



Connected Vehicle Architecture Workshop

SET-IT Software Tour

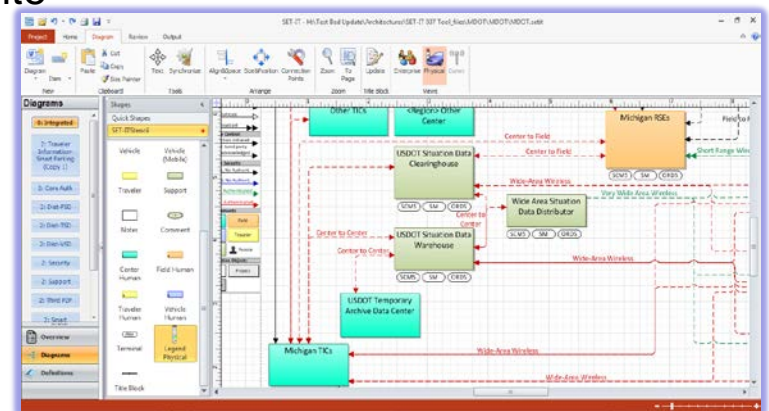
June 16, 2016

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



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



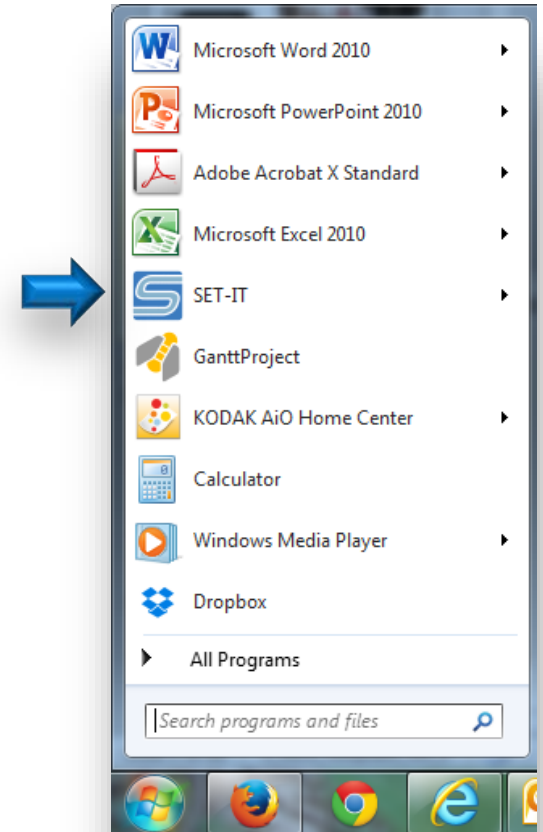
Features of SET-IT

- 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

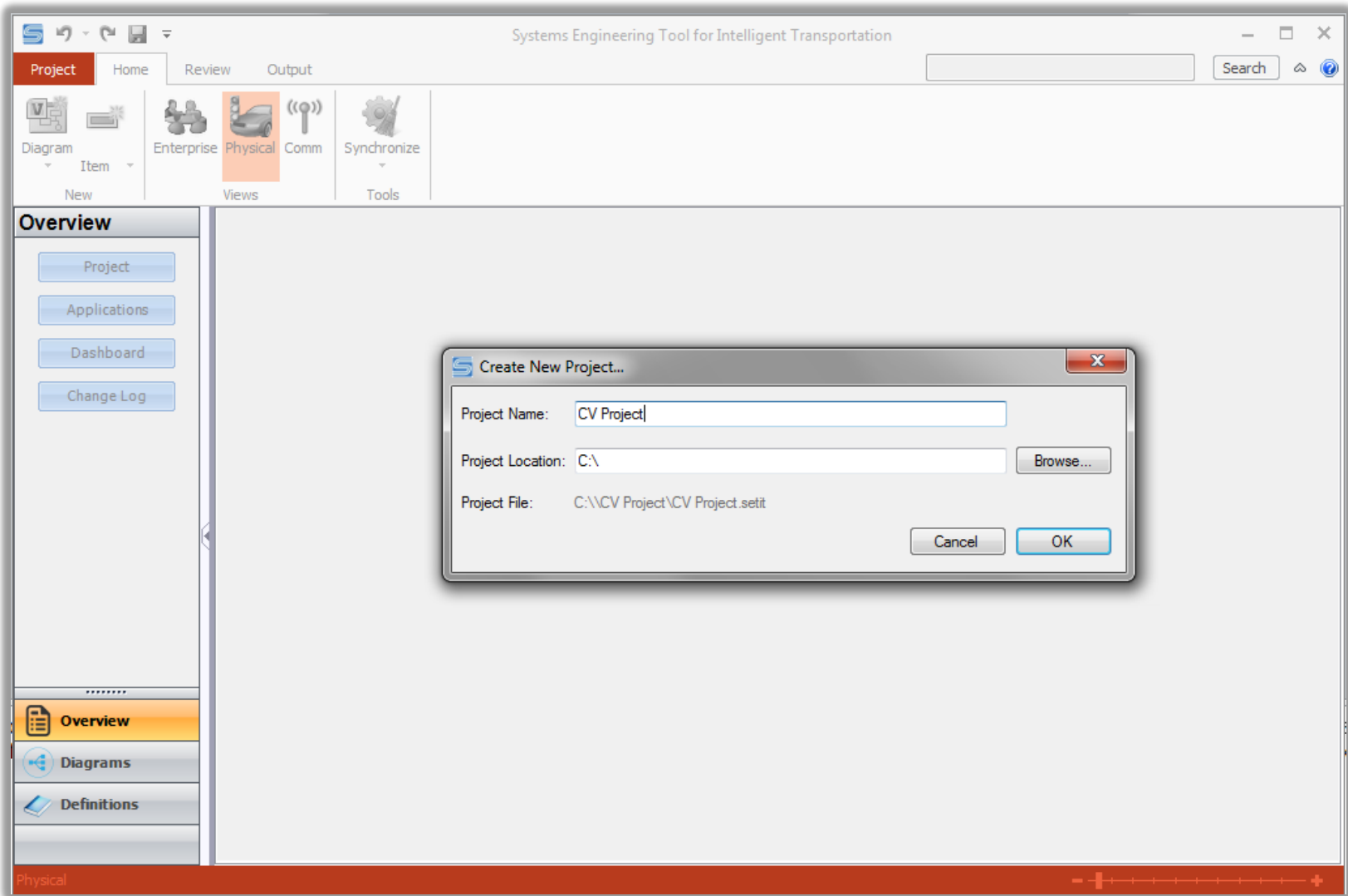


Getting Started in SET-IT

- 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

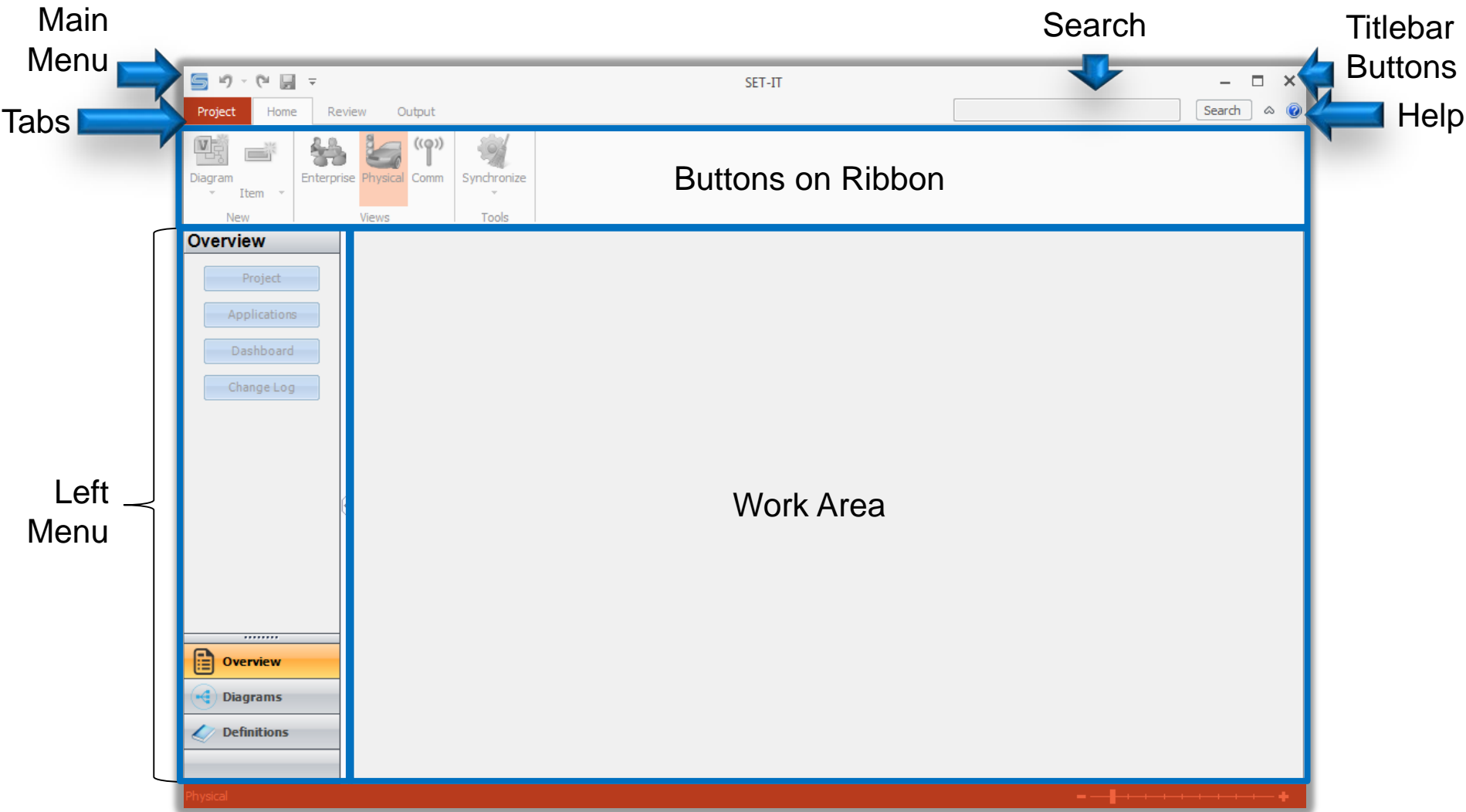


SET-IT File Upgrade Process

The screenshot displays the SET-IT software interface during a file upgrade process. The main window shows the 'Physical' view selected in the ribbon. Three dialog boxes are overlaid on the interface:

- SET-IT Project Upgrade (Top):** A confirmation dialog with the text: "This project was created using a previous version of SET-IT and must be upgraded before it can be opened. The upgraded project will not be compatible with previous versions of SET-IT. Please make a copy of your project before upgrading, in order to preserve your original project files. Would you like to upgrade?" with 'Yes' and 'No' buttons.
- SET-IT Project Upgrade (Bottom Left):** A progress dialog showing the following tasks:
 - ✓ Create New Project
 - ✓ Copy Project Data
 - ✓ Convert User Diagrams
 - ✓ Finalize upgradeThe dialog also states: "Upgrade completed. SET-IT will now save your diagrams and synchronize your diagrams and definitions." and includes an 'OK' button and a green progress bar.
- SET-IT is Working... (Bottom Right):** A progress dialog with the text: "Synchronizing the database to match 9 diagrams". It shows "7 diagram(s) synchronized" and a green progress bar. Below the bar, it says "Approximately 2 seconds remaining".

SET-IT Window



Creating a Project in SET-IT (cont.)

The screenshot shows the SET-IT software interface. The title bar reads "SET-IT - C:\CV Project\CV Project.setit". The ribbon includes "Project", "Home", "Review", and "Output". The "Physical" view is selected. The left sidebar shows "Overview", "Diagrams", and "Definitions". The main area displays the "Project Information" form with the following fields:

| | | | |
|---------------------|--|------------------|----------------------|
| Name: | CV Project | | |
| Description: | This is an example connected vehicle project. | | |
| Start Date: | 9/20/2015 | End Date: | 12/20/2015 |
| Geographical Scope: | The project is located in the Specific Region. | | |
| Service Scope: | The project involves the following connected vehicle applications... | | |
| Developer: | Developer Name | Maintainer: | Maintainer Name |
| Initials: | DxM | Origin Location: | United States |
| Version: | 2.0 | | 8/20/2015 7:16:20 PM |

Including Application(s) in a SET-IT Project

The screenshot shows the SET-IT software interface. The title bar reads "SET-IT - C:\CV Project\CV Project.setit". The interface includes a navigation pane on the left with "Overview", "Diagrams", and "Definitions". The main area is divided into a table of applications and a text description.

| Include | Type | Group | In Project | |
|--------------------------|---------------|--------------------|------------|-------------|
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Connecte |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Dynamic E |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Apprc |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Coop, |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Integr |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Lanes |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Lanes |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Ramp |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Spec |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Traffic |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Eco-Transi |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Electric Ch |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Low Emiss |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | Low Emiss |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 | RoadsideI |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Enhanced |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 | Variable S |
| <input type="checkbox"/> | Mobility | Border | 0 | Border Ma |
| <input type="checkbox"/> | Mobility | Commercial Vehicl | 0 | Container |
| <input type="checkbox"/> | Mobility | Commercial Vehicl | 0 | Container |
| <input type="checkbox"/> | Mobility | Commercial Vehicl | 0 | Electronic |
| <input type="checkbox"/> | Mobility | Commercial Vehicl | 0 | Intelligent |

Connected Eco-Driving

The Connected Eco-Driving application provides customized real-time driving advice to drivers so that they can adjust their driving behavior to save fuel and reduce emissions. Eco-driving advice includes recommended driving speeds, optimal acceleration, and optimal deceleration profiles based on prevailing traffic conditions, interactions with nearby vehicles, and upcoming road grades. The application also provides feedback to drivers on their driving behavior to encourage drivers to drive in a more environmentally efficient manner. Finally, the application may include vehicle-assisted strategies where the vehicle automatically implements the eco-driving strategy (e.g., changes gears, switches power sources, or reduces its speed in an eco-friendly manner).

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

The screenshot shows the SET-IT software interface. The 'Applications' table is the central focus, listing various applications with columns for 'Include', 'Type', 'Group', and 'In Project'. A blue arrow points to the 'Include' column. The application 'Variable Speed Limits for Weather-Responsive Traffic Management' is highlighted with a checkmark in the 'Include' column.

| Include | Type | Group | In Project |
|-------------------------------------|---------------|--------------------|---------------|
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Connected |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Dynamic E |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Appro |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Coop |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Integr |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Lanes |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Lanes |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Ramp |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Spec |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Traffic |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Eco-Transi |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Electric Ch |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Low Emiss |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Low Emiss |
| <input type="checkbox"/> | Environmental | AERIS/ Sustainable | 0 Roadside |
| <input type="checkbox"/> | Environmental | Road Weather | 0 Enhanced |
| <input type="checkbox"/> | Environmental | Road Weather | 0 Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 Road Wea |
| <input type="checkbox"/> | Environmental | Road Weather | 0 Road Wea |
| <input checked="" type="checkbox"/> | Environmental | Road Weather | 0 Variable S |
| <input type="checkbox"/> | Mobility | Border | 0 Border Ma |
| <input type="checkbox"/> | Mobility | Commercial Vehi | 0 Container |
| <input type="checkbox"/> | Mobility | Commercial Vehi | 0 Container/ |
| <input type="checkbox"/> | Mobility | Commercial Vehi | 0 Electronic |
| <input type="checkbox"/> | Mobility | Commercial Vehi | 0 Intelligent |

The 'Variable Speed Limits for Weather-Responsive Traffic Management' application uses road weather information from connected vehicles as well as current and historical data from multiple sources to determine the appropriate current safe speed. The application provides real-time information on appropriate speeds for current conditions and warn drivers of coming road conditions. The information will come from either vehicles operated by the general public and commercial entities (including passenger cars and trucks)

The diagram below illustrates the data flow for this application. It shows various data sources on the left (e.g., 'ITS Roadside Equipment', 'ITS Mobile Equipment') feeding into a central processing block ('Variable Speed Management'). This block then outputs data to a 'Driver' block, which in turn provides information to a 'Vehicle Speed Management' block, which finally outputs to an 'Averaged Speed' block.

Architecture Components in SET-IT

Represented with:

- Database tables
- Diagrams

Three Views:

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

Diagrams Menu

The screenshot displays the Microsoft Visio software interface. The title bar indicates the file path: "SET-IT - C:\Regional Unified Model Architecture\Regional Unified Model Architecture.setit". The ribbon includes "Project", "Home", "Diagram", "Review", and "Output". The "Diagram" ribbon is active, showing options for "Enterprise", "Physical", and "Comm" views, along with font and paragraph settings. A "Diagrams" task pane on the left lists several diagrams, with "2: Field Situation Data Distribution" selected. A context menu is open over this diagram, showing "Rename", "Delete", and "Create a copy" options. The "Shapes" task pane shows the "SET-ITStencil" with various shapes categorized by type (Vehicle, Support, Comment, Traveler, etc.). The main workspace contains a complex diagram titled "2: Field Situation Data Distribution". This diagram illustrates the flow of information between various components, including:

- <Region> Traffic Management Center (TMC):** TMC Signal Control, TMC Signal Control, TMC Signal Control.
- <Region> ITS Roadway Equipment:** Roadway Signal Control.
- <Region> RSE:** RSE Intervention Management, RSE Situation Monitoring.
- <Region> Information Center:** TIC Data Collection, TIC Traveler Information Broadcast.
- <Third Party> Information Center:** TIC Data Collection, TIC Traveler Information Broadcast.
- USDOT Facility Operator:** USDOT Facility Operator.
- USDOT Vehicle:** Vehicle Traveler Information Reception, Vehicle Situation Data Monitoring.
- Driver:** Driver.

The diagram shows data flows such as "I2C traffic control information", "I2B field observation data", "I2D intervention situation data", "I2E vehicle data collection", "I2F vehicle data collection", "I2G vehicle data collection", "I2H vehicle data collection", "I2I vehicle data collection", "I2J vehicle data collection", "I2K vehicle data collection", "I2L vehicle data collection", "I2M vehicle data collection", "I2N vehicle data collection", "I2O vehicle data collection", "I2P vehicle data collection", "I2Q vehicle data collection", "I2R vehicle data collection", "I2S vehicle data collection", "I2T vehicle data collection", "I2U vehicle data collection", "I2V vehicle data collection", "I2W vehicle data collection", "I2X vehicle data collection", "I2Y vehicle data collection", "I2Z vehicle data collection".

