Core Innovative Technology Deployment (ITD) Program Plan and Top-Level Design (PP/TLD)

For the State of North Dakota

April 2022

[Version with Schedule and Budget Removed]

Executive Summary

Note: To assist in reading this document, a *Definition of Acronyms* is provided in the following section.

In the 1990's, with trucking deregulation and the increase of heavy trucks on roads, the US Department of Transportation (USDOT) proposed the creation of an agency whose sole focus was to provide regulatory guidelines and oversight for the motor carrier industry on a national basis. Legislation eventually led to the creation of the Federal Motor Carrier Safety Administration (FMCSA), established within the USDOT. The FMCSA mission is stated as follows:

"Save lives and reduce crashes and injuries by advancing large truck and bus safety through collaboration, education, research, technology and compliance."¹

In the late 1990's North Dakota participated in a series of regional workshops sponsored by FMCSA. These workshops formed the basis for North Dakota's involvement in the Commercial Vehicle Information Systems and Networks (CVISN) currently known as Innovative Technology Deployment (ITD) program. ITD is a national program sponsored by FMCSA and designed to:

- Improve safety and productivity of motor carriers, commercial vehicles and their drivers
- ✓ Simplify enforcement operations
- Improve efficiency and effectiveness of commercial vehicle safety programs through targeted enforcement
- ✓ Improve commercial vehicle data sharing within states and between states and FMCSA
- ✓ Reduce Federal/State and industry regulatory and administrative costs
- ✓ Achieve nationwide deployment of the program, with all jurisdiction participating

Through ITD, FMCSA provides grant funding to states wishing to deploy projects which fit within the scope of the ITD program. FMCSA recognizes two levels of ITD deployment. Core ITD requires states to implement a fundamental set of capabilities which align each state to national ITD requirements. FMCSA provides grant funding to support Core ITD. The following table provides an overview of the capabilities required for states to be Core ITD compliant.

Capability Area	Capability
	Aspen Deployed
Safety Information Exchange	SAFER Snapshot Exchange
1091.	CVIEW Deployed
Credentials Administration	Automated IRP Credentials
n mana da mandra menangka kata manangka namana kata kata da kata da kata da kata da kata da kata da kata kat	Automated IFTA Credentials

¹FMCSA Strategic Plan 2021-2023, accessed at <u>www.fmcsa.dot.gov/safety/fmcsa-strategic-plan-2021-2023</u>.

Capability Area	Capability	
	Ready To Extend To Permits	
	IRP Clearinghouse Connection	
	IFTA Clearinghouse Connection	
	10% Transaction Volume Electronic	
1947 X 1957 X 1977	At Least One Fixed Or Mobile Implementation	
Electronic Screening	Use Snapshots to Support Screening Decision	
	Ready To Replicate	

The second level of ITD deployment is Expanded ITD. Under Expanded ITD, once states obtain Core ITD certification, they are eligible to receive additional grant funding annually for deployment and maintenance of a variety of projects and systems related to ITD. To date, North Dakota is compliant in most elements of the Core ITD capabilities. The purpose of this document is to provide a high-level roadmap to guide North Dakota in completing the deployment of the Safety Information Exchange capability area. This document is built according to the FMCSA template guidelines which govern the form and format. The project identified in this program plan is defined at a high-level with schedule and budget placeholders representing rough order of magnitude estimates. The project definition in this document are intended to provide the basis for more detailed project planning activities as the project moves into its project planning horizon.

North Dakota stakeholders in the ITD program have worked together to develop this plan. This stakeholder team is made up of the following agencies and associations:

- North Dakota Highway Patrol NDHP (Lead ITD Agency)
- North Dakota Department of Transportation NDDOT
- North Dakota Motor Carriers Association NDMCA
- Federal Motor Carrier Safety Administration FMCSA

Direct responsibility for motor carrier regulation is shared by two North Dakota agencies. These agencies are the North Dakota Highway Patrol (NDHP) and the North Dakota

Department of Transportation (NDDOT). In addition, the Federal Motor Carrier Safety Association (FMCSA) provides valuable assistance regarding ITD program requirements, benefits, and potential funding options. The ITD team provides ongoing project leadership for the North Dakota ITD Program.

This Core ITD Program Plan and Top-Level Design rewrite represents a key milestone for the state. The plan will form the basis for completing Core ITD capabilities and, when certified by FMCSA, will allow North Dakota to access an additional funds for deployment of other, expanded ITD projects and maintain deployed Core ITD projects.

North Dakota's commitment to ITD was formalized by the development and approval of the North Dakota ITD Top-Level Design in 2003. Since that time, North Dakota has developed and deployed several ITD-related projects. In developing this plan, the ITD team reviewed the



current status of ITD deployment throughout the state and contrasted current conditions against strategies, goals and plans for future projects. The following table provides a snapshot of deployed technologies.

Technology	Description	Physical Location: Address	Deployed
80		*	/ Planned
E-	IRP & IFTA -	Motor Carrier Section	Deployed
Credentialing	Provides on-line	North Dakota Department of Transportation	
System	tools for motor	608 E. Boulevard Ave.	
	carriers to conduct	Bismarck, ND 58505-0791	
	interstate		
	registration and		
	fuel tax business.		
	ND has been a		
	member of the		
	IRP and IFTA		
	Clearinghouses		
	since 2006.		
	E-Permitting -		
	Beginning in		
	2003, ND moved		
	the application		
	and issuance of		
	several permits		
	into an on-line		
	environment. This		
	provides ND		
	motor carriers		
	with additional		
	tools to make their		
	operations more		
A	efficient.	There have the state	Destand
Aspen	ND has deployed	I moughout the state.	Deployed
	Approximately 110		
	Aspenitoadside		
	to NDHD troopers		
	and civilian		
	commercial		
	vehicle inspectors		
	ND has been		
	using Aspen for		
	all commercial		
	vehicle		
	inspections since		
	the late 1990's.		
SAFETYNET	ND supports the	North Dakota Highway Patrol	Deployed
	reporting of	North Dakota Department of Transportation	
	commercial vehicle	608 E. Boulevard Ave, Bismarck, ND 58505-0791	
	crashes and	аничная к на начинично на налагия прилагод на радона на начини прилагод на на 1924 Ф. 1938 г. 2018 Г. 201	
	inspections through		
	SAFETYNET and		
	regularly maintains		
	a "Good" rating for		

Technology	Description	Physical Location: Address		Deployed
	data quality and			/ I lanneu
WIM	North Dakota has deployed 16 WIM systems across the state. WIM systems record the weight of vehicles as the vehicles pass over the sensors.	WIM StationLBelfieldBowmanEllendaleWahpetonWillistonJolietteWest Fargo(inactive)PortalWashburnDevils LakeWatford City(inactive)SykestonLangdonApple Creek East	Latitude Longitude	Deployed
		Apple Creek West		
Electronic Screening	North Dakota has implemented E- Screening capability through both PrePass and Drivewyze.	PrePass StationLatitBeach EBBowman EBBowman NBBowman NBBowman SBBowman WBJoliette SBMooreton NBMooreton SBPanger NBPanger SBWest Fargo WB	tude Longitude	Deployed
	North Dakota has implemented E- Screening capability through both PrePass and Drivewyze.	Drivewyze Station Apple Creek Rest Area I- 94 EB Apple Creek Rest Area I- 94 WB Beach I-94 EB Bowman US Hwy-85 NB Bowman US-12 EB Bowman US-12 WB Buxton I-29 NB Buxton I-29 SB	Latitude Longitude	Deployed

