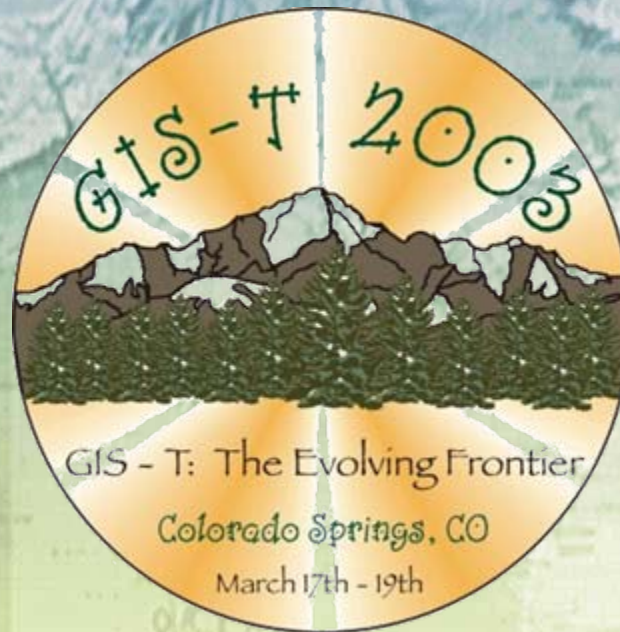


The Effective Use of GIS in Enterprise Integration



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ISG State and Local Government Services (SLG) is a platform independent consulting services group focused on developing **geographically enabled, integrated solutions for the State and Local Government community.**

These integrated solutions collate and geographically display information from disparate data sources enhancing **situation awareness and **decision making**.**



What is Integration?

- A mechanism to provide the efficient means of information flow between various data sources and applications throughout the enterprise.
- Gathering, collating and combining of data from many data sources in order to provide meaningful, sometimes new, answers to questions.
- There are no bounds to the type of data sources. Interagency, intra-agency, even interstate data integration is required in today's world.



Why is Integration Important?

- Demands on DOTs for information continues to increase.
- Application portfolios continue to grow in number and functionality.
- Stand-alone development efforts bring integration to the forefront.
- “Data Rich and Information Poor.”



The Problem

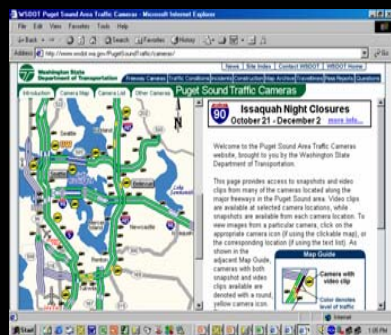
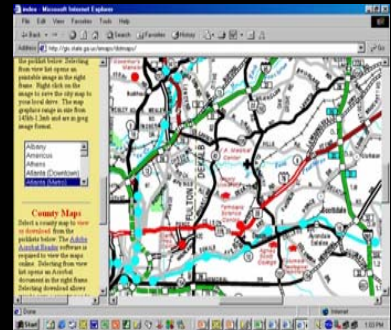
- Some data, such as that found in financial systems, is not traditionally GIS enabled
- Information is referenced in multiple linear referencing systems
- Source of truth issues
- Data is in multiple formats

- **Oracle**
- **SQL Server**
- **Microstation**
- **FoxPro**
- **MS Access**
- **Mainframe**
- **Informix**
- **SDE**



The Problem

- Information is needed by the right person, at the right time, to make the right decision
- Info must be easy to access, use and interpret
- Information must be reliable and credible
- Information is in:
 - ❖ Different places
 - ❖ Owned by different Divisions
 - ❖ Utilizes different business rules and logic
 - ❖ Developed with different technologies
- GIS alone will *never* be enough to meet the information needs of any organization!



Example of the Problem



- Director of the DOT gets a call from the head of the Senate Transportation Committee.

“I need a list of projects and their budgets which are currently under construction in my district on heavily traveled routes that are scheduled for repaving.”

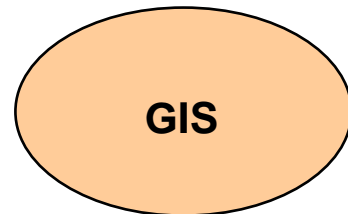


How do you Answer the Question?

