Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Cross Traffic Alert

APIM Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.2
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Version Date: March 11, 2016

FORD CONFIDENTIAL

<u>Revision History</u>

Date	Version		Notes
October 5, 2015	**1.0**	**Initial Release**	
October 26, 2015	**1.1**	**Updated Release**	
	CTA-REQ-198035/A-Missing Signal		tmertiri: Added Signal missing time due to Europe team request by email.
March 11, 2016	**1.2**	**Updated Release**	
	STR-296334/B-Overview		tmertiri- added text clarification for display timing

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1 Architectural Design

1.1 Overview

Cross Traffic Alert (CTA) is a feature that provides user assistance while the vehicle is in Reverse gear. Input signals for this feature are from side mounted radar sensors. The signal is periodic. Upon receiving a message indicating that the sensors have detected an incoming vehicle. Sync shall display an icon indicating from which direction the obstruction is detected and display relevant icon (one side or both if applicable) for as long as the signals are being sent by the sensors.

1.2 CTA-CLD-REQ-195204/A-CTA Client

Responsibility: The CTA (Cross Traffic Alert) Client is responsible for displaying the sensor information to the vehicle user.

1.3 CTA-CLD-REQ-195205/A-CTA Server

Responsibility: The CTA (Cross Traffic Alert) Server is responsible for supplying sensor data to the display.

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. Note: some CAN signals referenced throughout this document may use the logical name while some may use the actual CAN signal name.

Logical Name	CAN Signal Name
CTAAlert_St(Left = Off, Right = On)	CtaAlrtRight_D_Stat
CTAAlert_St(Left = On, Right = Off)	CtaAlrtLeft_D_Stat

Table. Logical name/CAN signal mapping

1.5 CTA-IIR-REQ-195214/A-CrossTrafficAlertClient_Rx

1.5.1 MD-REQ-195213/A-CTAAlert_St

Message Type: Status

This signal is used to inform the CrossTrafficAlertClient the current state of the CTA signal.

Name	Literals	Value	Description
Left			
	Off	0x0	No vehicle detected.
	On	0x1	A vehicle is detected sideways.
Right			
	Off	0x0	No vehicle detected.
	On	0x1	A vehicle is detected sideways.

2 General Requirements

2.1 CTA-REQ-195286/A-Client notification

SOD sensors CTA feature generates the periodic signal to indicate whether or not there is any incoming vehicle on the left or right side. Upon detecting such signal, the client will display proper notification icon on the display depending on which side the incoming vehicle has been detected.

2.2 CTA-REQ-198035/A-Missing Signal

If CtaAlrtLeft_D_Stat or CtaAlrtRight_D_Stat is missing for more than a defined period of time, as specified in the Diagnostic Spec, the Cross Traffic Alert Client shall not display any CTA icons, regardless of their previous state.

3 Functional Definition

3.1 CTAv1-FUN-REQ-195228/A-CTA

3.1.1 Use Cases

3.1.1.1 CTA-UC-REQ-194519/A-Cross Traffic Alert Right and Left Activation

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.
Scenario Description	The driver activates the Cross Traffic Alert (CTA) by placing the vehicle in Reverse Gear. An incoming car is detected by the vehicle right & left sensors.
Post-conditions	The vehicle display shows the right and left side CTA Icon
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.1.1.2 CTA-UC-REQ-194520/A-Cross Traffic Alert No Activation

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.
Scenario Description	The driver activates the Cross Traffic Alert (CTA) by placing the vehicle in Reverse Gear. No incoming car is detected by the vehicle sensor
Post-conditions	The vehicle display does not lit any CTA Icon
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.1.1.3 CTA-UC-REQ-194518/A-Cross Traffic Alert Left Activation

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.
Scenario Description	The driver activates the Cross Traffic Alert (CTA) by placing the vehicle in Reverse Gear. An incoming car is detected by the vehicle left sensor.
Post-conditions	The vehicle display shows the left side CTA Icon
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.1.1.4 CTA-UC-REQ-194511/A-Cross Traffic Alert Right Activation

| Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.

Scenario Description	The driver activates the Cross Traffic Alert (CTA) by placing the vehicle in Reverse Gear. An incoming car is detected by the vehicle right sensor.
Post-conditions	The vehicle display shows the right side CTA Icon
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.1.2 White Box Views
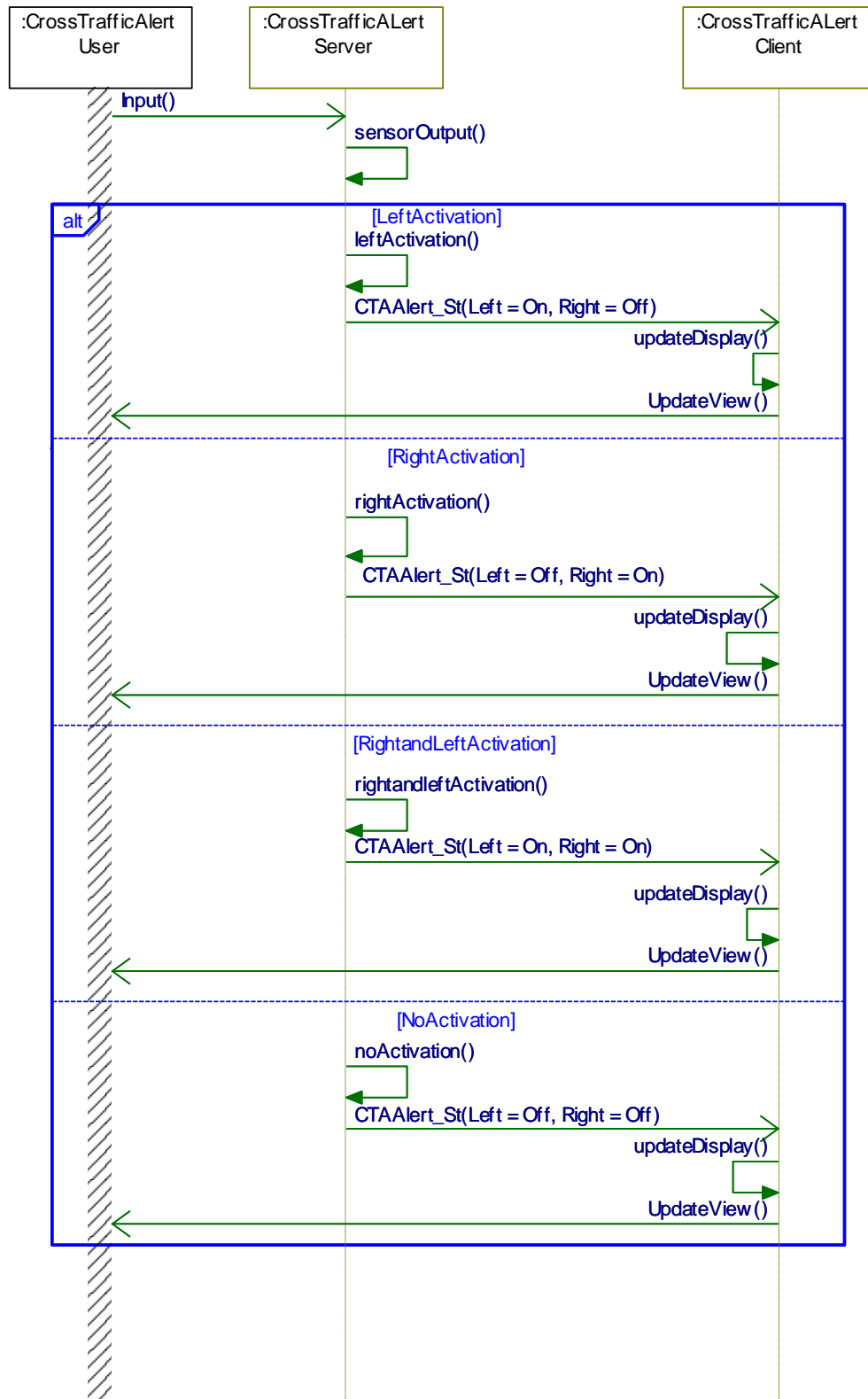
3.1.2.1 Activity Diagrams

3.1.2.1.1 CTA-ACT-REQ-194529/A-Cross Traffic Alert Activation
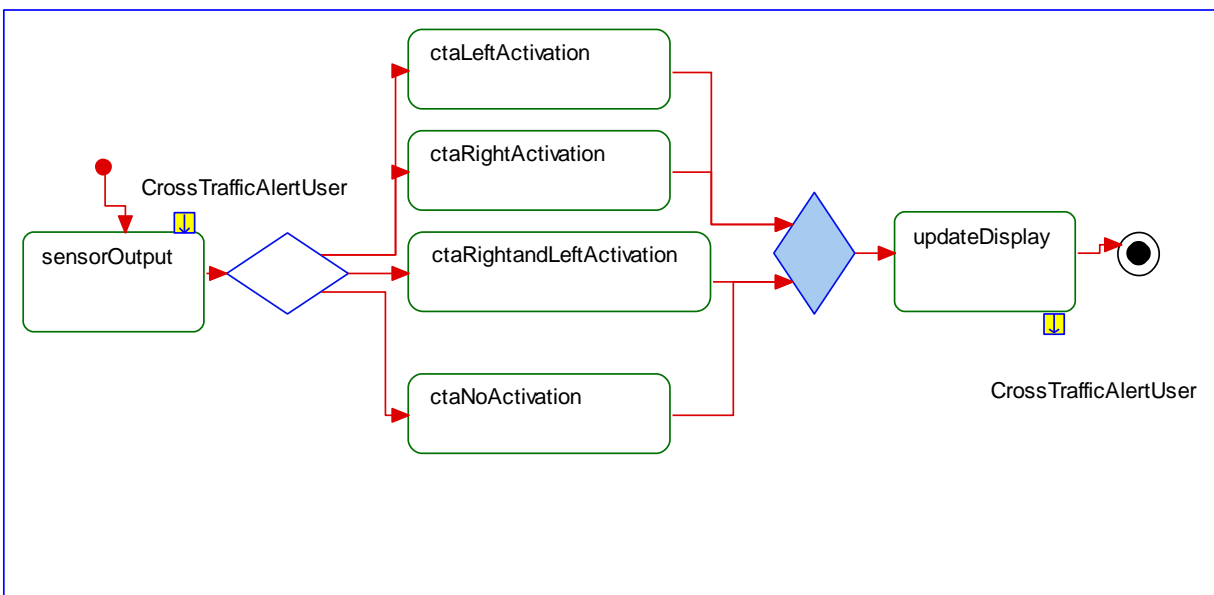
3.1.2.2   Sequence Diagrams

3.1.2.2.1   CTA-SD-REQ-194667/A-Cross Traffic Alert Activation

4 Appendix: Reference Documents

Reference #	Document Title
1	
2	
3	
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