Diagrams Menu (cont.)

The screenshot displays the SET-IT software interface for editing a diagram. The main window title is "SET-IT - C:\Regional Unified Model Architecture\Regional Unified Model Architecture.setit". The interface includes a ribbon with tabs for Project, Home, Diagram, Review, and Output. The Diagram tab is active, showing various toolbars for text formatting (Font, Paragraph), clipboard operations (Cut, Copy, Paste), alignment (Align & Space, Size & Position), and zooming (Zoom, To Page, Update).

On the left side, there is a "Diagrams" panel with a list of diagram types, including "2: Field Situation Data Distribution" which is highlighted with a blue box. Below this is an "Overview" section with icons for "Diagrams" and "Definitions".

The central "Shapes" panel shows the "SET-ITStencil" library. It contains a grid of shapes categorized into "Info Flow", "Vehicle", "Support", "Comment", "Traveler Human", "Vehicle Human", and "Support Human". A blue box highlights the "SET-ITStencil" panel.

The main workspace displays a complex system architecture diagram on a grid. The diagram consists of several interconnected components:

- <Region> Traffic Management Center** (TMC Signal Control)
- <Region> ITS Roadway Equipment** (Roadway Signal Control)
- Driver**
- <Region> RSE** (RSE Intersection Management, RSE Situation Monitoring)
- <Third Party> Vehicle** (USDOT Vehicle Information Reception, Vehicle Situation Data Monitoring)
- USDOT Facility Operator**
- USDOT Situation Data Clearinghouse** (DDS Data Access Management, DDS Data Collection and Aggregation)
- USDOT Situation Data Warehouse** (DDS Data Access Management, DDS Data Collection and Aggregation)
- <Region> Information Center** (TIC Data Collection, TIC Traveler Information Broadcast)
- <Third Party> Information Center** (TIC Data Collection, TIC Traveler Information Broadcast)

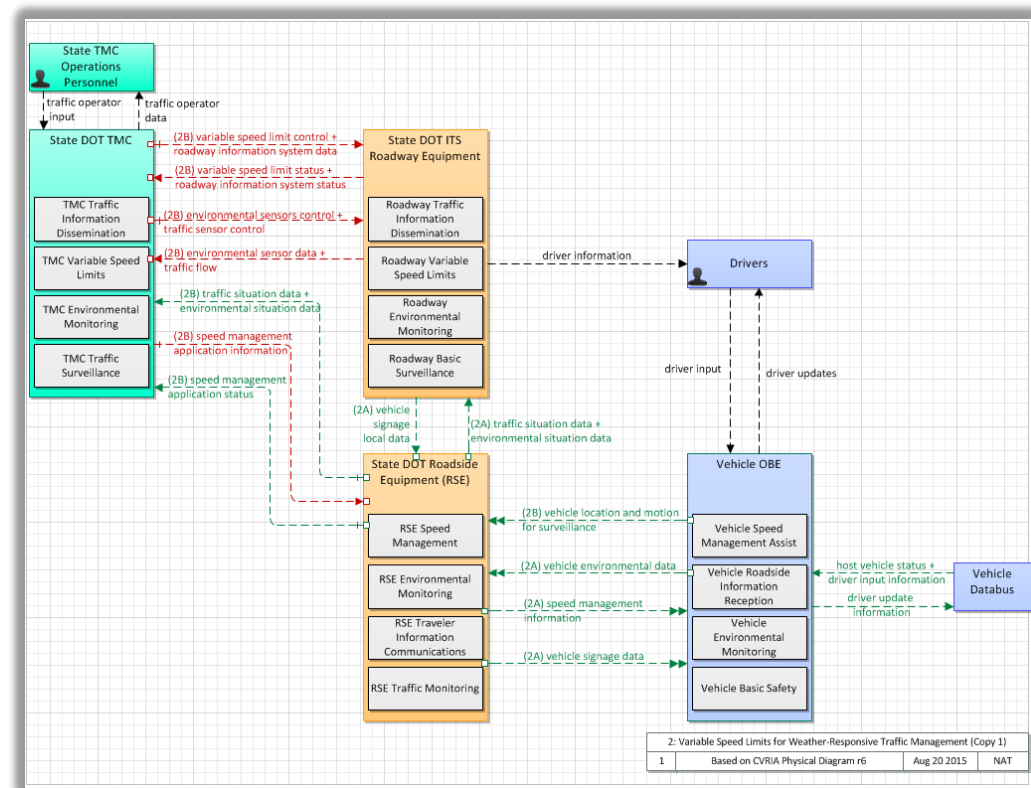
Red dashed arrows indicate data flows between these components, labeled with IDs such as (2C) traffic control information, (2B) field situation data, (2A) intersection status, (2D) intersection situation data, (2E) vehicle situation data, (2F) intersection data collection parameters, (2G) general data information presentation, (2H) field observation data, (2I) field observation data, and (2J) intersection situation data. A legend at the bottom right of the diagram area identifies "2: Field Situation Data Distribution" and lists "Based on CVRIS Physical Diagram v4", "Jul 2013", and "NAT".

