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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Transportation leadership you can trust.

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Overview
Build an Enterprise Geodatabase

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

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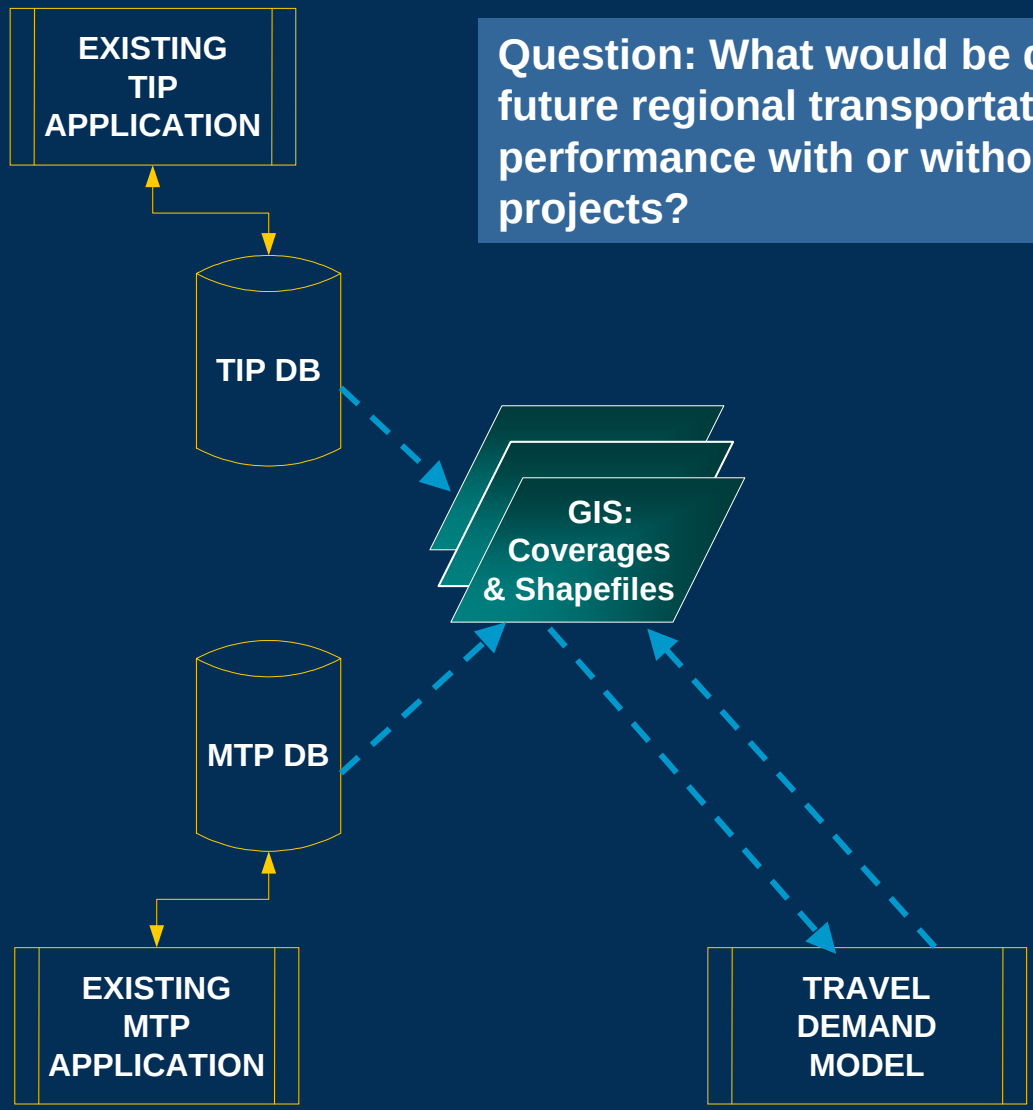
System Architecture
Transportation Components (Before)



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

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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

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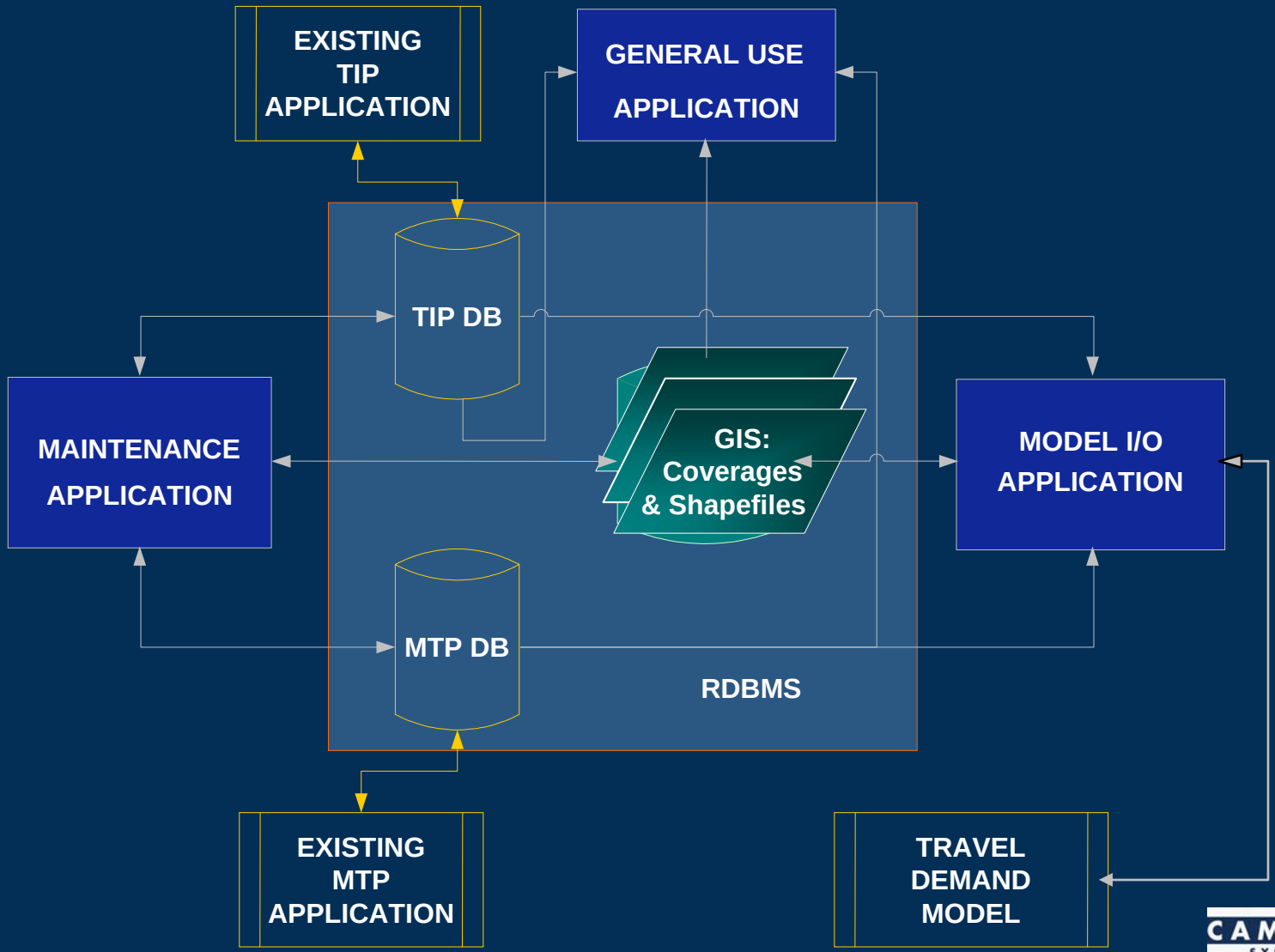
System Architecture
Transportation Components (After)



