Connected Vehicle Architecture Workshop

SET-IT Software Tour

June 16, 2016

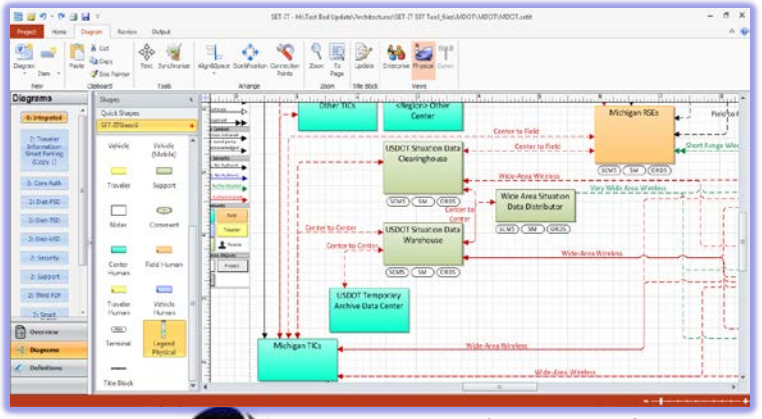
Workshop Agenda

▪ Introduction	9:00 AM
▪ CVRIA Overview	9:20 AM
▪ CVRIA Website Tour	9:50 AM
▪ National ITS Architecture / CVRIA Integration	10:20 AM
▪ Break	10:35 AM
▪ Attendee Feedback on CVRIA	10:50 AM
▪ SET-IT Software Tour	11:20 AM
▪ SET-IT Use Example	11:50 AM
▪ Wrap-up	12:20 PM
▪ Adjourn	12:30 PM

SET-IT

- Systems Engineering Tool for Intelligent Transportation (SET-IT)
  - Purpose: Develop project architectures for pilots, test beds and early deployments of connected vehicles
  - Applies CVRIA – build project specific architectures based on a common reference
    - Take advantage of prior research, updated with CVRIA
      - Over 90 connected vehicle applications
    - Establish common language between deployers, developers, stakeholders
    - Drawings and database definitions organized into one framework
    - Document generator builds Concepts of Operation using data and diagrams
  - Start with CVRIA and customize it with your names for Elements and Stakeholders
  - Available for free download from CVRIA website

SET-IT
Systems Engineering Tool for Intelligent Transportation



Requirements for SET-IT

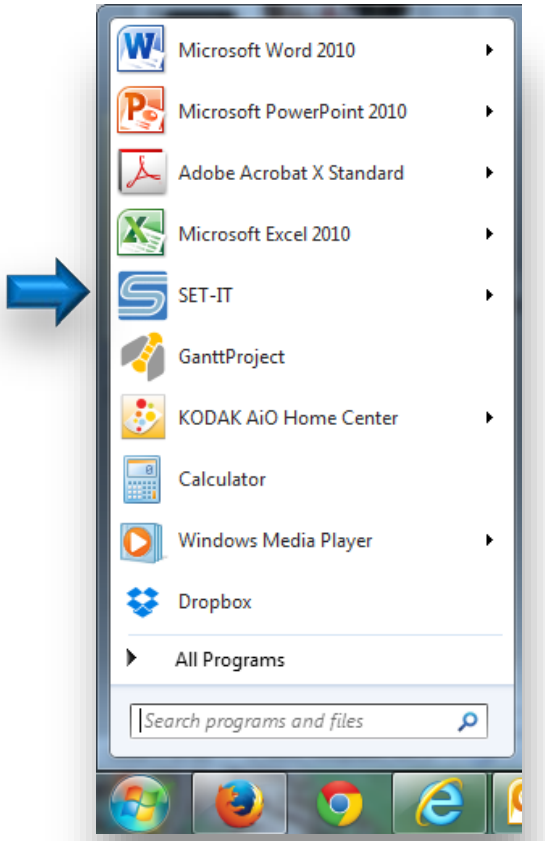
- Microsoft Visio 2010 or 2013 (32-bit)
  - Supports interface and functions for diagram development and tailoring
- Microsoft Word and/or Microsoft Excel
  - Supports tabular output functions

Features of SET-IT

- Create physical, enterprise and communications views of a connected vehicle project architecture based upon CVRIA
- Create physical, enterprise and communications diagrams
- Copy and customize connected vehicle applications and needs from CVRIA
- Output diagrams and tables of architecture components
- Create a concept of operations document for a project

Opening SET-IT

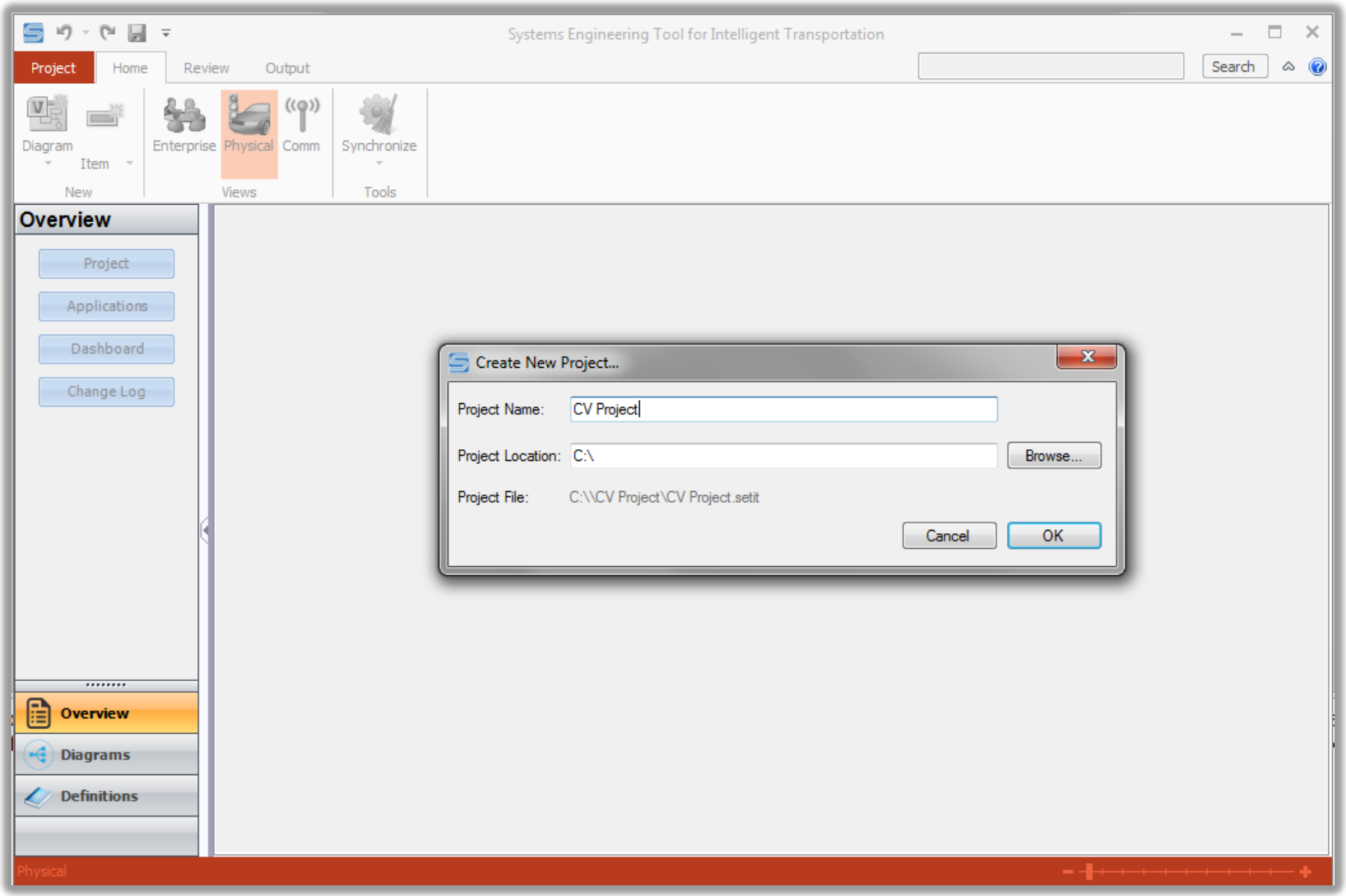
- Open SET-IT from the Start menu
- Double-click on the SET-IT icon on the desktop



