Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Media Player

Subsystem Part Specific Specification (SPSS)

Version 1.5

UNCONTROLLED COPY IF PRINTED

Version Date: February 23, 2018

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
April 8, 2016	**1.0**	**Draft Release**	
June 13, 2016	**1.1**	**Initial Release**	**First Formal CTR release**
	MP-FUR-REQ-134192/B-Bluetooth Indexing for Apple Devices		AGhoul: Correction made to title.
	MP-FUR-REQ-134193/B-AVRCP 1.4 Configuration		AGhoul: Clarified that requirement is for AVRCP Browsing.
	FUR-REQ-207092/B-iTunes Radio Support		AGhoul: New Requirement
	FUR-REQ-207094/B-iTunes Radio's metadata		AGhoul: New Requirement
	MP-SD-REQ-019967/B-Browse of Media Player (TcSE ROIN-150468-2)		Rpaquet2 - No Content change just put in a more readable diagram.
	MP-SD-REQ-019969/B-Now Playing - Media Player (TcSE ROIN-118694-2)		Rpaquet2 - No Content change just put in a more readable diagram.
	MP-FUR-REQ-020181/E-Audio File Support (TcSE ROIN-295833-1)		AGhoul: Removed .CAF support
	FUR-REQ-213649/A-USB hub detection recovery		AGhoul: New Requirement
	MP-FUN-REQ-212842/B-Media Smart Search		rpaquet2 - Added requirement 226429. Removed 212780, 212781, 212835
	FUR-REQ-212779/B-Smart Search Chinese Keyboard Inputs		AGhoul: Removed Chinese handwriting and Chinese Pinyin inputs.
	FUR-REQ-212782/B-Smart Search Multilanguage String		AGhoul: Updated content.
	FUR-REQ-226429/A-Smart Search Chinese Acronyms		AGhoul: New requirement
September 29, 2016	**1.2**	**Updated Release**	
	MP-FUN-REQ-019835/E-Sourcing (TcSE ROIN-294244-2)		mwarsit1: Added requirements MP-FUR-REQ-235205/A-Media Player device resume behavior, MP-FUR-REQ-235208/A-Media Player source resume behavior, MPv2-FUR-REQ-231265/A-Indexing – MSC Content Limits, MPv2-FUR-REQ-231264/A-Indexing – MTP Content Limits and MPv2-FUR-REQ-231229/A-Indexing – iPod Indexing Limits
	MP-FUR-REQ-235205/A-Media Player device resume behavior		mwarsit1: New requirement, first implementation for CTR.
	MP-FUR-REQ-235208/A-Media Player source resume behavior		mwarsit1: New requirement, first implementation for CTR.
	MP-FUR-REQ-134192/C-Indexing over Bluetooth for Apple Devices		AGhoul: Updated title and content to disable iAP over Bluetooth
	MP-FUN-REQ-212842/C-Media Smart Search		mwarsit1: “Added requirement MP-FUR-REQ-235406 – Smart Search Special Character Handling to align media player smart search with phonebook search logic.”
	MP-FUR-REQ-212774/B-Smart Search Speller		mwarsit1: Added reference to special characters to align media player smart search functionality to phone book smart search.
	FUR-REQ-212778/B-Smart Search String Order		mwarsit1: Added comment to clarify, that the given examples do not consider requirement FUR-REQ-226429
	MP-FUR-REQ-235406/A-Smart Search Special Character Handling		mwarsit1 - New requirement
	MP-FUR-REQ-212782/C-Smart Search Multilanguage String		mwarsit1: Added comment to clarify, that the given examples do not consider requirement FUR-REQ-226429. Corrected example for input letter J.
November 7, 2016	**1.3**	**Updated Release**	
	MP-IIR-REQ-019833/B-Media		mwarsit1 - Added signal MediaInformation2_St.

	Player Server Status (TcSE ROIN-148079-2)		
	MD-REQ-239457/A-MediaInformation2_St		mwarsit1 - New signal to allow up to 80 characters for metadata and source name.
	MP-FUN-REQ-019968/B-View Media Player Now Playing Information (TcSE ROIN-294230-1)		mwarsit1 - Added requirement 239458/A for new MediaInformation2_St interface.
	STR-417875/A-Requirements		mwarsit1 - Added Requirements paragraph
	MP-FUR-REQ-239458/A-Sending MediaInformation signals		mwarsit1 - New requirement, added based on introduction of MediaInformation2_St interface.
October 27, 2017	**1.4**	**Updated Release**	
	MP-FRD-REQ-213354/D-Media Player		asimukhi: v1.3 - On-demand release as of 07-Nov-2016
	MP-IIR-REQ-019833/C-Media Player Server Status (TcSE ROIN-148079-2)		rpaquet2- Added signals ActivSYNCSource_St,MediaShuffle,MediaRepeat
	MD-REQ-263665/B-ActiveSyncSource_St		rpaquet2 - New signal to indicate APIM internal audio source.
	MD-REQ-263666/B-MediaShuffle_St		rpaquet2 - New signal to indicate APIM internal audio source shuffle state.
	MD-REQ-263667/B-MediaRepeat_St		rpaquet2 - New signal to indicate APIM internal audio source repeat state.
	STR-063790/D-Requirements (TcSE ROIN-294228)		rpaquet2 - Added 250153
	FUR-REQ-250153/A-Browse Order Configuration		New Requirement based on HMI TGWs from south America
	MP-SD-REQ-019969/C-Now Playing - Media Player (TcSE ROIN-118694-2)		rpaquet2 - New signal to indicate APIM internal audio source.
	FUR-REQ-155231/C-SYNC Gen3 Supported USB Hubs		AGhoul: Added VID and PID for MY19 Molex Type-C hub
	MP-FUN-REQ-212842/D-Media Smart Search		mwarsit1 - Added requirement MP-FUR-REQ-261297/A-Case Sensitivity
	STR-347047/C-Requirements+		mwarsit1: Added REQ-247491 for fly-out behaviour definition.
	STR-347047/D-Requirements		mwarsit1 - Added Requirement MP-FUR-REQ-261297/A-Case Sensitivity
	MP-FUR-REQ-261297/A-Case Sensitivity		mwarsit1 - New Requirement
	MP-FUR-REQ-212782/D-Smart Search Multilanguage String		mwarsit1: Corrected Note. Examples DO consider REQ 212782. Correction only, no implementation effort.
	FUR-REQ-247491/A-Smart Search Simplified input method for fly-out characters		mwarsit1: New requirement
February 23, 2018	**1.5**	**Updated Release**	
	MP-FUR-REQ-212774/C-Smart Search Speller		mwarsit1: Removed special character keyboard from smart speller.
	MP-FUR-REQ-235406/B-Smart Search Special Character Handling		mwarsit1: Refined special character wildcard behaviour and special characters in front of words. Added examples.

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1 Architectural Design

1.1 MP-CLD-REQ-020289/A-Media Player Server (TcSE ROIN-150497-1)

Responsibility: The Media Player Server is the interface to the Media Player Client for the Media Player function. It responds to request from the Media Player Client during List Browse requests. It also provides active Media Player source information, metadata information, playtime, active track number, total tracks in current play plan, when the active source is a media player source.

1.2 Interface Requirements

See List Browse Protocol feature for signals used to navigate and select items in a list.

1.2.1 MP-IIR-REQ-019833/C-Media Player Server Status (TcSE ROIN-148079-2)

Method	Notes	Parameters
ActiveTrackNum1.St()	Message Type: Status Description: This attribute holds the current TrackID. The TrackID that is unique on the Media and is a combination of the unique FolderNumber and the TrackNumber of the currently playing track.	Int *TrackNumber :* TrackID = [FolderNumber][TrackNumber] FolderNumber: 0x0000 : Root 0x0001 : Folder nr 1 0x0002 : Folder nr 2 ... 0xFFFF : Folder nr 65535 TrackNumber: 0x0000 : invalid 0x0001 : Track 1 ... 0xFFFF : Track 65535
NumberOfTracks.St()	Message Type: Status	NumberOfTracksSt *Number :*

	Description: This attribute displays the total number of tracks in the currently active play plan.	0x0001 : 1 Track ... 0xFFFF : 65535 Tracks
TotalPlaytime.St()	Message Type: Status Description: This attribute holds the total playtime of the currently playing track.	TotalPlaytimeSt *Time :* Time (In Seconds)
TrackPlaytime.St()	Message Type: Status Description: This attribute holds the current track time of the currently playing track.	TrackPlaytimeSt *Time :* Time (In Seconds)
MediaInformation.St()	Message Type : Status TP signal which contains the metadata information, icon information, Source Name information, for the currently playing Media Player Server media. The Media Player Server provides this information to the Media Player Client so that metadata information can be displayed on the Now playing screen. If the Metadata or source information is not available, EOS is sent. If the string is longer than 19 Characters + EOS the metadata is cut like defined in the from the display unit. It is sent over the ISO 15765-2 protocol.	int *DataUpdate* 0x0 Inactive 0x1 Set Operation 0x2 Data refresh int *MetadataIcon_1* 0x00 Invalid 0x01.. 0x18 IconID's 0x19 - 0xFF Reserved int *MetadataIcon_2* 0x00 Invalid 0x01.. 0x18 IconID's 0x19 - 0xFF Reserved

		string *Metatdata1* Metadata1 string *Metadata2* Metadata2 string *SourceInformation* SourceInformation int *NonMetadataSrc* 0x0 No 0x1 Yes

1.2.1.1 MD-REQ-239457/A-MediaInformation2_St

Message Type: Status

Signal transferred using ISO 15765-2 protocol. It transfers status of currently playing Media Player Server media. The Media Player Server provides this information to the Media Player Client so that metadata information can be displayed on the Now Playing screen.

MediaInformation2_St has the same parameter compared to MediaInformation.St() but allows up to 80 character for strings.

Name	Literals	Value	Description
DataUpdate	-		DataUpdate is used to indicate if new data is incoming or if the currently shown data shall be updated.
	Inactive	0x0	
	Set Operation	0x1	
	Data refresh	0x2	

MetadataIcon_1	-		MetadataIcon_1 contains the Icon associated with the string transferred by

			Metadata1.
	Invalid	0x0	
	IconID	0x1	
		…	
	IconID	0x18	
	Reserved	0x19 – 0xFF	

MetadataIcon_2	-		MetadataIcon_2 contains the Icon associated with the string transferred by Metadata2.
	Invalid	0x0	
	IconID	0x1	
		…	
	IconID	0x18	
	Reserved	0x19 – 0xFF	

Metadata1	-		Parameter Metadata1 is used to transmit one metadata string to the client.
	String	-	Metadata1 is up to 81 characters. 80 letters plus 1 EOS character.

Metadata2	-		Parameter Metadata2 is used to transmit one metadata string to the client.
	String	-	Metadata2 is up to 81 characters. 80 letters plus 1 EOS character.

SourceInformation	-		Parameter SourceInformation is used to transmit the source name string to the client.
	String	-	SourceInformation is up to 81 characters. 80 letters plus 1 EOS character.

NonMetadataSrc	-		NonMetadataSrc is used to indicate, if the active source

			supports metadata or not.
	No	0x0	
	Yes	0x1	

1.2.1.2 MD-REQ-263665/B-ActiveSyncSource_St

Message Type: Status

This signal indicates what type of APIM internal source is active when the ResourceUpdate_St is reporting APIM Aux_ExtSource and Granted or Stacked.

Name	Literals	Value	Description
Type	-	-	
	Null	0x0	
	Audio Video In	0x1	
	USB	0x2	
	SD Card	0x3	
	WiFi	0x4	
	Bluetooth Audio	0x5	
	Line In	0x6	
	App Link	0x7	
	Carplay	0x8	
	Andriod Auto	0x9	
	Baidu Carlife	0xA	
	Not Used 1-5	0xB – 0xF	

1.2.1.3 MD-REQ-263666/B-MediaShuffle_St

Message Type: Status

This signal indicates the APIM internal active source shuffle state.

Name	Literals	Value	Description
Type	-	-	
	Null	0x0	
	Off	0x1	
	On	0x2	
	No Used	0x3	

1.2.1.4 MD-REQ-263667/B-MediaRepeat_St

Message Type: Status

This signal indicates the APIM internal active source Repeat state.

Name	Literals	Value	Description
Type	-	-	
	Null	0x0	
	RepeatOne	0x1	Repeats current playing song
	RepeatOff	0x2	
	RepeatOn	0x3	Repeats current play plan

2 Functional Definition

2.1 MP-FUN-REQ-019835/E-Sourcing (TcSE ROIN-294244-2)

2.1.1 Use Cases

2.1.1.1 MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)

Actors	User,
Pre-conditions	Infotainment System On Selected device supports a folder and file system hierarchy.
Scenario Description	The user inserts their device for the first time.
Post-conditions	As the device is indexed, each file within the root level shall be played in alphabetical order first, then the child files of each folder within that hierarchy level shall be played in alphabetical order recursively. A new playlist is not played until the customer makes a new selection. A device indices is created that contains a database of the connected device's metadata content
List of Exception Use Cases	E1 - System detects file system is not supported. E2 - System Detects that the Audio Object is Unusable Due to Copyright Protection. E3 - Audio file on the device is marked as hidden. E4 - Device has been removed before indexing completes.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.2 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.3 MP-UC-REQ-019838/B-System Detects File System is Not Supported (TcSE ROIN-290531-2)

Linked Elements
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019938/A-Direct Browse of a Device With Multiple Partitions (TcSE ROIN-290475-1)
MP-UC-REQ-019937/B-Direct Browse of Device with a File System Hierarchy (TcSE ROIN-290474-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	The user inserts a device that is formatted with a file system that is not supported. System shall at least support the

	following formats: ext2, exFAT, FAT, FAT32, NTFS and HFS+
Post-conditions	System detects the file system, and rejects further communication with the device. The user is notified that the file system of the inserted device is not supported The previously playing audio source continues playback
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.4 MP-UC-REQ-019839/A-Audio file on the device is marked as hidden (TcSE ROIN-290535-2)

Linked Elements
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)

Actors	User, Media Player
Pre-conditions	Infotainment System On Media device becomes the active source. Auto Play is ON
Scenario Description	The user inserts a ~~disk~~ media device that has hidden files or folders.
Post-conditions	System ignores any hidden files or folders on the ~~disk~~media device. System finds the first audio object within the root directory to play.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.5 MP-UC-REQ-019840/A-Device has been removed before indexing completes (TcSE ROIN-290546-2)

Linked Elements
MP-UC-REQ-019855/A-System Handles Large Libraries for Voice Control (TcSE ROIN-290490-1)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)

Actors	User, Media Player
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The device has been disconnected from the system before it has finished collecting the device's media library
Post-conditions	The device indices are not stored The device information is saved and indexing will ~~continue~~ restart the next time it is inserted.
List of Exception Use Cases	N/A

Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.6 MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)

Actors	User
Pre-conditions	Infotainment System On
Scenario Description	The user connects their device as a media source
Post-conditions	System begins to index the media content on the device if inserted for the first time or check if media content has changed if device was not inserted for the first time. System adds the connected device to the list of Audio Sources.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects file system is not supported. E3 - System Detects that the Audio Object is Unusable Due to Copyright Protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.7 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)

MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.8 MP-UC-REQ-019843/A-Insert Line-in Media Device (TcSE ROIN-290484-2)

Actors	User
Pre-conditions	System is On
Scenario Description	The user wants to connect an analog audio device for playback
Post-conditions	The device is not sourced until the user selects

	the line-in audio source The system continues to play audio through the active audio source
List of Exception Use Cases	~~E1 - System detects communication errors with the media device.~~
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.9 MP-UC-REQ-019844/C-Disconnect Active Media Device (TcSE ROIN-290485-1)

Actors	User, System
Pre-conditions	System is on Media device is active
Scenario Description	The user removes or disconnects the active media source.
Post-conditions	The Default Source is Sourced (ex AM/FM/SDARS/DAB)* The audio source is removed from the list of the available media sources in the source list. *note, see applicable Audio Management / Station Management SPSS for details.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.10 MP-UC-REQ-019845/A-Disconnect Inactive Media Device (TcSE ROIN-290486-1)

Actors	User, System
Pre-conditions	Infotainment System On Media Device is not active
Scenario Description	The user removes or disconnects their media source from the system.
Post-conditions	The previously playing audio source continues to play The device indices stays stored on the System All references to the source being connected are removed.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.11 MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)

Actors	User, Media Player
Pre-conditions	System Off Ignition Off Media device is connected, but not connected to using line-in The media source playing before the IGN off is turned on and/or within wireless connectivity range Now playing playlist of the media source is available
Scenario Description	Upon an IGN ON event, system waits up to 30 seconds for the last actively connected media source to reconnect. Once the device connects, it resumes playback of the Now Playing playlist from the last position in which the user stopped playback from the source.
Post-conditions	Inserted or connected media source is selected as the active source and continues playback.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported. E3 - System detects media source which is not the active source is disconnected. E4 - System detects that saved playback position does not exist. E5 - System detects that there is no Now Playing playlist persisted on the device or the system when auto play is ON. E6 - System detects that the media source is currently not connected.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.12 MP-UC-REQ-019847/B-System Detects Media Source Which is not the Active Source is Disconnected (TcSE ROIN-290529-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is the not the active source.
Scenario Description	The user removes or disconnects the media source from System.
Post-conditions	Current system operation is continued. The previously playing audio source continues to play The device indices stays stored on the System HMI removes the media source from the list of connected sources. All references to the source being connected are removed.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.13 MP-UC-REQ-019848/C-System detects that there is no Now Playing playlist persisted on the device or the system (TcSE ROIN-290532-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)

Actors	User, Media Player
Pre-conditions	Infotainment System On Media device becomes the active source.
Scenario Description	When the user connects a media source, System detects that there is no Now Playing playlist persisted on the device or on System.
Post-conditions	The Media Player shall build a Now Playing playlist of all content found on the device and render the Now Playing playlist immediately. The user is able to browse the media library for the device to select a song for playback.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.14 MP-UC-REQ-019849/B-System Detects that Saved Playback Position Does Not Exist (TcSE ROIN-290538-2)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)

Actors	Media Player
Pre-conditions	Infotainment System On
Scenario Description	System resumes a previously connected USB media device that doesn't maintain and persist its own Now Playing playlist
Post-conditions	System detects that the saved playback position could not be found. System shall assume that device was inserted for the first time, refer to MP-UC-REQ-019836/A-Immediate Playback First Indexing.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.15 MP-UC-REQ-019850/B-System Detects that the Media Source is Currently Not Connected (TcSE ROIN-290540-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	User
Pre-conditions	Infotainment System On
Scenario Description	User enters a scenario where they try to access a media device, and during the connection or sourcing process the device is not connected (either logically or physically)
Post-conditions	System detects the device being disconnected from the system System notifies user that the device has been removed or is not currently available. System remains on the current audio source.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.16 MP-UC-REQ-019851/A-System detects that the connected device is not supported (TcSE ROIN-290547-2)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)

MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The user has connected a device which is not supported by the system (i.e. USB Keyboard, mouse, etc)
Post-conditions	The user is notified that the device they have tried to access is not supported for use on this system. The current active audio source shall not be interrupted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.17 MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Now Playing Playlist is available
Scenario Description	The user selects the media player while in another audio source (i.e. AM/FM, SXM, CD).
Post-conditions	System resumes playing the connected media in which it last left off. Track metadata is appropriately presented to the user.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects file system is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.18 MP-UC-REQ-019853/A-System Indexes Cloud Storage Device (TcSE ROIN-290489-1)

Actors	Media Player, Device
Pre-conditions	System is On Media device is properly connected System is able to connect and read the library

	of a service that has off-board audio content.
Scenario Description	The user wants to index a music library that extends past the local storage on the connected device.
Post-conditions	The device remains connected to the system On board and off board content is transparent to user
List of Exception Use Cases	E1 - Off-board content is not longer available.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.19 MP-UC-REQ-019854/A-Off-board content is no longer available (TcSE ROIN-290543-1)

Linked Elements
MP-UC-REQ-019853/A-System Indexes Cloud Storage Device (TcSE ROIN-290489-1)

Actors	User
Pre-conditions	Infotainment System On Media is being played back from connected device Device is in the process or has finished indexing
Scenario Description	The user chooses to access content that is only available through off board storage
Post-conditions	The device remains connected to the system. System notifies user that the content they are trying to access is not currently available. If an audio object is currently playing, the audio object continues to play If no audio object is playing, user is prompted to select a new track User is given the option to queue audio track and play once available.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.20 MP-UC-REQ-019855/A-System Handles Large Libraries for Voice Control (TcSE ROIN-290490-1)

Actors	Media Player
Pre-conditions	System is On.

	Media device is properly connected. System is able to connect and read the library .
Scenario Description	The user wants to index a music library that is too large to access through the VUI within a reasonable period of time. *Time requirements will be defined in functional specifications
Post-conditions	The device remains connected to the system. System detects that the library has exceeded the number of tracks to index within a reasonable amount of time. System indexes everything on the device except for tracks. System makes speech commands available for everything except for tracks. System continues to index tracks after speech commands are made available for all other categories.
List of Exception Use Cases	E1 - Device has been removed before indexing completes.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.21 MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	User, Infotainment System
Pre-conditions	Infotainment System On iAP1 Media device is paired over Bluetooth and supports Bluetooth Stereo iAP1 Media device is connected over USB
Scenario Description	The user has paired, connected and sourced their iAP1 media device over Bluetooth audio, and then has connected and sourced the same device over USB.
Post-conditions	System detects that the device is connected over both Bluetooth and USB Digital Audio. IVIS then disconnects the device from Bluetooth Audio and allows audio to stream over USB digital audio immediately, once the device is sourced via USB. If the user selects to source back to Bluetooth

	Audio, IVIS shall reconnect back to the media device via Bluetooth A2DP. If the device gets disconnected from USB then the Bluetooth Audio connection shall be re-established, If not connected already at this point of time, and only if no other device is connected for BT Audio Streaming.
List of Exception Use Cases	E1 - System Detects Communication Errors with the Media Device. E2 - System Detects that the Media Source is Currently Not Connected.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.22 MP-UC-REQ-194248/A-Handling iAP2 Devices with Multiple Connection Methods

Actors	User, Infotainment System, iAP2 device
Pre-conditions	Infotainment System On iAP2 Media device is paired over Bluetooth and supports Bluetooth Stereo iAP2 Media device is also connected over USB
Scenario Description	The user has paired, connected and sourced their iAP2 media device over Bluetooth audio, and then has connected and sourced the same device over USB.
Post-conditions	System detects that the device is connected over both Bluetooth and USB Digital Audio, IVIS shall then start the USB Audio stream. Once the system or the user sources away from USB, the system shall then stop the USB Audio stream. System shall allow sourcing the device either via Bluetooth Audio or via USB. According to the selected source the stream shall resume via the associated interface.
List of Exception Use Cases	E1 - System Detects Communication Errors with the Media Device. E2 - System Detects that the Media Source is Currently Not Connected.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.23 MP-UC-REQ-134194/B-Locked MTP Device

Actors	Media Player
Pre-conditions	Infotainment System is On MTP device is properly connected over USB. User selects the MTP device as an audio source using HMI. Android device is not used for projection mode.
Scenario Description	System detects that the internal storage of the MTP device is empty or not accessible. User is given a message that device will not share media content until it is unlocked then reconnected to USB. System shall not display this message for non MTP capable devices.
Post-conditions	The selected source with no media types available on it is maintained as a connected audio source.
List of Exception Use Cases	E1 - System detects file system is not supported. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.24 MP-UC-REQ-134475/A-Connect a Powered Off Device

Actors	User, Media Device, System
Pre-conditions	Infotainment System On
Scenario Description	The user connects their device while it is off to the USB port
Post-conditions	If enumeration has failed due to device not fully powered up, system shall wait for device to fully boot up before trying to re-enumerate. After a successful enumeration device shall be added to the list of Audio Sources.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects file system is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC,