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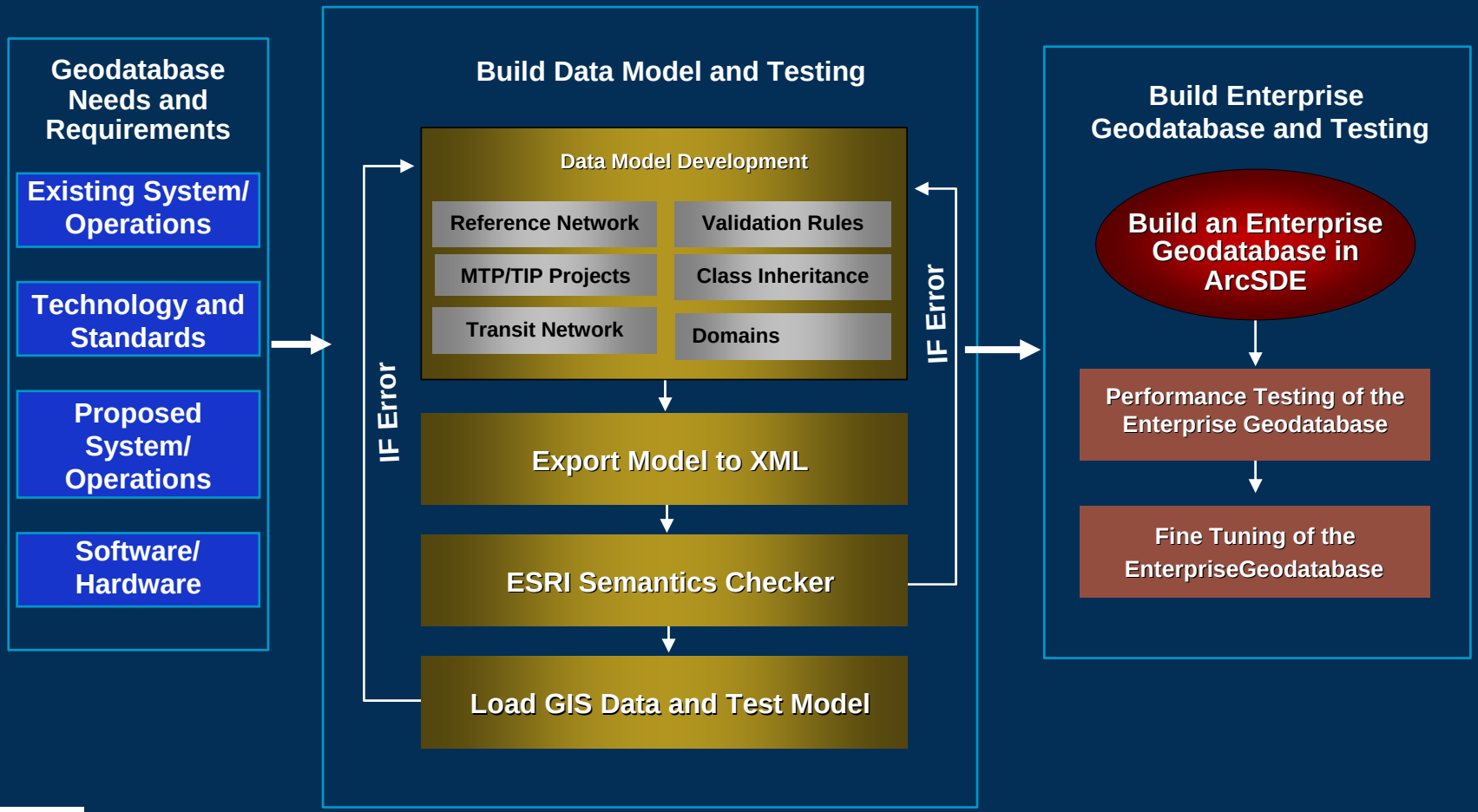
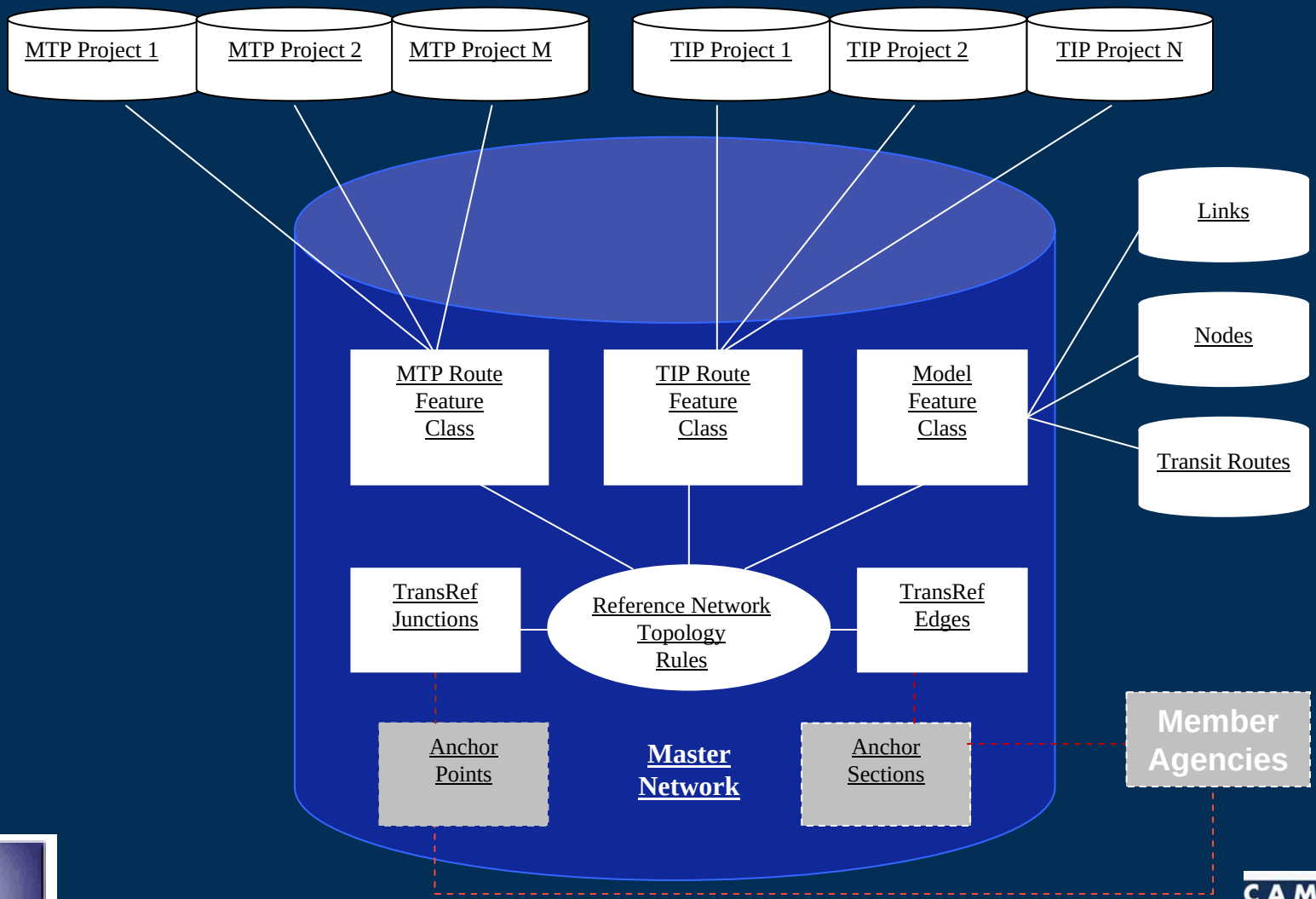
Geodatabase Development Flow Chart



