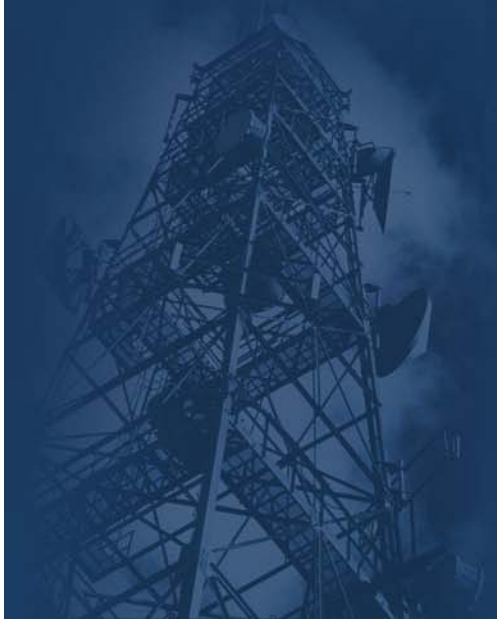
ESRI™

ESRI, GIS & the Telecommunications Enterprise: Solutions, Status and Vision



Kees van Loo
Business Development Manager
ESRI

Agenda

- Introduction
- Update ESRI in Telco
- Telecom GIS
- Architecture

Telecom in 2004/2005

- **New Users:**
  - MCI WorldCom
  - T-Mobile USA
  - Vodafone (UK)
  - France Telecom
  - Telecom Poland
  - Time Telecom (Malaysia)

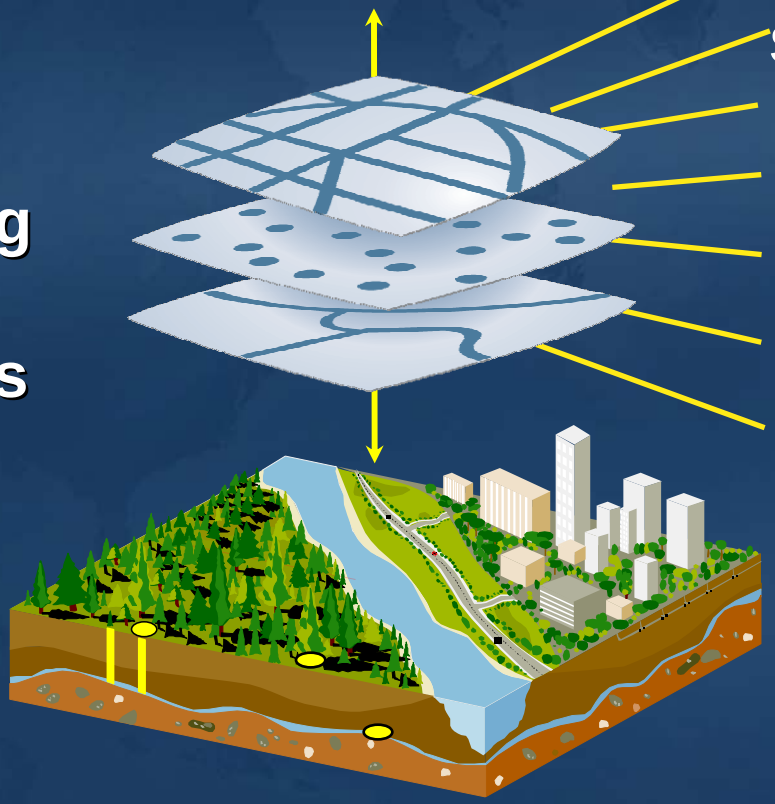
Telecom in 2004/2005

- **ESRI Major Users:**

  - SBC
  - Vodafone (9 Countries, including Verizon Wireless)
  - BellSouth
  - Reliance InfoCom
  - T-Mobile (4 Countries)
  - British Telecom
  - France Telecom Group (w/Orange)
  - Telecom Italia Mobile
  - Telefonica Moviles
  - Telefonica del Peru
  - Bouygues Telecom
  - 9 Telecom

GIS Integrates Data

- GeoReferencing
- Map Overlay
- Spatial Analysis
- Visualization



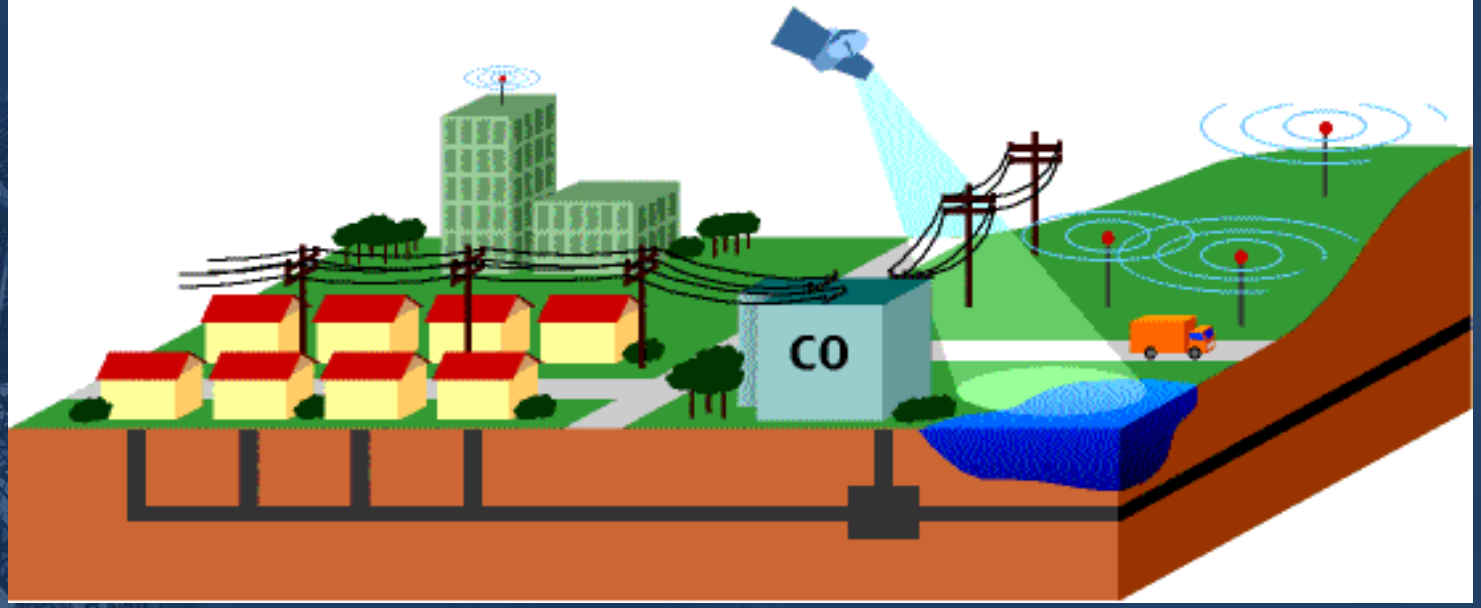
. . . Integrating Measurements And Disciplines

Telecom Reality:

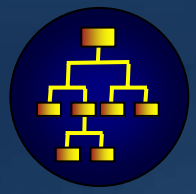
LANDBASE
- Clutter
- Satelite Imagery
- Airial Photography
- Streets
- Parcels
- Land Use
- Zoning
- Elevation
- Building Heights

FACILITIES/ OPERATIONS
- CO Locations
- Outside Plant Records
- Antenna Locations
- Signal Quality Models
- Network Test Data
- Forecast Model
- Trouble Calls
- Outlets
- Customer Locations

OTHER
- MTAs
- BTAs
- LATAs
- Tax Boundaries
- Municipalities
- County
- State
- Census Tracts
- Zip Codes
- Right of Ways

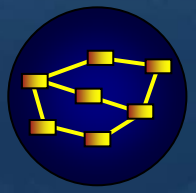


GIS Captures and Stores Reality Through 5 Basic Elements

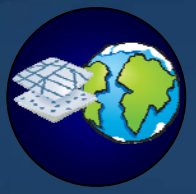


Data Models

Geodata Sets



Process and Workflow Models

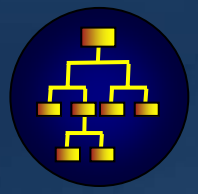


Maps and Globes

Metadata

Geodata Sets:

- Span
- Splice
- Pole
- Manhole
- Base Station
- Right of Way
- Tax Zones

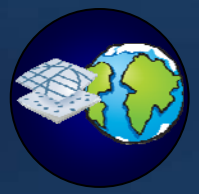


Data Models:

- Fiber
- Copper
- HFC
- GSM
- UMTS
- LMDS

Process and Workflow Models:

- Outage Management
- Design & Construction
- Dispatch
- Market Segmentation
- Sales Campaigns



Maps and Globes:

- Operations Center
- Cartographic Production
- Corporate Communication

Metadata:

- Author
- Scale
- Projection
- Updated
- Description
- Project
- Department
- Purpose

Enterprise GIS for Telecom:

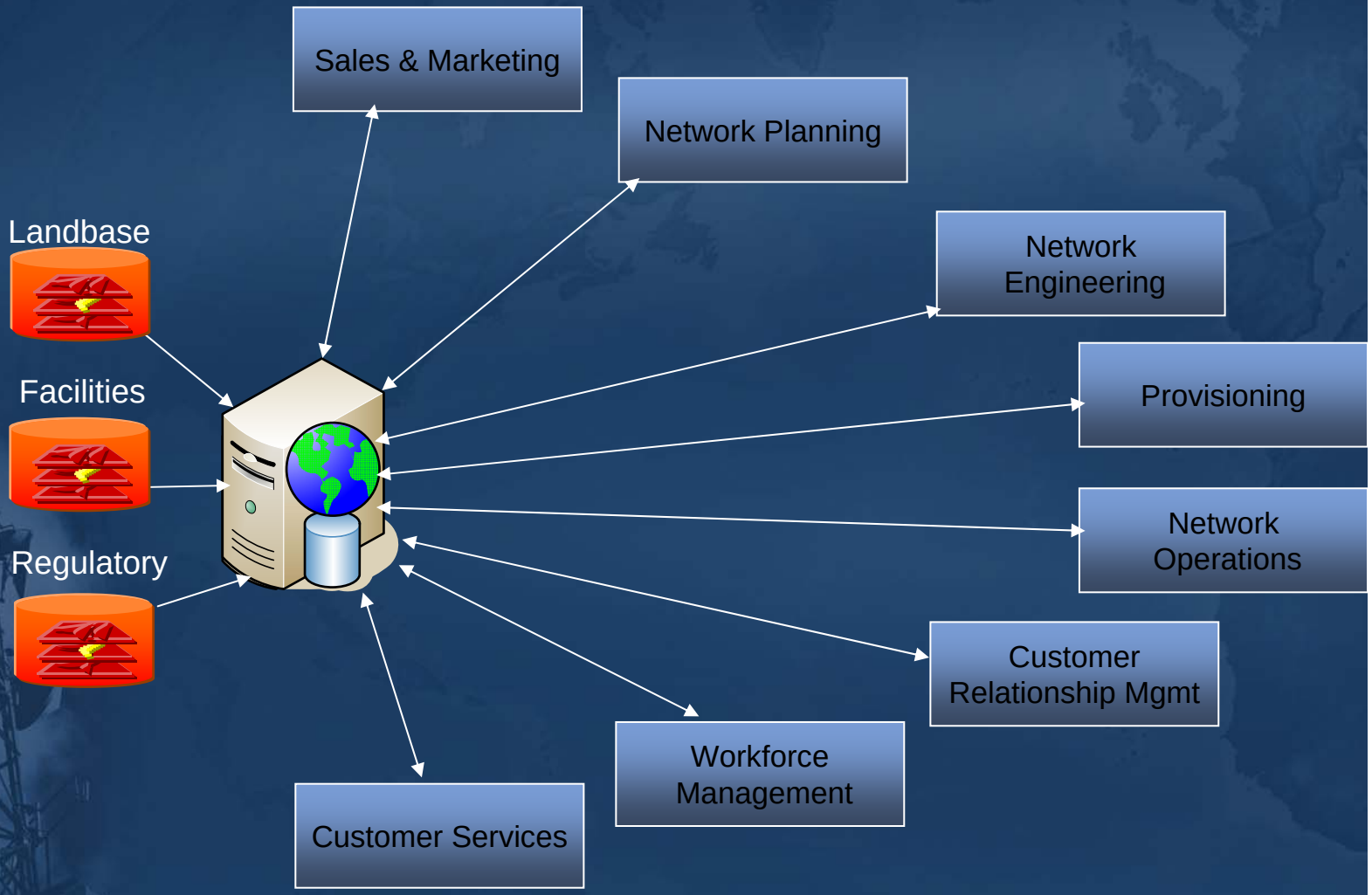
Enterprise Support

Enterprise GIS for Telecom

Logical Workflow

Enterprise GIS for Telecom

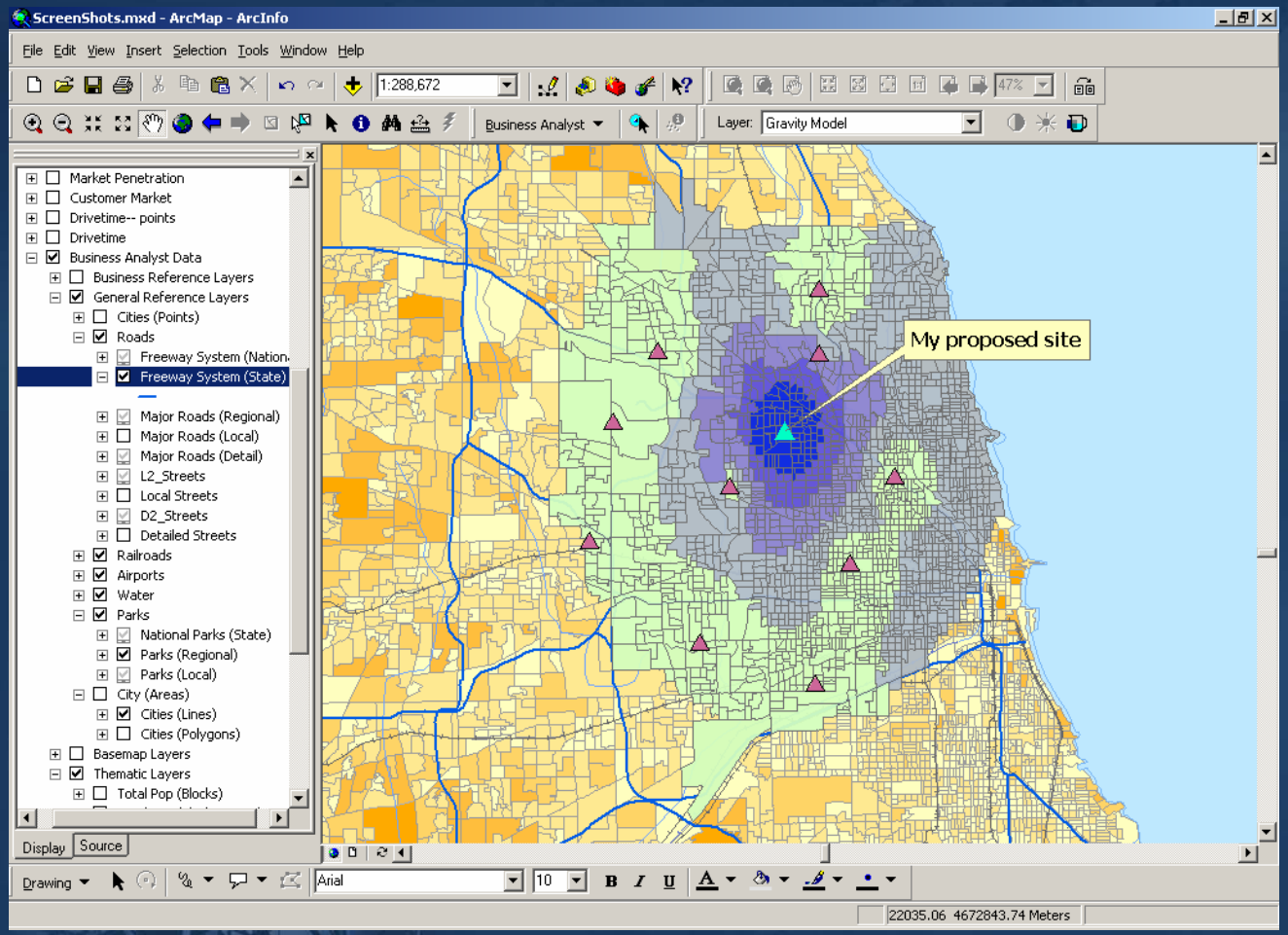
Data Flow



Enterprise GIS for Telecom:

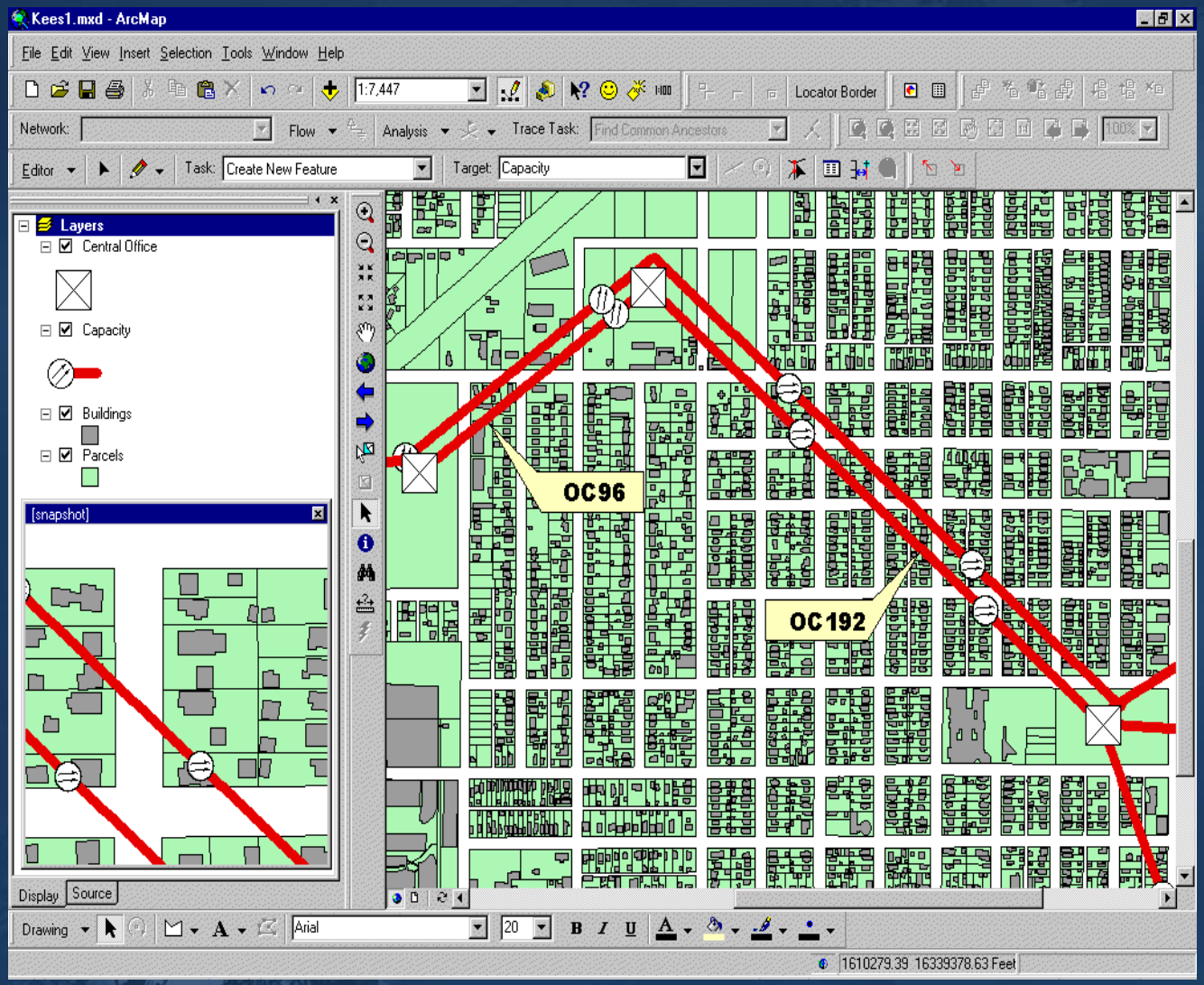
Applications: Departmental

Marketing & Sales



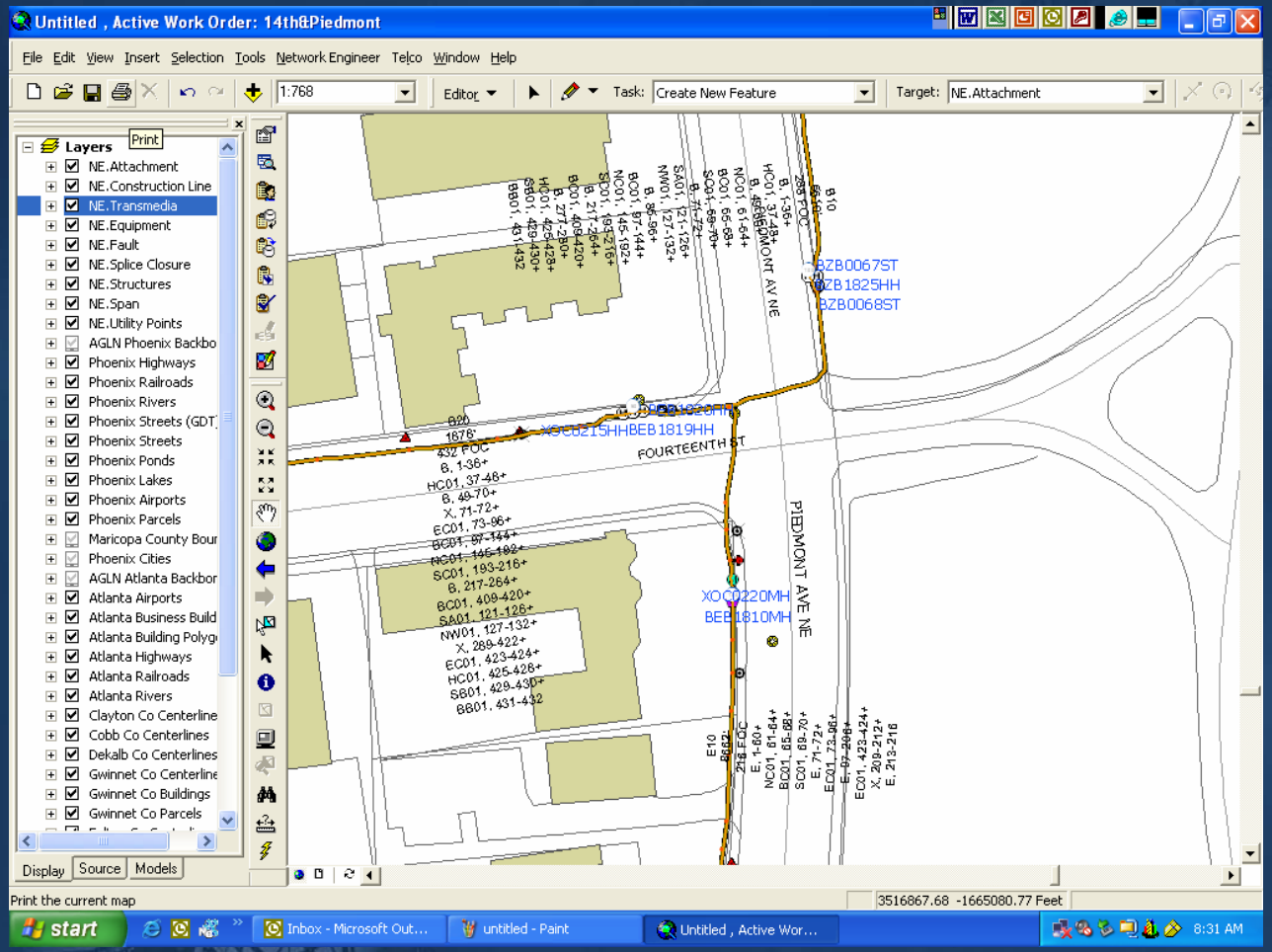
- Input into Capacity Planning
- Integrate w/other Marketing Systems (SAS, Business Objects)
- Targeted Marketing Campaigns
- Uses Demographics, Customer Data, Facilities Database
- Used for Future Store-Outlet Siting

Network Planning (Capacity Planning)



- Display Network Congestion
- Calculate Capacity
- Generate Schematic Network Layout
- Input for Engineering

Engineering Outside Plant

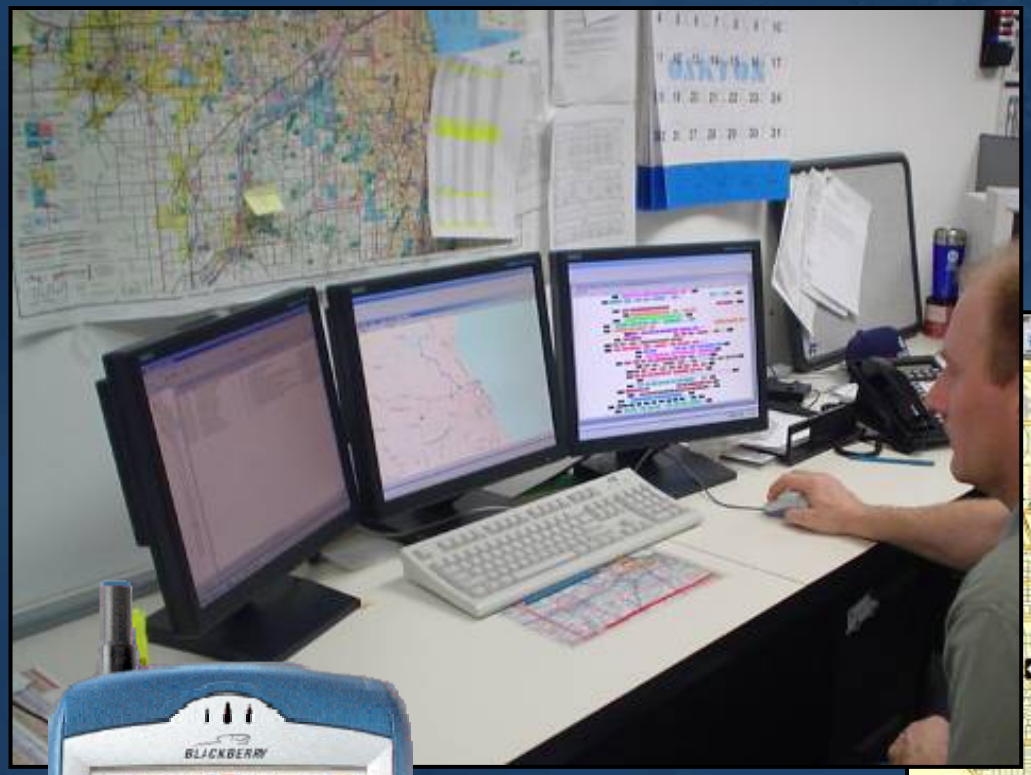


- Partner Tech. Leverages ESRI Platform
- Complete OSP Network Design
- Facilities Management
- Reporting
- Data Model

Field Engineering

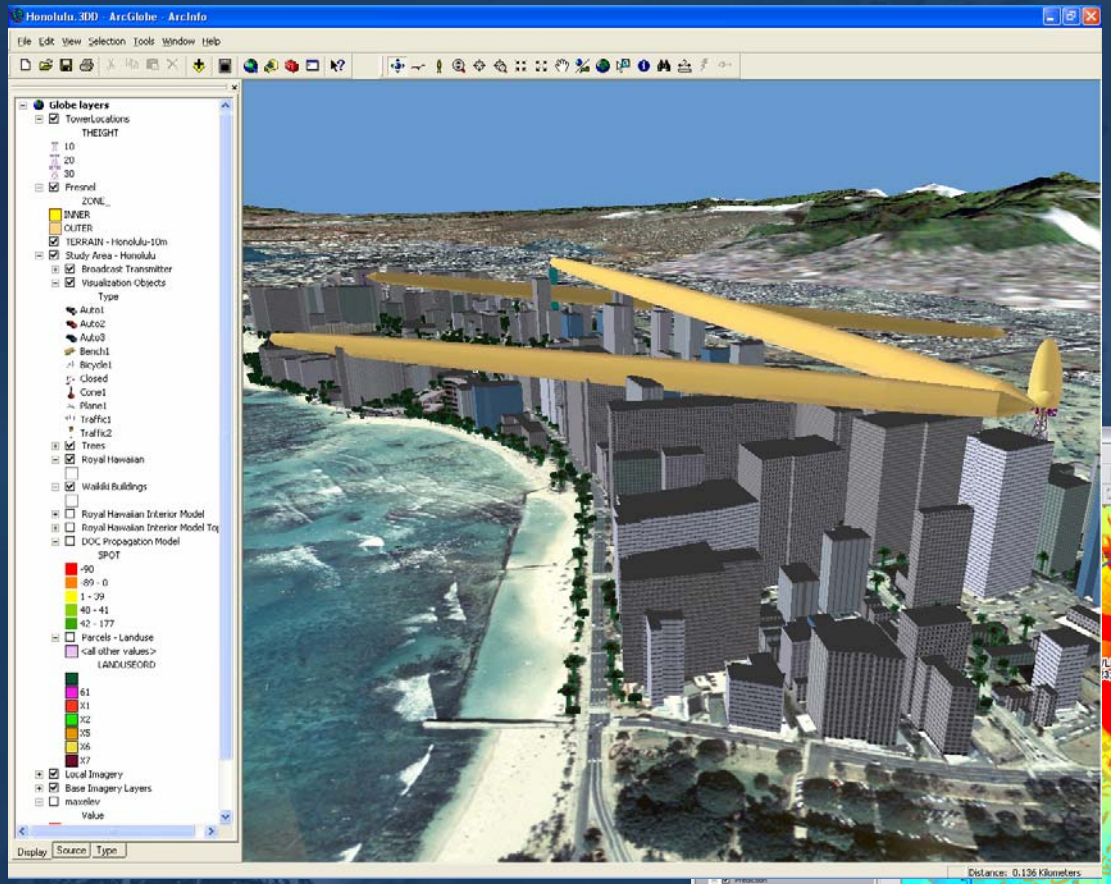
- Laptop
- Tablet PC (with editing capability)
- Windows CE
- J2ME
- Rich, Focused Functionality
- Check out-Check in Database Capability