	CBI, BT Interface, Vehicle System Interface

2.1.1.25 MP-UC-REQ-205462/A-Apple device connected to BT and USB but not sourced

Actors	User, Media Player, Connected Device, HMI, BT
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment via Bluetooth and USB Apple device is not the active audio source
Scenario Description	User initiates a Siri session via vehicle's HMI and requests media playback from the connected Apple device
Post-conditions	Media Core shall establish a USB Audio connection and source the connected Apple device via USB Audio within 50 Milliseconds from receiving the playback status notification. Media playback shall start via the vehicle infotainment system as specified in the MFi Accessory Interface Latest Specification
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone E2 – Carplay session is active on the Apple device
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.26 MP-UC-REQ-205465/A-Apple device connected to USB only but not sourced

Actors	User, Media Player, Connected Device, HMI, BT, USB
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment system via USB but not via Bluetooth The Apple device is not the active audio source
Scenario Description	User initiates a Siri session from the connected Apple device and requests media playback.
Post-conditions	In Vehicle infotainment system shall not change the active audio source
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.27 MP-UC-REQ-205466/A-Apple device is connected to USB only and sourced

Actors	User, Media Player, Connected Device, HMI, BT, USB
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment System via USB but not connected via Bluetooth Apple device is the active audio source
Scenario Description	User initiates a Siri session from the connected Apple device and requests media playback
Post-conditions	In Vehicle Infotainment System shall not change the audio source or the status of the media playback.
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.28 MP-UC-REQ-205472/A-Apple device is sourced and connected to BT only

Actors	User, Media Player, Connected Device, HMI, BT, USB
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment System via Bluetooth only Apple device is the active audio source via Bluetooth Audio
Scenario Description	User initiates a Siri session and requests media playback from the connected Apple device
Post-conditions	In Vehicle Infotainment System shall not change the audio source or the status of the media playback.
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.29 MP-UC-REQ-205477/A-Apple device is connected to BT only but not sourced

Actors	User, Media Player, Connected Device, HMI, BT, USB
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment system via Bluetooth only Apple device is not the active audio source
Scenario Description	User initiates a Siri session and requests media playback from the connected Apple device
Post-conditions	In Vehicle Infotainment System shall establish a BT Audio connection and source the connected Apple device within 50 Milliseconds from receiving the playback status notification. Media playback shall start via the vehicle infotainment system as specified in the latest MFi Accessory Interface Specification
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.30 MP-UC-REQ-205484/A-Apple device is connected to BT, USB and sourced

Actors	User, Media Player, Connected Device, HMI, BT
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment System via Bluetooth and USB Apple device is the active audio source via USB or BT Audio
Scenario Description	User initiates a Siri session and requests media playback from the connected Apple device
Post-conditions	In Vehicle Infotainment System shall not change the audio source and shall allow music to resume after the end of the Siri session as specified in the Latest MFi Accessory Interface Specification
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.31 MP-UC-REQ-205485/A-Play Status Notification without using Siri

Actors	User, Media Player, Connected Device, HMI, BT
Pre-conditions	Infotainment System On Apple Device is connected to the In Vehicle Infotainment System via Bluetooth and USB Apple device is not the active audio source
Scenario Description	User starts music playback on the Apple device without using Siri or the Vehicle's interface
Post-conditions	In vehicle infotainment system shall not change the audio source
List of Exception Use Cases	
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.32 MP-UC-REQ-205492/A-Non-media SIRI session during an Applink Audio Source

Actors	User, Media Player, Connected Device, HMI, BT
Pre-conditions	Infotainment System is On Apple Device is connected to the In Vehicle Infotainment System via Bluetooth and USB Apple device is the active audio source via an Applink App
Scenario Description	User initiates a Siri session but does not request media playback then ends the Siri session
Post-conditions	In vehicle Infotainment system shall not change the audio source away from Applink
List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.33 MP-UC-REQ-205493/A-Non-Media Siri Session

Actors	User, Media Player, Connected Device, HMI, BT
Pre-conditions	Infotainment System is On Apple Device is connected to the Infotainment via Bluetooth and USB Apple device is not the active audio source
Scenario Description	User initiates a Siri session but does not request media playback then ends the Siri session
Post-conditions	In vehicle Infotainment system shall resume the previously active audio source after Siri session has ended

List of Exception Use Cases	E1 – Siri is disabled from the connected Apple phone
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.34 MP-UC-REQ-205700/A-Media Siri session during Applink Audio Source

Actors	User, Media Player, Connected Device, HMI, BT, USB
Pre-conditions	Infotainment System is On Apple device is connected to the in vehicle infotainment system via Bluetooth and USB Apple device is the active audio source via an Applink App
Scenario Description	User initiates a Siri session via vehicle's HMI and requests media playback from the Apple device
Post-conditions	The in vehicle infotainment system shall establish a USB Audio connection and source the connected Apple device via USB Audio within 50 milliseconds from receiving the playback status and player change notification
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.1.1.35 UC-REQ-205721/A-Apple Media Library Updates post indexing

Actors	User, Media Player, Connected Device, HMI, USB
Pre-conditions	Infotainment System is On Apple Device is connected to the in vehicle infotainment system via iAP Infotainment system has finished indexing the media database of the connected Apple device Apple device is the active audio source
Scenario Description	User removes or adds media content to the Apple device from the cloud
Post-conditions	Media playback shall not be interrupted by the in vehicle infotainment system Infotainment system starts updating the saved media database within 500 milliseconds from receiving the library update notifications via iAP.

	Infotainment system shall only perform incremental updates to the saved media database. User shall be able to access the updated media database of the Apple device via voice and graphical user interfaces Note: Refer to Media Library Update section in MFI
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, SWC, CBI, Wireless Interface, Vehicle System Interface

2.1.1.36 UC-REQ-205728/A-Apple Media Library Updates during initial indexing

Actors	User, Media Player, Connected Device, HMI, USB
Pre-conditions	Infotainment System is On Apple Device is connected to the in vehicle infotainment system via iAP Infotainment system has not finished indexing the media database of the connected Apple device Apple device is the active audio source
Scenario Description	User adds new media content to the Apple device from the cloud while indexing is in progress
Post-conditions	Media playback shall not be interrupted by the in vehicle infotainment system Infotainment system shall be able to index the original and the newly added media content on the connected iAP device. User shall be able to access the media database of the iAP device via voice and graphical user interfaces Note: Refer to Media Library Update section in MFI
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, SWC, CBI, Wireless Interface, Vehicle System Interface

2.1.1.37 UC-REQ-205741/A-Apple Media Library Updates and sourcing

Actors	User, Media Player, Connected Device, HMI, USB
Pre-conditions	Infotainment System is On Apple Device is connected to the in vehicle infotainment

	system via iAP Infotainment system has finished indexing the media database of the connected Apple device Apple device is the active audio source
Scenario Description	User changes the audio source away from the Apple device
Post-conditions	In vehicle infotainment system shall not request media library updates while the Apple device is not sourced. Note: Refer to Media Library Update section in MFI
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, SWC, CBI, Wireless Interface, Vehicle System Interface

2.1.2 Requirements

2.1.2.1 MP-FUR-REQ-019857/B-Audio Source Transitions (TcSE ROIN-295948-1)

If the system's media player is interrupted during playback by another audio source, then media playback shall pause for the sourced media device. The Now Playing playlist shall be maintained, as well as the current track position. After the other audio source interruption has completed, media playback shall resume from the media device.

*note see applicable Audio Management / Station Management SPSS for details.

2.1.2.2 MP-FUR-REQ-019858/C-Audio transition on device removal (TcSE ROIN-295949-1)

If the media device was removed during an audio source interruption, then The Default Source is sourced (ex AM/FM/SDARS/DAB)*

*note see applicable Audio Management / Station Management SPSS for details.

2.1.2.3 MP-FUR-REQ-019859/A-Phone Call handling (TcSE ROIN-295950-1)

If media playback has been paused when a phone call is sourced, then media playback shall resume after the phone call has been completed.

2.1.2.4 MP-FUR-REQ-019860/B-Audio Sourcing on First Insert (TcSE ROIN-295951-1)

Upon first insert of a multimedia device over USB, the System shall be capable of receiving notification that the device supports Bluetooth pairing and then prompt the user to pair the device, immediately with a popup or after some time via a button press. See HMI phone and/or Bluetooth Pairing requirements in BT Phone SPSS for further details.

2.1.2.5 MP-FUR-REQ-019861/A-Device Operation while Sourced (TcSE ROIN-295952-1)

For devices capable of this feature, the Media Player shall publish a vehicle brand image logo – Ford or Lincoln - to the display of the device upon connection to the System.

The Media Player shall determine the correct pixel format code and display the vehicle brand image logo accordingly.

2.1.2.6 MP-FUR-REQ-019862/A-Media Player Resume Behavior Definition (TcSE ROIN-295792-1)

"Resume" refers to media beginning to play when the System confirms that the power state has returned to Infotainment and the Media Player remembers previously active audio source before the power state change. The Media Player shall then attempt to play audio from that source.

2.1.2.7 MP-FUR-REQ-235205/A-Media Player device resume behavior

When resuming a Media Player source as defined in *MP-FUR-REQ-235208 - Media Player source resume behavior*: The following priority shall be applied to select the device that will be activated:

If IVIS can differentiate between USB ports:

1. Activate same device that was active prior to suspend. This behavior is independent of the USB port the device is connected to.
2. Activate device that is connected to the same USB port, that was used prior to suspend.
3. Activate the default audio source*

If IVIS can't differentiate between USB ports:

1. Activate same device
2. Activate device, that has an index stored on IVIS and that was most recently connected
3. Activate default audio source*

*note, see applicable Audio Management / Station Management SPSS for details.

2.1.2.8 MP-FUR-REQ-235208/A-Media Player source resume behavior

When resuming, the In-Vehicle Infotainment System shall source the last active Media Player source, e.g. USB, BTAudio. If no device is available for the last active source, the default source shall be activated *.
Refer to *BTC-FUR-REQ 192160 - Media Player resume for Bluetooth* and *MP-FUR-REQ-235205/A-Media Player device resume behavior.*

*note, see applicable Audio Management / Station Management SPSS for details.

2.1.2.9 MP-FUR-REQ-019863/A-Media Player Device Presence Check (TcSE ROIN-295793-1)

The Media Player shall check for the presence of connected media devices when entering the Infotainment state after an ignition ON event and then shall scan the connected media device contents to ensure that the stored media index is still valid. After the System's media player has confirmed that the connected media device is indeed the same media device that was playing during the previous Infotainment power state, then media playback shall resume.

2.1.2.10 MP-FUR-REQ-019864/A-Media Player Content Change Detection (TcSE ROIN-295794-2)

~~If Auto Play is Off, and the Media Player detects that the connected devices' content has changed, then playback shall not resume on the connected media device. The user shall select another media device to begin playback and the device shall be re-indexed.~~

~~If Auto Play is On, then content~~Content will begin to play per the requirements defined in the Auto Play section.

2.1.2.11 MP-FUR-REQ-019865/A-Media Player Content Confirmation (TcSE ROIN-295795-1)

The media contents of all connected media devices shall be confirmed each time the power state toggles in and out of Infotainment.

The indexing HMI shall be shown if the user changes the audio source to the connected source that is still being checked for consistency.

Playback shall resume at the same point in the media track that was playing during the last Infotainment ON power state.

2.1.2.12 MP-FUR-REQ-019866/A-Media Player Device Consistency Check (TcSE ROIN-295796-1)

If there are multiple media devices that were connected during the previous Infotainment power state, then each device shall be checked for consistency.

2.1.2.13 MP-FUR-REQ-019867/B-Media Player Detection Timer (TcSE ROIN-295797-1)

If a media device is not detected within thirty (30) seconds after the Infotainment power state has resumed, then audio shall not resume from that device and the media player shall assume that the previously connected media device has been removed, then the Default Source is sourced (ex AM/FM/SDARS/DAB)*

If the media player detects the connected media device after thirty (30) seconds, then the contents of the media device shall be verified but not sourced.

*note see applicable Audio Management / Station Management SPSS for details.

2.1.2.14 MP-FUR-REQ-019868/B-Media Player Resume Behavior - iPod Device Resume (TcSE ROIN-295798-1)

iPod devices shall continue playing the current track on the iPod Now Playing playlist upon resume.

The media player shall always resume the Now Playing Playlist that the iPod has persisted. The media player shall not recreate or restart a playlist if a playlist on the device is already active.

For non-UID Apple devices, the following exception applies: If the system is managing a list of tracks selected by the user, system shall then resume the managed playlist after verifying that the now playing track from the previous iPod connection

has not changed. Once the system detects that the now playing track on the iPod has changed, the system shall then resume the playlist persisted by the iPod.

2.1.2.15 MP-FUR-REQ-019869/D-Media Player Resume for Bluetooth (TcSE ROIN-295799-1)

The media player shall attempt to resume the last previously playing A2DP device. Once the A2DP device is sourced, the media player shall send a play command to the device within 500 msec. If another device is connected according BTP-FUR-REQ-033782/B-Connection Order and Requirements the Default Source is Sourced (ex AM/FM/SDARS/DAB)*

AVRCP devices shall attempt to continue playing the current track on the Now Playing list.

*note, see applicable Audio Management / Station Management SPSS for details.

2.1.2.16 MP-FUR-REQ-019870/A-Media Player Integrity Check on Resume (TcSE ROIN-295800-1)

While the track is playing, the media player shall scan the other tracks on the device to verify the integrity of the index saved on the System. If the index is updated, the index shall be re-saved.

2.1.2.17 MP-FUR-REQ-019871/B-Media Player Resume Behavior – MTP and MSC (TcSE ROIN-295801-2)

If a Mass Storage Class or Media Transfer Protocol device is sourced and the media player is unable to continue playing the current track of the saved Now Playing list because the file is missing, then the device shall resume playback from within the first file in the root directory of the device and continue playing through the rest of the files and folders in an alphabetical order. If indexing was completed before sourcing device, the system shall build a playlist of all songs on the device in an alphabetical order of the Track Titles in metadata.

2.1.2.18 MP-FUR-REQ-019872/A-Now Playing Behavior Upon Resume (TcSE ROIN-295802-1)

The Media Player application shall pause, persist the playback state, and save the Now Playing playlist if the power state changes from Infotainment to any other state where the Media Player is not operational.

2.1.2.19 MP-FUR-REQ-019873/A-Resume Operations on Power State Change (TcSE ROIN-295803-1)

The Media Player application shall resume playback if the power state changes from any power state to the Infotainment state or another state for which the Media Player is operational.

2.1.2.20 MP-FUR-REQ-019874/A-Resume Operation for Browse (TcSE ROIN-295804-1)

Browsing that was in progress before the power state change from Infotainment mode shall not be visible on the display when the power state returns to the Infotainment state.

2.1.2.21 MP-FUR-REQ-019875/A-Resume Operation for Audio Playback (TcSE ROIN-295805-1)

If the Media Player was playing audio before the power state changed away from Infotainment then media playback shall resume when the power state returns to Infotainment or any other operational state. If the Media Player was not playing before the power state changed away from Infotainment, then media playback shall not begin playing.

2.1.2.22 MP-FUR-REQ-019876/A-Resume Operation - Indexing (TcSE ROIN-295806-1)

Indexing shall continue during the Wait-On, Infotainment, DisplayOnly, and VHM power states.

2.1.2.23 MP-FUR-REQ-019877/A-Resume Operation USB Functional Availability (TcSE ROIN-295807-1)

All USB functionality shall be available during the Infotainment, Wait-On, DisplayOnly, and VHM power states.

2.1.2.24 MP-FUR-REQ-019878/A-USB Debounce Timer (TcSE ROIN-295808-1)

A twelve (12) second debounce timer shall be applied to each USB port to protect against ignition cranking conditions. USB detach and re-attach messages shall not be acted upon during this debounce period to ensure a USB device is not disconnected and is able to be played immediately.

2.1.2.25 MP-FUR-REQ-019879/A-Indexing – Creating Indices (TcSE ROIN-295900-1)

Indices shall be created for the supported audio and playlist formats that are detected when a supported media device is attached to the System.

2.1.2.26 MP-FUR-REQ-019880/A-Indexing – On/Off (TcSE ROIN-295901-2)

The user shall be able to disable/enable indexing for their connected device. Changes in Indexing settings shall only apply to the connected media device.