Technology	Description	Physical Location: Address	S	Deployed
	1. 1.			/ Planned
		Crystal Springs Rest Area I-94 WB Ellendale US Hwy-281 NB Ellendale US Hwy-281 SB Hailstone Creek Rest Area I-94 EB Hailstone Creek Rest		
		Area I-94 WB Jameston Rest Area I-94 EB Jameston Rest Area I-94		
		WB		
		Joliette I-29 SB		
		Joliette I-29 NB		
		JolietteHwy-5 EB		
		Joliette Hwy-5 WB Lynchburg Truck Parking I-94 EB		
		Mooreton I-29 NB		
		Mooreton I-29 SB Norwich Rest Area RT-2 EB Norwich Rest Area RT-2		
		WB Old Hardwood Rest Area I-29 NB Old Hardwood Rest Area I-29 SB Old Hauge Scale US-83 N/A		
		Scenic Overview I-94 EB Sweet Briar Rest Area I- 94 WB		
		Sykeston Rest Area Hwy- 52 WB Tioga Inspection Area Hwy-2 EB Tioga Inspection Area		
		Hwy-2 WB West Fargo I-94 WB Williston Panger US-85 SB Williston Panger US-85 NB		
		13 Mile Corner US-2 NB 13 Mile Corner US-2 SB 29 Mile Corner US-85 NB 20 Mile Corner US-85 SD		
		29 Mile Corner US-85 SB		

North Dakota has implemented key electronic credentialing capabilities, electronic screening, and Aspen inspection capabilities. The planned North Dakota CVIEW ITD project will lead to North Dakota achieving Core ITD compliance.

System Design

The system design diagram displays state, federal and private systems related to North Dakota's planned core ITD project to implement a CVIEW.



Approval Signatures

The North Dakota Core ITD Program Plan and Top-Level Design document represents a multiagency commitment towards continued support of ITD program goals and objectives within the State of North Dakota and at a national level. By approving this document, each participating organization recognizes their respective roles and responsibilities regarding planning, deploying and supporting ITD projects that will enhance the efficiency, safety and compliance of the motor carrier industry within North Dakota and nationally.

North Dekote Highway Potrol	Data
North Dakota Highway Fation	Date
North Dakota Department of Transportation	Date

Definition of Acronyms

Acronym	Definition		
AAMVA	American Association of Motor Vehicle Administrators		
ADABAS	Adaptable Database System – A relational database developed by Software, AG. Typically deployed within a mainframe environment.		
Aspen	Not an acronym. PC-based system for capturing commercial vehicle inspection information at the roadside, maintained by FMCSA.		
ASTM	American Society for Testing and Materials		
AVI	Automatic Vehicle Identification – One of any number of systems capable of identifying a vehicle without human interaction. May be transponder or camera based.		
CDL	Commercial Driver's License		
CDLIS	Commercial Driver's License Information System – Inter-jurisdictional data exchange system to query CDL information from individual state CDL databases.		
CICS	Customer Information Control System – Transaction processing system typically deployed on an IBM mainframe for processing on-line transactions.		
СОАСН	ITD Operational and Architectural Compatibility Handbook – Series of handbooks used by states to test ITD systems for compatibility and interoperability based upon accepted standards.		
CR	Compliance Review. FMCSA process for reviewing a carrier's procedures and systems.		
CSA	Comprehensive Safety Analysis – FMCSA safety initiative which uses a set of Behavior Analysis Safety Improvement Categories (BASICs) to drive a series of progressive interventions to identify motor carriers exhibiting unsafe behavior.		
CV	Commercial Vehicle		
CVIEW	Commercial Vehicle Information Exchange Window – See NDCVIEW.		
CVISN	Commercial Vehicle Information Systems and Networks – Federal program administered by FMCSA, now called the Innovative Technology Deployment (ITD) program.		
CVO	Commercial Vehicle Operations – All administrative and enforcement activities associated with motor carriers and commercial vehicles.		
CVSA	Commercial Vehicle Safety Alliance – An association of state, provincial, and federal officials responsible for the administration and enforcement of motor carrier safety laws in the United States. Canada and Mexico.		
EFT	Electronic Funds Transfer – A set of industry accepted standards for the secure, electronic exchange of funds between financial institutions.		
FHWA	Federal Highway Administration		
FMCSA	Federal Motor Carrier Safety Administration		
FMCSR	Federal Motor Carrier Safety Regulations – Regulations enforced by FMCSA which are embodied with Chapter 49 of the Code of Federal Regulations.		
FTP	File Transfer Protocol – A standard network protocol used to exchange and manipulate files over the Internet.		
HAZMAT	Hazardous Material – Hazardous materials as defined in 49 CFR Parts 100-180 for FMCSA purposes.		
HPCMS	Highway Patrol Case Management System – System utilized by NDHP for monitoring and tracking all activities related to cases.		
IFTA	International Fuel Tax Agreement – Fuel taxation plan allowing for payment of fuel taxes to multiple states.		
IRP	International Registration Plan – Commercial vehicle registration plan that allow for carriers to register vehicles in their home state and pay fees for all states over which they will travel.		

Acronym	Definition		
ISS	Inspection Selection System – A data-driven decision-aid for commercial vehicle roadside driver/vehicle safety inspections, which guides safety inspectors in selecting vehicles for inspection, maintained by FMCSA.		
ITD	Innovative Technology Deployment program – Federal program administered by FMCSA.		
ITS	Intelligent Transportation Systems – Wide range of technologies applied toward surface transportation systems in order to increase system efficiencies, capture performance data and disseminate information.		
L&I	Licensing and Insurance – FMCSA system to track insurance status of motor carriers meeting federal registration and insurance criteria.		
LAN	Local Area Network - A local computer network for communication between computers		
LCV	Longer Combination Vehicle – Tractor and, typically, three trailers.		
LPR	License Plate Reader – A machine vision system capable of scanning images of license plates and extracting character strings matching the plate, then comparing against a database.		
MCMIS	Motor Carrier Management Information System – A computerized system whereby the Federal Motor Carrier Safety Administration (FMCSA) maintains a comprehensive record of the safety performance of the motor carriers (truck and bus) and hazardous materials shippers who are subject to the Federal Motor Carrier Safety Regulations (FMCSR) or Hazardous Materials Regulations (HMR).		
MCS	North Dakota Motor Carrier System – System for processing IRP and IFTA transactions for the state.		
MCSAP	Motor Carrier Safety Assistance Program – FMCSA program supporting roadside safety enforcement and inspection activities implemented by states.		
MDC	Mobile Data Client – Software resident on a laptop providing functionality in a server client environment.		
MFT	Managed file transfer – A secure data transfer protocol for reliable electronic data exchang for both internal and external organizations.		
NCIC	National Crime Information Center – A computerized index of criminal justice information (i.e criminal record history information, fugitives, stolen properties, missing persons). It is available to Federal, state, and local law enforcement and other criminal justice agencies and is operational 24 hours a day, 365 days a year.		
NDCVIEW	North Dakota Commercial Vehicle Information Exchange Window – Customized SAFER- type database and query windows.		
NDDOT	North Dakota Department of Transportation		
NDHP	North Dakota Highway Patrol		
NDMCA	North Dakota Motor Carriers Association		
Nlets	Not and acronym. The International Justice and Public Safety Network – A secure information sharing system for state and local law enforcement agencies. It provides electronic messaging to allow information exchange between state, local, and federal agencies and support services to justice-related computer programs.		
NMVTIS	National Motor Vehicle Title Information System – A system that allows the titling agency to instantly and reliably verify the information on the paper title with the electronic data from the state that issued the title.		
OCR	Optical Character Recognition – A machine vision system capable of scanning images and extracting character, then comparing against a database.		
OOSO	Out-of-Service-Order – Federal designation for carriers and/or vehicles which are precluded from operating.		
OS/OW	OS/OW – Oversize and Overweight permits.		

