Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Auto Hitch

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.5
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Version Date: August 16, 2021

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
April 24, 2018	**1.0**	**Initial Release**	
October 10, 2018	**1.1**		
		AHT-FRD-REQ-276908/C-Auto Hitch	ashepele: See revision comments in children requirements
		476742/C-Architectural Design	ashepele: See revision comments in children requirements
		499216/B-Feature Overview+	Work in progress
		499216/C-Feature Overview	ashepele: Simplified diagram to include only the AH Server and AH Client
		499217/B-HMI Overview+	Work in progress
		499217/C-HMI Overview+	Work in progress
		499217/D-HMI Overview+	Work in progress
		499217/E-HMI Overview	ashepele: Updated sample view template. Icon is now above Cancel button
		499352/B-Definitions+	Work in progress
		499352/C-Definitions	ashepele: See revision comments in children requirements
		AHT-FUR-REQ-294534/B-Auto Hitch Client	ashepele: No change
		AHT-FUR-REQ-294535/B-Auto Hitch Server+	Work in progress
		AHT-FUR-REQ-294535/C-Auto Hitch Server	ashepele: Removed mistaken reference to TBA feature
		530448/B-Auto Hitch Client Interface+	Work in progress
		530448/C-Auto Hitch Client Interface	ashepele: See revision comments in children requirements
		FUR-REQ-294964/C-Signal Mapping+	Work in progress
		FUR-REQ-294964/D-Signal Mapping+	Work in progress
		FUR-REQ-294964/E-Signal Mapping	ashepele: Removed CtrStkDsplyOp_D_Rq, CtrStkFeatNoActl, CtrStkFeatConfigActl. Added PersIndexIpmb_D_Actl, GearLvrPos_D_Actl, TrlrHitch_D_RqMnu signals
		AHT-FUR-REQ-294538/C-AH Feature ID Definition+	Work in progress
		AHT-FUR-REQ-294538/D-AH Feature ID Definition	ashepele: Updated column titles to match logical signal names
		499222/C-Auto Hitch Image Client Rx+	Work in progress
		499222/D-Auto Hitch Image Client Rx+	Work in progress
		499222/E-Auto Hitch Image Client Rx	ashepele: See revision comments in children requirements
		FUR-REQ-319292/A-Feature_St	New Requirment
		AHT-FUR-REQ-294539/C-Autohitch_St	ashepele: No change
		AHT-FUR-REQ-294540/C-IconRequest	ashepele: No change
		FUR-REQ-323562/A-Gear Lever Position+	Work in progress
		FUR-REQ-323562/B-GearLeverPos	ashepele: No change
		499223/C-Auto Hitch Client Tx+	Work in progress
		499223/D-Auto Hitch Client Tx	ashepele: See revision comments in children requirements
		AHT-FUR-REQ-294546/C-DriverInput+	Work in progress
		AHT-FUR-REQ-294546/D-DriverInput	ashepele: Updated to match TrlrHitch_D_RqMnu CAN signal
		476743/B-General Requirements+	Work in progress
		476743/C-General Requirements	ashepele: See revision comments in children requirements

AHT-FUR-REQ-294550/B-AH Interaction via Feature Based Message Protocol+	Work in progress
AHT-FUR-REQ-294550/C-AH Interaction via Feature Based Message Protocol	ashepele: Slight re-wording for consistency throughout spec
AHT-FUR-REQ-294552/E-AH HMI Display Requirements+	Work in progress
AHT-FUR-REQ-294552/F-AH HMI Display Requirements	ashepele: Removed non-camera view requirements
AHT-FUR-REQ-294554/C-Camera Image Priority	ashepele: Removed mistaken reference to TBA feature
FUR-REQ-323563/A-Info Button Availability+	Work in progress
FUR-REQ-323563/B-Info Button Availability	ashepele: Reworded for consistency throughout spec
499266/C-Auto Hitch Signal Interface+	Work in progress
499266/D-Auto Hitch Signal Interface	ashepele: See revision comments in children requirements
AHT-FUR-REQ-294562/B-Auto Hitch Signal Processing - Positional Icon1	ashepele: Updated value 0x4 to NotUsed. Added disclamer clause below the icon table
AHT-FUR-REQ-294563/C-Auto Hitch Signal Processing - Positional InstructionsHeadingField+	Work in progress
AHT-FUR-REQ-294563/D-Auto Hitch Signal Processing - Positional InstructionsHeadingField+	Work in progress
AHT-FUR-REQ-294563/E-Auto Hitch Signal Processing - Positional InstructionsHeadingField+	Work in progress
AHT-FUR-REQ-294563/F-Auto Hitch Signal Processing - Positional InstructionsHeadingField	ashepele: Updated table to match latest system design
FUR-REQ-319884/A-Auto Hitch Soft Button Requirements+	Work in progress
FUR-REQ-319884/B-Auto Hitch Soft Button Requirements+	Work in progress
FUR-REQ-319884/C-Auto Hitch Soft Button Requirements	ashepele: See revision comments in children requirements
FUR-REQ-320255/A-Handoff to Trailer Domain Menu	New Requirment
FUR-REQ-319885/A-Feature Selection by Soft Buttons+	Work in progress
FUR-REQ-319885/B-Feature Selection by Soft Buttons+	Work in progress
FUR-REQ-319885/C-Feature Selection by Soft Buttons	ashepele: Re-worded for clarity
476744/C-Functional Definition+	Work in progress
476744/D-Functional Definition	ashepele: See revision comments in children requirements
499274/B-Requirements+	Work in progress
499274/C-Requirements	ashepele: See revision comments in children requirements
AHT-FUR-REQ-294566/B-Cancel Auto Hitch when Camera Feed is Missing+	Work in progress
AHT-FUR-REQ-294566/C-Cancel Auto Hitch when Camera Feed is Missing	ashepele: Re-worded. Signal names now match logical signal names used throughout the spec
AHT-FUR-REQ-294567/B-Auto Hitch Maximum Speed+	Work in progress

