

Building an Enterprise Geodatabase for Transportation Planning and Modeling *Puget Sound Regional Council*

presented to

2004 GIS-T Symposium

presented by

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March 2004

Transportation leadership you can trust.

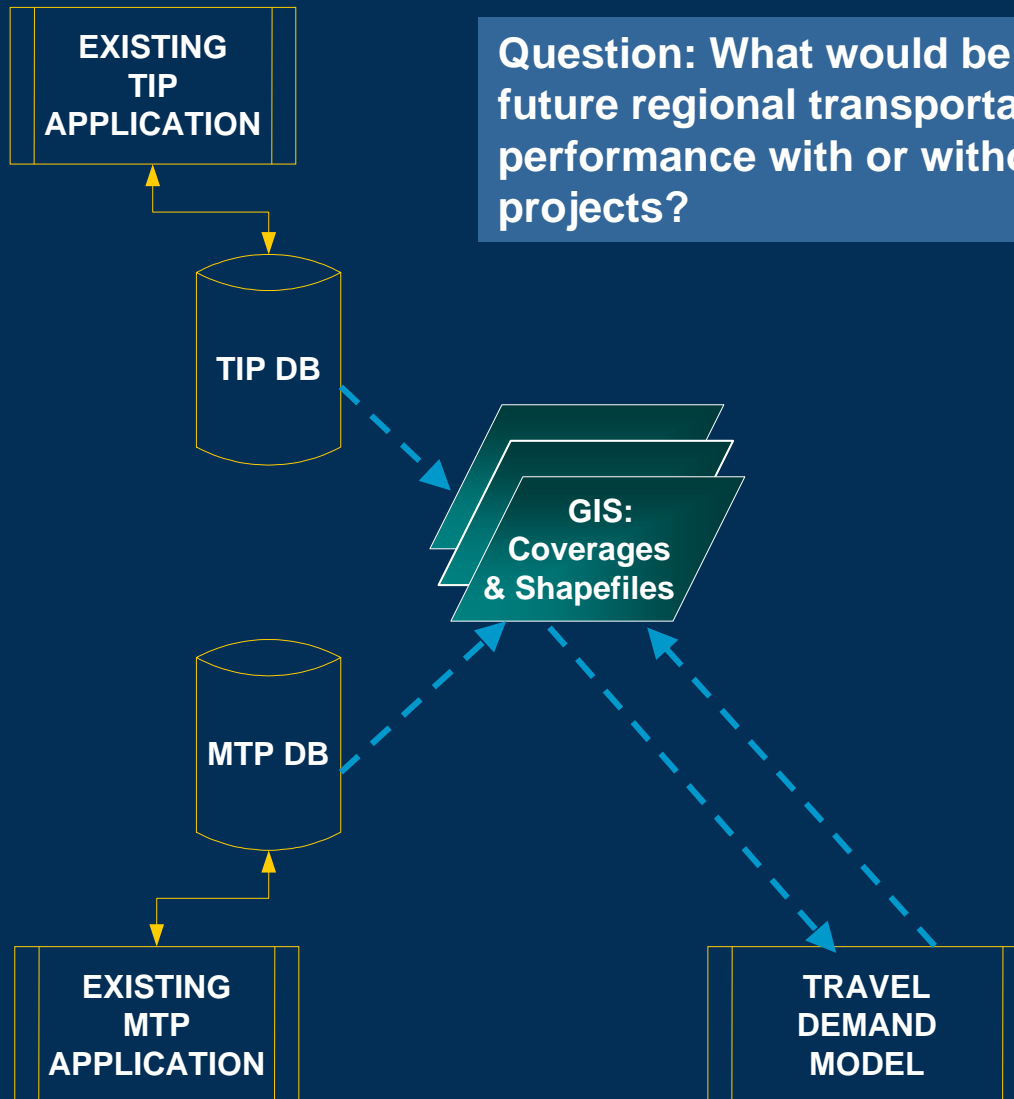
Overview

Build an Enterprise Geodatabase

- Data system architectures (before and after)
- New enterprise GIS transportation data model
- New GIS applications
- Next steps



System Architecture Transportation Components (Before)