2.1.2.27 MP-FUR-REQ-019882/A-Indexing – Categories Indexed (TcSE ROIN-295903-1)

The indexed metadata fields for any generic audio file or object shall include, but not be limited to, Track Name, Album Artist, Genre, Composer, Folder Name, File Name, Playlist Name, Track Number, and Hidden Status.

2.1.2.28 MP-FUR-REQ-019883/A-Indexing – Music Categories (TcSE ROIN-295904-1)

The indexed metadata fields for a music file or object shall include, but not be limited to, Song Name, Album, Artist, Genre, Composer, Folder Name, File Name, Playlist Name, Track Number, and Hidden Status.

2.1.2.29 MP-FUR-REQ-019884/A-Indexing – Podcast Categories (TcSE ROIN-295905-1)

The indexed metadata fields for a podcast file or object shall include, but not be limited to, Title (Track Name), Author (Artist), Podcast Name (Album), Genre, Folder Name, File Name, Playlist, Hidden, Episode Number, Total Chapters, Chapter Numbers and Names, and Podcast Release Date.

2.1.2.30 MP-FUR-REQ-019885/A-Indexing – audiobook categories (TcSE ROIN-295906-1)

The indexed metadata fields for a audiobook file or object shall include, but not be limited to, Episode Name (Track Name), Author (Artist), Podcast Name (Album), Genre, Folder Name, File Name, Playlist, Hidden, Total Chapters, and Chapter Numbers and Names.

2.1.2.31 MP-FUR-REQ-019886/A-Indexing – unknown categories (TcSE ROIN-295907-1)

If a Composer, Folder Name, or File Name metadata field is empty when it's indexed, it shall not be presented to the user.

NOTE: Metadata fields are indexed in order to be able to provide speech commands as well as an improved customer GUI browsing experience. Whenever possible, metadata fields should be removed from an index wherever necessary to reduce the amount of system resources necessary.

2.1.2.32 MP-FUR-REQ-019887/A-Indexing Media Files (TcSE ROIN-295908-1)

All supported media file types shall be indexed.

2.1.2.33 MP-FUR-REQ-019888/A-Indexing – Unsupported File handling (TcSE ROIN-295909-1)

Every effort shall be made to exclude corrupt or protected media files from the index.

If a media file is not identified as corrupt or protected until the media player begins to render the file, the file shall be skipped and removed from the index.

2.1.2.34 MP-FUR-REQ-019889/A-Indexing – Re-indexing (TcSE ROIN-295910-2)

When a previously indexed device is connected to the System, the Media Player shall update the stored device index to reflect any added or removed files.

If the System determines that the amount of changed media objects is less than X % compared to the total number of the old media objects, then the system shall only update the stored index. If the System determines that the amount of the changed media objects is greater than X % compared to the total number of the old media objects, then the System shall fully index the device and replace the stored index.

2.1.2.35 MP-FUR-REQ-019890/A-Indexing – Removing Unsupported File Types (TcSE ROIN-295911-1)

The re-indexing process shall update the grammar associated with the connected device. The HMI shall notify the user during the re-indexing process on when the grammar is being built.

2.1.2.36 MP-FUR-REQ-019891/B-Indexing – Re-indexing Initiation (TcSE ROIN-295912-1)

It shall be possible to initiate a re-index of a device using the HMI.

2.1.2.37 MP-FUR-REQ-019892/B-Indexing – Storing Indices in Memory (TcSE ROIN-295913-1)

Indices shall be saved in flash on the System. The amount of flash memory on the System shall be enough to store indices for ten media devices with 60K songs on each device~~affect the number of media device indices that can be saved. There shall be a limit to the amount of flash that is dedicated to all media device indices~~.

2.1.2.38 MP-FUR-REQ-019893/A-Indexing – Allowed number of Indices (TcSE ROIN-295914-1)

If a new media index needs to be saved on the System and there are already ten (10) saved media indices then the oldest saved media index shall be overwritten.

2.1.2.39 MP-FUR-REQ-019894/B-Indexing – AVRCP 1.4 Support (TcSE ROIN-295915-2)

The system shall be able to configure AVRCP 1.4 and AVRCP 1.5 Indexing to On or Off.

System shall index the content of Bluetooth AVRCP database aware devices only and shall allow the user to select media for playback via Voice Recognition commands.

Devices which only support the A2DP profile, and not the AVRCP profile, shall not be indexed.

2.1.2.40 MP-FUR-REQ-019895/B-Indexing – AVRCP 1.4 Performance (TcSE ROIN-295916-1)

The System shall be able to fully index each set of one thousand (1,000) media files in one minute or less.

2.1.2.41 MP-FUR-REQ-019896/B-Indexing – AVRCP 1.4 Track Limits (TcSE ROIN-295917-1)

The System shall be able to index 50,000 media files for each supported AVRCP 1.4 device when connected.

2.1.2.42 MP-FUR-REQ-019897/A-Indexing –AVRCP Profile Indexing Support (TcSE ROIN-295918-1)

Devices which support a version of AVRCP earlier than version 1.4 shall not be indexed.

2.1.2.43 MP-FUR-REQ-019898/A-Indexing – iPod Metadata Category Support (TcSE ROIN-295919-1)

The System shall index all metadata fields separately (e.g., first genres, then albums, etc.) to improve indexing performance time and rely on the iPod for specific functionality.

2.1.2.44 MP-FUR-REQ-019899/A-Indexing – iPod Connection Methods (TcSE ROIN-295920-1)

iPod devices connected to the System over a 30-pin or Lightning iPod cable shall be indexed by the media player.

2.1.2.45 MP-FUR-REQ-019900/B-Indexing – iPod Browse While Indexing (TcSE ROIN-295921-1)

The user shall be able to browse and playback media from the iPod during and after indexing (example: some iAP1 devices support browsing while indexing).

2.1.2.46 MP-FUR-REQ-019901/A-Indexing – iPod Indexing Performance (TcSE ROIN-295922-1)

The System shall be able to index each set of one thousand (1,000) media files in one minute or less.

2.1.2.47 MP-FUR-REQ-019902/A-Indexing – iPod Indexing Limits (TcSE ROIN-295923-2)

The System shall be able to index at least ~~35,000~~ 50,000 media files for each iPod device connected.

2.1.2.48 MPv2-FUR-REQ-231229/A-Indexing – iPod Indexing Limits

The System shall be able to index at least 10,000 media files for each iPod device connected.

2.1.2.49 MP-FUR-REQ-019903/A-Indexing – iPod Content Change Notification (TcSE ROIN-295924-1)

The System shall check the DB change iPodNotificaiton packet to determine a content change on a connected device. If the packet indicates a DB change, then the System shall re-index the connected device.

2.1.2.50 MP-FUR-REQ-019904/A-Indexing – Mini Indexing Defined (TcSE ROIN-295925-1)

Mini-indexing is defined as gathering the artist, album, genre, track and playlist category from a newly connected device and providing that metadata directly to the VCA before the phonetic transcription process has begun. Mini-indexing support shall be provided by the System for all supported devices.

2.1.2.51 MP-FUR-REQ-019905/A-Indexing – Mini Indexing Support Requirement (TcSE ROIN-295926-1)

The System shall be capable of performing a mini-index to make voice commands for artist, album, genre and playlist available while complete phonetic transcription & normalization is being built.

2.1.2.52 MP-FUR-REQ-019906/A-Mini-Indexing Voice Recognition Flow (TcSE ROIN-295927-1)

To expedite media voice command availability during the indexing stages, the System shall index devices in the following manner:

Action	Comm	Message	HMI Message	Comments
Device Physically Connected		CIndexingMgr::StartIndexingThread()	--	
Mini-Index Starts	SYNC -> VCA	Set VCA.MediaDeviceIndexing=1	Indexing…	
Mini-Index Complete			Indexing…	
Mini-Grammar Build Starts	SYNC -> VCA	Event ID 40024	Indexing…	
Mini-Grammar Build Completes	VCA -> SYNC	Event ID 49007, set VCA.MediaDeviceIndexing=0	Basic media cmds ready	
User can access mini-grammar Voice Commands now*				
Full-Index Begins	SYNC -> VCA		<User Metadata>	VCA.MediaDeviceIndexing must stay set to 0
Full-Index Completes			<User Metadata>	
Full-Grammar Build Starts	SYNC -> VCA	Event ID 40024	<User Metadata>	Note that if this event is transmitted to the VCA while the VCA is building the mini grammar, SYNC needs to cache the event and resend it after the mini grammar is finished building as VCA will ignore this request to build grammar and will send back event "EVM_VR_REBUILD_GRAMMAR_NOT_DONE" (event ID 49008) with the respective device ID. Event ID 49008 means the VCA can't build the grammar at this time for the device with the device ID specified.
Full-Grammar Build Completes	VCA -> SYNC	Event ID 49007	Full media cmds ready	All VR Command requests will use full grammar going forward.