		AHT-FUR-REQ-294567/C-Auto Hitch Maximum Speed	ashepele: Removed reference to TBA feature
		FUR-REQ-319291/A-Cancel Auto Hitch on Request from Driver+	Work in progress
		FUR-REQ-319291/B-Cancel Auto Hitch on Request from Driver	ashepele: Re-worded for clarity
		AHT-ACT-REQ-302424/B-Auto Hitch AD	tmertiri:remove trailerhitchball from AD
		AHT-SD-REQ-302425/B-Auto Hitch SD	tmertiri: remove trailerhitchball from SD
March 21, 2019	**1.2**		
		AHT-FRD-REQ-276908/D-Auto Hitch	ndecia: Updated overall spec structure for better readibility
		499217/F-HMI Overview	gkaur12: Updated Sample views layout image.
		530448/D-Auto Hitch Client Interface	ndecia: Updated sub-elements to improve overall spec structure
		AHT-FUR-REQ-294538/E-AH Feature ID Definition	ndecia: Added ellipsis to denote presence of values after Auto Hitch Rear Normal
		AHT-FUR-REQ-294546/E-DriverInput	ndecia: Updated spelling of value names to be consistent with their references from other requirements
		476743/D-General Requirements	ndecia: updated structure
		AHT-FUR-REQ-294554/D-Camera Image Priority	ndecia: added reference to Screen Interruption Table and added requirement when to clear popups
		AHT-FUR-REQ-294553/B-Auto Hitch Image Priority	ndecia: Updated reference to Screen Interruption Table
		AHT-FUR-REQ-294555/B-Autohitch Views	gkaur12: added configuration value for AutoHitch Rear Normal View.
		AHT-FUR-REQ-347436/A-Autohitch HMI content references	gkaur12: added configuration value for AutoHitch Rear Normal View.
		476744/E-Functional Definition	ndecia: Added new requirements under this heading
		AHT-FUN-REQ-343875/A-Display Auto Hitch	ndecia: New function heading added to improve overall spec structure
		AHT-FUR-REQ-323563/C-Info Button Availability	gkaur12: updated image and requirement text.
		AHT-FUR-REQ-294562/C-Auto Hitch Signal Processing - Positional Icon1	gkaur12: updated icon table
		AHT-FUR-REQ-346645/A-Auto Hitch Signal Processing - Positional Instructions	gkaur12: Updated Text table with Manual/Automatic column. ndecia: Removed all references to explicitly defined text strings and graphical HMI content. Added references to the AutoHitch HMI Text Mapping Table document where this will now be captured
		FUR-REQ-320255/B-Handoff to Trailer Domain Menu	ndecia: Added detail on signal handling for setting DriverInput back to 0x0 NoRequest upon a value change in AutoHitch_St.
		FUR-REQ-319885/D-Feature Selection by Soft Buttons	ndecia: Updated to add detail on setting signal value back to 0x0 No_Request upon a value change in the AutoHitch_St signal
		FUR-REQ-320255/B-Handoff to Trailer Domain Menu	ndecia: Added detail on signal handling for setting DriverInput back to 0x0 NoRequest upon a value change in AutoHitch_St.
		FUR-REQ-319885/D-Feature Selection by Soft Buttons	ndecia: Updated to add detail on setting signal value back to 0x0 No_Request upon a value change in the AutoHitch_St signal
		FUR-REQ-343766/A-TBA Selection by Soft Button	ndecia: added new requirement for a new TBA soft button on the autohitch screen to take you directly to the TBA feature
		FUR-REQ-347395/A-Continue Selection by Soft Button	ndecia: added new requirement for a new TBA soft button on the autohitch screen to take you directly to the TBA feature
		FUR-REQ-347435/A-Start Over Selection by Soft Button	ndecia: added new requirement for a new TBA soft button on the autohitch screen to take you directly to the TBA feature
		AHT-SD-REQ-302425/C-Auto Hitch SD	ndecia: Update sequence diagram to correct spelling of DriverInput and to add the presence of the AutoHitch_St message after the DriverInput message is sent
September 13, 2019	**1.3**		
		STR-624084/B-Requirements	ndecia: Removed Trailering Domain requirement 320255 as it is not supported in the HMI
		AHT-FUR-REQ-346645/B-Auto Hitch Signal Processing - Positional Instructions	ndecia: Update to Message59 of the table, and added a command to switch to the Trailering Menu in Message63, with an corresponding description of this command in the note below the table. Corrected Message28 to be Automatic only.
		FUR-REQ-319884/D-Auto Hitch Soft Button Requirements	ndecia: Removed unintentionally duplicated requirements 320255 & 319885

	FUR-REQ-319885/E-Feature Selection by Soft Buttons	ndecia: Updated screen layout wireframe to include Pro Trailer Info button, and included requirement to transition to the Info screen from reference 12 of the text mapping table document.
	FUR-REQ-347395/B-Continue Selection by Soft Button	ndecia: Update to pop-up layout and signal handling to include a new autohitch button and a cancel button.
	AHT-FUR-REQ-319291/C-Cancel Auto Hitch on Request from Driver	ndecia: added clarification to reset DriverInput back to NoRequest to align with other requirements where that has already been stated.

December 6, 2019	**1.4**	
	AHT-FUR-REQ-294552/G-AH HMI Display Requirements	ndecia: added reference to "Rear Hitch" view
	AHT-FUR-REQ-294555/C-Autohitch Views	ndecia: added reference to "Rear Hitch" view
	STR-624084/C-Requirements	ndecia: revised structure to add requirements 371605 & 371606
	AHT-FUR-REQ-346645/C-Auto Hitch Signal Processing - Positional Instructions	ndecia: added reference to Text Mapping table for Message60 (0x3C)
	REQ-371605/A-Driver Early Abort Selection by Soft Button	ndecia: new requirement
	REQ-371606/A-AutoHitch "Rear Normal" view and "Rear Hitch" view	ndecia: new requirement

August 16, 2021	**1.5**	
	AHT-FUR-REQ-294538/F-AH Feature ID Definition	ndecia: updated table to only include relevant camera view values
	476743/E-General Requirements	ndecia: revised structure to add new requirement 397066
	AHT-FUR-REQ-294552/H-AH HMI Display Requirements	ndecia: included Auto Hitch Rear Camera Zoom view in first bullet point and updated last bullet point to refer to new exception to display message44 or 45 regardless of vehicle speed
	AHT-FUR-REQ-294555/D-Autohitch Views	ndecia: added Rear Zoom View to the Rear Hitch View layouts section
	AHT-FUR-REQ-397066/A-Autohitch Vehicle Speed Exception	ndecia: new requirement to add exception to display message44 or 45 regardless of vehicle speed
	STR-624084/D-Requirements	ndecia: revised structure to include new requirement 422924
	AHT-FUR-REQ-294562/D-Auto Hitch Signal Processing - Positional Icon1	ndecia: added new icons for values 0x4, 0x5, and 0xD
	FUR-REQ-422924/A-Alternate Feature Selection by Soft Buttons	ndecia: New screen layout
	REQ-371606/B-AutoHitch "Rear Normal" view and "Rear Hitch" view	ndecia: updated to include the Autohitch Rear Zoom View
	499274/D-Requirements	ndecia: revised structure to remove req 294567, due to potential conflict with other requirements referring to vehicle speed
	STR-634010/B-Appendix: Reference Documents	ndecia: updated to include text mapping table version

Table of Contents

# 1   Architectural Design

1.1   Feature Overview

Feature Overview:

Auto Hitch is a new advanced driver assistance feature that is designed to improve a user's experience while hooking up a trailer.

Auto Hitch (AH) is a system that automatically aligns a vehicle's hitch ball with a trailer tongue coupler in preparation for hitching a trailer. It relies on the driver to position the vehicle within range of a compatible trailer and then utilizes sensors to detect the trailer and automatically maneuver into alignment.