North Dakota Core ITD Program Plan / Top-Level Design (PP/TLD)

Acronym	Definition	
PrePass	Electronic, transponder-based, bypass system. Carriers enroll transponders and are allowed to by-pass fixed inspection facilities based upon PrePass screening algorithms.	
PRISM	Performance Registration Information Systems Management – FMCSA program to promote safety-based registration and roadside targeting of at-risk carriers.	
SAFER	Safety and Fitness Electronic Records – Database of commercial carrier and vehicle safety and census information.	
SAFETYNET	Not an acronym. PC based system allowing entry access, analysis and reporting of data from driver/vehicle inspections, crashes, compliance reviews, assignments and complaints.	
SSL	Secure Socket Layer – A set of security protocols which provide for secure transmission of information across the Internet.	
STARS	State Titling and Registration System- – North Dakota's new registration and title system for all vehicles.	
TraCS	Traffic and Criminal Software – an application software utilized by law enforcement agencies to complete electronic citations, warnings, report & notice forms, crash reports and insurance exchange forms.	
UCR	Unified Carrier Registration – Regulation that requires carriers to register and pay fees supporting state safety and credentialing activities.	
USDOT	United States Department of Transportation	
VIN	Vehicle Identification Number – Unique number assigned to a motor vehicle by the manufacturer.	
VPN	Virtual Private Network – A network that provides secure, remote access into an enterprise network.	
VRTS	Vehicle Registration and Titling System – North Dakota's old (prior to 2016) registration and title system for all vehicles.	
WAN	Wide Area Network – A network of linked computers covering a multi-site, national or even global area.	
WASHTO	Western Association of State Highway and Transportation Officials	
WIFI	A brand name developed by the Wi-Fi Alliance to ensure compatibility among products which communicate data wirelessly via the IEEE 802.11.	
WIM	Weigh-In-Motion – Scale/scales designed to weigh vehicles while the vehicle is moving.	
XML	Extensible Markup Language – A widely accepted way of sharing information over the Internet in a standard, generic way.	

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1. Introduction

The North Dakota Core Innovative Technology Deployment (ITD) Program Plan and Top-Level Design document represents an update from the original ITD Top-Level Design which had been created in 2002 and approved in 2003 and updated in 2010. The purpose of this update is to provide a snapshot of North Dakota's current progress in ITD deployment, to re-establish North Dakota's ITD commitment to the national program objectives and to define the next steps required for North Dakota to reach Core ITD compliance. This document represents the culmination of a combined, multi-agency effort involving subject matter experts and members of North Dakota's original ITD team.

Activities associated with development of this document included revisiting and updating North Dakota's responses to the Federal Motor Carrier Safety Administration (FMCSA) Commercial Vehicle Information Systems and Networks Operational and Architectural Compatibility Handbook (COACH). Through this planning process North Dakota reexamined their commitment to the FMCSA COACH document. This process included reviewing original responses to the document and updating those responses to consider the most recent version of COACH.² Through this process, North Dakota now has no "no commitment" responses and fully supports the national ITD objectives.

To develop this planning and design document a sequential process had been identified. This process consisted of project scoping, definition of projects, top-level design and final document preparation.

Project Scoping

Project scoping consisted of multiple meetings with the North Dakota ITD subject matter experts and other stakeholders regarding defining the current status of the State's ITD deployment and the gaps in deployment status and core ITD compliance. The resulting project list consists of one project which will complete North Dakota requirements for core compliance.

Project Definition

The project is defined in terms of a high-level operational scenario and associated discussion regarding planned benefits for the state and industry. The project list also includes identification of lead and partner agencies. The finalized project definitions form the basis of this program plan and are included in Section 2.3 of this document.

<u>Top-Level Design</u>

The final steps in the process include developing high-level system and network designs the identified project. Designs also consider compatibility of the project with design criteria including FMCSA ITD architecture, National and state ITS architecture, internal state compliance requirements and other design criteria which may be applicable for the project.

² Commercial Vehicle Information Systems and Networks Operational and Architectural Compatibility Handbook (COACH) - Part 1 - Operational Concept and Top-Level Design Checklists, NSTD-08-487 V9.0, March 2019, accessed through the ITD website, available from <u>https://portal.fmcsa.dot.gov/</u>.

1.1 Purpose and Scope of Document

The purpose of this document is to re-baseline North Dakota's ITD goals and objectives and define one core ITD project, thus providing a roadmap for North Dakota to obtain core compliance. This document has been developed jointly by the North Dakota ITD Team made up of NDDOT and NDHP subject matter experts. The scope of this document provides high-level Core ITD project descriptions within the context of existing and planned North Dakota ITD systems and networks. In addition, the ITD project is designed within the context of national ITD and ITS architectures. The document is assembled following the Core ITD Program Plan and Top-Level Design template provided by FMCSA.³

1.2 Background

The ITD program is a key component of FMCSA's drive to improve commercial motor vehicle safety. The program is directly aligned with both the USDOT and FMCSA's performance goals, which have been established in five areas. These areas include:

- ✓ Highway vehicle safety;
- ✓ Hazardous materials safety;
- ✓ Homeland and national security;
- ✓ Transportation reliability and productivity; and
- ✓ Organizational excellence.

The ITD program supports these goals by focusing safety enforcement on high-risk operators; enabling more effective hazardous materials (HazMat) safety compliance and enforcement; integrating systems to improve the accuracy, integrity, and verifiability of credentials; improving efficiency through electronic screening of commercial vehicles; and enabling online application and issuance of credentials.

North Dakota has been involved with ITD concepts and processes since 1998 when North Dakota began a series of ITD workshops and began work on North Dakota's ITS/CVO Business Plan. Since that time, North Dakota completed its ITD Top-Level Design and successfully completed all elements of the E-Credentialing and Electronic Screening Core ITD requirements.

North Dakota agrees with the overall goals of the ITD program to improve safety and productivity of motor carriers, commercial vehicles, and their drivers; to simplify enforcement operations; to improve efficiency and effectiveness of commercial vehicle safety programs through targeted enforcement; to improve security of data; to improve sharing of commercial vehicle data within States and between States and FMCSA; and to reduce Federal/State and industry regulatory and administrative costs.⁴ North Dakota is committed to the ITD program.

The overall business case or rationale for North Dakota to achieve ITD Core Compliance is:

³ The Core ITD Program Plan and Top-Level Design template, accessed through the ITD website, available from <u>https://portal.fmcsa.dot.gov/</u>.

⁴ <u>https://www.fmcsa.dot.gov/itd</u>

NDHP

Motor Carrier Operations

Enforcement

NDHP

Motor Carrier Operations

Permitting

FMCSA North Dakota Division

Office

Committee

Chair (NDHP)

- To increase the efficiency and effectiveness of North Dakota's administrative, screening, and enforcement functions;
- To increase the operational productivity of legal and safe motor carriers; and
- To reduce commercial motor vehicle crashes.

North Dakota's ITD Team comprises members from two North Dakota agencies, FMCSA, and the North Dakota Motor Carriers Association. The team organization chart is shown here.

The following paragraphs provide a brief sketch of the participating agencies and organization. The North Dakota Highway Patrol and the North Dakota Department of Transportation both agree with the overall goals of the ITD program and the requirements for ITD Core Compliance, and there is no need for a memorandum of understanding (MOU) between the agencies.

North Dakota Highway Patrol (NDHP)

The North Dakota Highway Patrol is the lead agency for both the ITD and Motor Carrier Safety Assistance Program (MCSAP) in the state. Lt. NDHP, currently fulfills the role of ITD Program Manager for North Dakota. NDHP Motor Carrier Operations are responsible for administering a wide variety of activities; including the New Entrant Program, Border Inspection Program (BIP) and staffing the Permit Section which provides truck permitting services for the state. NDHP also conducts size and weigh enforcement in support of NDDOT's Size

and Weight Enforcement program. NDHP Motor Carrier Operations maintains a professional enforcement staff with training standards and operating procedures consistent with Federal Motor Carrier Safety Regulations (FMCSR) and the Commercial Vehicle Safety Alliance (CVSA).

North Dakota Department of Transportation (NDDOT)

The North Dakota Department of Transportation is responsible for building and maintaining North Dakota's highway system. This responsibility falls upon the second smallest department of transportation in the nation with more lane-miles of roads per maintenance employee than any other state in the nation.

These challenges have led NDDOT to be an early adopter of technologies to make daily operations more efficient and effective. The Driver and Vehicle Services Directorate is responsible the IRP and IFTA systems as well as administering the state's Unified Carrier Registration (UCR) program



NDDOT

Driver License &

Vehicles

NDDOT

Transportation Programs

North Dakota

Motor Carrier Assocation

Dakota | Transportation Be Legendary.



for North Dakota. , with the North Dakota Information Technology (NDIT) department, currently fulfills the ITD System Architect role for North Dakota.

North Dakota Motor Carrier's Association (NDMCA)

The North Dakota Motor Carrier's Association represents the motor carrier industry in North Dakota. NDMCA is a strong advocate of steps taken to make North Dakota's motor carrier community the safest and most efficient within the nation. Activities include



hosting the annual North Dakota Truck Driving Championship and providing safety and compliance seminars throughout the state. NDMCA provides access to motor carriers of all types and sizes. This access has proven invaluable when considering various deployment options for Core ITD compliance.

Federal Motor Carrier Safety Administration (FMCSA) – North Dakota Division Office

The North Dakota Division Office of the Federal Motor Carrier Safety Administration maintains a highly visible and active role in all aspects of North Dakota commercial



U.S. Department of Transportation Federal Motor Carrier Safety Administration

vehicle operations within the state. FMCSA oversees all program activities, including ITD and MCSAP, and also oversees all FMCSA grants to the state. FMCSA plays a vital role on the North Dakota ITD team by providing a federal and national perspective.

1.3 Organization of Document

North Dakota has identified one (1) Core ITD project. This project is described in detail within the pages that follow and falls within the following Core ITD capability area:

✓ Safety Information Exchange & Electronic Credentialing

• North Dakota CVIEW

Section 1 of this document provides background information on ITD and this program plan. Section 2 of this document discusses North Dakota ITD goals, current deployment status and planned Core ITD deployment activities. Section 3 provides system and network details for the project identified. Project design details include conformity with ITD architecture, National ITS Architecture and PRISM requirements. In addition, the project design details compliance with North Dakota and third-party requirements such as American Society for Testing and Materials (ASTM) specifications. Section 4 provides an overview of the procurement strategy for acquiring the services and product defined within the plan. A high-level project schedule is defined in Section 5 in order to convey overall project time and major task dependencies for the Project. Program budget details can be found in Section 6 of this document. The plan concludes with Section 7 which identifies key design and deployment issues along with associated mitigation strategies.

The North Dakota Core ITD Program Plan and Top-Level Design is intended to provide a roadmap to guide ITD activities in order to attain Core ITD compliance. The North Dakota ITD Team is committed to provide the oversight necessary to maintain project momentum and to

ensure that ITD Program documentation, such as this plan, adequately reflect North Dakota ITD plans.

2. State ITD Program

The North Dakota ITD program previously known as North Dakota CVISN program was reinvigorated in the summer of 2021 with the re-commissioning of the North Dakota ITD team and development of a plan to take the state to ITD Core Compliance. The plan entailed development of this document which defines the North Dakota ITD Program and Top-Level Design. This plan is based upon the North Dakota ITD Top-Level Design document from 2010. Upon consideration of the changes that have occurred both within the state and on a national basis, the team agreed to develop and update a new plan using the most current FMCSA template.

Planning activities focused on assessing the current status of North Dakota ITD deployment and development of project plans to bring North Dakota into ITD Core Compliance. The results of this planning effort are reflected in the planned Core ITD Deployment Projects described in Section 2.3 below. The ITD team aligned this project to fall within the following core ITD capability areas:

Safety Information Exchange

North Dakota CVIEW

This project is described fully in Section 2.3 of this document.

The remainder of this section will detail North Dakota's ITD goals and provide an overview of current ITD deployment status along with a description of the remaining ITD projects needed to bring North Dakota into Core ITD compliance.

2.1 State ITD Goals

All through this development process the North Dakota ITD team reviewed and re-affirmed the State ITD goals described in 2010 Program Plan. These goals are restated here:

Goal #1 – Improve CMV Safety			
a.	Take advantage of new systems to improve enforcement and focus resources on vehicles and locations with higher risks.		
b.	Develop systems and processes that will provide timely access to data to better allocate program resources to critical problem areas.		

Goal #2 - Improve Administrative Processes

- a. Update and maintain existing systems to allow compatibility with ITS/CVO.
- b. Maintain and improve customer service given reduced staffing levels and increased activity.

Goal #3 - Support and Participate in Regional and International Motor Carrier Operations Activities

Regional coalitions such as the I90 / I94 Northwest passage and national activities such as FMCSA, IRP, IFTA, UCR, CVSA, AAMVA and WASHTO workshops and meetings.

The activities that have led to development of the North Dakota Core ITD Program Plan and Top-Level Design have followed a logical progression starting with **reconstitution of the North Dakota ITD team**. The team was tasked with assessing the current status of ITD deployment and developing a plan to achieve core deployment in a fashion that met FMCSA requirements and North Dakota operational and budgetary constraints.

The team subsequently contracted with the North Dakota State University, Upper Great Plains Transportation Institute to assist in development and execution of the ITD process.



A detailed assessment of current ITD status led to a snapshot of multiple systems involved in ITD activities. The assessment included a review of North Dakota's 2010 exceptions to the COACH Part 1 document. The most current COACH document was used to revisit each element and update North Dakota's response. With completion of Steps 1 through 4, a project description for the CVIEW project was developed. The project description forms the basis of the program plan including updates to the systems and networks diagrams needed to support the projects. A high-level project plan, including tasks, schedules and budgetary estimates was developed and combined with design elements to develop the draft and finalized North Dakota ITD Program Plan and Top-Level Design. Ultimately the FMCSA approved document will lead to refinement of the high-level project plan, grant submittal and deployment activities.

2.2 Current ITD-Related Activities/Projects

North Dakota is one of only five (5) states (and the District of Columbia) without complete Core ITD functionality.⁵ An internal assessment of North Dakota's ITD deployment has been accomplished and this verifies the core deployment status. The baseline for this assessment was the current COACH document. This guide identifies the key elements required for Core ITD deployment.

The following table details current North Dakota status:

Capability Area	Capability	Status (C/I/P/N) ^(a)	
	Aspen Deployed	С	
Safety Information Exchange	SAFER Snapshot Exchange	Р	
	CVIEW Deployed	N	
	Automated IRP / IFTA Credentialing – Ready to Replicate to Other Credentials	с	
Credentials Administration	Provide Interstate Credential Updates to SAFER	N	
	Provide Credential Updates to CVIEW	N	
	IRP & IFTA Clearinghouse Connections	С	
	10% Transaction Volume Electronic	С	
	Use Snapshots for Screening	С	
Electronic Screening	At Least One Fixed Or Mobile Implementation	С	
	Ready To Replicate	С	
(a) C=Complete, I=In Progress, P=Partial, N=Not Compliant			

Table 2-1 - North Dakota Core ITD Status

As noted, North Dakota has successfully implemented Aspen, electronic exchanges of inspections with SAFER, electronic credentialing, including permits, and connections to the IRP and IFTA Clearinghouses; and electronic screening. North Dakota lacks a CVIEW with a SAFER connection. With the successful addition of the elements with a "Partial" or "Not Compliant" status in Table 2-1, North Dakota will be ITD Core Compliant. Upon certification of core compliance, North Dakota intends to initiate Expanded ITD planning in order to create the North Dakota Expanded ITD Program Plan and Top-Level Design. Many materials developed for this plan will form the basis for the expanded plan. North Dakota's Expanded ITD Program Plan and Top-Level Design will include many additional projects including Enhanced Electronic Permitting and Routing capabilities.

⁵ Reference the ITD - Current Program Status, available at <u>www_fmcsa.dot.gov/information-systems/itd/itd-current-status</u>.

Safety Information Exchange

Safety information exchange is the electronic exchange of safety data and supporting credentials information regarding carriers, vehicles, and drivers involved in commercial vehicle operations. This information is used by the enforcement community and other related agencies and organizations, e.g., state administrative offices, to make better-informed decisions that are based on historical safety performance information. The following table provides a brief status on each of the Safety Information Exchange capabilities:

SAFETY INFORMATION EXCHANGE		
Capability	Status	
Inspection reporting using Aspen (or equivalent) at all major inspection sites.	North Dakota Highway Patrol has been utilizing Aspen systems since the late 1990's. North Dakota currently has 110 deployed Aspen units being utilized by CVSA trained MCSAP troopers and	
Aspen data sent to SAFER (Safety and Fitness Electronic Records) directly or indirectly.	civilian inspectors. North Dakota currently utilizes SAFETYNET to enter and edit inspections prior to uploading. Future ITD projects will include the development of direct linkage to SAFER from the Aspen client for immediate upload of inspection data.	
Connection to the SAFER system to	North Dakota utilizes SAFETYNET to upload commercial vehicle inspection and crash information to MCMIS. North Dakota consistently enjoys an overall rating of good for commercial vehicle state inspection and crash data. North Dakota roadside and desk side personnel utilize various methods to access carrier and vehicle snapshots including use of	
provide exchange of interstate carrier and vehicle snapshots among states.	the SAFER website, MCMIS and Query Central. North Dakota CVIEW will serve to integrate snapshot information for users through a single portal / sign-on.	
	North Dakota currently has no connection to SAFER for exchange of required IRP and IFTA information. This will be accomplished through the North Dakota CVIEW project described in Section 2.3.	
Implementation of the Commercial Vehicle Information Exchange Window (CVIEW) (or equivalent) system for exchange of intrastate and interstate snapshots within state and connection to SAFER for exchange of interstate snapshots.	North Dakota currently has no CVIEW. This will be accomplished through the North Dakota CVIEW project described in Section 2.3.	

Table 2-2 – Safety Information Exchange

Electronic Credentialing

Electronic Credentialing is defined to mean an operational process that uses software under the applicant's control to send credentials applications (including fuel tax returns) to the state, and to get electronic notification of credentials status in return. When feasible, the credential itself is returned electronically. Electronic payment is an option associated with electronic credentialing. The following table provides a brief status on each of the Electronic Credentialing capabilities:

ELECTRONIC CREDENTIALING		
Capability	Status	
Automated electronic processing via Web- based or computer-to-computer solutions from carrier to state (processing includes carrier application, state application processing, credential issuance, and tax filing) of at least International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA) credentials; ready to extend to other credentials Note: processing does not necessarily include e-payment.	North Dakota has developed a new Motor Carrier System with full IRP and IFTA electronic credentialing capabilities. North Dakota has also implemented an electronic permitting functionality for the majority of permits sold to motor carriers. These include OS/OW, single trip, temporary registration and various seasonal permits.	
Update SAFER with credential information for interstate operators as actions are taken.	North Dakota currently has no process or connection to SAFER for updating IRP and IFTA credential information. This capability will be implemented with deployment of the North Dakota CVIEW project described in Section 2.3.	
Update CVIEW (or equivalent) with interstate and intrastate credential information as actions are taken.	North Dakota does not have a deployed CVIEW. This capability will be implemented with deployment of the North Dakota CVIEW project described in Section 2.3. The project will include integration of permits and potentially intrastate registration information.	
	Note: North Dakota currently has no legislative authority to require intrastate carriers to obtain a USDOT number. This will be addressed prior to introducing intrastate information into CVIEW.	
Connection to IRP and IFTA Clearinghouses.	North Dakota is now a participant with the IRP and IFTA Clearinghouses. North Dakota executes compliant data exchanges with each Clearinghouse.	
At least 10 percent of the transaction volume handled electronically; ready to bring on more carriers as carriers sign up; ready to extend to branch offices where applicable.	At least 10% of North Dakota's IRP and IFTA transactions are executed electronically. North Dakota maintains ongoing education and outreach to motor carriers to promote electronic credentialing services amongst qualified carriers.	

Table 2-2 - Electronic Credentialing Capabilities

Electronic Screening

Screening is a selection mechanism to target high-risk operators and make efficient use of weigh station and inspection resources. Electronic screening (e-screening) is the application of technology to make more informed screening decisions. Properly implemented, electronic screening results in improved traffic flow, focuses vehicle inspections and ultimately achieves the goals of increased safety and reduced operating costs. The following table provides a brief status on each of the Electronic Screening capabilities.

Table 2-3 - Electronic Screening Capabilities

ELECTRONIC SCREENING		
Capability	Status	
Use snapshots to support screening decisions.	North Dakota has implemented an E-Screening capability.	
Implemented at a minimum of one fixed or mobile inspection site.	E-Screening is available at multiple sites throughout North Dakota.	
Ready to replicate at other sites.	E-Screening is ready to replicate throughout the state.	

Other ITD-Related Activities

PRISM

PRISM provides States a safety mechanism to identify and immobilize motor carriers with serious safety deficiencies and hold them accountable through registration and law enforcement sanctions. North Dakota PRISM is fully integrated with the Motor Carrier System to meet the registration PRISM system requirements.

2.3 Planned ITD Deployment Projects

As noted previously, North Dakota has implemented key electronic credentialing capabilities, electronic screening, and Aspen inspection capabilities. This section defines one high-priority ITD project that will lead to North Dakota achieving Core ITD compliance. This project is the North Dakota CVIEW. The following table displays where this project aligns with the Core ITD capability requirement:

Capability	Status (C/I/P/N) ^(a)	NDCVIEW
SAFER Snapshot Exchange	Р	✓
CVIEW Deployed	N	✓
Provide Interstate Credential Updates to SAFER	Ν	~
Provide Credential Updates to CVIEW	Ν	~

Table 2-4- Project Alig

The proposed project will provide needed capabilities to complete North Dakota Core ITD compliance. The following sections provide an overview of the project.

North Dakota CVIEW

Table 2-5- North Dakota CVIEW

<u>PROJECT NAME</u>: North Dakota CVIEW

Physical Location: North Dakota Department of Transportation / North Dakota Highway Patrol

Project Objectives:

- 1. Provide North Dakota with a Commercial Vehicle Information Exchange Window (CVIEW) system which meets North Dakota need and is CSA / SAFER / Core ITD compliant.
- 2. Provide a repository for timely and accurate North Dakota CVO information which is available to authorized North Dakota agency roadside and desk side users.
- 3. Create CVIEW system interfaces for the exchange of current IRP, IFTA, intrastate carrier/vehicle registration and permits.
- 4. Provide a SAFER compliant service for uploading North Dakota IRP/IFTA data and downloading IRP/IFTA data from other jurisdictions along with federal carrier safety and census status.
- 5. Support registration and roadside enforcement elements of PRISM.
- 6. Utilize CVIEW connection to upload Aspen inspections to SAFER via the T0018 Inspection Report transaction set.

Project Benefits:

Benefits to the State:

- 1. Helps move the North Dakota ITD program forward towards attaining Core ITD compliance, thus opening up further grant funding opportunities.
- 2. Provides a common, Internet-based portal through which current motor carrier and vehicle information is available to multiple agency users.
- 3. Provides a database system to support E-Screening activities.

Benefits to the Motor Carrier Industry:

- 1. Ensures that enforcement and desk side personnel have accurate and timely information regarding carrier and vehicle status.
- 2. Provides timely and accurate information for supporting E-Screening activities at the roadside.

Project Description:

The North Dakota CVIEW project will provide for deployment of a SAFER compliant CVIEW system and system interfaces which will bring North Dakota into compliance with Core ITD requirements. North Dakota will pursue a vendor solution by customizing a commercial off-the-shelf (COTS) system to meet North Dakota requirements. The project will have multiple phases including vendor demonstrations, requirements gathering, development of a procurement document, procurement, installation of a base system capability and further customization. Initial deployment will focus upon development of the IRP and IFTA system interfaces and SAFER certification for upload and download. Subsequent activities will focus upon development of additional interfaces to the E-Permitting and STARS systems. Upon installation of the base system, roadside and desk side users and administrators will be trained on the use of the system.

Operational Scenario:



PR	PROJECT NAME: North Dakota CVIEW			
<u>1 IX</u>				
6	NDCVIEW provides an interface to the Check Station Network for use by the E-Screening Sub-System.			
7	NDHP users access NDCVIEW over secure Internet connection utilizing broadband connectivity. NDHP users accomplish queries, pass/fail screens and ad-hoc reporting.			
8	NDHP Aspen units utilize the NDCVIEW connection to upload inspection reports to SAFER via the T0018 Inspection Report transaction set.			
9	Authorized North Dakota desk side users access NDCVIEW over secure Internet connection to accomplish queries, pass/fail screens and ad-hoc reporting.			
Lea	ad (host) Agency:			
North Dakota Highway Patrol				
Pai	rticipating Agencies:			
North Dakota Department of Transportation				
Ke	y Functions to be Provided by Project/System:			
1.	Web-based data repository for all CVO-related information			
2.	CSA / SAFER / Core ITD compliant interface for uploading and downloading ITD information.			
3.	Access to other jurisdiction IRP and IFTA information			
4.	4. Interface to customize E-Screening datasets			
5.	5. System to provide for customized pass/fail screens and ad-hoc reports.			

2.4 High-Level Requirement for Top-Level Design

North Dakota supports the guiding principles, operational concepts, institutional framework, and design principles included in the COACH. The North Dakota ITD team has analyzed all past "No Commitment" responses to the COACH document. This analysis was conducted in light of changes to the COACH document along with North Dakota systems and procedures. All previous "No Commitment" responses have been evaluated and changed to "Full Commitment".

3. System Design

The projects which make up the North Dakota Core ITD Program Plan and Top-Level Design rely on systems and networks which are maintained by state and federal agencies, motor carriers, service providers and private contractors. This section provides an overview of both existing and planned systems and networks. It should be noted this overview provides a starting point for specific systems designs needed in grant applications and procurement documents. All diagrams are annotated to provide reference to tables describing the diagram. All standards, specifications and related background materials have been hyper-linked to the direct reference.

3.1 Architecture Overview

The architecture overview section provides high-level system and network diagrams specific to North Dakota CVIEW projects identified within this program plan and top-level design.

System Diagram

The system diagram displays state, federal and private systems related to North Dakota's planned core ITD projects.



The following table provides a description of the North Dakota core ITD systems. All annotated references in the table relate to the System Diagram.

Diagram Reference	System Description		
1	 E-Permitting – This application runs in an Oracle/PowerBuilder environment. The application has a web interface and application submittal form developed in J2EE (Java). The E-Permitting system allows carrier and service providers the ability to order the following permits on-line: Single Trip Longer Combination Vehicle (LCV) 10% Weight Exemption Permits-Winter and Harvest Nonresident Custom Combine Interstate Permit Oversize 		
2	SAFETYNET – This system is used to process commercial motor vehicle safety inspections, transferred from roadside Aspen units, and crash, transferred electronically from the NDDOT's TraCS system		
3	ARIES – The NDHP citations are held in ARIES. This is the administrative component of the Motor Carrier Safety Enforcement.		
4	PrePass / Drivewyze Sub-System – This sub-system represents proprietary PrePass / Drivewyze interfaces and algorithms that allow the system to interact with roadside dedicated short-range roadside communication (DSRC), WIM and AVI equipment in order to weigh, identify and communicate with vehicle-based transponder systems		
5	Check Station Network – The local network is available to authorized enforcement personnel for monitoring PrePass and the LPR/OCR sub-systems. The network would comprise a PrePass workstation and network connections to CVIEW.		
6	Aspen – PC based application which captures motor carrier safety inspections at the roadside.		
7	Court System - The majority of the Motor Carrier citations are transferred to the Supreme Court system, (Odyssey) the remainder to various municipal court systems. Ninety-eight percent of all conviction data is transferred electronically to the Driver License system from the courts. The remainder is in paper format.		
8	CVIEW – This planned system will consist of a SAFER-compliant database and web-based interface. The CVIEW will provide for exchange of IRP and IFTA data with SAFER, while also acting as a repository for all commercial carrier and vehicle information. The data will be accessible to all North Dakota authorized users via a secure web-based query window functionality.		

Table 3-1 - Description of Major North Dakota CVO Systems

Diagram Reference	System Description		
9	TraCS – TraCS is a third-party software application with interfaces to multiple data systems. A TraCS interface is being developed for transmission of crash data to the NDHP SAFETYNET system.		
10	The previous VRTS was changed in 2016 to STARS and incorporated with the DL system. Now it will be changed to the LEGEND system.		
11	Motor Carrier System (MCS) – NDDOT system in which the IRP, IFTA and UCR credentialing services are combined into a single Oracle/J2EE web-based application. Also included in this system is the interface to the IFTA and IRP Clearinghouses.		
12	Web Site – The state web-site has links to both NDDOT and NDHP home pages which provide web-enabled carrier access to credentialing services. NDDOT provides IFTA and IRP credentialing and NDHP provides E-Permitting through the site.		
13	Credit Card Provider – North Dakota's current credit card provider is VeriSign.		
14	Bank of North Dakota – The Bank of North Dakota provides clearance for all credit card transactions and processes net proceeds from the IRP and IFTA Clearinghouses. (IFTA netting commenced January, 2010.)		
15	HPCMS roadside client captures citation information, to be transferred to HPCMS.		

The following table provides a discussion of the planned system-to-system interactions and is annotated to relate directly to the System Diagram.

