Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Auto Hold

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.1

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Version Date: February 20, 2017

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
September 27, 2016	**1.0**	**Initial Release**	
February 20, 2017	**1.1**	**Updated Release**	
	AH-FUR-REQ-235718/B-AH Logical Signal Mapping		CAN signal naming update.

Table of Contents

1 Architectural Design

1.1 Overview

The aim of Auto Hold is to relieve the driver from having to press the brake pedal continuously to keep the vehicle stationary on any road gradient for an unlimited time. The feature is particularly helpful in stop-and-go traffic and on inclines. Auto Hold automatically releases the brakes when the driver presses the accelerator pedal or operates the clutch pedal with the intention to drive off.

1.2 AH-REQ-235635/A-Auto Hold Client

Responsibility: Auto Hold Client among its other duties is also responsible sending Auto Hold button press information and for displaying the Auto Hold feature state, enables the users to change the state of the Auto Hold feature (such as On and Off) and notifies the server if any missing signal related to the feature has been detected.

1.3 AH-REQ-235636/A-Auto Hold Server

Responsibility: Auto Hold Server is responsible for the main feature functionality. Basically it will reply to user requests to turn the feature On or Off or will notify the user if the feature is unavailable due to any restrictions or errors.

1.4 AH-FUR-REQ-235718/B-AH 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
AHSwitch	**AutoHoldSwtch_D_Stat3**
AHFeatureSt	**AutoHoldSwMde_B_Ind**

Table: Logical name/CAN signal mapping

1.5 AH-REQ-235721/A-AutoHoldServer_Tx

1.5.1 REQ-235720/A-AHFeatureSt

AHFeatureSt tells to the client the state of the feature, if it is ON or Off.

Name	Literals	Value	Description
AHFeatureSt			
	Off	0x0	Auto Hold is turned OFF.
	On	0x1	Auto Hold is turned ON.

1.6 AH-REQ-236105/A-AutoHoldServer_Rx

1.6.1 REQ-235719/A-AHSwitch

AHSwitch is used by the Client to send user request to the server to turn the Auto Hold feature ON or Off or any other state, such as Faulty condition in case signal is missing by giving the switch state.

AHSwitch is generated by Client at a periodic interval. For timing information and details please refer to CAN DBC file. The signal is generated as Pressed when user touches the button and as not pressed otherwise or faulty as applicable.

Name	Literals	Value	Description
AHSwitch			
	NotPressed	0x0	Auto Hold switch is not being pressed by the user.
	Pressed	0x1	Auto Hold switch is being pressed by the user.
	Not Used	0x2	Signal state is not being used.
	Faulty	0x3	Fault has been detected from Client side.

1.7 AH-REQ-235722/A-AutoHoldClient_Tx

1.7.1 REQ-235719/A-AHSwitch

AHSwitch is used by the Client to send user request to the server to turn the Auto Hold feature ON or Off or any other state, such as Faulty condition in case signal is missing by giving the switch state.

AHSwitch is generated by Client at a periodic interval. For timing information and details please refer to CAN DBC file. The signal is generated as Pressed when user touches the button and as not pressed otherwise or faulty as applicable.

Name	Literals	Value	Description
AHSwitch			
	NotPressed	0x0	Auto Hold switch is not being pressed by the user.
	Pressed	0x1	Auto Hold switch is being pressed by the user.
	Not Used	0x2	Signal state is not being used.
	Faulty	0x3	Fault has been detected from Client side.

1.8 AH-REQ-236106/A-AutoHoldClient_Rx

1.8.1 REQ-235720/A-AHFeatureSt

AHFeatureSt tells to the client the state of the feature, if it is ON or Off.

Name	Literals	Value	Description
AHFeatureSt			
	Off	0x0	Auto Hold is turned OFF.
	On	0x1	Auto Hold is turned ON.

2 General Requirements

2.1 REQ-235883/A-Error detection

If Client detects an error affecting Auto Hold switch display or its control, SYNC shall transmit AHSwitch = Faulty. An associated DTC shall be logged under this condition. Consult with diagnostics specs for more details.

2.2 REQ-235884/A-Missing Signal

If Client misses signal AHFeatureSt for 5 consecutive seconds (5xRx cycle time), it shall transmit AHSwitch= faulty and display the feature as Off. A lost communication with ABS module shall be logged under this condition.

2.3 REQ-237260/A-Button Press

The client shall generate a button press value only when the user requests a state change in the feature. The client shall not generate a button press value if the user requests the already selected feature state twice or more.

