Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Evasive Steering Assist Control

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.0
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Version Date: May 4, 2020

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
May 4, 2020	1.0	Initial Release	

Table of Contents

1 Architectural Design

1.1 ESA-CLD-REQ-386517/A-ESAC Server

The Evasive Steering Assist Controller(ESAC) Server is responsible for the tasks listed below

- Receive command from the ESAC Client to Enable or Disable Evasive Steering Assist.
- Send status of the Evasive Steering Assist controller status to ESAC Client.

1.2 ESA-CLD-REQ-386518/A-ESAC Client

The Evasive Steering Assist Controller(ESAC) Client is responsible for the tasks listed below:

- Receive command from the user display to Enable or Disable Evasive Steering Assist.
- Request ESAC Server to Enable or Disable the Evasive Steering Assist and receive the status from ESAC Server and update the user display.
- Support Diagnostics configuration to Enable or Disable the ESAC configuration through Vehicle End of Line (EOL).

1.3 Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the Evasive Steering Assist Control feature may be mapped into physical modules. This mapping example is specific to the FNV2 architecture and does not necessarily carryover to other carlines or vehicle architectures.

Logical Class	Physical Module (ECU)
ESAC Server	EPAS
ESAC Client	SYNC 4.2 CCPU

1.4 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.

Logical Name	CAN Signal Name
Vehicle_Ignition_St	Ignition_Status
Evasive_Steering_Control_St	EsaOn_B_Stat
Evasive_Steering_Control_Rq	EsaOn_B_Rq

Table: Logical name/CAN signal mapping

1.5 ESA-IIR-REQ-386519/A-Evasive Steering Assist Client_Rx

1.5.1 MD-REQ-386520/A-Vehicle_Ignition_St

Message Type: Status

This signal is used to indicate the processed value for current Ignition state.

Name	Literals	Value	Description
Type	-	-	Current Vehicle Ignition Status
	Unknown	0x0	
	Off	0x1	
	Accessory	0x2	

	Run	0x4	
	Start	0x8	
	Invalid	0xF	

1.5.2   MD-REQ-386521/A-Evasive_Steering_Control_St
Message Type: Status

The signal is used to indicate the Actual state for Emergency Steering Assist (ESA)

Name	Literals	Value	Description
Type	-	-	The status of ESA
	OFF	0x0	Turned OFF
	ON	0x1	Turned ON

1.6   ESA-IIR-REQ-386522/A-Evasive Steering Assist Client_Tx

1.6.1   MD-REQ-386523/A-Evasive_Steering_Control_Rq
Message Type: Request

The signal is used to request to Turn on/off the Emergency Steering Assist (ESA)

Name	Literals	Value	Description
Type	-	-	Request to Turn ON/OFF ESA
	OFF	0x0	Turned OFF
	ON	0x1	Turned ON

2 General Requirements

2.1 ESA-REQ-386526/A-Feature Configuration

The ESAC Client shall support to have a configurable parameter/DID to enable or disable the Evasive Steering Assist Controller (ESAC).

- When the ESAC is enabled through DID configuration, the user shall be presented with an option to enable or Disable the Evasive Steering Assist feature through ESAC Client.
- When the ESAC is Disabled through DID configuration, the Evasive Steering Assist feature shall be disabled by the ESAC Client. And the user **shall not** have an option to view the feature and change the settings.

Refer to the Infotainment Diagnostic Specification for the details of DID.

2.2 ESA-REQ-386527/A-Feature Availability

The ESAC Client shall allow the user to select the Evasive Steering Assist feature through user display only when

- Vehicle Ignition status is RUN (or)
- Vehicle Ignition status is Start.

2.3 ESA-REQ-386528/A-ESAC Client Wait Time for Response

The ESAC Client shall wait for the ESAC Server module to respond for any of the request placed by it. The wait time on the ESAC Client shall follow applicable Ford design standards and best practices (ex. 5 sec). In case no response from the ESAC Server module the ESAC client shall remain in the last known state.