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

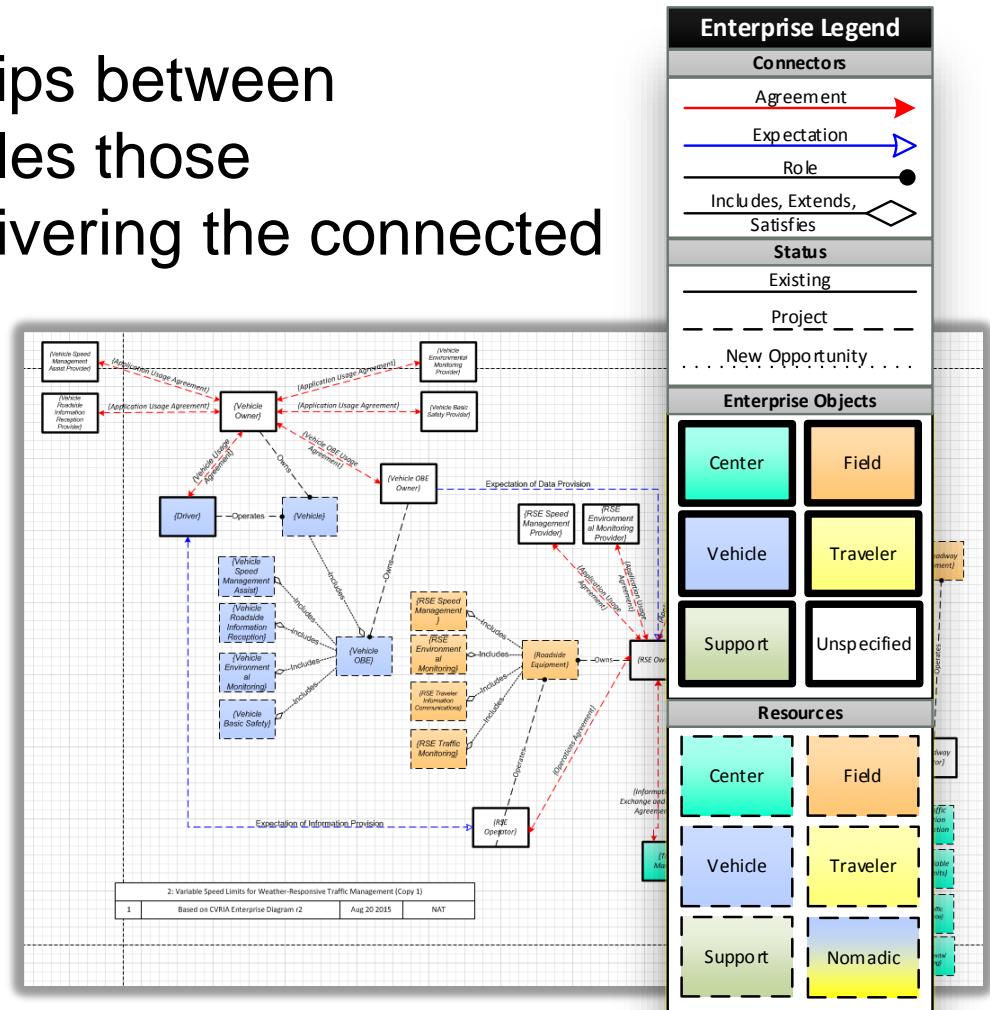
- Layer 0 diagrams
 - Shows physical elements & interconnects

- 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

The screenshot shows the SET-IT software interface. The ribbon at the top includes tabs for Project, Home, Diagram, and Output. The 'Comm' icon in the Diagram tab is highlighted with a blue arrow. The 'Templates' pane on the left shows a list of templates, with 'DSRC-5.9-GHz-UDP' selected. The main workspace displays a detailed protocol stack diagram for DSRC 5.9 GHz - UDP. The diagram is structured as follows:

| DSRC 5.9 GHz - UDP (Vehicle to Vehicle, Vehicle to Infrastructure) | |
|--|---|
| FLows-SOURCE-DEST | |
| P-OBJECT-SOURCE | P-OBJECT-DEST |
| Process Information Layer | Process Information Layer |
| INFORMATION-LAYER-STANDARD | INFORMATION-LAYER-STANDARD |
| Facility Layer Undefined | Facility Layer Undefined |
| Presentation Layer ISO ASN.1 DER | Presentation Layer ISO ASN.1 DER |
| Session Layer IETF DTLS | Session Layer IETF DTLS |
| Transport and Network Layer IETF UDP, IETF IPv6 | Transport and Network Layer IETF UDP, IETF IPv6 |
| Link Layer IEEE 1609.4, IEEE 802.2, IEEE 802 MAC | Link Layer IEEE 1609.4, IEEE 802.2, IEEE 802 MAC |
| Physical Layer IEEE 802.11p (5.9GHz wireless) | Physical Layer IEEE 802.11p (5.9GHz wireless) |
| PARTIAL-COMMENT | |

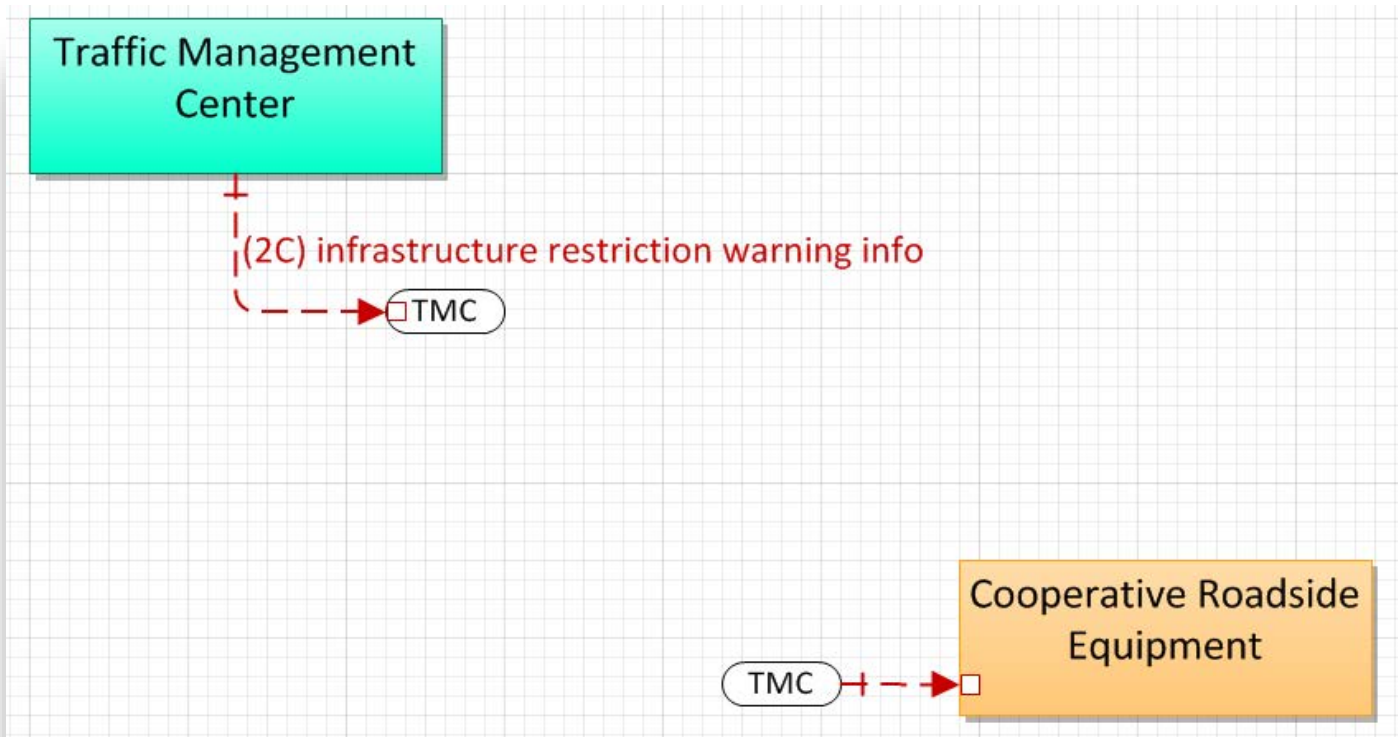
The diagram also includes a central vertical label: Security Plane IEEE 1609.2.