Project	Diagram	Description	
Name	Reference		
		NDCVIEW downloads the following data from SAFER.	
		 IFTA License Data (Other Jurisdictions) 	
		IRP Account (Other Jurisdictions)	
		IRP Fleet (Other Jurisdictions)	
		 IRP Registration (Cab Card, Other Jurisdictions) 	
		Vehicle Inspection Summary	
	٨	 MCMIS Safety & Census 	
	A	Licensing & Insurance	
		NDCVIEW uploads the following data to SAFER.	
		IFTA License Data	
		IRP Account	
		• IRP Fleet	
M		IRP Registration (Cab Card)	
/IE		Vehicle Inspection Reports	
5	В	NDCVIEW accesses CDLIS for driver CDL snapshots upon request	
ota		from authorized users.	
ako	C	Future: E-Permitting system provides permit information to	
0		NDCVIEW (new, updates) via web-services. Permit information is	
ŧ		available through secure web-based queries to NDC VIE w.	
N	D	and IETA license information to NDCVIEW, notantially via web	
		and IF IA license information to NDCVIEW, potentially via web-	
		Future: North Dakota intrastate registration and title information is	
		provided to NDCVIEW.	
	-		
E Note: North Dakota currently has no legislative authority t		Note: North Dakota currently has no legislative authority to require	
		intrastate carriers to obtain a USDOT number. This will be addressed prior to introducing intrastate information into	
		NDCVIEW.	
	F	Enforcement personnel utilize secure, web-based queries to NDCVIEW query windows for carrier and vehicle information and Pass/Fail screens. CVIEW returns a pass/fail indicator with vehicle and carrier information to the Check Station Network.	
	*		
	G		

Table 3-2 Planned System-to-System Flows

Network Diagram

The network diagram graphically describes key network elements and system components directly related the Core ITD projects. The section following is a discussion of the system components and is directly related to the network diagram.



Description of Network Interfaces

The following table describes key network interfaces. All diagram references relate to the Network diagram.

Table 3-3 Network Diagram Descriptions

Ref.	Description of Network Interface
1	Connection from Motor Carrier System to provide IRP and IFTA transmittal files to the IRP and IFTA Clearinghouses using web services via a SSL encrypted Internet session.
2	Connection between motor carriers and service providers accessing MCS system (UCR, IRP, IFTA) services and E-Permitting through a secure web-based application sign-on via a SSL encrypted Internet session.
3	Bank of North Dakota clears MCS credit card transactions settles using Electronic Funds Transfer (EFT).
4	Other North Dakota emergency agencies use Managed File Transfer (MFT) to send the crash data into the central TraCS server from their cars. Those agencies can also collect and process crash data from TraCS system via MFT.
5	TraCS transmits electronic citation information via MFT to the North Dakota court system.
6	Convictions are transmitted via MFT to the LEGEND system.
7	LEGEND system provides driver information to CDLIS and operating authority information to L&I through AAMVAnet TCP/IP frame relay connection.
8	Planned connection from TraCS to NDHP for SAFETYNET.
9	Aspen inspections are uploaded to SAFETYNET through SSL encrypted Internet sessions.
10	SAFETYNET uploads completed crash and inspection information to SAFER and accesses MCMIS via VPN.
11	Planned connection between MCS and CVIEW for the exchange of IRP and IFTA information in XML format via webservices.
12	Planned connection between CVIEW and the E-Screening interface for real-time by- pass decisions via web-services.
13	Planned connection between CVIEW and SAFER for the exchange of IRP and IFTA data via persistent VPN.
14	Bank of North Dakota transfers net amounts to NDDOT via EFT.
15	Connection between LEGEND and MCS for financial transfers.
16	Connection between LEGEND and NMVTIS providing title information via AAMVAnet TCP/IP frame relay connection.

Ref.	Description of Network Interface
17	Web-based connection through SENTRI / NEWS for accessing carrier information and transferring New Entrant Safety Audit results. ⁶
18	Connection between HPCMS client and ARIES for the transfer of citations via secure ftp.
19	Connection between ARIES to Courts system to transfer citations.
20	Planned connection between LEGEND and E-Permitting to permit the exchange of intrastate registration, titling and permit information to CVIEW.
21	Connection to PrePass / Drivewyze E-Screening system for mainline E-Screening signaling (By-Pass / Pull-In).
22	TraCS sends data to LEGEND for reporting crash information against the driver records.

Compatibility with ITD Architecture

The North Dakota Core ITD projects are designed to be compatible with ITD Architecture requirements defined in the Innovative Technology Deployment (ITD) Architecture.⁷

In addition, the projects are designed to comply with the following:

ITD Core Compliance Monitoring Plan⁸ ITS CVO COACH Checklists, Part 1⁹ SAFER Interface Certification Procedures¹⁰

Compatibility with National ITS Architecture

North Dakota Core ITD are consistent with the National ITS Reference Architecture.¹¹ The following table of hyper-linked information displays the applicable market packages, equipment packages and subsystems from within the National ITS Architecture which apply to each project:

⁶ SENTRI / NEWS deployment covers only New Entrant Safety Audits.

⁷ Innovative Technology Deployment (ITD) Architecture, VOLPE center, ITS CVO, Version 6.0, December 2019, accessed through the ITD website, available from https://portal.fmcsa.dot.gov/

⁸ ITD Core Compliance Monitoring Plan, Version 3; accessed through the ITD website, available from https://portal.fmcsa.dot.gov/

⁹ Commercial Vehicle Information Systems and Networks Operational and Architectural Compatibility Handbook (COACH) - Part 1 - Operational Concept and Top-Level Design Checklists, NSTD-08-487 V9.0, March 2019, accessed through the ITD website, available from https://portal.fmcsa.dot.gov/

¹⁰ SAFER Interface Certification Procedures, Version 3, January 2018; accessed through the ITD website, available from https://portal.fmcsa.dot.gov/

¹¹ Architecture Reference for Cooperative and Intelligent Transportation, Version 9.0; available from www.arc-it.net

PROJECT North Dakota CVIEW			
Service Package	Functionality Object	Subsystem	
CV Administrative Processes	<u>CVAC Credentials and</u> <u>Taxes Administration</u>	Commercial Vehicle	
	<u>CVAC Information</u> <u>Exchange</u>	Administration Center	
<u>Roadside CVO Safety</u>	CVAC Information Exchange	<u>Commercial Vehicle</u> <u>Administration Center</u>	
	<u>CVAC Safety and Security</u> <u>Administration</u>		

Table 3-4 North Dakota CVIEW

Compatibility with Other Systems

In order to insure compatibility between systems, these projects will also comply with the following:

Manual on Traffic Control Devices¹² NTCIP Object Definitions for Transportation Sensor Systems (TSS)¹³ North Dakota Information Technology Contract Guideline¹⁴ North Dakota Information Technology Procurement¹⁵ North Dakota Project Management for Information Technology Standard¹⁶ North Dakota Large Project Oversight Guidance Document¹⁷ North Dakota Statewide ITS Architecture¹⁸

¹² Manual on Traffic Control Devices, 2009 Edition, May 2012, USDOT; available from www mutcd.fhwa.dot.gov
¹³ National Transportation Communications for ITS Protocol, Object Definitions for Transportation Sensor Systems

⁽TSS), NTCIP 1209, Version v02, May2014; available from www.ntcip.org/file/2018/11/NTCIP1209v0218jp.pdf ¹⁴ North Dakota IT Contract Guideline; available from www.ndit.nd.gov/standards/information-technology-contract-guideline

¹⁵ North Dakota IT Procurement Standard; available from www ndit nd.gov/standards/POL0020208

¹⁶ North Dakota Project Management for IT Standard; available from www.ndit.nd.gov/standards/POL0020207

¹⁷ North Dakota Large Project Oversight Guidance Document; available from www ndit nd.gov/services/projectmanagement/project-management-oversight

¹⁸ North Dakota Statewide ITS Architecture, Version 3.0, October 2013, available from regional.atacenter.org/northdakota/downloads/NDReportUpdate.pdf

3.2 Description of System Components

Provided in the following table is a brief description of the key system components involved in North Dakota ITD. Note that the Diagram Reference column refers back to the Network Diagram is Section 3.1.