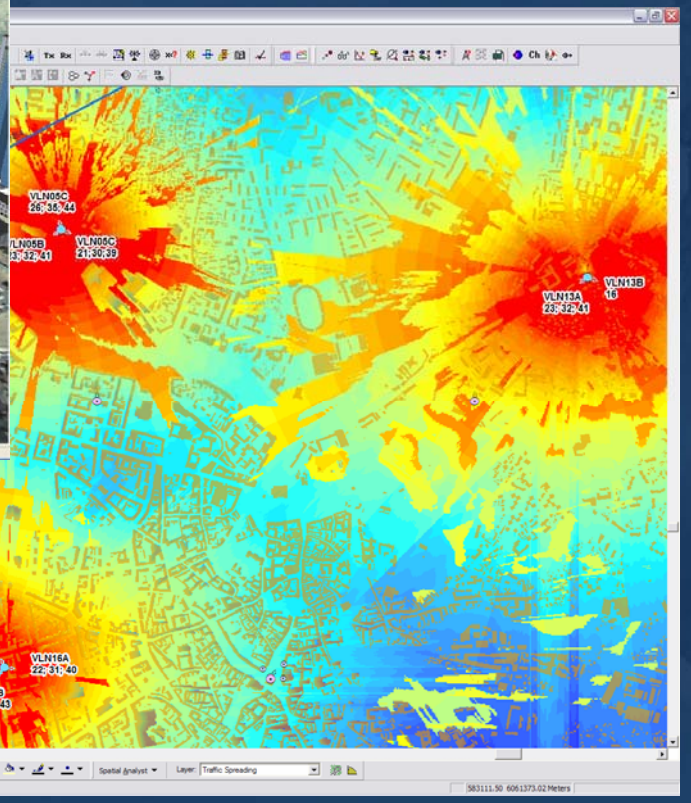
Location Tracking/Routing



Location Services

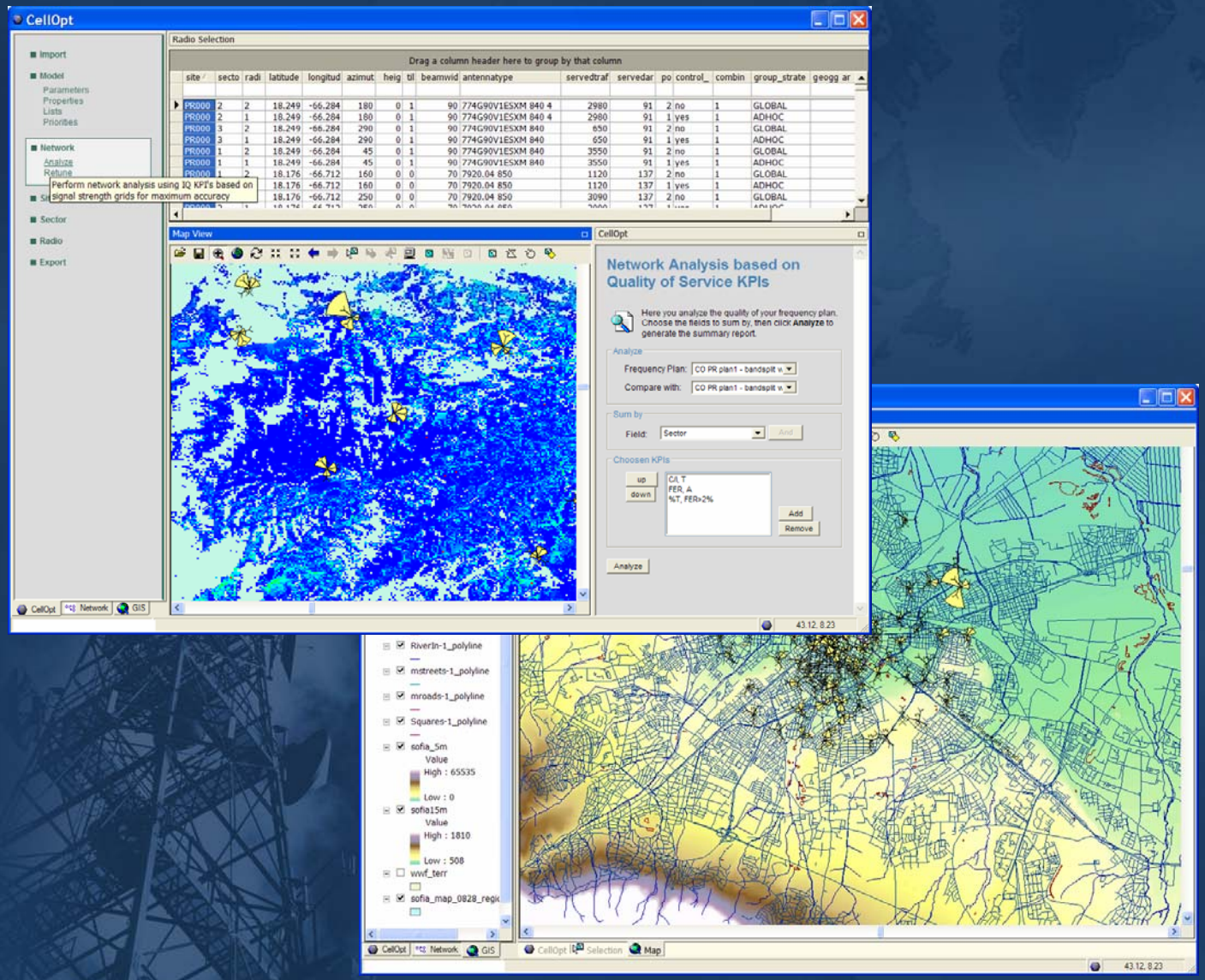
Wireless Network Engineering





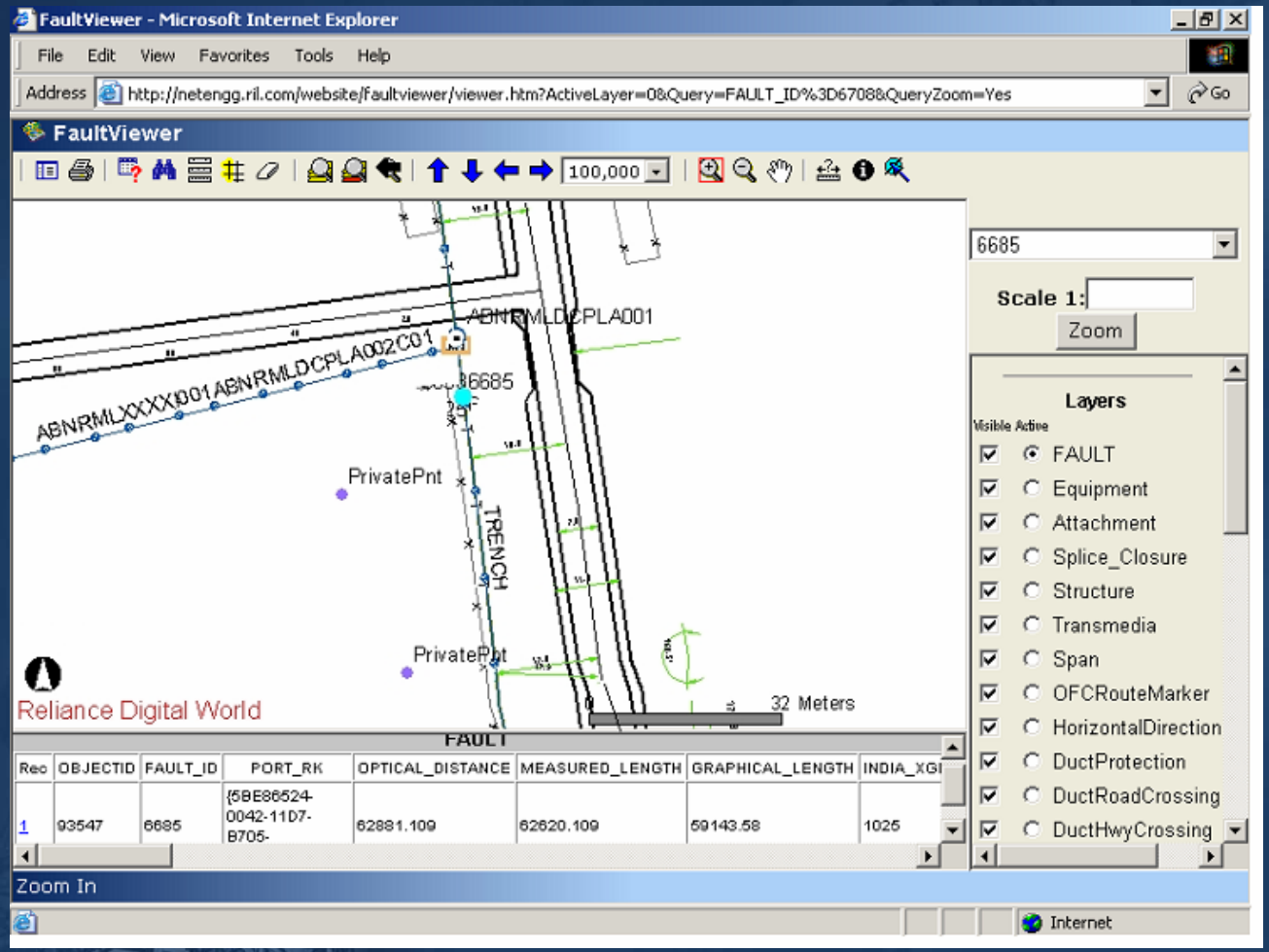
- Wave Propagation Modeling Integrated
- 3D Rendering: ArcScene & ArcGlobe
- Spatial Analysis

Wireless Network Optimization



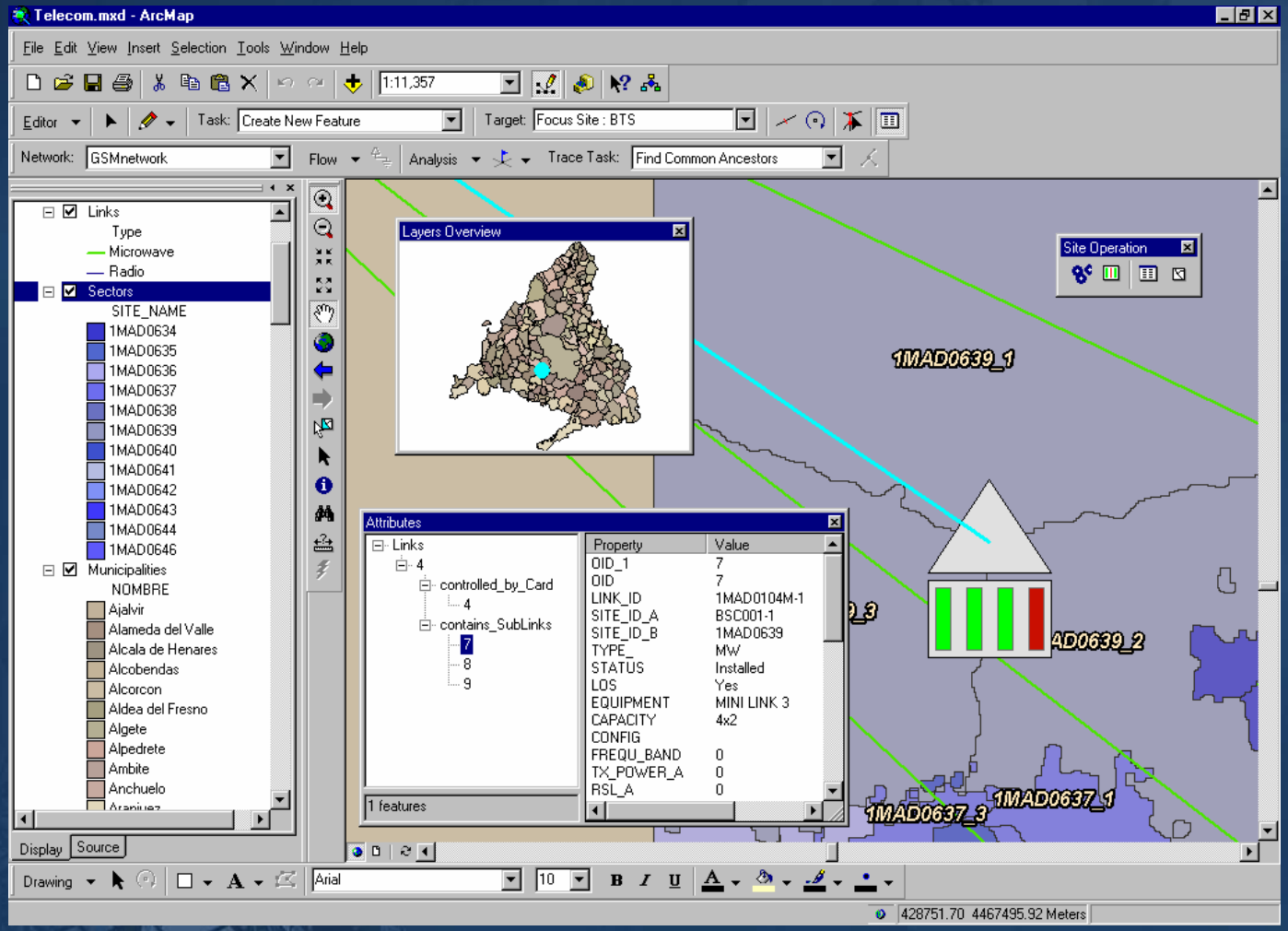
- Adjust Network Parameters
- Improve Network Performance
- Integrated with Planning Tools
- Visualization & Analysis with ArcGIS Engine

Operation Support Systems: Outage Management



- Integrate with Industry-Standard Fault-Management Systems
- (Near) Real-Time View of Network Status
- Tracking Network Use

Operation Support Systems: Outage Management

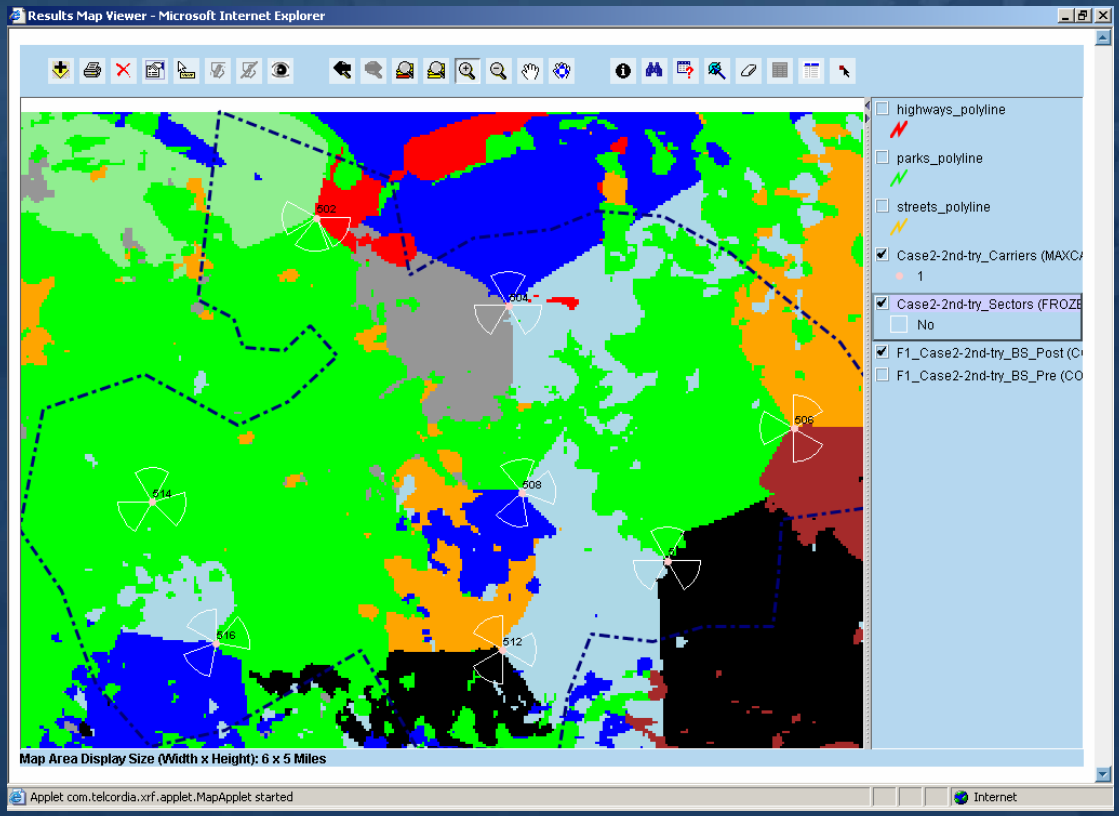


- Real-Time View of Network Status
- Object Replication
- Call Behavior
- Tracking Network Use

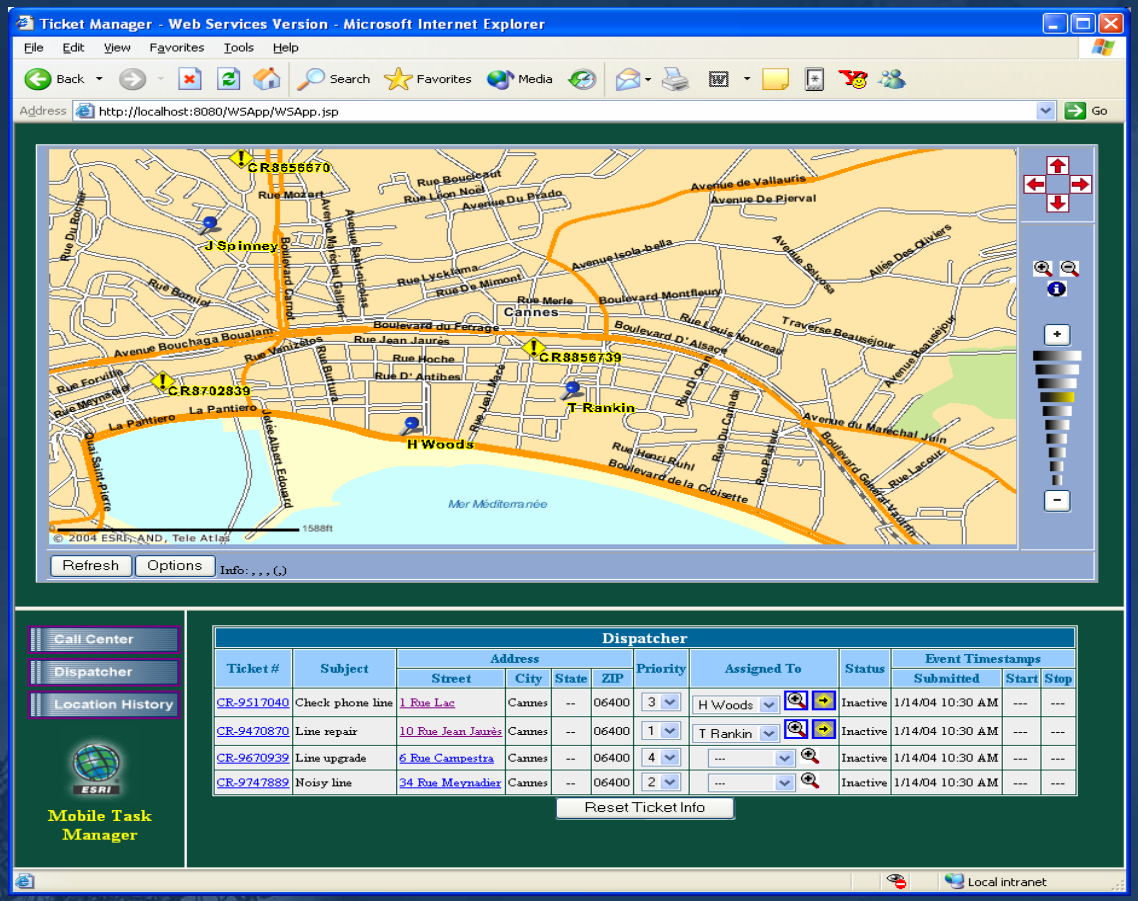
Operation Support Systems: Network Performance

Multiple Analyses Types Possible

- Aggregate Billing Data to Privacy Regulation
- Pull Together Network Outage Data to ID Network Trouble Spots
- Integrate Billing data with Market Segmentation and Network Performance
- Unprecedented Insight into A Companies Operations



Workforce Management

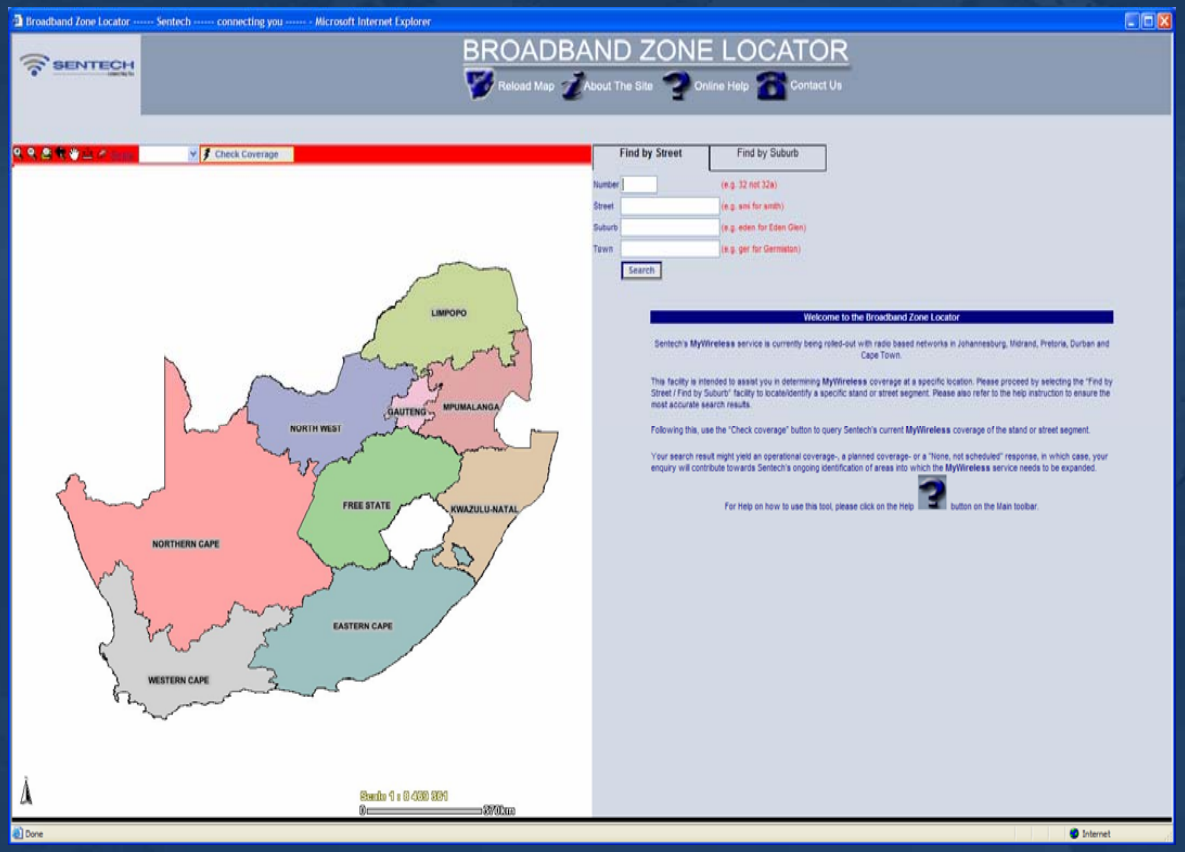


- Intelligent Workforce Notification Systems
- Uses GIS & Mobile Network to Efficiently Deploy Resources
- Respond to Trouble Tickets More Quickly; Improve Customer Experience