Other Diagram Tools

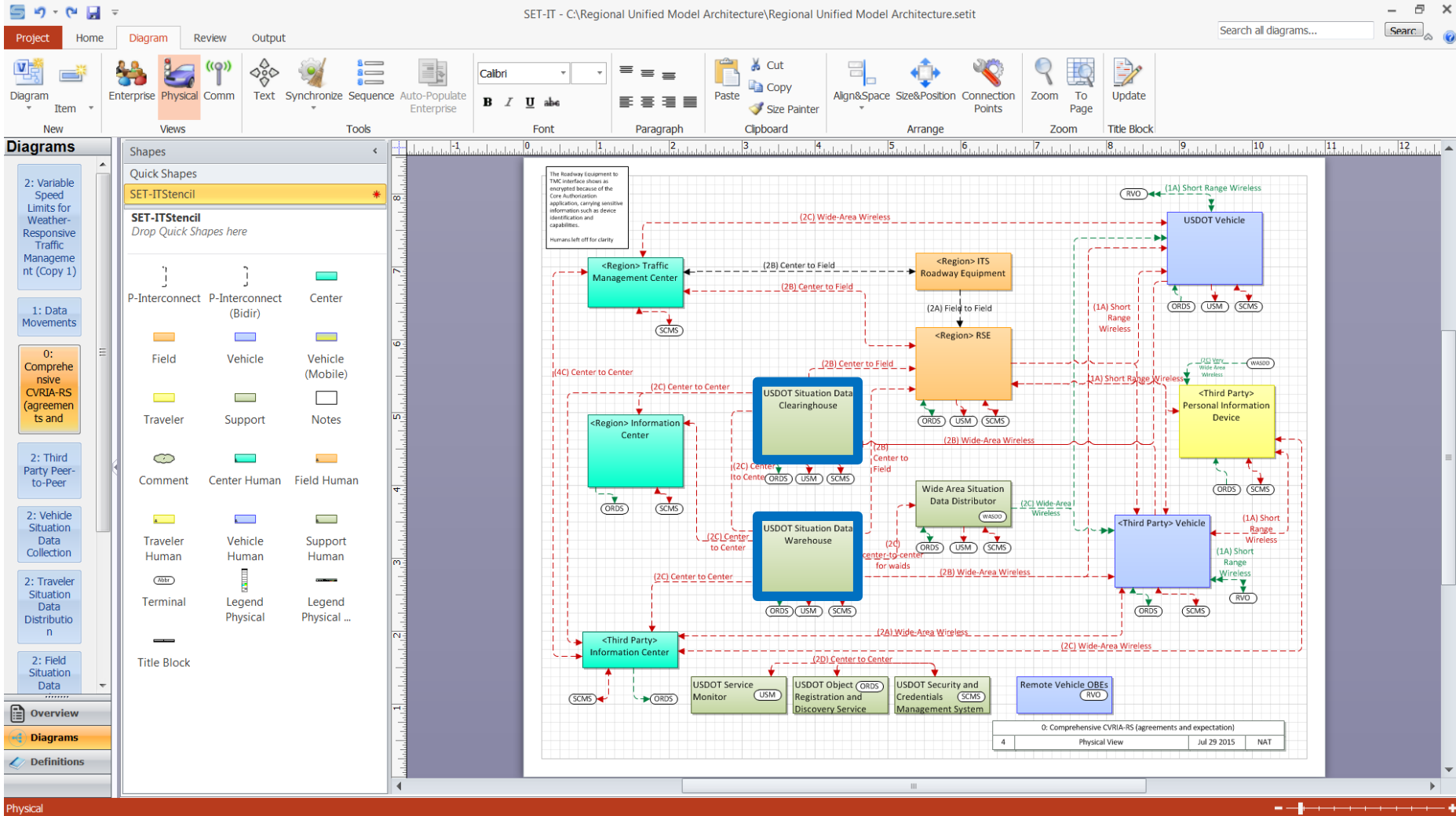
- Terminals
- Data Distribution



Terminals



Data Distribution



Output Tab - Tables

SET-IT Table

Stakeholders

| 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 particular to the type of vehicle (i.e., interactions supporting vehicle | Driver | Project |

Output Tab - Documents

The screenshot displays a software application window titled "SET-IT - C:\Regional Unified Model Architecture\Regional Unified Model Architecture.setit". The interface includes a menu bar with "Project", "Home", "Diagram", "Review", and "Output" tabs. A search bar is located in the top right corner. On the left side, there is a "Diagrams" panel with a tree view and a "Physical" layer selected. A "Documents" panel is also visible, showing a list of document types: "Concept of Operations", "Architecture Document", "Requirements Specification", "Interface Specification", "Verification Plan", and "Validation Plan". A blue arrow points from the "Concept of Operations" document to a dialog box titled "Document - Concept of Operations". This dialog box has buttons for "Setup", "Create", "View", and "Close". The main workspace shows a network diagram with several components: "<Region> RSE", "USDOT Situation Data Warehouse", "Wide Area Situation Data Distributor", and "<Third P...". Connections are labeled with codes like "(2A) Field to Field", "(1A) Short Range Wireless", "(2B) Wide-Area Wireless", and "(2C) Center to Center". A legend on the left side of the diagram lists various elements: Field, Vehicle, Vehicle (Mobile), Traveler, Support, Notes, Comment, Center Human, Field Human, Traveler Human, Vehicle Human, Support Human, Terminal, Legend Physical, and Legend Physical ...

