

**Intelligent Transportation Systems (ITS)
Commercial Vehicle Operations (CVO)**

**Commercial Vehicle Information Systems and Networks (CVISN)
Operational and Architectural Compatibility
Handbook (COACH)**

Part 4

Interface Specification Checklists

Baseline Version

POR-97-7067 V1.0

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Note

The Motor Carrier Safety Improvement Act was signed into law on December 9, 1999. This act established a new Federal Motor Carrier Safety Administration (FMCSA) within the U.S. Department of Transportation (DOT), effective January 1, 2000. Prior to that, the motor carrier and highway safety program was administered under the Federal Highway Administration (FHWA).

The mission of the FMCSA is to improve truck and commercial passenger carrier safety on our nation's highways through information technology, targeted enforcement, research and technology, outreach, and partnerships. The FMCSA manages the Intelligent Transportation Systems (ITS) / Commercial Vehicle Operations (CVO) program, a voluntary effort involving public and private partnerships that uses information systems, innovative technologies, and business practice re-engineering to improve safety, simplify government administrative systems, and provide savings to states and motor carriers. The FMCSA works closely with the FHWA ITS Joint Program Office (JPO) to ensure the integration and interoperability of ITS/CVO systems with the national ITS program.

As part of the CVISN program, FMCSA defined an initial set of capabilities that could be deployed incrementally by a state and its motor carriers. The capabilities focus on electronically exchanging safety and credentialing information, electronically processing interstate registration and fuel tax credentials, and implementing roadside electronic screening at one fixed or mobile site. These capabilities were originally referred to as “CVISN Level 1” capabilities, but are now called “Core” CVISN capabilities.

This is Version 1 of a Baseline Issue

This document has completed internal and external reviews of previously published drafts and preliminary versions. All comments received to date have been incorporated or addressed.

Note: This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from The Johns Hopkins University Applied Physics Laboratory (JHU/APL) CVISN site on the World Wide Web. The URL for the CVISN site is: <http://www.jhuapl.edu/cvisn/>.

Review and comments to this document are welcome. Please send comments to:

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CVISN Operational and Architectural Compatibility Handbook (COACH) Part 4 – Interface Specification Checklists

Change Summary:

This document is under configuration management by the CVISN Architecture Configuration Control Board. The list below provides a brief description of the change requests (CRs) processed by the board that impacted this document. See [Chapter 5](#) for lists of CRs incorporated into previous versions of this document. See [Chapter 6](#) for information concerning CRs applicable to this version of the document.

References to the CRs listed below appear in the text or tables of the document so that the reader knows how each CR affected Version 1.0 of the document

In January 2002, JHU/APL transitioned to a new tool for Configuration Management. The change request numbering was reinitialized; hence CR numbers have wrapped around.

Version 1.0 of the document incorporates revisions related to these change requests:

- CR 69 (old CR 1463) – IFTA Tax Scenario Changes
- CR 72 (1551) – No EDI queries from APL developed CVIEW to SAFER
- CR 98 (1842) – Update the State diagram in the CVISN System Design Description
- CR 101 (2000) – Update documents regarding TS 284 not supported in Fed systems
- CR 182 – Update documentation to reflect CVISN Level 1 Checklist
- CR 604 (312) – Disapproved (Add Clearinghouse Connections to SAFER)
- CR 681 – Changes to IFTA transactions in SAFER 4.2
- CR 682 – Changes to IRP transactions in SAFER 4.2
- CR 683 – Changes to E-screening transactions in SAFER 4.2
- CR 684 – Changes to SAFER to State trans. for MCMIS and L&I in SAFER 4.2
- CR 685 – Changes to SAFER to State trans. for IFTA in SAFER 4.2

- CR 686 – Changes to SAFER to State trans. for IRP in SAFER 4.2
- CR 687 – Changes to SAFER to State trans. for E-screening in SAFER
- CR 688 – Changes to EDI State-SAFER interface in SAFER 4.2
- CR 704 – Update to Primary Identifiers White Paper
- CR 785 – Changes to SAFER to State trans. for Veh. Inspection in SAFER 4.2
- CR 895 – Query Central needs to be added to the list of CVISN Core Infrastructure systems
- CR 1992 – CVISN "Level 1" changed to CVISN "Core"
- CR 2147 – COACH 4 – replace EDI-A, etc, with AA, etc.
- CR 2155 – COACH 4 – correct safety system interfaces
- CR 2156 – COACH 4 – add Query Central interface info
- CR 2178 – COACH 4 cleanup

**CVISN Operational and Architectural Compatibility Handbook (COACH)
Part 4 – Interface Specification Checklists**

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1. INTRODUCTION

The Commercial Vehicle Information Systems and Networks (CVISN) Operational and Architectural Compatibility Handbook (COACH) provides a comprehensive checklist of what is required to conform with the CVISN operational concepts and architecture. It is intended for use by state agencies with a motor carrier regulatory function and by motor carriers. It is also intended to provide a quick reference for developers of CVISN Core Infrastructure systems.

1.1 COACH Structure

The COACH is divided into 5 parts:

- Part 1 – Operational Concept and Top-Level Design Checklists
- Part 2 – Project Management Checklists
- Part 3 – Detailed System Checklists
- **Part 4 – Interface Specification Checklists**
- Part 5 – Interoperability Test Criteria

The other parts of the COACH are available at the Documents > CVISN Architecture and Standards section of the JHU/APL CVISN Web site <http://www.jhuapl.edu/cvisn/>. This is the third revision to the *COACH Part 4* [see [References 37 and 42](#) for the earlier versions].

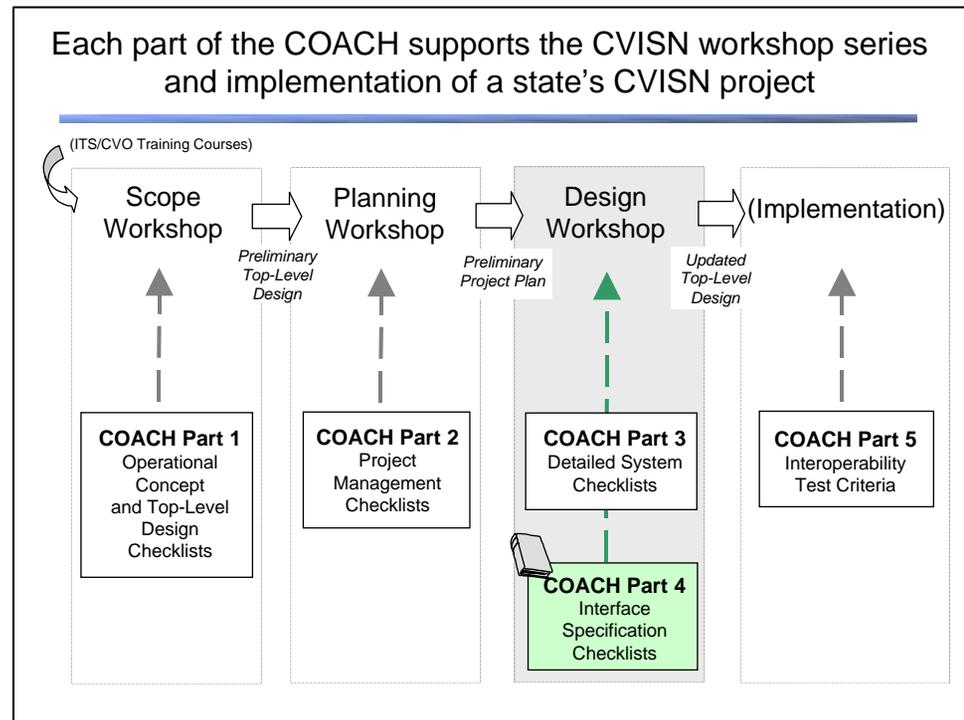


Figure 1–1. The COACH Supports the Workshops

1.2 COACH Part 4 Interface Specification Checklists Description

This volume is Part 4. Part 4 includes several types of checklists related to interfaces:

- Standard Interface Identification Tables, identifying the standardized interfaces to be used between pairs of products [[Chapter 2](#)].
- Standard Data Definitions, specifying data format and meaning conventions for items common to more than one standard interface [[Chapter 3](#)].
- References, a list of standards and recommended practices related to ITS/CVO interfaces [[Chapter 4](#)].
- Change Requests Incorporated into Previous Versions [[Chapter 5](#)]
- Change Requests Incorporated into the Current Version [[Chapter 6](#)]

In Part 4, the checklists are intended to be used to indicate which items the reader agrees with, and to provide a mechanism for planning development activities. Each state should maintain a master filled-in copy of the COACH.

1.3 Generic CVISN State System Design

Figure 1–2 depicts the generic CVISN state system design template. CR 895 has been applied. Material in this document is based upon this generic design. Products equivalent to the carrier and state products shown may be substituted in the design. For example, a state may choose to combine the HazMat and Oversize/Overweight (OS/OW) permitting functions into one product. In that case, the interfaces specified would apply to the combined product rather than to two distinct products.

Generic State System Design Template

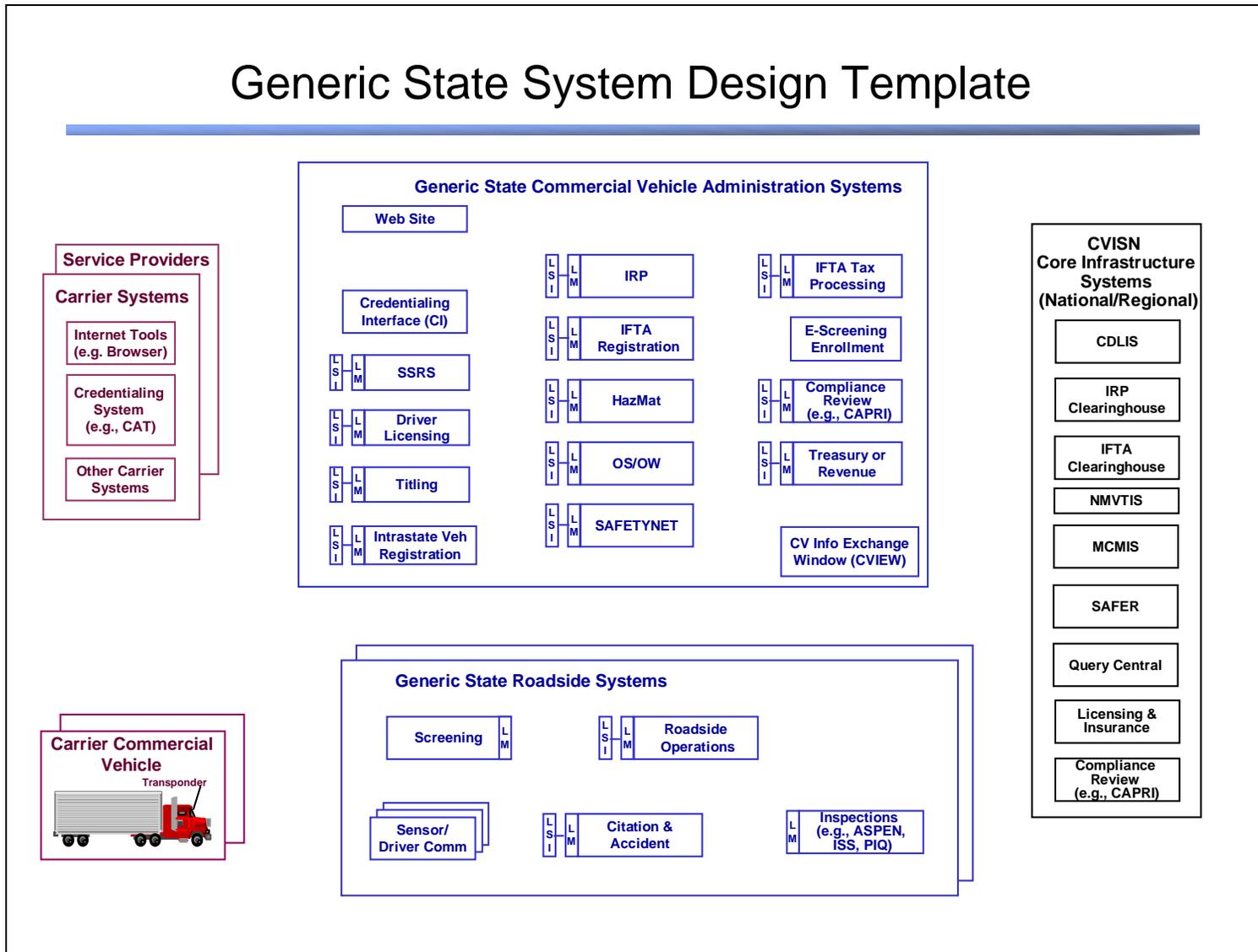


Figure 1-2. Generic State Design Template

Most of the systems shown in the generic design are defined in the *CVISN Glossary* [[Reference 1](#)]. The generic design represents the main elements and interfaces needed for a state to implement the CVISN architecture. Each state will adapt the generic design to accommodate their existing (legacy) systems, and to meet their own unique needs. The generic design is explained in more detail in the *COACH Part 3* [[Reference 5](#)].

Use of standardized Dedicated Short Range Communications (DSRC) and either computer-to-computer or Web interfaces is required for architecture conformance. In the past, ANSI X12 Electronic Data Interchange (EDI) interfaces were recommended for computer-to-computer exchanges, and CVO implementation guidance exists. In the future, the eXtensible Markup Language (XML) is an alternative to EDI for some interfaces. It may also be possible to use XML with or instead of HyperText Markup Language (HTML) for Web interfaces. Each state chooses whether to modify a legacy system (LM – legacy modification) to support XML, EDI or non-EDI formats (and other new functions and interfaces), or to create a Legacy System Interface (LSI) to deal with the EDI or non-EDI-to-native form interface. Many CVISN states are implementing a mix of LSIs and LMs. Throughout this document, the generic state system design is based on choosing to modify the legacy systems (i.e., implement LMs).

In the generic design depicted here, the legacy credentials systems update the appropriate snapshot segments in the Commercial Vehicle Information Exchange Window (CVIEW) using EDI or XML. In this design, both the Roadside Operations and the inspection system products subscribe to CVIEW to receive snapshots. The CVIEW-Roadside Operations connection may be an EDI or XML interface. The CVIEW-inspection system interface uses the “application file format” that corresponds to a file format that could be input into an EDI translator.

To achieve interoperability, the CVISN architecture calls for the use of open standards for carrier-state and state-state (via the CVISN Core Infrastructure) interfaces. Interfaces that are wholly within a state government’s control (e.g., between state agencies) are not required to use open standards. Most CVISN model deployment states have chosen to use open standards for some within-state interfaces, and have chosen to use existing custom interface agreements for others. For example, some states have chosen to implement LSIs instead of modifying their existing International Registration Plan (IRP) or International Fuel Tax Agreement (IFTA) products. They are implementing the LSIs as small applications running on the same computer as the Credentialing Interface (CI). For those states, there are no EDI interfaces between the CI and their existing IRP or IFTA systems. Some of those states have also decided that the CI will provide snapshot segment updates of credentials data to CVIEW on behalf of the IRP or IFTA systems. In this document we depict one generic design for simplicity. The generic design shown here maximizes the use of open standards. Other designs are also acceptable under the CVISN architecture. Refer to the technical volumes of the CVISN Guide series for further information [[References 16–19](#)].

