

**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 CONFIDENTIALF**

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

**Table of Contents**

[Revision History 2](#_Toc445462786)

[1 Architectural Design 4](#_Toc445462787)

[1.1 Overview 4](#_Toc445462788)

[1.2 CTA-CLD-REQ-195204/A-CTA Client 4](#_Toc445462789)

[1.3 CTA-CLD-REQ-195205/A-CTA Server 4](#_Toc445462790)

[1.4 Logical Signal Mapping 4](#_Toc445462791)

[1.5 CTA-IIR-REQ-195214/A-CrossTrafficAlertClient\_Rx 4](#_Toc445462792)

[1.5.1 MD-REQ-195213/A-CTAAlert\_St 4](#_Toc445462793)

[2 General Requirements 5](#_Toc445462794)

[2.1 CTA-REQ-195286/A-Client notification 5](#_Toc445462795)

[2.2 CTA-REQ-198035/A-Missing Signal 5](#_Toc445462796)

[3 Functional Definition 6](#_Toc445462797)

[3.1 CTAv1-FUN-REQ-195228/A-CTA 6](#_Toc445462798)

[3.1.1 Use Cases 6](#_Toc445462799)

[3.1.2 White Box Views 7](#_Toc445462800)

[4 Appendix: Reference Documents 9](#_Toc445462801)

# Architectural Design

## 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.

## 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.

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

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

## 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

## CTA-IIR-REQ-195214/A-CrossTrafficAlertClient\_Rx

### 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. |
|  |  |  |  |

# General Requirements

## 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.

## 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.

# Functional Definition

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

### Use Cases

#### 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 |

#### 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 |

#### 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 |

#### 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 |

### White Box Views

#### Activity Diagrams

##### CTA-ACT-REQ-194529/A-Cross Traffic Alert Activation



#### Sequence Diagrams

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



# Appendix: Reference Documents

|  |  |
| --- | --- |
| Reference # | Document Title |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |