3 Unwrapping PODS 7
Part 2
Unwrapping PODS 7

Unit 3 – A continuation of training on the PODS 7 data model and component databases
Intended Audience

- GIS/IT professionals
- New to pipeline industry
- Little or no exposure to PODS

PODS Training – both PODS Basics and PODS Advanced – create a better understanding of PODS Standards and PODS implementations through geospatial and relational database applications.
3 Unwrapping PODS 7

An introduction to the PODS 7 Data Model and component databases
Webinar Series Overview

• **Unit 1** – Introduction to PODS 7
• **Unit 2** – Unwrapping PODS 7, Part 1
• **Unit 3** - Unwrapping PODS 7, Part 2
• **Unit 4** – Modifying & Extending PODS
• **Unit 5** – Introduction to Utility Network
• **Unit 6** - Information and Analysis – Risk and Reports
Introduction

- What comes with PODS 7?
  - Core table comparison with PODS 7 and previous versions. What’s changed?
  - Pipeline Hierarchy, Linear Referencing, Assets, Conditions, Operations, Locations, Metadata, Model Metadata, Documentation Metadata
  - Unzipping PODS 7 contents – User Docs, Logical model files, GDB files, PODS Scripts and Data Dictionaries.
- PODS 7 Conceptual Schema Diagram and how to read it
- PODS Hierarchy and Relationships – Pipeline parent object – Product – Code/LookUp table. Connections between Pipeline parent and other entities.
3 Unwrapping PODS 7

- The PODS 7 Schema
- Design Principles
- What does PODS 7 include?
Our Goals for this Unit

1. Become familiar with the PODS 7 data model.
2. Learn how to interpret the PODS 7 Conceptual Model Poster.
3. Discuss various PODS implementations and the types of databases can support PODS.
4. Gain familiarity with PODS data creation scripts and their results.
PODS 7 Design Principles

• Future - A complete departure from previous models and designed for the future.
• Agile - Extensible, agile, and flexible model based on solid core modules.
• Historical - Built for the historical and present-day lives of pipeline assets.
• Spatial - Supports spatial representations of assets (ESRI and non-ESRI).
• Interoperable - Can access and share information within and between organizations.
• Easy to understand, implement, extend, and use.
PODS 7 Model Types

One PODS 7.0 Conceptual Model
Microsoft Visio

One PODS 7.0 Logical Model
Sparx Enterprise Architect, Shapechange

Managed by the PODS Association
Managed by Users of the PODS Model

Download templates and instructions from PODS website

Multiple Implementation Patterns (templates for different platforms)

e.g., geodatabase for use with Esri APR
• The PODS 7.0 data model is published out to the following physical implementation schemas:
  • Oracle RDBMS
  • MS SQL Server RDBMS
  • Postgres RDBMS (with PostGIS option)
  • ESRI Server (Enterprise Geodatabase) running on Oracle,
    • MS SQL Server, or PostGreSQL (with PostGIS option)
  • ESRI File and Personal Geodatabases
• PODS Lite – A free smaller version of PODS for user evaluation
What comes with PODS 7?

- User Documents
- PODS 7 Logical Model Files
- Geodatabase Files
- Scripts and Data Dictionaries
• README_List of Documents – **START WITH THESE.**
• Executive Summary – Background and high-level overview
• Technical Overview and Guide - Technical concepts of the model
• Conceptual Model Diagram (Poster)
• PODS 7.0 RDBMS Configuration Guide
• PODS 7.0 Geodatabase Configuration Guide
• Design Standards Document
• Modeling and Physical Implementation Generation Guide
• PODS 7.0 Change Log
PODS Creation Scripts

• PODS Downloadable zip file
• PODS-7.0\PODS 7.0 SCRIPTS AND DATA DICTIONARIES-ALL FLAVORS