Auto Hitch controls the steering, brakes, and throttle in a way that allows the user to simply lower the trailer onto the vehicle's hitch ball after completion of the Auto Hitch maneuver.
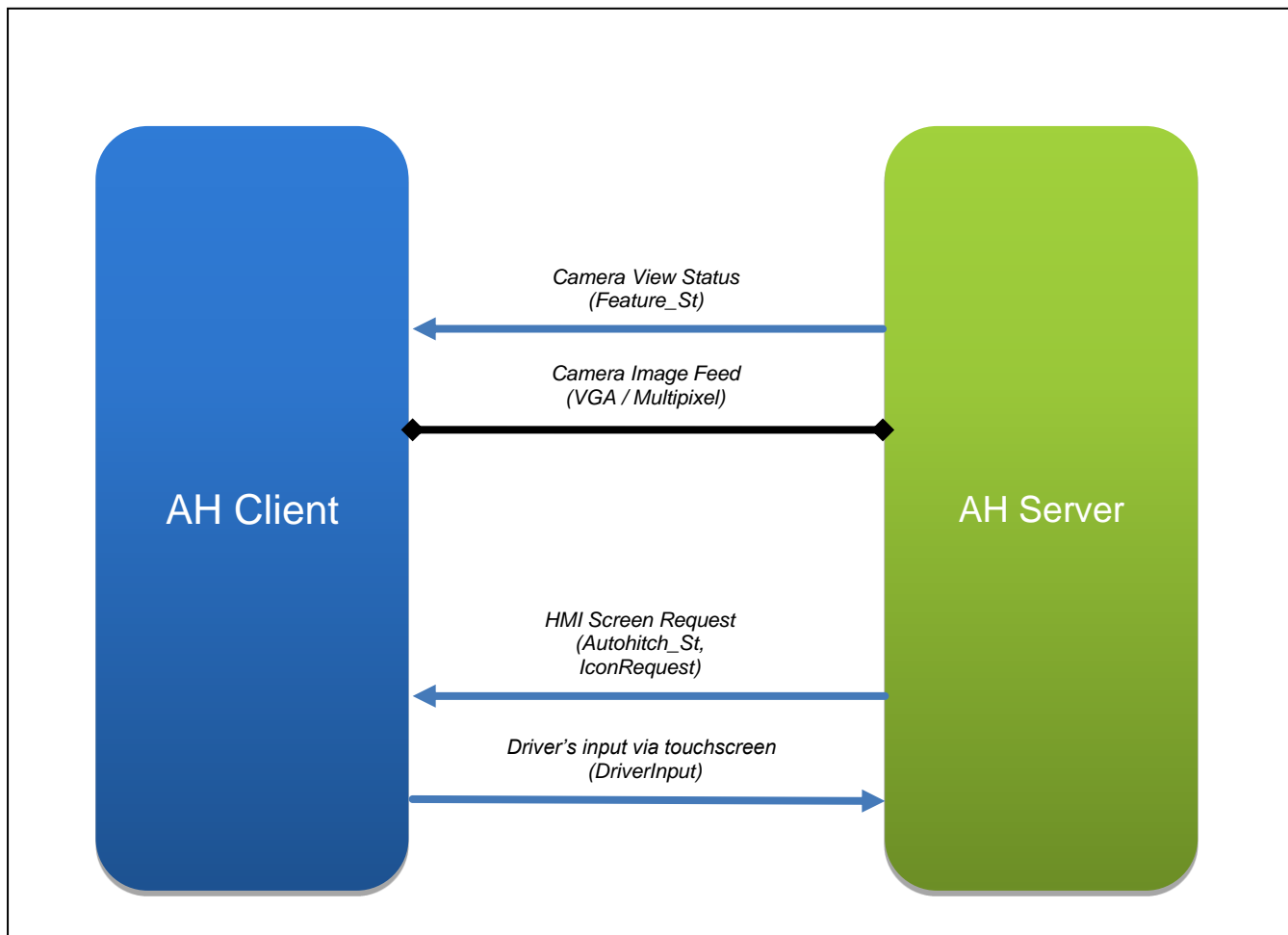
1.2   HMI Overview

HMI Overview

The layout naming used in this spec are used only for convenience in naming and should not to be used when comparing layouts named in other specifications such as HMI specs or elsewhere. Refer to Appendix for a potential list of related documentation
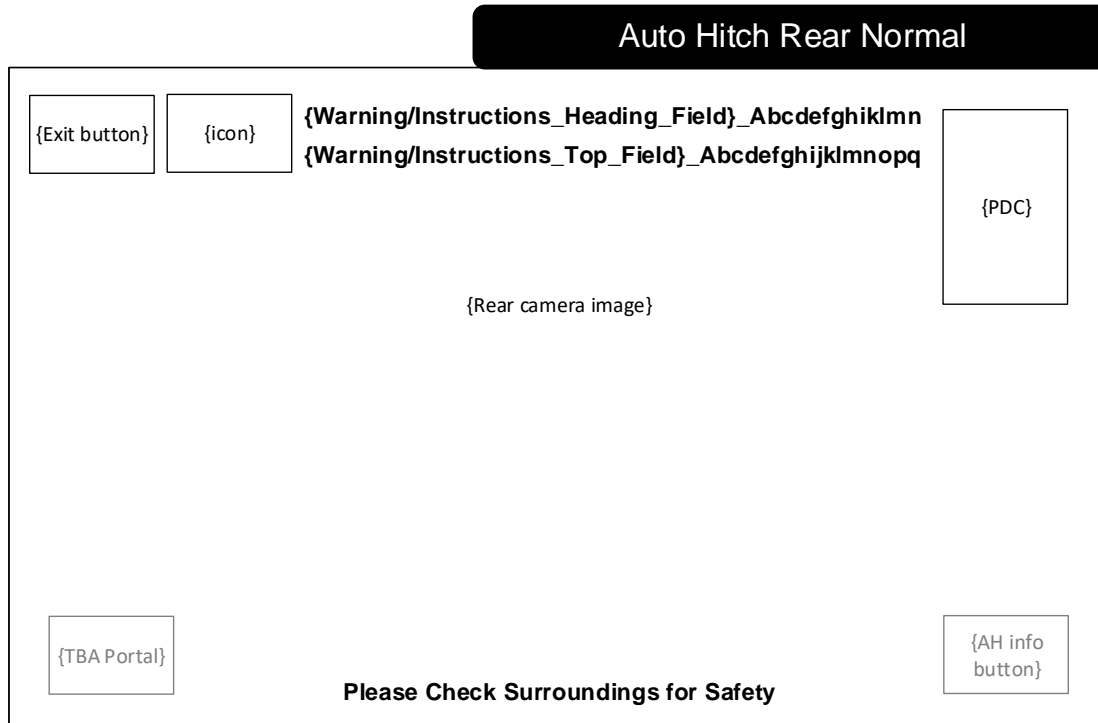
Sample Icons used for AH HMI Layouts

Finnish   Hands-Off   Info   Down Arrow   Caution   Up Arrow   Right Arrow   Left Arrow   Stop   Left/Right Arr

Sample views available to the user.

1.3 Definitions

1.3.1 AHT-FUR-REQ-294534/B-Auto Hitch Client

Responsibility: The AutoHitchClient is the interface of the Auto Hitch (AH) feature. The AutoHitchClient is responsible for displaying a view rearward of the truck, AH maneuver messages, and/or graphics to driver during an AH session.

Review the implementation guide/static view/block diagram to locate the AutoHitch Image Client object.

1.3.2 AHT-FUR-REQ-294535/C-Auto Hitch Server

Responsibility:

The AH Server is responsible for determining the instructions and AH Status provided to the AH Client and for display to the AH feature user.

The AH Server is also responsible for determination of camera views provided to the AH Client.

1.4 Auto Hitch Client Interface

1.4.1 FUR-REQ-294964/E-Signal Mapping

Literal vs. Physical mapping requirement

APIM Tx/Rx	CAN Signal Name	Logical Signal Name
Rx	TrlrHitchMsgTxt_D_Rq	Autohitch_St
Rx	TrlrHitchIcon_D_Rq	IconRequest
Rx	FeatNoIpmbActl	FeatureID
Rx	FeatConfigIpmbActl	ConfigNumber
Rx	PersIndexIpmb_D_Actl	PersIndex
Rx	GearLvrPos_D_Actl	GearLeverPos
Tx	TrlrHitch_D_RqMnu	DriverInput

1.4.2 AHT-FUR-REQ-294538/F-AH Feature ID Definition

The below table defines the Feature ID information related to the Feature Based Message Protocol command and control method for AH (Note: 0x81B is also used in the TBA2 and Rear View Camera feature).

Feature Name	Feature ID	Config Number	Config Value
		0x00	Off
		…	…
		0x17	Auto Hitch Rear Normal
		…	…
Camera Showing	0x081B	0x26	Auto Hitch Rear Hitch View
		…	…
		0x47	Auto Hitch Rear Zoom View
		…	…

1.4.3 Auto Hitch Image Client Rx

1.4.3.1 FUR-REQ-319292/A-Feature_St

Message Type: Status

Represents the current status of a feature (feature selected, feature setting, etc.).

Included Parameters:
FeatureID
Configuration
PersIndex

Name	Literals	Value	Description
FeatureID	-	-	Active feature number
		0x0000 – 0xFFFF	
Configuration	-	-	Active configuration value
		0x0000 – 0xFFFF	
PersIndex	-	-	Indicates which personality profile is active

	PERS_1	0x0	
	PERS_2	0x1	
	PERS_3	0x2	
	PERS_4	0X3	
	VEHICLE	0X4	
	Not Used	0x5	
	Not Used	0x6	
	Not Used	0x7	

1.4.3.2   AHT-FUR-REQ-294539/C-Autohitch_St

Message Type: Status

This signal communicates the system's operational state to the driver.