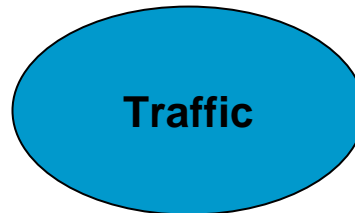
- Requires gathering and collating up to date information from several different data sources.
- Not all are GIS enabled and those that are may not share a common LRS.
- The integration required to answer this question goes beyond the capabilities of GIS software alone.



IMS/Mainframe



Oracle Spatial



Oracle



Oracle



SQLServer

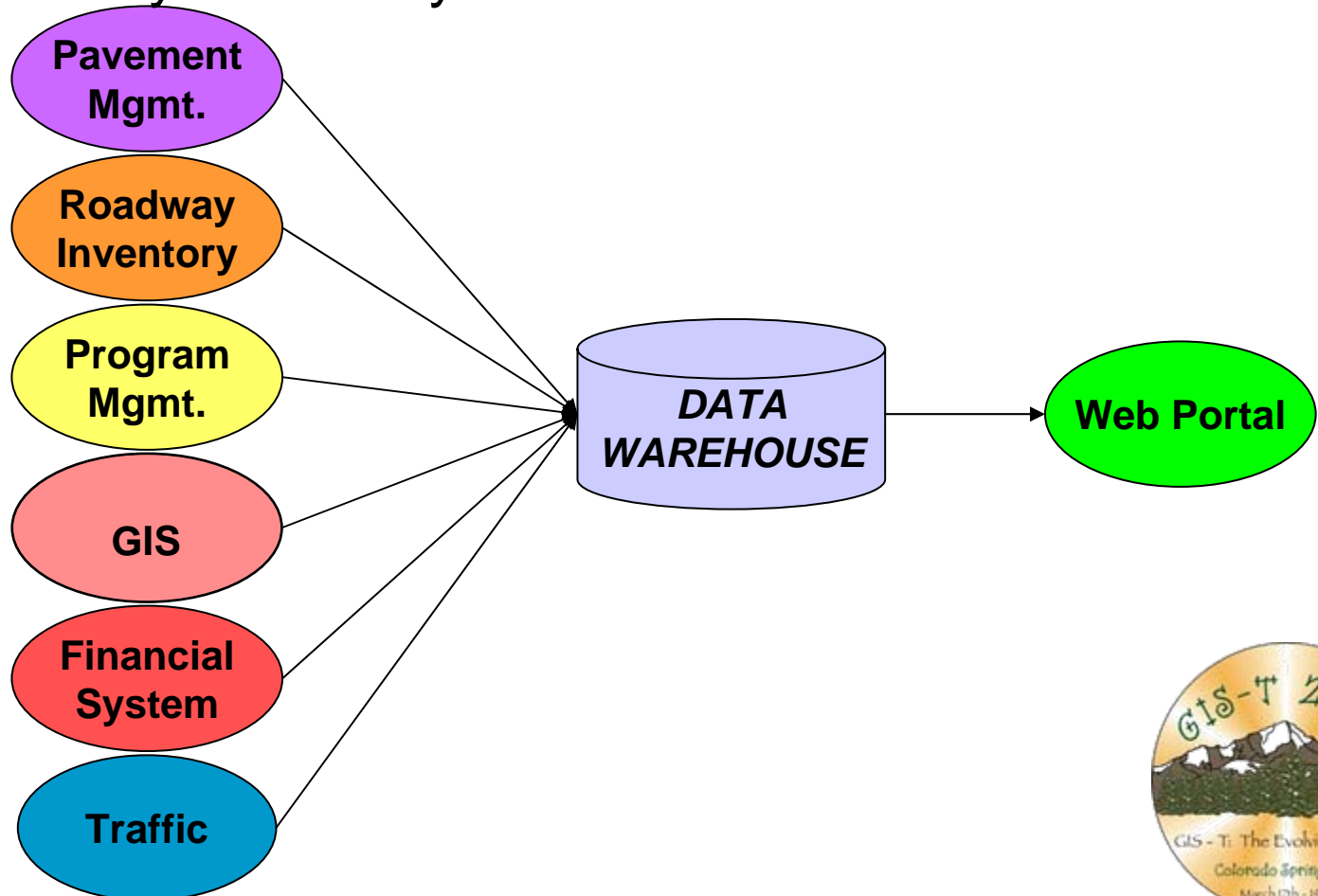


FoxPro



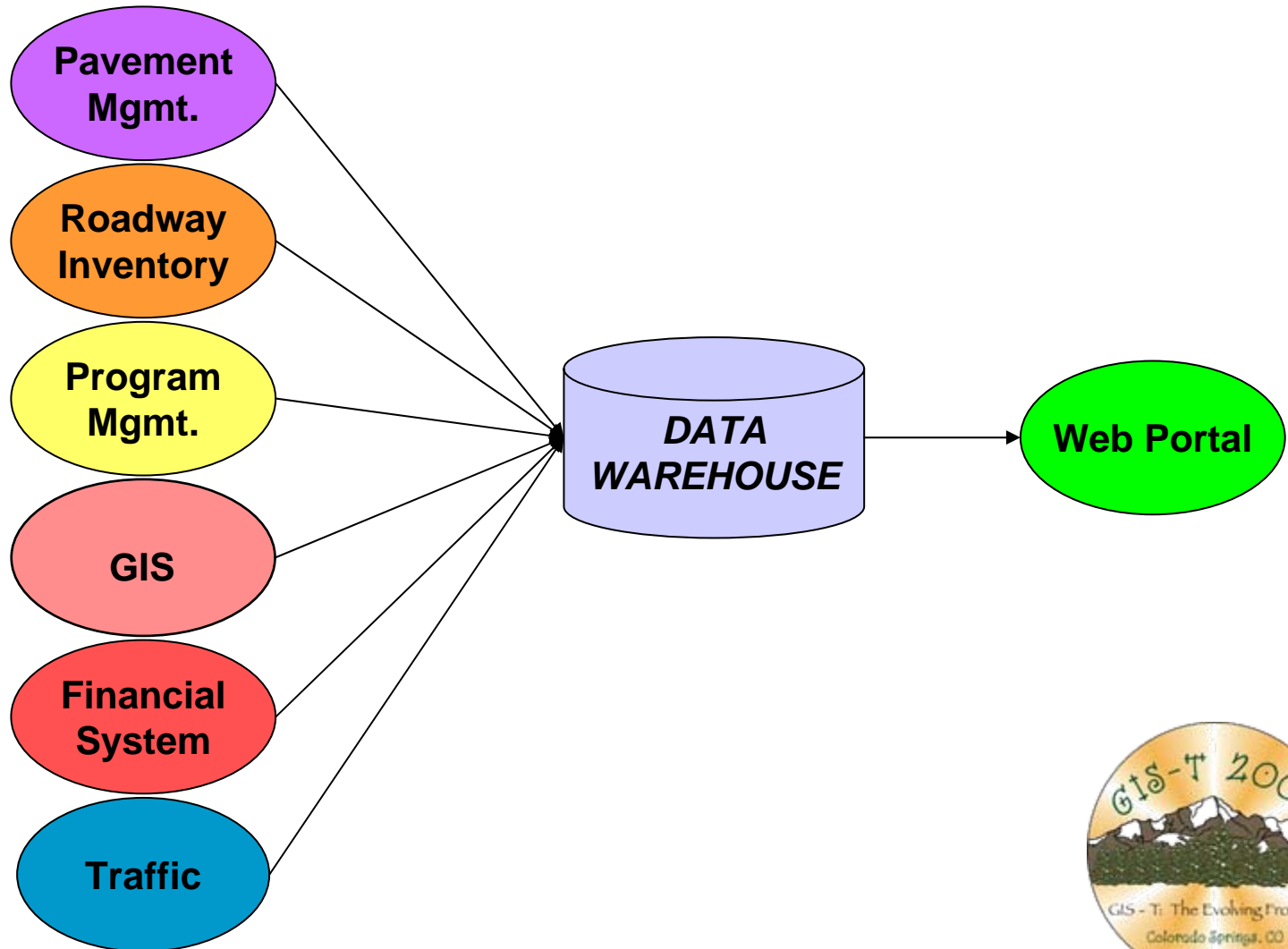
Data Warehouse Solution

- Data warehousing of all data to be shown on the map
- Extensive data preprocessing
- Web based application front end for single point of entry and analysis



