



# ITS Architecture Update Project Review

Eastgate Conference Room

February 10, 2011



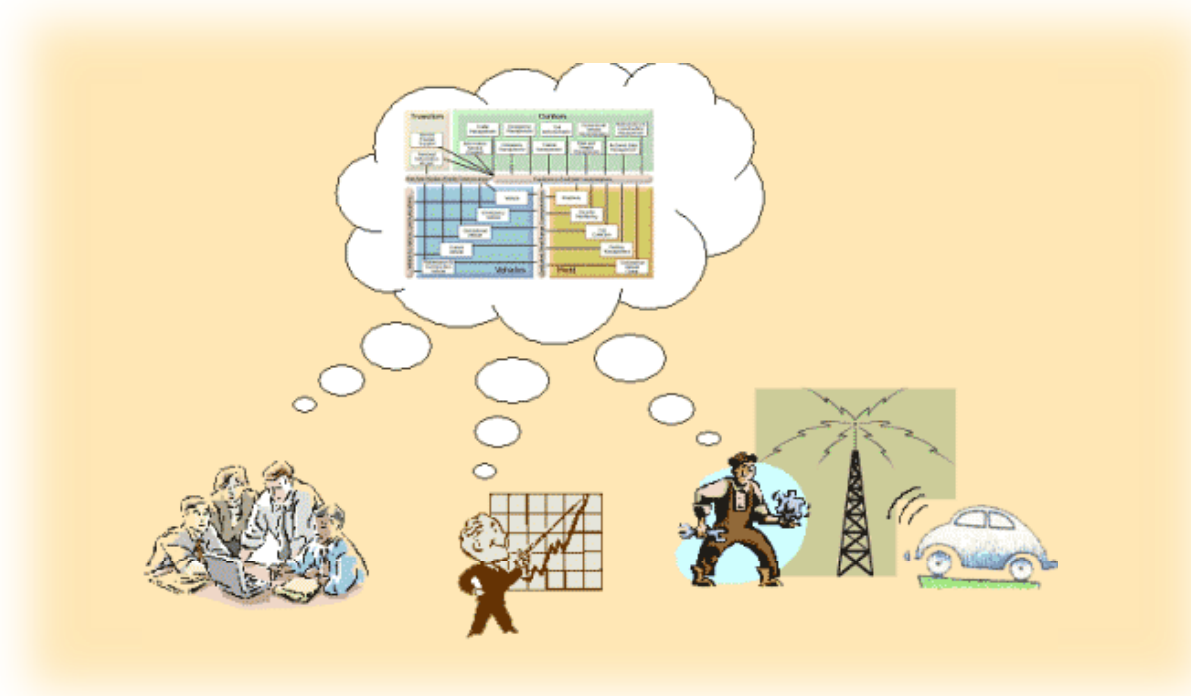
# Agenda



- Introductions & Overview
- Operational Concept
- Website Overview
- Using the Architecture
- Regional ITS Projects Discussion
- Review & Update Customized Market Packages
- Maintaining the Architecture
- Next Steps



# Introductions & Overview





## Draft Architecture - Summary Statistics

- 57 Stakeholders
  - Eastgate, ODOT, WRTA, City of Youngstown, etc.
- 136 Elements
  - WRTA EasyGo Dispatch, Buckeye Traffic, WRTA Smart Card, etc.
- Services (Market Packages)/ Information Flows
  - 44 Market Packages
    - ATMS06: Traffic Information Dissemination
    - APTS04: Transit Fare Collection Management
  - 2061 Information flows connecting the elements to provide the services

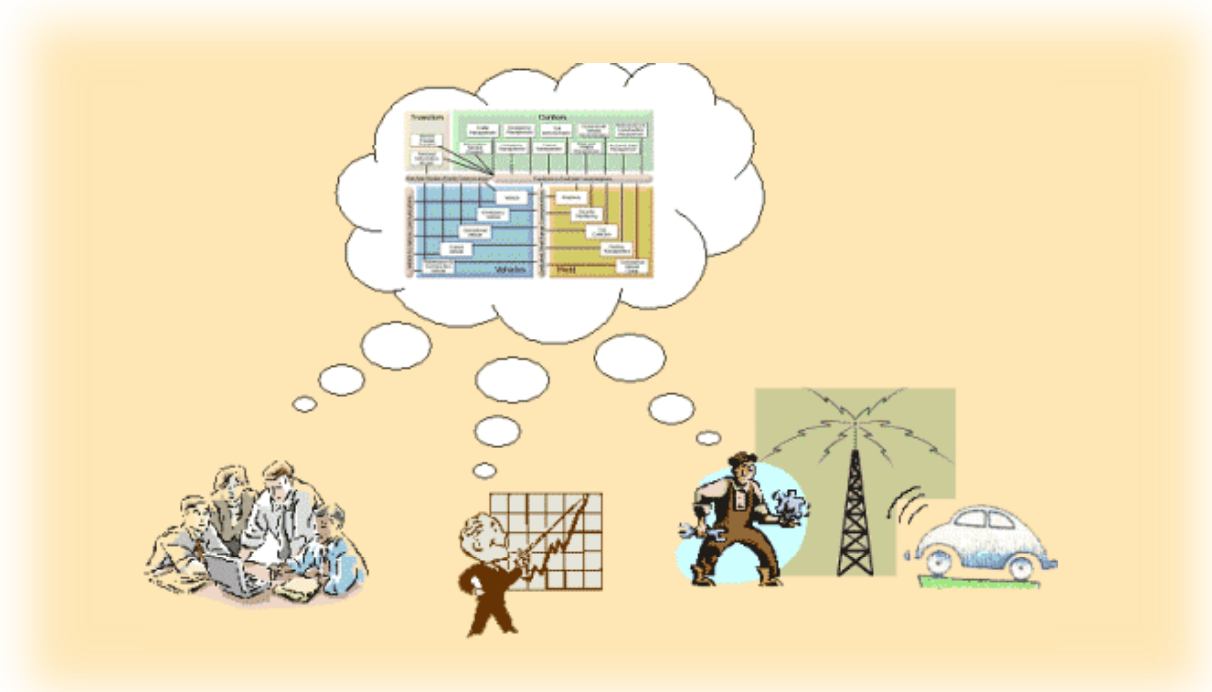




# Project Overview Timeline

Task	October	November	December	January	February	March
Inventory Meetings	█					
Initial Architecture Update	█	█				
Workshop #1			★			
Market Packages		█	█			
Workshop #2					★	
Report			█	█	█	
Website			█	█		
Turbo			█	█	█	
Present to Eastgate TAC Board						★

