

Colorado Dept. of Transportation (CDOT)'s Geodatabase Migration Project

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Three Portions of Today's Presentation

✦ The Migration Project – Goals & Stages

✦ The Data Model – Logical and Physical Design

✦ Broader Applicability, Evaluation, and Future

Transportation Data Description

✠ TranSys database contains roadway inventory data

- ◆ Linearly referenced State highway routes
 - E.G. XSecOn table
- ◆ Roadway segments for roads under other jurisdictions

✠ Geometric datasets represent

- ◆ Roadway centerlines
- ◆ Jurisdiction boundaries
- ◆ Topologies

Geodatabase Migration Project Goals

- ✦ Move all TranSys data, now in Sybase, to Oracle
- ✦ Integrate geometric and tabular data for roadways and jurisdictions into one database
- ✦ Position the geodatabase that we build using ArcSDE/Oracle to become an enterprise database
- ✦ Minimize impacts on work activities outside migration project
- ✦ Enable on-going work to continue while migration data model and procedures are developed

Competitive Process

- ✦ CDOT Established Pre-Qualified Consultant List
- ✦ CDOT Developed Project Statement of Work (SOW) – Nov. '02
- ✦ CDOT Sent SOW to Pre-Qualified Consultants – Nov. '02
- ✦ Consultants Submitted Proposals – Dec. '02
- ✦ CDOT Evaluated Proposals
- ✦ CDOT Selected Farragut Systems, Inc.
- ✦ CDOT and Farragut Together Defined the Final Project Scope of Work – May '03

Project Team

CDOT Team

- ◆ Tammy Goorman – Project Manager
- ◆ Brandon Campbell – Technical Lead
- ◆ Key Advisors
- ◆ Coordination with Information Technology Office

Farragut Team

- ◆ Al Butler – Chief Architect and Designer
- ◆ Jerry Mohnhaupt – Senior Database Consultant

Project Deliverables

- ✦ Geodatabase Logical Data Model – Editing Environment
- ✦ HUTF Application Requirements & Initial Geodatabase Physical Data Model
- ✦ Remaining Six Application Requirements
- ✦ Geodatabase Physical Data Model – Editing Environment
- ✦ Pilot Data Migration – Completed and Validated
- ✦ Data Migration Project Plan

Key Business Rules - 1

- ✦ Treat each physical transportation facility as a separate roadway
- ✦ Combine local and State road data
- ✦ Allow attributes (events) to be defined for both roadways and traversals (routes)
- ✦ Tie all events to a position on a roadway using a linear LRM

Key Business Rules - 2

- ✦ Support the use of an optional single centerline and dual carriageway geometries for road mapping applications
- ✦ Separate the editing (development) and publication (production) environments
- ✦ Provide record-level metadata to support:
 - ◆ who created the record and when
 - ◆ the date the attribute value was compiled
 - ◆ the time period for which the value is valid

Key Project Success Factors

- ✦ Upper Management Support – esp. Resources
- ✦ Develop Data Business Rules Early
- ✦ Use Business Rules to Drive the Logical Data Model
- ✦ Determine Key Application Requirements
- ✦ Use Application Requirements to Drive the Physical Data Model and Designs
- ✦ Differentiate Between Editing and Publication Data Environments and Models

Relationship to Products & Tools

✦ The 7 Key Applications are shown in **Red**

✦ Reporting

- ✦ Highway Performance Monitoring System – annual FHWA report
- ✦ HPMS Data Extract
- ✦ Highway Users Tax Fund – annual report supporting funds distributions to local governments
- ✦ City & County Road Mapping
- ✦ Traffic Data Analysis & Reporting

✦ Editing Applications

- ✦ HUTF Data Editor
- ✦ On-System Data Editor
- ✦ Traffic Data Compilation

Relationship to Products & Tools - Continued

- ✦ The 7 Key Applications are shown in **Red**
- ✦ End-User Applications
 - ✦ **Data Access - web application**
 - ✦ Maps2 – ArcView 3.2 application
 - ✦ Straight Line Diagramming – web application
- ✦ Data Products
 - ✦ Integrated Road Information System – IRIS
 - ✦ Highway and Roadway Statistics

Technology

✦ Oracle 9i

✦ ArcSDE - ESRI

✦ Geodatabase – ESRI

✦ Variation on Enterprise GIS-T Data Model
by Dueker & Butler

✦ Not UNETRANS Model

Schedule

- ✦ Geodatabase Logical Data Model – Editing Environment – July ‘03
- ✦ HUTF Application Requirements & Geodatabase Physical Data Model – Sept. ‘03
- ✦ Remaining Six Application Requirements & Geodatabase Physical Data Model – Nov. ‘03
- ✦ Pilot Migration Project Plan – Dec ‘03
- ✦ Editing Web Application Design – Jan ‘04
- ✦ Pilot Data Migration – Completed and Validated – Due
- ✦ Data Migration Project Plan – Due

Cost Elements

- ✦ Proposed Costs from Farragut
- ✦ Costs of Hardware and Software
- ✦ CDOT Staff Costs
 - ◆ Project Manager
 - ◆ Technical Lead
 - ◆ Advisors
- ✦ Costs of Adopting Technology
- ✦ Costs of Data Repair