2.1.2.53 MP-FUR-REQ-019907/A-Indexing – MTP Support (TcSE ROIN-295928-1)

MTP devices connected to the System over a USB cable shall be indexed by the media player.

2.1.2.54 MP-FUR-REQ-019908/B-Indexing – MTP Browsing While Indexing (TcSE ROIN-295929-1)

The user shall be able to browse and playback media from the MTP device during and after indexing. During indexing system shall allow the user to use Explore Device option from HMI.

2.1.2.55 MP-FUR-REQ-019909/A-Indexing – MTP Performance (TcSE ROIN-295930-1)

The System shall be able to index each set of one thousand (1,000) media files in one and a half minutes or less.

2.1.2.56 MP-FUR-REQ-019910/A-Indexing – MTP Content Limits (TcSE ROIN-295931-2)

The System shall be able to index at least ~~35,000~~ 50,000 media files for each MTP device connected.

2.1.2.57 MPv2-FUR-REQ-231264/A-Indexing – MTP Content Limits

The System shall be able to index at least 10,000 media files for each MTP device connected.

2.1.2.58 MP-FUR-REQ-019911/A-Indexing – MTP DRM Support (TcSE ROIN-295932-1)

The System shall skip DRM files from the index for an MTP device which does not support WMDRM-ND.

2.1.2.59 MP-FUR-REQ-019912/A-Indexing – MSC Support (TcSE ROIN-295933-1)

USB Mass Storage Class devices connected over a USB cable shall be indexed by the Media Player.

2.1.2.60 MP-FUR-REQ-019913/B-Indexing – MSC Browse while Indexing Support (TcSE ROIN-295934-1)

The user shall be able to browse and playback media from the MSC device during and after indexing. During indexing system shall allow the user to use Explore Device option from HMI.

2.1.2.61 MP-FUR-REQ-019914/A-Indexing – MSC Performance (TcSE ROIN-295935-1)

The System shall be able to index each set of one thousand (1,000) media files in one minute or less.

2.1.2.62 MP-FUR-REQ-019915/A-Indexing – MSC Content Limits (TcSE ROIN-295936-1)

The System shall be able to index at least 50,000 media files for each USB Mass Storage Class device connected.

2.1.2.63 MPv2-FUR-REQ-231265/A-Indexing – MSC Content Limits

The System shall be able to index at least 10,000 media files for each USB Mass Storage Class device connected.

2.1.2.64 MP-FUR-REQ-019916/A-Indexing – MSC and DRM Content (TcSE ROIN-295937-1)

The System shall skip Windows Media DRM files from the index for any USB MSC device.

2.1.2.65 MP-FUR-REQ-048886/A-Indexing – Multiple Connected Devices (TcSE ROIN-306019-1)

The System shall be able to index two USB media devices connected in parallel. If multiple connections will slow down the indexing performance then the indexing priority shall be for the sourced media device.

2.1.2.66 MP-FUR-REQ-134103/A-AVRCP Browsing Channel

Upon connection of an AVRCP channel, system shall establish an AVRCP browsing connection if supported by the connected Bluetooth device.

2.1.2.67 MP-FUR-REQ-134108/A-AVRCP Addressed Media Player selection

System shall obtain a list of available media players from Bluetooth devices at connection. The list shall be updated by the system using notifications from the connected Bluetooth device.

System shall only select and browse one media player per connected Bluetooth device.
System shall select and browse a media player that can access the on-board and off-board media content of the connected device. If multiple media players have access to the on-board and off-board media content, system shall select one media player that have the most coverage of the AVRCP features. Video only players shall not be selected and browsed.

2.1.2.68 MP-FUR-REQ-134109/A-AVRCP Media Player not Active

If browsing is not permitted due to media player not being active on the connected AVRCP device, system shall then inform user via HMI to start media player on the AVRCP device.

2.1.2.69 MP-FUR-REQ-134110/A-AVRCP Addressed Media Player has changed

System shall detect whether the addressed media player and the now playing playlist has changed on the sourced AVRCP device and update the now playing HMI as necessary (example: shuffle, metadata..etc)

2.1.2.70 MP-FUR-REQ-134112/A-AVRCP Voice Commands

System's Voice Recognition commands for AVRCP database aware devices shall be the same as the Voice Recognition commands for USB devices.

2.1.2.71 MP-FUR-REQ-134113/A-AVRCP Media Request Error

In the event of receiving an error code from the AVRCP database aware device while requesting a media object, system shall initiate re-indexing and inform user via HMI that the content on the device has changed. List of errors used by the system to initiate re-indexing shall be configurable.

2.1.2.72 MP-FUR-REQ-134114/A-AVRCP Browsing While Indexing

System might prevent the user from browsing the content of the connected Bluetooth AVRCP device as it is being indexed.

2.1.2.73 MP-FUR-REQ-134189/A-AVRCP Re-Indexing at Connection

System shall use the UID Counter for the selected database aware player to determine whether a re-indexing is necessary at every AVRCP browsing connection.

2.1.2.74 MP-FUR-REQ-134192/C-Indexing over Bluetooth for Apple Devices

IVIS shall not use iAP over Bluetooth to index Apple devices.

2.1.2.75 MP-FUR-REQ-134193/B-AVRCP 1.4 Configuration

System shall use device ID/PNP profile matching to enable or disable the AVRCP media browsing feature on a per-device basis.

If the connected device does not support device ID/PNP profile, then the feature will be turned off.

System's HMI might present the user with the option to disable the feature for a paired Bluetooth device or all paired Bluetooth devices.

The supplier shall provide the possibility to easily:

- Disable the feature for all Bluetooth devices
- Disable the feature for all but some types of Bluetooth devices
- Enable the feature for all Bluetooth devices
- Enable the feature for all but some types of Bluetooth devices
- Ability to update the list of supported Bluetooth devices by an installation file via USB or IVSU

2.1.2.76 MP-FUR-REQ-205793/A-Unnamed USB Device

If a USB device does not have a name available, depending on the connection order, the Infotainment system shall report "USB Device 1", "USB Device 2", "USB Device 3" or "USB Device 4" to the HMI.

2.1.2.77 MP-FUR-REQ-205797/A-USB Device Name

The In-Vehicle Infotainment System shall request the user-friendly name associated with the connected USB device.

This name shall be shown to the customer according the HMI specification, e.g. in the list of audio sources or the USB media player base screen, with a maximum length of 19 characters.

2.1.2.78 FUR-REQ-207092/B-iTunes Radio Support

IVIS shall request and index the iTunes Radio station library from the connected Apple devices.

IVIS shall display iTunes Radio in the media Browse menu only for Apple devices that supports this feature.

IVIS shall allow requesting iTunes radio stations for playback by name via system's voice recognition application.

2.1.2.79 FUR-REQ-207093/A-iTunes Radio supported features

IVIS shall support the following iTunes Radio features: Demote, Promote and add to iTunes wish list.

Features shall be accessible to the user on the now playing screen.

2.1.2.80 FUR-REQ-207094/B-iTunes Radio's metadata

IVIS shall display the following information on the user interface:

1. Name of the playing iTunes Radio station.
2. The title and artist name of the playing media item.

3. The Artwork sent from the Apple device for each playing media item

iTunes Radio track metadata and station name shall not be normalized by Gracenote.

2.1.2.81 FUR-REQ-207096/A-iTunes Radio station becomes unavailable

IVIS shall notify the user once the selected iTunes Radio station becomes unavailable, example: internet data connection becomes unavailable.

