



**Research & Vehicle Technology**  
**“Infotainment Systems Product Development”**

**Feature – Sentinel**

**Infotainment Subsystem Part Specific  
Specification (SPSS)**

Version 1.0

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## Revision History

Date	Ver	Notes	
Jan. XX, 20XX	1.0	Initial Release	

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# 1 Overview

The purpose of this document is to describe the feature function requirements for “Sentinel” Feature. This document describes the usage of the Sentinel Feature in the vehicle from different actor’s perspective.

Sentinel feature is a connected intelligent system offering security services to the users against theft and intrusion inside the truck bed, cargo area and surrounding the vehicle particularly for commercial vehicle customers

Sentinel feature is an integrated security system that enables the user to

- Detect intruders using AJAR sensors (or any sensor in the combined sensor module), Perimeter sensors, as well as accelerometer sensor
- Send a notification to the user about the detected intrusion,
- Start recording the video feed from the vehicle cameras locally on the vehicle and on the cloud,
- Enable streaming directly to a subscription app on the customer’s mobile device.

The requirements on the functionality are described either as use cases or as conventional functional decomposition. This document only defines the functionality on an abstract level, focusing on what the system SHALL perform, not detailing how.  
Model Year: MY23 and beyond  
Region: TBD



## 2 Architectural Design

### 2.1 STNL-CLD-REQ-407661/A-Sentinel Interface Client

The Sentinel Interface Client (SentInterfaceClient) is responsible for the tasks listed below:

- Receiving data and status from Server
- Receives Input and sends Request to the server

Please review the implementation guide/block diagram to locate the SentInterfaceClient class.

#### Acceptance Criteria

### 2.2 STNL-CLD-REQ-407662/A-Sentinel Interface Server

The Sentinel Interface Server (SentInterfaceServer) is responsible for the tasks listed below:

- Monitoring and handling active function and data.
- Receive Request from the Client
- Transmitting data and status to SentInterfaceClient

Please review the implementation guide/block diagram to locate the SentInterfaceServer class.

#### Acceptance Criteria

### 2.3 Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the Sentinel feature can be mapped into physical modules. This mapping is an example only and does not necessarily carryover to other carlines or vehicle architectures.

Logical Class	Physical Module (ECU)
SentInterfaceServer	ECG
SentInterfaceClient	Sync(USB-VRP),Mobile devices,APP

### 2.4 Logical Signal Mapping

The CAN signals mentioned throughout this document shall refer to the CAN signal's logical name. The logical names shall be mapped to their actual CAN signal names. Please use the table below to perform the mapping. The InfoCAN database file is the master file for the actual CAN signal names. Note: There may be cases where the actual CAN signal name is used in this documentation.

Logical Name	CAN Signal Name
IgnitionStatus_St	Ignition_Status

### 2.5 Sentinel InterfaceClient Interface

#### 2.5.1 STNL-IIR-REQ-407663/A-Sentinel InterfaceClient\_Rx

The VSP interface client shall receive the following signals for the feature to work as needed.

#### Acceptance Criteria

##### 2.5.1.1 MD-REQ-407664/A-SentinelMode\_St

Message Type: Status

This Method is used to indicate the Sentinel Mode status.



Name	Literals	Value	Description
Mode	-	-	
	NoDataExist	0x0	NoDataExist is used to indicate that the module which keeps Sentinel function is currently not able to provide a valid status e.g. during startup while booting. As soon as the application is able to provide a valid status the parameter "Mode" shall change the status from "NoDataExist" to any valid value.
	Off	0x1	Off is used to indicate that the Sentinel function is set to off.
	On	0x2	On is used to indicate that the Sentinel function is set to on.

**Acceptance Criteria****2.5.1.2 MD-REQ-407665/A-IgnitionStatus\_St**

Message Type: Status

Signal used to indicate ignition state.

Name	Literals	Value	Description
Type	-	-	Indicates ignition state
	Unknown	0x0	
	Off	0x1	
	Accessory	0x2	
	Run	0x4	
	Start	0x8	
	Invalid	0xF	

**Acceptance Criteria****2.5.2 STNL-IIR-REQ-407666/A-Sentinel InterfaceClient\_Tx**

The system shall transmit the following messages

**Acceptance Criteria****2.5.2.1 MD-REQ-407667/A-SetSentinelMode\_Rq**

Message Type: Request

This method is used to request the change of the Sentinel Mode setting

Name	Literals	Value	Description
Mode	-	-	
	Inactive	0x0	



	Off	0x1	Off is used to indicate that the Sentinel function is set to off.
	On	0x2	On is used to indicate that the Sentinel function is set to on.