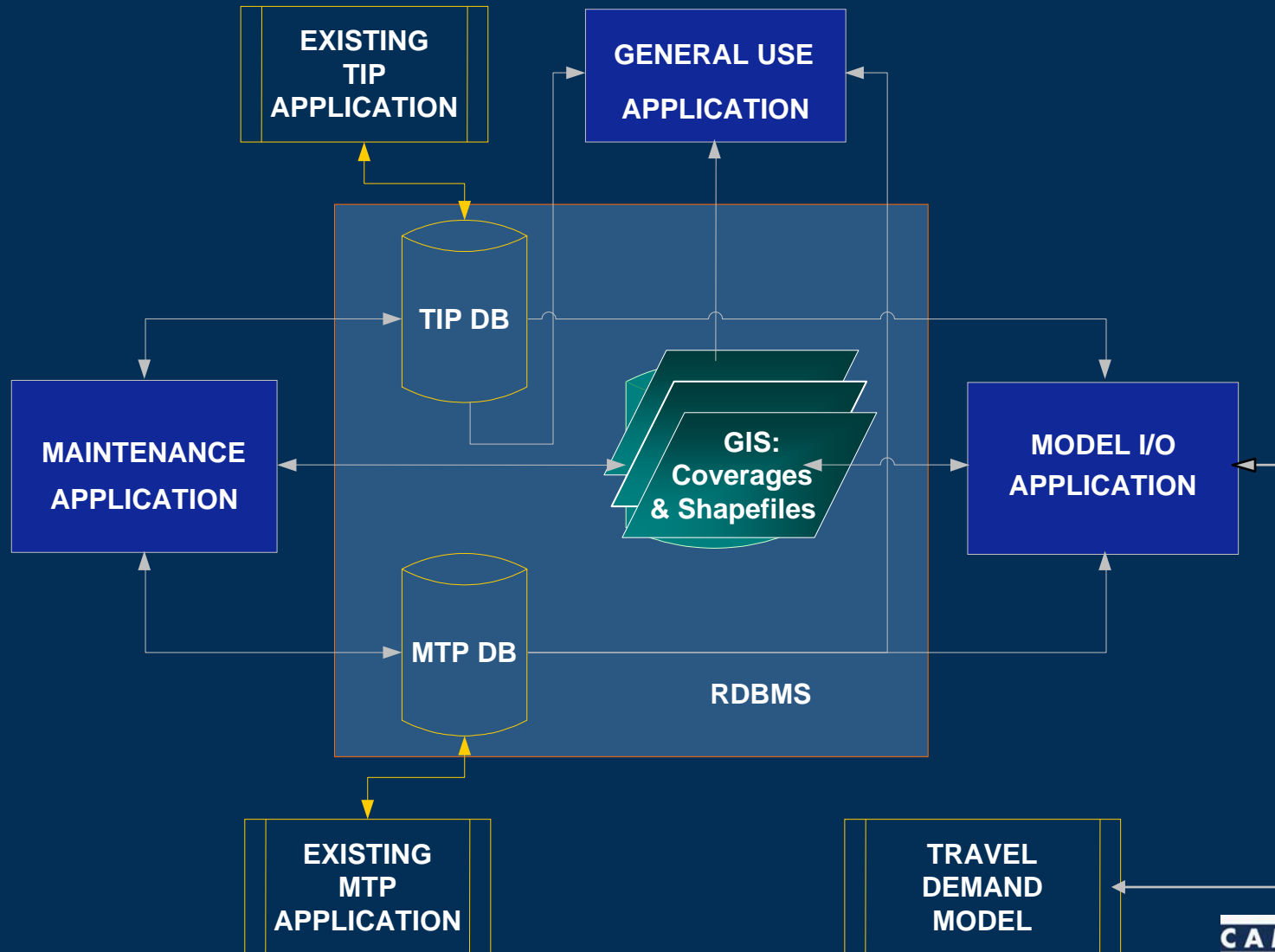
Question: What would be different about future regional transportation system performance with or without certain projects?