Output Tab – Context Diagrams

Physical Context Diagram Setup

1. Select Context Diagrams

All Types All Classes

- <Region> Information Center
- <Region> ITS Roadway Equipment
- <Region> RSE
- <Region> Traffic Management Center
- <Third Party> Information Center
- <Third Party> Personal Information Device
- <Third Party> Vehicle
- Driver
- Drivers
- Remote Vehicle OBEs
- State DOT ITS Roadway Equipment
- State DOT Roadside Equipment (RSE)
- State DOT TMC
- State TMC Operations Personnel
- Traveler
- USDOT Facility Operator
- USDOT Object Registration and Discovery Service
- USDOT Security and Credentials Management Syst...
- USDOT Service Monitor
- USDOT Situation Data Clearinghouse
- USDOT Situation Data Warehouse
- USDOT Vehicle
- Vehicle Databus
- Vehicle OBE
- Wide Area Situation Data Distributor

2. Identify Interfaces to Include

All Types All Classes

- <Region> Information Center
- <Region> ITS Roadway Equipment
- <Region> RSE
- <Region> Traffic Management Center
- <Third Party> Information Center
- <Third Party> Personal Information Device
- <Third Party> Vehicle
- Driver
- Drivers
- Remote Vehicle OBEs
- State DOT ITS Roadway Equipment
- State DOT Roadside Equipment (RSE)
- State DOT TMC
- State TMC Operations Personnel
- Traveler
- USDOT Facility Operator
- USDOT Object Registration and Discovery Service
- USDOT Security and Credentials Management Syst...
- USDOT Service Monitor
- USDOT Situation Data Clearinghouse
- USDOT Situation Data Warehouse
- USDOT Vehicle
- Vehicle Databus
- Vehicle OBE
- Wide Area Situation Data Distributor

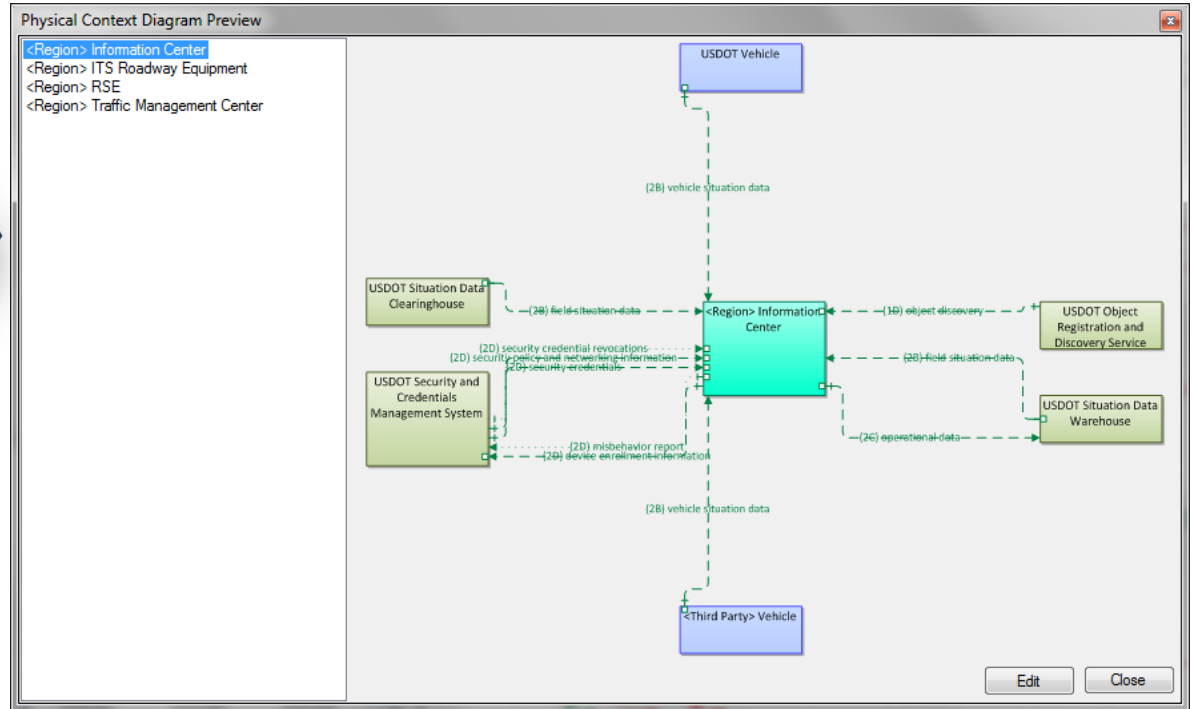
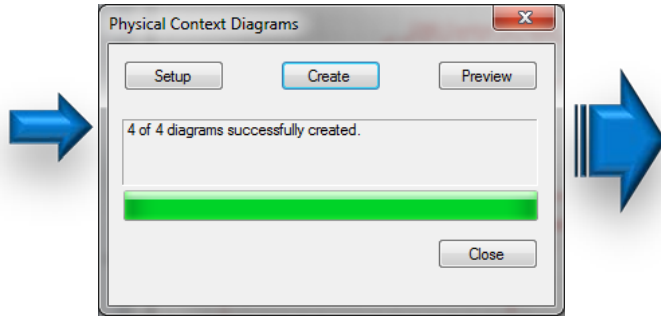
3. Select Connectors

Flows
 A-Interconnects
 P-Interconnects

Existing
 Project
 New Opportunity

Close

Output Tab – Context Diagrams



Output Tab – Communications Diagrams

SET-IT - C:\Regional Unified Model Architecture\Regional Unified Model Architecture.setit