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

→ Unique ID

- Direction
- Modes
- Dapacity
- Speed limit

→ By Time of Day

- In/out service dates → Date/Time stamped
- Other attributes

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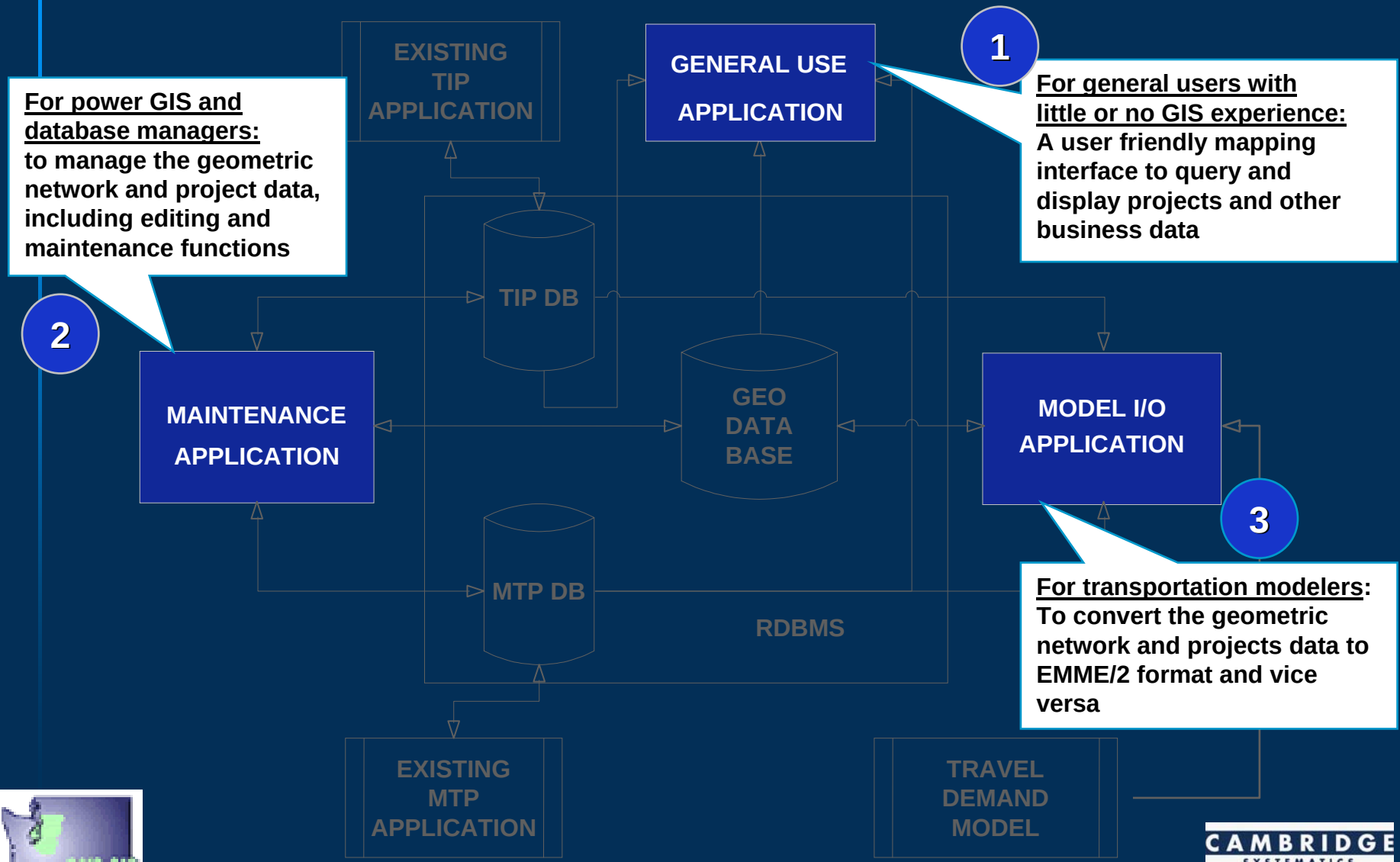
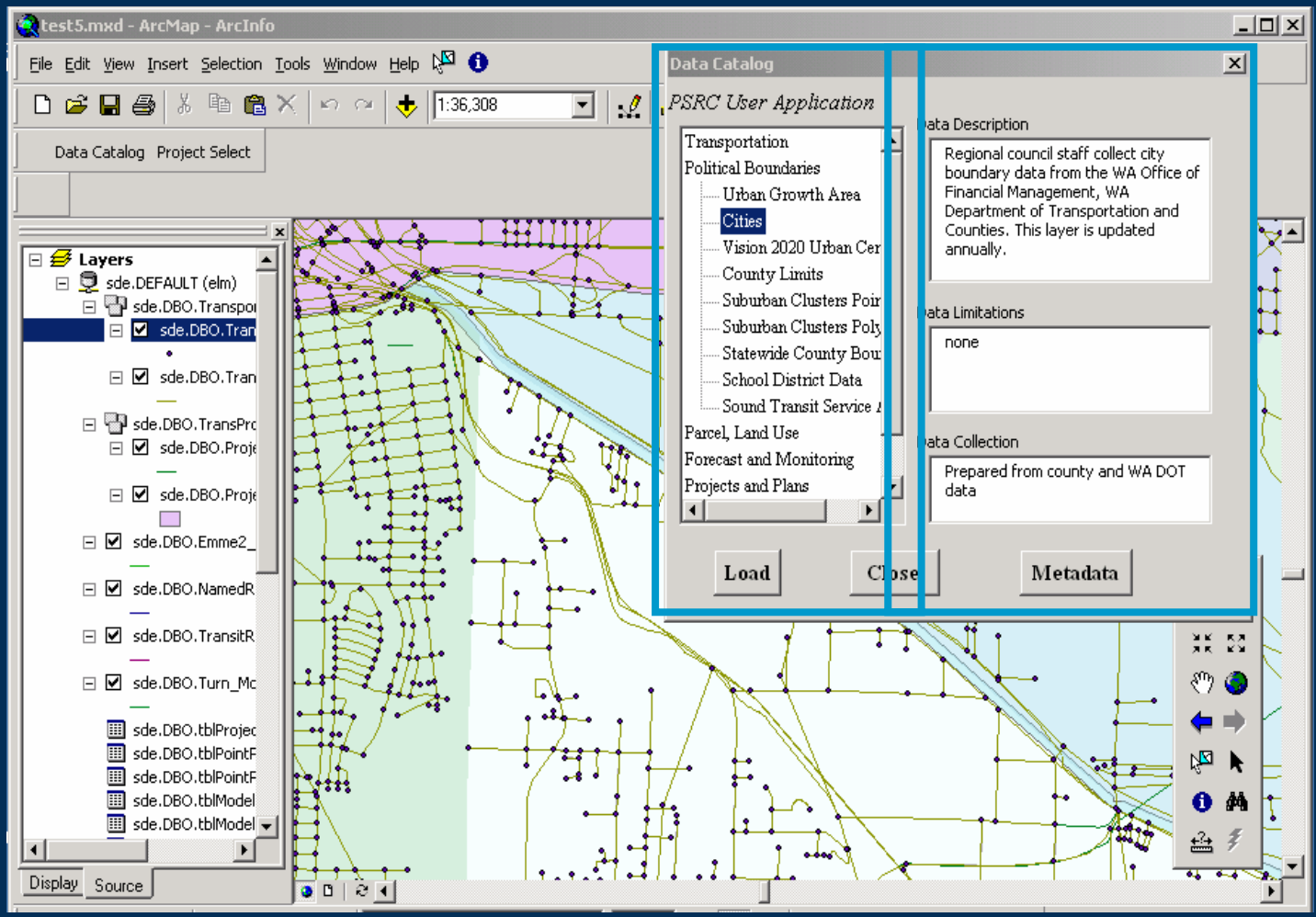
Overview of Applications