1.4 How States Should Use This Document

The COACH summarizes key concepts and architectural guidelines for CVISN. This version of the *COACH Part 4* focuses on topics important to states. The *COACH Part 1* defines the CVISN Level 1 criteria. This document identifies the detailed interface requirements associated with CVISN Level 1.

To gain a more complete understanding of CVISN, state planners and designers should read the *Introductory Guide to CVISN* [[Reference 20](#)], other parts of the COACH [[References 2–6](#)], and the *CVISN System Design Description* [[Reference 15](#)]. This version of the *COACH Part 4* is intended to be a working document that is used for designing modifications and enhancements to existing state systems, and for planning the development of new systems in each user's state. This document will be used in the CVISN workshops.

The key concepts and architectural guidelines for CVISN states have been summarized in this document in a series of checklist tables. Each table in this document consists of these columns, unless otherwise noted:

- Commit Level (F/P/N) – the state's commitment level to the item

Using the first column of each checklist entry, a **commitment level should be filled in** by the state. There are three possible levels of commitment:

- (F) This rating indicates a full commitment. This level means that at least 80% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist item statement.
- (P) This rating indicates a partial commitment. This level means that between 50% and 80% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist item statement.
- (N) This rating indicates no commitment. This level means that less than 50% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist statement.

- Reqtcs Level – the compatibility requirement level assigned to this compatibility criterion by the FMCSA CVISN project team
For a state to be “compatible with CVISN,” it must implement selected items in the checklists. To distinguish those items, the CVISN project team has assigned a **compatibility requirement level** to each checklist item:
 - (L1) This rating identifies a CVISN Level 1 compatibility requirement.
 - (E) This rating indicates an enhanced level of CVISN compatibility. These items may require a little longer to complete (3-4 years).
 - (C) This rating indicates a complete level of CVISN compatibility. Satisfying all these provides complete CVISN compatibility. These items are expected to require a longer-range (5 or more years) time frame.

States are expected to focus initially on checklist items with an “L1” compatibility requirement level rating. Making a *partial commitment* indicates that the state will at least demonstrate the feasibility of that concept or architectural guideline. Making a *full commitment* indicates that the state will fully implement the concept or architectural guideline and be ready for the next steps.

Comments – available for the state to refer to another document or plan, note a question, record a clarifying comment, etc.

If the state maintains its master copy of this document electronically, the following conventions are recommended when filling in the columns to illustrate the “firmness” of the state’s plan:

- *Italics type:* Tentative, not approved by the final decision makers
- Regular type: Approved by the decision makers (or supported by consensus)
- **Bold type:** Completed

States are to fill out the “Commit Level” column for the tables prior to attending the CVISN Design Workshop.

2. STANDARD INTERFACE IDENTIFICATION

The open standards used for CVISN Level 1 interfaces are listed below:

American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12 EDI Standard Transaction Sets

These are the ANSI EDI standards used in CVISN applications. A subset of these transaction sets (TS) is used to support Level 1 capabilities.

- TS 149 Notice of Tax Adjustment or Assessment (not Level 1)
- TS 150 Tax Rate Notification (not Level 1)
- TS 151 Electronic Filing of Tax Return Data Acknowledgement
- TS 284 CV Safety Reports (available for non-ASPEN inspection systems)

Note that the 284 (for EDI inspection reports) is not supported by Safety and Fitness Electronic Records (SAFER), CVIEW, or federal safety systems such as ASPEN and SAFETYNET.

- TS 285 CV Safety & Credentials Information Exchange (snapshots)
- TS 286 Commercial Vehicle (CV) Credentials
- TS 813 Electronic Filing of Tax Return Data
- TS 820 Payment Order/Remittance Advice
- TS 824 Application Advice
- TS 826 Tax Information Exchange (if used for tax credit, not Level 1)
- TS 997 Functional Acknowledgement

The EDI standards are available for purchase from the Data Interchange Standards Association (DISA), Inc., 1800 Diagonal Road, Suite 200, Alexandria, VA 22314-2852; email publications@disa.org; phone 1-888-363-2334; Web site <http://www.disa.org/>. As of the publication of this document, [Reference 7](#) is the current standard.

The Federal Highway Administration (FHWA) and Federal Motor Carrier Safety Administration (FMCSA) sponsored the development of several implementation guides (IGs) on how to use the EDI transaction sets for CVO applications. JHU/APL has developed IGs for TS 284, TS 285, TS 286 (IRP, IFTA, OS/OW, Electronic Screening Enrollment), and TS 824, as well as a FMCSA Code Directory. See the Documents > EDI and XML section of the JHU/APL CVISN Web site <http://www.jhuapl.edu/cvisn/> for the latest IGs. For information about the transaction sets related to tax filing, see <http://www.taxadmin.org/>.

CR 69 revised the guidance for IFTA tax filing including the addition of TS 149.

DSRC-Related Standards

ASTM PS-111-98	Frequency (Physical) Layer
ASTM v6	Data Link Layer
IEEE Std 1455-1999	Application Layer

The DSRC standards are still in the approval cycle. For current status information, see <http://www.its-standards.net/aafactsheets.asp> or http://www.its-standards.net/Documents/dsrc_advisory.pdf.

These ANSI and DSRC open standards are the ones that states implementing CVISN capabilities should adopt.

The interfaces between carrier's Internet browsers and various World Wide Web applications, such as the state's Web site, use Internet standards. See <http://www.w3.org/> for information about Internet standards.

The FMCSA's policy on electronic credentials administration between motor carriers and states is:

- FMCSA requires that states implement either a person-to-computer or a computer-to-computer interface.
- FMCSA recommends that states survey their stakeholders to determine whether both interfaces would be appropriate.
- FMCSA encourages the exploration of eXtensible Markup Language (XML) as an alternative to X12 EDI for computer-to-computer interfaces between carriers and states.

This is a policy regarding CVISN Level 1. If a state chooses to implement only a person-to-computer credentialing approach, then implementation of a computer-to-computer interface is considered an Enhanced capability. Similarly, if a state chooses to implement only a computer-to-computer credentialing approach, then implementation of a Web-based interface is considered an Enhanced capability. See the World Wide Web Consortium (W3C) Web site <http://www.w3.org/XML/> for more information on XML specifications and the W3C recommendations.

The interfaces between FHWA and FMCSA-developed safety-related systems [ASPEN and SAFER, ASPEN and CVIEW, SAFER and SAFETYNET, SAFER and Motor Carrier Management Information System (MCMIS), SAFER and Licensing & Insurance (L&I)] are based on custom interface agreements defined by the system developers and endorsed by FHWA and FMCSA. Under special circumstances, FMCSA tolerates, but does not encourage, the use of custom interface agreements for interchanges between systems operated under different “jurisdictions”.

The purposes of the interfaces are explained in the remainder of this section.

Figures 2–1 through 2–4 show the CVISN Level 1 interfaces overlaid onto the generic state template. The letters correspond to particular functions as illustrated in the table that follows.