# Review of Operational Concepts





## Operational Concept

- Defines roles and responsibilities of stakeholders
- Organized by ITS Area
  - Traffic Signal Control
  - Highway Management
  - Incident Management
  - Emergency Management
  - Transit Management
  - Maintenance Management
  - Traveler Information
  - Archived Data





# Operational Concept

The image shows two screenshots of a web application titled 'Eastgate Regional ITS Architecture Update (Draft)'. The left screenshot displays the 'Operational Concept' section, which includes a table with columns for 'Area' and 'Description'. The right screenshot displays the 'Maintenance and Construction for Youngstown-Warren Roles and Responsibilities' section, which includes a table with columns for 'Stakeholder' and 'Role and Responsibility'.

**Operational Concept Table:**

Area	Description
<a href="#">Archived Data Systems for Youngstown-Warren</a>	
<a href="#">Commercial Vehicle Operations for Youngstown-Warren</a>	
<a href="#">Electronic Toll Collection for Youngstown-Warren</a>	
<a href="#">Emergency Management for Youngstown-Warren</a>	
<a href="#">Freeway Management for Youngstown-Warren</a>	
<a href="#">Incident Management for Youngstown-Warren</a>	
<a href="#">Maintenance and Construction for Youngstown-Warren</a>	
<a href="#">Parking Management for Youngstown-Warren</a>	
<a href="#">Surface Street Management for Youngstown-Warren</a>	
<a href="#">Transit Services for Youngstown-Warren</a>	
<a href="#">Traveler Information for Youngstown-Warren</a>	

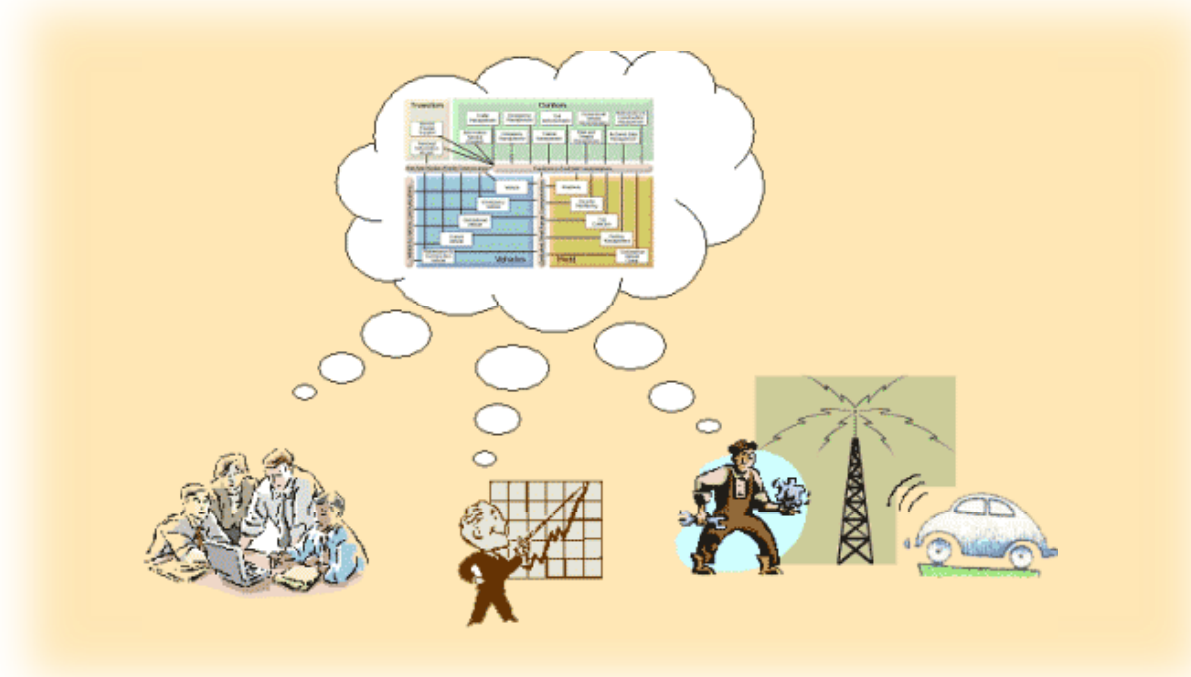
**Maintenance and Construction for Youngstown-Warren Roles and Responsibilities Table:**

Stakeholder	Role and Responsibility
<a href="#">City of Niles Engineer</a>	Maintains signalized intersection equipment. Provide maintenance of arterials in the city including snow and ice control and pavement maintenance.
<a href="#">City of Warren Operations Department</a>	Provide maintenance of arterials in the city including snow and ice control and pavement maintenance. Maintains signalized intersection equipment.
<a href="#">City of Youngstown Street Department</a>	Maintains signalized intersection equipment. Provide maintenance of arterials in the city including snow and ice control and pavement maintenance.
<a href="#">Mahoning County</a>	Provide maintenance of County roads including snow and ice control and pavement maintenance.
<a href="#">Municipal Service Departments</a>	Provide maintenance of municipal roads including snow and ice control and pavement maintenance.
<a href="#">ODOT</a>	Provide maintenance of state highways in the region including snow and ice control and pavement maintenance.
<a href="#">Ohio Turnpike Commission (OTC)</a>	Provides maintenance of tollways including snow and ice control and pavement maintenance.
<a href="#">Private Maintenance Contractor</a>	Provide maintenance of signals, DMS, HAR, and lighting systems Contracted by municipalities and counties in the region.
<a href="#">Trumbull County Engineer</a>	Provide maintenance of County roads including snow and ice control and pavement maintenance. County contracts private company to perform the traffic signal maintenance.



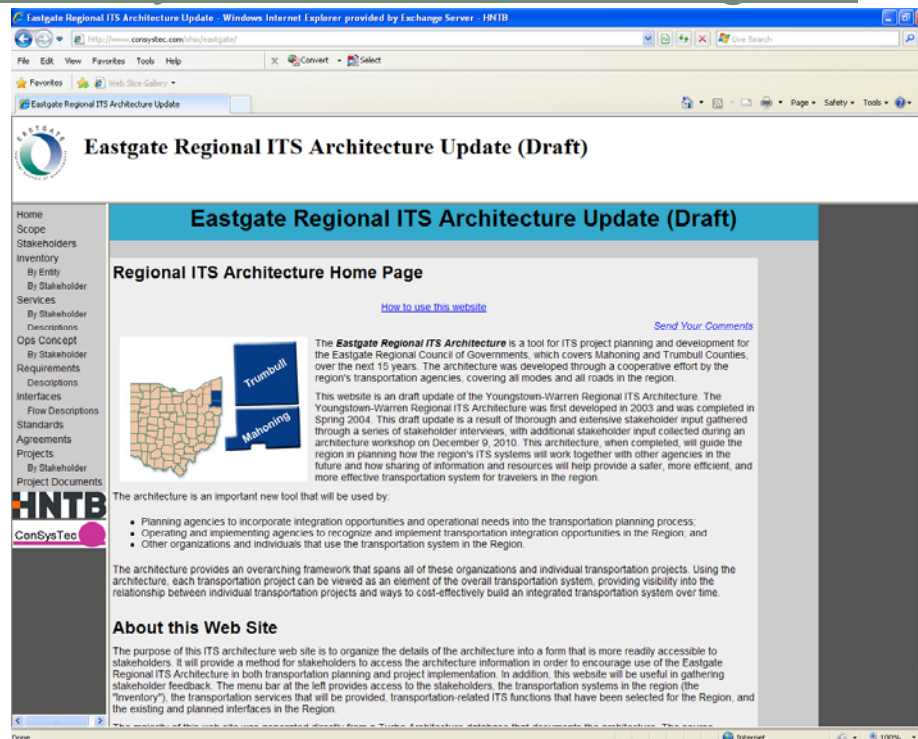
# Website Overview

## Review of Draft Architecture

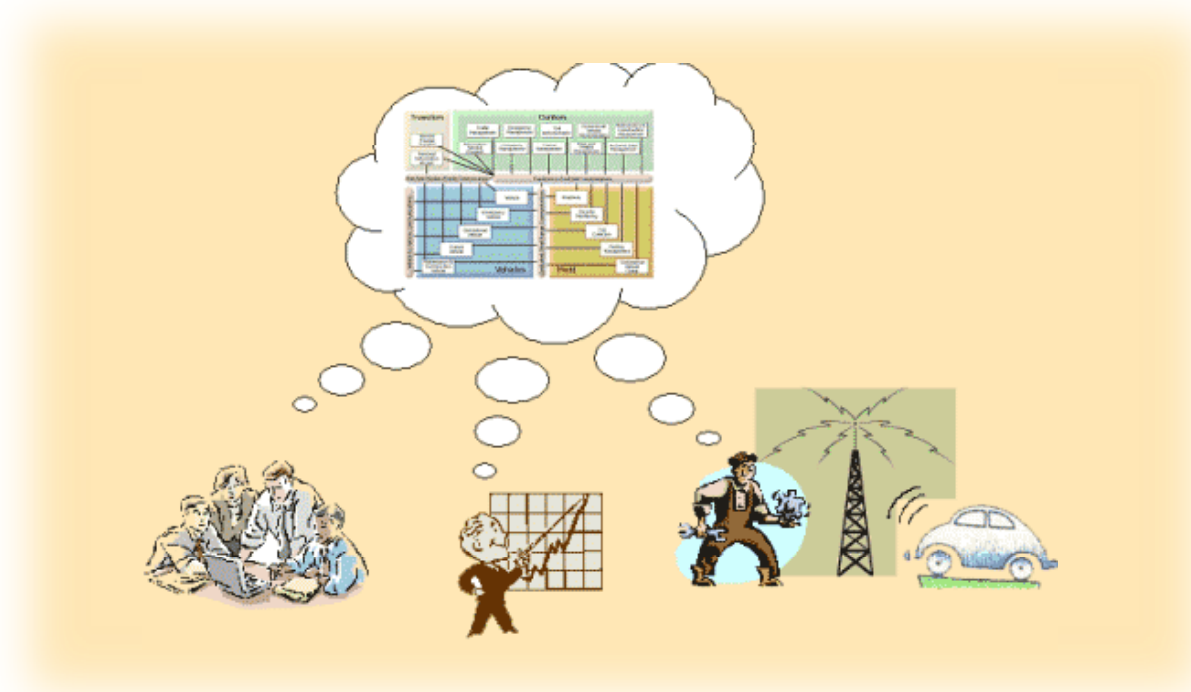


# Eastgate Regional ITS Architecture

- Draft architecture details can be viewed at <http://www.consystec.com/ohio/eastgate/>



# Use & Maintenance Summary



## Use the ITS Architecture for:

- Transportation Planning
- Programming/Budgeting
- ITS Project Implementation

Architecture Use in Programming and Project Implementation

Maintaining the Architecture



# Architecture Use in Common Programming Process



- 1- MPO issues Request for Projects**
- 2 - Project Sponsors submit projects**
- 3 - Project are prioritized by the MPO**
- 4 - Projects are voted on/accepted by the MPO governing body.**





# Example of Use on Project Submittals

## Anchorage Metropolitan Area Transportation Solutions (AMATS) Checklist

### **Step One: Planning / TIP Development:**

#### **Project Agency Sponsors Agree to Comply with Federal ITS Regulations**

When a project is nominated or added to the AMATS Transportation Improvement Program (TIP), project agency sponsors will provide answers to the following questions in the Project Information Packet during the project nomination process:

- a. Does my project include any ITS elements? \*
- b. Does my project use funds from the federal highway trust fund (including the mass transit account) now and/or in the future?  
If you are not sure, consult with the AMATS Coordinator.
- c. Does the project sponsor agree to comply with the federal ITS requirements?

