

**Research & Vehicle Technology**

**“Infotainment Systems Product Development”**

**Feature – Second Row Seats InterfaceClient1**

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

Version 1.0

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**Version Date: January 14, 2022**

**FORD CONFIDENTIALF**

**Revision History**

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| **January 14, 2022** | **1.0** | **Initial Release** |  |
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# Overview

The Second Row Seats feature allows a first row user to make second row driver and passenger seat adjustment requests from the SRSInterfaceClient2 via Power Pitch. Power Pitch allows Pitch/Return control of the Second Row Driver and Passenger Seats.

## Terms and Definitions

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| CAN | Controller Area Network |
| DID | Data Identifier |
| FNV3 | Fully Networked Vehicle 3rd Generation |
| FRS | First Row Seat |
| SCMK | Seat Control Module-K (driver's side second row seat module) |
| SCML | Seat Control Module-L (passenger's side second row seat module) |
| SPSS | Subsystem Part Specific Specification |
| SRS | Second Row Seat |

|  |  |
| --- | --- |
| **Term** | **Description** |
|  |  |
|  |  |
|  |  |
|  |  |

# Architectural Design

## SRS-CLD-REQ-465235/A-Second Row Seats InterfaceClient1

The Second Row Seats InterfaceClient1 (SRSInterfaceClient1) is responsible for the tasks listed below:

* Receive seat status information from SRSDriverPositionServer and SRSPassengerPositionServer
* Transmit Power Pitch adjustment requests to SRSDriverPositionServer and SRSPassengerPositionServer
* Display seat status information for Power Pitch

Please review the implementation guide/ block diagram to locate the Second Row Seats InterfaceClient1 class.

## SRS-CLD-REQ-465236/A-Second Row Seats Driver Position Server

The Second Row Seats Driver Position Server (SRSDriverPositionServer) is responsible for the tasks listed below:

* Transmit driver seat status information to SRSInterfaceClient2
* Receive driver seat adjustment requests from SRSInterfaceClient2
* Receive Power Pitch adjustment requests from SRSInterfaceClient1
* Transmit Power Pitch seat status to SRSInterfaceClient1
* Synchronize screen menu changes with SRSInterfaceClient2
* Perform/actuate driver seat adjustments
* Perform/actuate Power Pitch adjustments

Please review the implementation guide/ block diagram to locate the Second Row Seats Driver Position Server class.

## SRS-CLD-REQ-465237/A-Second Row Seats Passenger Position Server

The Second Row Seats Passenger Position Server (SRSPassengerPositionServer) is responsible for the tasks listed below:

* Transmit passenger seat status information to SRSInterfaceClient2
* Receive passenger seat adjustment requests from SRSInterfaceClient2
* Receive Power Pitch adjustment requests from SRSInterfaceClient1
* Transmit Power Pitch seat status to SRSInterfaceClient1
* Synchronize screen menu changes with SRSInterfaceClient2
* Perform/actuate passenger seat adjustments
* Perform/actuate Power Pitch adjustments

Please review the implementation guide/ block diagram to locate the Second Row Seats Passenger Position Server class.

## Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the Second Row Seats 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)** |
| SRSInterfaceClient1 | Phoenix |
| SRSDriverPositionServer | SCMK |
| SRSPassengerPositionServer | SCML |

## SRSInterfaceClient1 Interface

### SRS-IIR-REQ-464846/A-SRSInterfaceClient1\_Rx

#### MD-REQ-027149/A-IgnitionStatus\_St (TcSE ROIN-225464-1)

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 |  |

#### MD-REQ-465364/A-~~SeatLatchWarningSecondRowDriver\_Rq~~ SeatLatcWarnR2Drv\_D\_Rq, SeatLatchR2Drv\_No\_Cnt, SeatLatchR2Drv\_No\_Cs

Message Type: Request

Signal used to request Driver side Power Pitch warnings be displayed on HMI and signals for Counter and CheckSum to support ASIL rating.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Request to display Power Pitch warnings on HMI. |
|  | Inactive | 0x0 |  |
|  | Warning\_1 | 0x1 |  |
|  | Warning\_2 | 0x2 |  |
|  | Warning\_3 | 0x3 |  |

#### MD-REQ-465365/A-~~SeatLatchWarningSecondRowPassenger\_Rq~~ SeatLatcWarnR2Psn\_D\_Rq, SeatLatchR2Psngr\_No\_Cnt, SeatLatchR2Psngr\_No\_Cs

Message Type: Request

Signal used to request Passenger side Power Pitch warnings be displayed on HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Request to display Power Pitch warnings on HMI. |
|  | Inactive | 0x0 |  |
|  | Warning\_1 | 0x1 |  |
|  | Warning\_2 | 0x2 |  |
|  | Warning\_3 | 0x3 |  |

#### MD-REQ-465366/A-~~SeatSlideDriver\_Rq~~ SeatSlidDrv\_D\_Rq

Message Type: Request

Signal used to provide Second Row Driver seat pitch/return status.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Second Row Driver seat pitch/return status. |
|  | Inactive | 0x0 |  |
|  | Enabling | 0x1 |  |
|  | Pitching | 0x2 |  |
|  | Pitched | 0x3 |  |
|  | Returning | 0x4 |  |
|  | Stopped | 0x5 |  |
|  | NotUsed | 0x6-0x7 |  |

#### MD-REQ-465367/A-~~SeatSlidePassenger\_Rq~~ SeatSlidPsngr\_D\_Rq

Message Type: Request

Signal used to provide Second Row Passenger seat pitch/return status.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Second Row Passenger seat pitch/return status. |
|  | Inactive | 0x0 |  |
|  | Enabling | 0x1 |  |
|  | Pitching | 0x2 |  |
|  | Pitched | 0x3 |  |
|  | Returning | 0x4 |  |
|  | Stopped | 0x5 |  |
|  | NotUsed | 0x6-0x7 |  |

### SRS-IIR-REQ-464847/A-SRSInterfaceClient1\_Tx

#### MD-REQ-465368/A-~~SeatSlideSecondRowDriver\_Rq~~ SeatSlidR2Drv\_D\_RqMnu

Message Type: Request

Signal used to control Second Row Driver seat pitch/return, from First Row HMI input

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust pitch/return of Second Row Driver seat device from First Row HMI. |
|  | Inactive | 0x0 |  |
|  | Pitch | 0x1 |  |
|  | Return | 0x2 |  |
|  | Stop | 0x3 |  |

#### MD-REQ-465369/A-~~SeatSlideSecondRowPassenger\_Rq~~ SeatSlidR2Psng\_D\_RqMnu

Message Type: Request

Signal used to control Passenger Second Row seat pitch/return, from First Row HMI input

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust pitch/return of Second Row Passenger seat device from First Row HMI. |
|  | Inactive | 0x0 |  |
|  | Pitch | 0x1 |  |
|  | Return | 0x2 |  |
|  | Stop | 0x3 |  |

# General Requirements

## SRS-REQ-465177/A-Power Pitch - Configuration

The SRSInterfaceClient1 shall have a configurable parameter/DID to allow the Power Pitch feature to be enabled/disabled.

* When the parameter indicates that Power Pitch is Present, all the functionality and signals defined in FUN-REQ-464909 shall be supported.
* When the parameter indicates that Power Pitch is Not Present, none of the functionality defined in FUN-REQ-464909 shall be supported.
  + The default value for this parameter shall be Not Present.

## SRS-REQ-465178/A-Power Pitch - Powermode Conditions

The SRSInterfaceClient1 shall only perform the Power Pitch functionality as long as the HMI display is available (irrespective of IgnitionStatus\_St).

# Functional Definition

## SRS-FUN-REQ-464909/A-Power Pitch

### Use Cases

#### SRS-UC-REQ-464991/A-User makes Power Pitch Driver adjustments via SRSInterfaceClient1

|  |  |
| --- | --- |
| **Actors** | SRSInterfaceClient1, SRSDriverPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens Power Pitch and makes a driver side adjustment on the SRSInterfaceClient1 |
| **Post-conditions** | The SRSInterfaceClient1 sends the respective setting request to the SRSDriverPositionServer  The SRSDriverPositionServer makes the adjustment and sends status update to SRSInterfaceClient1  The SRSInterfaceClient1 displays the updated status |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

#### SRS-UC-REQ-464992/A-User makes Power Pitch Passenger adjustments via SRSInterfaceClient1

|  |  |
| --- | --- |
| **Actors** | SRSInterfaceClient1, SRSPassengerPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens Power Pitch and makes a passenger side adjustment on the SRSInterfaceClient1 |
| **Post-conditions** | The SRSInterfaceClient1 sends the respective setting request to the SRSPassengerPositionServer  The SRSPassengerPositionServer makes the adjustment and sends status update to SRSInterfaceClient1  The SRSInterfaceClient1 displays the updated status |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

#### SRS-UC-REQ-464993/A-Seat not fully returned/latched via Power Pitch

|  |  |
| --- | --- |
| **Actors** | SRSInterfaceClient1, SRSPassengerPositionServer, SRSPassengerPositionServer |
| **Pre-conditions** | Powermode conditions are met  Second Row Driver or Passenger Seat is not fully returned to initial position and not latched |
| **Scenario Description** | User puts vehicle in Drive |
| **Post-conditions** | The SRSDriverPositionServer or SRSPassengerPositionServer (whichever seat is not latched) sends popup request to SRSInterfaceClient1  The SRSInterfaceClient1 displays popup |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

### Requirements

#### SRS-REQ-465179/A-Request Driver Pitch Forward from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowDriver\_Rq = “Pitch" when the user selects to move the driver's second row seat to the pitched position.

#### SRS-REQ-465180/A-Request Driver Pitch Rearward from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowDriver\_Rq = “Return" when the user selects to move the driver's second row seat to the seated position.

#### SRS-REQ-465181/A-Request Driver Pitch Pause from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowDriver\_Rq = “Stop" when the user selects to pause the driver's second row seat while the seat is in the process of pitching/reseating.

#### SRS-REQ-465182/A-Request Driver Pitch Rearward from SRSInterfaceClient1 after Vehicle Status Warning

When the SRSInterfaceClient1 receives SeatLatchWarningSecondRowDriver\_Rq = “Warning\_1" and the user selects to reseat the pitched seat, it shall send SeatSlideSecondRowDriver\_Rq = “Return”.

#### SRS-REQ-465183/A-Display SRS Driver Side Stop Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlideDriver\_Rq = “Pitching”, “Returning", or “Enabling", it shall provide the user the option to stop the driver's side second row seat pitch process.

#### SRS-REQ-465184/A-Display SRS Driver Side Return Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlideDriver\_Rq = “Pitched”, it shall provide the user the option to return the driver's side second row seat.

#### SRS-REQ-465185/A-Display SRS Driver Side Pitch Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlideDriver\_Rq = “Inactive", it shall provide the user the option to pitch the driver's side second row seat.

#### SRS-REQ-465186/A-Display SRS Driver Side Pitch or Return Options in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlideDriver\_Rq = “Stopped", it shall provide the user the options to pitch or return the driver's side second row seat.

#### SRS-REQ-465187/A-Request Passenger Pitch Forward from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowPassenger\_Rq = “Pitch" when the user selects to move the passenger's second row seat to the pitched position.

#### SRS-REQ-465188/A-Request Passenger Pitch Rearward from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowPassenger\_Rq = “Return" when the user selects to move the passenger's second row seat to the seated position.

#### SRS-REQ-465189/A-Request Passenger Pitch Pause from SRSInterfaceClient1

The SRSInterfaceClient1 shall send SeatSlideSecondRowPassenger\_Rq = “Stop" when the user selects to pause the passenger's second row seat while the seat is in the process of pitching/reseating.

#### SRS-REQ-465190/A-Request Passenger Pitch Rearward from SRSInterfaceClient1 after Vehicle Status Warning

When the SRSInterfaceClient1 receives SeatLatchWarningSecondRowPassenger\_Rq = “Warning\_1" and the user selects to reseat the pitched seat, it shall send SeatSlideSecondRowPassenger\_Rq = “Return".

#### SRS-REQ-465191/A-Display SRS Passenger Side Stop Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlidePassenger\_Rq = “Pitching", “Returning", or “Enabling", it shall provide the user the option to stop the passenger's side second row seat pitch process.

#### SRS-REQ-465192/A-Display SRS Passenger Side Return Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlidePassenger\_Rq = “Pitched“, it shall provide the user the option to return the passenger's side second row seat.

#### SRS-REQ-465193/A-Display SRS Passenger Side Pitch Option in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlidePassenger\_Rq = “Inactive", it shall provide the user the option to pitch the passenger's side second row seat.

#### SRS-REQ-465194/A-Display SRS Passenger Side Pitch or Return Options in SRSInterfaceClient1

When the SRSInterfaceClient1 receives SeatSlidePassenger\_Rq = “Stopped", it shall provide the user the options to pitch or return the passenger's side second row seat.

#### SRS-REQ-465195/A-Display Warning 1 for Second Row Driver Seat

When the SRSInterfaceClient1 receives SeatLatchWarningSecondRowDriver\_Rq = “Warning\_1", it shall:

* Display a warning to the user that the driver's second row seat is pitched
* Provide an option to the user to return the seat.

#### SRS-REQ-465196/A-Display Warning 1 for Second Row Passenger Seat

When the SRSInterfaceClient1 receives SeatLatchWarningSecondRowPassenger\_Rq = “Warning\_1", it shall:

* Display a warning to the user that the passenger's second row seat is pitched
* Provide an option to the user to return the seat.

### White Box View

#### Activity Diagrams

#### Sequence Diagrams

# Appendix: Reference Documents

|  |  |
| --- | --- |
| Reference # | Document Title |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
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| 17 |  |