



Intelligent Transportation Systems Joint
Program Office (ITS JPO)

**Full-Scale Security Credential
Management System (SCMS) Deployment
Support Project Summary**

August 28, 2018

Agenda

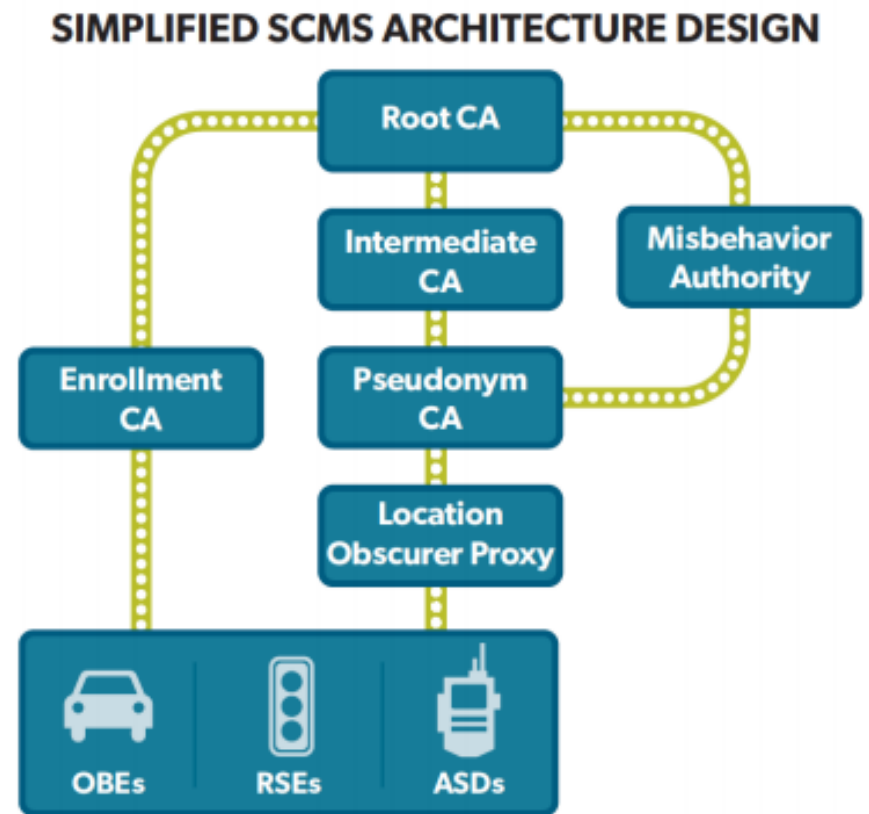
- High-level Overview of the SCMS
- Full-Scale SCMS Deployment Support Project Goals
- Overall Project Approach
- Need for a Full-Scale SCMS Model
- Importance of Deployment and Implementation Planning
- High-level Elements of a Full-Scale SCMS
- Range of Ownership and Governance Models
- Potential SCMS Manager Purpose and Responsibilities
- Stakeholder Groupings
- SCMS Deployment Workshops
- Ownership and Governance Considerations
 - Public Interest Objectives
 - Design and Deployment Attributes



High-level Overview of the SCMS

The SCMS provides the security infrastructure to issue and manage the security certificates that form the basis of trust for Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication

- Connected vehicle devices enroll into the SCMS, obtain security certificates from Certificate Authorities (CAs), and attach those certificates to their messages as part of a digital signature
- The SCMS system and processes provide a high level of confidence that the device is a trusted actor in the system, while also maintaining privacy



Full-Scale SCMS Deployment Support Project Goals

Work with a diverse population of V2X stakeholders to conduct an analysis and develop a strategy, with next steps, to drive key elements of a full-scale SCMS deployment