If the answer is YES to the first two questions, then your project must comply with federal requirements or AMATS could be subject to loss of funding. Project agency sponsors must agree to comply with the federal requirements. The agreement will be documented as specified by AMATS. Proceed to Step Two. If the answer is yes to the first question, but no to the second, project agency sponsors are *encouraged* to use the steps recommended in this Checklist to foster a more efficient system.

\*ITS means electronics, communications, or information processing used singly or in combination to improve the efficiency of a surface transportation system.





# Example of Use on Project Submittals

## Maricopa Association of Governments (MAG)

26-Aug-05

### FY 2007 - 2011 TIP - Programming only 2011 MAG ITS Project Data Form

Please enter project data in highlighted cells, save the file with the lead agency name in it --ie. Mesa-ITSProj1.xls, and email the Excel f  
The numbers shown in highlighted cells are for illustrative purposes only. Please use one worksheet per project.

Please enter required information in highlighted cells

Lead Agency	
Other Partnering Agencies	
ITS Project Title:	
ITS Market Package:	

#### A. ITS Strategic Plan (40 Points Max):

	ID#	Need Score
First user need that best matches the project	3	68
Second user need that matches the project	9	47
Third user need that matches the project	27	21
Total User Need Score		136
Total Estimated Points for ITS Plan		0.0

Determine whether the proposed ITS project is an arterial project OR an intersection/s project. Enter data under B1 or B2 -- NOT BOTH

#### B 1. Segment Congestion (30 Points Max):



# Example of Use during Project Prioritization

## Rhode Island State Planning Commission

### Addition of new criteria

#### **g. Enhances Intelligent Transportation System network**

5 points: provides hardware and / or monitoring equipment to implement Rhode WAYS Strategic Deployment Plan or RIPTA ITS Plan (bus fareboxes, vehicle locators, etc.)

1-4 points: installation of fiber-optic cable on off-system highway; enhances dissemination of information; provides for shared use of equipment already in place

0 points: no ITS elements are part of the project

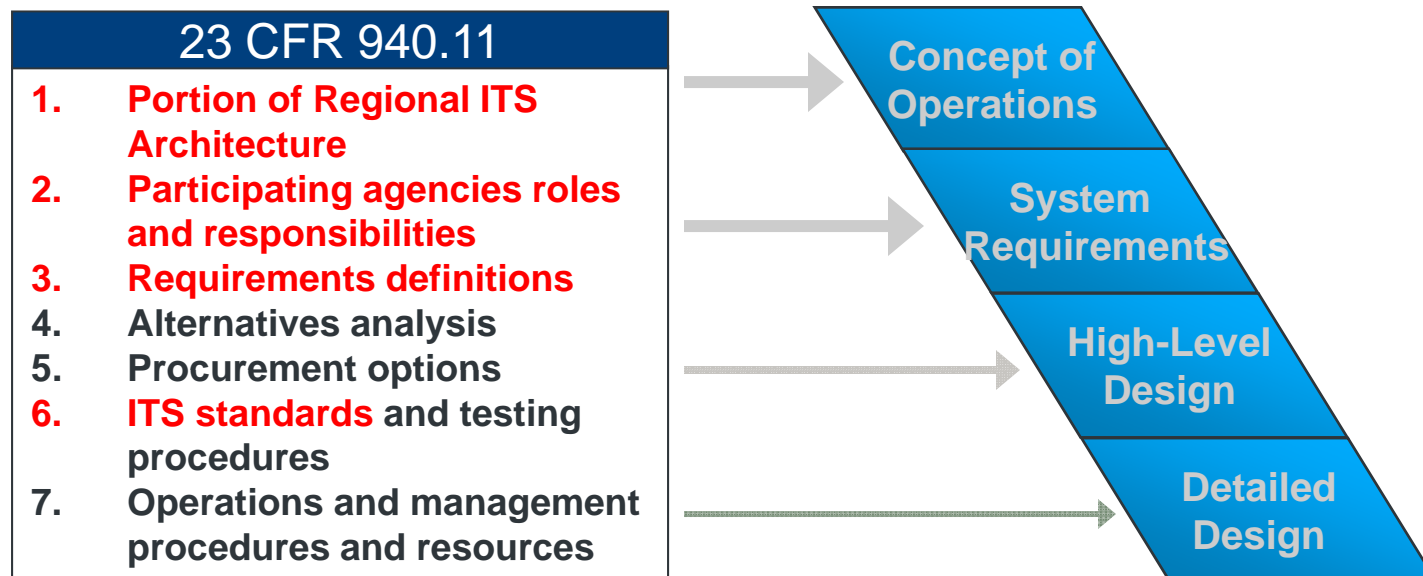
negative points: project is on a RhodeWAYS route that calls for ITS equipment, but equipment not provided





# Systems Engineering Analysis Requirements

- Rule/Policy requires all HTF-funded projects to be based on a systems engineering analysis
  - Scale commensurate with project scope
  - Identifies seven requirements “at a minimum”