Name	**Literals**	**Value**	**Description**
Type	-	-	-
	NoMessage	0x00	
	Message1	0x01	
	Message2	0x02	
	Message3	0x03	
	Message4	0x04	
	Message5	0x05	
	Message6	0x06	
	Message7	0x07	
	Message8	0x08	
	Message9	0x09	
	Message10	0x0A	
	Message11	0x0B	
	Message12	0x0C	
	Message13	0x0D	
	Message14	0x0E	
	Message15	0x0F	
	Message16	0x10	
	Message17	0x11	
	Message18	0x12	
	Message19	0x13	
	Message20	0x14	
	Message21	0x15	
	Message22	0x16	
	Message23	0x17	
	Message24	0x18	
	Message25	0x19	
	Message26	0x1A	
	Message27	0x1B	
	Message28	0x1C	
	Message29	0x1D	
	Message30	0x1E	
	Message31	0x1F	
	Message32	0x20	
	Message33	0x21	
	Message34	0x22	
	Message35	0x23	
	Message36	0x24	
	Message37	0x25	

	Message38	0x26	
	Message39	0x27	
	Message40	0x28	
	Message41	0x29	
	Message42	0x2A	
	Message43	0x2B	
	Message44	0x2C	
	Message45	0x2D	
	Message46	0x2E	
	Message47	0x2F	
	Message48	0x30	
	Message49	0x31	
	Message50	0x32	
	Message51	0x33	
	Message52	0x34	
	Message53	0x35	
	Message54	0x36	
	Message55	0x37	
	Message56	0x38	
	Message57	0x39	
	Message58	0x3A	
	Message59	0x3B	
	Message60	0x3C	
	Message61	0x3D	
	Message62	0x3E	
	Message63	0x3F	

1.4.3.3   AHT-FUR-REQ-294540/C-IconRequest

Message Type: Status

This signal indicates the on-screen icon that is to be displayed to the driver.

Name	**Literals**	**Value**	**Description**
Type	-	-	-
	NoIcon	0x00	
	Icon1	0x01	
	Icon2	0x02	
	Icon3	0x03	
	Icon4	0x04	
	Icon5	0x05	
	Icon6	0x06	
	Icon7	0x07	
	Icon8	0x08	
	Icon9	0x09	
	Icon10	0x0A	
	Icon11	0x0B	
	Icon12	0x0C	
	Icon13	0x0D	
	Icon14	0x0E	
	Icon15	0x0F	

1.4.3.4   FUR-REQ-323562/B-GearLeverPos

Message Type: Status

Vehicle status signal for the Gear Lever Position on an <u>automatic</u> transmission vehicle.

Name	Literals	Value	Description
Type	-	-	-
	Park	0x0	
	Reverse	0x1	
	Neutral	0x2	
	Drive	0x3	
	Sport_DriveSport	0x4	
	Low	0x5	
	First	0x6	
	Second	0x7	
	Third	0x8	
	Fourth	0x9	
	Fifth	0xA	
	Sixth	0xB	
	Undefined_Treat_as_Fault	0xC	
	Undefined_Treat_as_Fault1	0xD	
	Unknown_Position	0xE	
	Fault	0xF	

1.4.4   Auto Hitch Client Tx

1.4.4.1   AHT-FUR-REQ-294546/E-DriverInput
Message Type: Request

Represents a request from the Autohitch Image Client to the Autohitch Activation Server to convey the driver's on-screen input to the feature algorithm

Name	Literals	Value	Description
Type	-	-	Driver input via touchscreen
	NoRequest	0x0	
	CancelAutohitch	0x1	
	TurnOnAutohitch	0x2	
	TurnOnTba	0x3	
	Confirm	0x4	
	GoToTraileringDomain	0x5	
	NotUsed_1	0x6	
	NotUsed_2	0x7	

2 General Requirements

2.1 AHT-FUR-REQ-294550/C-AH Interaction via Feature Based Message Protocol

Feature Base Message Protocol shall be used between AH Client and AH Server to synchronize and communicate the current camera view display (360, Normal) of Auto Hitch views.

The HMI Layout used by the AH Client shall be determined by the camera view status provided by the AH Server in order to ensure the HMI Layout applied by the Client is compatible with the Camera View supplied by the Server.

2.2 AHT-FUR-REQ-294552/H-AH HMI Display Requirements

Autohitch-related graphics shall be displayed when the following conditions are valid

- The AH Image Server is requesting Auto Hitch Rear Normal camera view (ConfigNumber== 0x17) or Auto Hitch Rear Camera Hitch view (ConfigNumber== 0x26) or Auto Hitch Rear Camera Zoom view (ConfigNumber== 0x47)
- The value of Autohitch_St is not 0x0
- Vehicle speed does not exceed the camera display maximum speed for 100ms, unless the value of Autohitch_St changes to Message44 or Message45 (for details see AHT-FUR-REQ-397066-Autohitch Vehicle Speed Exception.)

2.3 AHT-FUR-REQ-294554/D-Camera Image Priority

Auto Hitch event shall be treated as defined in spec H22A-Screen Interruption Table. Once the camera image has been displayed to user, the image shall be maintained as long as the conditions required to be in the particular camera view are present and shall have highest priority:

- In Autohitch feature, rearview camera is displayed regardless of the gear the vehicle is in. No pop-ups shall interrupt this video image, except the ones requested by Autohitch feature. (Autohitch displays rearview display even if the gear is in Drive)
- Pop-ups shall disappear when vehicle speed is greater than 0 KPH or if the driver shifts to reverse

2.4 AHT-FUR-REQ-294553/B-Auto Hitch Image Priority

Auto Hitch event shall be treated as defined in spec H22A-Screen Interruption Table.

2.5 AHT-FUR-REQ-294555/D-Autohitch Views

Autohitch Views

Autohitch Rear Normal View HMI Layouts shall be displayed by the AH Image Client when Feature_St has the encoding of FeatureID = 0x081B, Configuration = 0x17 AH Rear Normal.

Autohitch Rear Hitch View HMI Layouts shall be displayed by the AH Image Client when Feature_St has the encoding of FeatureID = 0x081B, Configuration = 0x26 AH Rear Hitch View or 0x47 AH Rear Zoom View.

2.6 AHT-FUR-REQ-347436/A-Autohitch HMI content references

The references to HMI screen layouts and other related HMI content are for reference only and not intended to depict the actual text, graphical, or layout content. Refer to the released HMI specifications for further detail on this type of content.