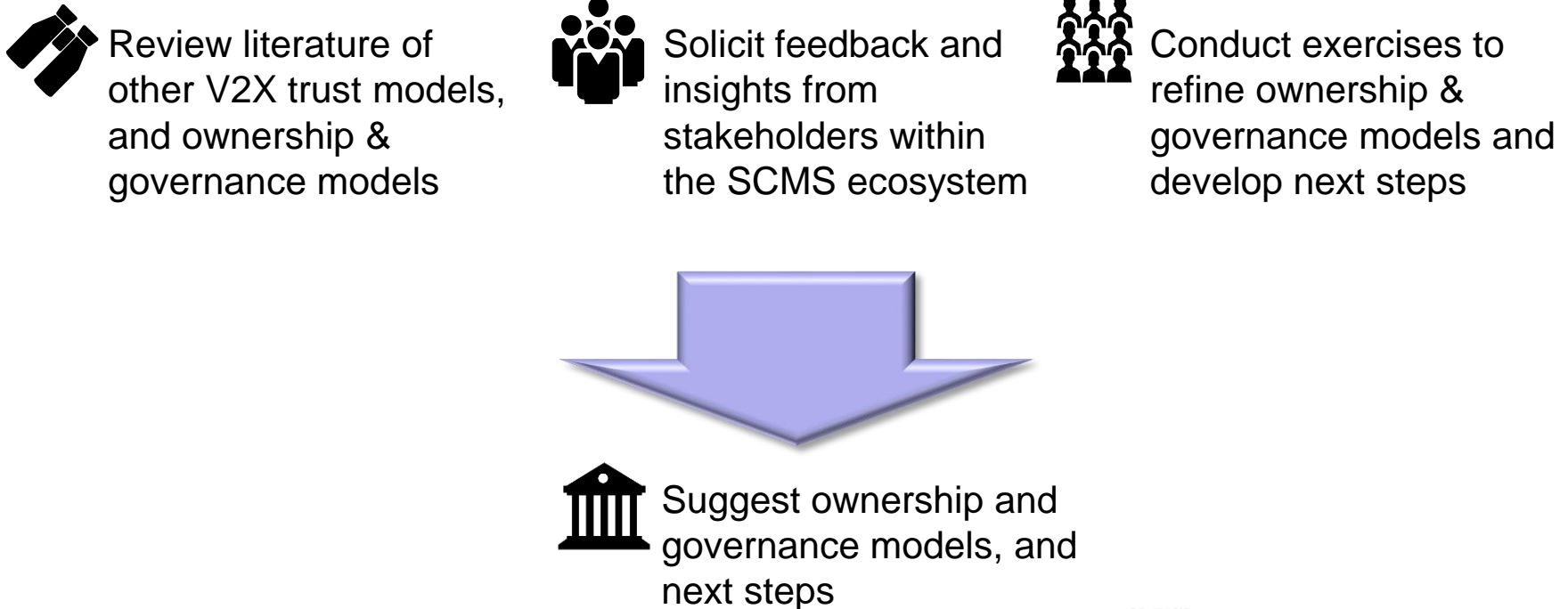
- Establishment of an overall SCMS Manager (or similar system management entity), along with functions, roles, and responsibilities for managing on-going operations and executing any functions deemed to be “inherently central” and/or “core”
- Establishment of an SCMS Governance Board (or similar oversight entity, such as a Board of Directors), along with functions, roles, and responsibilities
- Establishment of management entities that will be part of the larger SCMS delivery system (and whose authority is dependent on and linked to the SCMS Manager)
- High-level policies and procedures that affect the integrity and efficiency of the system and define and guide interactions among the various entities that make up the SCMS Manager
- Roles and responsibilities of other entities that are not directly part of the SCMS but who may play a supportive, authorization, administrative, or other indirect role (such as the Federal Government, State Governments, and industry associations)
- Business and financial plans for initial stand-up and sustainable operations



Overall Project Approach

The Full-Scale SCMS Deployment Support project is intended to help identify and explore potential strategies for the establishment and governance of a broad SCMS ecosystem through stakeholder guidance and a feasibility assessment of these strategies

Ideally, outcomes will consist of next steps and milestones to implement the favored strategy or strategies



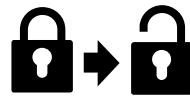
Why do we need a Full-Scale SCMS Model?

A full-scale SCMS is imperative to securing all types of communications for the V2X ecosystem

- To deploy and oversee the multifaceted SCMS, there must be a model or models to ensure effective governance and continued operations
- Without effective ownership and governance:



The SCMS could organically grow into a non-sustainable system with **varying levels of security and device enrollment** not meeting standard requirements



A lack of enforcement for policies and processes could create **varying security, privacy, and device standards across components**. This may result in **interoperability concerns, lack of confidence, and exploitable vulnerabilities**



There could be **inconsistent funding streams** that could lead to issues in availability and inconsistent services



Importance of Deployment and Implementation Planning

Along with the ownership and governance model(s), a strategy for deployment and implementation of that model must be developed

Depending on the selected model, an implementation plan would contain differing activities and milestones