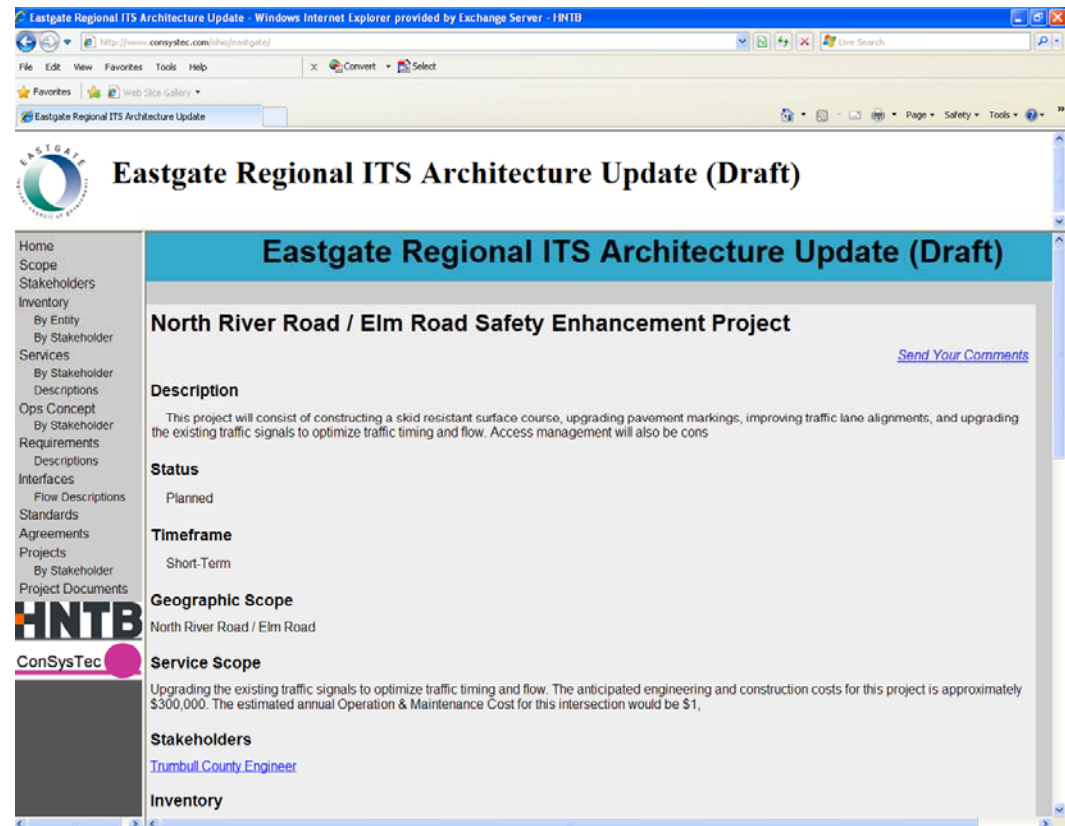
## Method

- If a project architecture has been created look at the Projects web page.
- If a project architecture has not been created, look at the regional architecture and find the appropriate web pages.



# Portion of the Regional ITS Architecture

- Go to Projects page, then click on the Project.
- Project Details:
  - Project Description
  - Status
  - Timeframe
  - Scope
  - Stakeholders
  - Inventory
  - Services
  - Functional Areas
  - Interfaces
  - Standards
  - Operational Concepts



# Portion of the Regional ITS Architecture

1

- Go to the Services page, and find the customized market package diagram(s) that represents the project.

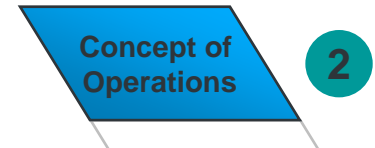
**Eastgate Regional ITS Architecture Update (Draft)**

**Market Packages**

One of the first steps in developing an architecture is to identify the transportation services that are important to the Region. The following table lists each Market Package and its applicability to the Region. Customized market package diagrams for each Market Package can be viewed by selecting the market package in the table below.

Area	Market Package	Name
Traffic Management	ATMS01	Network Surveillance
	ATMS02	Traffic Probe Surveillance
	ATMS03	Surface Street Control
	ATMS04	Freeway Control
	ATMS05	HOV Lane Management
	ATMS06	Traffic Information Dissemination
	ATMS07	Regional Traffic Management
	ATMS08	Traffic Incident Management System
	ATMS09	Traffic Decision Support and Demand Management
	ATMS10	Electronic Toll Collection
	ATMS11	Emissions Monitoring and Management
	ATMS12	Roadside Lighting System Control
	ATMS13	Standard Railroad Grade Crossing
	ATMS14	Advanced Railroad Grade Crossing
	ATMS15	Railroad Operations Coordination
	ATMS16	Parking Facility Management
	ATMS17	Regional Parking Management
	ATMS18	Reversible Lane Management

# Concept of Operations



- Go to Operational Concepts Page and click on the appropriate Area(s), or
- Go to Operational Concepts by Stakeholder, and select the appropriate stakeholder

**Eastgate Regional ITS Architecture Update (Draft)**

**Operational Concepts by Stakeholder**

[Send Your Comments](#)

An Operational Concept documents each stakeholder's current and future roles and responsibilities in the operation of the regional ITS systems. This table lists those stakeholders for whom roles and responsibilities have been identified for this regional ITS architecture. Clicking on the stakeholder shall result in a list of the roles and responsibilities identified for that stakeholder.

Stakeholder
<a href="#">City of Niles</a>
<a href="#">City of Niles Engineer</a>
<a href="#">City of Niles Public Safety Department</a>
<a href="#">City of Warren</a>
<a href="#">City of Warren Operations Department</a>
<a href="#">City of Warren Public Service and Safety Department</a>
<a href="#">City of Youngstown</a>
<a href="#">City of Youngstown Street Department</a>
<a href="#">County Sheriff</a>
<a href="#">Eastgate Council of Governments</a>
<a href="#">Mahoning County</a>
<a href="#">Mahoning County Emergency Management Agency</a>
<a href="#">Mahoning County Traffic Department</a>



# System Requirements

- Go to the Inventory page and click on an element.
- Click on an interface to view the flows.
- Click on an Equipment Package to view requirements.

