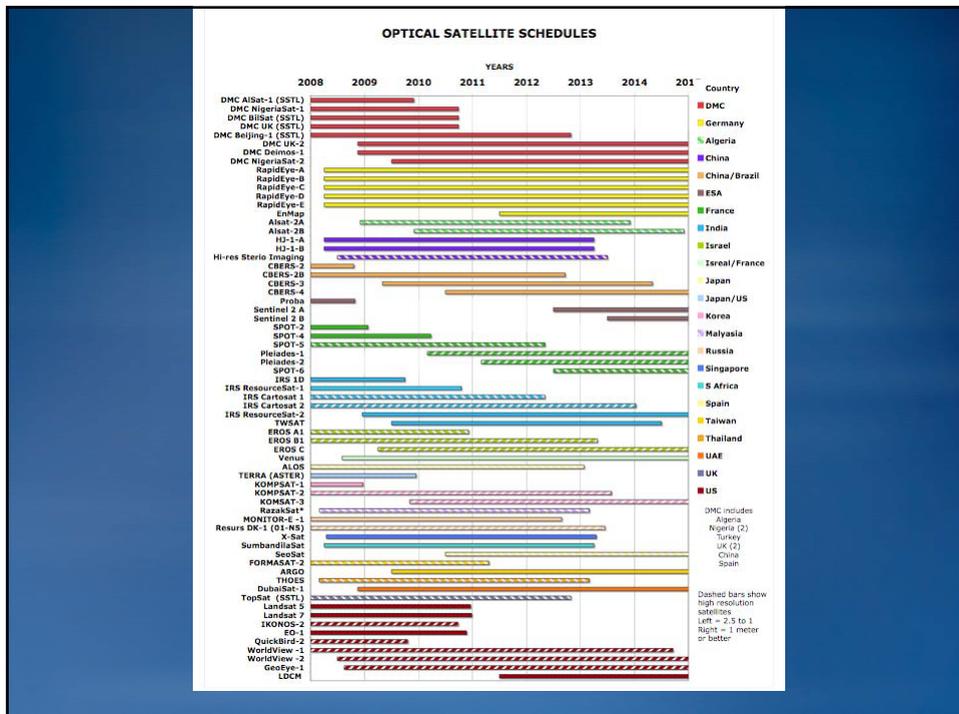
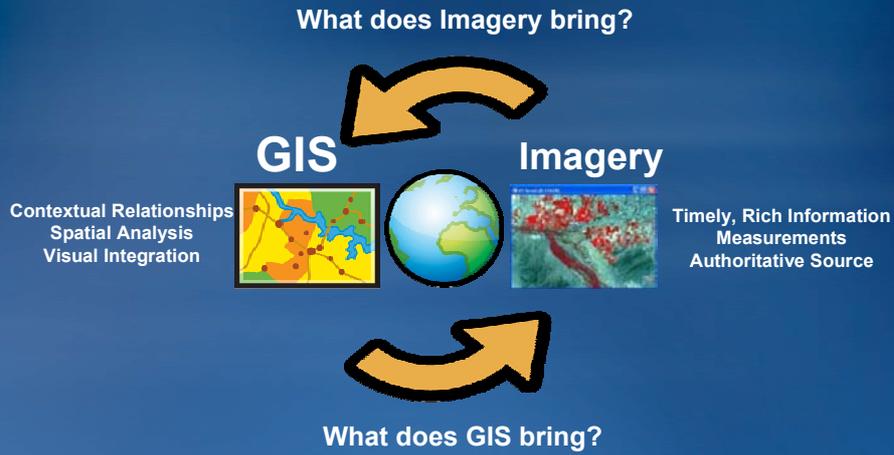
Executive Dashboards / COP

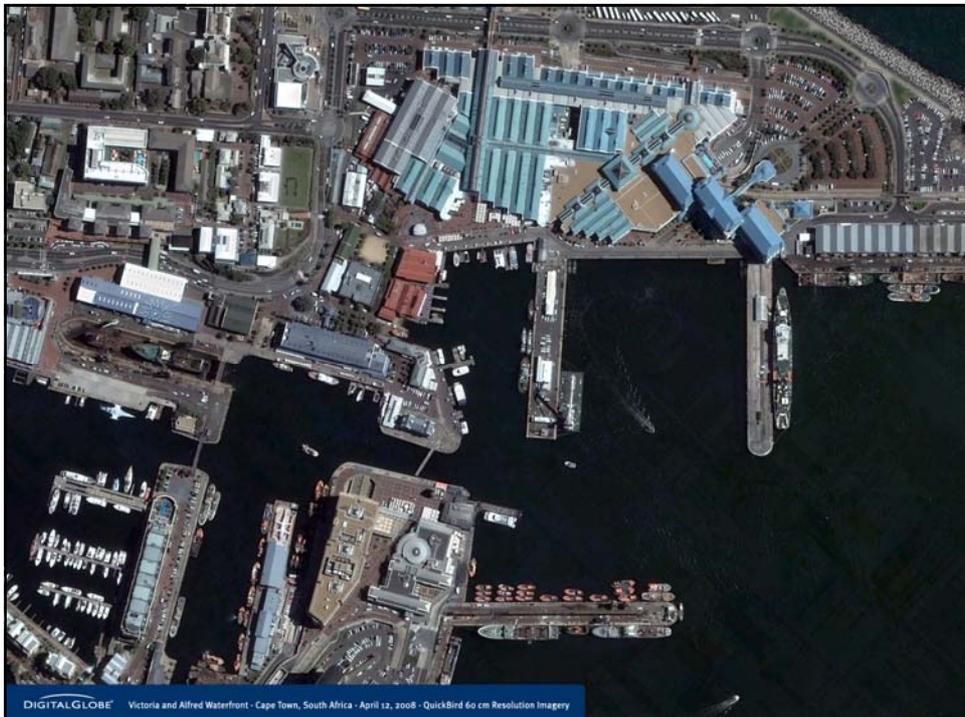
Building Management

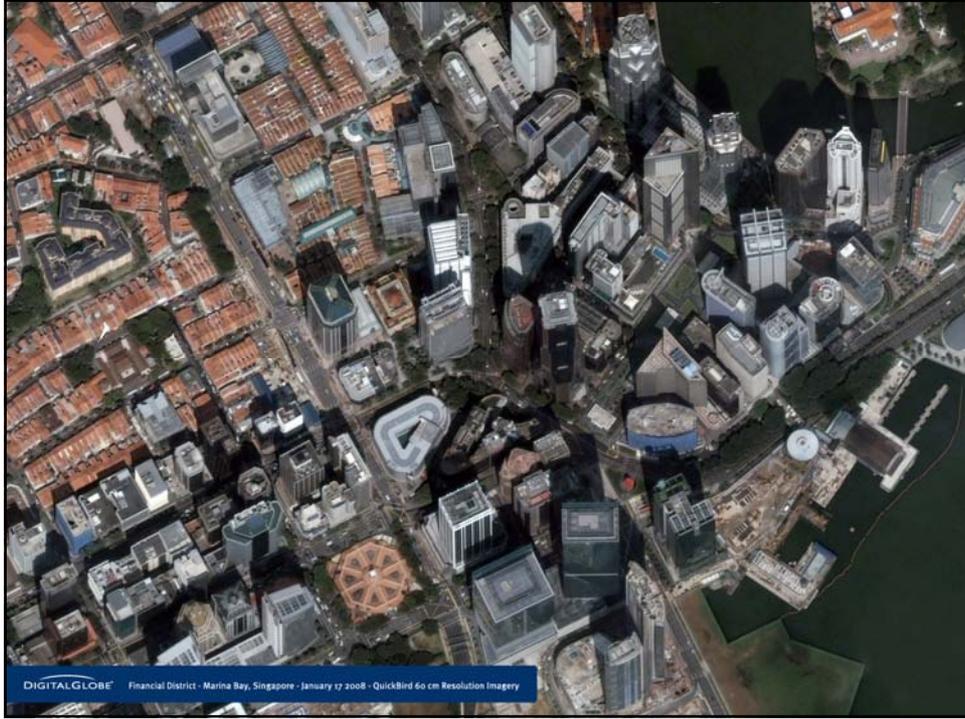
*Integrating Imagery Solutions for Collection, Management, Production and Exploitation...*

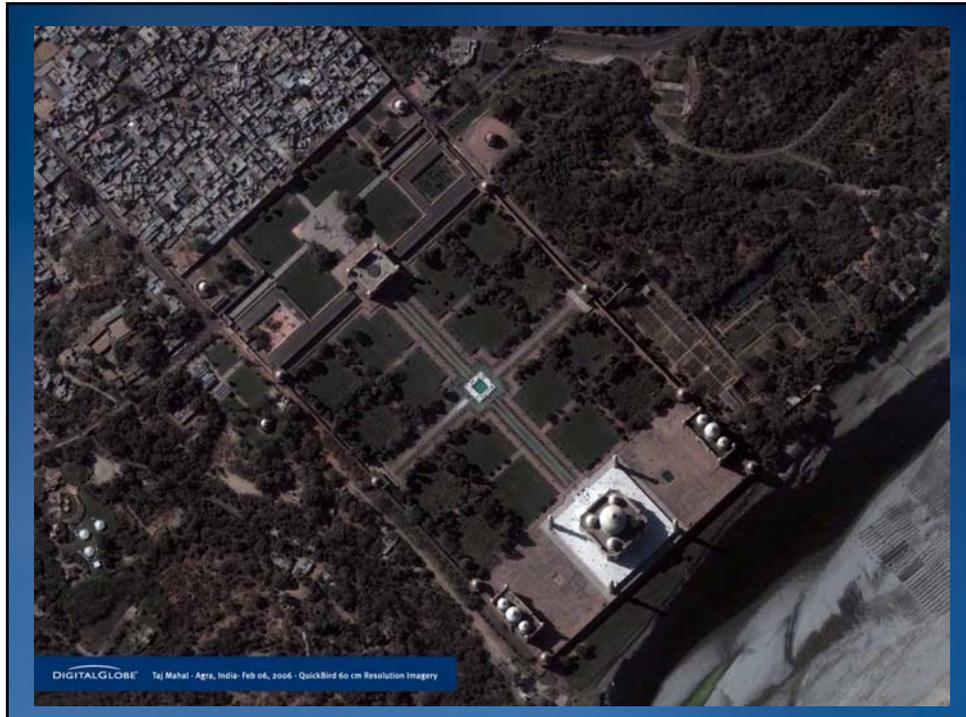
# Integration of Imagery and GIS

*Two sides to the coin*









**Two and a Half Minutes Over Beijing, China**

**WorldView 1 Dwell-Imaging Test**

**July 12, 2008**

















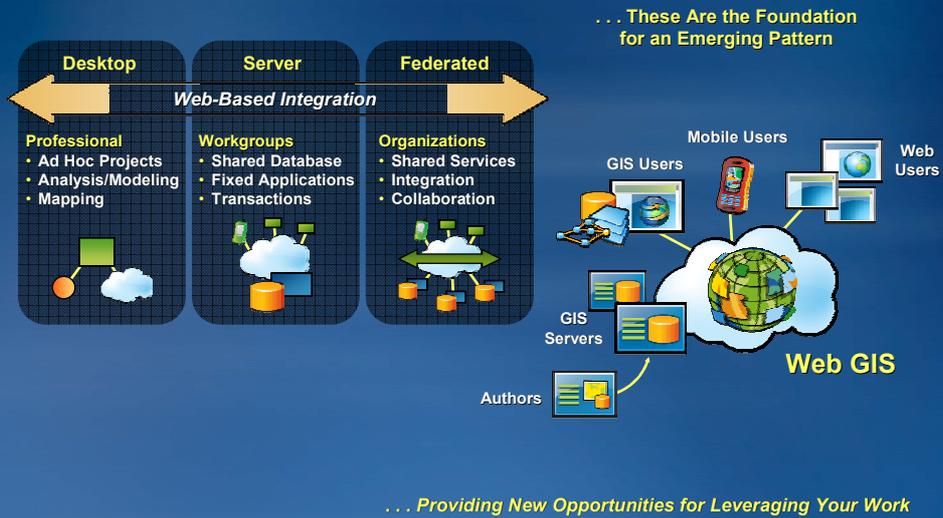








## Today GIS Implementations Follow 3 Common Patterns



## GIS On The Web Is Just Beginning

# WEB GIS

*Harnessing the Web . . .  
... And the Power of GIS*



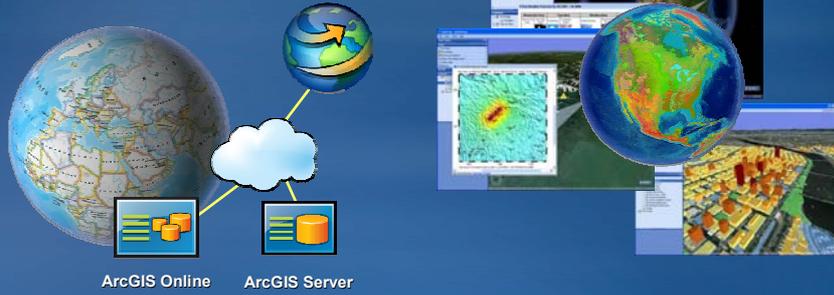
*Going Far Beyond Mapping & Visualization . . .  
... Ultimately Becoming Essential Infrastructure*

# ArcGIS Explorer Is Expanding GIS for Everyone

*Integrating, Visualizing & Analyzing Geographic Information*

- Fast
- Intuitive
- Web Centric

Accessing Maps, Models & Globe Services



*... Creating a New Community of Users*

## ArcGIS Online Content

Basemaps & Globes



Imagery & Elevation



Demographics & Market Data



Street Maps

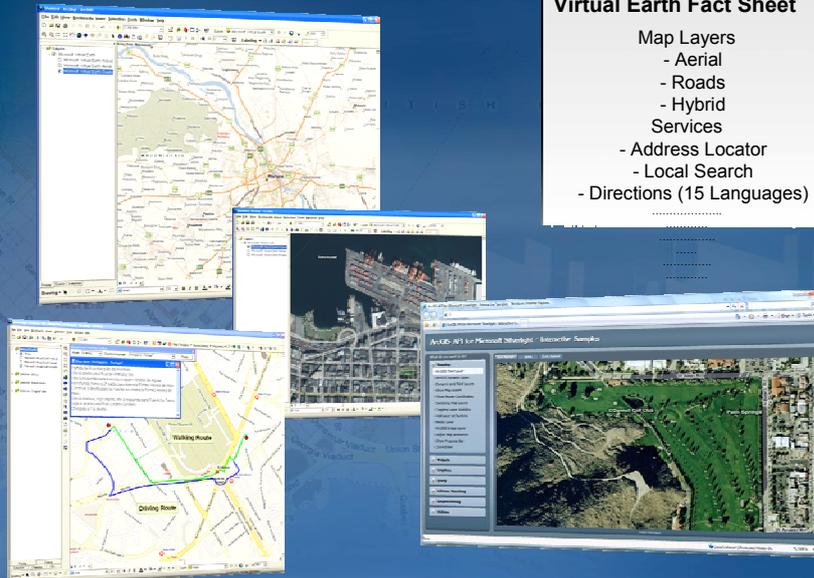


### ArcGIS Online Fact Sheet

- Map Layers
- Streets
  - Imagery
  - Demographics
  - Standard & Premium Content

.....  
.....  
.....

## Microsoft Virtual Earth Collection



### Virtual Earth Fact Sheet

- Map Layers
- Aerial
  - Roads
  - Hybrid
- Services
- Address Locator
  - Local Search
  - Directions (15 Languages)

## Coming Soon to ArcGIS Online

### DeLorme Base Maps

- Worldwide Topographic Maps
- 1:100,000 Scale
  - Streets
  - Landuse
  - Contours
  - Points of Interest



### GeoEye Imagery

- High Resolution Imagery
- 700+ Cities Worldwide

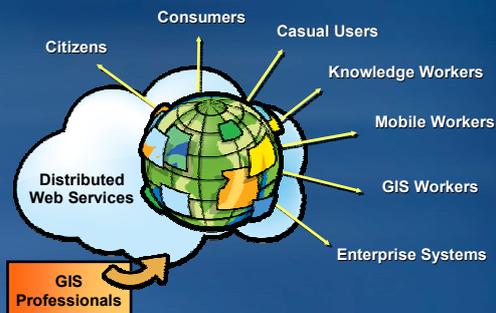


## GIS Professionals Will Implement WebGIS

### Author & Serve Geographic Knowledge

- High Quality Maps
- 3D Visualizations
- Analysis & Models
- Data Management Workflows
- Authoritative Content
- Rich Web Applications

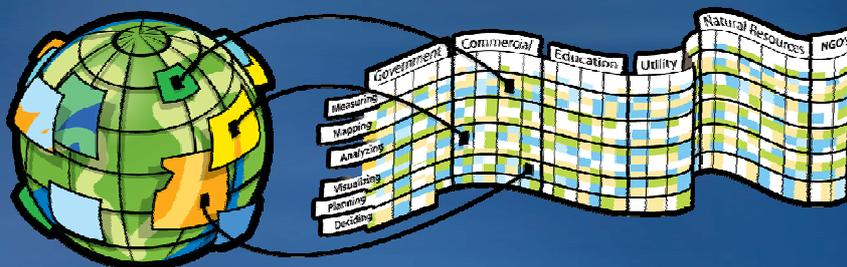
### ... Constructing Libraries of Shared GIS Services



Reaching New Communities of Users . . .  
 . . . Dramatically Leveraging Our Collective Knowledge

## GIS Is Creating a Strong Foundation Across Many Disciplines & Organizations

1,000's of Applications  
 100,000's of Systems  
 1,000,000's of Users



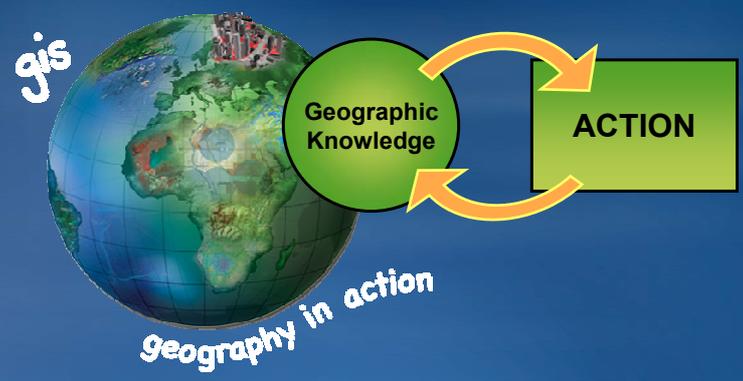
... This is Only The Beginning

# GIS Creates Sustainable Action

*Raising Awareness, Saving Resources, Improving Efficiency & Making Better Decisions*



# VISION



*Your Work is Geography in Action . . .  
... But It's Only the Beginning*