

**Research & Vehicle Technology**

**“Infotainment Systems Product Development”**

**Feature – Integrated Dash Cam**

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

Version 1.0

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**FORD CONFIDENTIALF**

**Revision History**

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# Overview

The Integrated Dash Camera feature allows the user to capture vehicle data and video from dash cam while driving and store the recorded data on removable on-board storage. The dash cam is mounted behind the vehicle windshield glass without the obstruction from interior components.

Based on user command, the camera captures video of the exterior environment of the car at all times while driving as long as the portable available memory allows room to store files. The recorded files are available for the user to play back on center stack display once the vehicle is in “Park” position.

The user is able to configure the recording experience via the center stack HMI (feature enable/disable and recording settings). In addition, the IDC system allows the user to select the vehicle metadata to be recorded alongside the video files. The metadata options (toggleable via settings) include GPS, vehicle speed, and pedal position. The Date/Time and VIN metadata items are always recorded with the video files for traceability purpose.

## Terminology and Abbreviations

The following table lists terminologies that are used in this document along with a brief description.

| **Term** | **Description** |
| --- | --- |
| APIM | Auxiliary Protocol Interface Module |
| ARM | Augmented Reality Module |
| CAN | Controller Area Network |
| ECG | Enhanced Central Gateway |
| FNV3 | Fully Networked Vehicle Architecture 2.0 |
| GPS | Global Positioning System |
| HMI | Human Machine Interface |
| IDC | Integrated Dash Camera |
| PDC | Phoenix Domain Controller |
| SoA | Service Oriented Architecture |

# Architectural Design

## IDCAM-CLD-REQ-408176/A-Integrated Dash Cam Interface Client

The Integrated Dash Cam Interface Client (IDCInterfaceClient) is responsible for providing HMI to the user.

## IDCAM-CLD-REQ-408177/A-Integrated Dash Cam Server

The Integrated Dash Cam Server (IDCServer) is responsible for sending different recording and playback requests based on the user’s input and receiving responses.

## IDCAM-CLD-REQ-414961/A-Integrated Dash Cam Video Recording Client

The Integrated Dash Cam Video Recording Client (IDCVideoRecordingClient) is responsible for processing video recording and playback requests.

## Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the Integrated Dash Cam feature may be mapped into physical modules. This mapping example is specific to the FNV3 architecture and does not necessarily carryover to other carlines or vehicle architectures.

|  |  |
| --- | --- |
| **Logical Class** | **Physical Module (ECU)** |
| IDCInterfaceClient | PDC |
| IDCServer | PDC |
| IDCVideoRecordingClient | PDC |

## 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** |
| FRCC\_St | VehImpactCode\_No2\_Actl |

## IDCServer Interface

### IDCAM-IIR-REQ-408178/A-IDCServer \_Rx

#### MD-REQ-422240/A-FRCC\_St

This CAN signal is used to receive FRCC severity value.

Refer to MD-REQ-385133 in First Notification of Loss SPSS for details.

#### MD-REQ-408179/A-StartRecording

This API is used to send recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-408180/A-PublishRecordingStatus

This API is used to receive recording status from IDCVideoRecordingClient.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-408182/A-StopRecording

This API is used to send stop recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-408183/A-ListRecordings

This API is used to send list recordings request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422233/A-StartPlayback

This API is used to send playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422234/A-PausePlayback

This API is used to send pause playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422235/A-ResumePlayback

This API is used to send resume playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422236/A-StopPlayback

This API is used to send stop playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422237/A-DeleteRecording

This API is used to send delete recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422238/A-MemoryConsumptionStatus

This API is used to send memory consumption status request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422239/A-ProtectRecording

This API is used to send protect recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

### IDCAM-IIR-REQ-408181/A-IDCServer \_Tx

#### MD-REQ-408179/A-StartRecording

This API is used to send recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-408182/A-StopRecording

This API is used to send stop recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-408183/A-ListRecordings

This API is used to send list recordings request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422233/A-StartPlayback

This API is used to send playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422234/A-PausePlayback

This API is used to send pause playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422235/A-ResumePlayback

This API is used to send resume playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422236/A-StopPlayback

This API is used to send stop playback request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422237/A-DeleteRecording

This API is used to send delete recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422238/A-MemoryConsumptionStatus

This API is used to send memory consumption status request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

#### MD-REQ-422239/A-ProtectRecording

This API is used to send protect recording request to IDCVideoRecordingClient. The IDCVideoRecordingClient also uses this API for its response.

Refer to MD-REQ-XXXXXX in Video Recording and Playback SPSS for details.

# General Requirements

## IDCAM-REQ-422196/A-Power Moding

The IDC feature shall only be capable of recording during IGN Run/Start.

## IDCAM-REQ-422197/A-Preconditions of Recording

The IDC feature shall only start recording when the feature status is set to Active during IGN Run/Start and memory device is available.

## IDCAM-REQ-422203/A-Store Files

The IDCServer shall request to store recorded video files to USB drives.

## IDCAM-REQ-422208/A-Setting Change when Recording is Active

If recording is already active and a setting change (Resolution, Loop Recording, Overlay Settings, etc.) occurs, IDCServer shall send StopRecordingRqst to IDCVideoRecordingClient to end the current recording and send StartRecordingRqst to IDCVideoRecordingClient to start a new recording with the new settings.

## IDCAM-REQ-422212/A-Naming of Recordings

The IDCServer shall request video recordings to be named in the following format: Date Time Dashcam. For example, “05212021 093215AM Dashcam”.

## IDCAM-REQ-422215/A-Store Settings

The IDCServer shall be capable of storing IDC settings.

# Functional Definition

## IDCAM-FUN-REQ-408184/A-First-time Setup

### Requirements

#### IDCAM-REQ-422220/A-First Time Setup

The IDC feature shall ask for permission for recording via an HMI popup when the user opens the IDC menu and selects to enable the feature for the first time. If popup is Denied, feature status will change to Disabled and popup will appear again on next instance of setting feature status to Enabled. If popup is Accepted, popup will not appear again for subsequent enabling/disabling of feature status.

### Use Cases

#### IDCAM-UC-REQ-422177/A-First-time Setup

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed |
| **Scenario Description** | User selects the IDC feature on the IDCInterfaceClient.  IDC menu shows up and user selects to enable the feature.  The feature asks for permission for recording via a popup.  User selects “Accept” and IDC landing page (displays options including “Enable/disable recording”, “Videos”, “Video Settings”, “Overlay Settings” and “Storage Device”) shows up. (Videos Settings and Overlay Settings might be combined into “Settings”, Videos list on the right side of the screen, Memory status on left bottom, TBD) |
| **Post-conditions** | IDC feature is ready to use.  Recording is enabled with default settings:  G-Sensor – High (TBD if user is able to set it)  Video Resolution – 1080p  Loop Recording – 5 minutes  Overlay GPS Logging – Yes  Overlay Vehicle Speed – Yes  Overlay Pedal Position – Yes |
| **List of Exception Use Cases** | User selects “Deny” when the feature asks for permission for recording. Feature status will change to Disabled and popup will appear again on next instance of setting feature status to Enabled. |
| **Interfaces** | HMI |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-408190/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-408191/A-PLACEHOLDER

## IDCAM-FUN-REQ-414964/A-Enable/Disable IDC

### Requirements

#### IDCAM-REQ-422195/A-Enable/Disable IDC

The IDCInterfaceClient shall provide HMI to the user to enable/disable the feature and update the status on the display.

### Use Cases

#### IDCAM-UC-REQ-422178/A-Enable/Disable IDC

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Infotainment system is on  Vehicle speed is less than threshold speed  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up. |
| **Scenario Description** | User selects “Enable/disable” option on the IDCInterfaceClient.  IDCServer sends request signal to IDCVideoRecordingClient and receives response. (VRP – ECG – AR should be out of scope of IDC, TBD)  Feature status (enable/disable) is updated on screen as toggle option on IDC landing page. |
| **Post-conditions** | User is able to see the enable/disable feature status on IDC landing page |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414965/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414966/A-PLACEHOLDER

## IDCAM-FUN-REQ-422222/A-Recording Status

### Requirements

#### IDCAM-REQ-422198/A-Recording Status Icon (Not in ConOps)

The IDCInterfaceClient shall provide a Recording Status icon to inform the driver of Recording Status (Recording, not recording) when the HMI is not on IDC page. TBD, the icon might be read-only

### Use Cases

#### IDCAM-UC-REQ-422179/A-Recording Status Icon

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed |
| **Scenario Description** | IDCVideoRecordingClient sends current recording status to IDCServer via PublishRecordingStatus.  IDCInterfaceClient displays recording status icon outside of the IDC menu which shows status separately for “not recording”, “missing USB”, “recording”, and “recording read-only”. (TBD, might only have “recording” and “not recording”) |
| **Post-conditions** | User is able to see recording status outside of the IDC menu. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-422223/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-422224/A-PLACEHOLDER

## IDCAM-FUN-REQ-414967/A-Video Settings

### Requirements

#### IDCAM-REQ-422204/A-Set G-Sensor (Not in ConOps)

The IDCInterfaceClient shall provide HMI to the user to set G-Sensor as “High” or “Low”. (May need to be removed so that the user is not be able to set this and only use the default value)

#### IDCAM-REQ-422205/A-Request Loop Recording

The IDCServer shall request the recording mode to be loop mode.