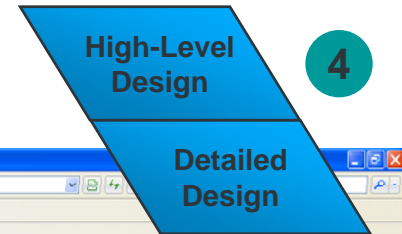
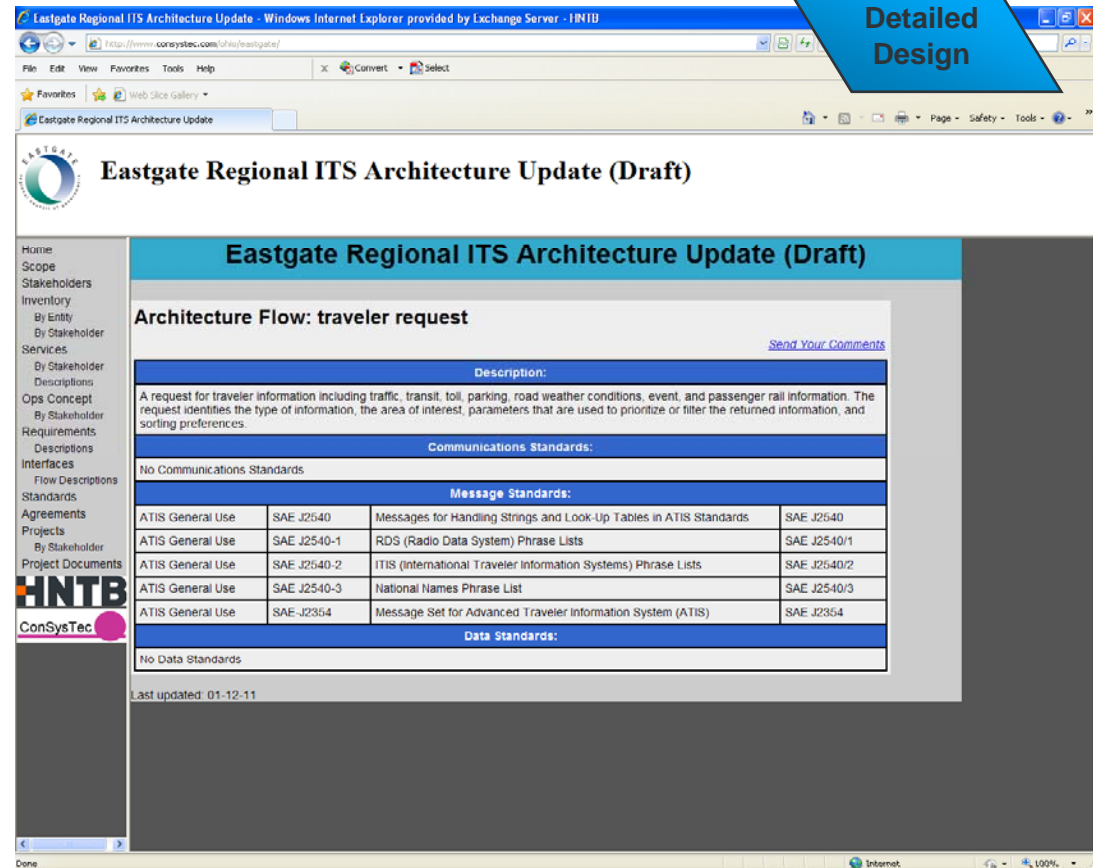
The screenshot shows a web browser window with the URL <http://www.consystec.com/ohio/eastgate/>. The page title is "Eastgate Regional ITS Architecture Update (Draft)". The main content area is titled "Eastgate Regional ITS Architecture Update (Draft)" and "ITS Element: WRTA Website". A sidebar on the left contains a navigation menu with items like Home, Scope, Stakeholders, Inventory, Services, Descriptions, Ops Concept, Requirements, Interfaces, Standards, Agreements, Projects, and Project Documents. The main content area contains a table with the following information:

<b>Description:</b>	<a href="http://wrtonline.com/">http://wrtonline.com/</a> Website has general information and route detour information. Existing route information and real-time bus schedules are not online.
<b>Status:</b>	Existing
<b>Stakeholder:</b>	<a href="#">Western Reserve Transit Authority (WRTA)</a>
<b>Mapping:</b>	<a href="#">Information Service Provider</a> Other ISP
<b>Interfaces:</b>	<a href="#">Traveler Information Device</a> <a href="#">WRTA Administration Office</a> <a href="#">WRTA EasyGo Dispatch</a> <a href="#">WRTA Fixed Route Dispatch</a> <a href="#">WRTA Special Service Transportation (SST) Dispatch</a>
<b>Market Packages:</b>	<a href="#">APTS02 - Transit Fixed Route Operations - WRTA</a> <a href="#">APTS03 - Demand Response Transit Operations - WRTA EasyGo</a> <a href="#">APTS03 - Demand Response Transit Operations - WRTA</a> <a href="#">APTS04 - Transit Fare Collection Management - WRTA</a> <a href="#">APTS08 - Transit Traveler Information - WRTA</a>
<b>Functional Requirements:</b>	

Below the table, it says "Last updated: 01-12-11". There is a "Context Diagram" icon and a "Send Your Comments" link.

# ITS Standards

- Go to the Inventory page and click on an element.
- Click on an interface to view the flows.
- Click on a flow to view applicable ITS standards.

**Eastgate Regional ITS Architecture Update (Draft)**

**Architecture Flow: traveler request**

[Send Your Comments](#)

**Description:**  
A request for traveler information including traffic, transit, toll, parking, road weather conditions, event, and passenger rail information. The request identifies the type of information, the area of interest, parameters that are used to prioritize or filter the returned information, and sorting preferences.

**Communications Standards:**  
No Communications Standards

**Message Standards:**

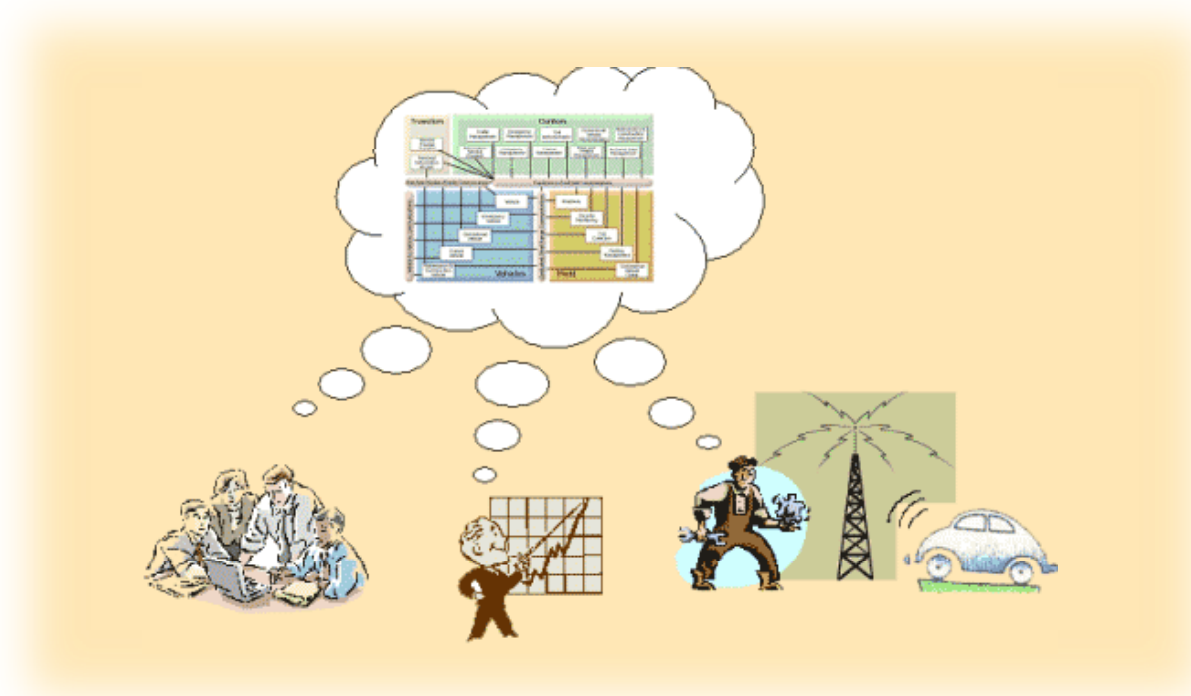
ATIS General Use	SAE J2540	Messages for Handling Strings and Look-Up Tables in ATIS Standards	SAE J2540
ATIS General Use	SAE J2540-1	RDS (Radio Data System) Phrase Lists	SAE J2540/1
ATIS General Use	SAE J2540-2	ITIS (International Traveler Information Systems) Phrase Lists	SAE J2540/2
ATIS General Use	SAE J2540-3	National Names Phrase List	SAE J2540/3
ATIS General Use	SAE J2354	Message Set for Advanced Traveler Information System (ATIS)	SAE J2354

**Data Standards:**  
No Data Standards

Last updated: 01-12-11

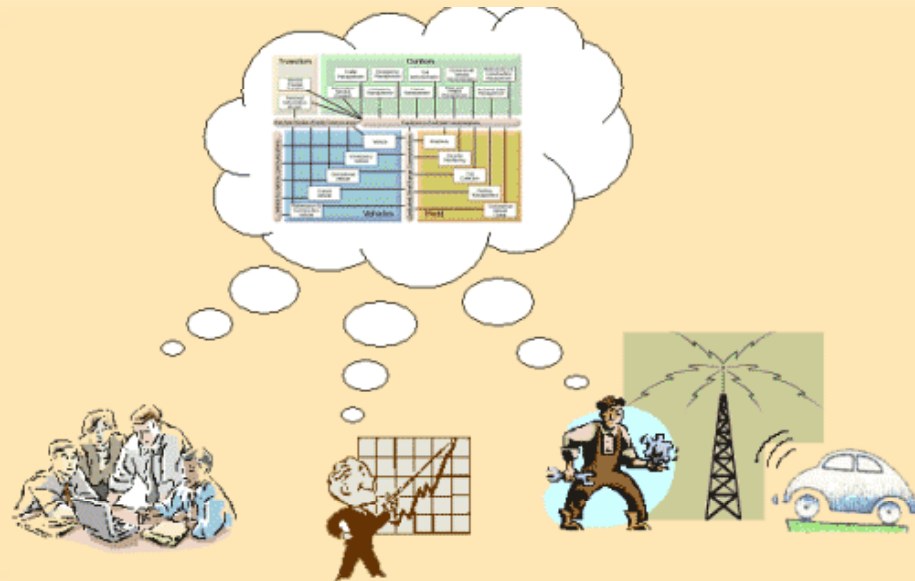


# Regional ITS Projects Discussion

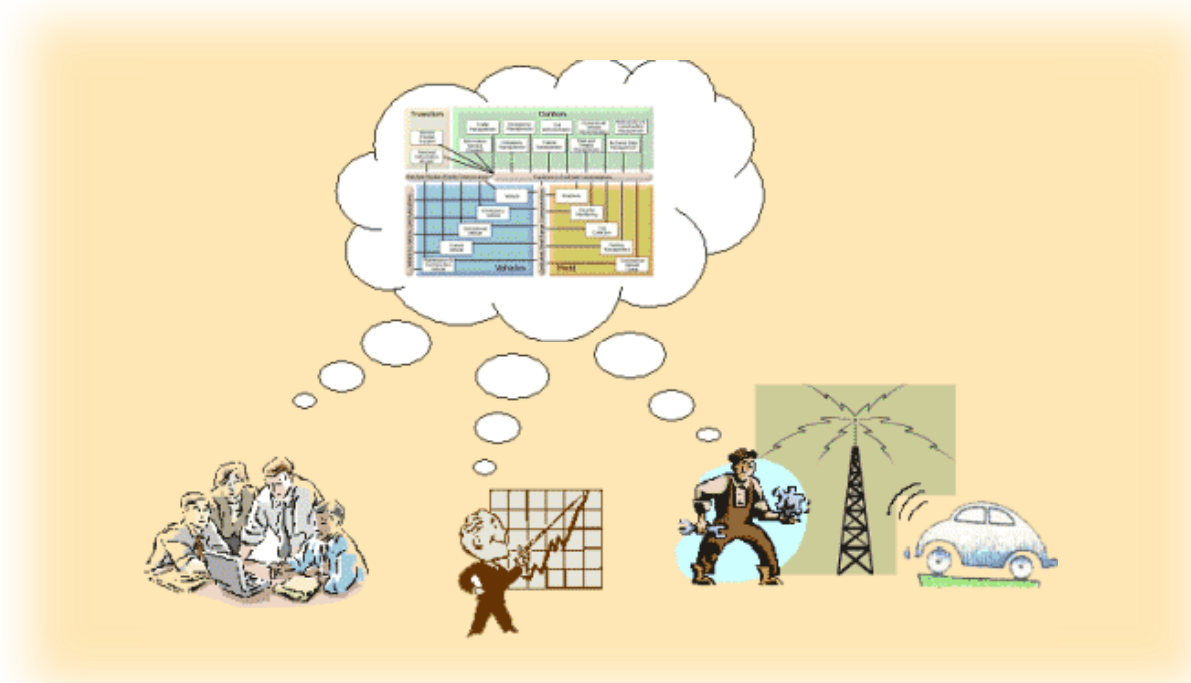




# Review and Update Customized Market Packages



# Maintaining the Architecture





# Eastgate Regional ITS Architecture Maintenance

- Why Changes Occur
- Maintenance Models
- Roles and Responsibilities
- Baseline
- Change Management Process



# Why Changes Occur

- **Projects**
  - Additions/Deletions – new projects or dropped projects
  - Status – change in status (planned/existing)
  - Definition – change in details, scope, e.g., information flows, standards
  - Priorities – change in goals, budgets
  - Agreements – institutional change



## Why Changes Occur

- **Regional**
  - Goals – changes in regional needs
  - Stakeholders – New stakeholders
  - Other architectures – changes to interfaces with adjoining regions
  - National ITS Architecture – changes to the National ITS Architecture



## Maintenance Models

- **Two models**
  - Periodic Basis
    - Fixed time periods
  - Event Driven
    - As changes occur

← Eastgate





## Roles & Responsibilities

- Responsible Agency
- Maintenance Manager
- Stakeholders
- Maintenance Working Group



## Baseline

- Architecture document
- Turbo Architecture database
- Architecture web pages
- Change request database





# Change Management Process

- Submit a Change Request
- Define the Proposed Change
- Assess the impact
- Approving the Change
- Implementing the Change



**Eastgate Regional ITS Architecture**  
Change Request (CR) Form

*To Be Completed By Stakeholder(s) Requesting Changes*

Originator Name: \_\_\_\_\_ Date Submitted: \_\_\_\_\_  
 Originator Telephone: \_\_\_\_\_ Originator Fax: \_\_\_\_\_ Originator E-Mail: \_\_\_\_\_  
 Originator Agency: \_\_\_\_\_  
 Agency Authorized Signature: \_\_\_\_\_ Functional Area: \_\_\_\_\_  
 Description of Proposed Change: \_\_\_\_\_ Signature Date: \_\_\_\_\_

Rationale for Proposed Change: \_\_\_\_\_

Affected Agency: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_  
 Affected Agency: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_ Signature Date: \_\_\_\_\_  
 List Attachments: \_\_\_\_\_ Signature Date: \_\_\_\_\_

Baseline Documents Affected:  
 Website  Turbo Architecture  Market Package Diagram  
 Architecture Document  Other (describe) \_\_\_\_\_

*To Be Completed By Maintenance Manager*

Change Request Number: \_\_\_\_\_ Date CR Received: \_\_\_\_\_ Date CR Logged: \_\_\_\_\_  
 Date Initially Discussed: \_\_\_\_\_ Disposition:  Accepted  Rejected  More Info Disposition Comments: \_\_\_\_\_  
 Date Discussed: \_\_\_\_\_ Disposition:  Accepted  Rejected  More Info Disposition Comments: \_\_\_\_\_  
 Date Discussed: \_\_\_\_\_ Disposition:  Accepted  Rejected  More Info Disposition Comments: \_\_\_\_\_

Date of Maintenance Working Group Approval (If Applicable): \_\_\_\_\_  
 Turbo Architecture Date: \_\_\_\_\_ Version: \_\_\_\_\_  Website Date: \_\_\_\_\_ Version: \_\_\_\_\_  
 Market Package Date: \_\_\_\_\_ Version: \_\_\_\_\_  Architecture Doc Date: \_\_\_\_\_ Version: \_\_\_\_\_



## Current Maintenance Plan

- Comprehensive update will be made every 3 years several months prior to the formal TIP update
- Interim updates: every 6 months if necessary
- Actively solicit changes annually
- Maintenance Working Group



## Implementation

- Make agreed changes to baseline
- Update Change Request Database
- Inform Stakeholders
- Distribute changes
- Update website





## Next Steps

- Please provide any additional comments by 2/24
- Your input will be used to create:
  - Update Turbo Database
  - Update Website
  - Distribute Draft Report
  - Receive Comments
  - Draft Final Eastgate Regional ITS Architecture Document
- Formal adoption of the ITS Architecture by the Eastgate TAC Board





**Thank you for your input today!**

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