CVISN Level 1: Carrier-Related Interface Functions

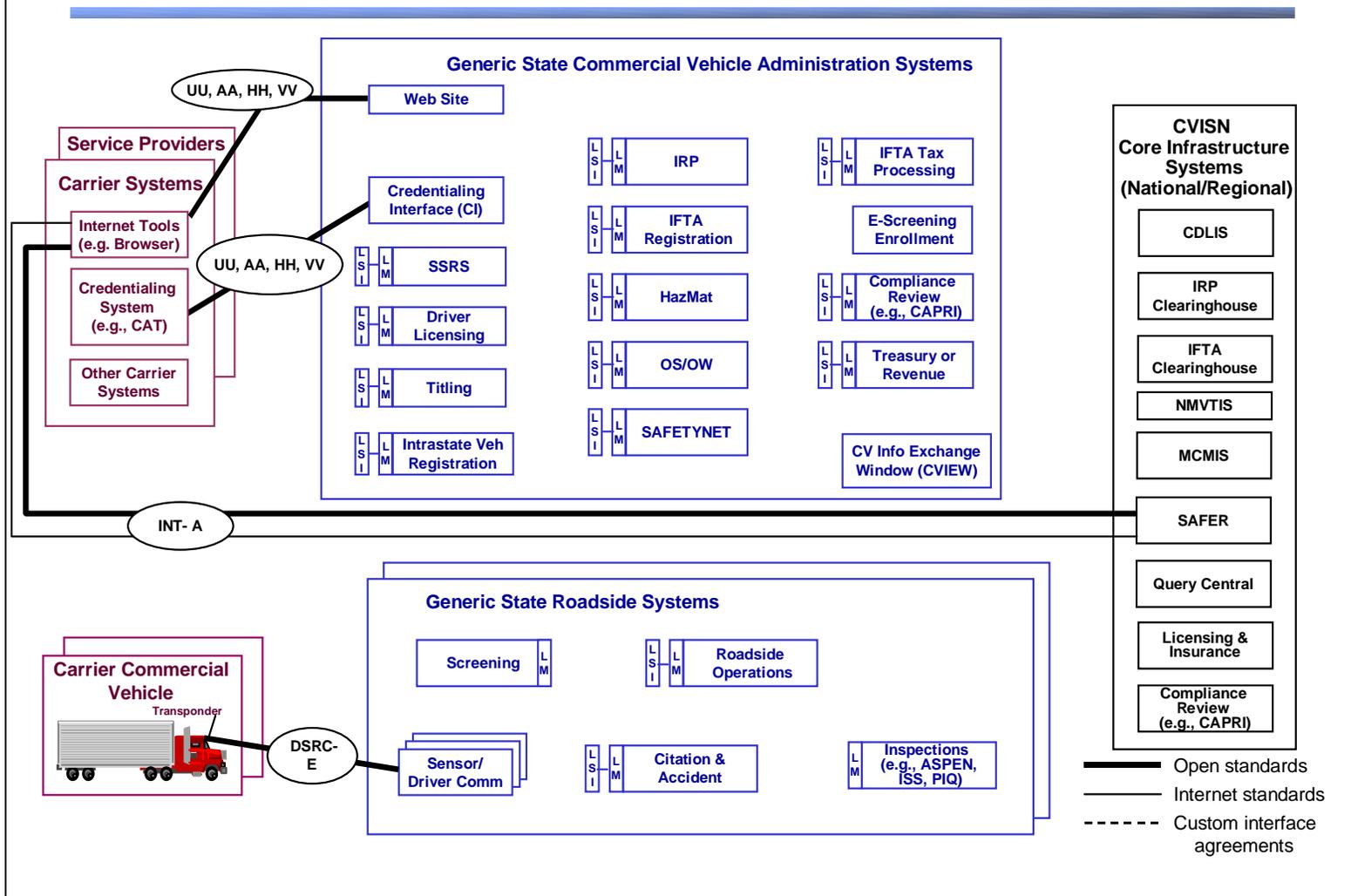


Figure 2-1. CVISN Level 1 Carrier-Related Interface Functions

CVISN Level 1: Interface Functions Among CVISN Core Infrastructure Systems

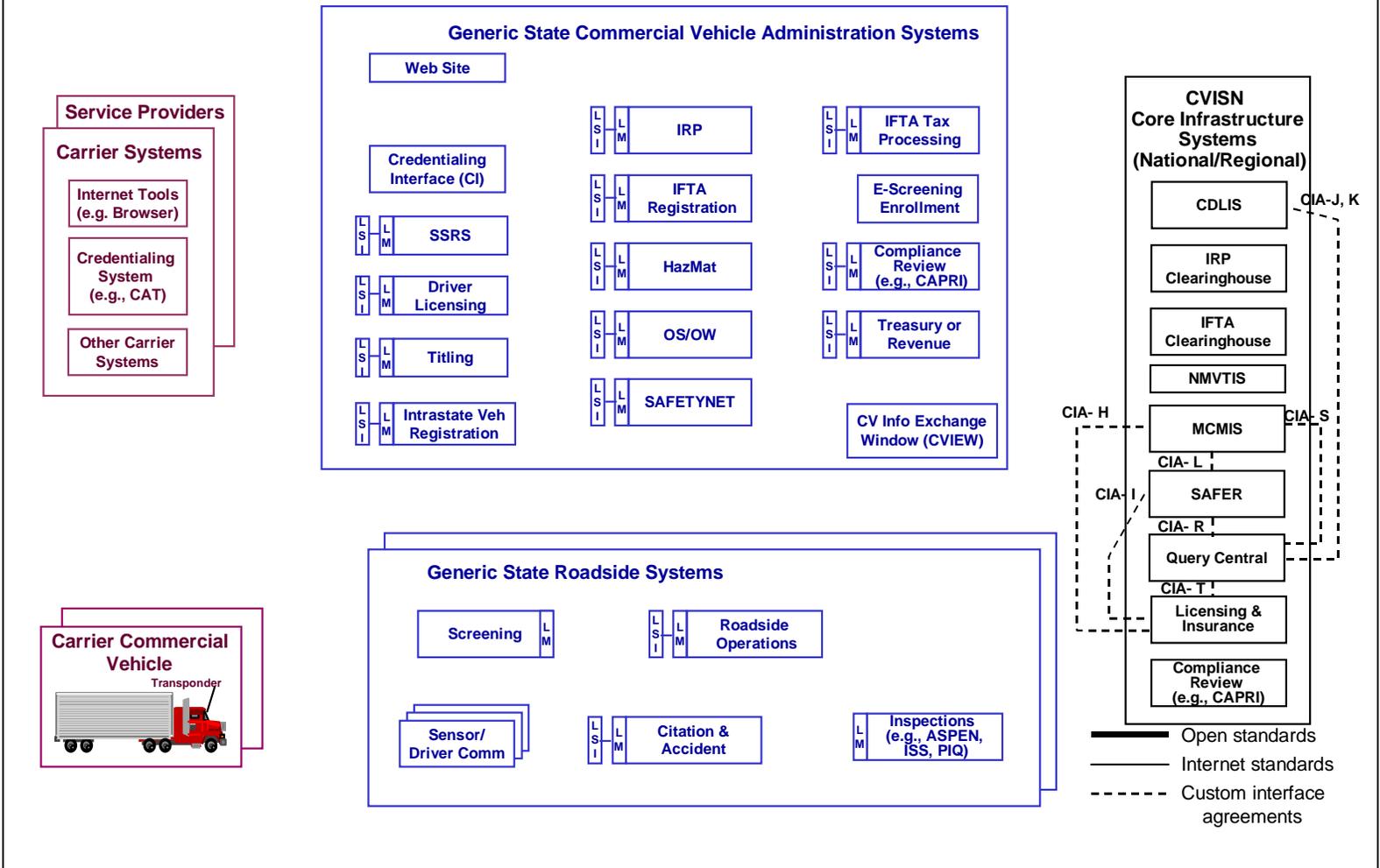


Figure 2-2. CVISN Level 1 Interface Functions Among CVISN Core Infrastructure Systems

CVISN Level 1: Interface Functions Between the State and the CVISN Core Infrastructure

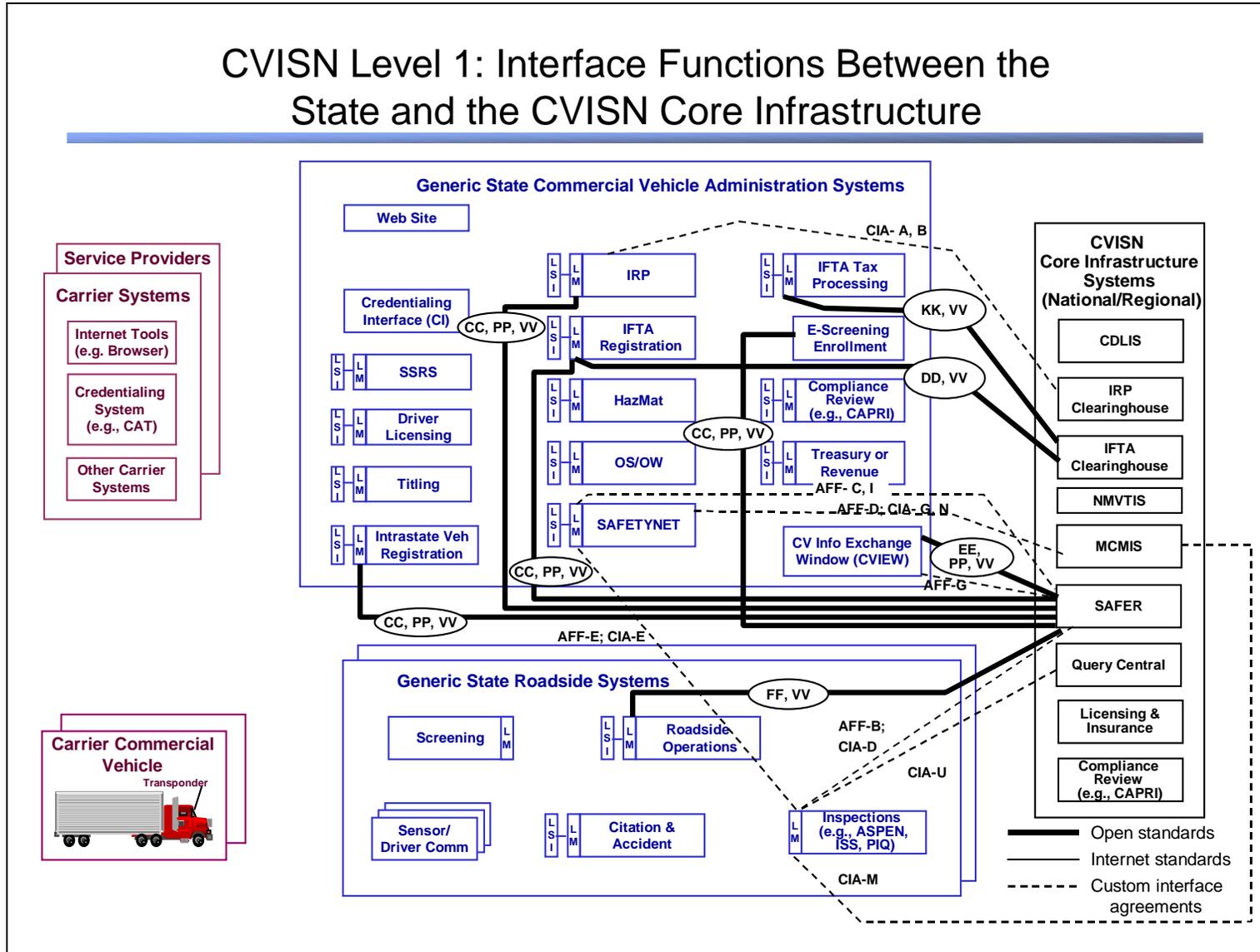


Figure 2-3. CVISN Level 1 Interface Functions Between the State and the CVISN Core Infrastructure

CVISN Level 1: Interface Functions Within the State

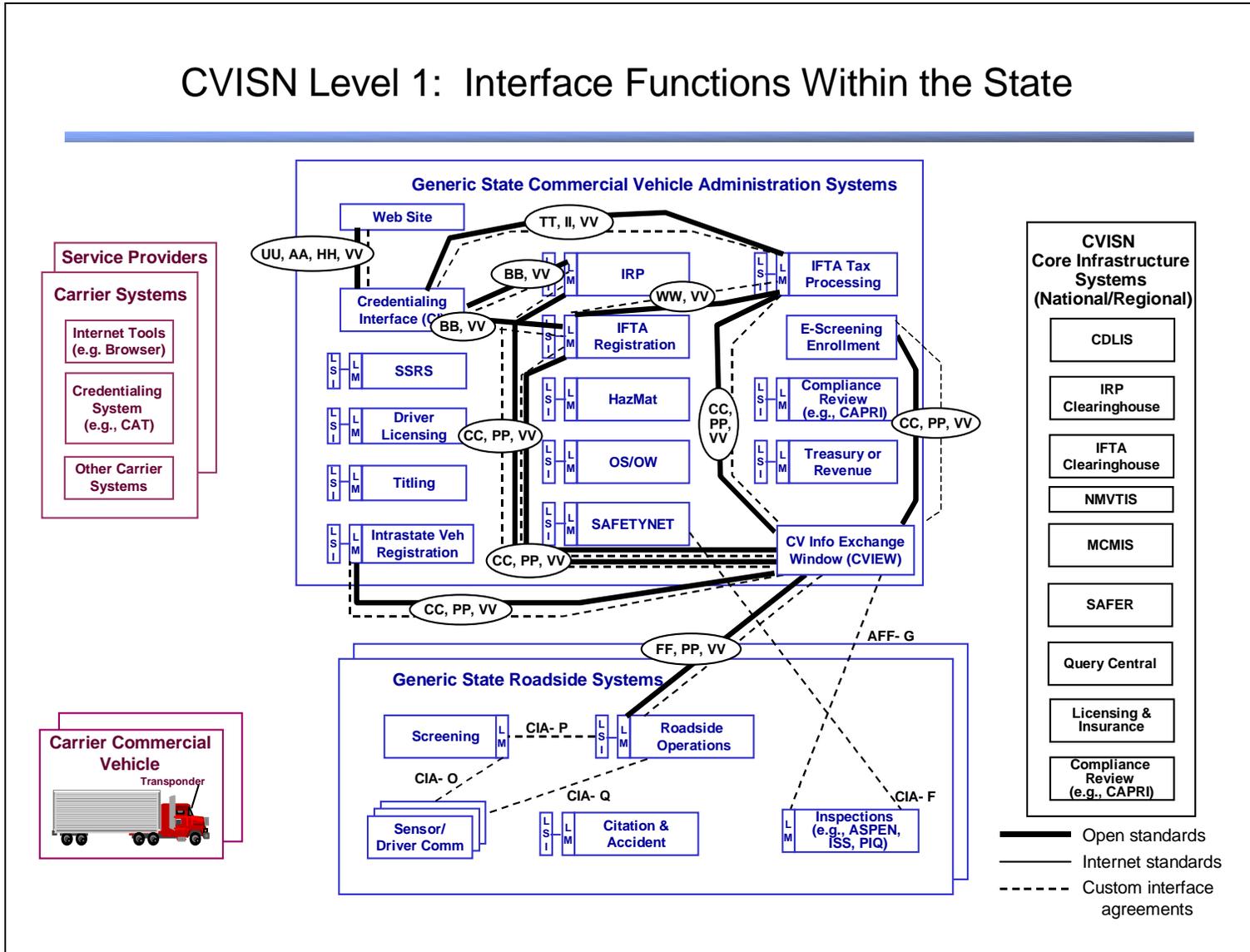


Figure 2-4. CVISN Level 1 Interface Functions Within the State

The checklist table, Table 2–1, explains the purpose for each standardized interface shown in Figures 2–1 through 2–4. In addition to the standard column definitions explained in section 1.4, this table contains these columns:

- Label – the identification shown in Figures 2–1 through 2–4
- Std – the open standard or custom interface agreement to which the label refers and references that contain details of the standard and how to implement it
- Interface Purpose – summary versions of the interface exchanges expected, culled from other CVISN documentation
- From System – based on the generic design, the system that will send the information listed in the Interface Purpose column
- To System – based on the generic design, the system that will receive the information listed in the Interface Purpose column

There are more interfaces listed in the table than are shown on the drawings. Those additional interfaces correspond to enhanced or complete capabilities, as indicated by the “Req Level” column. For details about implementing the standardized interfaces, review the standards and IGs.