General Use Application
Data Loading and Metadata



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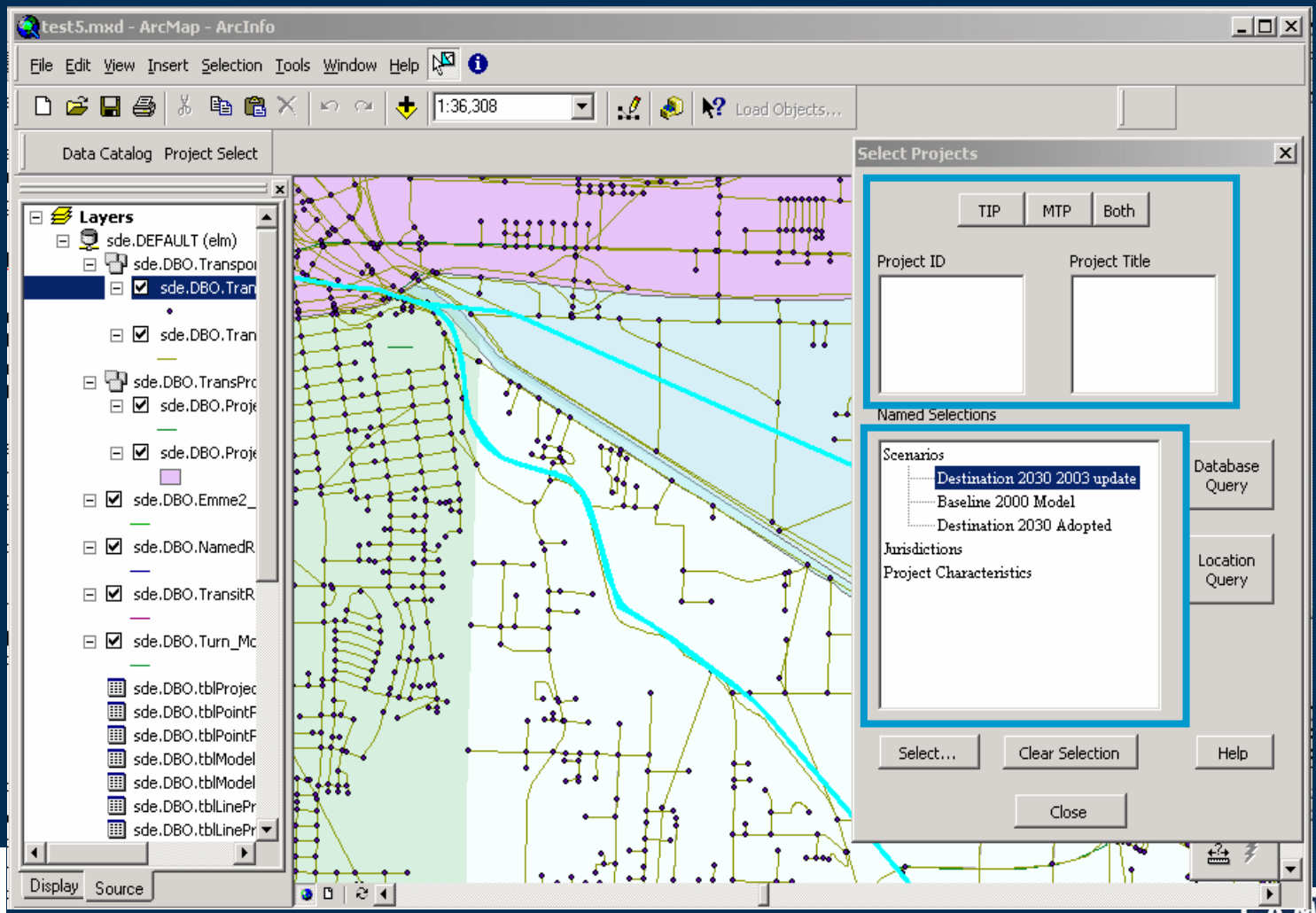
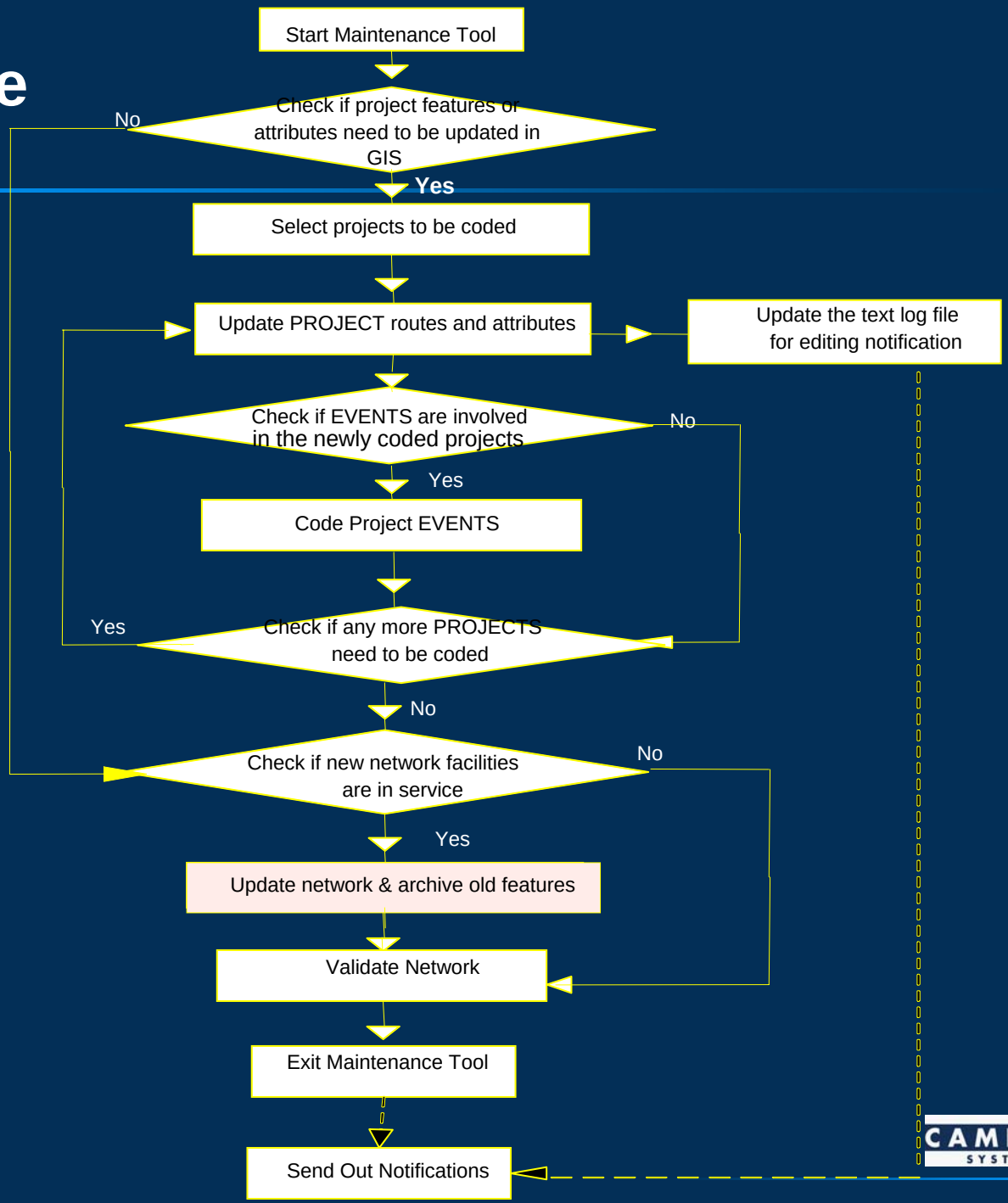
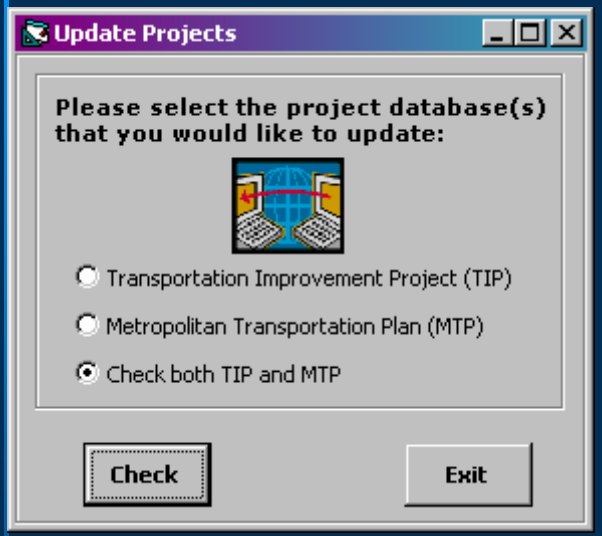
General Use Application
Display Projects or Model Results

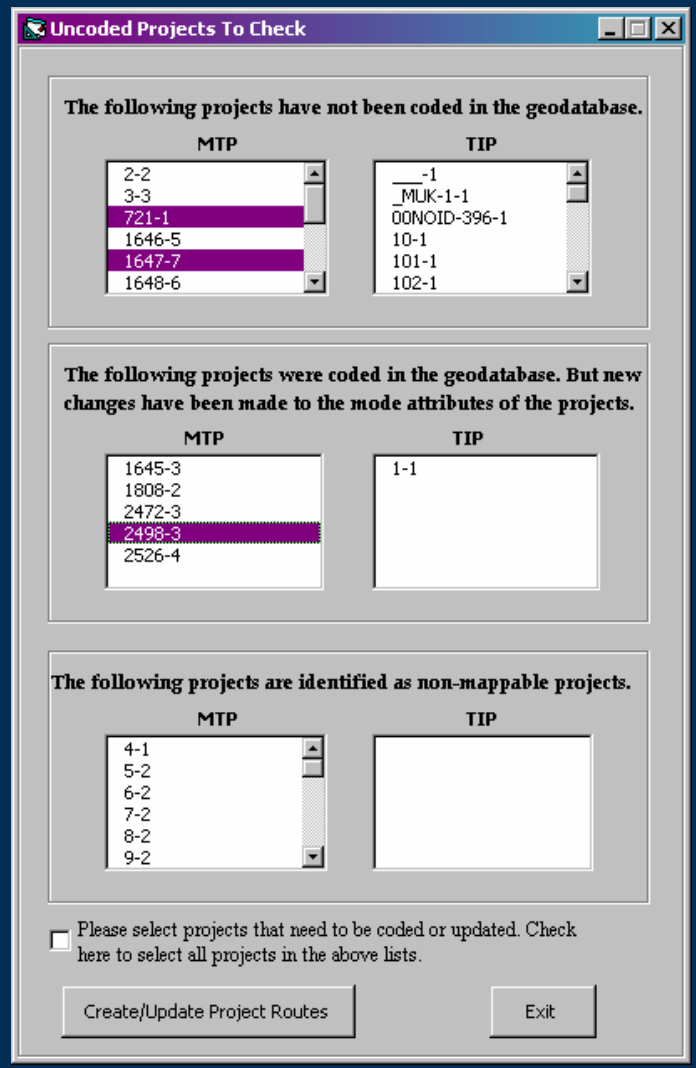


Maintenance Work Flow



Maintenance Application
Update Project Databases





Three Options:

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

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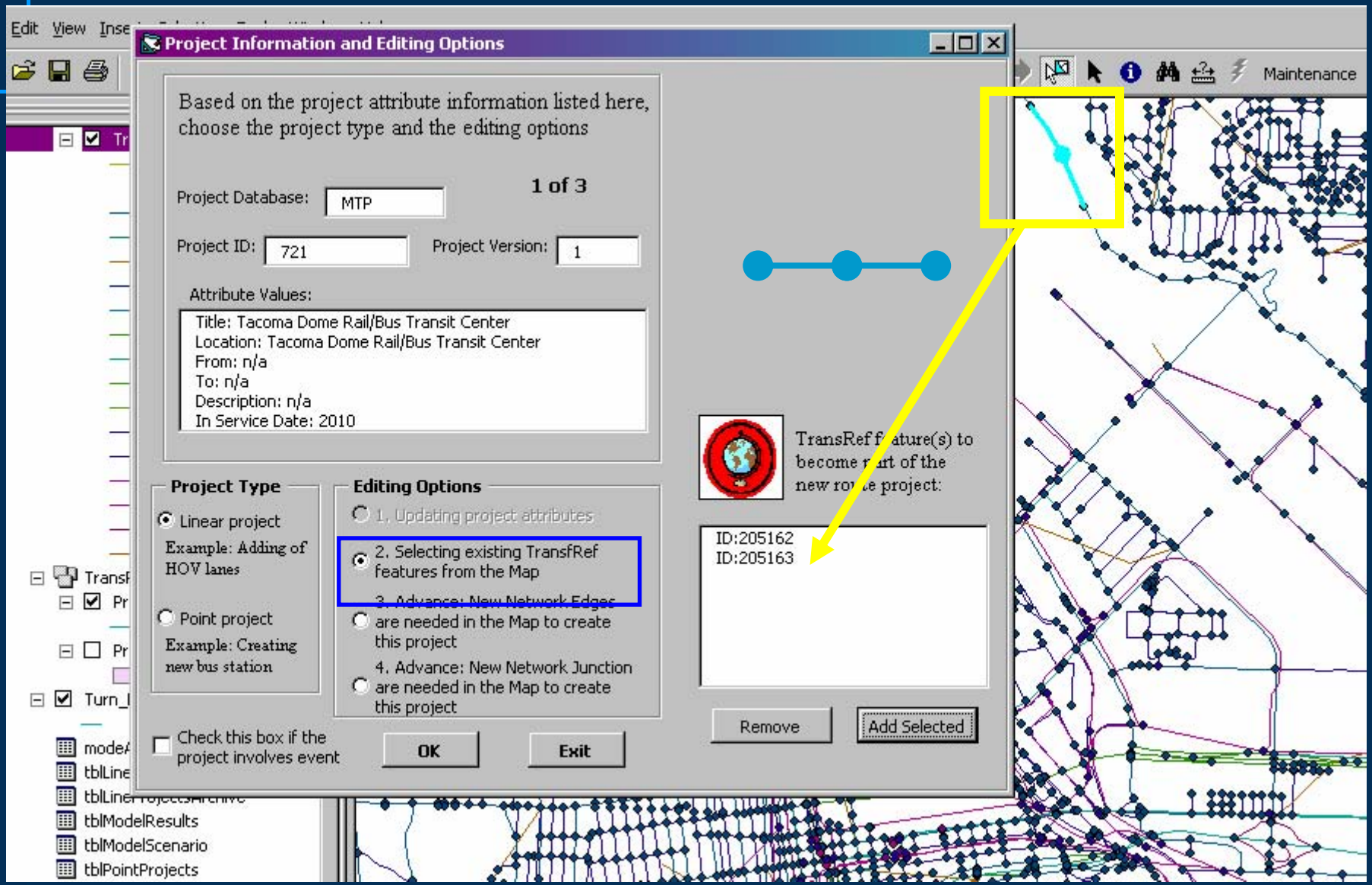