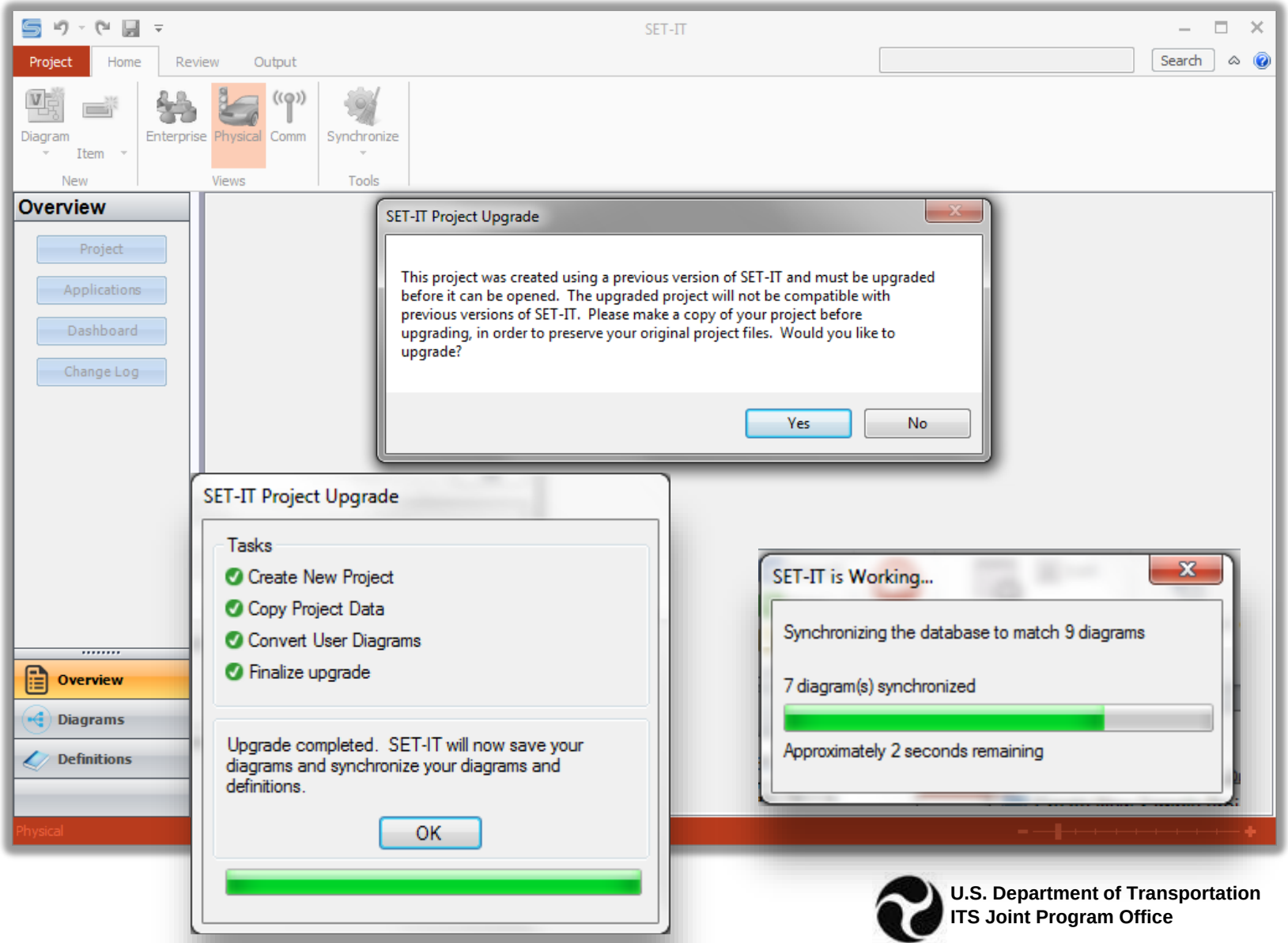
Getting Started in SET-IT

- If desired, set SET-IT options
- SET-IT is project-based so you either have to:
  - Create a new project
  - Open an existing project