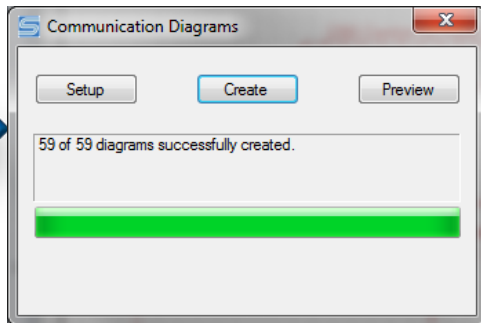
Communication Diagram Setup

Select Diagrams

| Flow | Source | Destination | Profile | Create Communication Diagram |
|-------------------------------|----------------------------|-----------------------------|--------------------|-------------------------------------|
| vehicle location and motion | <Third Party> Vehicle | Remote Vehicle OBEs | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| vehicle location and motion | USDOT Vehicle | Remote Vehicle OBEs | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| vehicle location and motion | Remote Vehicle OBEs | <Third Party> Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| vehicle location and motion | Remote Vehicle OBEs | USDOT Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| intersection status | <Region> ITS Roadway Eq | <Region> RSE | RSE2ITSroadway | <input checked="" type="checkbox"/> |
| intersection status | <Region> RSE | <Third Party> Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| intersection status | <Region> RSE | USDOT Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| signal control status | <Region> ITS Roadway Eq | <Region> Traffic Managem | C2F-SNMP | <input checked="" type="checkbox"/> |
| signal control commands | <Region> Traffic Managem | <Region> ITS Roadway Eq | C2F-SNMP | <input checked="" type="checkbox"/> |
| local traveler information | <Region> RSE | <Third Party> Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| local traveler information | <Region> RSE | USDOT Vehicle | DSRC-5.9-GHz-W SMP | <input checked="" type="checkbox"/> |
| interactive traveler informat | <Third Party> Information | <Third Party> Personal Info | C2Traveler-WAW | <input checked="" type="checkbox"/> |
| vehicle situation data | <Third Party> Vehicle | <Region> Information Cent | V2C-WAW | <input checked="" type="checkbox"/> |
| vehicle situation data | <Third Party> Vehicle | <Region> Information Cent | V2C-RSEGateway | <input checked="" type="checkbox"/> |
| vehicle situation data | <Third Party> Vehicle | <Third Party> Information | V2C-WAW | <input checked="" type="checkbox"/> |
| vehicle situation data | <Third Party> Vehicle | <Third Party> Information | V2C-RSEGateway | <input checked="" type="checkbox"/> |
| vehicle situation data | USDOT Vehicle | <Region> Information Cent | V2C-WAW | <input checked="" type="checkbox"/> |
| vehicle situation data | USDOT Vehicle | <Region> Information Cent | V2C-RSEGateway | <input checked="" type="checkbox"/> |
| vehicle situation data | USDOT Vehicle | <Third Party> Information | V2C-WAW | <input checked="" type="checkbox"/> |
| vehicle situation data | USDOT Vehicle | <Third Party> Information | V2C-RSEGateway | <input checked="" type="checkbox"/> |
| operational data | <Region> Information Cent | USDOT Situation Data War | C2C-XML | <input checked="" type="checkbox"/> |
| operational data | <Third Party> Information | USDOT Situation Data War | C2C-XML | <input checked="" type="checkbox"/> |
| field situation data sharing | USDOT Situation Data Cle | USDOT Situation Data War | C2C-XML | <input checked="" type="checkbox"/> |
| traffic control information | <Region> Traffic Managem | <Third Party> Information | C2C-XML | <input checked="" type="checkbox"/> |
| wide area broadcast travel | Wide Area Situation Data D | <Third Party> Personal Info | C2Traveler-WAW | <input checked="" type="checkbox"/> |

Physical

Output Tab – Communications Diagrams



Communications Diagram Preview

```

<C2C-XML> <Region> Information Center=>operati
<C2C-XML> <Region> Traffic Management Center
<C2C-XML> <Third Party> Information Center=>ope
<C2C-XML> USDOT Situation Data Clearinghouse
<C2C-XML> USDOT Situation Data Clearinghouse
<C2C-XML> USDOT Situation Data Clearinghouse=>f
<C2C-XML> USDOT Situation Data Warehouse=>f
<C2F-SNMP> <Region> ITS Roadway Equipment=
<C2F-SNMP> <Region> Traffic Management Cente
<C2F-SNMP> State DOT ITS Roadway Equipment
<C2F-SNMP> State DOT ITS Roadway Equipment
<C2F-SNMP> State DOT ITS Roadway Equipment
<C2F-SNMP> State DOT ITS Roadway Equipment
<C2F-SNMP> State DOT Roadside Equipment (RS
<C2F-SNMP> State DOT Roadside Equipment (RS
<C2F-SNMP> State DOT TMC=>environmental ser
<C2F-SNMP> State DOT TMC=>roadway informati
<C2F-SNMP> State DOT TMC=>traffic sensor cont
<C2F-SNMP> State DOT TMC=>variable speed lim
<C2Traveler-WAW> <Third Party> Information Ceri
<C2Traveler-WAW> Wide Area Situation Data Dist
<C2V-RSEGateway> USDOT Situation Data Ware
<C2V-RSEGateway> Wide Area Situation Data Dis
<C2V-RSEGateway> Wide Area Situation Data Dis
<C2V-WAW> USDOT Situation Data Warehouse=
<C2V-WAW> Wide Area Situation Data Distributor
<DSRC-5.9-GHz-UDP> <Region> RSE=>intersecti
<DSRC-5.9-GHz-UDP> <Region> RSE=>intersecti
<DSRC-5.9-GHz-UDP> <Region> RSE=>local trav
<DSRC-5.9-GHz-UDP> <Region> RSE=>local trav
    
```

| Center to Center (XML) | | |
|--|---|--|
| operational data | | |
| <Region> Information Center | | USDOT Situation Data Warehouse |
| Process Information Layer | Security Plane IEEE 1009.2, HTTPS, HTTP Auth, FTPS, FTP Auth | Process Information Layer |
| ITE TMDD | | ITE TMDD |
| Facility Layer NTCIP 2306, IETF HTTP, IETF FTP | | Facility Layer NTCIP 2306, IETF HTTP, IETF FTP |
| Presentation Layer NTCIP 2306, W3C XML, IETF GZIP | | Presentation Layer NTCIP 2306, W3C XML, IETF GZIP |
| Session Layer IETF TLS | | Session Layer IETF TLS |
| Transport and Network Layer IETF TCP, IETF IPv6 | | Transport and Network Layer IETF TCP, IETF IPv6 |
| Link Layer IEEE 802.2, IEEE 802 MAC | | Link Layer IEEE 802.2, IEEE 802 MAC |
| Physical Layer Backhaul PHY* | Physical Layer Backhaul PHY* | |

* Mechanism for transmitting raw bits over a physical link between centers, such as 1.430/431, SONET/SDH, IEEE 802.3, IEEE 802.11 or any other viable physical layer specification or standard.


PARTIAL-COMMENT

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