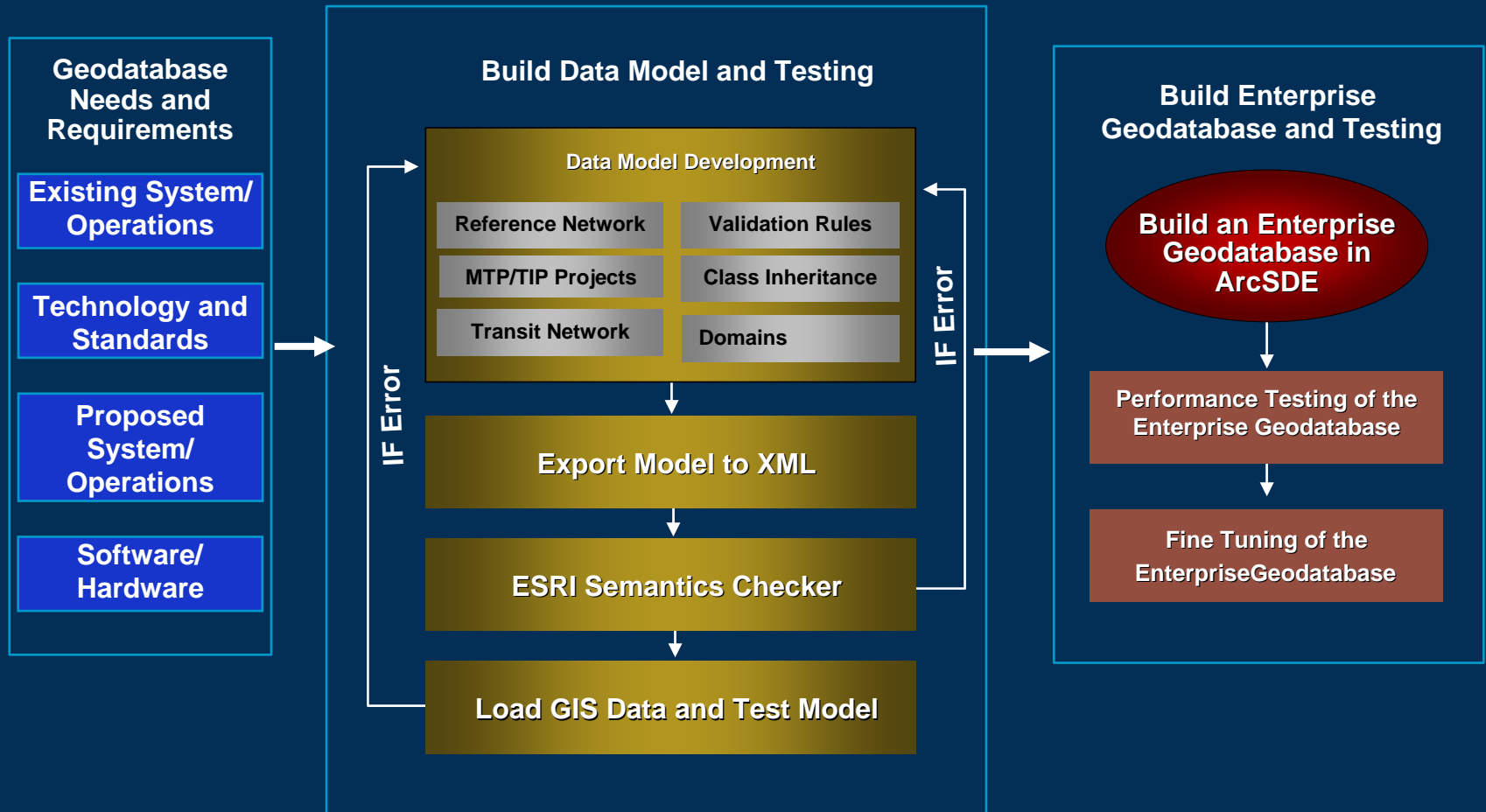
An Enterprise Solution

- To provide a centralized environment for data management and to eliminate the unnecessary passing of data between different programs and applications
- To enable teams to work with a consistent and up-to-date set of geographic features and attribute data
- To fully accommodate the requirements of TDM as well as the TIP and MTP applications
- To provide the foundation for future expansion to other applications, such as the Congestion Management System (CMS) and URBANSIM

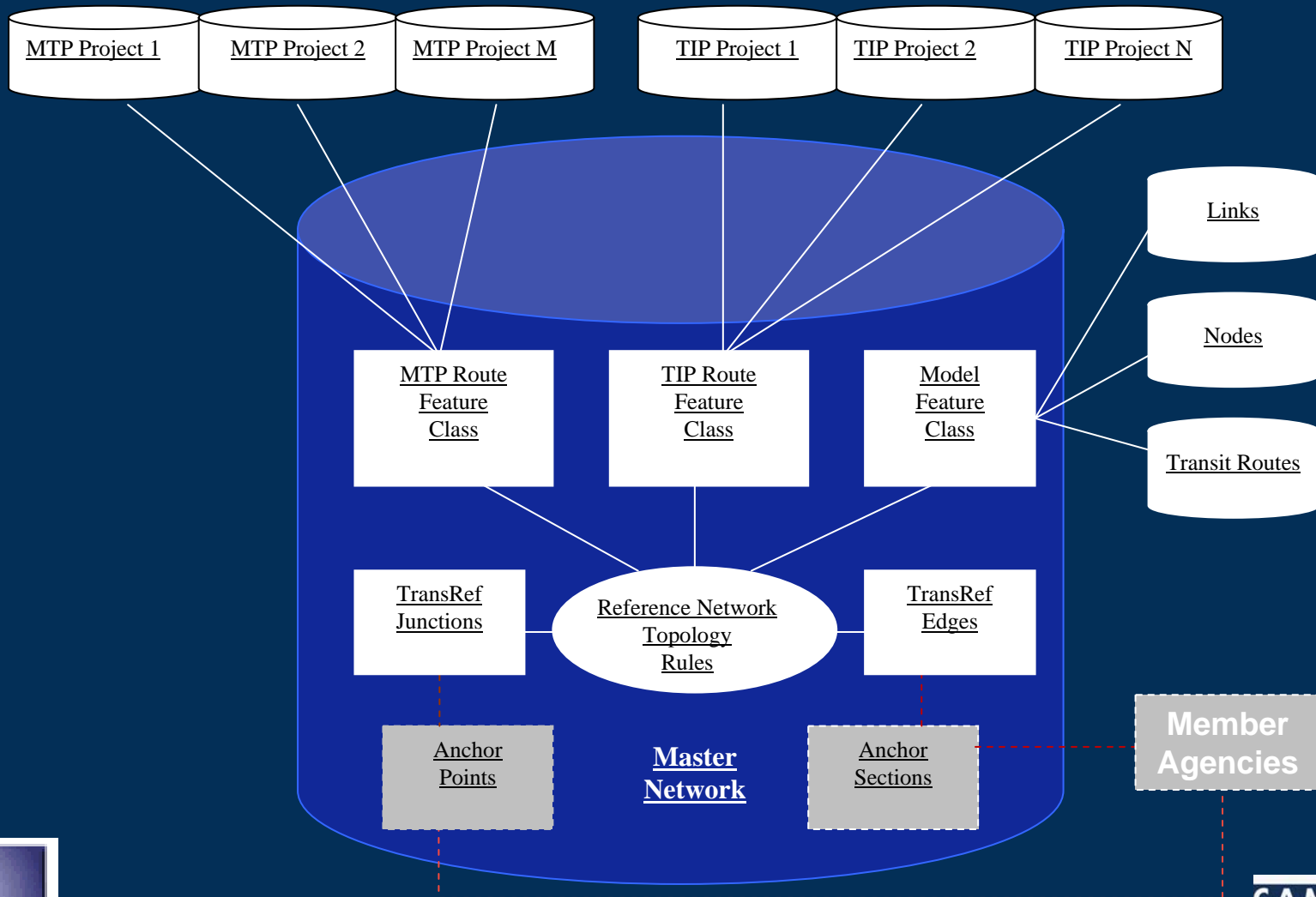
System Architecture Transportation Components (After)