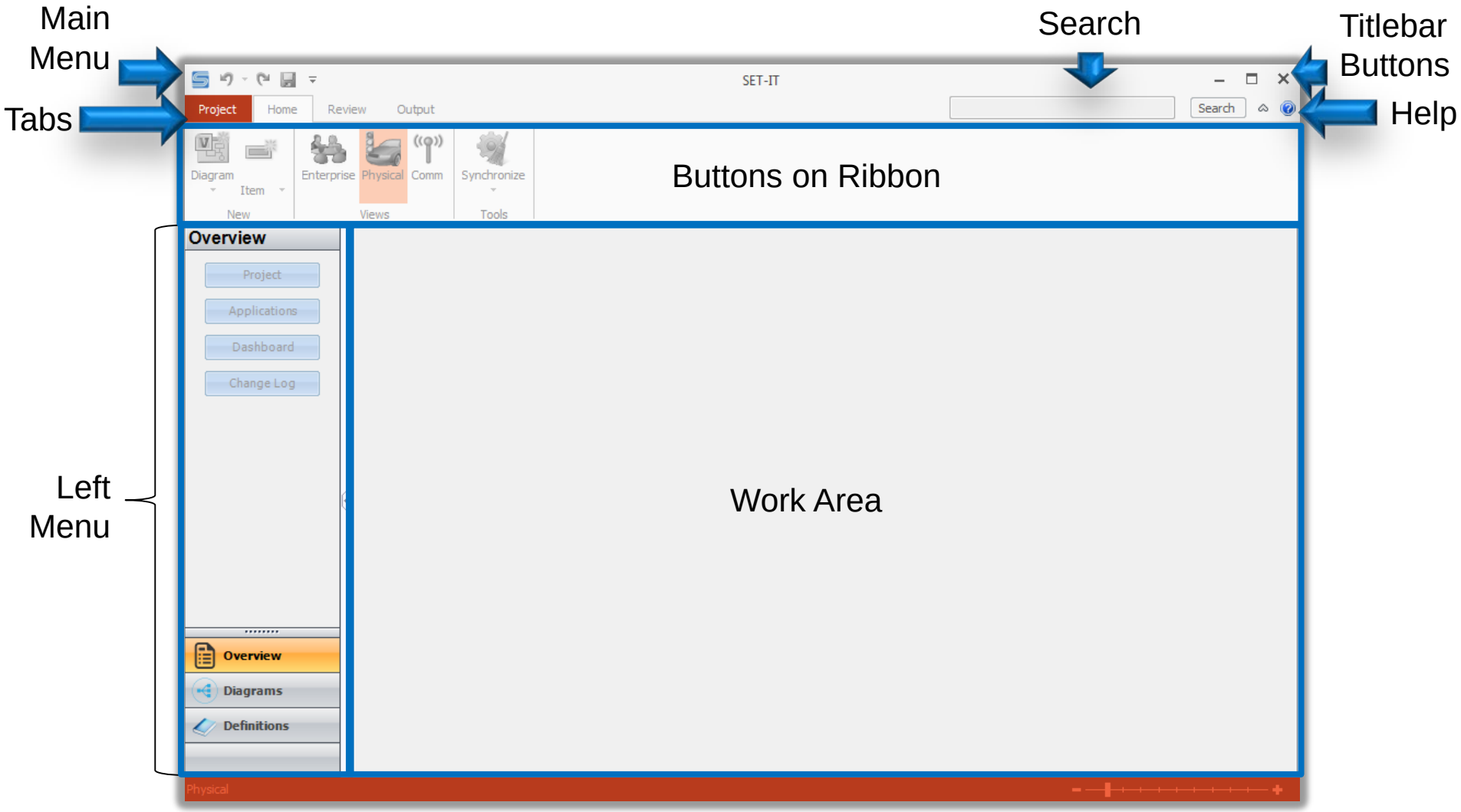
Creating a Project in SET-IT



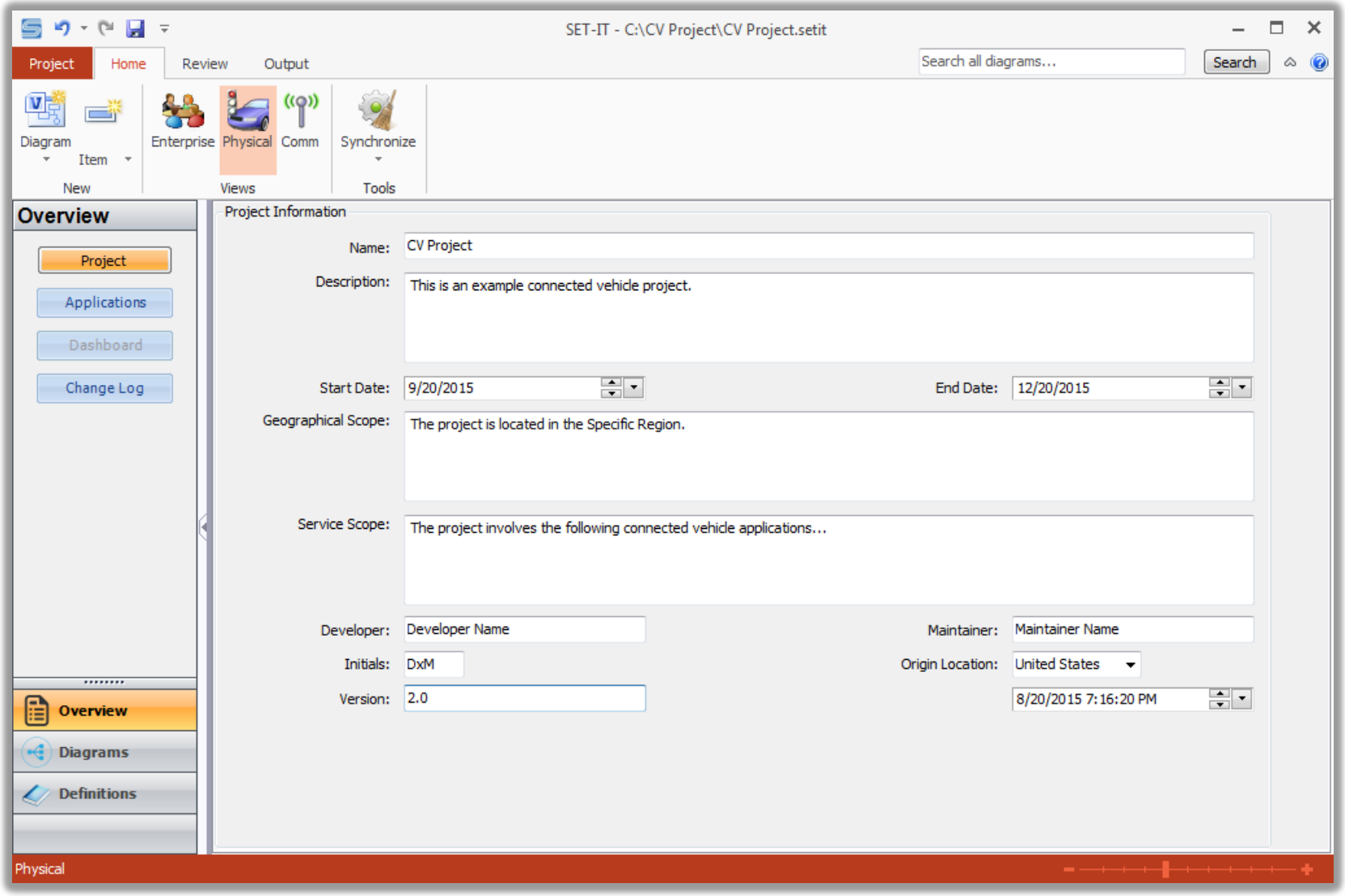
SET-IT File Upgrade Process



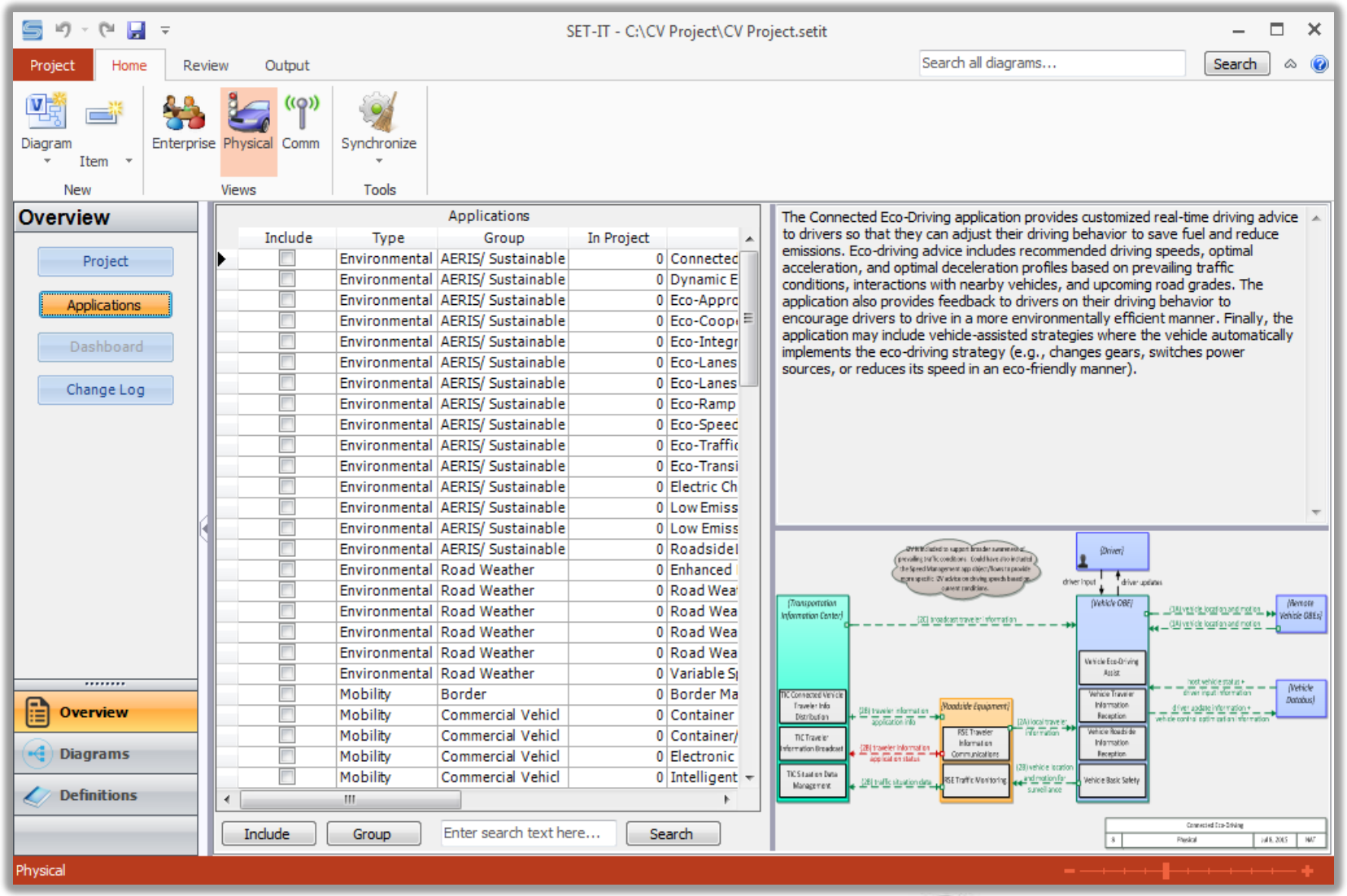
SET-IT Window



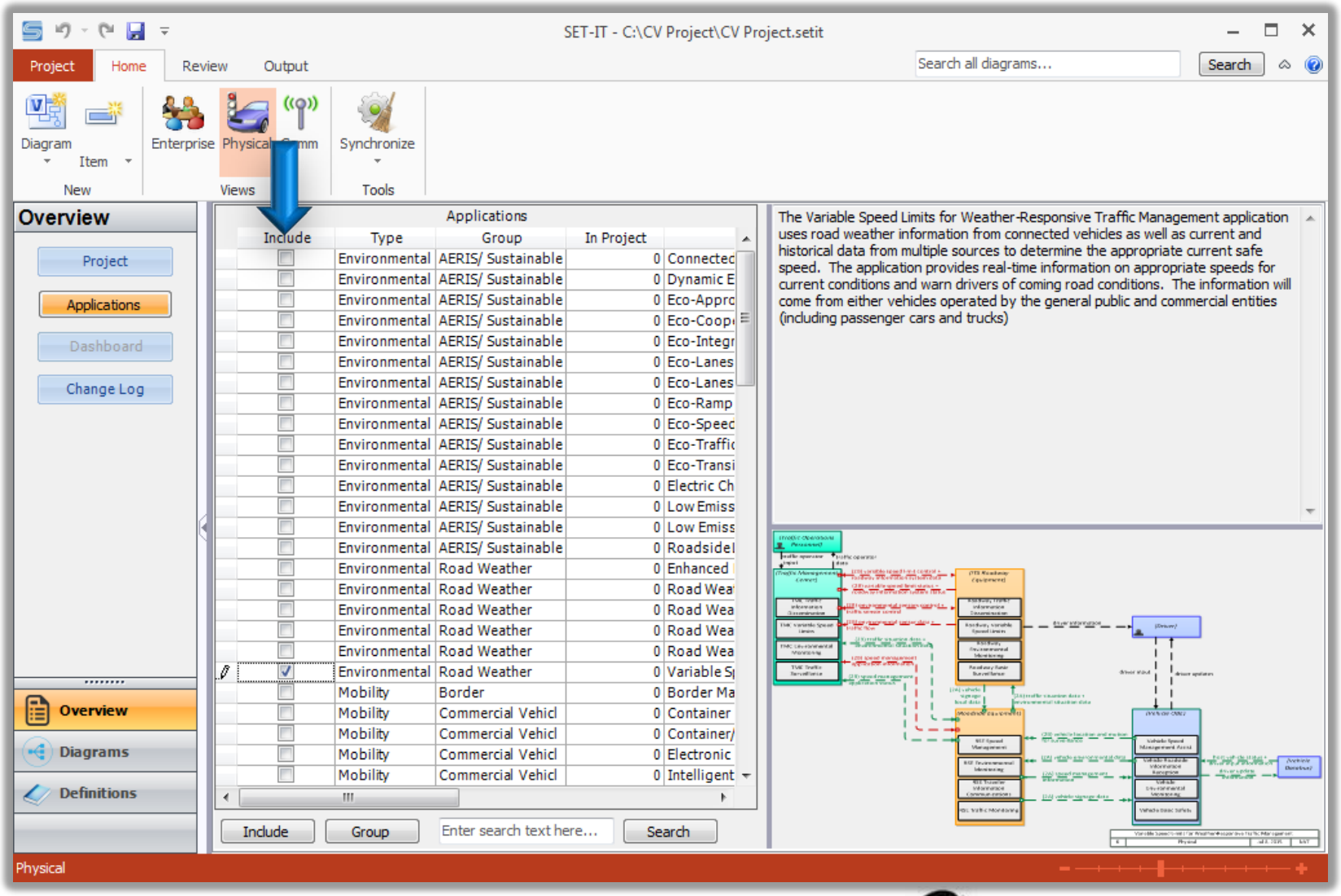
Creating a Project in SET-IT (cont.)



Including Application(s) in a SET-IT Project



Including Application(s) in a SET-IT Project (cont.)



