

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

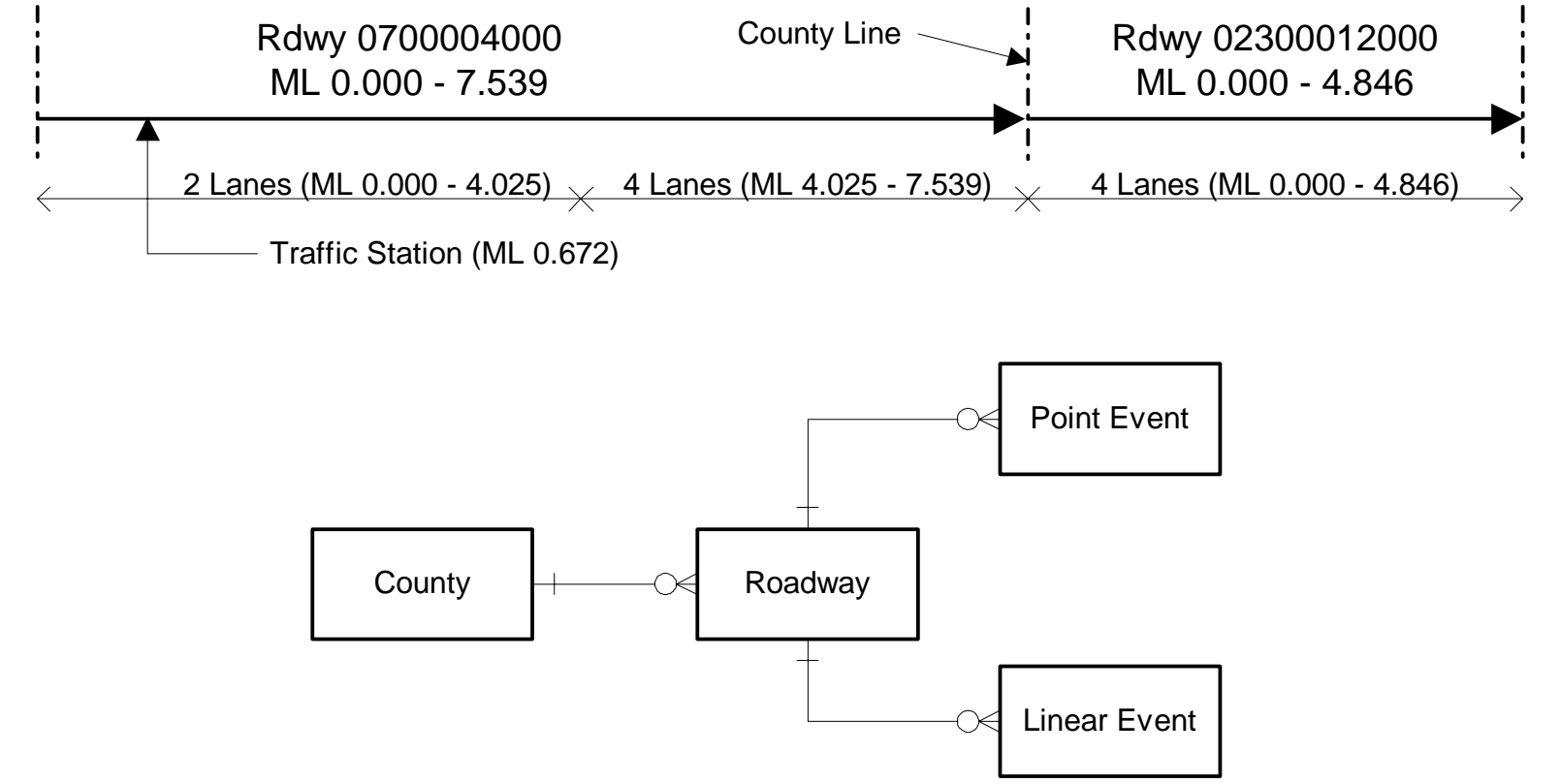
Logical Data Model

- ✠ Roadway object is the center of the model
 - ◆ The real-world feature over which the general public may travel in a motor vehicle
- ✠ Roadway public key
 - ◆ 3-digit county FIPS code
 - ◆ 4-digit primary sequence number for roadways within the county
 - ◆ 2-digit secondary sequence number for ancillary roadways
 - ◆ 1-digit version sequence number