Geodatabase Development Flow Chart



New Enterprise Data Model



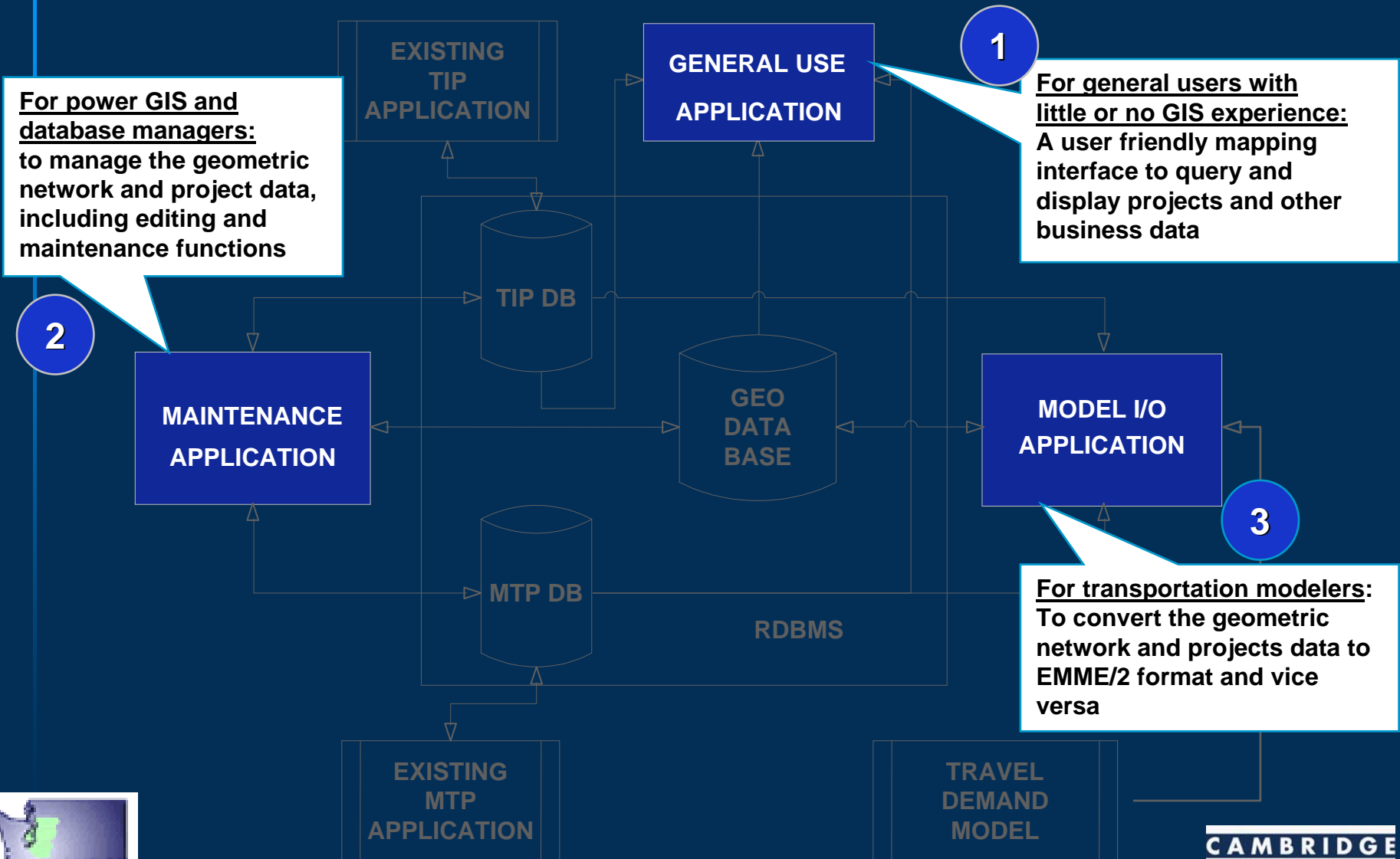
Transportation Network: Facility Types

- Freeway
- Expressway
- HOV
- Reversible
- Ramp
- Arterial
- Local
- Non-Motor
- Ferry
- Rail
- Monorail
- Busway
- Light rail
- Centroid Connector

ATTRIBUTES

- PSRC Edge ID
 - From/To Node
 - Direction
 - Modes
 - Dapacity
 - Speed limit
 - In/out service dates
 - Other attributes
- Unique ID
- By Time of Day
- Date/Time stamped dates

Overview of Applications



General Use Application Data Loading and Metadata

The screenshot shows the ArcMap interface with a map of a road network. A 'Data Catalog' window is open, displaying the following metadata for the 'PSRC User Application' under the 'Cities' category:

- Transportation**
- Political Boundaries**
- Urban Growth Area
- Cities**
- Vision 2020 Urban Cer
- County Limits
- Suburban Clusters Poir
- Suburban Clusters Poly
- Statewide County Bou
- School District Data
- Sound Transit Service A
- Parcel, Land Use
- Forecast and Monitoring
- Projects and Plans

Data Description: Regional council staff collect city boundary data from the WA Office of Financial Management, WA Department of Transportation and Counties. This layer is updated annually.

Data Limitations: none

Data Collection: Prepared from county and WA DOT data

Buttons: Load, Close, Metadata



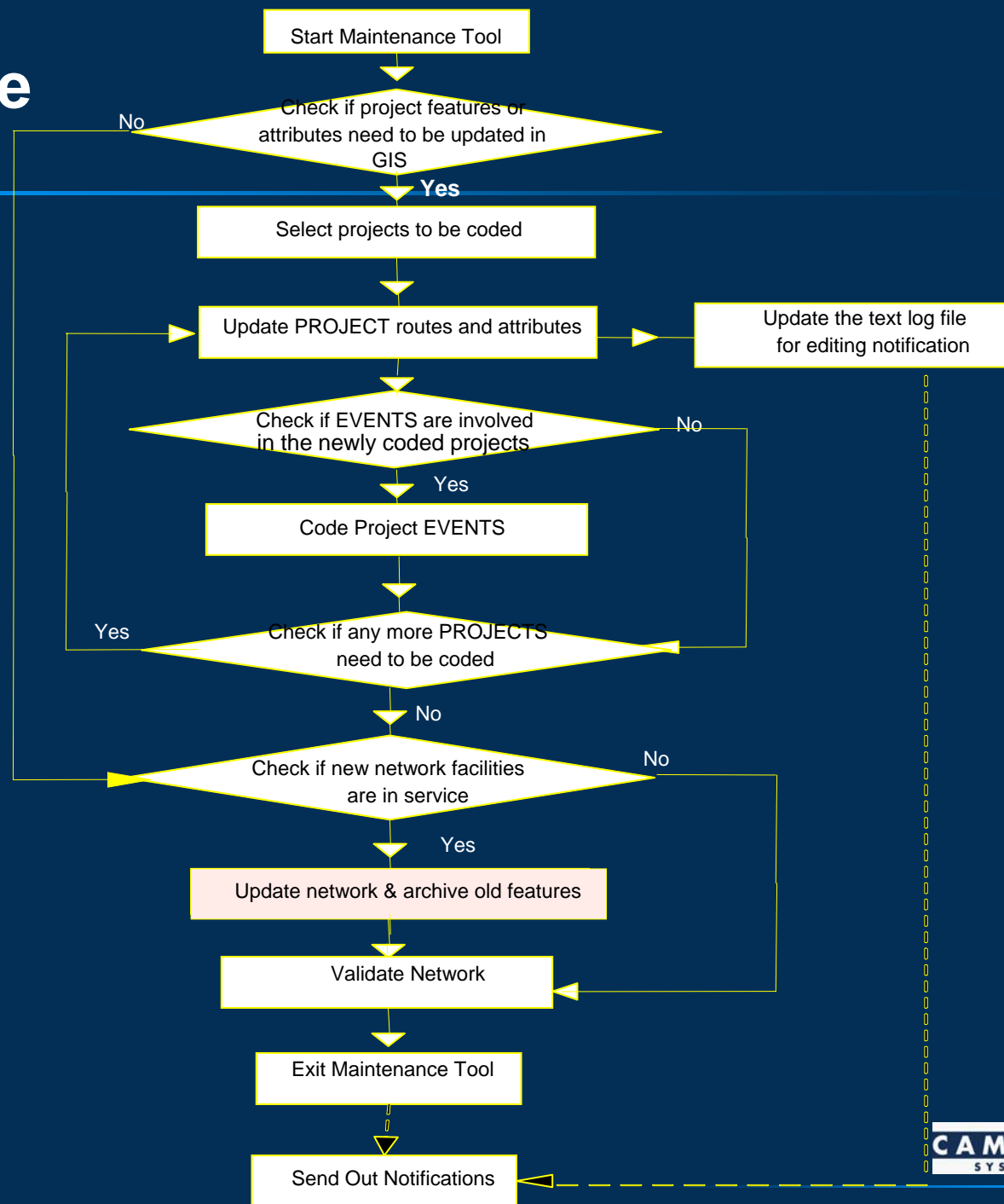
General Use Application

Display Projects or Model Results

The screenshot displays the ArcMap interface with a map of a transportation network. The map shows a network of roads and transit lines, with a prominent cyan line representing a transit route. The map is overlaid on a purple and green background. The 'Layers' panel on the left lists various data sources, including 'sde.DEFAULT (elm)', 'sde.DBO.Transpor', 'sde.DBO.Tran', 'sde.DBO.Tran', 'sde.DBO.TransPr', 'sde.DBO.Proj', 'sde.DBO.Proj', 'sde.DBO.Emme2_', 'sde.DBO.NamedR', 'sde.DBO.TransitR', and 'sde.DBO.Turn_Mc'. The 'Select Projects' dialog box is open, showing options for 'TIP', 'MTP', and 'Both'. It includes fields for 'Project ID' and 'Project Title', and a list of 'Named Selections' including 'Scenarios' (Destination 2030 2003 update, Baseline 2000 Model, Destination 2030 Adopted), 'Jurisdictions', and 'Project Characteristics'. The dialog box also features buttons for 'Select...', 'Clear Selection', 'Help', and 'Close'.




Maintenance Work Flow



Maintenance Application Update Project Databases

Update Projects

Please select the project database(s) that you would like to update:



Transportation Improvement Project (TIP)
 Metropolitan Transportation Plan (MTP)
 Check both TIP and MTP

Check **Exit**

Uncoded Projects To Check

The following projects have not been coded in the geodatabase.

MTP	TIP
2-2	-1
3-3	MUK-1-1
721-1	00NOID-396-1
1646-5	10-1
1647-7	101-1
1648-6	102-1

The following projects were coded in the geodatabase. But new changes have been made to the mode attributes of the projects.

MTP	TIP
1645-3	1-1
1808-2	
2472-3	
2498-3	
2526-4	

The following projects are identified as non-mappable projects.

MTP	TIP
4-1	
5-2	
6-2	
7-2	
8-2	
9-2	

Please select projects that need to be coded or updated. Check here to select all projects in the above lists.

Create/Update Project Routes **Exit**

- Three Options:
1. Code in New Projects
 2. Update Existing Projects
 3. Non-mappable



Project Information and Editing Options

Based on the project attribute information listed here, choose the project type and the editing options

Project Database: 1 of 3

Project ID: Project Version:

Attribute Values:

Title: Tacoma Dome Rail/Bus Transit Center
Location: Tacoma Dome Rail/Bus Transit Center
From: n/a
To: n/a
Description: n/a
In Service Date: 2010

Project Type

- Linear project
Example: Adding of HOV lanes
- Point project
Example: Creating new bus station

Editing Options

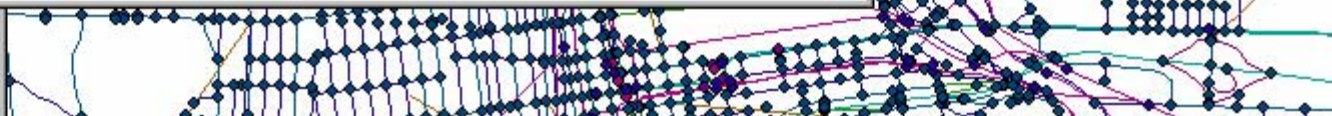
- 1. Updating project attributes
- 2. Selecting existing TransfRef features from the Map
- 3. Advance: New Network Edges
- are needed in the Map to create this project
- 4. Advance: New Network Junction
- are needed in the Map to create this project

Check this box if the project involves event



TransRef feature(s) to become part of the new route project:

- ID:205162
- ID:205163



Project Information and Editing Options

Based on the project attribute information listed here, choose the project type and the editing options

Project Database: 2 of 3

Project ID: Project Version:

Attribute Values:

Title: Tacoma Dome Rail/Bus Transit Center
 Location: Tacoma Dome Rail/Bus Transit Center
 From: n/a
 To: n/a
 Description: n/a
 In Service Date: 2010

Project Type

Linear project
Example: Adding of HOV lanes

Point project
Example: Creating new bus station

Check this box if the project involves event

Editing Options

1. Updating project attributes

2. Selecting existing TransRef features from the Map

3. Advance: New Network Edges are needed in the Map to create this project

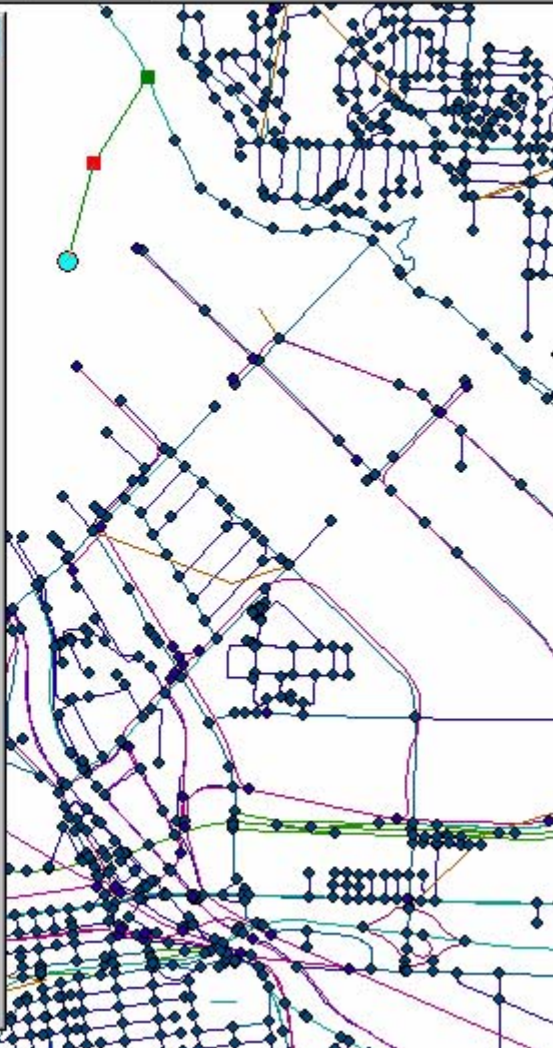
4. Advance: New Network Junction are needed in the Map to create this project

OK Exit



TransRef feature(s) to become part of the new route project:

Remove Add Selected



1-48,303

Task: Create New Feature Target: TransRefEdges : Generic

Project Information and Editing Options

Based on the project attribute information listed here, choose the project type and the editing options

Project Database: TIP **3 of 3**

Project ID: 2498 Project Version: 3

Attribute Values:

- Title: SR-509: at Cloverdale St (In Seattle)
- Location: n/a
- From: n/a
- To: n/a
- Description: n/a
- In Service Date: 0

Project Type

- Linear project
Example: Adding of HOV lanes
- Point project
Example: Creating new bus station


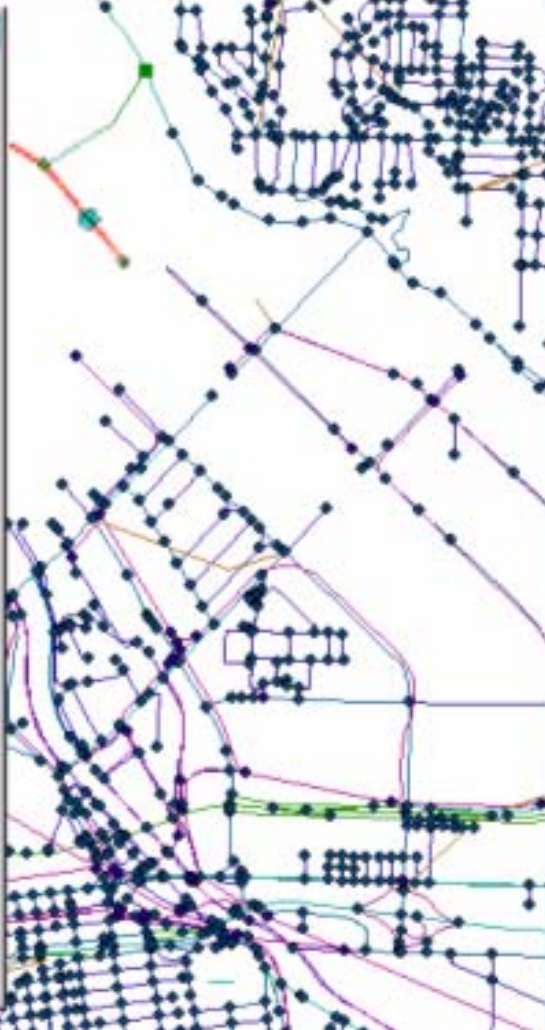
Editing Options

- 1. Updating project attributes
- 2. Selecting existing TransRef features from the Map
- 3. Advance: New Network Edges are needed in the Map to create this project
- 4. Advance: New Network Junction are needed in the Map to create this project

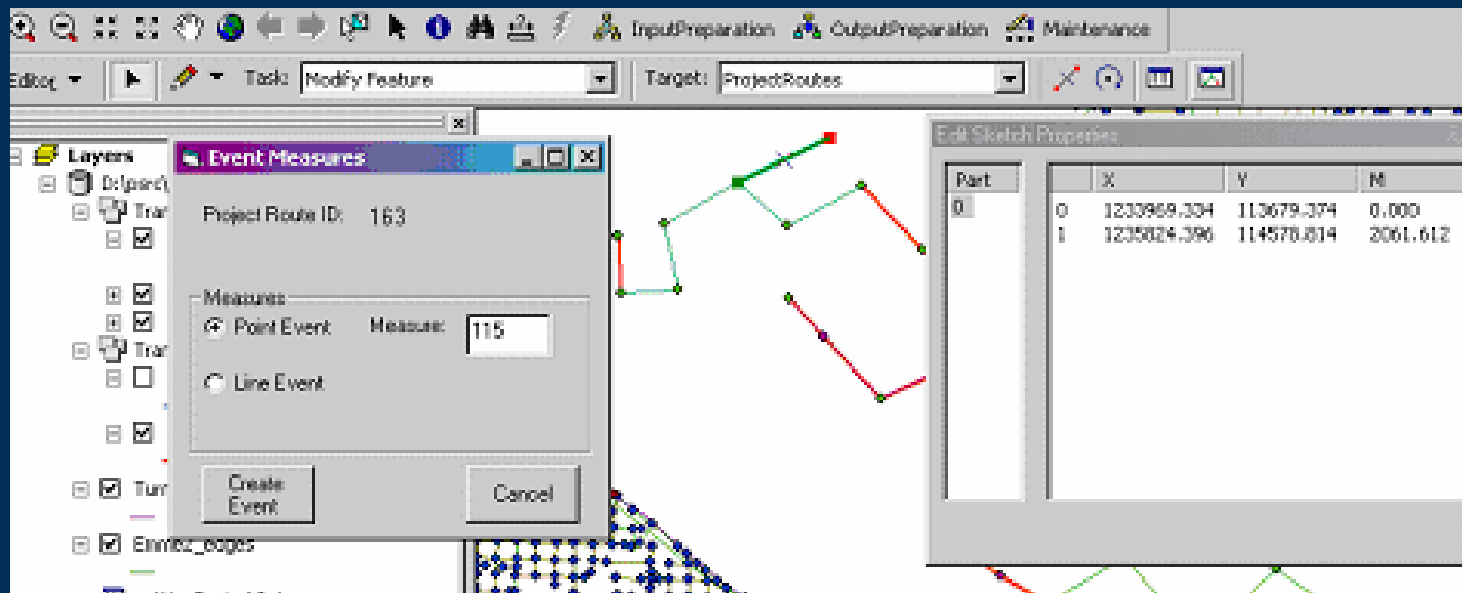
Check this box if the project involves event

Remove Add Selected

TransRef feature(s) to become part of the new route project:

Project Event Editing



Model I/O Application

Create an EMME/2 Input Scenario

Scenario Definition Form

Enter Modeling Scenario Information

YEAR: (e.g. 2020)

TITLE:

DESCRIPTION:

Advance Scenario Definition. User will be able to add additional projects to modeling scenario.

Mapped Projects Results

List of Mappable projects found based on year. Select projects from list that you wish to include in the model.

MTP	TIP
1-25	27PCO-45-1
2-2	FIF-12-1
3-3	LW-5-1
5-2	MIL-11-1
6-2	PCO-27-1
7-2	PCO-69-1
8-2	PCO-70-1

Select All Projects and Events Select All Projects and Events

MTP Events	TIP Events
TAC-57-1	TAC-57-1

Advance Scenario Selection Option

Note: All projects listed in the box below will be automatically added to the EMME/2 export.

SelectByAttribute SelectByLocation



Model I/O Application

Create an EMME/2 Input Scenario (Cont.)

Select By Attributes [?] [X]

Query Wizard...

Layer: **ProjectRoutes**

Method: **Create a new selection**

Fields:

- [OBJECTID]
- [projRtelD]
- [projDBS]
- [projID_Ver]
- [Length]
- [Shape_Length]
- [projID]
- [projVer]

Unique values:

[=] [< >] [Like]

[>] [> =] [And]

[<] [< =] [Or]

[?] [*] [()] [Not]

SQL Info... Complete List

SELECT * FROM TransProjects.ProjectRoutes WHERE:

Clear Verify Help Load... Save...

Apply Close

Save Scenario Files As [] [] [X]

Please select the path and an unique filename:

d: [DATA]

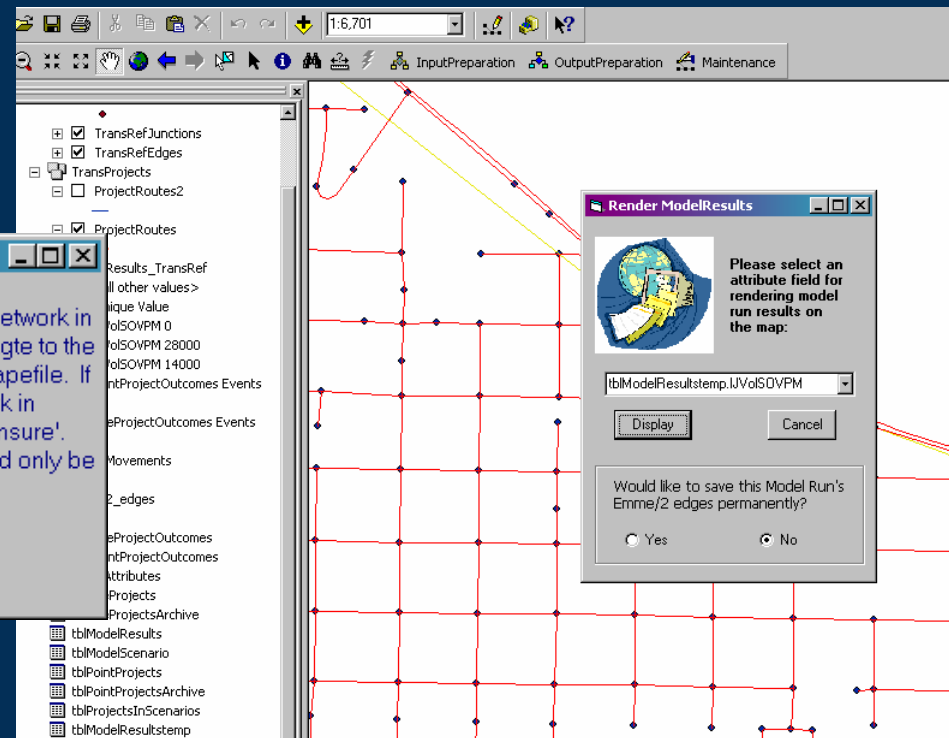
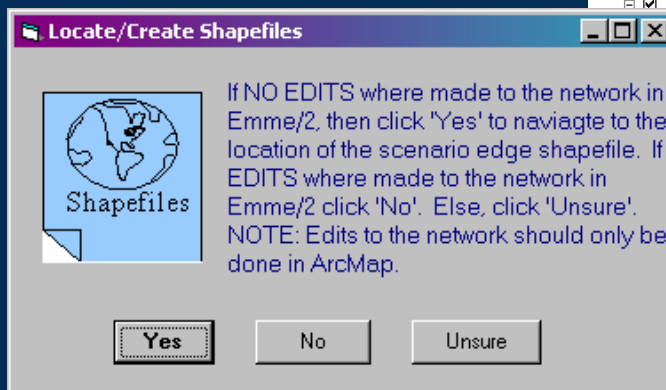
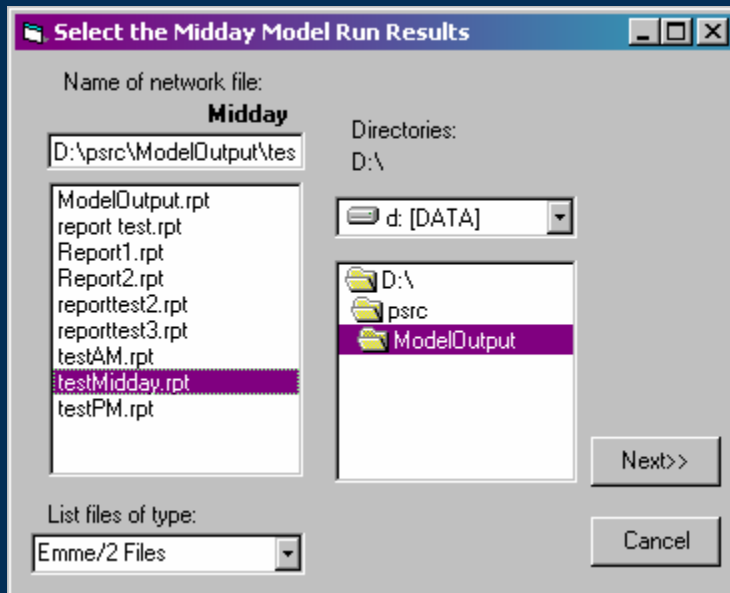
- D:\
- psrc
- AS12790
- ModelOutput
- MyDigitizeEvent
- PSRC_Final5d
- psrcApp

Enter name of Scenario:

Continue>> Previous<< Exit

Model I/O Application

Display Model Output to Geodatabase



Future Phases

- **Phase 2 – Demographic data, Land use data and Supporting application**
 - Geocoding service
 - WWW publishing (2030 project data)
- **Phase 3 – Upgrades to existing applications, zonal data allocation application, and external agency data import/export**



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Questions?