Architecture Components in SET-IT

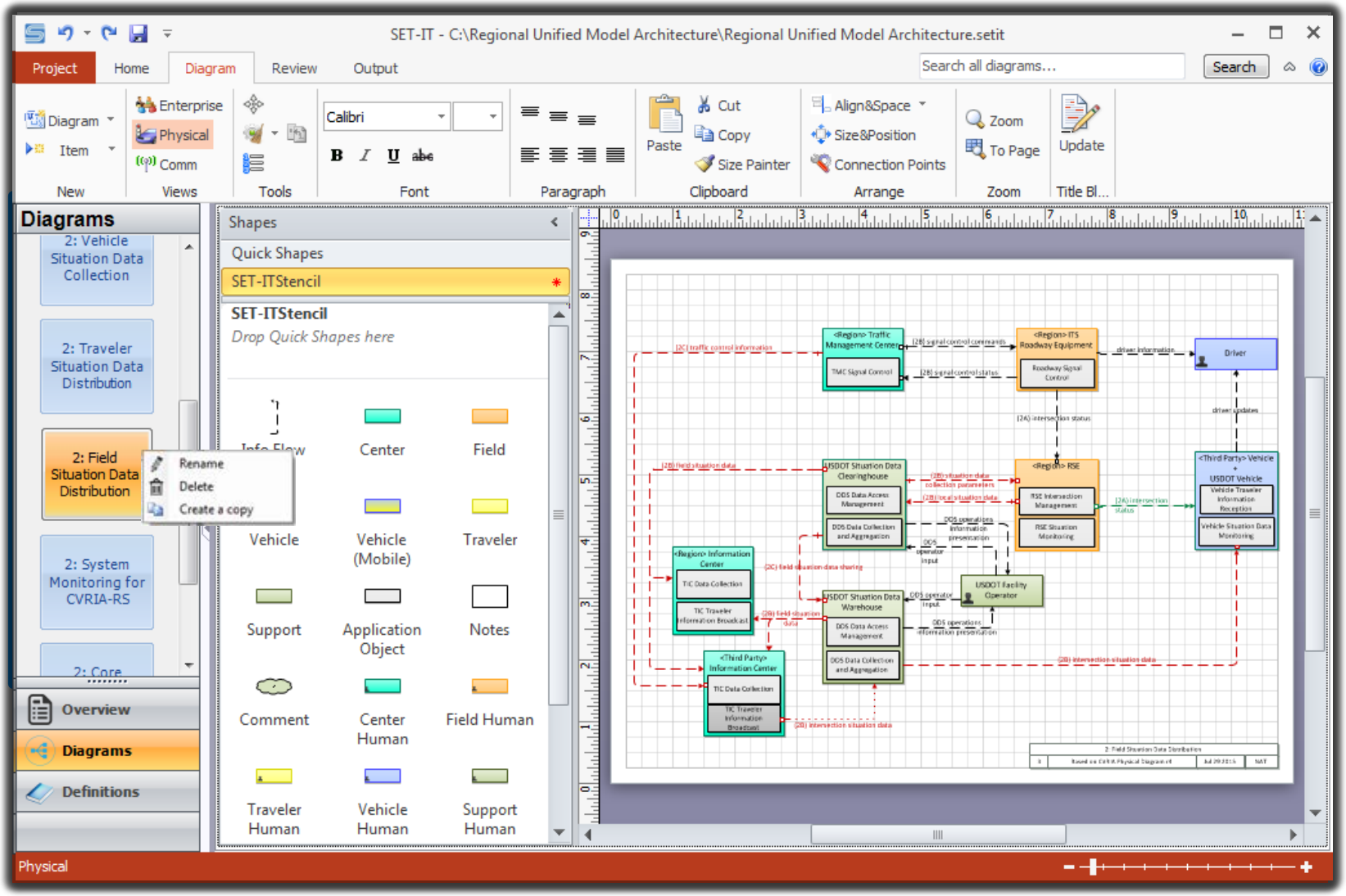
Represented with:

- Database tables
- Diagrams

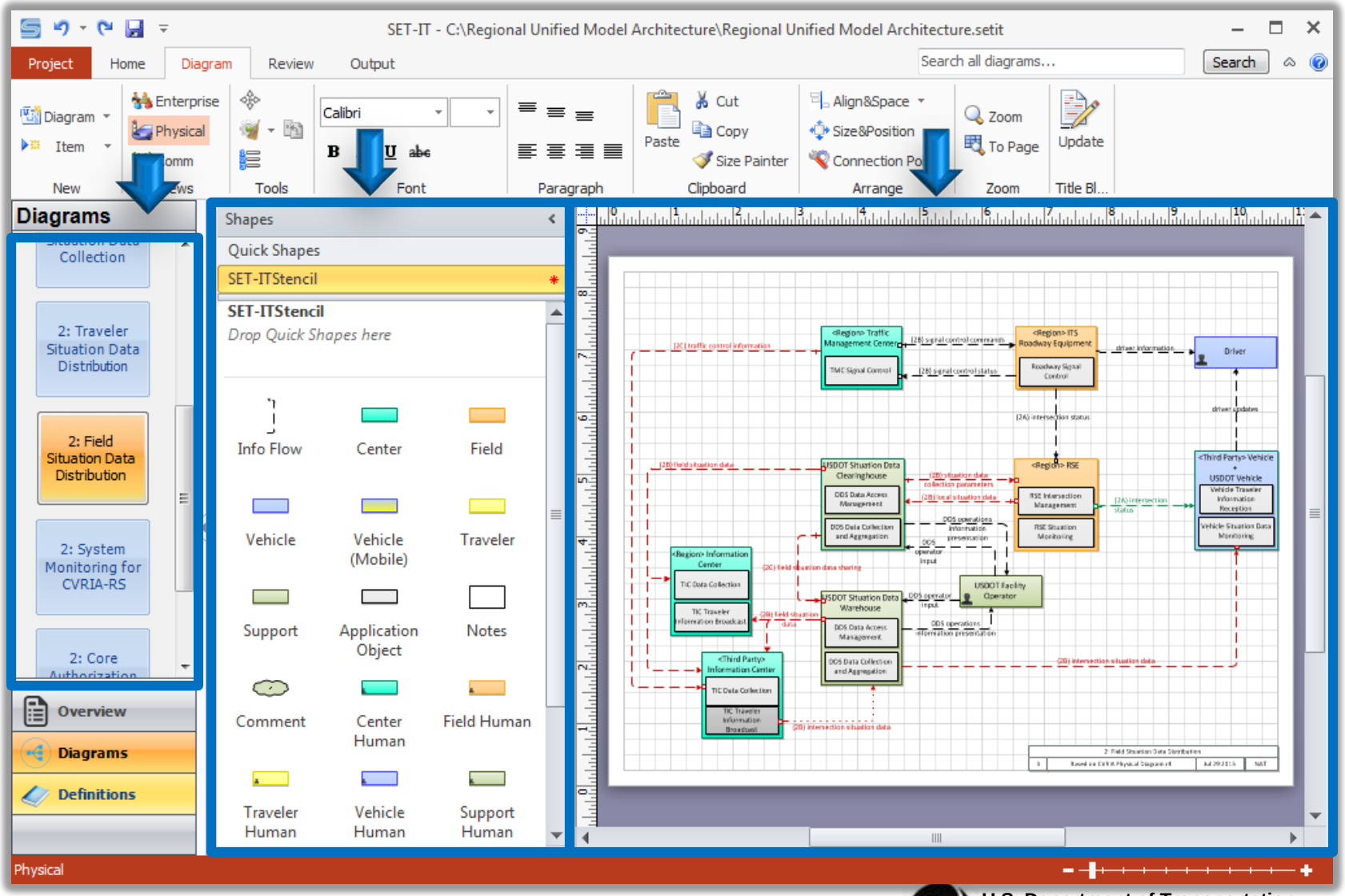
Three Views:

- Physical
- Enterprise (currently operations phase only)
- Communications

Diagrams Menu



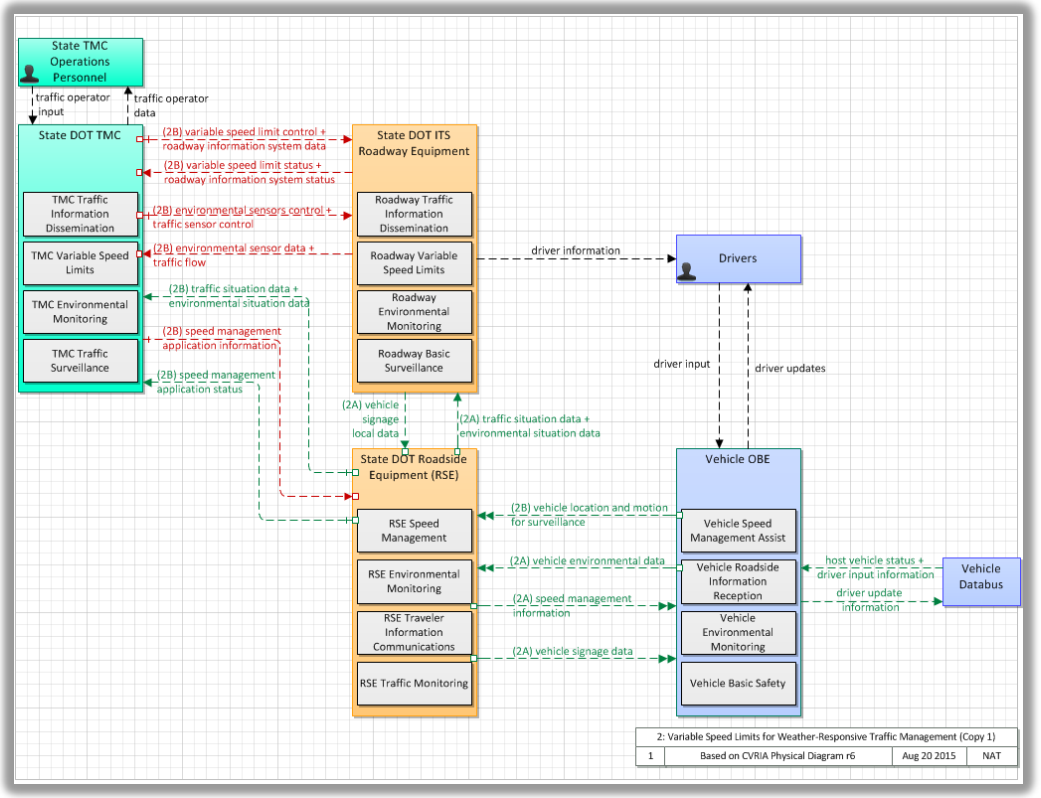
Diagrams Menu (cont.)