2.7 AHT-FUR-REQ-397066/A-Autohitch Vehicle Speed Exception

If the value of Autohitch_St is set to Message44 (0x2C) or Message45 (0x2D), the message shall be allowed to be displayed at any vehicle speed.
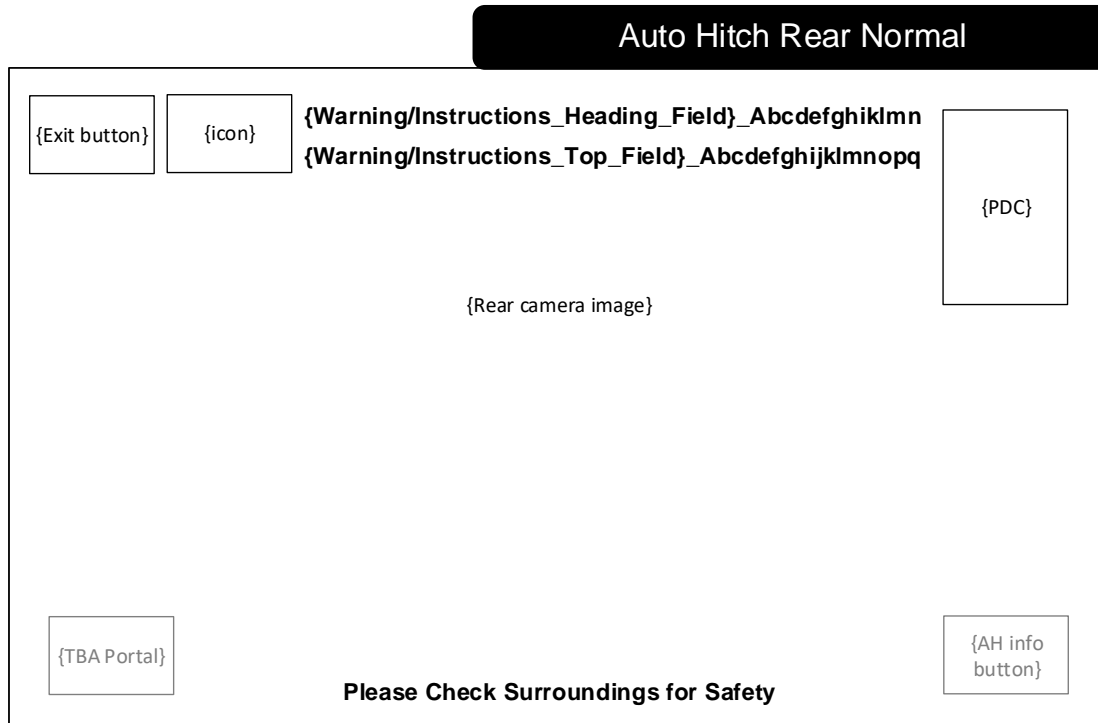
3 Functional Definition

3.1 AHT-FUN-REQ-343875/A-Display Auto Hitch

3.1.1 Requirements

3.1.1.1 AHT-FUR-REQ-323563/C-Info Button Availability
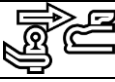
The Auto Hitch info button (Bottom right corner above) shall be disable/greyed if all of the following conditions are not met:
- When Vehicle speed is 0 KPH.

3.1.1.2 AHT-FUR-REQ-294562/D-Auto Hitch Signal Processing - Positional Icon1

Operational Mode	[IconRequest]	Icon 1	Icon 2
	0x0		
	0x1	/000	
	0x2	/000	
	0x3	/000	
	0x4		

Operational Mode	[IconRequest]	Icon 1	Icon 2
	0x5		
	0x6	/000	
	0x7	/000	
	0x8		
	0x9	/000	
	0xA	/000	
	0xB	/000	
	0xC	/000	
	0xD		
	0xE	/000	
	0xF	Not Used	Not Used

Icon graphics are shown above for convenience and do not necessarily represent the final designs. Please refer to the appropriate documentation from the HMI Design team on the final approved graphics.

3.1.1.3   AHT-FUR-REQ-346645/C-Auto Hitch Signal Processing - Positional Instructions

[Autohitch_St]		Icon1 Enabled	Autohitch Instructions	Manual/ Automatic
Hex	Encoding			
0x00	NoMessage	No	No Info Button	M
0x01	Message1	No	No Info Button	M
0x02	Message2	Yes	See AutoHitch HMI Text Mapping Table	M
0x03	Message3	No	No Info Button	M
0x04	Message4	Yes	No Info Button	A&M
0x05	Message5	Yes	See AutoHitch HMI Text Mapping Table	A&M
0x06	Message6	No	No Info Button	M
0x07	Message7	No	No Info Button	M
0x08	Message8	No	No Info Button	M
0x09	Message9	No	See AutoHitch HMI Text Mapping Table	M
0x0A	Message10	Yes	See AutoHitch HMI Text Mapping Table	M
0x0B	Message11	Yes	No Info Button	M
0x0C	Message12	No	No Info Button	M
0x0D	Message13	Yes	No Info Button	A&M
0x0E	Message14	Yes	No Info Button	A
0x0F	Message15	Yes	No Info Button	A
0x10	Message16	Yes	No Info Button	A
0x11	Message17	Yes	No Info Button	A
0x12	Message18	Yes	No Info Button	M
0x13	Message19	Yes	No Info Button	A

| [Autohitch_St]		Icon1 Enabled	Autohitch Instructions	Manual/ Automatic
Hex	Encoding			
0x14	Message20	No	No Info Button	M
0x15	Message21	Yes	See AutoHitch HMI Text Mapping Table	M
0x16	Message22	Yes	No Info Button	M
0x17	Message23	Yes	See AutoHitch HMI Text Mapping Table	A
0x18	Messag24	Yes	No Info Button	A
0x19	Message25	Yes	No Info Button	A
0x1A	Message26	No	No Info Button	M
0x1B	Message27	No	No Info Button	M
0x1C	Message28	Yes	No Info Button	A
0x1D	Message29	No	No Info Button	M
0x1E	Message30	Yes	No Info Button	M
0x1F	Message31	Yes	No Info Button	M
0x20	Message32	Yes	No Info Button	A&M
0x21	Message33	Yes	No Info Button	A&M
0x22	Message34	No	No Info Button	M
0x23	Message35	No	No Info Button	M
0x24	Message36	Yes	No Info Button	M
0x25	Message37	Yes	No Info Button	A
0x26	Message38	Yes	No Info Button	A&M
0x27	Message39	Yes	No Info Button	A&M
0x28	Message40	Yes	See AutoHitch HMI Text Mapping Table	A
0x29	Message41	No	No Info Button	M
0x2A	Message42	No	No Info Button	M
0x2B	Message43	No	No Info Button	M
0x2C	Message44	No	No Info Button	M
0x2D	Message45	No	No Info Button	M
0x2E	Message46	No	No Info Button	M
0x2F	Message47	No	No Info Button	M
0x30	Message48	Yes	No Info Button	M
0x31	Message49	Yes	No Info Button	M
0x32	Message50	No	No Info Button	M
0x33	Message51	Yes	See AutoHitch HMI Text Mapping Table	A&M
0x34	Message52	Yes	No Info Button	A
0x35	Message53	Yes	No Info Button	M
0x36	Message54	No	No Info Button	M
0x37	Message55	Yes	No Info Button	A&M
0x38	Message56	Yes	No Info Button	A&M
0x39	Message57	No	No Info Button	M
0x3A	Message58	Yes	No Info Button	A
0x3B	Message59	No	See AutoHitch HMI Text Mapping Table	M
0x3C	Message60	No	See AutoHitch HMI Text Mapping Table	M
0x3D	Message61	No	No Info Button	
0x3E	Message62	No	No Info Button	M
0x3F	*Message63	No	{Command to Go to Trailering Domain}	M

Note: Please refer to the AutoHitch HMI Text Mapping Table for the text strings of the instructions fields associated with each Message ID from the table above. *Message63 is not an AutoHitch screen with text strings and instead indicates a command to the AutoHitch Client to transition to the Trailering Domain as defined in the HMI specification.

3.1.1.4   *FUR-REQ-319884/D-Auto Hitch Soft Button Requirements*

The APIM shall track the status of each soft button available to the user. Debounce and arbitration of the softbutton status shall follow applicable Ford design standards and best practices. Only one button is allowed to register as pressed at any one time, no matter how many buttons the user is pressing simultaneously.