#### IDCAM-REQ-422206/A-Set Loop Recording Duration

The IDCInterfaceClient shall provide HMI to the user to set loop recording duration as 1 Min /3 Min / 5 Min.

#### IDCAM-REQ-422207/A-Set Video Resolution

The IDCInterfaceClient shall provide HMI to the user to set video resolution as 1080P or 720P.

### Use Cases

#### IDCAM-UC-REQ-422180/A-Video Settings – G-Sensor

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up. |
| **Scenario Description** | User selects “Video Settings” option.  User selects “G-Sensor” and “High/Low” options are displayed to the user.  User selects “High” or “Low”. (TBD, this use case might need to be removed if user is not able to set this) |
| **Post-conditions** | G-Sensor is set to be “High” or “Low”. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI |

#### IDCAM-UC-REQ-422181/A-Video Settings – Video Resolution

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up.  IDC is not currently recording |
| **Scenario Description** | User selects “Video Settings” option.  User selects “Video Resolution” and “1080P/720P” options are displayed to the user.  User selects “1080P” or “720P”. |
| **Post-conditions** | Video Resolution is set to be 1080P or 720P. |
| **List of Exception Use Cases** | If recording is already active and a setting change occurs, IDCServer will send StopRecordingRqst to IDCVideoRecordingClient to end the current recording and send StartRecordingRqst to IDCVideoRecordingClient to start a new recording with the new settings. |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422182/A-Video Settings – Loop Recording

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up.  IDC is not currently recording |
| **Scenario Description** | User selects “Video Settings” option.  User selects “Loop Recording” and “1 Min /3 Min / 5 Min” options are displayed to the user.  User selects “1 Min /3 Min / 5 Min”. |
| **Post-conditions** | Loop Recording is set to be 1 Min /3 Min / 5 Min. |
| **List of Exception Use Cases** | If recording is already active and a setting change occurs, IDCServer will send StopRecordingRqst to IDCVideoRecordingClient to end the current recording and send StartRecordingRqst to IDCVideoRecordingClient to start a new recording with the new settings. |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414968/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414969/A-PLACEHOLDER

## IDCAM-FUN-REQ-414970/A-Overlay Settings

### Requirements

#### IDCAM-REQ-422199/A-Record Metadata

The IDCServer shall request metadata to be to be recorded alongside the video.

#### IDCAM-REQ-422200/A-Mandatory Metadata

The IDCServer shall always request VIN and Date/Time to be recorded as metadata.

#### IDCAM-REQ-422201/A-Optional Metadata

The IDCInterfaceClient shall provide HMI to the user to turn ON/OFF the GPS Logging, Vehicle Speed and Pedal Position so that the data will be recorded or not recorded.

#### IDCAM-REQ-422202/A-Encrypt Metadata

The IDCServer shall always request metadata to be encrypted regardless of the status of the optional metadata settings.

### Use Cases

#### IDCAM-UC-REQ-422183/A-Overlay Settings

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is on  Memory device is available  Vehicle speed is less than threshold speed  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up.  IDC is not currently recording |
| **Scenario Description** | User selects “Overlay Settings” option.  The screen displays toggle buttons so that the user is able to turn ON/OFF the GPS Logging, Vehicle Speed and Pedal Position. |
| **Post-conditions** | GPS Logging / Vehicle Speed / Pedal Position will be displayed as an overlay on recorded videos if user selects to turn ON the toggle button. |
| **List of Exception Use Cases** | If recording is already active and a setting change occurs, IDCServer will send StopRecordingRqst to IDCVideoRecordingClient to end the current recording and send StartRecordingRqst to IDCVideoRecordingClient to start a new recording with the new settings. |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414971/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414972/A-PLACEHOLDER

## IDCAM-FUN-REQ-422225/A-Display Videos List

### Requirements

#### IDCAM-REQ-422217/A-Display the List of Recorded Files

The IDCInterfaceClient shall display the list of stored video files when IDC feature is selected. HMI TBD

### Use Cases

#### IDCAM-UC-REQ-422184/A-Display Videos List

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient, USB |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  Vehicle is in Park mode  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up. |
| **Scenario Description** | User selects “Videos” option.  IDCServer sends ListRecordingsRqst to IDCVideoRecordingClient.  IDCServer receives ListRecordingsResp.  IDCInterfaceClient displays list of recordings. |
| **Post-conditions** | User can review the list of recorded videos. |
| **List of Exception Use Cases** | E1: Memory is not available in the device. Video folder should either be inaccessible, or a popup appears stating no memory device detected. |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-422226/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-422227/A-PLACEHOLDER

## IDCAM-FUN-REQ-414973/A-Video Controls

### Requirements

#### IDCAM-REQ-422209/A-Playback On HMI

The IDCInterfaceClient shall provide HMI to the user so that user is able to select the video file and playback on the center stack HMI.