2.4 ESA-REQ-386529/A-ESAC Client HMI content references

The references to HMI screen layouts and other related HMI content are for reference only and not intended to depict the actual text, graphical, or layout content. Refer to the released HMI specifications for further detail on this type of content.

2.5 ESA-REQ-386684/A-ESAC Client system Accuracy

Within 100ms of receiving the data result or signal state change from the vehicle network, the ESAC Client shall be able to update the display with appropriate status or graphics.

3 Functional Definition

3.1 ESA-FUN-REQ-386525/A-Evasive Steering Assist Controller Operation

3.1.1 Requirements

3.1.1.1 *ESA-REQ-386784/A-ESAC Client Initialization*

The ESAC Client shall set below signals to default whenever the ESAC Client receives 'Vehicle_Ignition_St' with a state transition from 'Off/Accessory' to 'RUN/Start'.

- When the Evasive Steering Assist feature is enabled through Diagnostics, the default state of the signal shall be set as 'Evasive_Steering_Control_Rq = ON' (0x1).

- When the Evasive Steering Assist feature is **disabled** through Diagnostics, the default state of the signal shall be set as 'Evasive_Steering_Control_Rq = OFF' (0x0).

3.1.1.2 *ESA-REQ-386785/A-Evasive Steering Assist feature user Selection*

When the ESAC feature is enabled through DID configuration, the ESAC Client shall allow the user to toggle the Evasive Steering Assist feature through user display. The ESAC Client shall make use of 'Evasive_Steering_Control_Rq' signal to request the ESAC Server to toggle the feature state.

3.1.1.3 *ESA-REQ-386838/A-Evasive Steering Assist Status notified by ESAC Server*

The ESAC Server is the control master of the Evasive Steering Assist feature, the ESAC Client shall receive the status of the Evasive Steering Assist feature from the ESAC Server on 'Evasive_Steering_Control_St' signal. The ESAC Client shall update its internal state and update the user display with appropriate graphics.

3.1.1.4 *ESA-REQ-386843/A-ESAC feature disabled through Diagnostic DID*

When the ESAC feature is disabled through diagnostics DID configuration, the ESAC Client shall ignore the status of the Evasive Steering Assist from the ESAC Server on the 'Evasive_Steering_Control_St' signal. ESAC Client shall disable the Evasive Steering Assist feature in the user display.

3.1.2 Use Cases

3.1.2.1 **ESA-UC-REQ-386530/A-Evasive Steering Assist Toggled by User**

Actors	ESAC User
Pre-conditions	1. Evasive Steering Assist feature is enabled through Diagnostic DID configuration in ESAC Client. 2. Vehicle Ignition status is RUN or Start.
Scenario Description	1. User toggles the Evasive Steering Assist feature through User Display.
Post-conditions	1. The Evasive Steering Assist feature state toggles in the user display.
List of Exception Use Cases	1. No Response from the ESAC Server for the request from the ESAC Client.
Interfaces	ESAC Server, ESAC Client

3.1.2.2 **ESA-UC-REQ-386848/A-Evasive Steering Assist is not Operational by User**

| Actors	ESAC User

Pre-conditions	1. Evasive Steering Assist feature is Disabled through Diagnostic DID configuration in ESAC Client. 2. Vehicle Ignition status is RUN or Start.
Scenario Description	1. User tries to toggle the Evasive Steering Assist feature through User Display.
Post-conditions	1. The Evasive Steering Assist feature shall not be operational through user display. 2. The status of the Evasive Steering Feature shall be Turned Off.
List of Exception Use Cases	
Interfaces	ESAC Server, ESAC Client