Establish the National SCMS Implementation Workgroup



Roles and Responsibilities Framework



Communications Plan



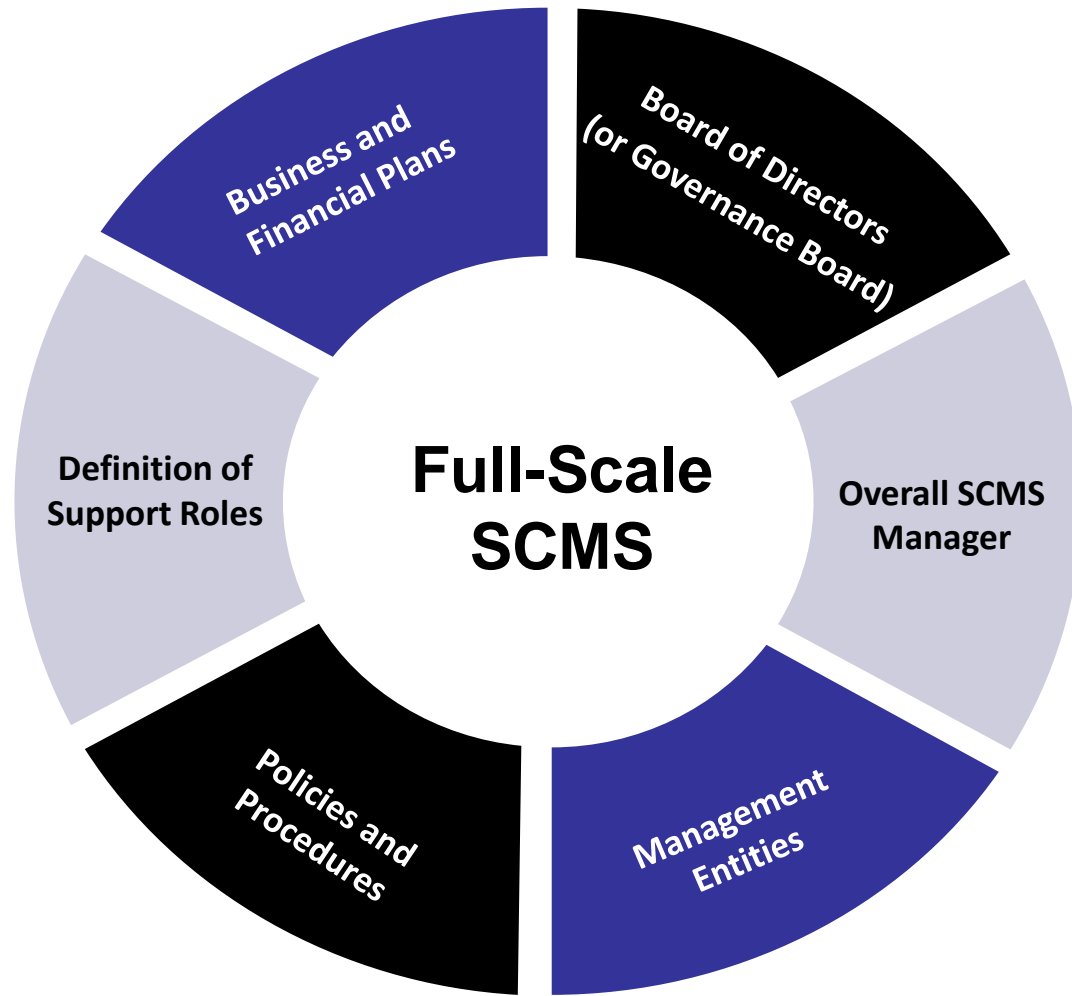
Project Plan and Timeline



Evaluation and Feedback Plan



Elements of a Full-Scale SCMS



Range of Ownership and Governance Models

There are many potential SCMS Manager and broader SCMS ecosystem ownership and governance models based on the desired (and potentially necessary) public and private involvement. These models may evolve over time

- Based on factors such as the objectives of the organization, government mandates, market need, etc.
- Model must balance fulfillment of public interest objectives with considerations such as cost, deployment schedule, risk, and desired government authority

Increasingly Private

Public Model

Government controls by establishing new office to serve as SCMS Manager

Government-led P3

Government office leads creation of public-private team

P3 Concession

Government facilitates and governs. SCMS Manager is run as a concession

Industry-led P3

Government is on the board for facilitation and oversight, and financially assists only with initiation