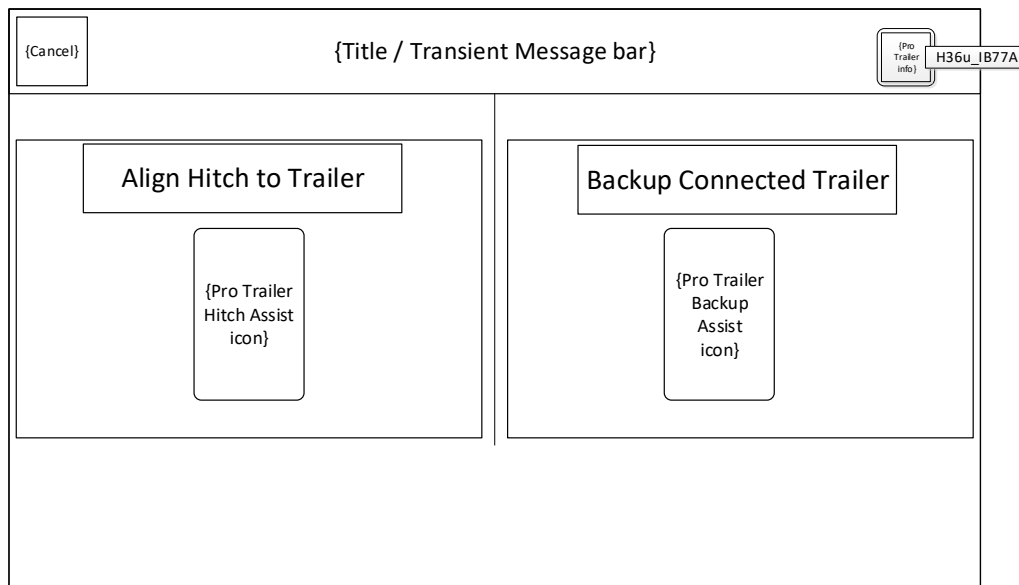### 3.1.1.5 *FUR-REQ-319885/E-Feature Selection by Soft Buttons*
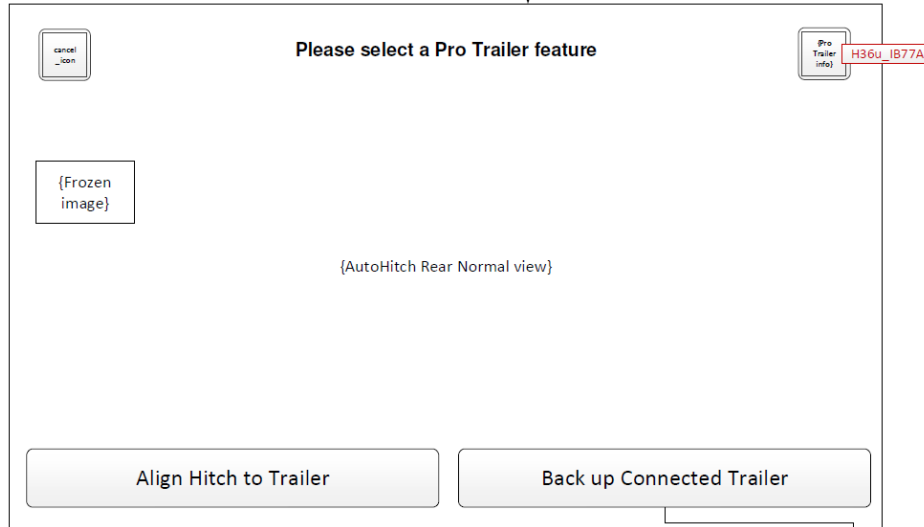
The output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
Align Hitch to Trailer	0x2 TurnOnAutohitch
Back Up Connected Trailer	0x3_TurnOnTba

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

When {Pro Trailer info} button is selected, the Pro Trailer information screen shown in reference 12 of the AutoHitch HMI Text Mapping Table shall be displayed.

3.1.1.6 *FUR-REQ-422924/A-Alternate Feature Selection by Soft Buttons*

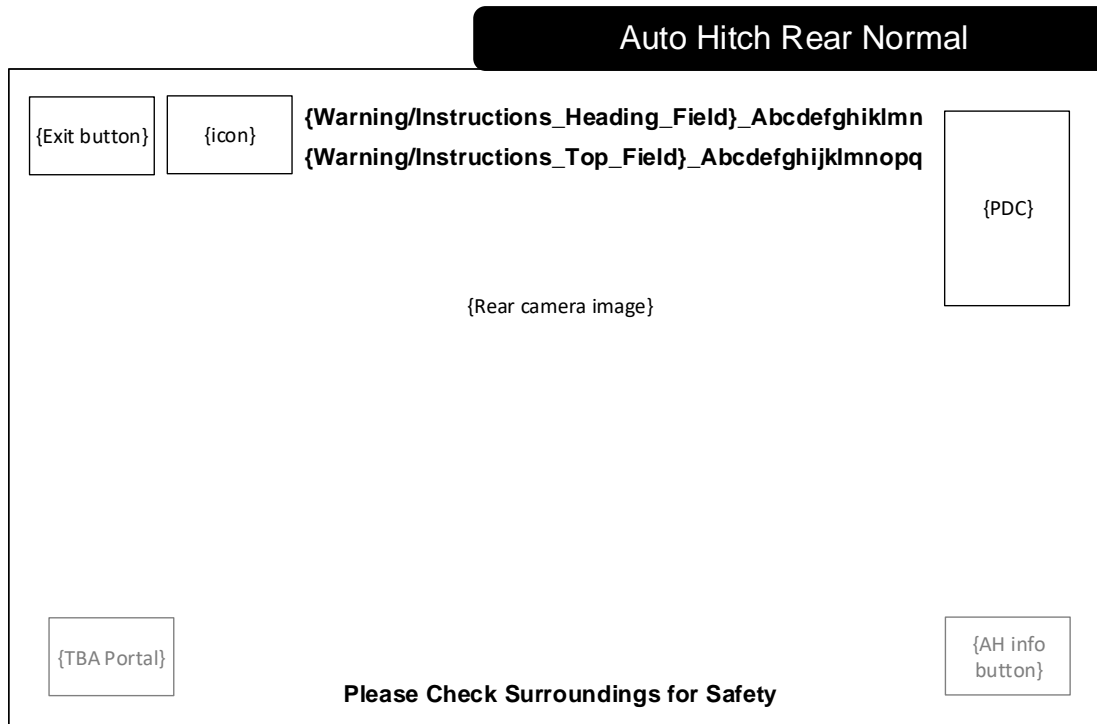The output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
Align Hitch to Trailer	0x2 TurnOnAutohitch
Back Up Connected Trailer	0x3_TurnOnTba

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

When {Pro Trailer info} button is selected, the Pro Trailer information screen shown in reference 12 of the AutoHitch HMI Text Mapping Table shall be displayed.

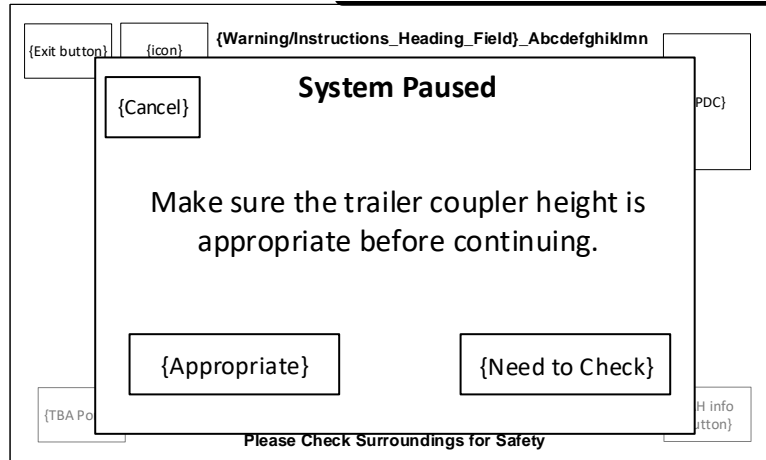*3.1.1.7*   *FUR-REQ-343766/A-TBA Selection by Soft Button*

The output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
{TBA Portal}	0x3 TurnOnTba