#### IDCAM-REQ-422210/A-Controls during Video Playback

The IDC feature shall provide the user controls during video playback including: Pause, Resume, Protect/Unprotect, Delete, Return to Menu, and a video progress bar that can be used to jump forward and backward.

#### IDCAM-REQ-422211/A-Preconditions of Video Playback

The IDC feature shall only be capable of video playback when vehicle transmission is PARK.

#### IDCAM-REQ-422213/A-Overlay Metadata upon Video Playback

The IDCServer shall request to overlay the corresponding metadata on the video file during playback.

### Use Cases

#### IDCAM-UC-REQ-422185/A-Videos – Playback

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  Vehicle is in Park mode  IDCInterfaceClient displays list of recordings |
| **Scenario Description** | User selects the desired video for play back on the IDCInterfaceClient.  IDCServer sends StartPlayback request to IDCVideoRecordingClient.  IDCServer will receive video stream from IDCVideoRecordingClient and send to IDCInterfaceClient. |
| **Post-conditions** | User can playback the selected video file on the IDCInterfaceClient. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422186/A-Videos – Pause the Playback

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | A video file is currently played back on HMI |
| **Scenario Description** | User selects to pause the playback on the IDCInterfaceClient.  IDCServer sends PausePlayback request to IDCVideoRecordingClient.  IDCServer receives response from IDCVideoRecordingClient. |
| **Post-conditions** | Video playback is paused on the IDCInterfaceClient. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422187/A-Videos – Resume the Playback

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Video playback is paused on HMI |
| **Scenario Description** | User selects to resume the playback on the IDCInterfaceClient.  IDCServer sends ResumePlayback request to IDCVideoRecordingClient.  IDCServer receives response from IDCVideoRecordingClient. |
| **Post-conditions** | Video file resumes to playback on the IDCInterfaceClient. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422188/A-Videos – Stop the Playback

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | A video file is currently played back on HMI |
| **Scenario Description** | User selects to return to the menu on the IDCInterfaceClient.  IDCServer sends StopPlayback request to IDCVideoRecordingClient.  IDCServer receives response from IDCVideoRecordingClient. |
| **Post-conditions** | Video playback is stopped on the IDCInterfaceClient. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422189/A-Videos – Delete

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  Vehicle is in park mode  IDCInterfaceClient displays list of recordings |
| **Scenario Description** | User selects a video file and then clicks on Delete button.  IDCServer sends DeleteRecording request to IDCVideoRecordingClient.  IDCVideoRecordingClient processes the request and sends response back.  IDCServer receives the response and IDCInterfaceClient updates list displayed with now smaller list of videos. |
| **Post-conditions** | User can select the video which he wants to delete, and video can be removed |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414974/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414975/A-PLACEHOLDER

## IDCAM-FUN-REQ-422228/A-Recording Memory Status

### Requirements

#### IDCAM-REQ-422221/A-Display Memory Status

The IDCInterfaceClient shall display the memory status of the USB when IDC feature is selected. HMI TBD

### Use Cases

#### IDCAM-UC-REQ-422190/A-Recording Memory Status

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up. |
| **Scenario Description** | User selects “Videos” option. (Might need to be moved to left bottom of landing page, TBD)  IDCServer sends MemoryConsumptionStatRqst to IDCVideoRecordingClient.  IDCServer receives MemoryConsumptionStatResp and IDCInterfaceClient displays data including Remaining Memory, Used Memory, Total Memory. |
| **Post-conditions** | User can see the current memory statistics for the chosen storage device. |
| **List of Exception Use Cases** | E1: If MemoryConsumptionStatResp RequestStatus = Fail, the screen should display “Memory Status Currently Unavailable”. |
| **Interfaces** | HMI, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-422229/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-422230/A-PLACEHOLDER