Private Model

Government is only a stakeholder. Industry forms a consortium and funds development

Increasingly Public

Examples



U.S. Department of Transportation
ITS Joint Program Office

Potential SCMS Manager Purpose and Responsibilities

The SCMS Manager is likely a centralized body responsible for setting certain standards and policies, and providing guidance and oversight to promote consistency and adherence to needed standards and practices throughout the V2X certificate management industry

- Develop industry-wide policies and standards that assure interoperability of technology and maintain security and privacy in Certificate Management Entity (CME) operations
- Set performance requirements for all V2X industry participants
- Enforce compliance with requirements, standards, and policies throughout the SCMS
- Assure open, informative, and consistent dissemination of information to all stakeholders
- Set rules and guidelines about ownership and operations of the CMEs, and how those owners/operators will interact with private companies that are part of the V2X industry



Stakeholder Groupings

SCMS IMPLEMENTERS INCLUDE:

-  PKI Security Services
-  Certification Services
-  OEMs
-  USDOT
-  Communications Service Providers

SCMS USERS INCLUDE:

-  Vehicle Owner/
Operators
-  Dealers and
Installers
-  Service and Parts
Facilities
-  CV Equipment
and Application
Suppliers
-  OEMs
-  State and
Local DOTs
-  Public Infrastructure
System Integrators

SCMS OTHER INTERESTED PARTIES INCLUDE:

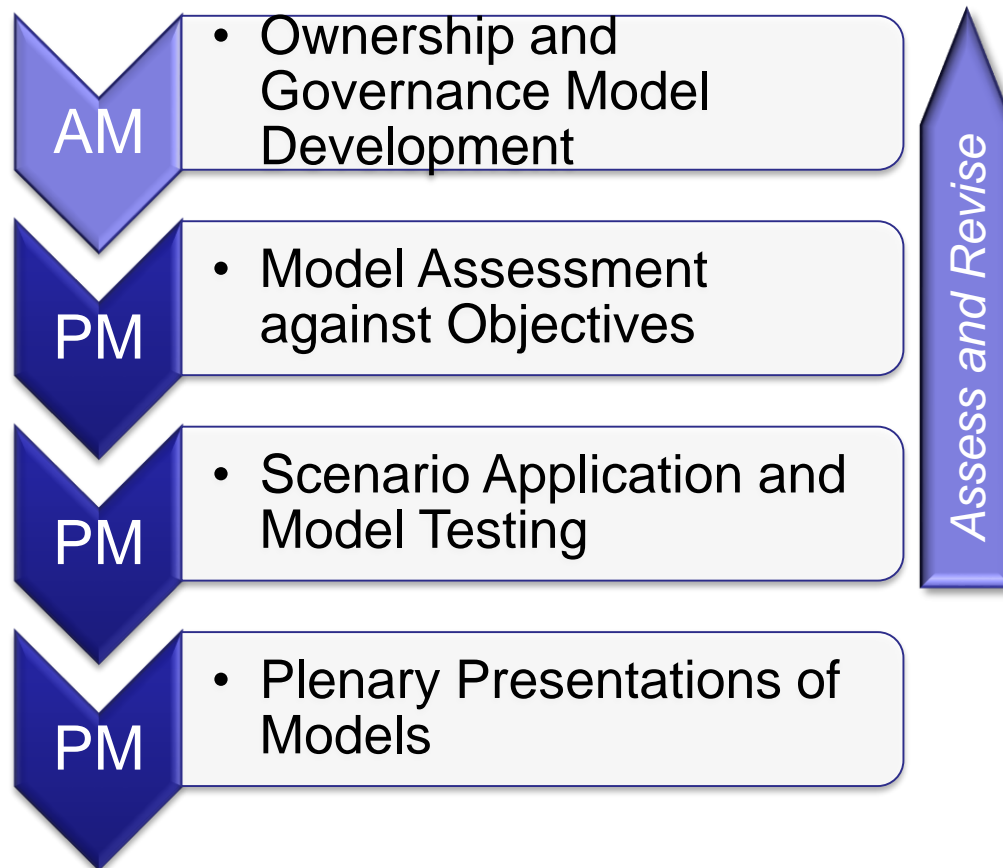
-  USDOT
-  Academia
-  Standards
Organizations
-  Advocacy Groups



Day 1: Heterogeneous groups build models

Methods: Three activities conducted in breakouts with end-of-day brief-outs

Participation: Five breakout groups representing multiple stakeholder types



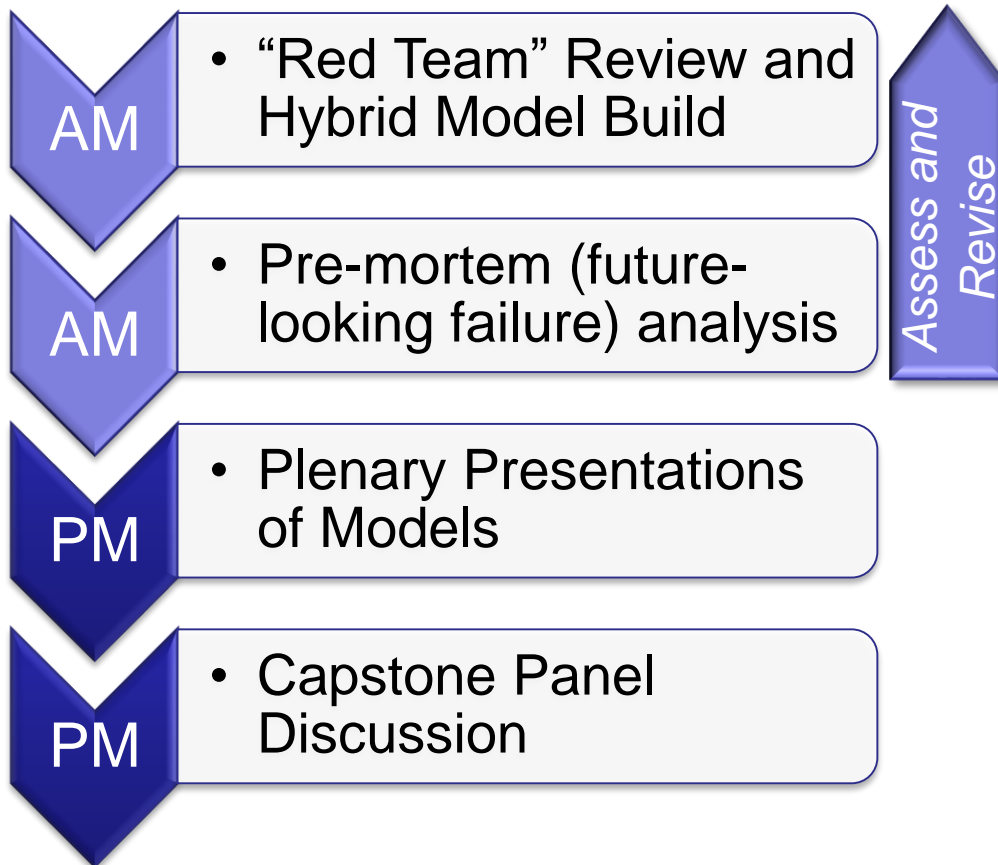
		Breakout Groups				
		#1	#2	#3	#4	#5
Stakeholder Groups	OEMs					
	PKI Service Providers					
	Equipment Suppliers					
	Infrastructure Orgs.					
	Trade & Other					



Day 2: Homogeneous groups refine models

Methods: *Two activities conducted in breakouts with brief-outs and end-of-day panel discussion*

Participation: *Five breakout groups, each one representing a stakeholder constituency*









SCMS Model Ownership and Governance Attributes

The project team developed 12 design and deployment attributes that we believe are critical in developing an initial SCMS ownership and governance model

SCMS Structure Attributes

-  Initial Ownership
-  Initial Funding
-  SCMS Manager Sustainment Funding
-  Technical Component Sustainment Funding
-  Competition
-  Legislation/Regulation

SCMS Manager Roles and Responsibilities Attributes

-  Initial Policy Development
-  Recurring Policy Development and Approval
-  Oversight and Auditing
-  Misbehavior Authority Management
-  End Entity Certification
-  Trust Anchor Management

Public Interest Objectives

Secure Communications – Privacy – Availability – Affordability – Performance – Stakeholder Representation

Example Model Development Activity Attribute Sheet



SCMS MANAGER SUSTAINMENT FUNDING

The SCMS Manager will need a stable sustainment funding source. While a government owned and operated SCMS Manager would likely be funded by an agency's departmental budget, an industry-led SCMS Manager may have multiple funding mechanisms. The SCMS Manager will need to consider what stakeholders are directly burdened by the mechanisms and whether the fees are based on ownership or usage.