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

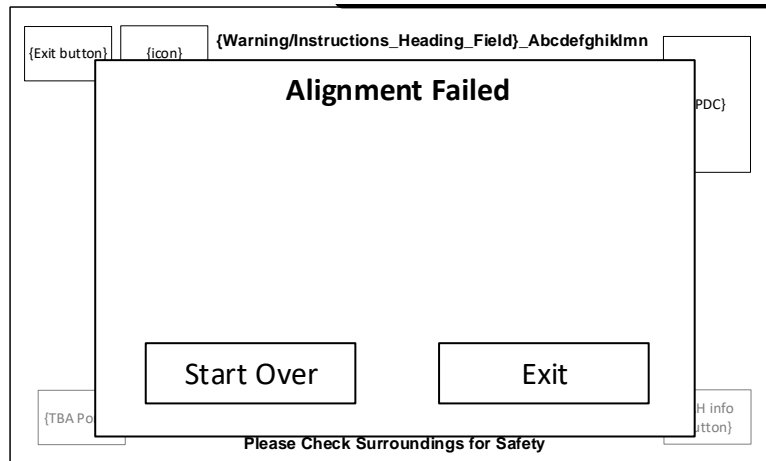*3.1.1.8   FUR-REQ-347395/B-Continue Selection by Soft Button*

For the above layout, the output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
{Appropriate}	0x4 Confirm
{Need to Check}	0x2 TurnOnAutohitch
{Cancel}	0x1 CancelAutohitch

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

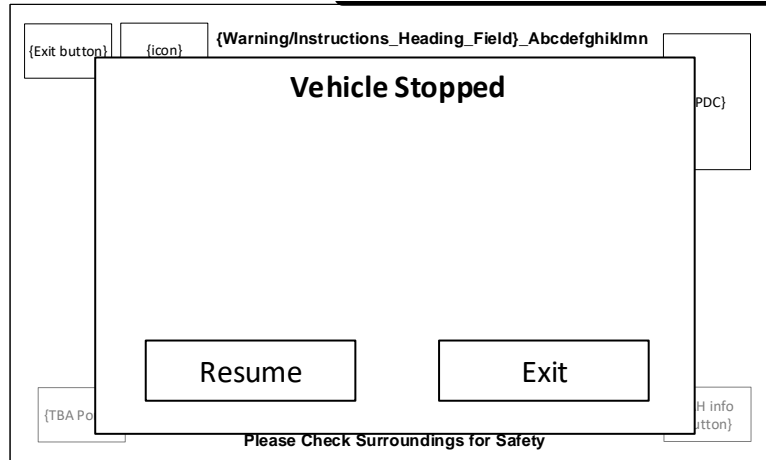*3.1.1.9   FUR-REQ-347435/A-Start Over Selection by Soft Button*

For the above layout, the output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
Start Over	0x4 Confirm
Exit	0x1 CancelAutohitch

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

### 3.1.1.10 *REQ-371605/A-Driver Early Abort Selection by Soft Button*

For the above layout, the output signal DriverInput shall be set according to the following table.

Soft Button Pressed	DriverInput
Resume	0x4 Confirm
Exit	0x1 CancelAutohitch

The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

3.1.1.11 *REQ-371606/B-AutoHitch "Rear Normal" view and "Rear Hitch" view*
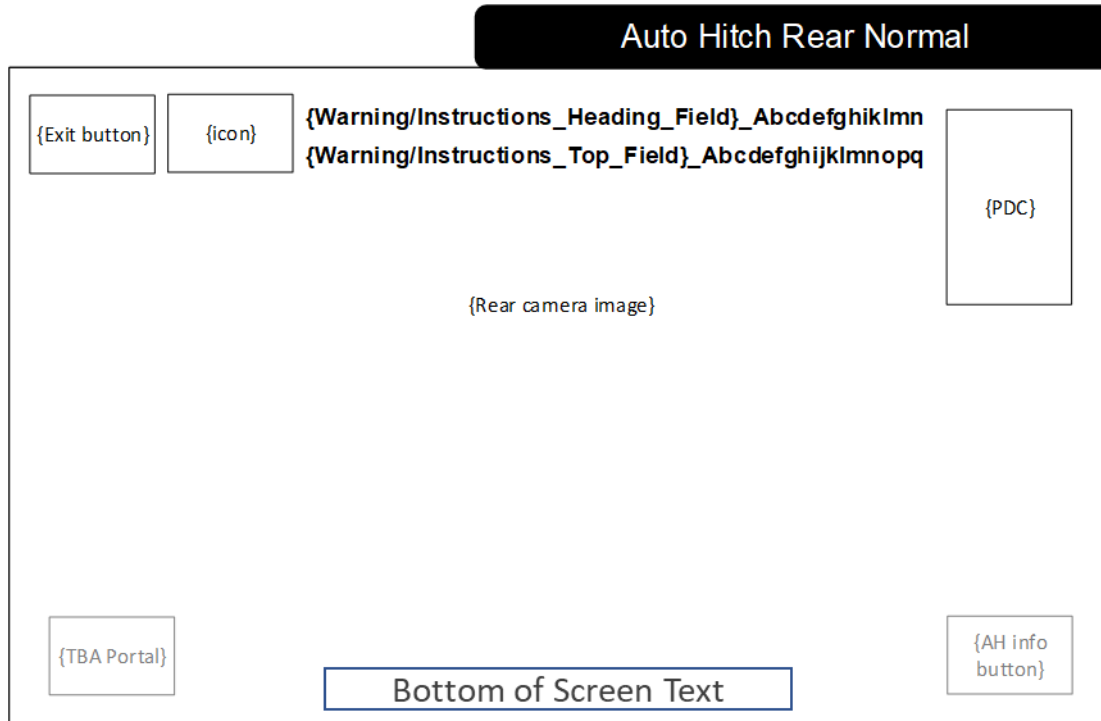
The client shall display the AutoHitch "Rear Normal" view screen format while the ConfigNumber== 0x17.

The client shall display the AutoHitch "Rear Hitch" view screen format while the ConfigNumber== 0x26.

The client shall display the AutoHitch "Rear zoom" view screen format while the ConfigNumber== 0x47.
The message at the bottom of the screen shall be displayed as described below:

- The Client shall display "Text A" for the bottom of screen message, in AutoHitch 'Rear Normal' view.

- The Client shall display "Text A" for the bottom of screen message, in AutoHitch 'Rear Hitch" or "Rear Zoom" view, when message #25 (0x19) is requested.

- The Client shall display "Text B" for the bottom of screen message, in AutoHitch 'Rear Hitch" or "Rear Zoom" view, except when message #25 (0x19) is requested.