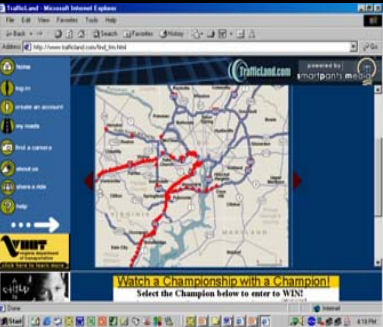
Data Warehouse Advantages

- All data in one place to manage for the GIS
- May realize some performance enhancements



Data Warehouse Disadvantages

- Duplication of data which may lead to source of truth issues.
- Overhead of import and export mechanisms for moving information around – increases the chance that errors may occur.
- Pre and post processing logic is required.
 - ❖ Often written/found in the individual applications
 - ❖ Not easily locatable
- Stale data - Never any better than the last update to the warehouse.
- How much data can you efficiently stuff into one warehouse?



The Integrated Approach

- Web based map-enabled portal for single point of entry and ease of use.
- Middleware distributes data

Middleware: A software product which serves as the “glue” between multiple data sources.

Middleware is an off the shelf product provided by many vendors.

Oracle Spatial

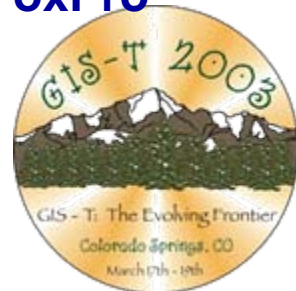
Roadway Inventory

Oracle

Program Management

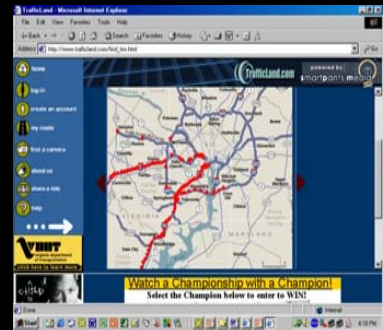
SQLServer

FoxPro



Benefits of the Integrated Approach

- Real time information
- Business logic accessible to any application in the enterprise
- Real time benefits to entire IT enterprise, not just GIS (Helps to create standard IT development approach for the enterprise)
- Able to communicate with hard-to-reach data sources, such as mainframes and flat files, through off-the-shelf technology
- Reduces maintenance costs by isolating the application layer from the database layer
- Can communicate with multiple sources, including data warehouses.



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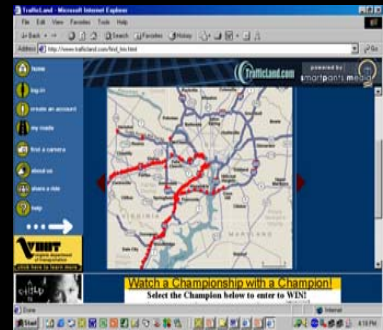
Web services are a new type of web application. They are self-contained, modular applications which can be published, located, and invoked across the Web.

Roadway
Inventory



Benefits of the Integrated Approach

- Integrates processes and systems
- Easy to add, change or replace applications across the enterprise without causing a cascade of changes to other applications
- Provides two way communication capability (bi-directional synchronization) allowing inserts and updates to data on back-end data sources (*ONLY* if desired)
- Wave of the future – all data will be live and real time
- ***Don't make the enterprise fit the GIS, fit the GIS into the enterprise***



Come and See Us!

For a demo of our web-based Integrated Transportation Management System approach, please come visit our booth!

GeoMedia WebMap Professional Transportation Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History

Address <http://isgdemo/scdemo/Home.htm> Go Links >>

SCDOT

County

Project Status

Show Projects

View State Map

Main Menu
Home

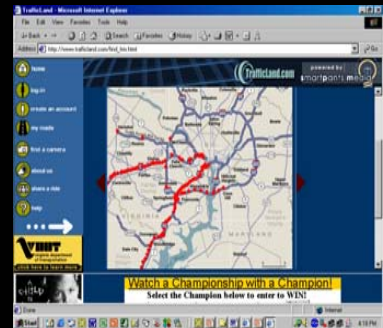
South Carolina

Done Local intranet



What does Middleware do in the ITMS?

- Logic to associate non-GIS data with logmile data
- Business logic for information retrieval from disparate data sources
- Creates a common LRS between various data sources:
 - Traffic Database
 - Pavement Database
 - Roadway Inventory
 - Financial Data
 - Project Data
- Dynamic Segmentation



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