TMS : Transportation Management Systems

- Oracle-based data storage
- Transportation data (i.e. Traffic, Pavement, Accidents)
- Locations referenced by log miles
Linear Referencing

- Oracle tables can be queried and landed as route events in ArcGIS
- Challenge: ArcGIS is too complex for majority of data consumers
Transportation Management Systems

- Provides desktop and web solutions
- View and query data with no ArcGIS experience
Desktop solution

- Runs within ArcMap
- Suited for map creation by all levels of users
- Data stored in personal Geodatabases
Transportation Management Systems

Desktop solution

- Self-installing across network
- Can be used in off-network locations
- Uses ActiveX and .NET dll's, templates and layer files
Automatic updates

• Installer .exe checks for network availability, updates outdated files from server

• Users only need Admin to run installer when binary compatibility is broken, or for first time install
IObjectFactory

• After data update, a new MxDocument is created
• IObjectFactory is used to populate and configure the new document object
• Users choose layout size, map layout is set up automatically by Application object
Dim pObjectFactory As IObjectFactory
Dim m_pApp As IApplication
Dim pDoc As IDocument
Dim pMxDoc As IMxDocument
Dim pMap As IMap
Set pDoc = New MxDocument
Set m_pApp = pDoc.Parent
m_pApp.NewDocument False, templatePath
Set pObjectFactory = m_pApp
Set pMxDoc = m_pApp.Document
Set pMxDoc.ActiveView = pMxDoc.FocusMap
Set pMap = pMxDoc.FocusMap
Set pDockableWindowManager = m_pApp
pUID.Value = "{368131A0-F15F-11D3-A67E-0008C7DF97B9}"
Set pDockableWindow = pDockableWindowManager.GetDockableWindow(pUID)
pDockableWindow.Show False
pMap.DelayDrawing True
' ADD LAYERS
pDockableWindow.Show True
pMap.DelayDrawing False
m_pApp.Visible = True
Tools

• Used to aid permit agents in locating vertical clearance obstructions when routing trucks
Tools

• Allows users to access ARAN video for over 20,000 miles of road by clicking a route
Tools

- Allows users to browse route locations
- Can enter GPS coordinates and snap to routes
TMS Web Viewer

- Desktop viewer still too complex for some users, requires ArcGIS install
- ArcGIS Server provides a better solution for users that do not use ArcGIS
- Same functions as TMS Desktop Viewer, written in VB.NET, run on server
Architecture

- SDE 9.0 (Oracle 9i)
- IIS 6 on Windows Server 2003
- Visual Studio 2003 / .NET Framework 1.1
- ArcGIS Server 9.1 (SP1)
ArcGIS Server Considerations

- Cost - $$$
- IMS vs. Server
- Code must be efficient, not as forgiving as VB6
- SDE must be well-tuned for ArcGIS Server to perform well
Practices

• Always keep ArcObjects inside Try,Catch,Finally statements

• Use Finally blocks to release server contexts and dispose of webmap, webobj

• Not doing this can leave instances running, keeping locks in SDE after recycling

• Follow guidelines in Administrator and Developer Guide
Transportation Management Systems

TMS Web Viewer

- Quick access to SDE data
- Accepts URL variables for log miles, layers, bookmarks
TMS Web Viewer

- Provides access to ARAN video over intranet
ArcGIS Server Setup

- ArcGIS Server ADF installed on internal and external web servers (SOM)
- Internal server also serves as host machine for ArcGIS Server (SOC) processes
- Impersonation ID and password stored in encrypted registry key
ArcGIS Server Setup

- Internal server hosts apps for MoDOT users, such as TMS Viewer
- External web server hosts public apps, such as Traffic Congestion and Mobile Workzone Locators
- Both web servers currently use the same machine to host container processes
Future Uses

- Update log miles in Oracle tables
- Edit SDE data
- Generate reports based on map selections
- Addressing
- Routing