**Acceptance Criteria****2.5.2.2 MD-REQ-423058/A-USBDevice\_St**

Message Type: Status

This method is used to transmit the USBDevice status information.

Name	Literals	Value	Description
Availability	-	-	
	NULL	0x0	
	NotAvailable	0x1	NotAvailable is used to indicate that no USB device is connected to any USB port.
	Available	0x2	Available is used to indicate that a USB device is connected to any USB port.
DeviceCapacity	-	-	
	NULL	0x0	
	Capacity	0x0001 – 0xFFFF	Capacity is used to indicate the maximum data size of the connected USB device
FreeSpace	Memory	0x0000 – 0xFFFF	Memory is used to indicate the free memory size of the connected USB device.

**Acceptance Criteria**



### 3 General Requirements

#### 3.1 STNL-REQ-407657/A-Powermode Condition

The SentInterfaceClient and Server shall only allow the functionality defined by this SPSS when the Ignition\_Status =OFF

##### Acceptance Criteria

#### 3.2 STNL-REQ-407658/A-Feature Configuration

The SentinelInterfaceServer shall have a configurable parameter to determine whether the vehicle supports this Feature. This Configuration parameter shall be set by the Diagnostics DID programmed at the End of line.

##### Acceptance Criteria

#### 3.3 STNL-REQ-407659/A-Missing Message Strategy

The Connection between the ECG and the other depending modules shall determine the communication Failure which intern shall detect the failure in the Function

##### Acceptance Criteria

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## 4 Functional Definition

### 4.1 STNL-FUN-REQ-407744/A-Sentinel Subscription/Enable/Settings

#### Acceptance Criteria

#### 4.1.1 Use Cases

##### 4.1.1.1 STNL-UC-REQ-414989/A-Sentinel Enable

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Ignitions is switched ON Multimedia System is ON Sentinel feature is disabled
<b>Scenario Description</b>	The user enters the Sentinel settings menu and changes the current setting from disabled to enabled via << HMI Input >>
<b>Post-conditions</b>	The Sentinel setting is changed to enabled. The user will be informed via <<HMI Output>>.
<b>List of Exception Use Cases</b>	E1: Sentinel is enabled from Ford Pass App – If the user enables the Sentinel setting from the Ford Pass App then the setting shall be changed to enabled and the user will be informed via <<HMI output>>. Post-Condition: Sentinel Feature is enabled.  E2: Sentinel subscription is not available – If the Sentinel subscription is not available then the setting shall not be changed to enabled and the user shall be informed via <<HMI Output>>. Post-Condition: Sentinel Feature is disabled.
<b>Interfaces</b>	G-HMI

##### 4.1.1.2 STNL-UC-REQ-407745/A-Sentinel Disable

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Ignitions is switched ON. Multimedia System is ON. Sentinel feature is enabled.
<b>Scenario Description</b>	The User enters the Sentinel settings menu and changes the current setting from enabled to disabled via << HMI Input >>
<b>Post-conditions</b>	The Sentinel setting is changed to disabled. The user will be informed via <<HMI Output>>.
<b>List of Exception Use Cases</b>	E1: Sentinel is disabled from Ford Pass App – If the user disables the Sentinel setting from the Ford Pass App then the setting shall be changed to disabled and the user will be informed via <<HMI output>>. Post-Condition: Sentinel Feature is disabled.  E2: Sentinel subscription is not available – If the Sentinel subscription is not available then the setting shall automatically be disabled, and the user shall be informed via <<HMI Output>>. Post-Condition: Sentinel Feature is disabled.
<b>Interfaces</b>	G-HMI

**4.1.1.3 STNL-UC-REQ-407746/A-Subscription**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Powermode Conditions are met SentInterfaceClient is ON SentInterfaceServer is ON
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	CAN

**4.1.2 Requirements****4.1.2.1 STNL-REQ-407747/A-Sentinel Enable****Acceptance Criteria****4.1.2.2 STNL-REQ-407748/A-Subscription****Acceptance Criteria****4.1.2.3 REQ-407749/A-\*****Acceptance Criteria****4.1.2.4 REQ-407750/A-\*****Acceptance Criteria****4.1.2.5 REQ-407751/A-\*****Acceptance Criteria**

**4.1.3 White Box View****4.1.3.1 Activity Diagrams****4.1.3.1.1 STNL-ACT-REQ-407752/A-\*****Activity Diagram****4.1.3.2 Sequence Diagrams****4.1.3.2.1 STNL-SD-REQ-407753/A-\*****Constraints****Pre-Condition****Scenarios****Normal Usage****Post-Condition****Sequence Diagram****4.2 STNL-FUN-REQ-407668/A-Video Record****Acceptance Criteria****4.2.1 Use Cases****4.2.1.1 STNL-UC-REQ-407669/A-Record- USB**

<b>Actors</b>	
<b>Pre-conditions</b>	
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	

**4.2.1.2 STNL-UC-REQ-407670/A-Pause Record-USB**

<b>Actors</b>	
<b>Pre-conditions</b>	
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	

**4.2.1.3 STNL-UC-REQ-407671/A-Resume Record-USB**

<b>Actors</b>	
<b>Pre-conditions</b>	Powermode Conditions are met InterfaceClient is ON
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	

**4.2.1.4 STNL-UC-REQ-407672/A-Stop Record-USB**

<b>Actors</b>	
<b>Pre-conditions</b>	Powermode Conditions are met InterfaceClient is ON
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	

**4.2.1.5 STNL-UC-REQ-407699/A-Meta Data Request Response**

<b>Actors</b>	
<b>Pre-conditions</b>	Powermode Conditions are met
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	CAN,

**4.2.2 Requirements****4.2.2.1 STNL-REQ-407677/A-Record**

The SentInterfaceServer shall receive the Record\_request API from the Client.  
The server shall send the request to the VRP Record Request Function via the api .  
The VRP function performs the record request as mentioned in the VRP-REQ-XXXXXX and sends back the status via the API.

**Acceptance Criteria**



#### 4.2.2.2 STNL-REQ-407680/A-Stop Record

##### Acceptance Criteria

#### 4.2.2.3 STNL-REQ-420565/A-Rewind/Fastforward

##### Acceptance Criteria

### 4.2.3 White Box View

#### 4.2.3.1 Activity Diagrams

##### 4.2.3.1.1 STNL-ACT-REQ-407685/A-\*

##### Activity Diagram

#### 4.2.3.2 Sequence Diagrams

##### 4.2.3.2.1 STNL-SD-REQ-407686/A-\*

##### Constraints

##### Pre-Condition

##### Scenarios

##### Normal Usage

##### Post-Condition

##### Sequence Diagram

### 4.3 STNL-FUN-REQ-422311/A-Video Playback

##### Acceptance Criteria

#### 4.3.1 Use Cases

##### 4.3.1.1 STNL-UC-REQ-407673/A-Start Playback

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Infotainment System is On. The user has entered the list of stored video files on the USB device.
<b>Scenario Description</b>	The user starts playing a recorded video file from the local storage device.
<b>Post-conditions</b>	The recorded video file is played back and visible to the user via <<HMI output>>.
<b>List of Exception Use Cases</b>	E1: A video file in pause state is active – If a video file is active in pause state then the video playback will be re-started. Post-Condition: The paused video file is played back and visible to the user via <<HMI output>>.
<b>Interfaces</b>	G-HMI; Audio;

##### 4.3.1.2 STNL-UC-REQ-407674/A-Pause Playback

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Infotainment System is On.



	Video playback of a stored video file is active.
Scenario Description	The user pauses the currently played video file via <<HMI Input>>.
Post-conditions	The currently played video file is paused. The user is informed via <<HMI Output>>.
List of Exception Use Cases	
Interfaces	G-HMI; Audio;

#### 4.3.1.3 STNL-UC-REQ-407676/A-Stop Playback

Actors	Sentinel User
Pre-conditions	Infotainment System is On. Video playback of a stored video file is active.
Scenario Description	The user stops the currently played video file via <<HMI Input>>.
Post-conditions	The currently played video file is stopped. The list of stored video files on the USB device is shown via <<HMI Output>>.
List of Exception Use Cases	
Interfaces	G-HMI; Audio;

#### 4.3.1.4 STNL-UC-REQ-407675/A-Resume Playback

Actors	
Pre-conditions	
Scenario Description	
Post-conditions	
List of Exception Use Cases	
Interfaces	

#### 4.3.1.5 STNL-UC-REQ-407690/A-Live Stream-Pause/Resume

Actors	
Pre-conditions	Powermode Conditions are met
Scenario Description	
Post-conditions	
List of Exception Use Cases	
Interfaces	CAN

**4.3.1.6 STNL-UC-REQ-407699/A-Meta Data Request Response**

<b>Actors</b>	
<b>Pre-conditions</b>	Powermode Conditions are met
<b>Scenario Description</b>	
<b>Post-conditions</b>	
<b>List of Exception Use Cases</b>	
<b>Interfaces</b>	CAN,