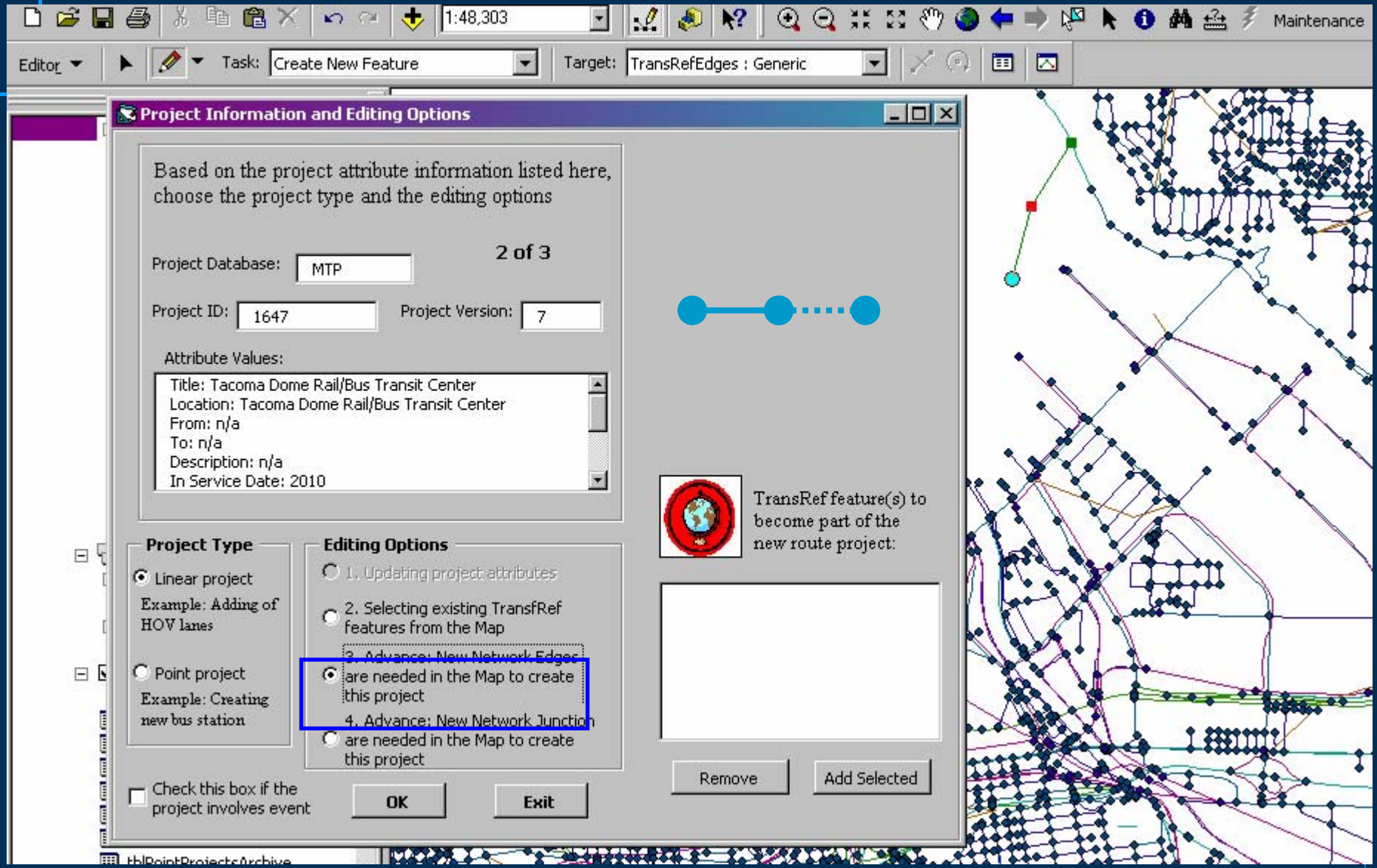
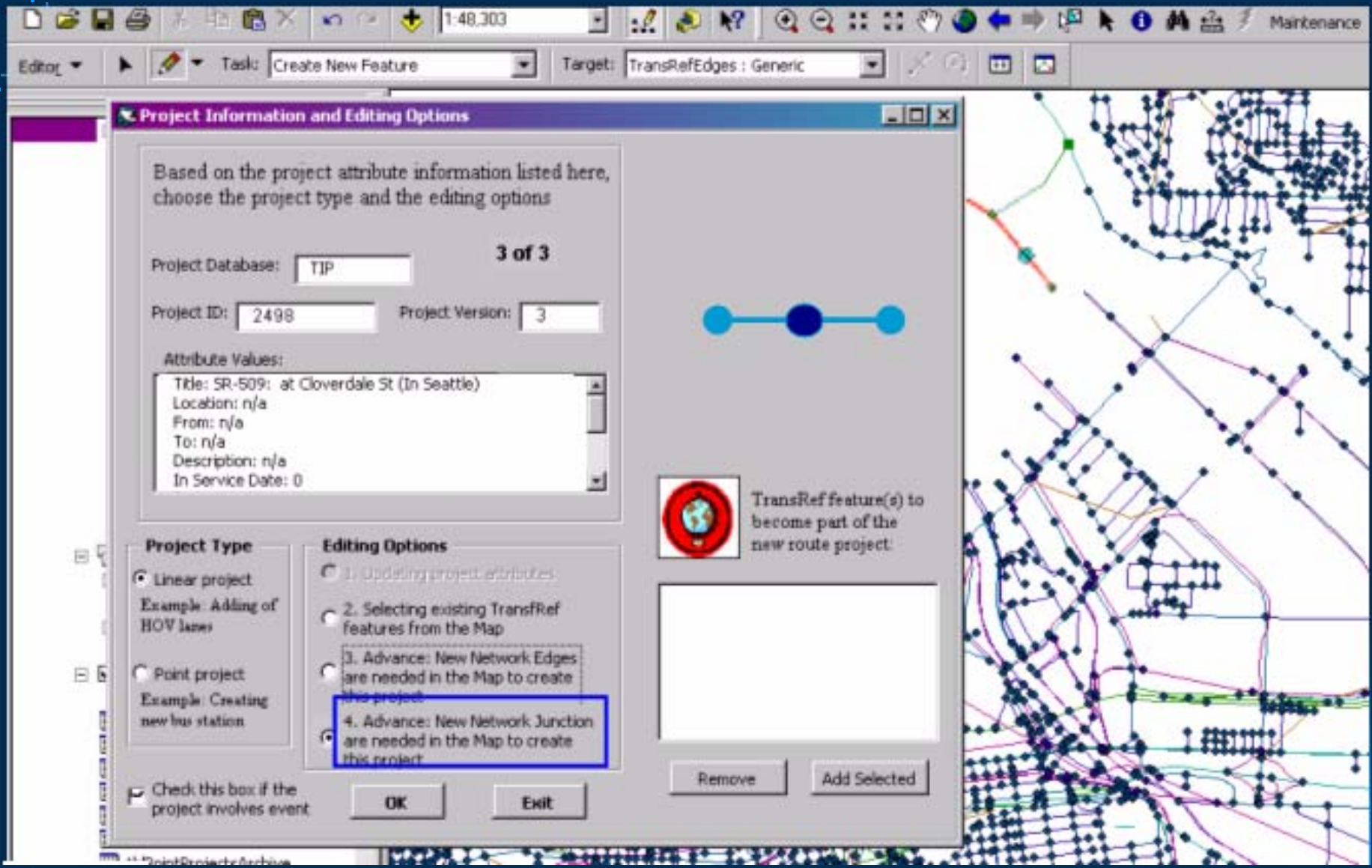
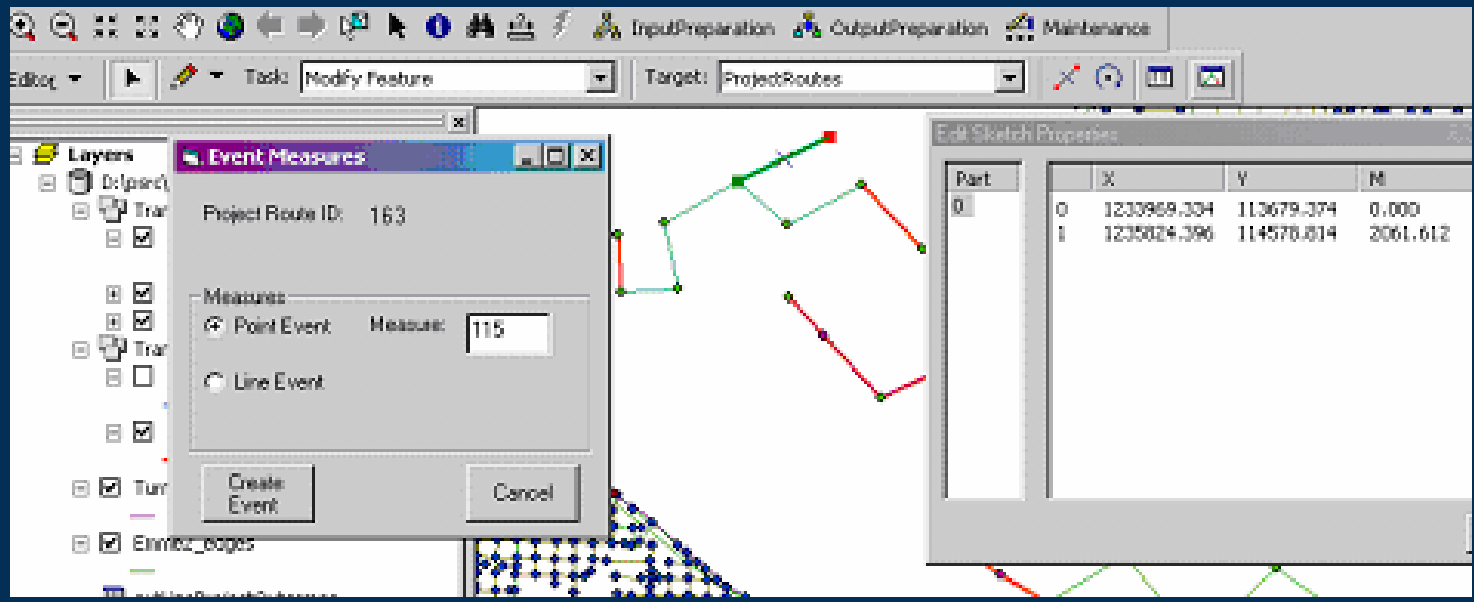