## IDCAM-FUN-REQ-414976/A-Select Storage Device

### Requirements

#### IDCAM-REQ-422214/A-Select Storage Device (Not in ConOps)

TBD

### Use Cases

#### IDCAM-UC-REQ-422191/A-Select Storage Device

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device(s) is available  User selects the IDC feature on the IDCInterfaceClient and IDC landing page shows up. |
| **Scenario Description** | User selects “Storage Device” option. (Location and details TBD)  The screen displays currently available USB storage devices.  User selects a specific storage device. |
| **Post-conditions** | The chosen storage device is saved to be used when accessing videos folder and for recording. |
| **List of Exception Use Cases** |  |
| **Interfaces** | HMI |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414977/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414978/A-PLACEHOLDER

## IDCAM-FUN-REQ-414979/A-Convert Recorded Files to Read-Only

### Requirements

#### IDCAM-REQ-422216/A-Protect Files based on Sensors

The IDCServer shall convert recorded video files to Read-Only when the FRCC severity value is higher than the sensor threshold.

#### IDCAM-REQ-422218/A-Protect Files – Press Recording Status Icon (Not in ConOps)

The IDCServer shall convert the current recording to read-only when user presses the recording status icon. TBD if the icon is read-only

#### IDCAM-REQ-422219/A-Protect/Delete IDC Recorded Files Only

The IDC feature shall only be capable of protecting and deleting videos that were recorded by IDC.

### Use Cases

#### IDCAM-UC-REQ-422192/A-Convert Recorded Files to Read-Only Manually – Recording Status Icon

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  Recording is ongoing |
| **Scenario Description** | (This use case might need to be removed, TBD if this icon is read-only)  User presses the recording status icon on the IDCInterfaceClient.  IDCServer sends ProtectRecordingRqst to IDCVideoRecordingClient.  IDCServer receives ProtectRecordingResp and IDCInterfaceClient updates Icon accordingly. |
| **Post-conditions** | User is able to convert the current recording to read-only. |
| **List of Exception Use Cases** | E1: If ProtectRecordingResp RequestStatus = Fail, icon should not be changed. |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422193/A-Convert Recorded Files to Read-Only Manually – Under Videos Menu

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCInterfaceClient, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  Vehicle is in park mode  IDCInterfaceClient displays list of recordings |
| **Scenario Description** | User selects a video file and then click on lock/unlock button to toggle protected status on selected file.  IDCServer sends ProtectRecordingRqst with protect Boolean set to opposite of current state to IDCVideoRecordingClient.  IDCVideoRecordingClient processes the request and sends back response.  IDCServer receives ProtectRecordingResp and IDCInterfaceClient updates the display with new status of read-only on selected file if successful. |
| **Post-conditions** | User is able to convert the selected file to read-only |
| **List of Exception Use Cases** | E1: If ProtectRecordingResp RequestStatus = Fail, display should remain as it was. |
| **Interfaces** | HMI, Ethernet |

#### IDCAM-UC-REQ-422194/A-Convert Recorded Files to Read-Only Automatically

|  |  |
| --- | --- |
| **Actors** | IDC User, IDCServer, IDCVideoRecordingClient |
| **Pre-conditions** | Ignition is Run/Start  Infotainment system is turned on  Memory device is available  IDCServer receives FRCC Severity value and sensor threshold reached depending on G-Sensor setting (TBD if user is able to set G-Sensor)  (If user selects “High” then FRCC Severity value > 0 will trigger read-only  If user selects “Low” then FRCC Severity value > 2 will trigger read-only)  **Note:** Please reference to MD-REQ-385133 in First Notification of Loss SPSS for details. |
| **Scenario Description** | IDCServer sends ProtectRecordingRqst to IDCVideoRecordingClient with protect status True for current recording.  IDCVideoRecordingClient processes the request and sends response back via ProtectRecordingResp.  If ProtectRecordingResp RequestStatus = Success, IDCServer will update icon to display read-only recording. |
| **Post-conditions** | Current recorded file is converted to read-only automatically. |
| **List of Exception Use Cases** | E1: If ProtectRecordingResp RequestStatus = Fail, IDCServer will NOT update icon display.  Current recorded file will NOT be converted to read-only. |
| **Interfaces** | CAN, Ethernet |

### White Box View

#### Activity Diagrams

##### IDCAM-ACT-REQ-414980/A-PLACEHOLDER

#### Sequence Diagrams

##### IDCAM-SD-REQ-414981/A-PLACEHOLDER

# Appendix: Reference Documents

|  |  |
| --- | --- |
| Reference # | Document Title |
| 1 | Video Recording and Playback SPSS |
| 2 | First Notification of Loss SPSS |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |