ESRI Technology Overview

The ArcGIS 9.2 System & The Road Ahead

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Chris LeSueur

2007
ESRI
Health GIS
Conference
Scottsdale, Arizona • October 7–10, 2007

Product Architectural Overview
Architectural Description & Key Features

Desktop GIS
ArcInfo®
ArcEditor™
ArcView®
ArcReader™
ArcGIS Desktop Extensions

Server GIS
ArcGIS® Server
ArcGIS Image Server
ArcGIS Mobile
ArcGIS Explorer

ArcGIS

Online GIS
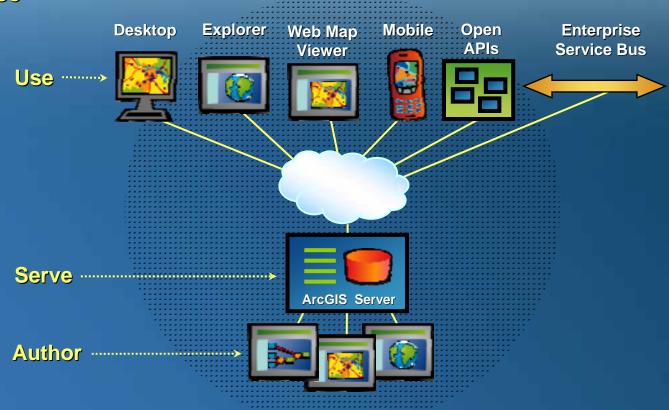ArcGIS Online
ArcWeb™ Services

An integrated system for managing, creating, displaying, analyzing, and sharing geographic information.

ArcGIS 9.2
A Complete System

Author/Serve/Use

- **Maps**
- **Data**
- **Models**
- **Globes**
- **Metadata**

Use ┈┈┈>

Desktop **Explorer** **Web Map Viewer** **Mobile** **Open APIs** **Enterprise Service Bus**

Serve ┈┈┈┈┈┈>

ArcGIS Server

Author ┈┈┈┈┈┈>

Making GIS Knowledge Available To Anyone . . .
. . . Integrates With Other Systems Via Standards

ArcGIS Desktop
Authoring and Using Geographic Knowledge

Many Improvements

- **Mapping**
- **Labeling**
- **Data Compilation**
- **Analysis & Modeling**
- **Visualization**
- **Interoperability**

ArcInfo
(Geoprocessing/Analysis)

ArcEditor
(Create/Manage)

ArcView
(Use)

ArcReader
(View)
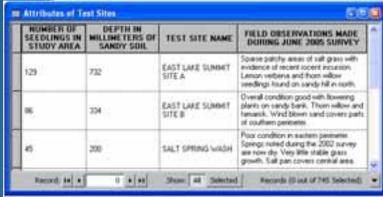
Common, Scalable Family of Products

Usability
ArcMap Productivity

- **Many new shortcuts for faster navigation around maps & tables**
- **User requested enhancements:**
  - **PDF Layer support**
  - **Support for Excel Tables**
  - **Easy to calculate lengths, areas**
  - **Print tables**
  - **Go To XY dialog (DD, DMS, USNG, current coord system)**
  - **Area & snapping in Measure tool**
  - **My Places for sharing locations**
  - **Support field aliases and really long field names in Query Builder**
  - **View Metadata directly in ArcMap**
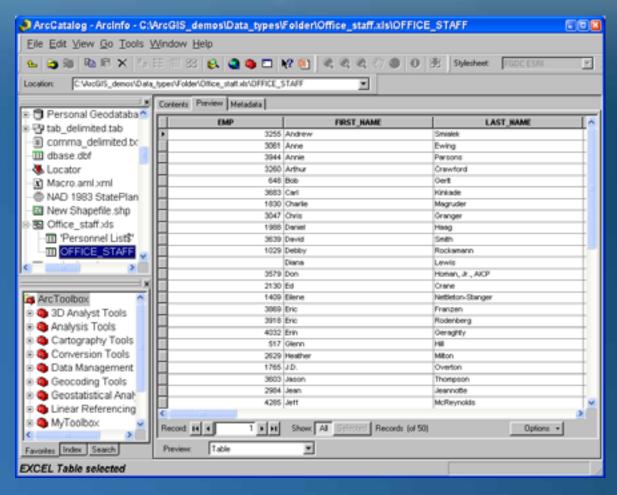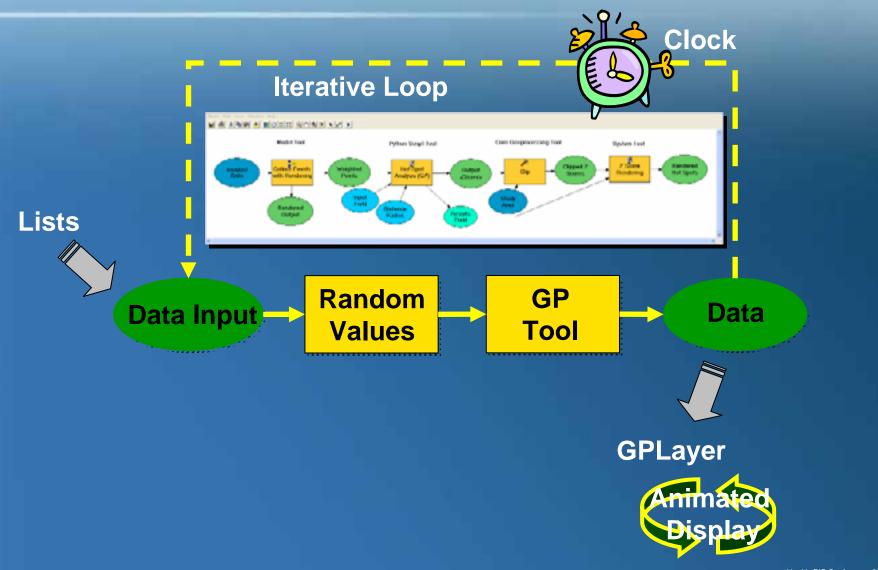 - **And much more…**

Usability
Direct Read Excel Spreadsheets

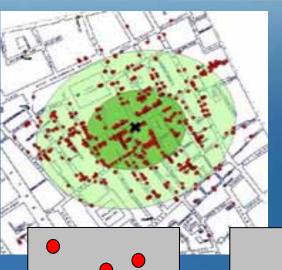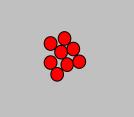- **Use first row on non-null values for field names**

Spatial Analysis
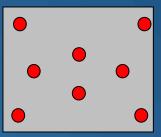## *Spatial Statistics Tools*

- **A measure of what's going on spatially**
  - Not the same as a-spatial stats
- **Two categories of spatial measurements**
  - 1) Identifying characteristics of a distribution
  - 2) Quantifying geographic pattern

Random   **Clustered**   **Dispersed**

- **Core functionality with ArcGIS 9.x**
- **Available with all ArcGIS licenses**
- ***The ESRI Guide to GIS Analysis, Volume 2***

Demonstration
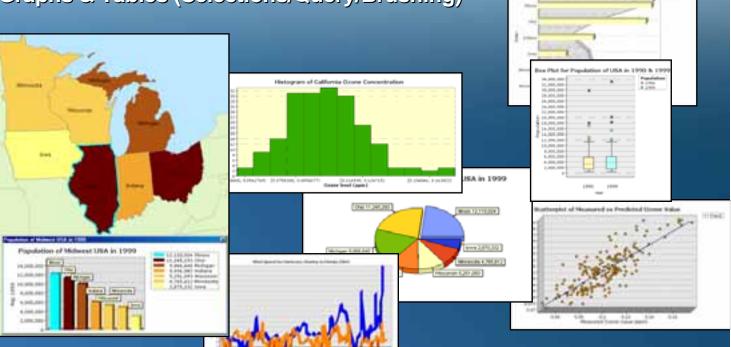
ArcGIS Desktop
Spatial Statistics Geoprocessing

Visualization
Graphing and Table Support

- Linked Maps, Graphs & Tables (Selections/Query/Brushing)
- Time
- Animation

. . . Easier, More Powerful, and Better Integration

Visualization
Animations in ArcGIS

Map View Animation

Human (yellow) and animal (red) cases of avian flu (2004 - 2006)

View Extent

Map Layer Animation

Human (yellow) and animal (red) cases of avian flu (2004 - 2006)

Visibility Transparency

Time Layer Animation

Cumulative cases of avian flu (2004 - 2006)
Human (yellow)
Animal (red)   12/10/2003

Time Intervals Units

Time Animations
- ArcMap
- ArcScene
- ArcGlobe

Data provided courtesy of Declan Butler http://declanbutler.info/blog
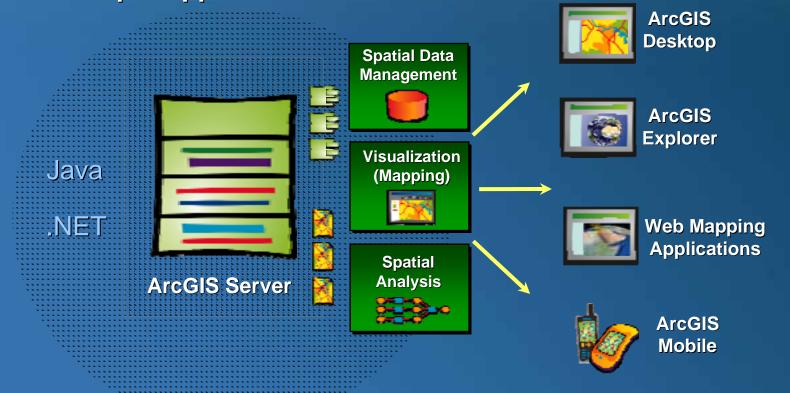
Demonstration

ArcGIS Desktop
Graphing and Animation
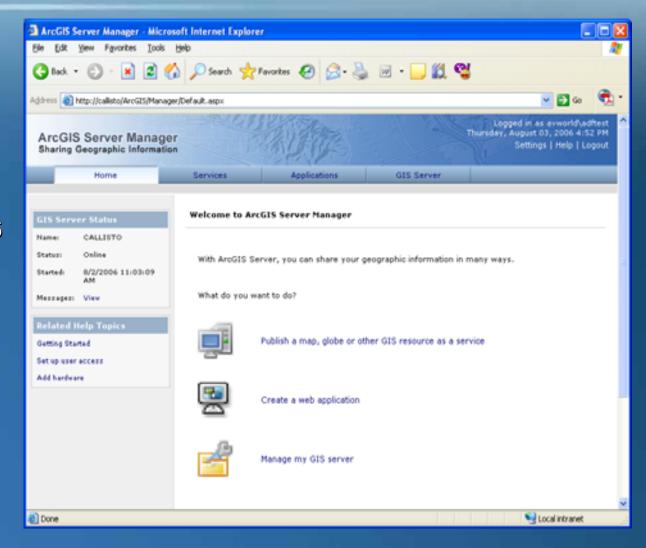
ArcGIS Server
Complete Server-Based GIS

- **Complete & Integrated server-based GIS**
- **Out-of-the-box applications and services**
- **Rich developer opportunities**

Java

.NET

ArcGIS Server

Spatial Data Management

Visualization (Mapping)

Spatial Analysis

ArcGIS Desktop

ArcGIS Explorer

Web Mapping Applications

ArcGIS Mobile

ArcGIS Server
ArcGIS Server Manager

- **Serving and publishing content via *services***

- **Creating web applications**

- **Managing your GIS Server**

- **Access Help**

- **Complements ArcCatalog**

ArcGIS Server
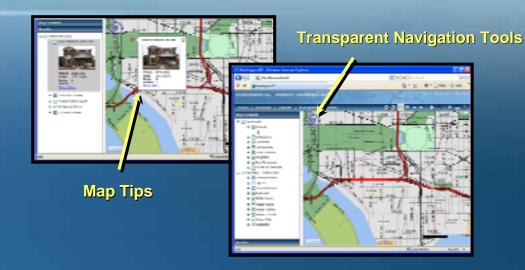## *Mapping, Editing, Geoprocessing & Data Management*

- **Web Mapping Application**
- **Easier to Use**
  - Fewer Clicks
  - Better Map Navigation
  - New Tools
    - **Overview Map**
    - **Hover Map Tips**
  - Map Printing

Transparent Navigation Tools

Map Tips

New Tool Bar

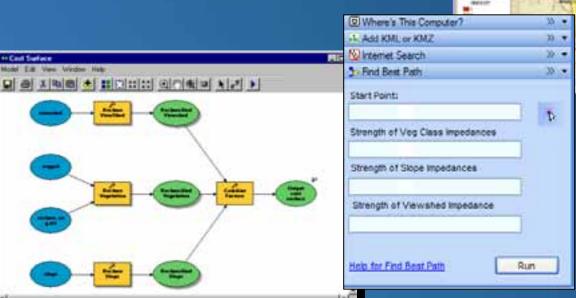**Previous Next**

Display Overview

Web Map

Building on AJAX Standards for Web Communication

ArcGIS Server
Analysis and Geoprocessing

- Vector, raster, 3-D and network analytics
- Models, scripts and tool
- Desktop authoring
- Synchronous processing
- Publish models as web services
- Functionality exposed as "Tasks"

Demonstration

ArcGIS Server
Geoprocessing on the Web

ArcGIS Server
Supporting a Wide Range of Clients

- **ArcGIS Desktop**
- **ArcGIS Explorer**
- **Web Mapping (Browser)**
- **Mobile Technology**
- **Other visualization tools…**

- **Supported by web services:**
  - **Data Management**
  - **Visualization (2D & 3D)**
  - **Spatial Analysis**

ArcGIS Server
Enterprise Integration

CIOs	Program Managers	Epidemiologists Biostatisticians	GIS Coordinators	GIS Analysts	Shareholders (Hospitals, Non-profits)

Roles

Desktop   **Browser**   **Mobile**

Clients

J2EE, .NET
(SOAP/XML)

Integration Platform

ArcGIS Server

Servers   **HAN**   **Billing**   **CRM**   **GIS** | **Web** |
                                                                     | **Mobile** |
                                                                     | **App** |

ArcGIS Mobile

A Lightweight Client for the Field/Use Powered by ArcGIS Server

Supports

- Mapping
- Editing
- Query
- GPS

Application

Runs On Many Devices

- Phones
- PDA's
- Laptops

Includes development kit for custom applications
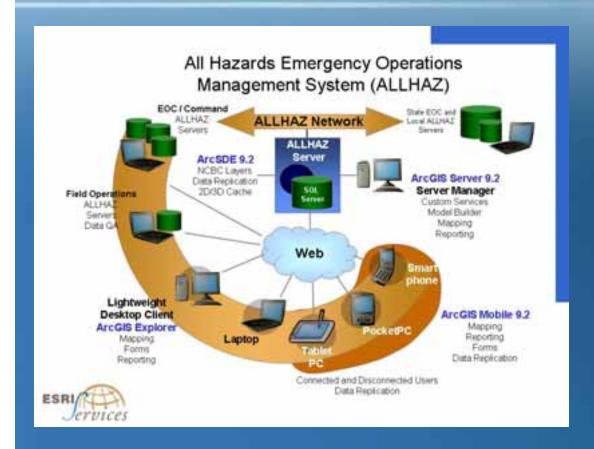
. . . Synchronized with Geodatabase

ArcGIS Mobile
Case Study: Jackson State University - ALLHAZ

All Hazards Emergency Operations
Management System (ALLHAZ)

Project Objectives

- Common Operating Picture (COP)
- Situational Awareness during Disaster Response
- Data collection in sometimes-connected field situations

Key Features

- Simple to use, no GIS training required
- ArcGIS Server, including ArcGIS Mobile
- Localized data to support field collection

Contributors

- Jackson State University
  - Elizabeth Matlack, Program Director
  - 5 person team
- ESRI
  - 6 person team

ALLHAZ
All Hazards Emergency Operations Management System
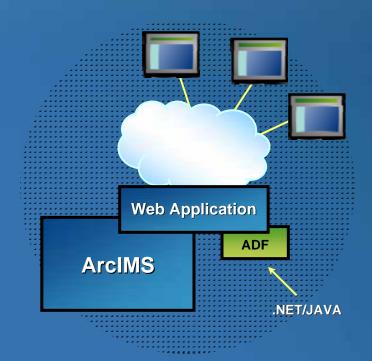
Demonstration

ArcGIS Mobile
ALLHAZ

ArcIMS 9.2 – A Major Release
Very Fast, Modern Web Mapping

Many Improvements

- **Web Map Viewer**
- **.NET & Java Integration**
- **Easy Install & Administration**

Web Application

ADF

ArcIMS

.NET/JAVA

. . . Seamless Integration with ArcGIS Server

ArcIMS in Action
Hippocrates – New Jersey's Health System Situational Awareness Application

2007 ESRI Health GIS

HEALTH LAYERS
- Advanced and Basic Life Support
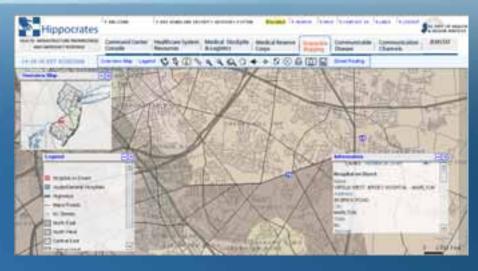- Acute and Non-Acute Care Hospitals
- Points of Distribution
- Blood Banks
- RSS Medical Stockpile Locations
- Health Departments
- Hospitals from Surrounding States
- Long Term Care
- Command Centers

HIPPOCRATES

BASE MAP LAYERS
- Post Offices
- Schools
- Roads
- Municipalities
- Counties
- Surrounding State Counties

REAL-TIME FEEDS
- Incidents
- Events
- Weather/Traffic
- Medical Stockpile
- SitStat Surveys
- Hospital Divert Status
- Ambulance Locations
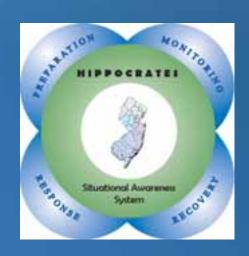
Demonstration

ArcIMS in Action - Hippocrates

Special Thanks To and For More Information:
Dave Grubber
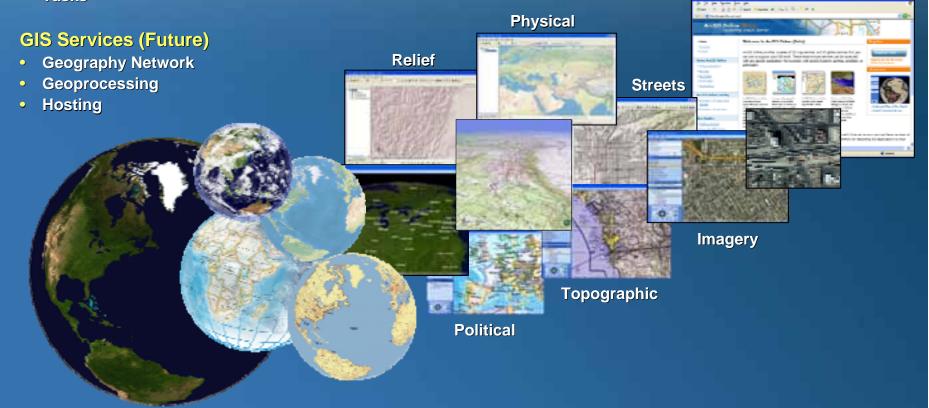**Lighthouse Moments, Showcase**

Online GIS
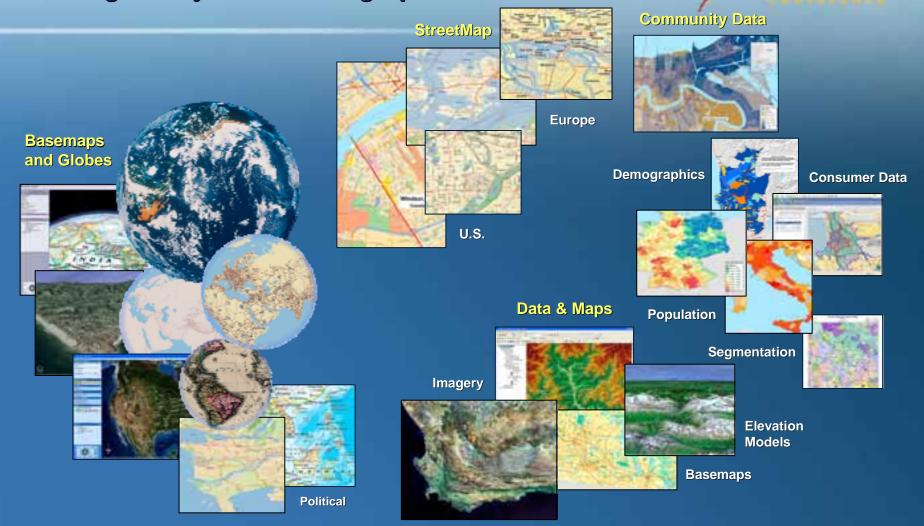## GIS Content and Services for ArcGIS Users

Content Services
- Maps & Globes
- Data Downloads
- Tasks

GIS Services (Future)
- Geography Network
- Geoprocessing
- Hosting

Physical

Relief

Streets

Imagery

Topographic

Political

. . . Helping GIS Professionals Be Immediately Productive

ESRI Data Products
Providing Ready-to-Use Geographic Content

StreetMap

Community Data

Europe

Basemaps and Globes

Demographics

Consumer Data

U.S.

Data & Maps

Population

Segmentation

Imagery

Elevation Models

Basemaps

Political

Available on CDs, Appliances, and Online
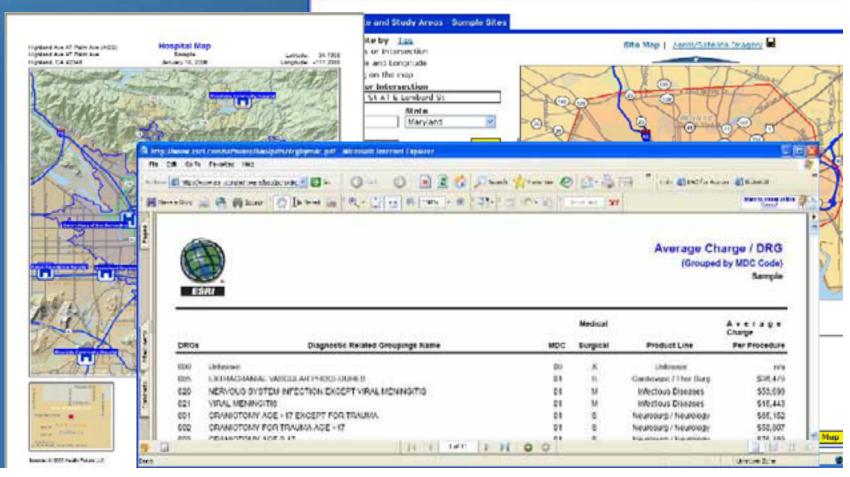
Demonstration

ArcGIS Desktop – Online GIS

Online GIS Solutions
Business Analyst Online for Health

- Strategic planning and marketing
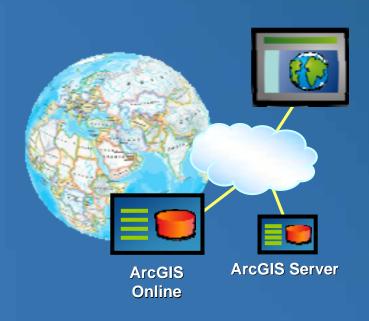- Demographics / Consumer data
- Hospital Discharge Data

ArcGIS Explorer

A Simple GeoBrowser For Working with Geographic Information

- **Fast**
- **Intuitive**
- **Web Centric**

Visualization

Mapping

Analysis Tasks

ArcGIS Online

ArcGIS Server

. . . Accesses Maps, Models and Globe Services

Demonstration

ArcGIS Explorer

Demonstration Summary

TODO: ArcGIS Explorer

Online GIS Globes

Solutions Products

For Business Analytics and Logistics

Business Analyst
Applications & Data Sets

Reporting

Market Analysis/
Customer Profile

Site Selection

Desktop, Server
and Online

ArcLogistics
Vehicle Routing & Scheduling

- Para-Transit
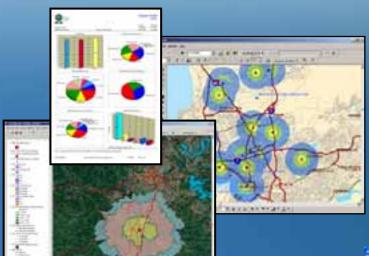- Delivery
- Inspection
- Technicians

. . . Better Decisions Using Geography

Business Analyst
A Complete Spatial Business Intelligence Solution

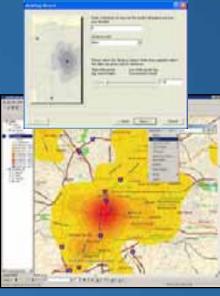**. . . A Standard Extension of ArcGIS**

- **Manage and examine customer and sites**

- **Wizard Driven Analyses**

- **Data Included in Solution**

Target Marketing

Customer Profiling

Site Selection

Demographic Analysis

Facility Profiling

ArcGIS

Extensive Data Sets
- **Population**
- **Demographics**
- **Forecasts**
- **Streets**
- **Businesses**
- **Segmentation**

ArcLogistics Route

Consistently Saves 15-30% Costs, Reduces Fuel Consumption & Improves Services

Cook County Housing

- **25,000 inspections per year**
- **33% more** inspections

San Diego Paratransit

- **20% more** trips per hour

Creates Maps
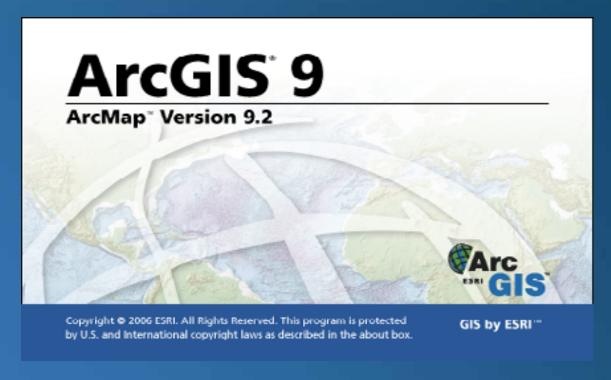
Optimizes Routes

Schedules Vehicles

Product Update
ArcGIS 9.2 and Beyond

- **ArcGIS 9.2 Service Packs**
  - **SP3 available**
  - **Working on Microsoft Windows Vista certification for ArcGIS 9.2 Desktop and ArcGIS 9.2 Engine**

- **ArcGIS 9.3**

ArcGIS 9.3
Vision and Schedule

- **Vision**
  - Improve the core ArcGIS system
    - **Spatial Regression** tools in the Spatial Statistics Toolbox
  - Extend the Server with increased functionality
    - Security and **Interoperability**
    - REST and JavaScript APIs = **MASHUPS!!**

- **Schedule**
  - In development now
  - Beta December 2007
  - Release 2nd quarter 2008
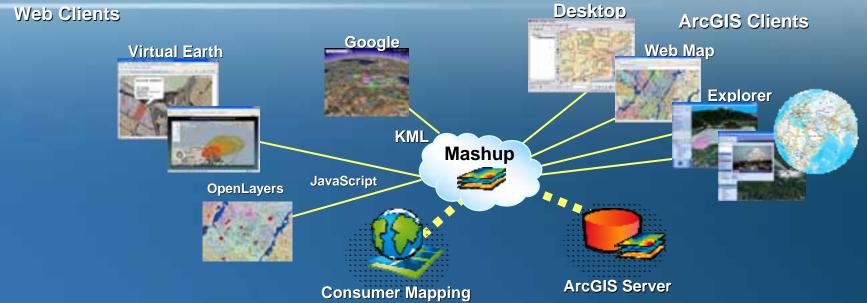
ArcGIS Server 9.3

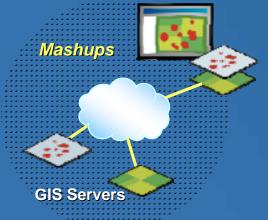*Interoperability*

- **WMS – Web Mapping Service**
  - support for Styled Layer Descriptors
  - A capability of / interface on the Map and Image Services

- **WFS/WFS-T – Web Feature Services**
  - support WFS 1.1 with GML 3.0 Simple Feature Profile
  - capability of / interface on the Map and Geodata Services

- **WCS – Web Coverage (Raster) Service**
  - A capability of / interface on the Map, Geodata and Image Services
  - Supports image data not just 'pictures'

ArcGIS Server Supports Mashups

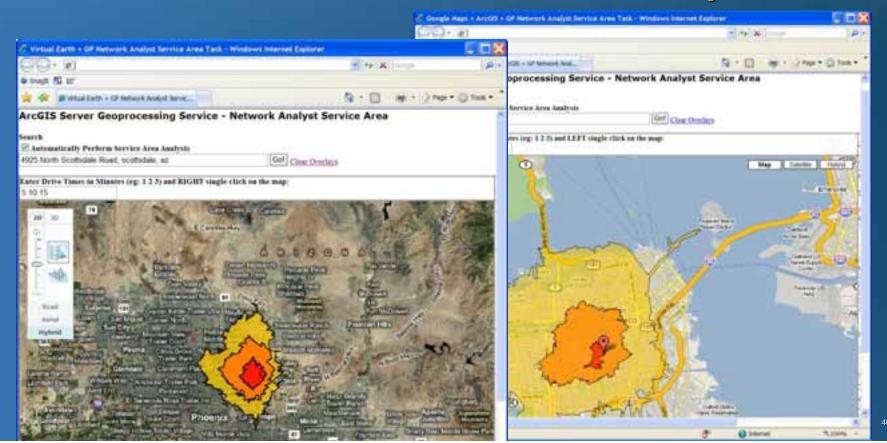## Integrating Multiple GIS Services and Making Use of Consumer Map Services

Web Clients

Virtual Earth

Google

Desktop

ArcGIS Clients

Web Map

Explorer

KML

Mashup

JavaScript

OpenLayers

Consumer Mapping

ArcGIS Server

Mashups

GIS Servers

- **Integrates ArcGIS Server content with Other Services: other ArcGIS Servers, Google, Yahoo!, Microsoft,…**
- **Leverages a REST API and JavaScript browser scripting**
- **Functionality:**
  - **Map navigation, Query, Geocoding, Geoprocessing**
  - **Returns: map tiles, map images and vector results**

Demonstration

ArcGIS Server / Virtual Earth Mashup

Summing it Up…
ESRI Technology & Ways to Engage

- **ESRI Technology**
  - ArcGIS – a family of **complementary products** that work together both on the **desktop and server**
  - ESRI servers are used to **publish the spatial content** that is being **authored in the desktop**
  - **Online GIS** offerings help to make users **more immediately productive**

- **Your feedback is important to us…Many ways to communicate**
  - Healthy GIS Newsletter
  - Online Forum
  - Provide information back to development

And Now…

- **Please join us for the Networking Luncheon in the Ballroom**

- **Mr. Jared Shoultz**
  - **Director of the Division of Public Health Informatics at the South Carolina Department of Health and Environmental Control (SCDHEC)**

- **Come see us in the GIS Solutions EXPO**
  - **More demos**
  - **Technical Support**
  - **Networking**
  - **When?**
    - **Monday 4 - 7pm**
    - **Tuesday 8:30am - 5pm**

Thank you

Also – A comparison of viewer apps…