Physical View

- Defines the physical objects that interact with each other to deliver connected vehicle applications

- Components include:
  - Elements
  - Application objects
  - Information flows



Tailoring Physical Diagrams

1. Define elements and map them to physical objects

2. Define information flows between elements

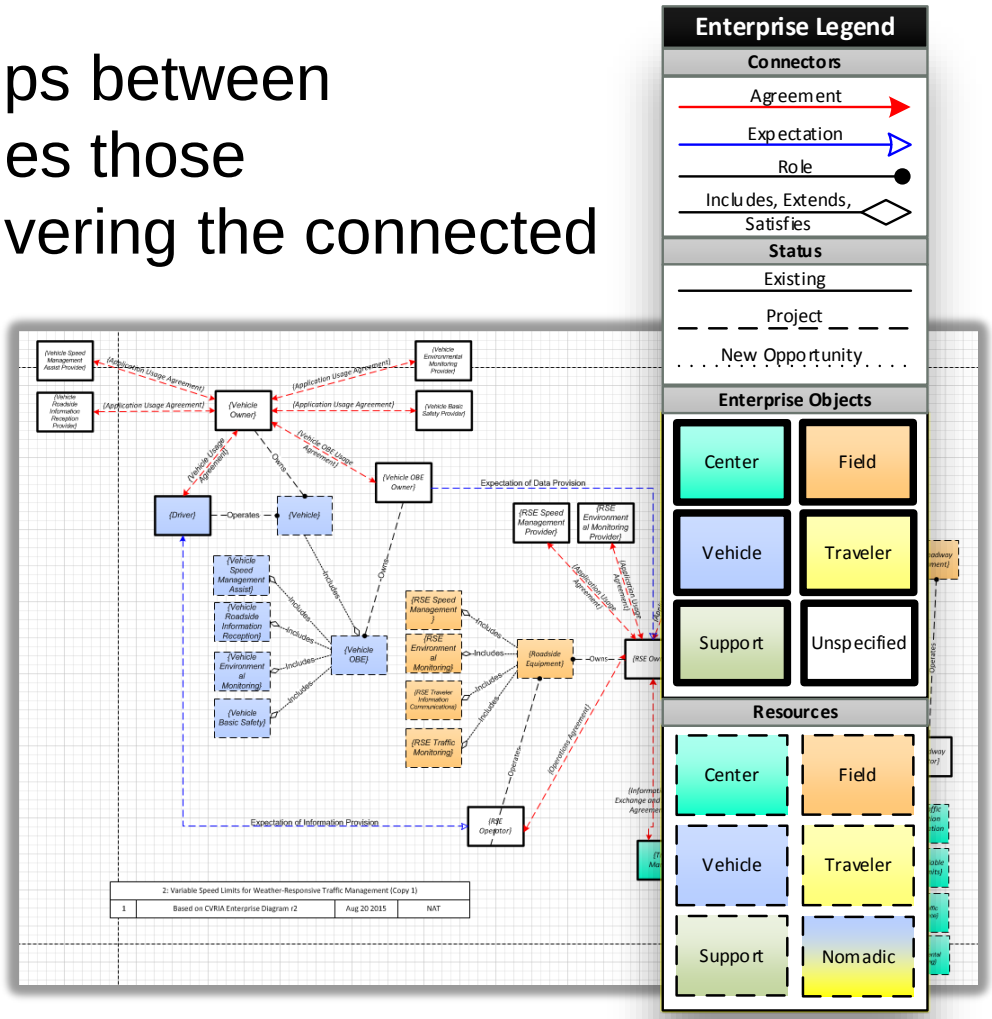
Creating Higher Level Physical Diagrams

- Layer 0 diagrams
  - Shows physical elements & interconnects
- Layer 1 diagrams
  - Shows combined set of physical elements and all of their application objects and interconnects

Enterprise View

- Describes the relationships between organizations and the roles those organizations play in delivering the connected vehicle applications

- Components include:
  - Enterprise objects
  - Resources
  - Relationships including Agreements, Expectations, Roles and Includes



Enterprise Components vs. Physical Components

Enterprise Components	Physical Components
Enterprise objects	Stakeholders
Resources	Physical objects
Relationships including Agreements, Expectations, Roles and Includes	Information flows

Options for Tailoring Between the Physical and Enterprise Views

A. Open the generic diagram and tailor (based upon information entered in other view)

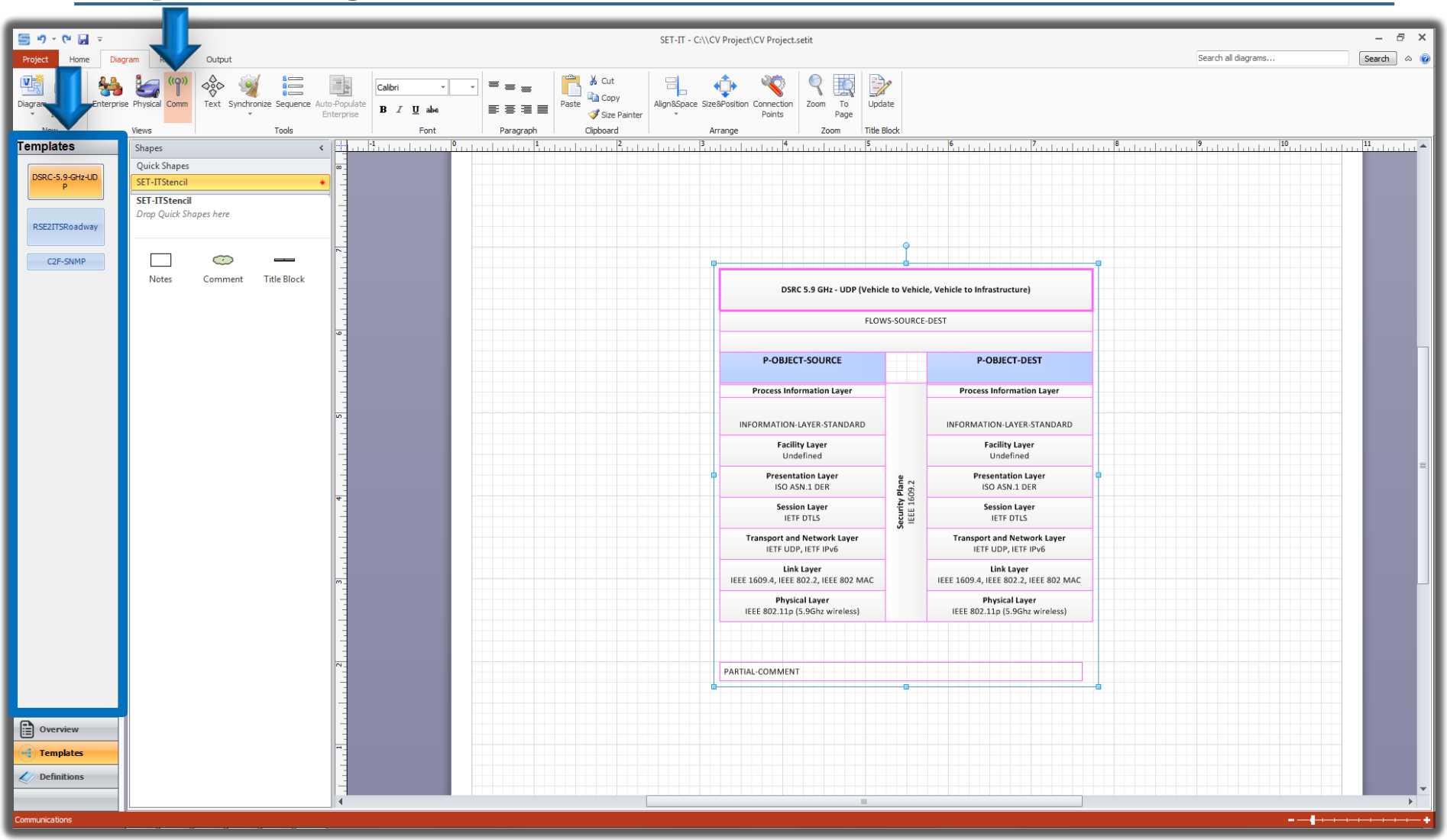
B. Delete generic diagram and create a new diagram based upon the tailored diagram of the other view

Communications View

- Describes the standardized communications protocols necessary to provide interoperability between Physical Objects in the Physical View

- Components include:
  - Templates for the standards profiles associated with the interfaces in your project
  - Definitions
    - Diagram Information
    - Physical Interconnects
    - Protocol Layers
    - Standards Profiles
    - Standards