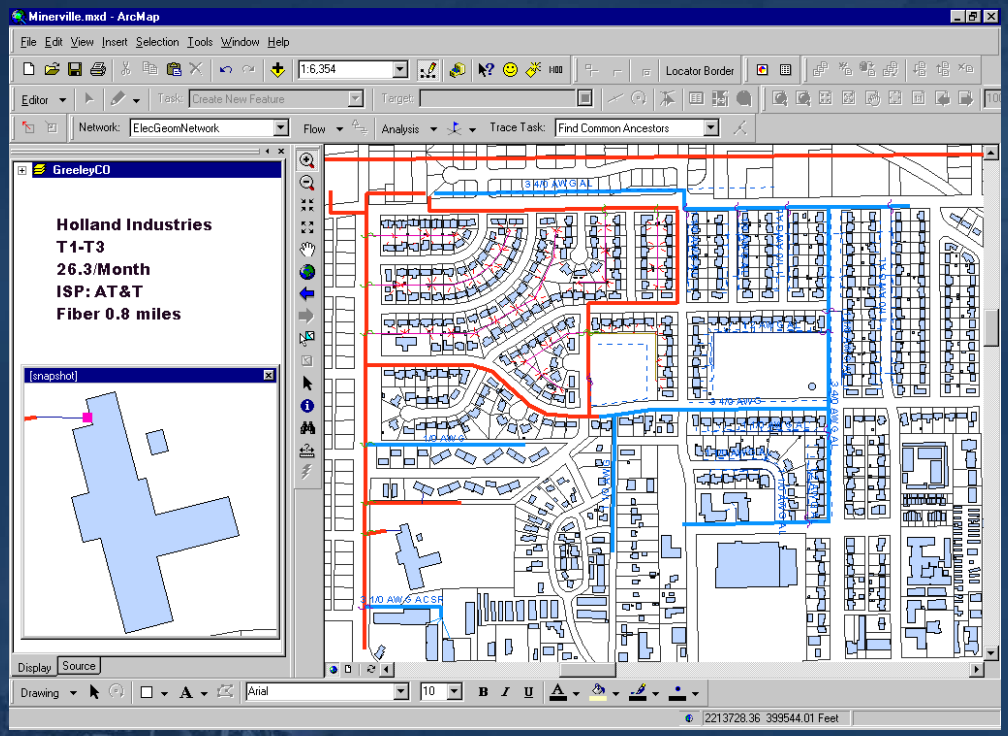
Customer Services

Online Services

- Wireless Coverage Locator
- DSL Prequalifier
- Store Locator
- WiFi Hotspot Locator



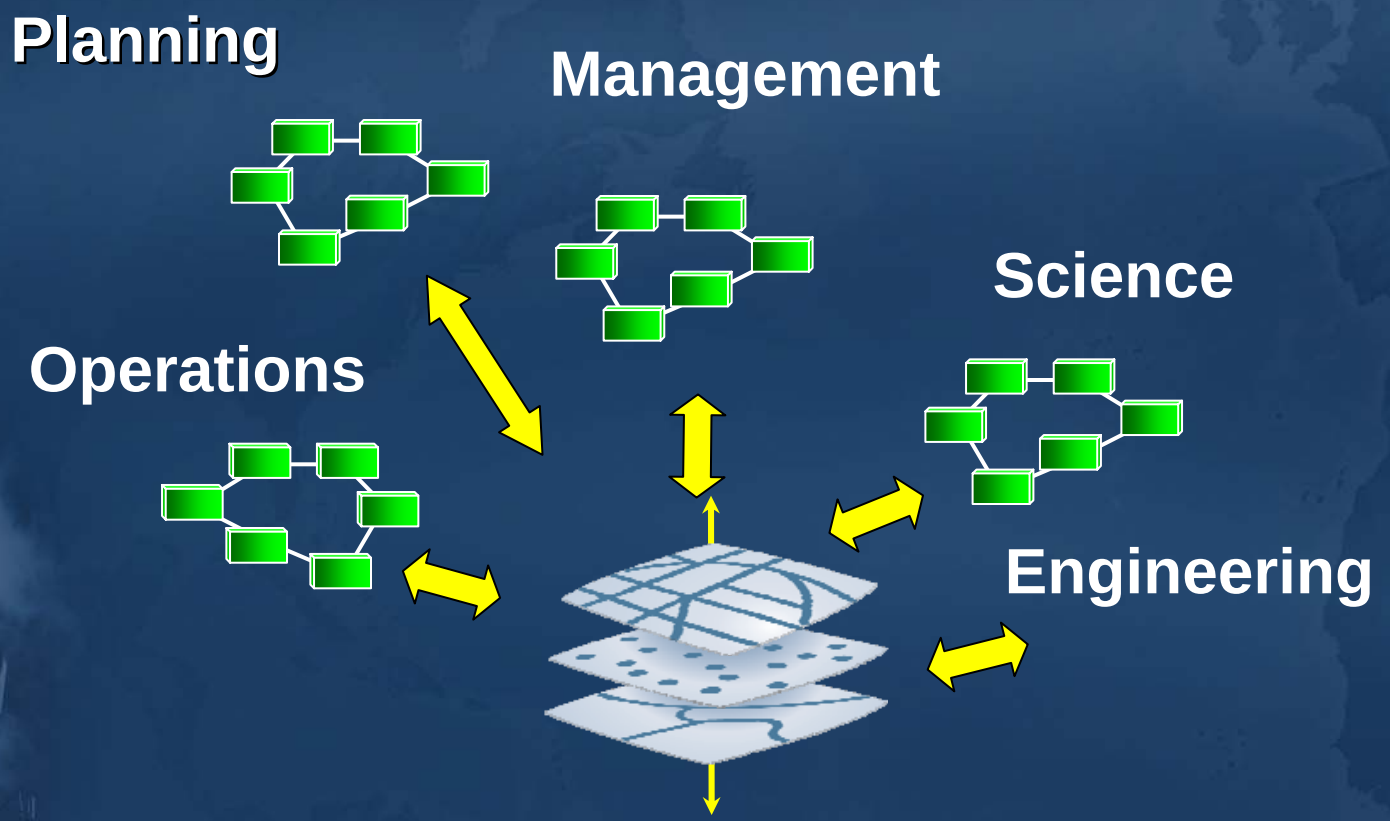
Sales Support



Functions:

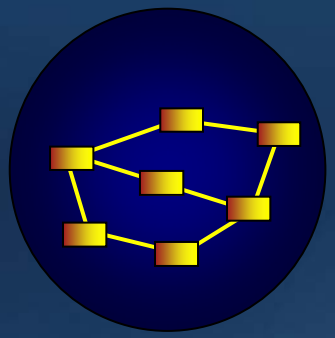
- *Map Out Existing Customers*
- *Map Out Prospects*
- *Pre-Defined Queries*
- *Prospect-to-Backbone Distance Calculations*
- *Visualization for Prospects*
- *Automated Reports, Maps*
- *Traveling Salesman*

GIS Integrates Workflows

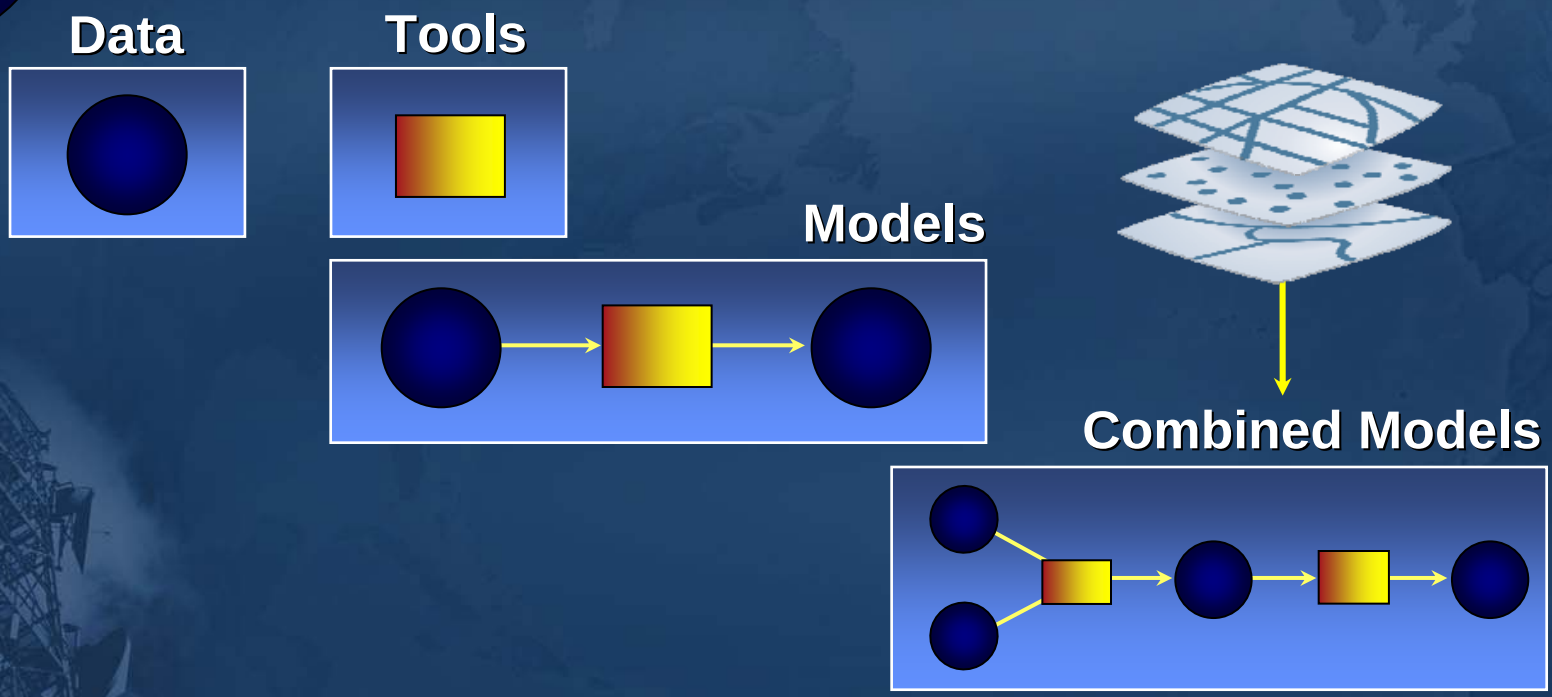


. . . Supporting Collaboration

Geodatabases Support Models



That Describe Geographic Processes And GIS Workflows

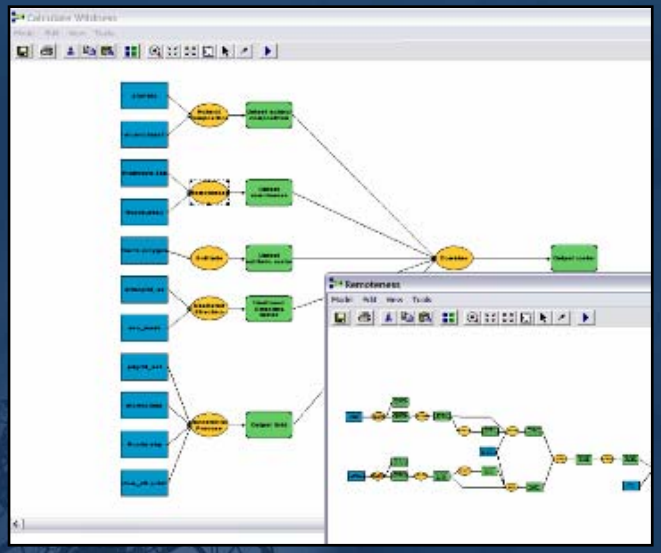


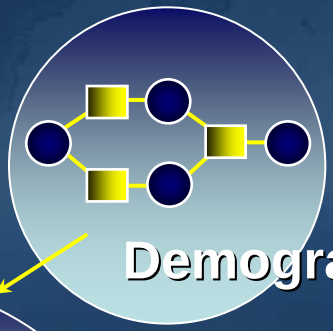
Sequences of Tools and Data . . .

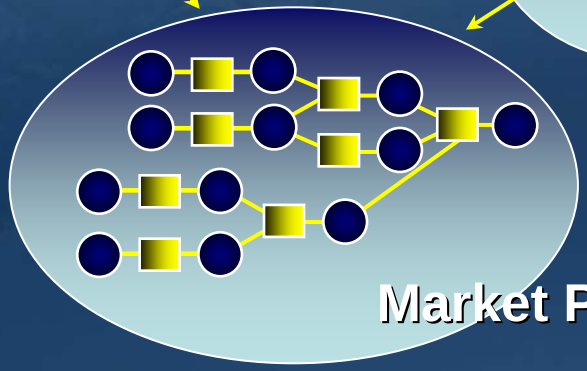
. . . That Define Process Knowledge

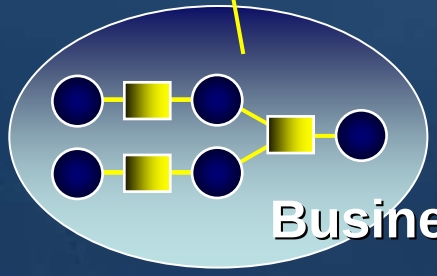
Process Models Can Be Integrated

. . . To Create New Models





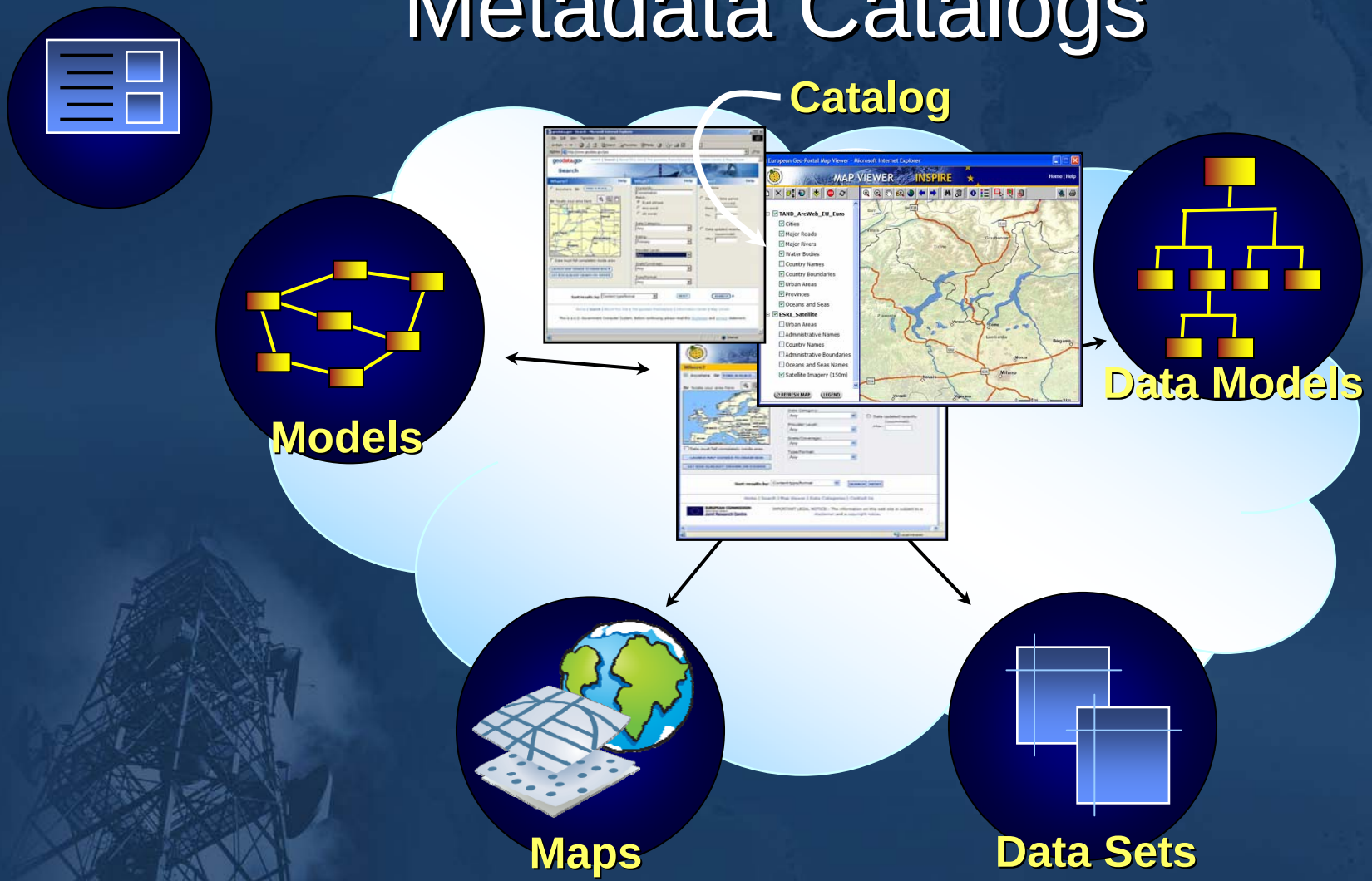




. . . and Share Them

Leveraging Common Knowledge

Geographic Knowledge is Organized in Metadata Catalogs

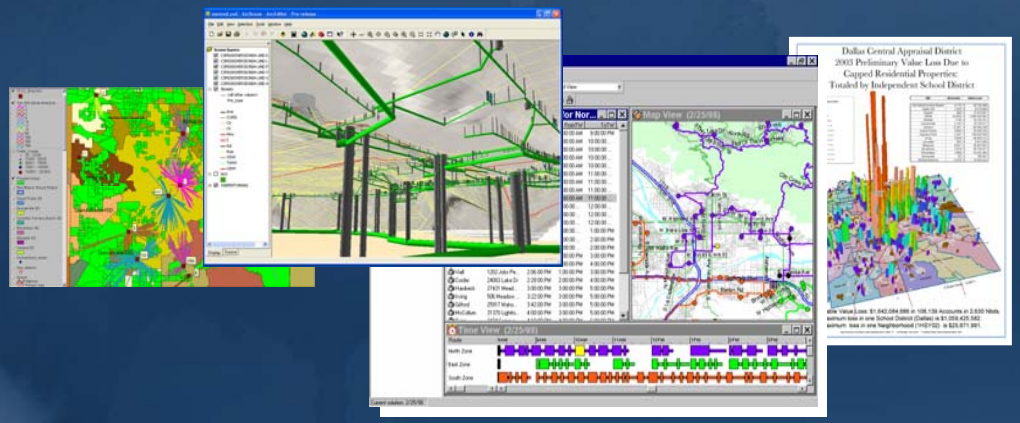


. . . Metadata Describes Content and Relationships

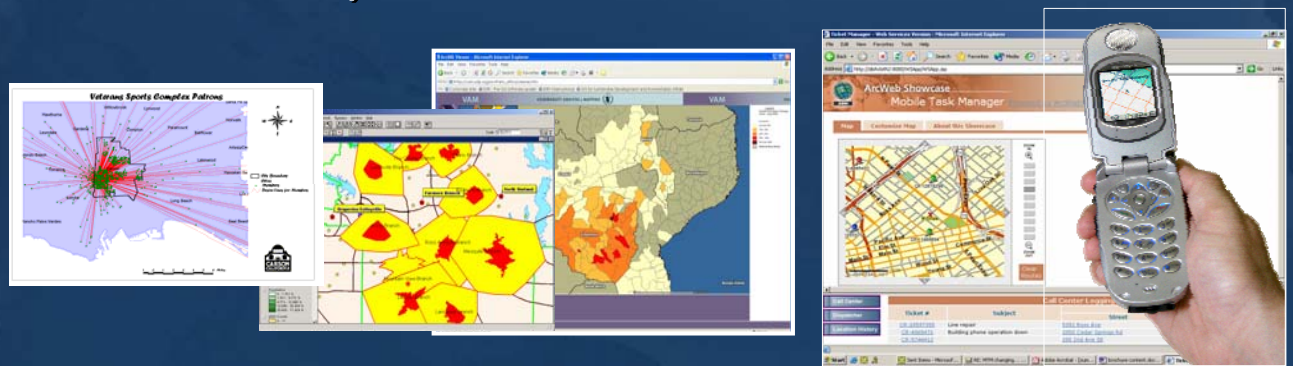
Growing Enterprise Solutions

Two Kinds Of Systems

- Geo-Centric Workflows Managing GeoObjects
  (Telecom, Utilities, Land Records, Planning, Military)

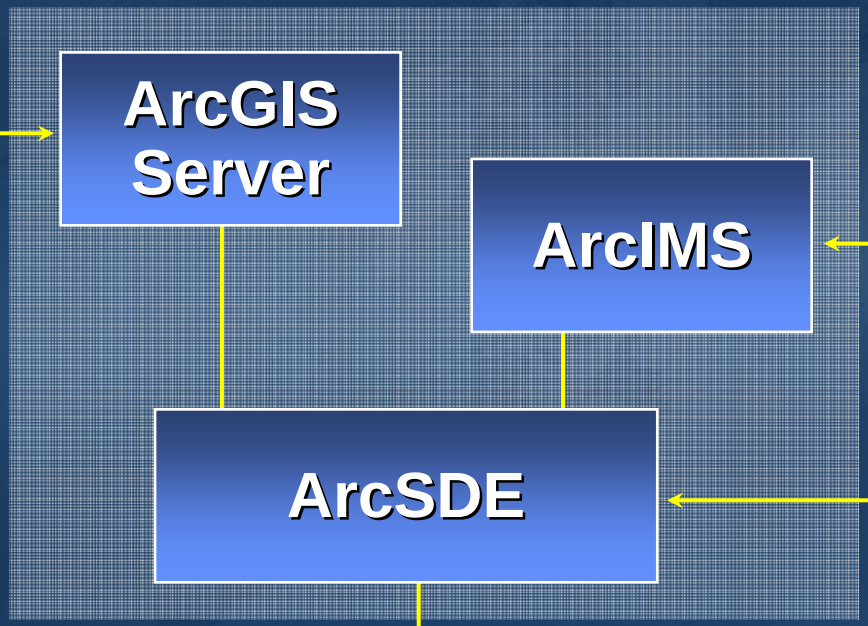


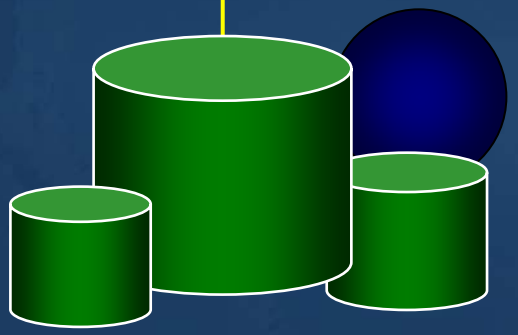
- Geospatially Enabling Business Systems
  (ERP, CRM, BI . . .)