Edit View
Project Information and Editing Options
Based on the project attribute information listed here, choose the project type and the editing options
1 of 3
Project Database: MTP
Project ID: 721
Project Version: 1
Attribute Values:
Title: Tacoma Dome Rail/Bus Transit Center
Location: Tacoma Dome 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
OK
Exit
TransRef feature(s) to become part of the new route project:
ID:205162
ID:205163
Remove
Add Selected
Maintenance
tblModelResults
tblModelScenario
tblPointProjects


1:48,303
Maintenance
Editor
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
2 of 3
Project Database: MTP
Project ID: 1647
Project Version: 7
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
OK
Exit
TransRef feature(s) to become part of the new route project:
Remove
Add Selected


1:48,303
Maintenance
Editor
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
3 of 3
Project Database: TIP
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
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
TransRef feature(s) to become part of the new route project:
Remove
Add Selected
Check this box if the project involves event
OK
Exit

Project Event Editting



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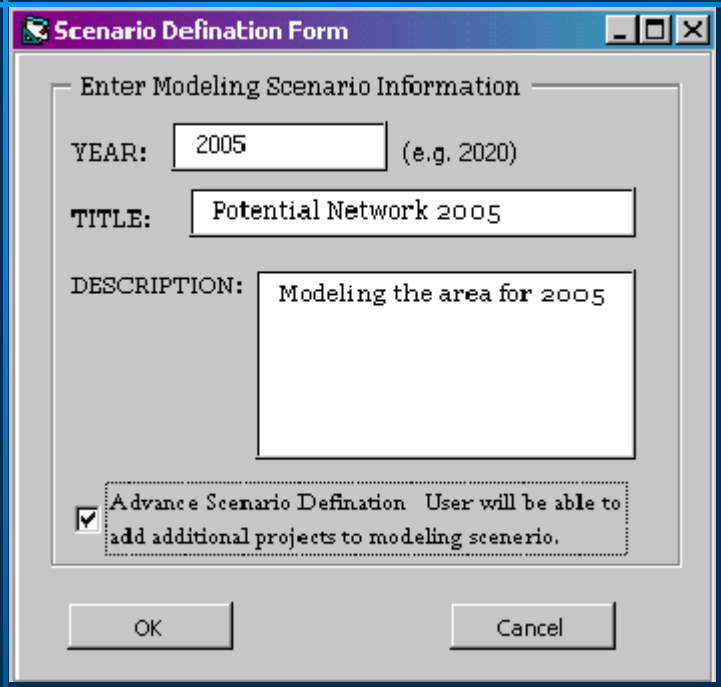
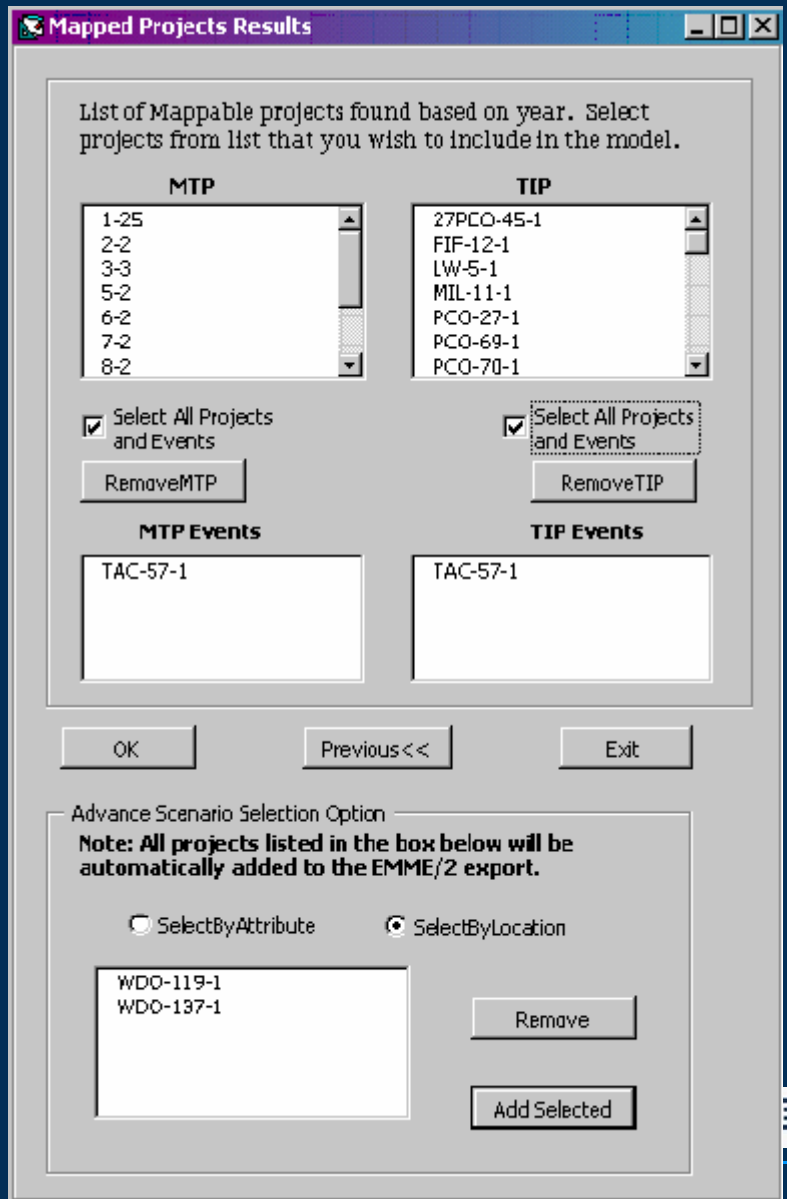
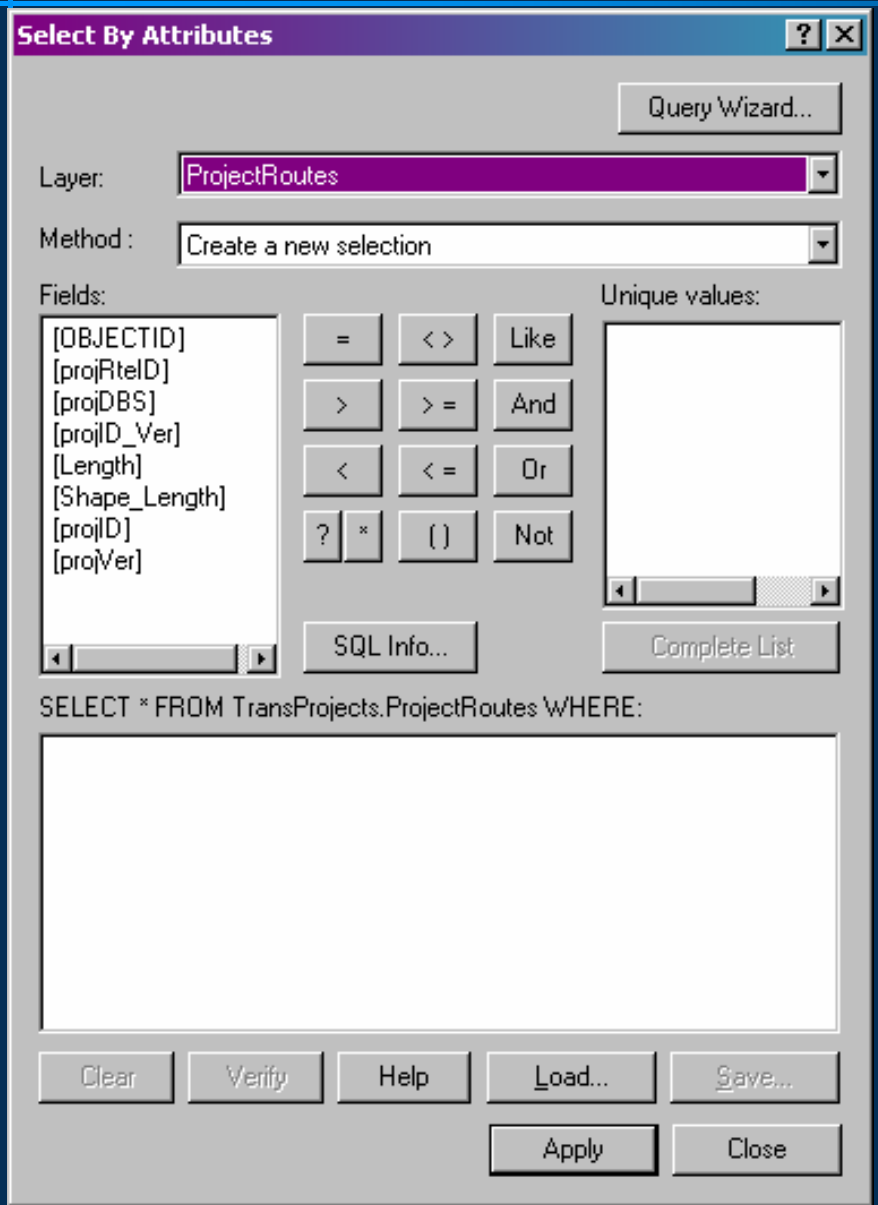
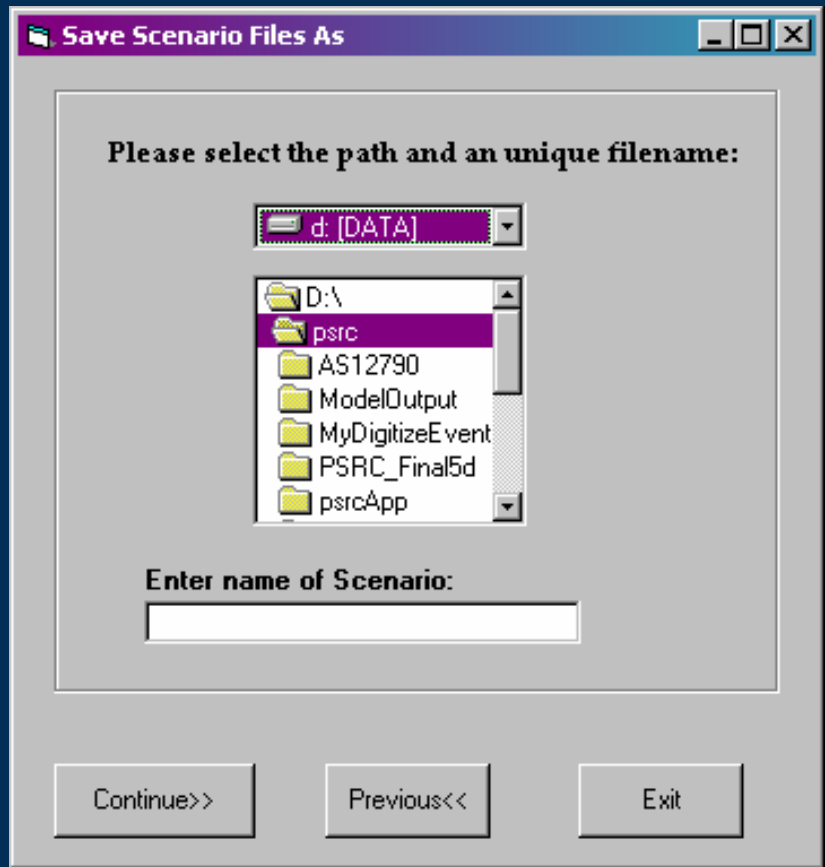
Model I/O Application
Create an EMME/2 Input Scenario