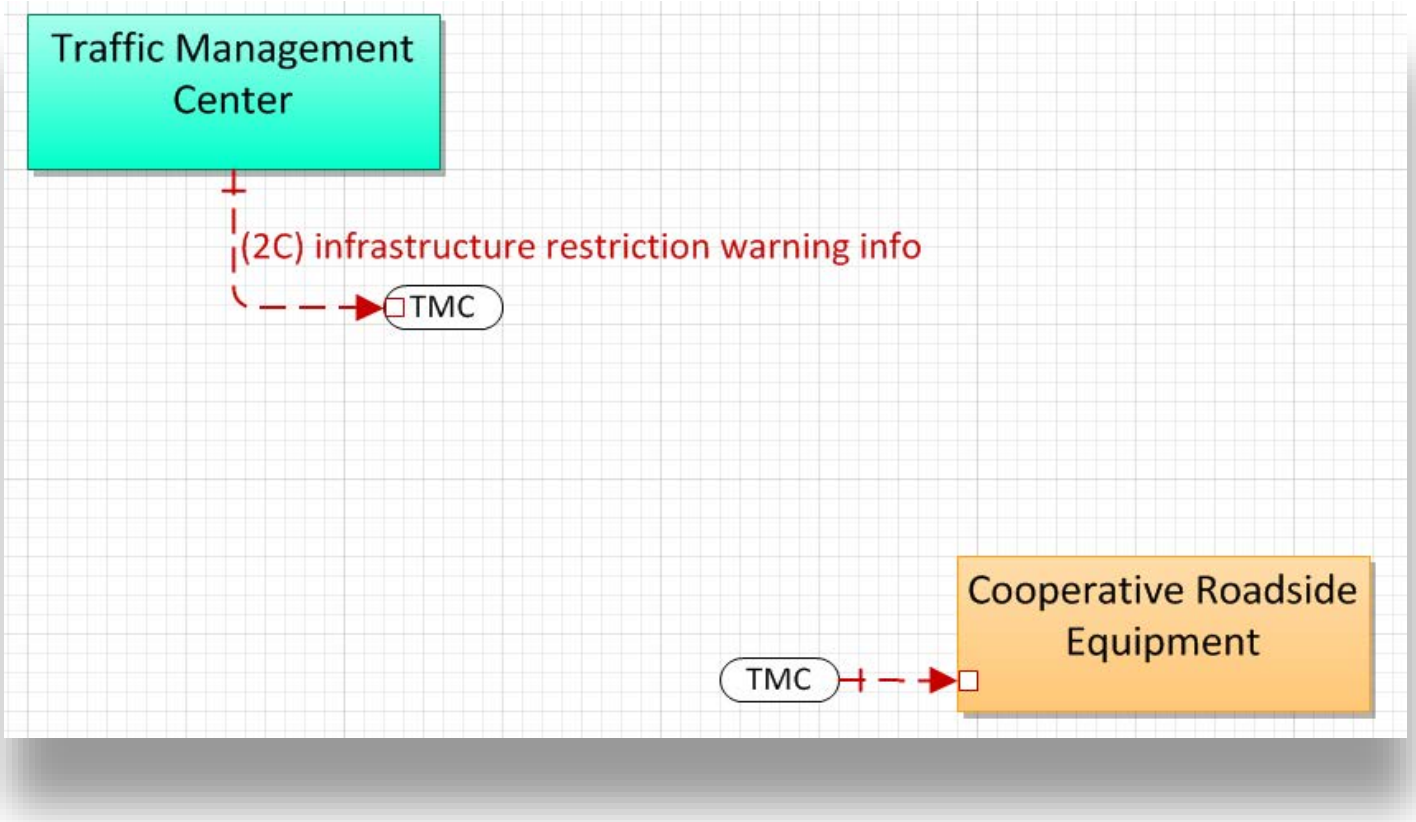
Populating the Communications View



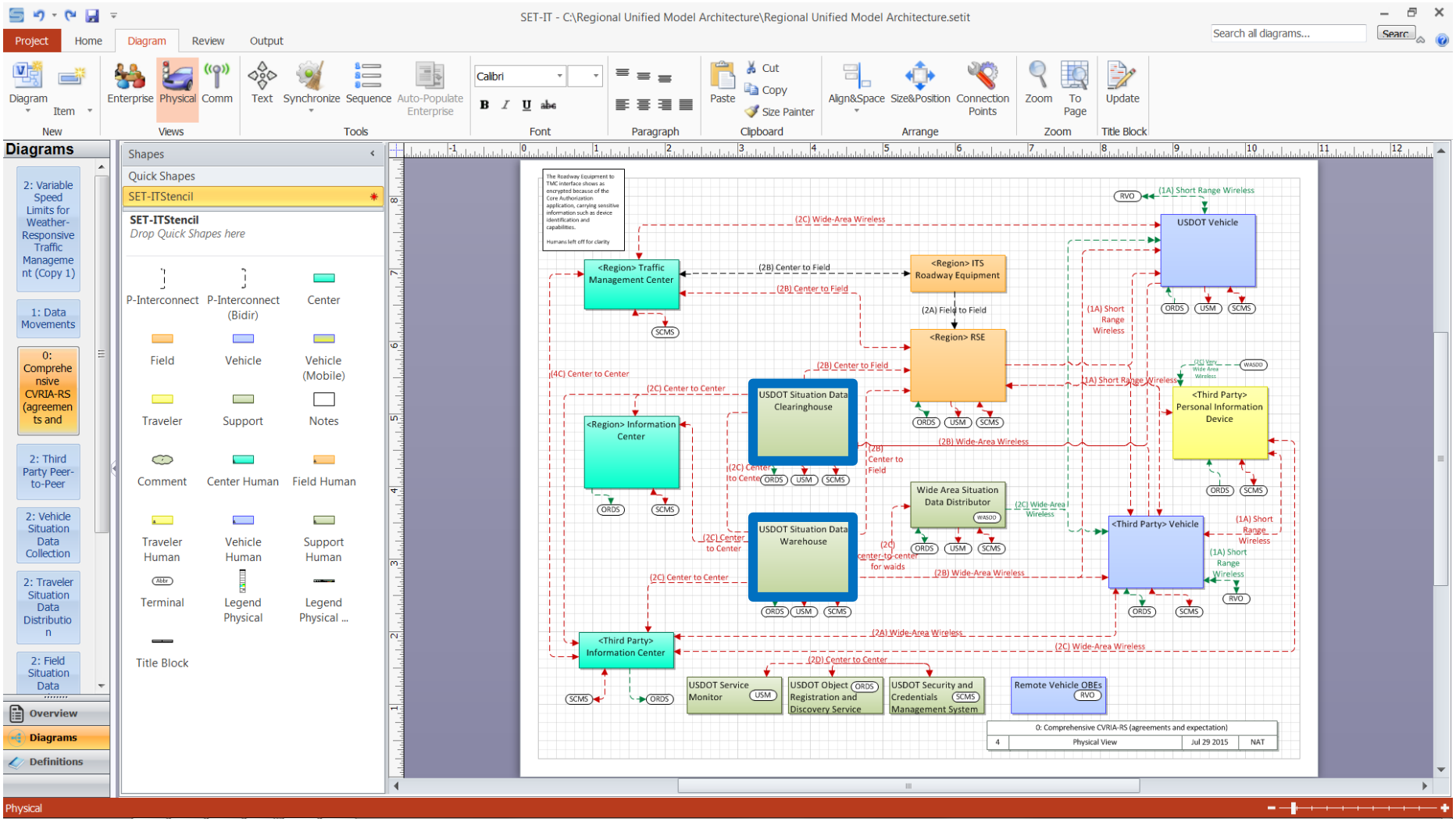
Other Diagram Tools

- Terminals
- Data Distribution

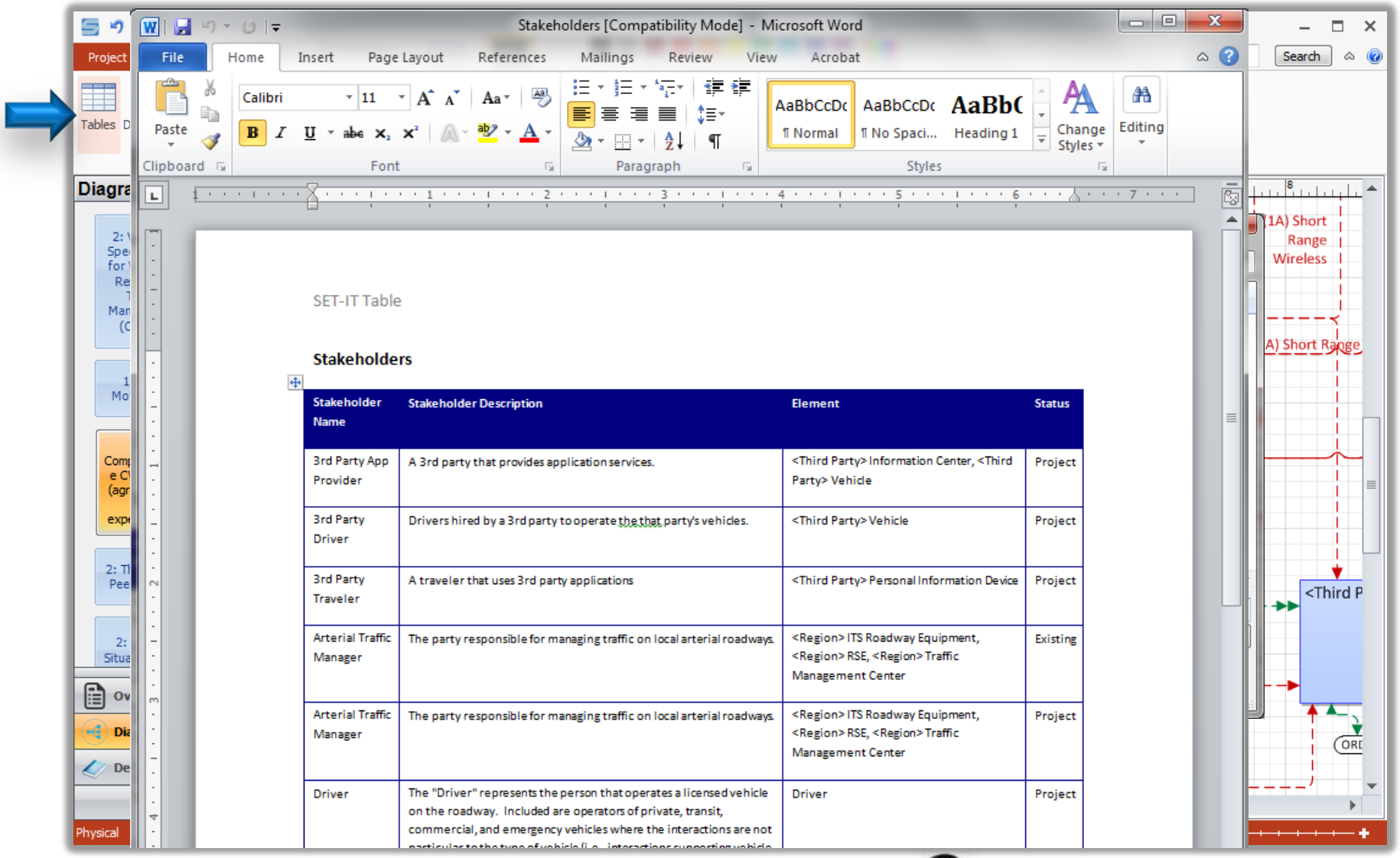
Terminals


Traffic Management Center
(2C) infrastructure restriction warning info
TMC
Cooperative Roadside Equipment
TMC