Network	Diagram Reference	Description	Platform	Interface Protocol(s)	Network Environment
North Dakota Department of Transportation	MCS Motor Carrier System	Web-based motor carrier services system including IRP, IFTA and UCR components.	WebSphere server / J2EE / Oracle database	Flat File, XML Web Services	ND WAN NDDOT LAN Internet
	STARS (Future LEGEND)	Registration and titling system, Non-Commercial and commercial driver licensing system.	FAST (Vendor System), SQL Server database	MFT, File Transfers, Web Services	ND WAN VPN
	TraCS	Electronic Crash Reporting System	Vendor System, SQL database	MFT, Web Services	ND WAN NDDOT LAN Internet
	CVIEW	SAFER-compliant data repository for IRP, IFTA, FMCSA census, safety and other data motor carrier and commercial vehicle data.	TBD	XML, Web- Services Flat File	ND WAN NDDOT LAN Internet
North Dakota Highway Patrol	E-Permitting	Electronic permitting system including web- based application and payment.	Struts 1 framework w/ Oracle DB	Secure FTP or HTTPS (depending on the data transfer mechanism)	ND Lan via VPN

Network	Diagram Reference	Description	Platform	Interface Protocol(s)	Network Environment
	SAFETYNET	FMCSA field system for processing commercial vehicle inspections and crashes.	Windows server 2016	XML AFF	ND WAN NDHP LAN with VPN AAMVAnet
	Aspen	Roadside, laptop- based system for capturing commercial vehicle inspections.	Windows 10	Secure FTP	ND WAN VPN
	E-Screening	Web-based interface to CVIEW for screening decision support.	TBD	Web Services	ND WAN NDHP LAN Internet
	SENTRI/NEWS	Client-server based system for capturing New Entrant Safety Audit information.	Windows	Secure FTP	ND WAN NDHP LAN VPN
	ARIES	NDHP case management system for case administration functions and roadside client to capture citations.	Spring MVC Java w/ Oracle DB	Secure FTP or HTTPS	NDDOT LAN VPN
Other North Dakota Systems	Court	North Dakota court system for case management and adjudication.	Unknown	XML Secure FTP	ND WAN

Network	Diagram Reference	Description	Platform	Interface Protocol(s)	Network Environment
	Law Enforcement Agencies	Non-NDHP law enforcement agencies providing crash information from their local jurisdictions.	Vendor System, SQL database	Secure ftp, Web Services	ND WAN NDDOT LAN Internet
		Financial systems used to clear ND			

	Law Enforcement Agencies	enforcement agencies providing crash information from their local jurisdictions.	Vendor System, SQL database	Secure ftp, Web Services	ND WAN NDDOT LAN Internet
	Bank of North Dakota	Financial systems used to clear ND credit card transactions and net proceeds from IRP and IFTA clearinghouses	Unknown	EFT Secure FTP	VPN Internet
Other Non-State Entities	Carrier & Service Providers	Private and proprietary system utilized by carriers and service providers.	Unknown	Web Services	Internet
	PrePass	Proprietary electronic screening system administered by ACS, Inc. on behalf of the Heavy Vehicle Electronic License Plate, Inc.	Vendor System	Secure ftp, Web Services	VPN Internet
	Drivewyze	Proprietary electronic screening system administered by Drivewyze, Inc.	Vendor System	Secure ftp, Web Services	Unknown

3.3 Project Design Elements



The following table indicates high-level system changes required to deploy the North Dakota ITD projects described in this plan. There will be no new ICD identified for the project.

Project Name	System	Description of Modifications Required	No Change	Change (S,M,L)	Buy	Build
North Dakota CVIEW	CVIEW	New system including CVIEW database, data exchange services, system interfaces, web-based querying and reporting.	-	L	\checkmark	ĩ
	SAFER/ PRISM	Exchange of carrier safety, census and licensing information. Exchange of registration and fuel taxation information.	\checkmark	-	1	
	CDLIS	Utilize Query Central web services to make CDL information request.	\checkmark	÷	-	1
	E- Permitting	Develop web-services based interface to send all current permit information to CVIEW, making the information available to CVIEW users.	\checkmark	-	1	i.
	Motor Carrier System	Develop web-services based interface to send all IRP account, fleet, vehicle registration and IFTA license update information.	\checkmark			
	STARS (Future: LEGEND)	Develop interface (flat file or XML) from the STARS to CVIEW. Data would include intrastate ¹⁹ carrier and vehicle information.	\checkmark	-	-	Ĩ
	E- Screening	Develop interface to provide updated E-Screening data sets utilizing web-services.	\checkmark	-	-	Ĩ
	Enforce- ment Laptops	Utilize Internet browser-based querying and reporting connections to CVIEW for pass/fail queries and ad-hoc reporting.	\checkmark	-	П	

¹⁹ North Dakota currently does not require intrastate carriers to obtain USDOT numbers. This will be addressed prior to designing and developing the interface.

3.4 System Testing

All testing activities and documents will be structured to comply with the ITS CVO COACH-Part 1 Checklists.²⁰ The following briefly describes the high-level testing strategy for the project. Specific test plans and pass/fail criteria will be developed for each system.

North Dakota CVIEW

- ✓ System Tests
 - Certify CVIEW for uploads and downloads with SAFER
 - Test baseline and update procedures. (Record counts for baseline procedures to validate the number of records created.)
 - Test timing of extract or web-service to ensure that update procedures are executed as scheduled.
 - Test data validation routines and log file creation.
 - Test service functions including the scheduler to ensure that processes kick-off as scheduled, including pre and post processing executables, if applicable.
 - Execute web-site security tests.
- ✓ Interoperability Tests
 - End-to-End testing of all source data using data sets to validate data mapping and conformity to web-service specification.
 - End-to-End testing of all transaction types, including add, change and delete.
 - Trace data to SAFER and verify error-free transaction set processing. (T0020, T0021 and T0022 upload, T0026, T0027 and T0028 download.)
 - Trace data from E-Permitting and STARS, if applicable.
 - Test failure modes for system interfaces such as communication failure and data validation failure.
 - Test E-Screening data set creation. (Data update and validation.)
- ✓ Operational Tests
 - Test scripts to check the validity and timeliness of vehicle and carrier data at the roadside through CVIEW query windows.
 - Test scripts to test all PRISM checks to ensure proper Pass / Fail decisions at the roadside.
 - Check transaction processing logs, verify automated operation and success / failure logging.
 - Examine SAFER transaction logs to verify success.
 - Run series of ad-hoc reports to verify reporting functionality and report scheduler.
 - Verify automated e-mail functions for processing notification and PRISM OOSO.

²⁰ Commercial Vehicle Information Systems and Networks Operational and Architectural Compatibility Handbook (COACH) - Part 1 - Operational Concept and Top-Level Design Checklists, NSTD-08-487 V9.0, March 2019, accessed through the ITD website, available from https://portal.fmcsa.dot.gov/