- "Text A" and "Text B" are defined in the Auto Hitch HMI Text Mapping Table, reference 15.
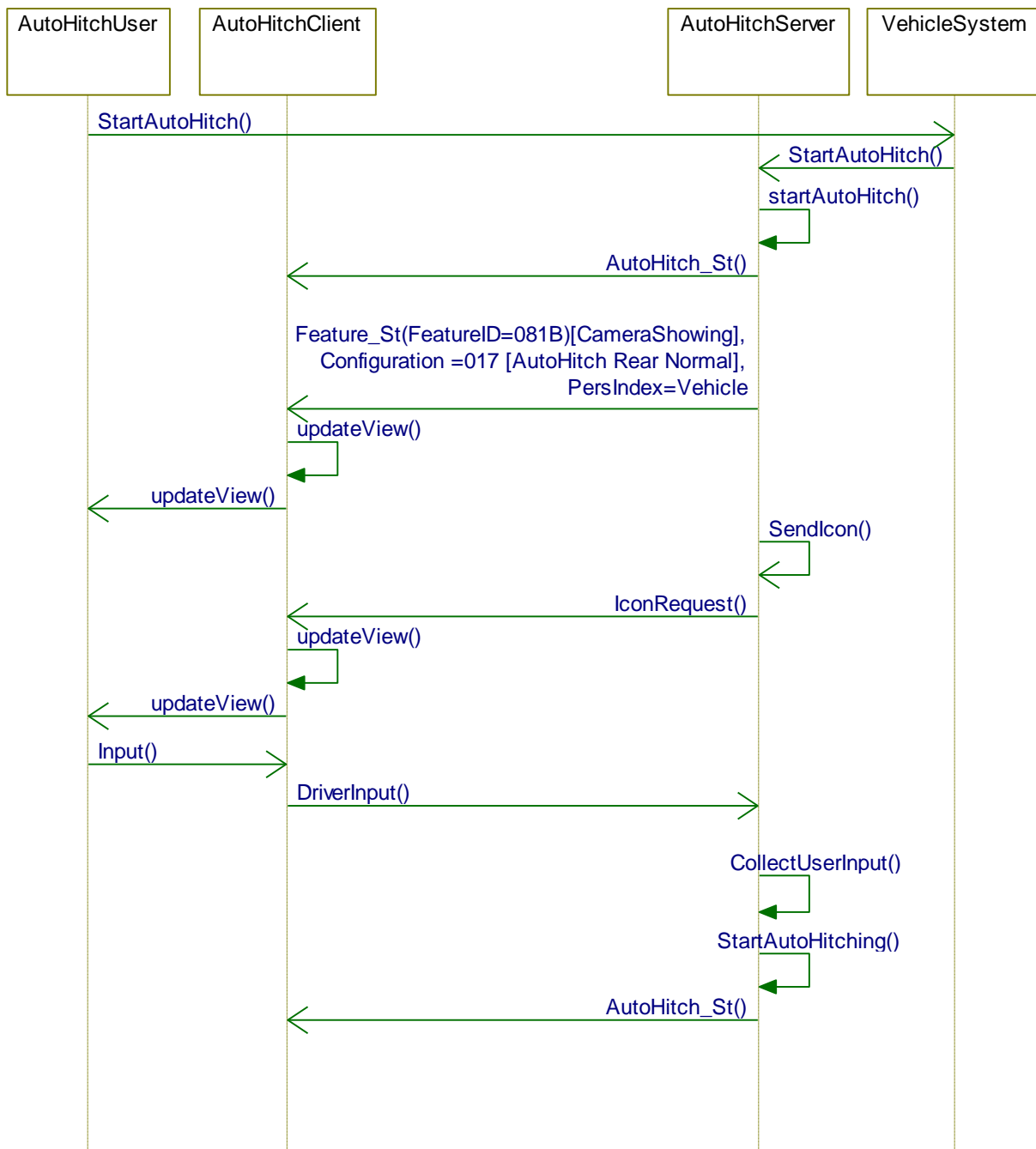
3.1.2 Use Cases

3.1.3 White Box View

3.1.3.1 *AHT-ACT-REQ-302424/B-Auto Hitch AD*
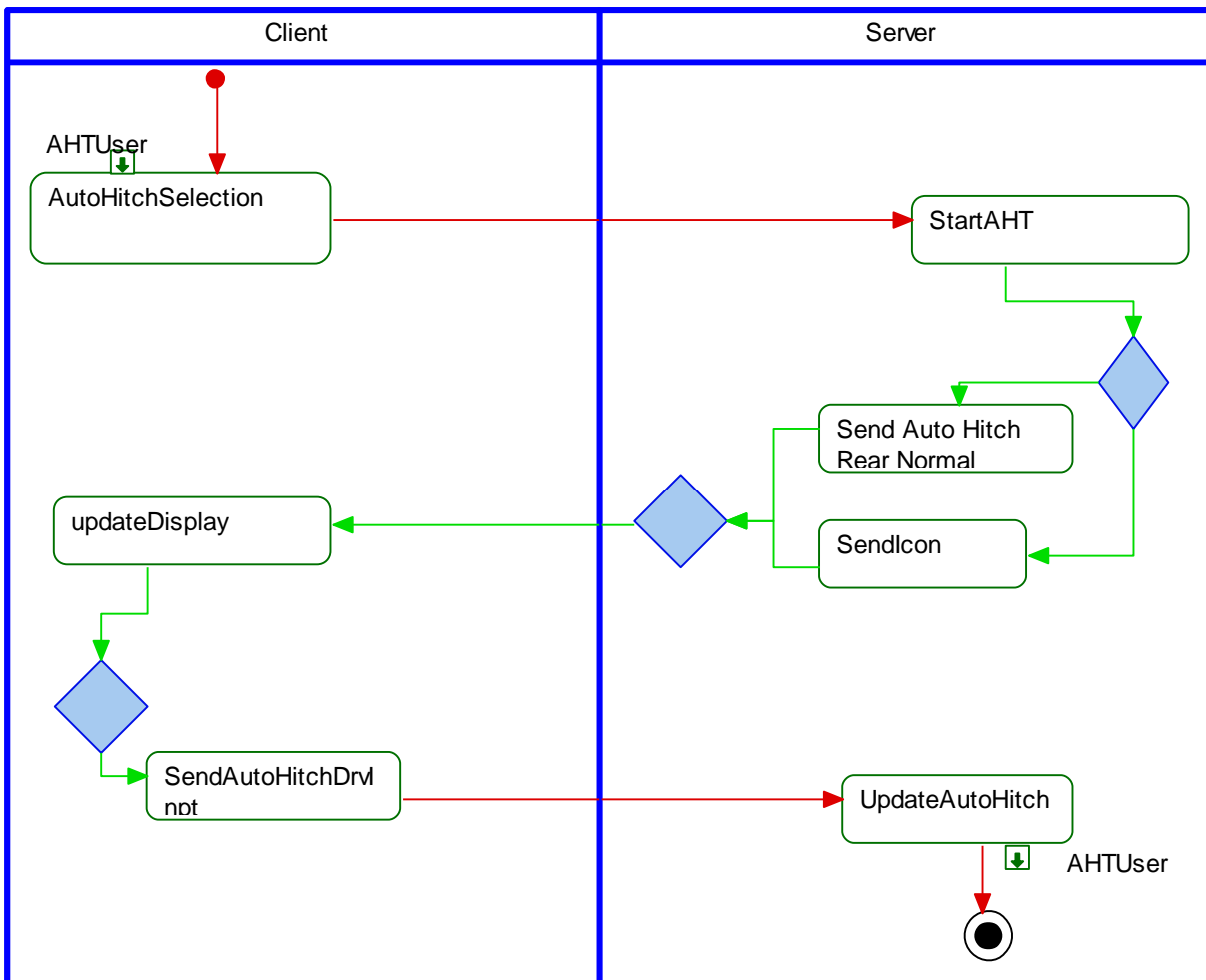
3.1.3.2 AHT-SD-REQ-302425/C-Auto Hitch SD

3.2 Auto Hitch Exit

3.2.1 Requirements

3.2.1.1 *AHT-FUR-REQ-294566/C-Cancel Auto Hitch when Camera Feed is Missing*

In the event the camera feed is missing, the Auto Hitch Client shall set DriverInput to a value of 0x1_CancelAutohitch while Autohitch_St >= 0x1. Once the feature is cancelled, the request should be reset to 0x0_NoRequest.

3.2.1.2 *AHT-FUR-REQ-319291/C-Cancel Auto Hitch on Request from Driver*

When the driver presses the Exit button on the touchscreen, the Auto Hitch Client shall set DriverInput to a value of 0x1_CancelAutohitch while Autohitch_St >= 0x1. The value of DriverInput shall be maintained until the value of Autohitch_St has changed to any value other than its last reported value, before setting the DriverInput signal value back to 0x0 NoRequest.

4 Appendix: Reference Documents

Reference #	Document Title
1	H36u_SYNC4_AutoHitch_MY21
2	AutoHitch HMI Text Mapping Table v1.5 or later
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
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16	
17	