Data Distribution

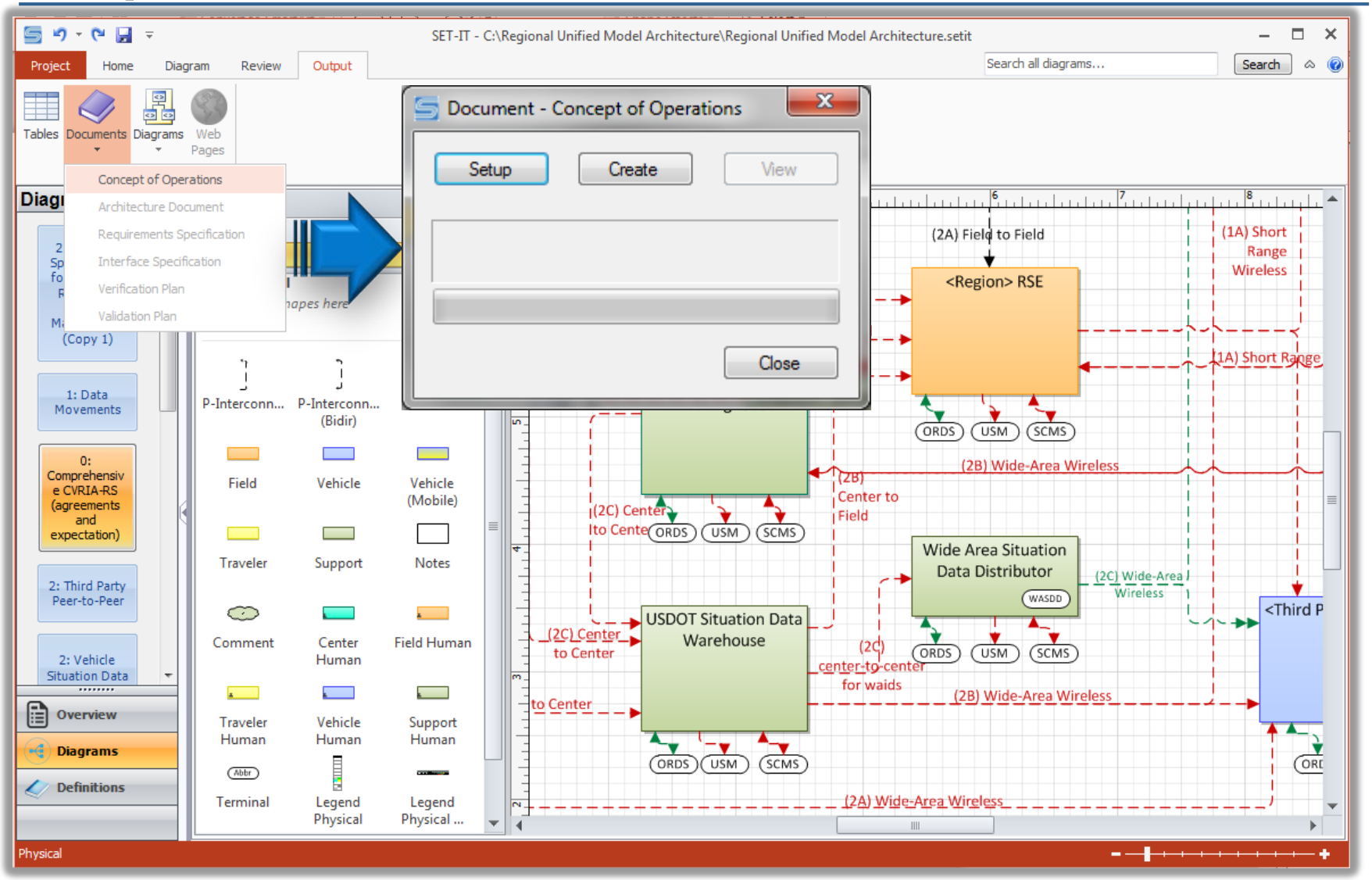


Output Tab - Tables

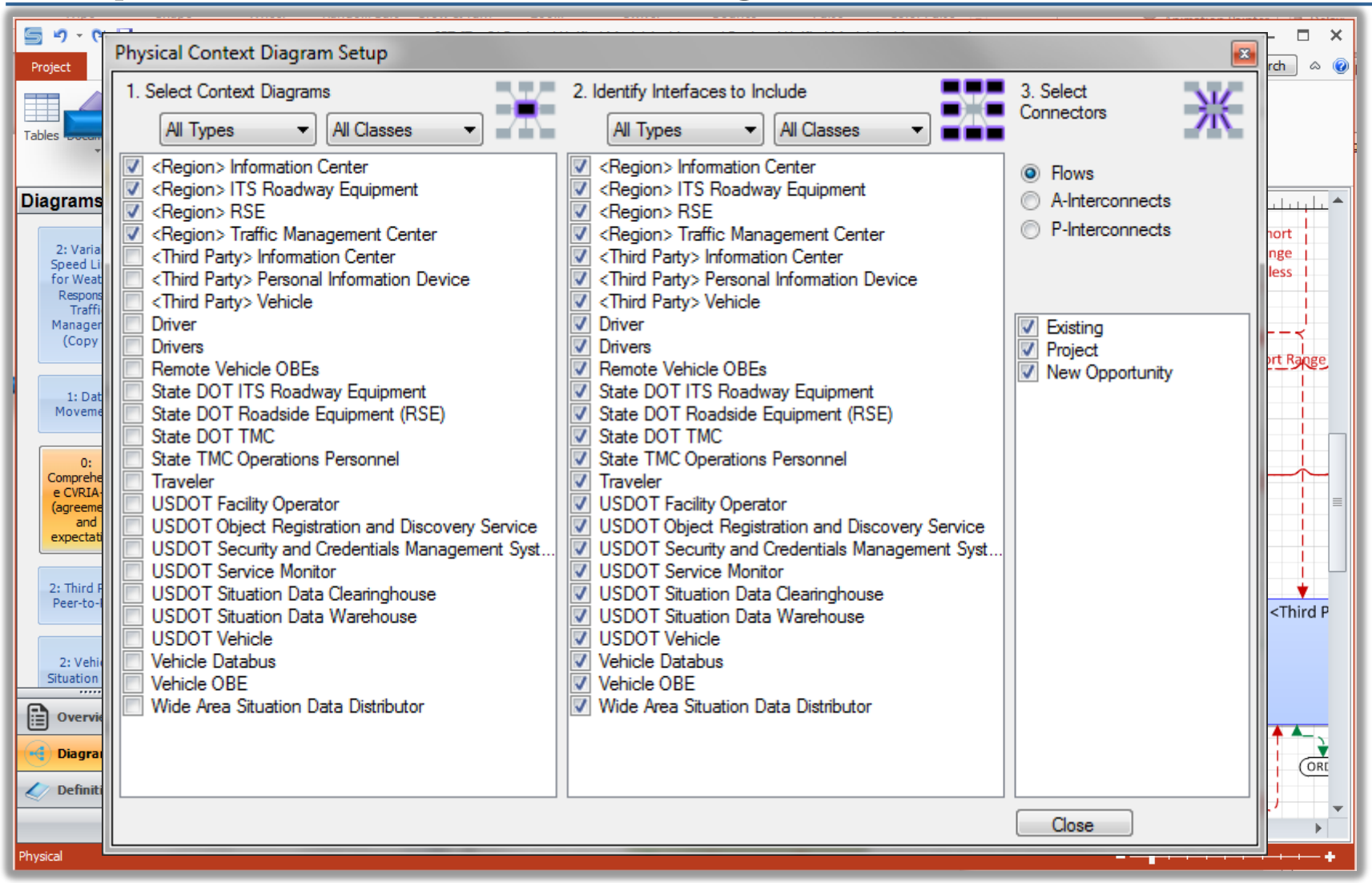


Stakeholder Name	Stakeholder Description	Element	Status
3rd Party App Provider	A 3rd party that provides application services.	<Third Party> Information Center, <Third Party> Vehicle	Project
3rd Party Driver	Drivers hired by a 3rd party to operate the that party's vehicles.	<Third Party> Vehicle	Project
3rd Party Traveler	A traveler that uses 3rd party applications	<Third Party> Personal Information Device	Project
Arterial Traffic Manager	The party responsible for managing traffic on local arterial roadways.	<Region> ITS Roadway Equipment, <Region> RSE, <Region> Traffic Management Center	Existing
Arterial Traffic Manager	The party responsible for managing traffic on local arterial roadways.	<Region> ITS Roadway Equipment, <Region> RSE, <Region> Traffic Management Center	Project
Driver	The "Driver" represents the person that operates a licensed vehicle on the roadway. Included are operators of private, transit, commercial, and emergency vehicles where the interactions are not	Driver	Project