- 20-PODS-7-0_insert_metadata.zip
- 21-PODS-7-0-Oracle-SDO.zip
- 22-PODS-7-0-Oracle-ST.zip
- 23-PODS-7-0-SQLServer.zip
- 24-PODS-7-0-PostgreSQL.zip
• 22 Oracle ST zip file contents
  • These are the files that build the PODS implementation

- PODS 7-0 Oracle ST RDBMS Data Dictionary-FINAL.pdf
- PODS-7-0_insert_metadata-oracle.sql
- PODS-7-0-Oracle-ST.eap
- PODS-7-0-Oracle-ST.sql
- PODS-7-0-Oracle-ST_inserts_codelistType_2.sql
- PODS-7-0-Oracle-ST_inserts_codelistType_3.sql
- PODS-7-0-Oracle-STSpatial.sql
CREATE TABLE PIPELINE_TYPE_CL (  
  CODE VARCHAR2(75) NOT NULL PRIMARY KEY,  
  DESCRIPTION VARCHAR2(255),  
  CODE_STATUS VARCHAR2(50),  
  CODE_STATUS_NOTES VARCHAR2(255),  
  CODE_SUPERSEDES VARCHAR2(75)  
);
<p>| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |
| INSERT INTO PIPELINE_TYPE_CL (CODE, DESCRIPTION, CODE_STATUS, CODE_STATUS) |</p>
<table>
<thead>
<tr>
<th>CODE_SUPERSEDES</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flowline</td>
<td>('Flowline', 'Flowline', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Flying Lead</td>
<td>('Flying Lead', 'Flying Lead', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Future Connection/Tie-In</td>
<td>('Future Connection/Tie-In', 'Future Connection/Tie-In', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Gas Injection</td>
<td>('Gas Injection', 'Gas Injection', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Gas Lift</td>
<td>('Gas Lift', 'Gas Lift', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Gathering</td>
<td>('Gathering', 'Gathering', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Interconnect</td>
<td>('Interconnect', 'Interconnect', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Jumper</td>
<td>('Jumper', 'Jumper', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Lateral</td>
<td>('Lateral', 'Lateral', 'valid', NULL, NULL);</td>
</tr>
<tr>
<td>Mainline</td>
<td>('Mainline', 'Mainline', 'valid', NULL, NULL);</td>
</tr>
</tbody>
</table>
• Code Look-ups become GDB domains applied to attribute tables
Using Supplied Data Dictionaries help you define your data and meet the PODS 7 standard.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type (or Domain)</th>
<th>Length</th>
<th>Precision</th>
<th>Scale</th>
<th>Allow Nulls</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL_COMPANY_NAME</td>
<td>esriFieldTypeString</td>
<td>75</td>
<td>0</td>
<td>0</td>
<td>false</td>
<td></td>
<td>The full name of the company for a given record.</td>
</tr>
<tr>
<td>PL_COMPANY_ACRONYM</td>
<td>esriFieldTypeString</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td></td>
<td>The acronym of the company name for a given record (e.g., stock ticker, internally designated acronym, etc.).</td>
</tr>
<tr>
<td>NATIONAL_IDENTIFIER</td>
<td>esriFieldTypeString</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td></td>
<td>A governmentally assigned operator identifier at the national/federal level (for example, NPMS for US regulatory).</td>
</tr>
<tr>
<td>STATE_OR_PROV_IDENTIFIER</td>
<td>esriFieldTypeString</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td></td>
<td>A governmentally assigned operator identifier at the state/provincial (regional/territory) level.</td>
</tr>
<tr>
<td>IS_OPERATOR</td>
<td>YES_NO NA CL</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td>Unknown</td>
<td>Logical flag indicating that a company may have (is allowed to have) a foreign key value in the PIPELINE table (OPERATOR_COMPANY_ID) which means that the company operates the pipeline. This model assumes that a pipeline is operated by a single company.</td>
</tr>
<tr>
<td>IS_OWNER</td>
<td>YES_NO NA CL</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td>Unknown</td>
<td>Logical flag indicating that a company may have (is allowed to have) a record in the OWNERSHIP table.</td>
</tr>
<tr>
<td>UNIQUE_ID</td>
<td>esriFieldTypeGUID</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>false</td>
<td></td>
<td>This is the primary key field for any table/feature class implemented in a PODS 7.0 data model.</td>
</tr>
<tr>
<td>CREATED_DATE</td>
<td>esriFieldTypeDate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>false</td>
<td></td>
<td>The date and time the database row was created in a database table.</td>
</tr>
<tr>
<td>LAST_EDITED_DATE</td>
<td>esriFieldTypeDate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>true</td>
<td></td>
<td>The date and time a database row was last modified or last edited. Modification means populating attributes with values that previously had no values, removing values that existed previously, or modifying the value of an attribute.</td>
</tr>
<tr>
<td>CREATED_USER</td>
<td>esriFieldTypeString</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>false</td>
<td></td>
<td>The name of the user or the software system who created the database record. Typically user IDs are derived from the operating system (OS) ID that the user logged in as. Alternatively, the CREATED_USER attribute could be populated by a relational database.</td>
</tr>
</tbody>
</table>
• **Assets**  
  • Installed and in-service product transport or containment devices  
  • Located by LR or XYZ locations  