There are several connection paths shown for ASPEN and SAFETYNET. They represent the capabilities planned as the products evolve to more powerful computers and more sophisticated software.

The categories of interfaces shown on Figures 2–1 through 2–4 and in Table 2–1 are:

- AA, BB, etc. – EDI – Electronic Data Interchange, ANSI X12 standards; HTML; eXtensible Markup Language (XML); Custom Interface Agreement (CIA) (CR 2147)
- DSRC – Dedicated Short-Range Communications; Institute of Electrical and Electronics Engineers (IEEE) and ASTM standards
- AFF – Application File Format; data structured in a format that is a precursor to an EDI exchange
- INT – Internet; HTML; XML
- CIA – Custom Interface Agreement; data exchanged according to a particular custom interface agreement

Table 2-1. Standard Interface Identification Table

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Repts Level	Comments
	AA	EDI TS 286 Ref 7, 9, 11, 12, 14 XML HTML	Commercial Vehicle (CV) Credentials: <ul style="list-style-type: none"> • Submit initial/renewal/supplemental electronic application for credentials • Submit trip permit application • Notify payee of payment method • Submit corrected application • Send renewal notice • Return credentials data to applicant • Return temporary credential • Return trip permit • Notify payer of fees due • Reject application 	Carrier Automated Transaction (CAT) (or Web site) CAT (or Web site) CAT (or Web site) CAT (or Web site) CI CI CI CI CI CI CI	CI CI CI CI CAT (or Web site) CAT (or Web site)	L1; E	L1 = IRP, IFTA E = other credentials CR 2147
	BB	EDI TS 286 Ref 7, 9, 11, 12, 14 XML CIA	CV Credentials: <ul style="list-style-type: none"> • Pass application to legacy system • Return credentials data • Return temporary credential • Return trip permit • Report fees due • Reject application 	CI Legacy admin system Legacy admin system Legacy admin system Legacy admin system Legacy admin system	Legacy admin system CI CI CI CI CI	L1; E	L1 = IRP, IFTA E = other credentials

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	CC	EDI TS 285 Ref 7, 13-14 XML Ref 25 CIA	CV Safety & Credentials Information Exchange: <ul style="list-style-type: none"> Update snapshot segment Request carrier, vehicle, or driver information (i.e., request a snapshot view) Respond to carrier, vehicle, or driver information request or fulfill subscription (i.e., send one or more snapshots using a particular view) 	Legacy admin system or E-screening Enrollment (or CI) Legacy admin system or E-screening Enrollment (or CI) CVIEW or SAFER	CVIEW or SAFER CVIEW or SAFER Legacy admin system or E-screening Enrollment (or CI)	L1; C	L1 = carrier and vehicle C = driver CRs 681, 682, 683, 684, 685, 686, 687, 688, 785
	DD	EDI TS 286 Ref 7, 11, 14	CV Credentials: <ul style="list-style-type: none"> Submit application data Retrieve demographic data from Clearinghouse for review 	State IFTA Registration IFTA Clearinghouse	IFTA Clearinghouse State IFTA Registration	L1	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
	EE	EDI TS 285 Ref 7, 13-14 XML Ref 25	CV Safety & Credentials Information Exchange: <ul style="list-style-type: none"> Update snapshot segment Request carrier, vehicle, or driver information (i.e., request a snapshot view) Respond to carrier, vehicle, or driver information request or fulfill subscription (i.e., send one or more snapshots using a particular view) Update snapshot segment 	CVIEW CVIEW SAFER SAFER	SAFER SAFER CVIEW CVIEW	L1; C	L1 = carrier and vehicle C = driver CRs 681, 682, 683, 684, 685, 686, 687, 688, 785 CR 1551: APL CVIEW, as delivered, does not support EDI. RPC is available for the query function.
	FF	EDI TS 285 Ref 7, 13-14 XML CIA	CV Safety & Credentials Information Exchange <ul style="list-style-type: none"> Request carrier or vehicle information (i.e., request a snapshot view) Respond to carrier or vehicle information request (i.e., send one or more snapshots using a particular view) 	Roadside Operations CVIEW or SAFER	CVIEW or SAFER Roadside Operations	L1; C	L1 = carrier and vehicle C = driver SAFER interfaces are XML only. CRs 681, 682, 683, 684, 685, 686, 687, 688, 785
	EDI-G		<i>deleted</i>				

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
	HH	EDI TS 813 Ref 7, 35 XML HTML	Tax Return: <ul style="list-style-type: none"> File electronic IFTA tax return 	CAT (or Web site)	CI	L1	CR 2147 Note: TS 813 is unidirectional from filer to state.
	II	EDI TS 813 Ref 7, 35 XML CIA	Tax Return: <ul style="list-style-type: none"> Pass tax return to IFTA tax return processing system 	CI	State IFTA Tax Processing System	L1	Note: TS 813 is unidirectional from filer to state.
	EDI-J		<i>deleted</i>				CR 604 disapproved
	KK	EDI TS 826 Ref 7, 36 HTML	Tax Information Exchange: <ul style="list-style-type: none"> Send data on fuel tax filings among jurisdictions; summarize detailed tax information from individual returns and balance due/owed (netting and pre-netting summaries) Send tax credits to filer 	IFTA Clearinghouse State IFTA Tax Processing System	State IFTA Tax Processing System CAT or Web site	L1 E	CR 69
	LL	EDI TS 150 Ref 7, 34 XML HTML	Tax Rate Notification <ul style="list-style-type: none"> Send latest IFTA tax rates Request latest IFTA tax rates 	CI CAT or Web site	CAT or Web site CI	E E	CR 2147 CR 69

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	MM	XML	CV Safety Reports (Inspection Report) <ul style="list-style-type: none"> Submit safety report Request safety report Respond to safety report request 	CVIEW CVIEW SAFER	SAFER SAFER CVIEW	E	(to support non-ASPEN inspection systems) CR 101
	NN	XML CIA	CV Safety Reports (Inspection Report) <ul style="list-style-type: none"> Submit original safety report Request safety report Respond to safety report request 	non-ASPEN Inspection system non-ASPEN Inspection system CVIEW	CVIEW CVIEW non-ASPEN Inspection system	E	CR 101
	OO	XML CIA	CV Safety Reports (Crash Data) <ul style="list-style-type: none"> Submit original safety report 	Citation & Accident	SAFETYNET via CVIEW and SDM	C	SDM = SAFER Data Mailbox CR 101
	PP	EDI TS 824 Ref 7, 14, 40 XML CIA	Application Advice <ul style="list-style-type: none"> Acknowledge successful processing of TS 285 update message data Report errors in processing of TS 285 update message data 	receiver of 285 receiver of 285	sender of 285 sender of 285	L1	
	QQ	EDI TS 150 Ref 7, 34 XML CIA	Tax Rate Notification <ul style="list-style-type: none"> Send latest IFTA tax rates 	State IFTA Tax Processing System	CI	E	
	RR	EDI TS 286 Ref 41 XML HTML	Electronic Screening Enrollment <ul style="list-style-type: none"> Submit e-screening enrollment data 	CAT or other carrier system	E-Screening Enrollment	E	CR 2147