Roadway Segmentation

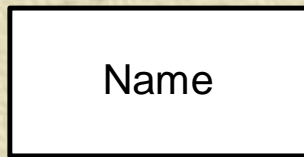
- ✦ Linear extent of a roadway is limited to a single county
- ✦ All other forms of basic segmentation are eliminated
 - ✦ block-by-block structure of off-system roads
 - ✦ event-based segmentation of State routes

Roadway Segmentation Schema



Entity Relationship Diagram Symbology

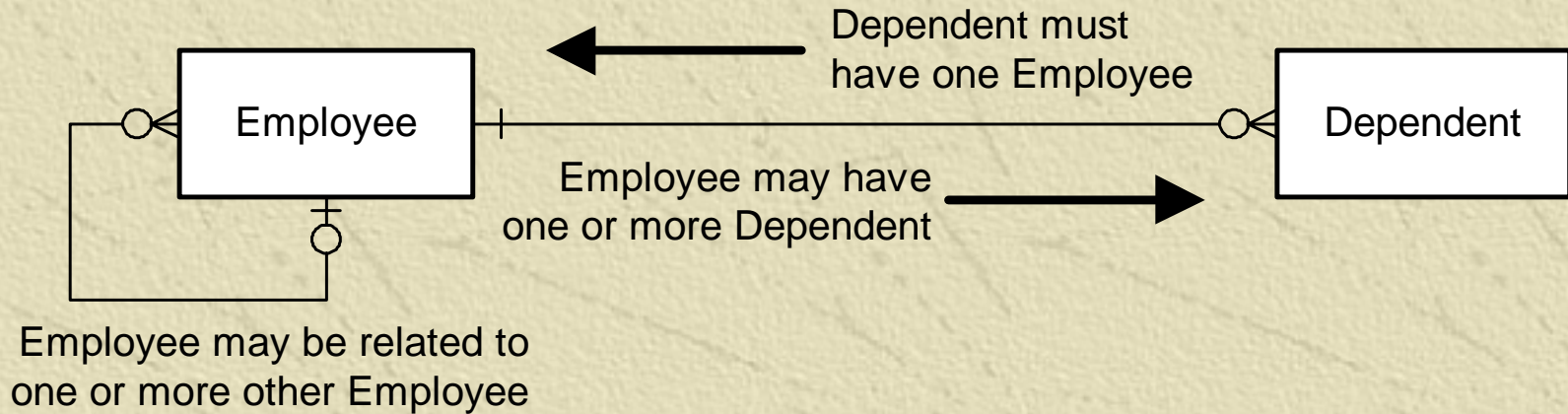
Entity



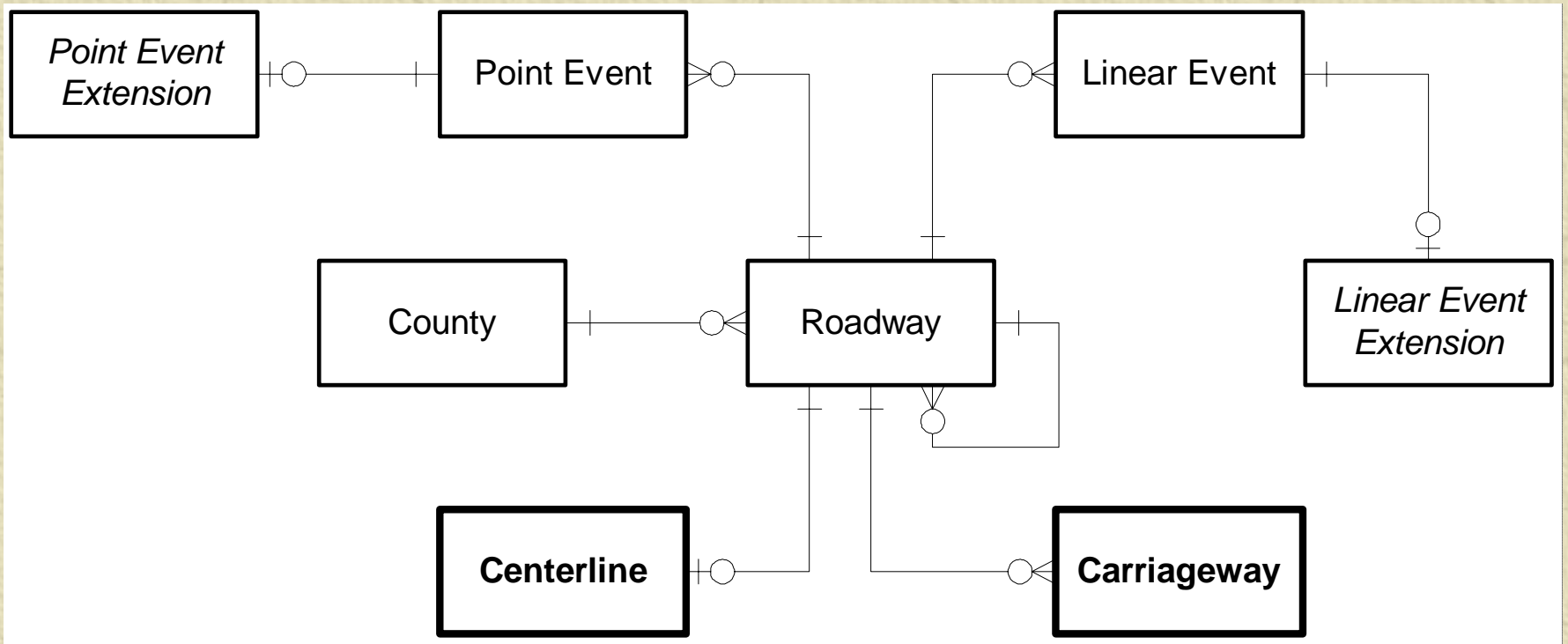
Relationships

- + One must exist
- ◁ One or more must exist
- + One may exist
- ◁ One or more may exist

Example



Logical Data Model - Core



Logical Data Model - Events

✦ Linear Events

- ✦ Functional Class
- ✦ Speed Limit
- ✦ Number of Through Lanes
- ✦ NHS Designation
- ✦ Maintenance Jurisdiction

✦ Point Events

- ✦ Anchor Point

Logical Data Model - Extensions

✦ Linear Event Extensions

- ✦ Pavement Condition Section
- ✦ Project
- ✦ HPMS Sample Segment
- ✦ Traffic Section