• **Conditions**  
  • Representing the state or condition of a pipeline  
  • Results of activities including inspection or analysis  

• **Operations**  
  • Classifications system based on need for organization or as the result of analysis of the pipeline and the surrounding geography  

• **Locations**  
  • Typically used as reference points to find other features on or along the pipeline
Core Table Comparison

What’s changed between PODS 7 and previous versions?
• Describes the conceptual model poster including:
  • How to understand the diagram
  • How to read the diagram

• Abstract Classes
• Metadata
• Location Model (Linear Referencing System – LRS)
• Assets, Conditions, Operations, Locations
• Domains and Look-ups
• EditResponseCL
Attribute names ending in ID represent Primary Key or Foreign Key fields.

Attribute names ending in _IDENTIFIER indicate a field used for identification (non-database).

NN or AN stands for Not Null or Allow Null on Foreign Key constraints.

<d> indicates the field is qualified by a domain or check-constraint.

(1), (2) or (3) in the domain or Code Lookup indicates a 1) managed domain, 2) standard domain, 3) free-form domain.

An asterisk (*) indicates a special condition for the attributes in a table.

<d> indicates the use of a data type such as AUDIT, HISTORY, or DESCRIBE.
PODS Lite – Explore PODS 7 on your own

Want to “look under the hood” of PODS 7?

• Free download for members and non-members from PODS.org
• Subset of PODS 7 full model
• Available for multiple platforms:
  • ESRI Geodatabase, RDBMS, Open SQL
  • Supports ESRI APR, but not required
• Compatible with PODS 7
PODS 7 – Location Model

Location Model (Linear Referencing System - LRS) [Optional]

- Centerline
- CenterlineSequence
- LRSNetwork
- ContinuousMeasureNetwork
- EngineeringStationNetwork
- CalibrationPoint

assigns Measure to

ordered by
enumerated as
PODS Lite – Explore PODS 7 on your own

PODS Lite Download Contains:

1. PODS Lite User Documents
2. PODS Lite Logical Model Files
3. PODS Lite Geodatabase Files
4. PODS Lite Scripts and Data Dictionaries

User documents are similar to full version of PODS 7.

CLICK HERE to DOWNLOAD “PODS Lite.ZIP”
1. PODS 7 has many different implementation types.
2. When PODS Members download PODS 7, not only do they get the model, they also get high-quality support documentation and scripts to help you in your implementation.
3. The PODS 7 Conceptual Model Poster is available for download from PODS.org. It’s key to your understanding of the model.
4. Start learning with the section of text at the bottom the poster.
5. PODS Lite is a great way to sample PODS 7 in your environment.
End of Unit 3

Any questions?
Resource for This Unit  PODS Association web site

https://www.pods.org