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	SS	EDI TS 820 Ref 7 XML	Payment Order/Remittance Advice: <ul style="list-style-type: none"> Initiate electronic funds transfer (EFT) payment Report payment received 	payer state's bank	payer's bank State Treasury or Revenue system	E	
	TT	EDI TS 151 Ref 7, 32 XML CIA	Electronic Filing of Tax Return Data Acknowledgement <ul style="list-style-type: none"> Report errors encountered when attempting to process IFTA tax return (813) 	State IFTA Tax Processing System	CI	L1	Note: TS 151 is unidirectional from state to filer.
	UU	EDI TS 151 Ref 7, 32 XML HTML	Electronic Filing of Tax Return Data Acknowledgement <ul style="list-style-type: none"> Pass IFTA tax return error message Pass IFTA tax return successfully processed message 	CI CI	CAT (or Web site) CAT (or Web site)	L1	CR 2147 Note : TS 151 is unidirectional from state to filer.
	VV	EDI TS 997 Ref 7, 33 XML CIA	Acknowledge	all EDI-receiving systems	all EDI sending-systems	L1	
	WW	EDI TS 286 Ref 7, 11, 14 XML CIA	CV Credentials: <ul style="list-style-type: none"> Submit application data (complete or subset) demographic information 	State IFTA Registration System	State IFTA Tax Processing System	L1	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	XX	XML	Inspection Report <ul style="list-style-type: none"> • Fulfill inspection report subscription • Query for inspection report • Respond to inspection query 	SAFER Law Enforc User SAFER	Law Enforcement User SAFER Law Enforc User	E	CR 101
	YY	EDI TS 286 Ref 7, 11, 14 XML CIA	CV Credentials: <ul style="list-style-type: none"> • Query for latest credentials status • Respond to credentials query 	Law Enforcement Credentialing System of record	Credentialing System of record Law Enforcement	E	
	ZZ	EDI TS 149 Ref 7 XML HTML CIA	Notice of Tax Adjustment or Assessment <ul style="list-style-type: none"> • State tax calculation 	CI State IFTA Tax Processing Center	CAT or Web site CI	E E	CR 69
	DSRC	various	According to draft USDOT policy, <ul style="list-style-type: none"> • For the immediate future, all CVO and Border Crossing projects will continue to utilize the current DSRC configuration employed by the programs. This is the "American Society for Testing and Materials (ASTM) version 6" active tag. 				
	DSRC-A	IEEE Std 1455-1999 Ref 24	CV Electronic Screening Message Set <ul style="list-style-type: none"> • CV Screening Identification 	Transponder	Screening/Driver Comm	E	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	DSRC-B	IEEE Std 1455-1999 Ref 24	CV Screening Message Set All messages	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	C	
	DSRC-C	IEEE Std 1455-1999 Ref 24	CV Border Clearance Message Set • Trip Identification Number message	Transponder	Screening/Driver Comm	E	
	DSRC-D	IEEE Std 1455-1999 Ref 24	CV Border Clearance Message Set All messages	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	C	
	DSRC-E	“Active Sandwich” protocol Ref 30	Proposed future DSRC standard for CVO	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	L1	
	DSRC-F	ASTM 2158-01 Ref 22	ASTM Physical Layer in the active mode	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	E	
	DSRC-G	ASTM 17.51 Ver 6 Ref 23	The existing ASTM version 6 Data Link Layer in the synchronous mode	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	E	
	AFF-A		<i>deleted</i>				CR 2147
	AFF-B	application file format Ref 25	Inspection Report • Submit original inspection report • Query for inspection report • Respond to inspection query	ASPEN ASPEN SAFER	SAFER via SDM SAFER via SDM ASPEN via SDM	L1	CR 2155
	AFF-C	application file format Ref 25	Snapshot • Fulfill snapshot subscription	SAFER	SAFETYNET via SDM	L1	CR 2155

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	AFF-D	application file format Ref 25	Compliance Reviews, Crash Data, Enforcement Data <ul style="list-style-type: none"> Update request (upload and store) Update confirmation (confirm success) 	SAFETYNET MCMIS	MCMIS SAFETYNET	L1	CR 2155
	AFF-E	application file format Ref 25	Inspection Report <ul style="list-style-type: none"> Submit original inspection report 	ASPEN	SAFETYNET	L1	CR 2155
	AFF-F		<i>deleted</i>				CR 2147
	AFF-G	application file format Ref 25, 26	Inspection Report <ul style="list-style-type: none"> Submit original inspection report 	ASPEN	SAFER via CVIEW	L1	
	AFF-H		<i>deleted</i>				CR 2147
	AFF-I	application file format Ref 25, 26	Inspection Report <ul style="list-style-type: none"> Update request (upload and store) 	SAFETYNET	SAFER via SDM	L1	CR 2155
	INT-A	Internet Stds XML HTML	Snapshots <ul style="list-style-type: none"> Query for snapshot(s) Response to query 	Internet Tools SAFER	SAFER Internet Tools	L1	CR 2147
	CIA-A	custom inter- face agree- ment (CIA)	Recaps	State IRP	IRP Clearinghouse	L1	
	CIA-B	CIA	Netting/Transmittal data	IRP Clearinghouse	State IRP	L1	
	CIA-C		<i>deleted</i>				CR 2147

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Repts Level	Comments
	CIA-D	CIA Ref 25	Inspection Reports <ul style="list-style-type: none"> Submit original inspection report Query for inspection report 	ASPEN ASPEN	SAFER via SDM SAFER via SDM	L1	CR 2155
	CIA-E	CIA	Inspection Reports <ul style="list-style-type: none"> Submit original inspection report 	ASPEN	SAFETYNET	L1	CR 2155
	CIA-F	CIA	Inspection Reports <ul style="list-style-type: none"> Submit original inspection report 	ASPEN	SAFETYNET via electronic bulletin board	L1	
	CIA-G	CIA Ref 25	Inspection report	SAFETYNET	MCMIS	L1	CR 2155
	CIA-H	CIA	Carrier OOS, carrier profile, carrier status Mexican carrier data, MC number	MCMIS L&I	L&I MCMIS	L1	CR 2155
	CIA-I	CIA Ref 25	Snapshot <ul style="list-style-type: none"> Update carrier snapshot segment 	Licensing & Insurance (L&I)	SAFER	L1	
	CIA-J	CIA	Driver Status Report	CDLIS Query Central	Query Central CDLIS	L1	CR 2156
	CIA-K	CIA	Driver History Report	CDLIS Query Central	Query Central CDLIS	L1	CR 2156
	CIA-L	CIA Ref 25	Snapshot <ul style="list-style-type: none"> Update carrier snapshot segment 	MCMIS	SAFER	L1	
	CIA-M	CIA	Carrier census data	MCMIS	ISS	L1	CR 2155
	CIA-N	CIA Ref 25	Compliance Reviews, Crash Data, Enforcement Data <ul style="list-style-type: none"> Provide reports 	SAFETYNET	MCMIS	L1	
	CIA-O	CIA	Sensor data Control data	Sensor/Driver Comm Screening	Screening Sensor/Driver Comm	L1	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqts Level	Comments
	CIA-P	CIA	Screening criteria, snapshot data	Roadside Operations	Screening	L1	
			Screening results	Screening	Roadside Operations		
	CIA-Q	CIA	Sensor data	Sensor/Driver Comm	Roadside Operations	L1	
			Control data	Roadside Operations	Sensor/Driver Comm		
	CIA-R	CIA	Past inspection, Motor Carrier Safety Improvement Process (MCSIP) level, and vehicle registration data	SAFER (and PRISM)	Query Central	L1	CR 2156
	CIA-S	CIA	General carrier data and carrier out-of-service orders	MCMIS	Query Central	L1	CR 2156
	CIA-T	CIA	Licensing, insurance, and authority data	L&I	Query Central	L1	CR 2156
	CIA-U	CIA	Driver status report, MCSIP level data, vehicle registration data, general carrier data, carrier out-of-service orders, licensing data, insurance data, and authority data	Query Central	ASPEN	L1	CR 2156

NOTE: For CVISN Level 1,

- The credentials handled by TS 286 include IRP Registration and IFTA Registration.
- The snapshots handled by TS 285 include carrier (safety and credentials elements), vehicle (safety and credentials elements).