3.1.3 White Box View
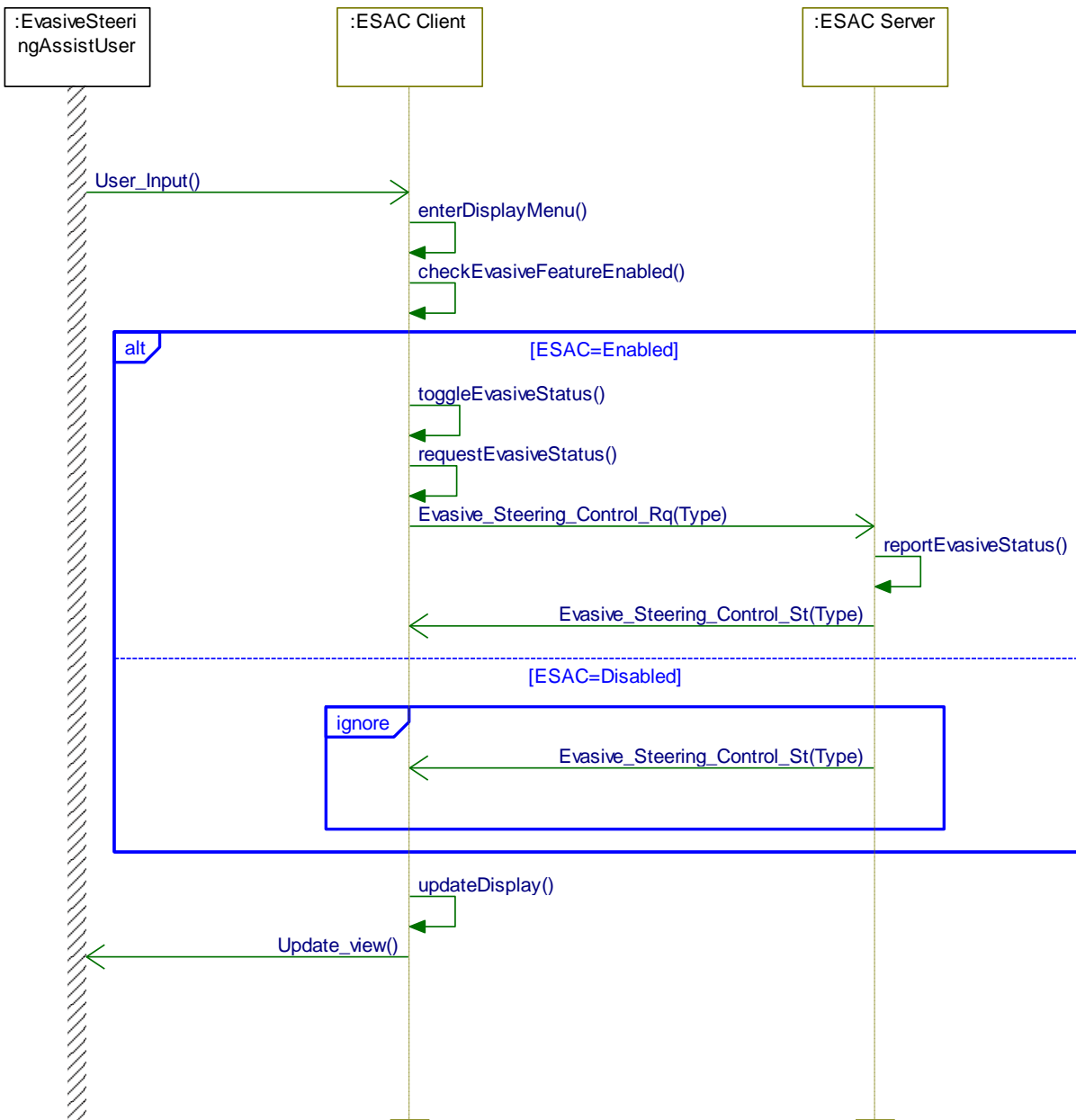
3.1.3.1 Activity Diagrams

3.1.3.1.1 ESA-ACT-REQ-386531/A-EvasiveSteeringAssist Toggling_AD
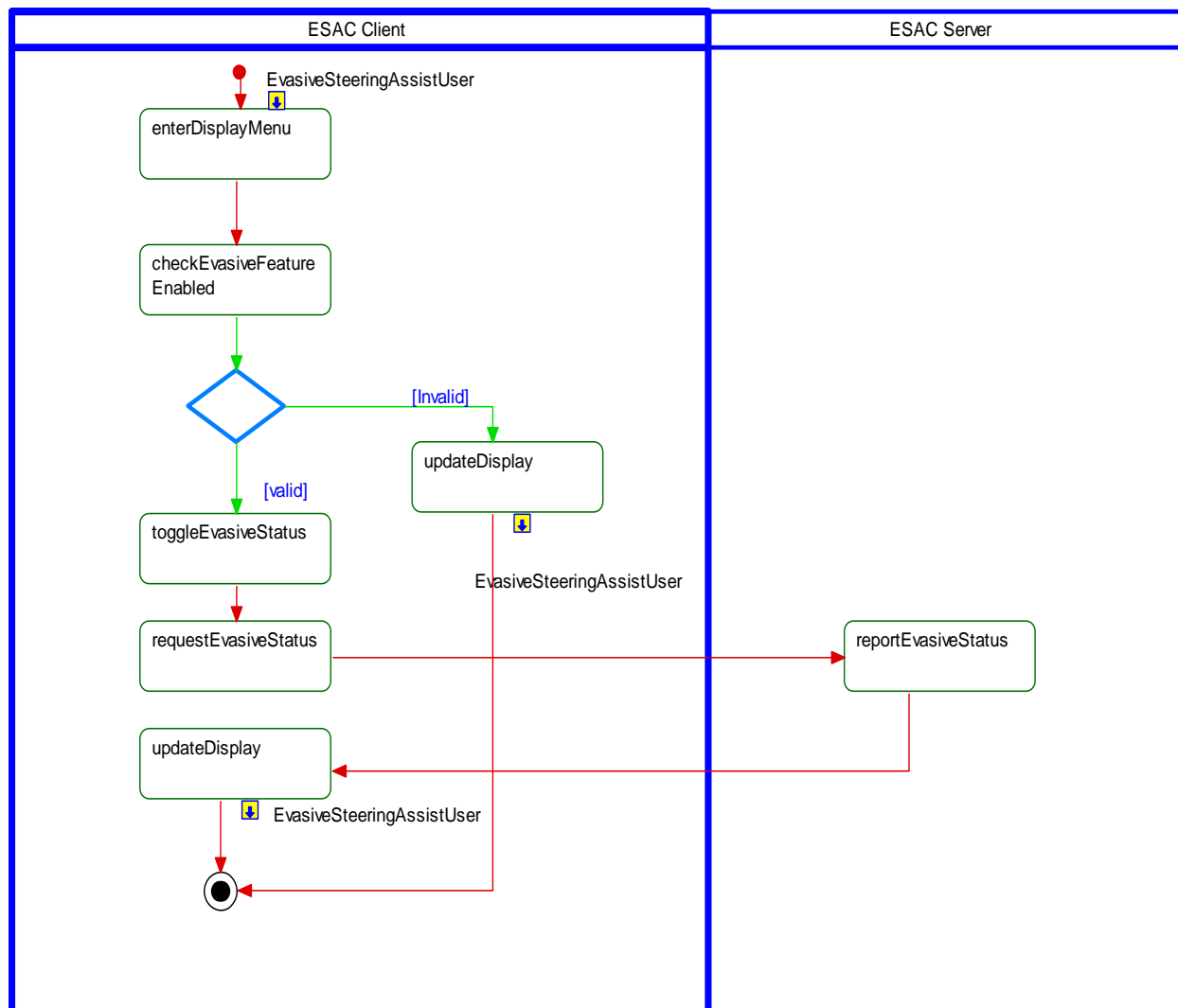
3.1.3.2   Sequence Diagrams

3.1.3.2.1   ESA-SD-REQ-386532/A-EvasiveSteeringAssist Toggling_SD

4 Appendix: Reference Documents

Reference #	Document Title
1	Evasive Steering Assist Control Function - CGEA1.3
2	Infotainment Diagnostics Specification
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