**4.3.2 Requirements****4.3.2.1 STNL-REQ-407681/A-Playback****Acceptance Criteria****4.3.2.2 STNL-REQ-407682/A-Pause Playback****Acceptance Criteria****4.3.2.3 STNL-REQ-407683/A-Resume Playback****Acceptance Criteria****4.3.2.4 STNL-REQ-407684/A-Stop Playback****Acceptance Criteria****4.3.2.5 STNL-REQ-420565/A-Rewind/Fastforward****Acceptance Criteria****4.3.3 White Box View****4.3.3.1 Activity Diagrams****4.3.3.1.1 STNL-ACT-REQ-422312/A-\*****Activity Diagram****4.3.3.2 Sequence Diagrams****4.3.3.2.1 STNL-SD-REQ-422313/A-\*****Constraints****Pre-Condition**



## Scenarios

Normal Usage

Post-Condition

## Sequence Diagram

## 4.4 STNL-FUN-REQ-407732/A-Local Storage

## Acceptance Criteria

## 4.4.1 Use Cases

## 4.4.1.1 STNL-UC-REQ-407733/A-USB Device Availability

Actors	Sentinel System
Pre-conditions	Infotainment System is On.
Scenario Description	The SentinelClient checks for USB device availability and informs the SentinelServer about the availability.
Post-conditions	USB availability status information is transmitted to SentinelServer.
List of Exception Use Cases	
Interfaces	USB, Ethernet

## 4.4.2 Requirements

4.4.2.1 STNL-REQ-407737/A-Check for Storage Device and Memory Status

## Acceptance Criteria

4.4.2.2 STNL-REQ-407738/A-Estimated Memory and Estimated Memory Reached

## Acceptance Criteria

4.4.2.3 STNL-REQ-407739/A-Create New File /Folder

## Acceptance Criteria

4.4.2.4 STNL-REQ-407740/A-File List

## Acceptance Criteria

4.4.2.5 STNL-REQ-407741/A-Memory Storage

## Acceptance Criteria





#### 4.4.3 White Box View

##### 4.4.3.1 Activity Diagrams

###### 4.4.3.1.1 STNL-ACT-REQ-407742/A-\*

###### Activity Diagram

##### 4.4.3.2 Sequence Diagrams

###### 4.4.3.2.1 STNL-SD-REQ-407743/A-\*

###### Constraints

Pre-Condition

###### Scenarios

Normal Usage

Post-Condition

###### Sequence Diagram

#### 4.5 STNL-FUN-REQ-407754/A-Data Control

##### Acceptance Criteria

##### 4.5.1 Use Cases

###### 4.5.1.1 STNL-UC-REQ-407736/A-Browse recorded video files list

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Ignitions is switched ON. Multimedia System is ON.
<b>Scenario Description</b>	The user enters the list of recorded video files on the USB device for browsing.
<b>Post-conditions</b>	The list of recorded video files is shown on the car HMI.
<b>List of Exception Use Cases</b>	E1: Only unsupported files in the selection – If there are only unsupported files in the selection the user is notified via <<HMI Output>>.  E2: Selection is empty - If there is no file in the selection the user is notified via <<HMI Output>>.
<b>Interfaces</b>	USB, Ethernet

###### 4.5.1.2 UC-REQ-422320/A-Delete file from recorded video files list

<b>Actors</b>	Sentinel User
<b>Pre-conditions</b>	Ignitions is switched ON. Multimedia System is ON. The user has entered the list of stored video files on the USB device.
<b>Scenario Description</b>	The selects to delete a video file from the list of recorded video files on the USB device.
<b>Post-conditions</b>	The selected video files is deleted from the list of recorded video files on the USB device.



List of Exception Use Cases	
Interfaces	USB, Ethernet

## 4.5.2 Requirements

### 4.5.2.1 STNL-REQ-407758/A-\*

#### Acceptance Criteria

### 4.5.2.2 STNL-REQ-407759/A-\*

#### Acceptance Criteria

### 4.5.2.3 STNL-REQ-407760/A-\*

#### Acceptance Criteria

### 4.5.2.4 STNL-REQ-407761/A-\*

#### Acceptance Criteria

### 4.5.2.5 STNL-REQ-407762/A-\*

#### Acceptance Criteria

## 4.5.3 White Box View

### 4.5.3.1 Activity Diagrams

#### 4.5.3.1.1 STNL-ACT-REQ-407763/A-\*

Activity Diagram

### 4.5.3.2 Sequence Diagrams

#### 4.5.3.2.1 STNL-SD-REQ-407764/A-\*

#### Constraints

##### Pre-Condition

#### Scenarios

##### Normal Usage

##### Post-Condition

#### Sequence Diagram



## 5 Appendix: Reference Documents

Reference #	Document Title
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