A Big Change

Telecom Business Logic



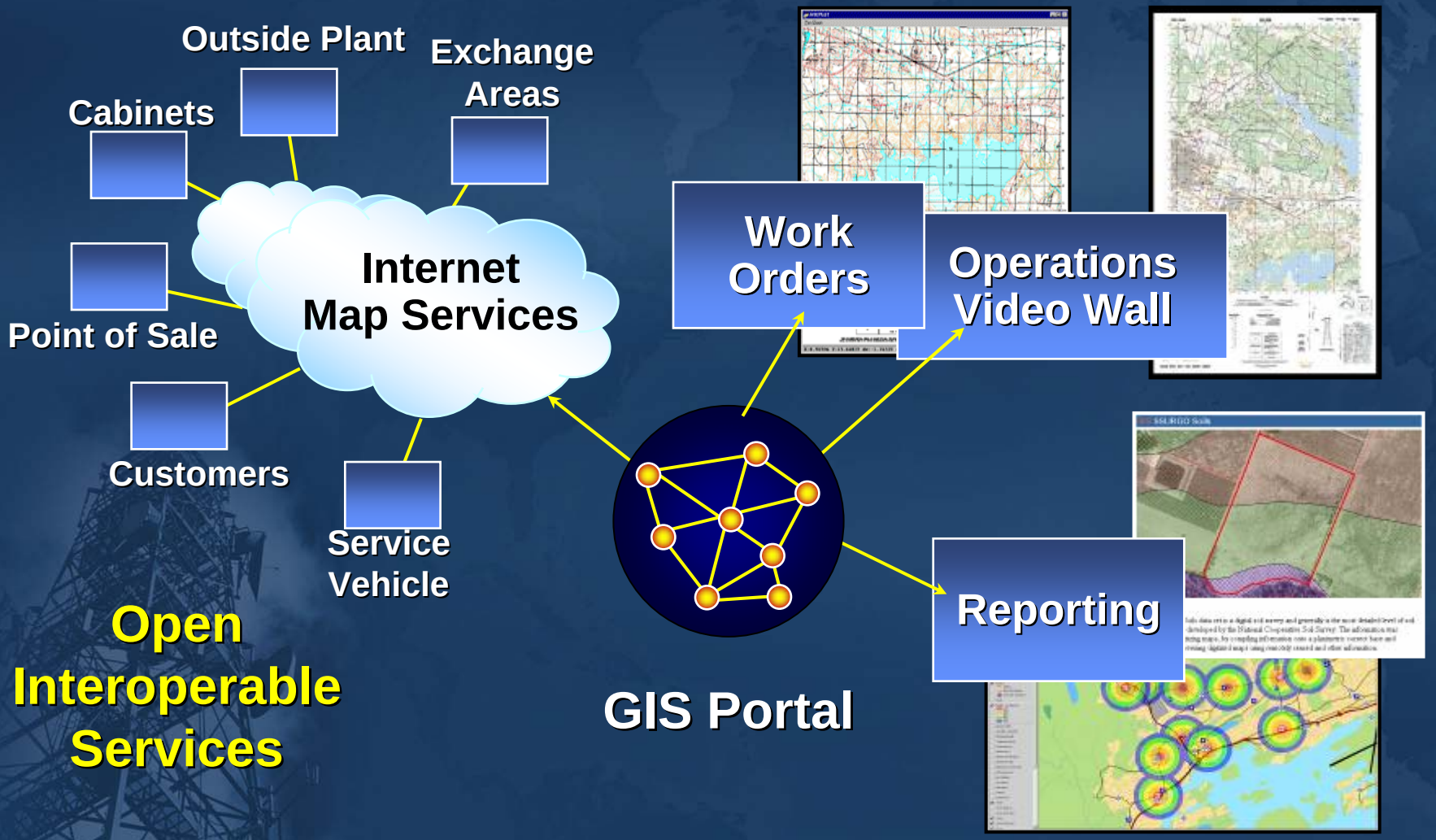


Supports Any DBMS

- SQL Server
- Oracle
- Informix
- DB2

. . . Supporting Multi-user Implementations

ESRI GIS Servers Can Operate In A Distributed Services Oriented Architecture



Open Interoperable Services

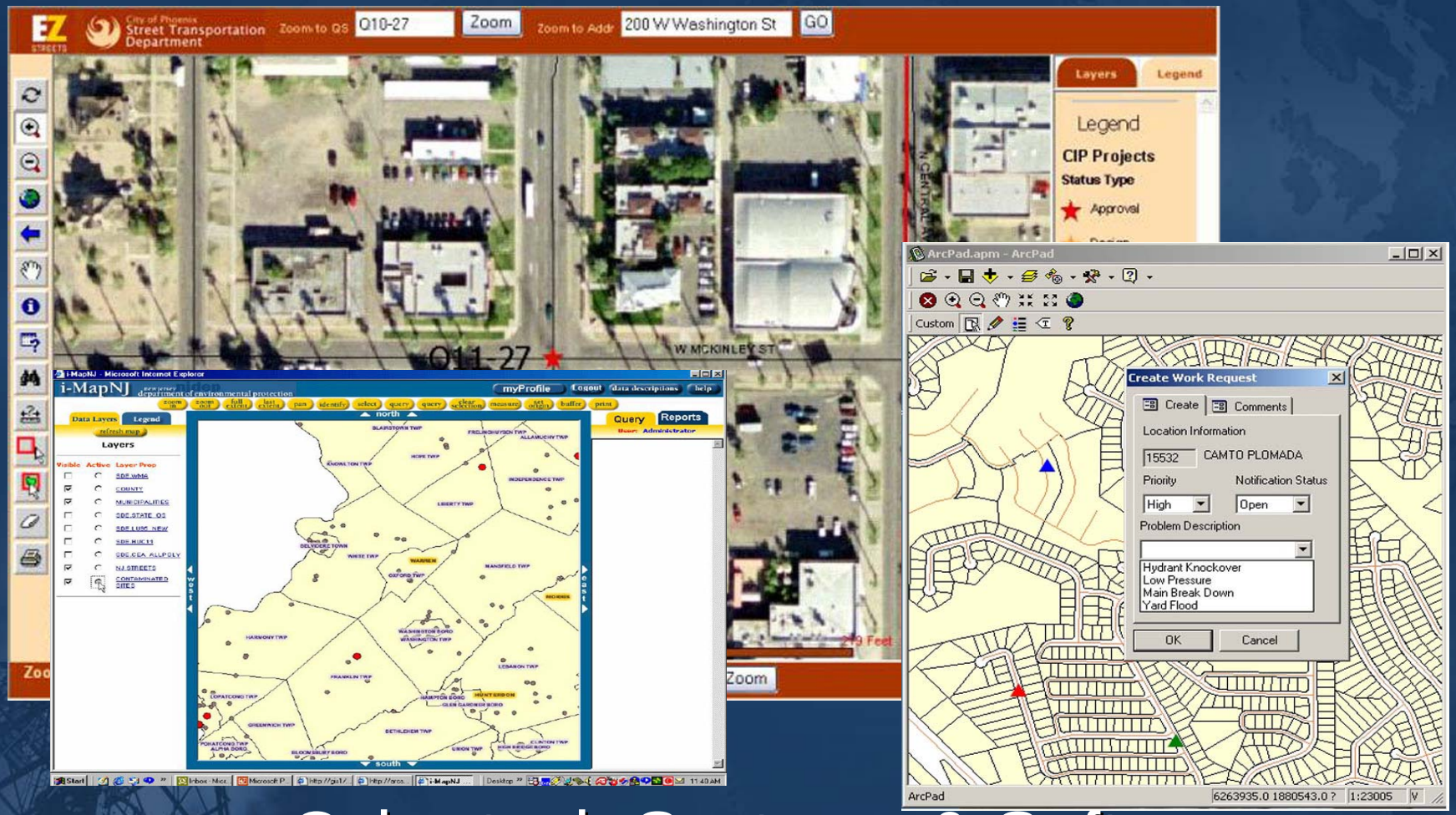
. . . Providing The Foundation For GIS Networks

ArcGIS Server Integrates with Other Enterprise Systems

at the Application Level

. . . Open, Flexible and Standards Based

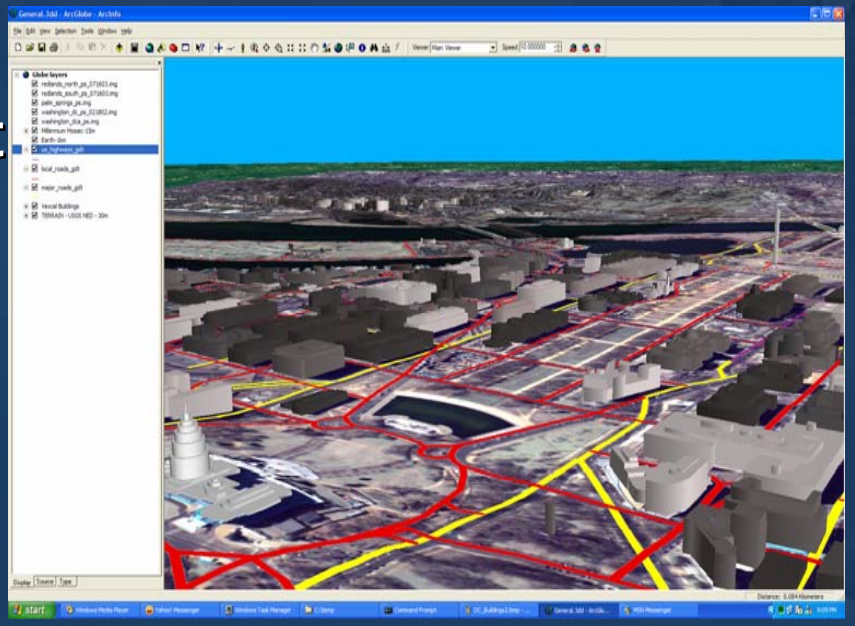
ArcGIS Integration With SAP And Business Objects



Cybertech Systems & Software Inc.

Why GIS for Telecom ?

- **What is the Business Case?**
  - **Business Process Automation**
    - **Reduce Cost**
    - **Better Decision Making**
    - **Faster Network Rollout**
    - **Competitive Advantage**



Enterprise GIS for Telecom:

Benefits

Automation:	Return:
•Engineering/Asset Management	X
•Capacity Planning	3X
•Field Crew	60X
•Customer Service	300X
•OSS	600X

ESRI & The Telecommunications Community

Memberships

- **ITU** (International Telecommunications Union)
- **TIA** (Telecommunications Industry Association)
- **CTIA** (Cellular Telecom Industry Association)
- **GITA** (GeoSpatial Industry Trade Association)
- **USTA** (United States Telecom Association)

ESRI Telecom Business Partners

- 100+ Partners Around the World
- Creating GIS-based Solutions for the Telecom Industry


TM
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