3 Functional Definition

3.1 Use Cases

3.1.1 UC-REQ-235610/A-Auto Hold turned On

Actors	Vehicle occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. Auto Hold switch is in OFF position.
Scenario Description	The driver clicks on the Auto Hold soft switch to turn the feature ON. All Auto Hold enabling conditions are fulfilled.
Post-conditions	The vehicle display shows Auto Hold soft switch in switched ON position.
List of Exception Use Cases	
Interfaces	

3.1.2 UC-REQ-235614/A-Auto Hold turned Off

Actors	Vehicle occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. Auto Hold switch is in ON position.
Scenario Description	The driver clicks on the Auto Hold soft switch to turn the feature OFF. All Auto Hold enabling conditions are fulfilled.
Post-conditions	The vehicle display shows Auto Hold soft switch in switched OFF position.
List of Exception Use Cases	
Interfaces	

3.1.3 UC-REQ-235621/A-Auto Hold not Enable-able

Actors	Vehicle occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. Auto Hold switch is in OFF position.
Scenario Description	The driver clicks on the Auto Hold soft switch to turn the feature ON. Auto Hold enabling conditions are not fulfilled or Auto Hold has detected a system fault.
Post-conditions	The vehicle display shows Auto Hold soft switch in switched OFF position.
List of Exception Use Cases	
Interfaces	

3.1.4 UC-REQ-235627/A-Auto Hold detects system fault

Actors	Auto Hold system
Pre-conditions	The infotainment system is powered on.

	The ignition status is Run/Start. Auto Hold switch is in ON position.
Scenario Description	Auto Hold feature detects a system fault.
Post-conditions	The vehicle display shows Auto Hold soft switch in switched OFF position.
List of Exception Use Cases	
Interfaces	

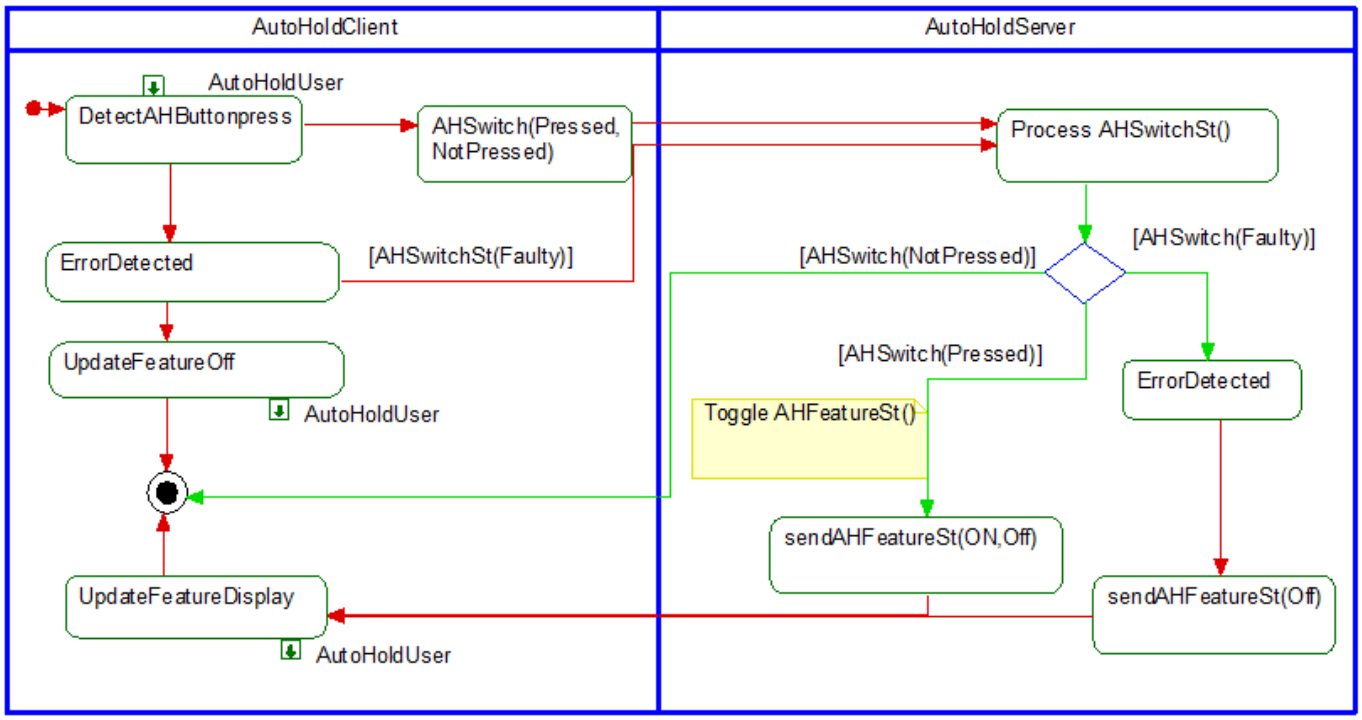
3.1.5 UC-REQ-235631/A-Vehicle Display detects system fault

Actors	Vehicle display system
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. Auto Hold switch is in ON position.
Scenario Description	Vehicle display system detects a system fault.
Post-conditions	The vehicle display shows Auto Hold soft switch in switched OFF position. Display shall send faulty condition to the server.
List of Exception Use Cases	
Interfaces	