✦ Point Event Extensions

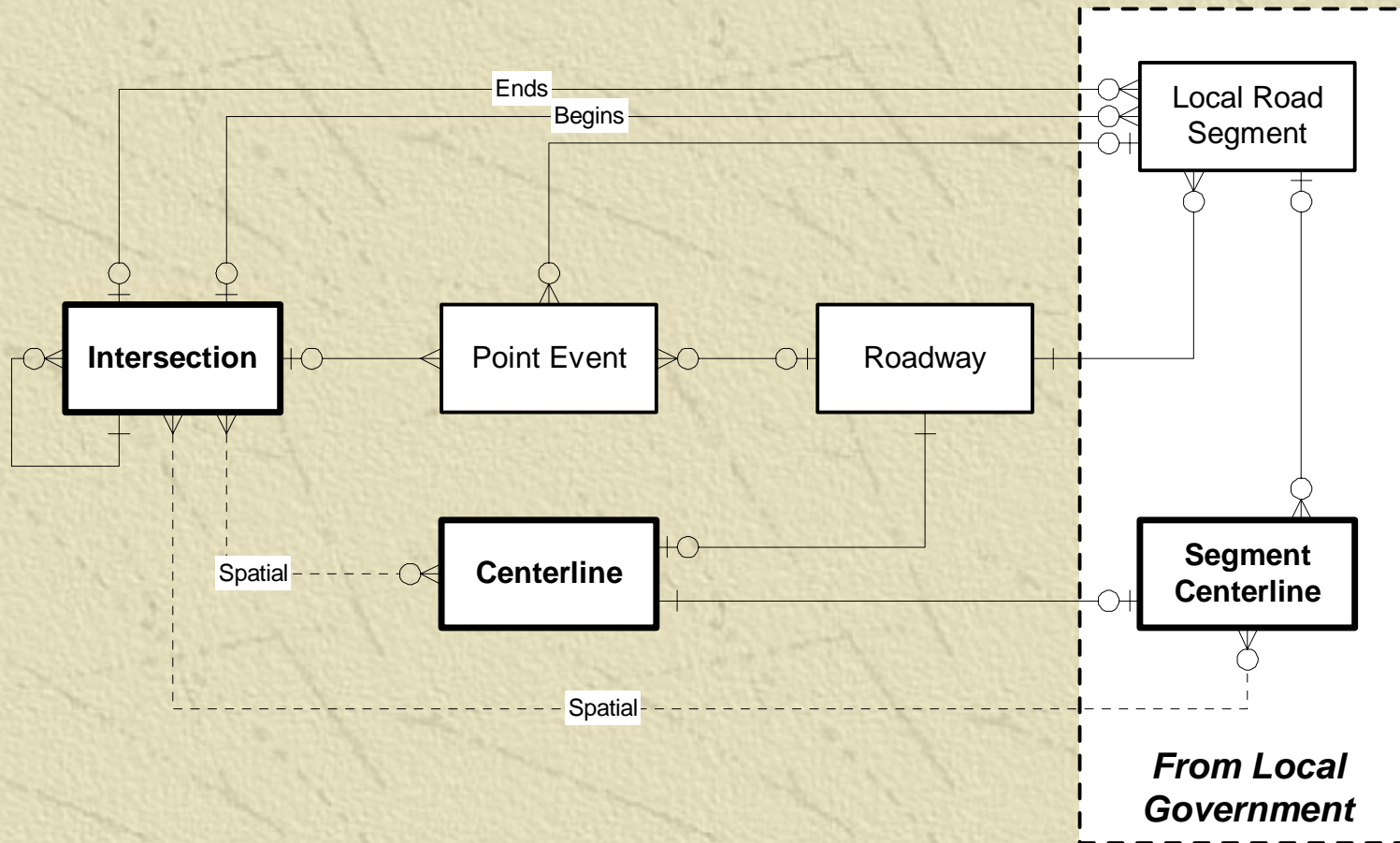
- ✦ Traffic Count Station
- ✦ Bridge

Logical Data Model - Extensions

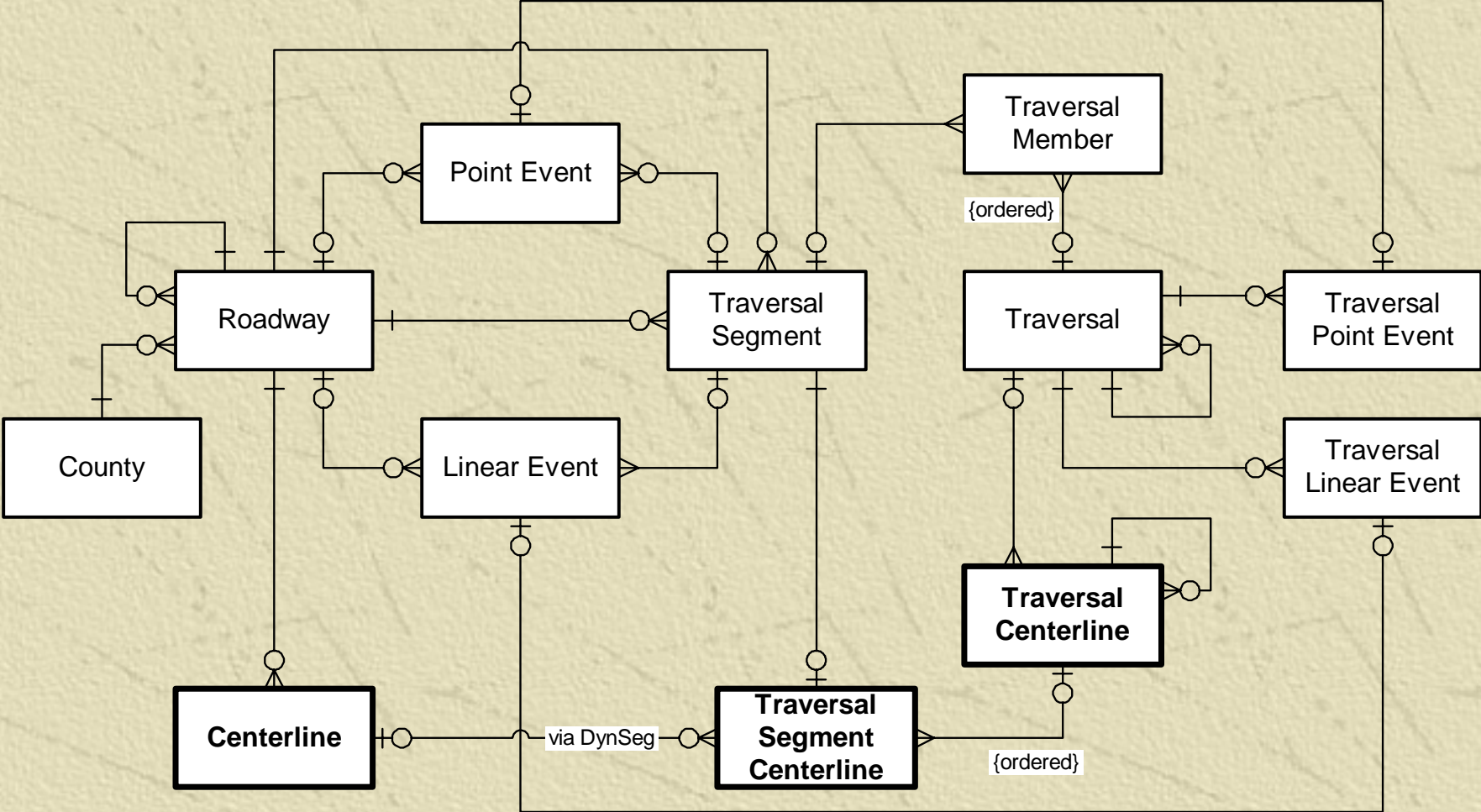
✦ Data Model Extension Package