MAJOR CONSIDERATIONS

- The group directly burdened with the sustainment cost
- The organization controlling fund collection and distribution
- One-time fee based on ownership vs. recurring fee based on usage or services

DETAILED OPTIONS

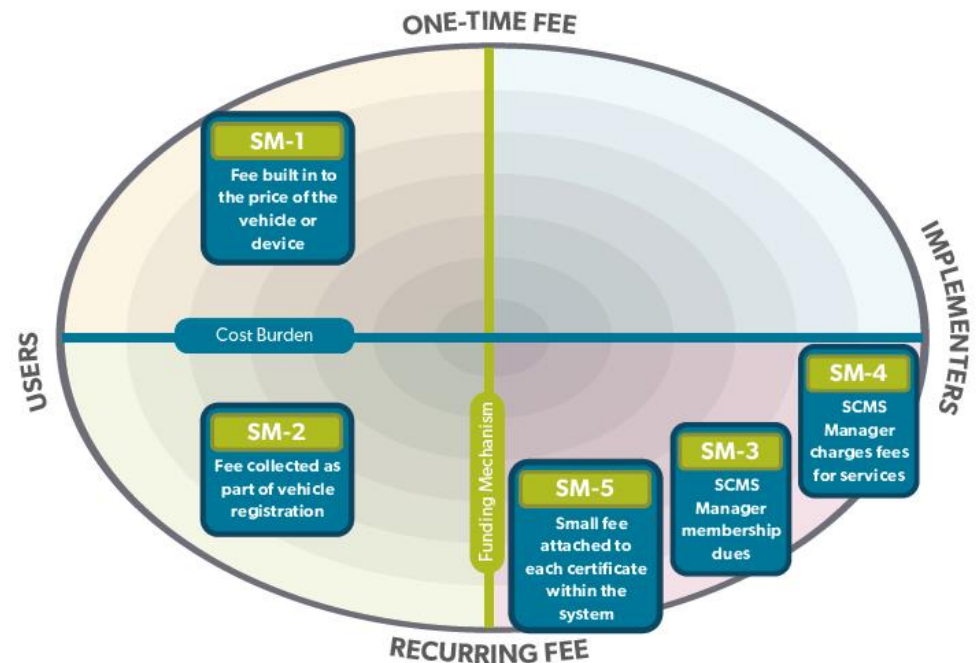
SM-1 — A fee built into the price of the vehicle or other end entity. A portion of this fee is automatically allocated to the SCMS Manager.

SM-2 — A fee is collected as part of the state vehicle registration process and automatically allocated to the SCMS Manager.

SM-3 — The SCMS Manager creates a tiered membership structure with annual dues (e.g., separate dues for technical component operators and SCMS member organizations).

SM-4 — The SCMS Manager charges accreditation, auditing, and/or other services fees.

SM-5 — A miniscule fee is attached to each certificate distributed to an end entity within the ecosystem, which is paid to the SCMS Manager.



SELECT AN OPTION OR CREATE YOUR OWN

YOUR PREFERENCE(S)

NOTES

Example: SCMS Manager Sustainment Funding

Overview: The SCMS Manager will need a stable sustainment funding source. While a government owned and operated SCMS Manager would likely be funded by an agency's departmental budget, an industry-led SCMS Manager may have multiple funding mechanisms. The SCMS Manager will need to consider what stakeholders are burdened by the mechanisms and whether the fees are based on ownership or usage.

Major Considerations:

- The group directly burdened with the sustainment cost
- The organization controlling fund collection and distribution
- One-time fee based on ownership vs. recurring fee based on usage or services

Detailed Options (Select an option, multiple options, and/or create your own):

- **Fee built in to the price of the vehicle or device.** A fee built into the price of the vehicle or other end entity. A portion of this fee is automatically allocated to the SCMS Manager.
- **Fee collected as part of vehicle registration.** A fee is collected as part of the state vehicle registration process and automatically allocated to the SCMS Manager.
- **SCMS Manager membership dues.** The SCMS Manager creates a tiered membership structure with annual dues (e.g., separate dues for technical component operators and SCMS member organizations).
- **SCMS Manager charges fees for services.** The SCMS Manager charges accreditation, auditing, and/or other services fees.
- **Small fee attached to each certificate within the system.** A miniscule fee is attached to each certificate distributed to an EE within the ecosystem, which is paid to the Manager.

Questions?

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