Output Tab - Documents



Output Tab – Context Diagrams



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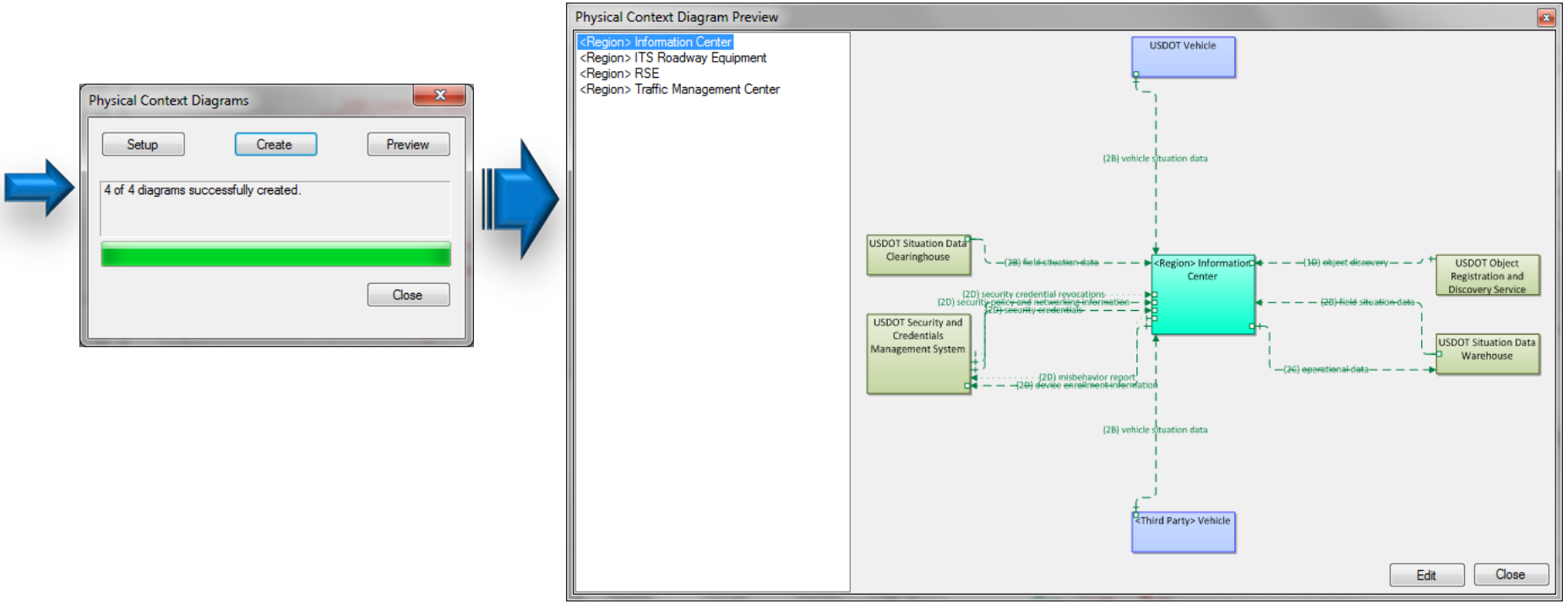
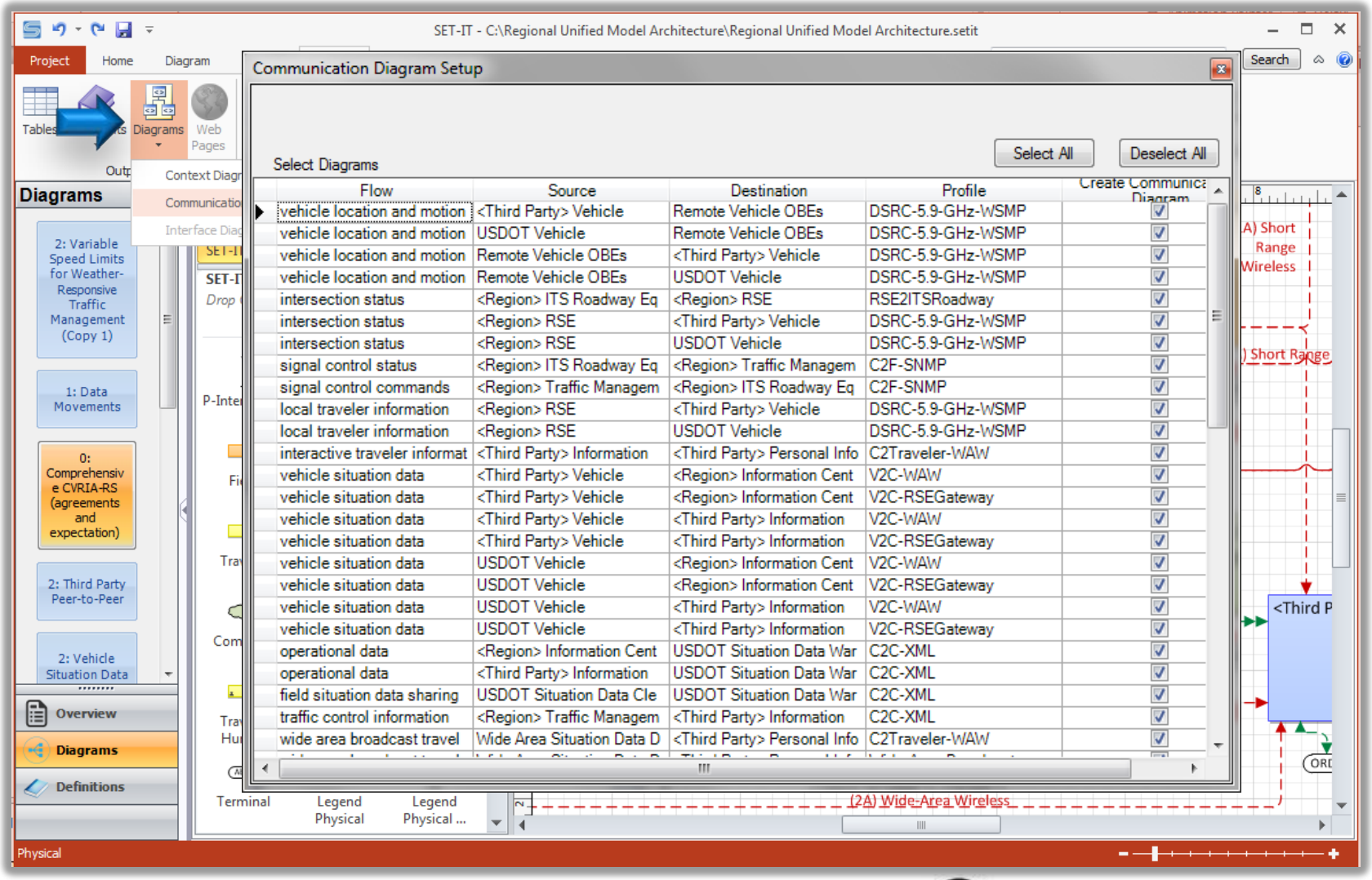


Output Tab – Communications Diagrams



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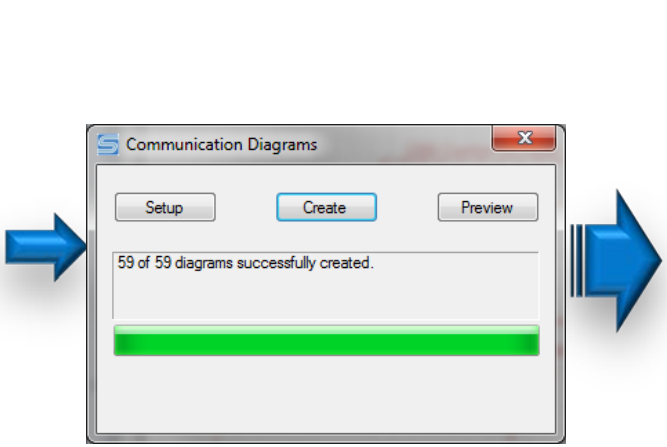

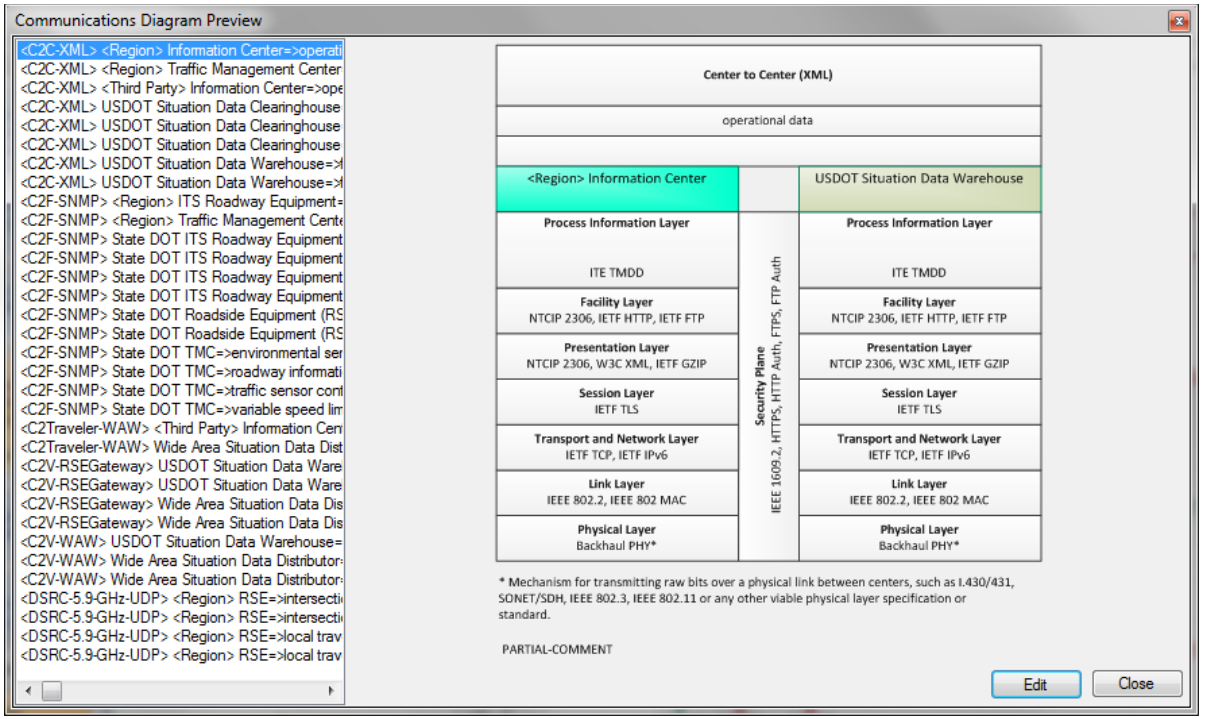

Summary Process for Creating a Project Architecture in SET-IT

1. Open a project
2. Include application(s) in the project
3. Tailor a view of each application (on a diagram and in the definitions)
4. Tailor the other view of the application and communications templates
5. Create outputs

Getting Help on SET-IT

- SET-IT Internal Help
- CVRIA website at http://www.iteris.com/cvria/
- Support services at (800) 260-1001 or SETIT@iteris.com