- ✦ Intersection
- ✦ Traversal
- ✦ HPMS
- ✦ Traffic Monitoring
- ✦ Anchor Point

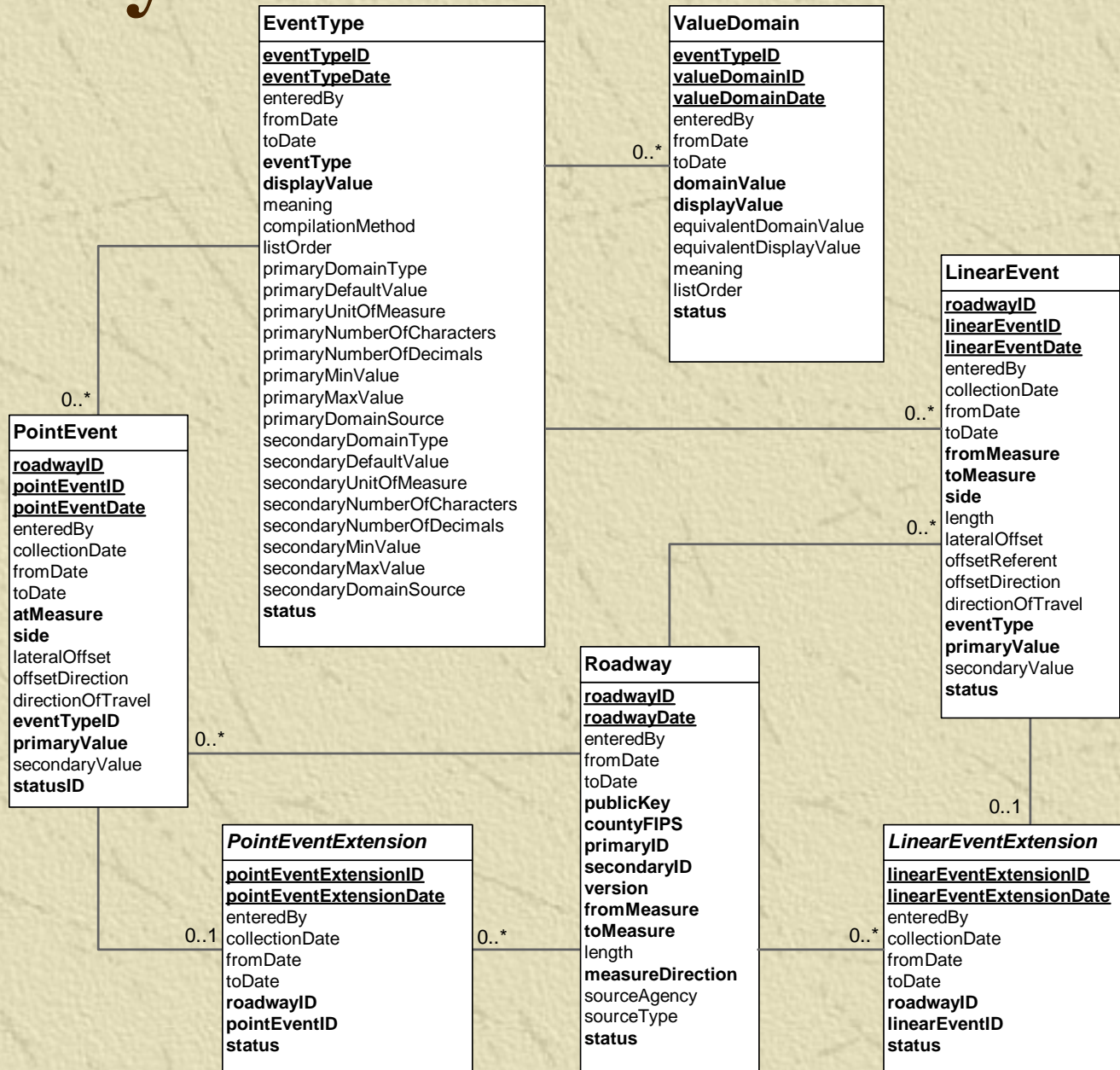
Intersection Data Model Extension



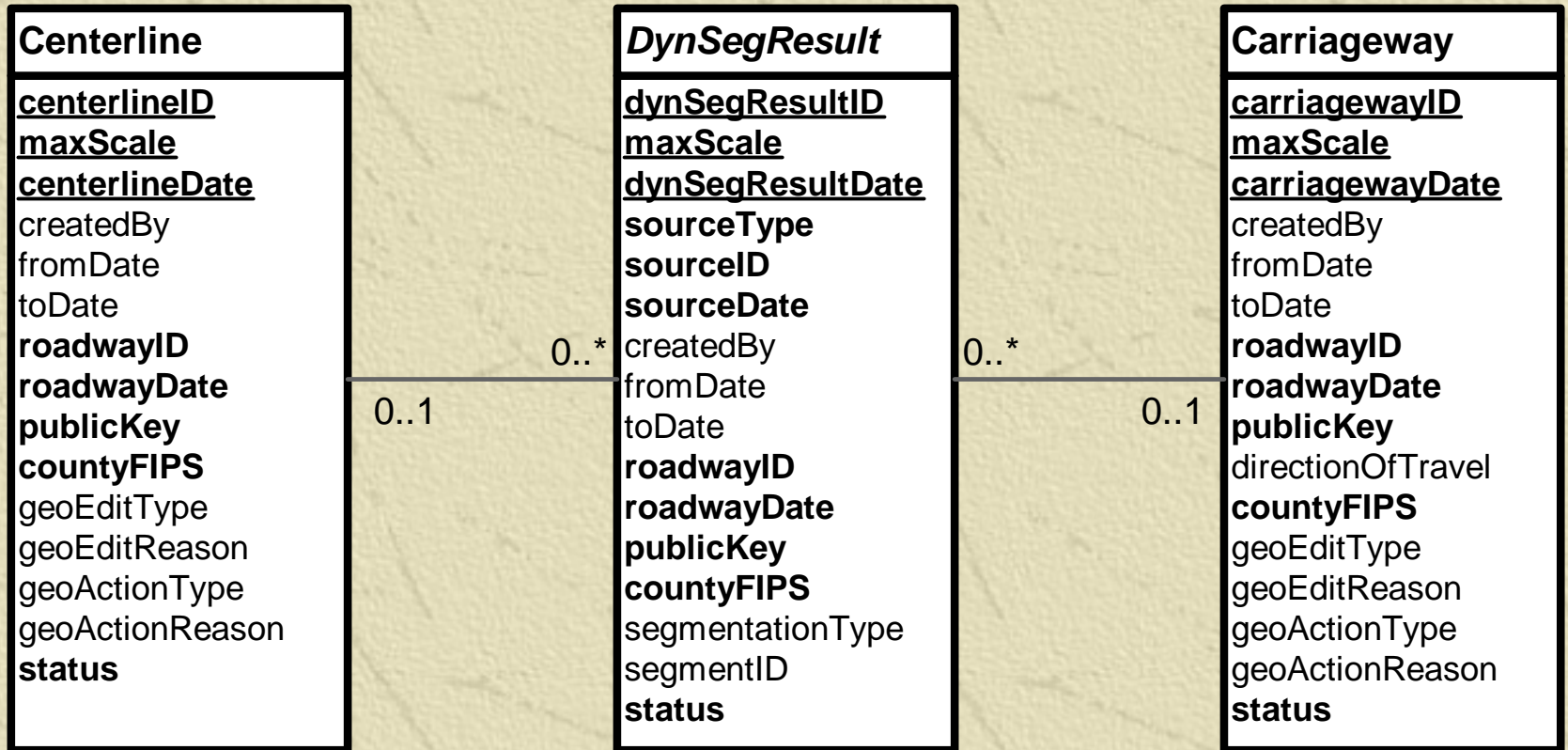
Traversal Data Model Extension



Physical Data Model - Core



Physical Data Model – Roadway Inventory Geometry



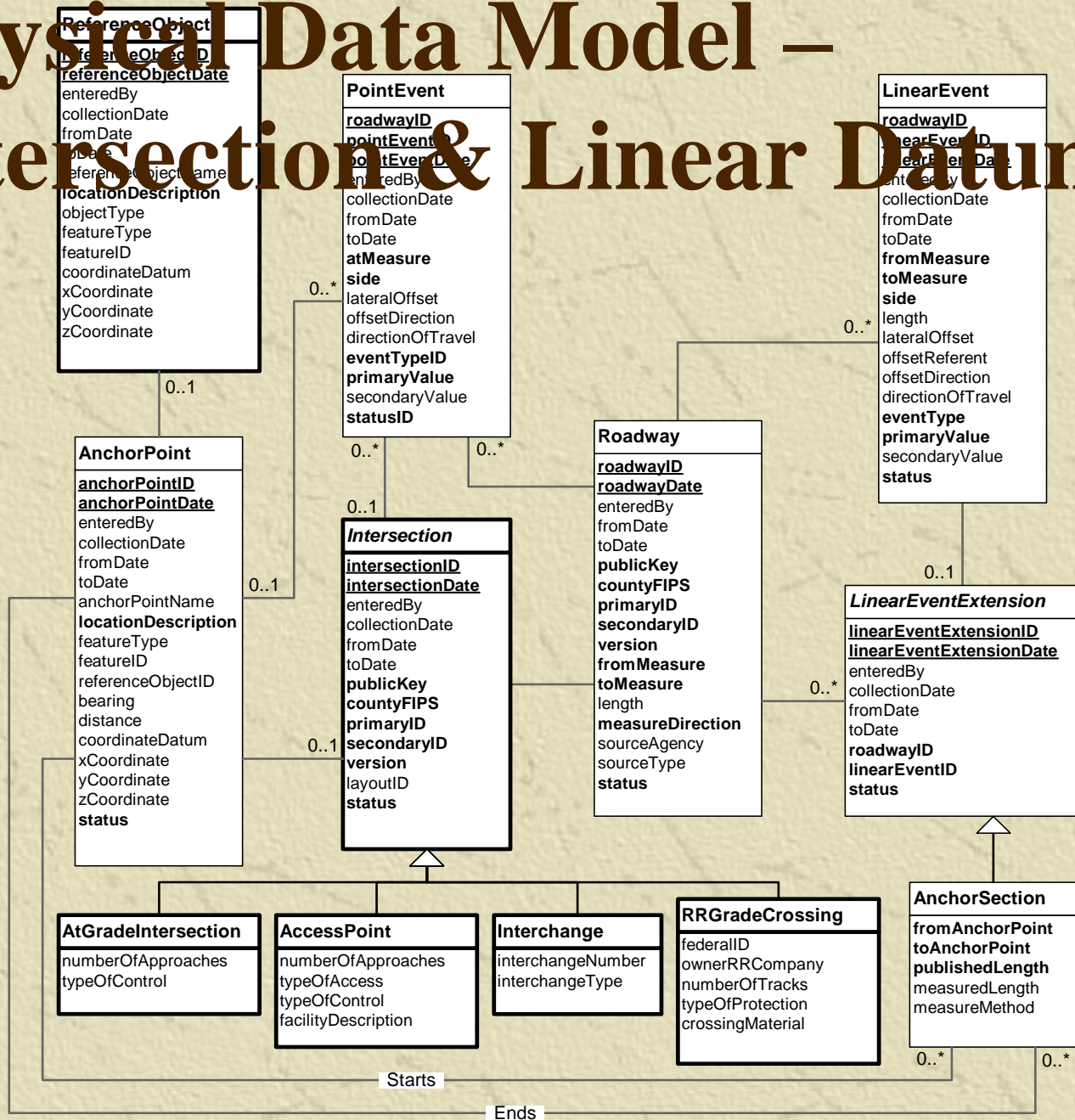
Roadway Status Domain

CODE	DESCRIPTION
1	Proposed
2	Active
3	Replaced
4	Retired

Dates in the Logical Data Model

- ✦ Dynamically construct the state of the transportation system as of a given date
 - ◆ fromDate
 - ◆ toDate
 - ◆ status
- ✦ Update log is built into the model
 - ◆ roadwayDate
 - ◆ enteredBy
- ✦ No records are deleted from the geodatabase
- ✦ ArcSDE's Versioning capability is used only to avoid concurrent update conflicts

Physical Data Model – Intersection & Linear Datum



Physical Data Model - Traversal