3.2 White Box Views

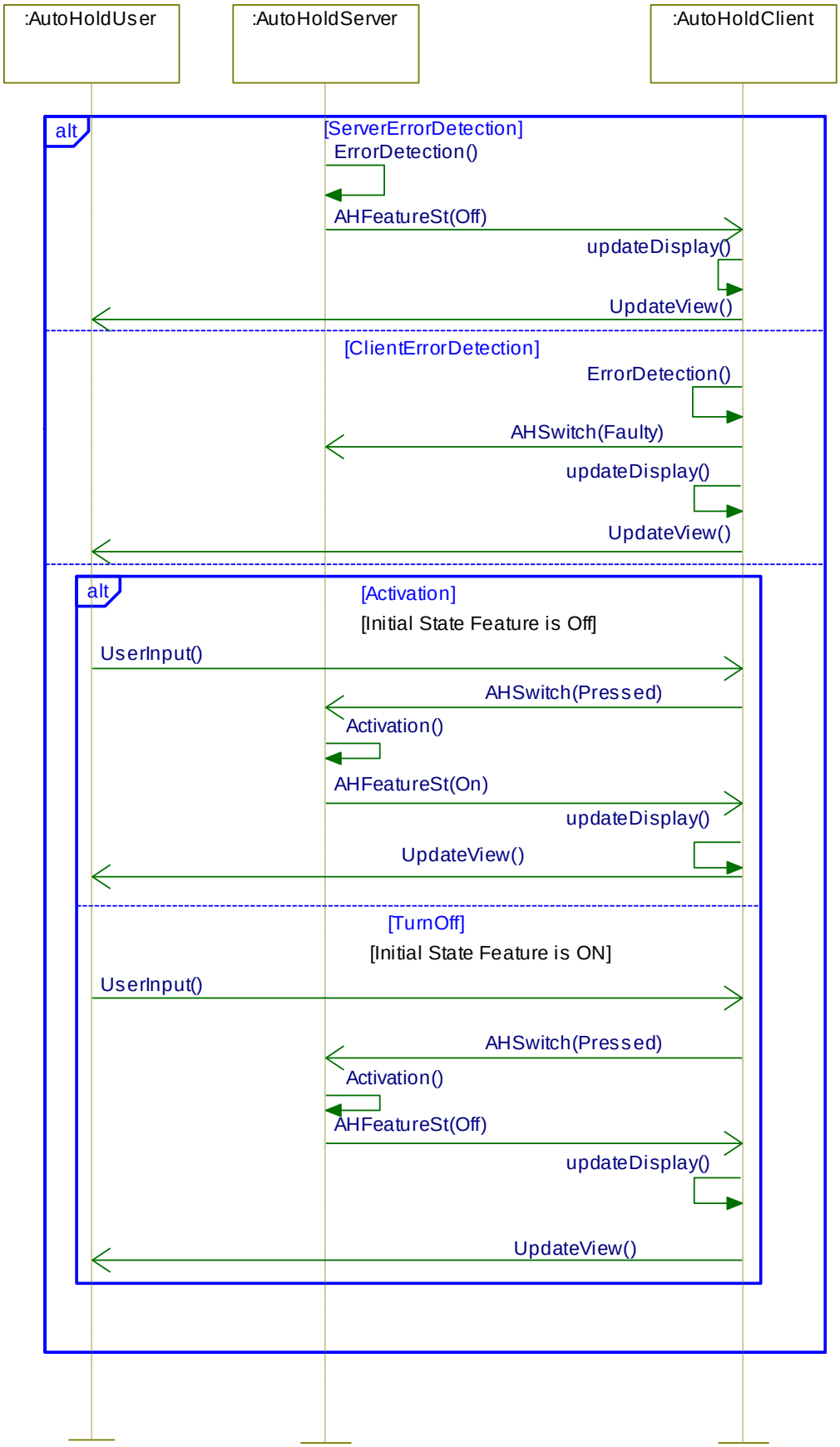
3.2.1 Activity Diagram

3.2.1.1 REQ-236101/A-Auto Hold Operation



3.2.2 Sequence Diagram

3.2.2.1 REQ-236102/A-Auto Hold Operation


:AutoHoldUser
:AutoHoldServer
:AutoHoldClient
alt
[ServerErrorDetection]
ErrorDetection()
AHFeatureSt(Off)
updateDisplay()
UpdateView()
[ClientErrorDetection]
ErrorDetection()
AHSwitch(Faulty)
updateDisplay()
UpdateView()
alt
[Activation]
[Initial State Feature is Off]
UserInput()
AHSwitch(Pressed)
Activation()
AHFeatureSt(On)
updateDisplay()
UpdateView()
[TurnOff]
[Initial State Feature is ON]
UserInput()
AHSwitch(Pressed)
Activation()
AHFeatureSt(Off)
updateDisplay()
UpdateView()

4 Appendix: Reference Documents

Reference #	Document Title
1	
2	
3	
4	
5	