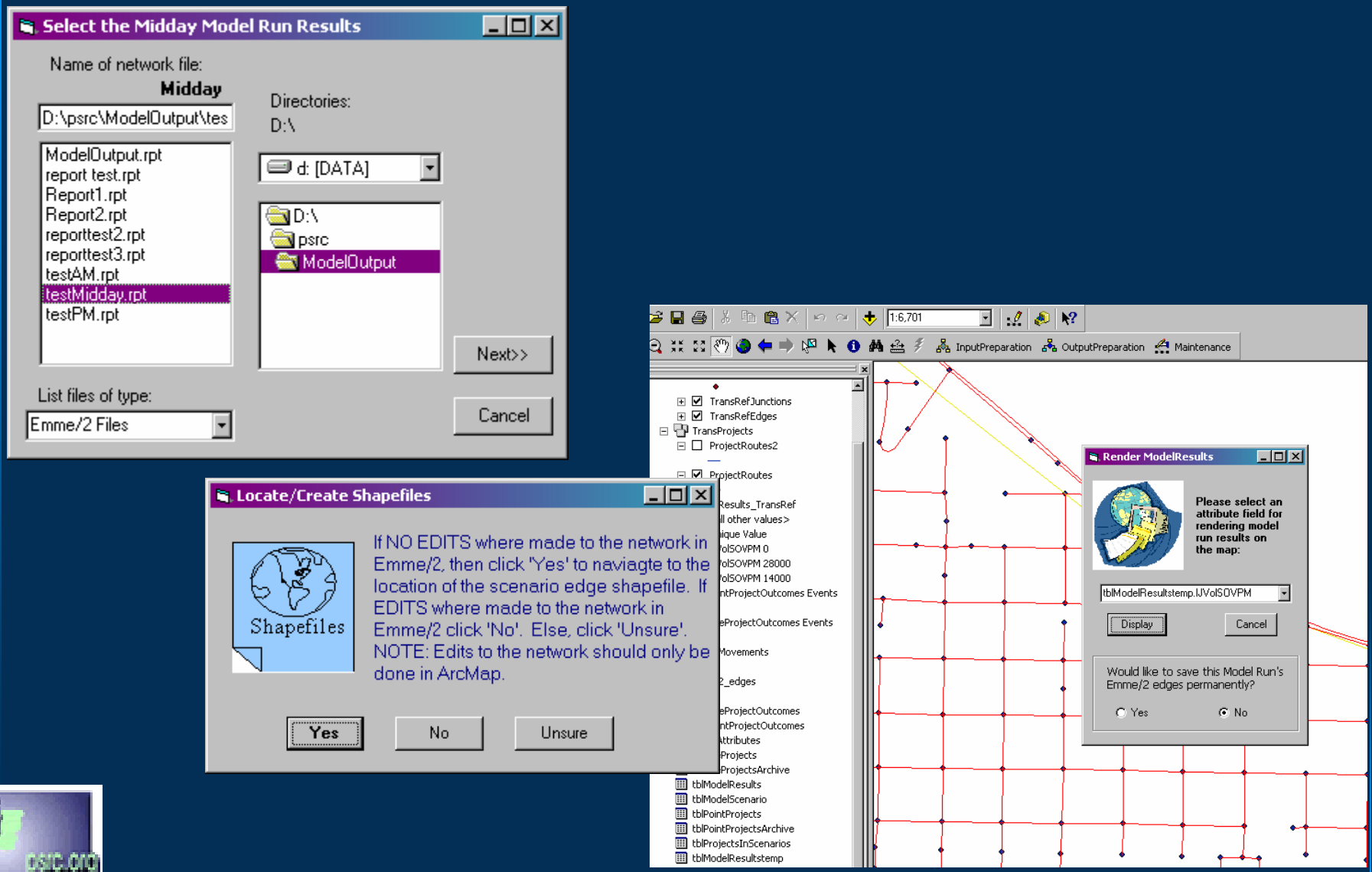


Model I/O Application
Create an EMME/2 Input Scenario (Cont.)





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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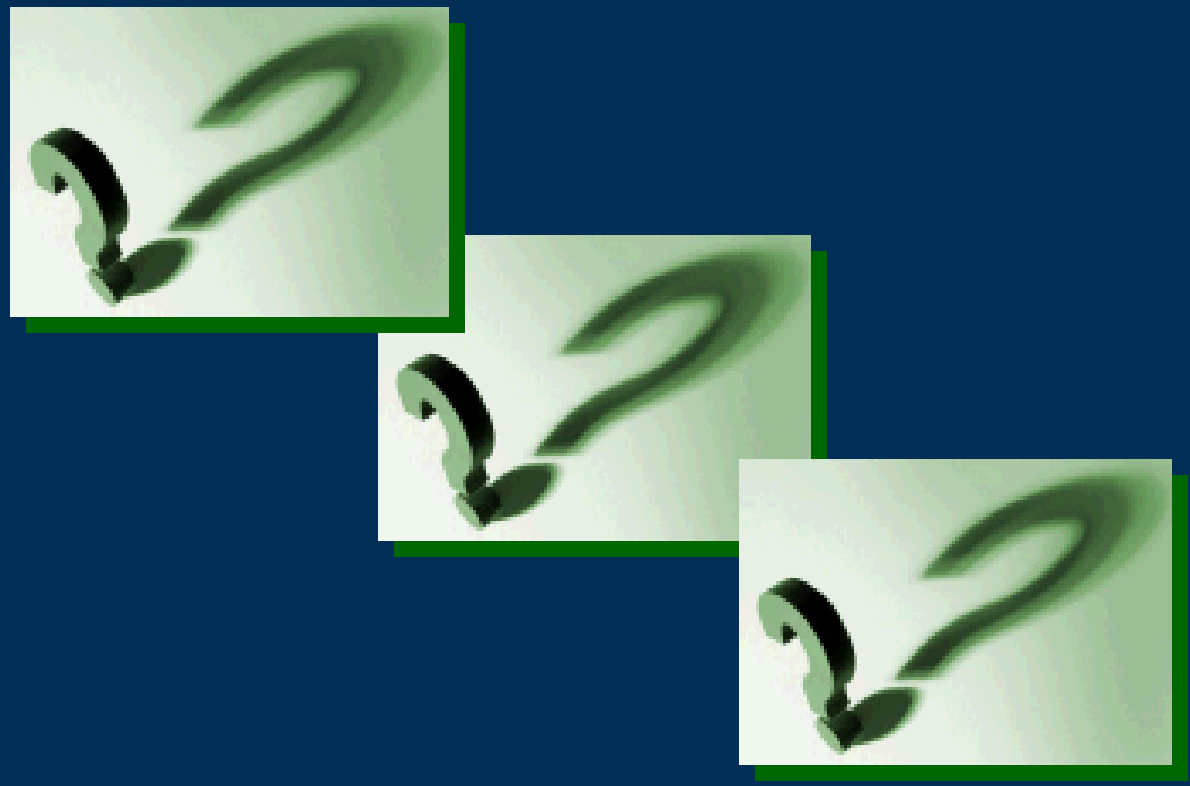
Questions?



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