Some existing interfaces between FMCSA-controlled systems are not shown.

3. STANDARD DATA DEFINITIONS

Ideally, there would be a common data dictionary for use throughout all systems associated with CVISN. That is not practical, since many legacy systems have different data definitions, and new systems are being developed by different organizations. Several documents define data elements that support CVO functions and standards [[References 14, 21, 24, 27, 28, 29](#)].

The data items listed in this chapter are common across more than one interface standard. They are used as “keys” to access information about the major entities: carrier, vehicle, driver, shipment, and trip. When systems use common keys, it is possible to match information sets such as safety and credentials data. The specifications in Table 3–1 define the key identifier characteristics to be adopted when exchanging information using the standards. It may be necessary to translate the identifier from a legacy system into this format when using a standard to exchange information. In addition to the standard column definitions explained in [section 1.4](#), this table contains these columns:

- Entity – Any person, place, thing, concept, or event that has meaning to an enterprise, and about which data can be stored. (Example: vehicle)
- Identifier Name – the name of the data element that should be standard across systems for the entity
- Identifier Segment – a list of components that make up the data name, including whether the segment should be alphabetic, numeric, or alphanumeric
- Number of Characters – the maximum length that should be supported for each segment

For further information about standard identifiers, see [Reference 8](#).

Table 3–1. Standard Data Definitions

Commit Level (F/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqs Level	Comments
	Motor Carrier	Primary Carrier ID				CR 704
		For <i>interstate</i> carrier:	Carrier-Specific Identifier (alphanumeric); must be USDOT number +	12 (max)		
		e.g.,	Carrier Terminal ID designated by carrier (alphanumeric) (optional) +	4 (max)		
		12345 A001 (note that '12345' must be the carrier's USDOT #; the terminal ID 'A001' is optional)	CVO Company Type	TBD		
		For <i>intrastate</i> carrier:	Country Code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2		
		e.g.,	Jurisdiction (state or province) Code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2		
		US CA 123A45689 1234 (note that the terminal ID '1234' is optional)	Carrier-Specific Identifier; if carrier is intrastate and has a USDOT number, must be USDOT number; for state-specific IDs, the Carrier-Specific Identifier may include a prefix to clarify the agency/source of the identifier) +	12 (max)		
		Carrier Terminal ID designated by carrier (alphanumeric) (optional)	4 (max)			
		CVO Company Type	TBD			

Commit Level (F/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqs Level	Comments
	Vehicle	Vehicle Identification Number e.g., 1FDKE30F8SHB3318 4 and Vehicle Plate ID e.g., US CA 12345664820M	VIN assigned by manufacturer (alphanumeric) Country code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory + Jurisdiction (state or province) code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory + License plate ID (alphanumeric)	30 (max) 2 2 12 (max)		
	Transponder	Transponder ID e.g., 0 123456789 or 1 9999 232323	segments shown below Transponder ID Definition Flag (0=current; 1=IEEE 1455-1999) + <i>If Transponder ID Definition Flag = current, then the other segment is:</i> Transponder Serial Number assigned by manufacturer <i>If Transponder ID Definition Flag = IEEE 1455-1999, then the other segments are:</i> Manufacturer Identifier +	10 (max) 1 (1 bit) 8 (32-bit hexadecimal value) 4 (16 bits hexadecimal value)		CR 704 CR 704

Commit Level (F/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqs Level	Comments
			Transponder Serial Number assigned by manufacturer	5 (20 bits hexadecimal value)		
	Driver	Driver Unique ID e.g., US MD B99999999999A	Country code (alphanumeric); the allowable country codes will be defined in the FHWA Code Directory + Jurisdiction (state or province) code (alphanumeric); the allowable subdivision codes will be defined in the FHWA Code Directory + Driver specific identifier (driver license number) assigned by jurisdiction (alphanumeric)	2 2 16 (max)		
	Shipment	Shipment Unique ID e.g., 776655443322	Bill of Lading number assigned by the carrier (numeric)	12 (max)		
	Trip	Trip/Load Number e.g., 123456789761231	Carrier DUNS number as assigned by Dun and Bradstreet (numeric) + Trip unique number as assigned by carrier (numeric)	9 6		

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5. CHANGE REQUESTS INCORPORATED INTO EARLIER VERSIONS

References to the CRs listed below appear in the text or tables of the document so that the reader knows how each CR affected Version P2.0 of the document.

Version P2.0 of the document incorporates revisions related to these change reports:

- CR 313 – Disapproved (EDI interface for IRP CH)
- CR 549 – Transponder ID specified to be a two-part identifier, with the ID itself in hexadecimal representation
- CR 630 – Split country and subdivision in Driver Unique ID
- CR 631 – Clarify description of Trip/Load Number to match IEEE P1455 standard
- CR 1048 – Update CVISN for Web sites and XML for Credentialing
- CR 1084 – Update Design Template and Stakeholder View
- CR 1159 – Update DSRC references
- CR 1164 – Clarify interface options (EDI, XML, Web, other) for Safety
- CR 1172 – Clarify & complete concepts and requirements for E-Screening Enrollment

6. CHANGE REQUESTS INCORPORATED INTO THE CURRENT VERSIONS

In January 2002, APL transitioned to a new tool for Configuration Management. The change request numbering was reinitialized; hence CR numbers have wrapped around.

The effect of each CR incorporated into Version 1.0 of the document is briefly described below.

Version 1.0 of the document incorporates revisions related to these change reports:

- CR 69 (old CR 1463) – IFTA Tax Scenario Changes
- CR 72 (1551) – No EDI queries from APL developed CVIEW to SAFER
Added clarification note to Table 2–1
- CR 98 (1842) – Update the State diagram in the CVISN System Design Description
- CR 101 (2000) – Update documents regarding TS 284 not supported in Fed systems
- CR 182 – Update documentation to reflect CVISN Level 1 Checklist
- CR 604 (312) – Disapproved (Add Clearinghouse Connections to SAFER)
Removed clearinghouse connections to SAFER
- CR 681 – Changes to IFTA transactions in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 682 – Changes to IRP transactions in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 683 – Changes to E-screening transactions in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 684 – Changes to SAFER to State trans. for MCMIS and L&I in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 685 – Changes to SAFER to State trans. for IFTA in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 686 – Changes to SAFER to State trans. for IRP in SAFER 4.2
Updates to Figure 2–3 and Table 2–1

- CR 687 – Changes to SAFER to State trans. for E-screening in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 688 – Changes to EDI State-SAFER interface in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 704 – Update to Primary Identifiers White Paper
Updated Table 3–1
- CR 785 – Changes to SAFER to State trans. for Veh. Inspection in SAFER 4.2
Updates to Figure 2–3 and Table 2–1
- CR 895 – Query Central needs to be added to the list of CVISN Core Infrastructure systems
- CR 1992 – CVISN "Level 1" changed to CVISN "Core"
Added explanation to page ii
- CR 2147 – COACH 4 – replace EDI-A, etc, with AA, etc.
Level 1 Interface Diagrams
Table 2–1
- CR 2155 – COACH 4 – correct safety system interfaces
Table 2–1 interfaces between safety systems (ASPEN, CVIEW, SAFER, SAFETYNET, MCMIS) were brought into accordance with the SAFER ICDs and comments received during the review of the SAFE current systems document.
- CR 2156 – COACH 4 – add Query Central interface info
Table 2–1 updated with Query Central interfaces
- CR 2178 – COACH 4 cleanup
Expand acronyms
References updated
Section 2 – split the interface function diagram into 4; dispensed with separate Interface Standards diagram(s)
Remove version number from SAFETYNET