2.1.2.82 FUR-REQ-207097/A-iTunes Radio Stations' sorting

IVIS shall display to the user the list iTunes Radio stations in an alphabetical order.

2.2 MP-FUN-REQ-019917/C-Browse of Media Player (TcSE ROIN-294227-2)

2.2.1 Use Cases

2.2.1.1 MP-UC-REQ-019918/A-Browse All Playlists (TcSE ROIN-290462-1)

Actors	User
Pre-conditions	System is On Media device is properly connected
Scenario Description	The user selects browse all playlists function
Post-conditions	The user can browse and select available playlists Playlists are presented in alphabetical order for the connected device.
List of Exception Use Cases	E1 - System detects no playlists are available.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.2 MP-UC-REQ-019919/A-System Detects no Playlists are Available (TcSE ROIN-290526-1)

Linked Elements
MP-UC-REQ-019918/A-Browse All Playlists (TcSE ROIN-290462-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that no playlists are available. No playlists available message is presented to the user.
Post-conditions	Previous system operation is continued.

List of Exception Use Cases	N/A
Interfaces	V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.3 MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)

Actors	User
Pre-conditions	System is On Media device is properly connected
Scenario Description	The user wants to browse a specific playlist on their device
Post-conditions	A list of media objects is presented to the user. The user can select a media objects to play.
List of Exception Use Cases	E1 - System detects that playlist is empty E2 - System detects that playlist is corrupt E3 - System detects media file is not supported E4 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.4 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is

	unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.5 MP-UC-REQ-019921/A-System Detects Playlist is Empty (TcSE ROIN-290522-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the playlist is empty. Playlist empty indicator is given System removes playlist from any stored indices.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.6 MP-UC-REQ-019922/A-System Detects Playlist is Corrupt (TcSE ROIN-290523-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)

Actors	Media Player, User, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the playlist is corrupt. User is presented a notification that indicates playlist is corrupt

	System removes playlist from any stored indices.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.7 MP-UC-REQ-019923/B-System Detects Media File is Not Supported (TcSE ROIN-290530-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)

Actors	Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects the file type, sampling rate, or bitrate are not supported
Post-conditions	User is given an indication that the selected file is not supported If available, the reason for media file not being supported shall be shown on HMI. System moves on to the next track according to repeat and shuffle settings
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.8 MP-UC-REQ-019925/A-No Media Types are Available on the Source (TcSE ROIN-290527-1)

Linked Elements
MP-UC-REQ-019924/A-Browse All Connected Devices (TcSE ROIN-290464-1)
MP-UC-REQ-019927/A-Browse Specific Connected Device (TcSE ROIN-290465-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that no media types are available on the selected source. User is given a message that no media is available on selected device.
Post-conditions	The selected source with no media types available on it is maintained as a connected

	source.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.9 MP-UC-REQ-019926/B-Only One Media Type Available on the Media Device (TcSE ROIN-290528-2)

Linked Elements
MP-UC-REQ-019924/A-Browse All Connected Devices (TcSE ROIN-290464-1)
MP-UC-REQ-019927/A-Browse Specific Connected Device (TcSE ROIN-290465-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)

Actors	Media Player, User
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that only one media type is available on the source. The user is able to browse through the media category of the single media type.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.10 MP-UC-REQ-019927/A-Browse Specific Connected Device (TcSE ROIN-290465-1)

Actors	User
Pre-conditions	System is on Media device is properly connected
Scenario Description	The user wants to browse a specific media source
Post-conditions	A list of media types are presented to the user – audio, video, audiobooks, podcasts, etc
List of Exception Use Cases	E1 - No media types are available on the source. E2 - Only one audio object available on the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.11 MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected.

Scenario Description	The user wants to Browse all Music
Post-conditions	User is given the option to browse the available metadata field categories - genre, album, artist, composers, songs, and playlists.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 – No media types are available on the source.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.12 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization ‘On’ for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization ‘Off’ for Media Device (TcSE ROIN-290503-1)

MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.13 MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)

Actors	User
Pre-conditions	System is on Media device is properly connected
Scenario Description	The user selects browse all music genres function
Post-conditions	Available genres are presented to the user User is given the option to browse artists of each available genre. Genres are presented in alphabetical order
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - Missing or unassigned metadata category.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.14 MP-UC-REQ-019930/A-Missing or Unassigned Metadata Category (TcSE ROIN-290536-1)

Linked Elements
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)

Actors	User, Audio object, Media Player
Pre-conditions	System is on Device is inserted
Scenario Description	The user has audio object(s) on the device which are missing a metadata category which they would like to browse.
Post-conditions	System returns no media found in the selected metadata category.
List of Exception Use Cases	N/A
Interfaces	V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.15 MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected.
Scenario Description	The user selects Browse Music Artists function
Post-conditions	Available artists are presented to user Artists are provided in alphabetical order Once an artist is selected, an option to browse albums of the selected artist is presented to user.
List of Exception Use Cases	E1 - System detects a communication error with the media device. E2 - Missing or unassigned metadata category.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface,

2.2.1.16 MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user selects Browse Music Composers function

Post-conditions	Available composers on device is presented to user Users are presented with the option to browse albums by the selected composer Composers are presented in alphabetical order
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - Missing or unassigned metadata category.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.17 MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user requests to Browse all music albums
Post-conditions	All available albums are presented to user in alphabetical order. Once an album is selected, the user can then browse through all tracks of the selected album
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - Missing or unassigned metadata category.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.18 MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)

Actors	User
Pre-conditions	System is on Media device is properly connected
Scenario Description	The user selects browse all song titles
Post-conditions	User is presented available songs/tracks in alphabetical order if browsing from Artist, Composer, or Genre. User is presented available songs/tracks in track order if browsing from Album or Playlist.

	User is presented an option to play the song
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.19 MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user wants to browse a list of all audiobooks on their connected device
Post-conditions	The user is presented with a list of the available audiobooks for playback.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.20 MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)

Actors	User
Pre-conditions	System is on Media device is properly connected Audiobook is segmented with Chapter information
Scenario Description	The user selects browse chapters of an available audiobook.
Post-conditions	The user can browse the chapter names of the selected audiobook in their intended order. The user is presented the chapter numbers, names, and where playback position is last saved.
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.21 MP-UC-REQ-019937/B-Direct Browse of Device with a File System Hierarchy (TcSE ROIN-290474-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Selected device supports a folder and file system hierarchy
Scenario Description	The user chooses to directly browse the file system on the connected device
Post-conditions	The files and folders (identified by their filename and folder name text) in the root directory of the device are listed for the user. Only supported media files, playlists and folders that contain them shall be shown to the user. The user shall have the option to browse each child directory of the root directory and each file each directory contains. The user shall have the option to browse to each parent directory of each child directory and each file it may contain, up to and including the root directory. Each folder is listed subsequently in alphabetical order, then each file listed in alphabetical order at a given hierarchy level. There shall be the option to play each file and folder at each hierarchy level, as well as "play all" files and folders at a given hierarchy level including child folders.
List of Exception Use Cases	E1 - System detects file system is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.22 MP-UC-REQ-019838/B-System Detects File System is Not Supported (TcSE ROIN-290531-2)

Linked Elements
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019938/A-Direct Browse of a Device With Multiple Partitions (TcSE ROIN-290475-1)
MP-UC-REQ-019937/B-Direct Browse of Device with a File System Hierarchy (TcSE ROIN-290474-1)

Actors	Media Player
Pre-conditions	Infotainment System On

	Media device is properly connected. Media device is selected as the source.
Scenario Description	The user inserts a device that is formatted with a file system that is not supported. System shall at least support the following formats: ext2, exFAT, FAT, FAT32, NTFS and HFS+
Post-conditions	System detects the file system, and rejects further communication with the device. The user is notified that the file system of the inserted device is not supported The previously playing audio source continues playback
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.23 MP-UC-REQ-019938/A-Direct Browse of a Device With Multiple Partitions (TcSE ROIN-290475-1)

Actors	User
Pre-conditions	Infotainment System On Selected device has multiple partitions with a folder and file system hierarchy.
Scenario Description	The user chooses to Direct Browse a Device With Multiple Partitions.
Post-conditions	The partitions (identified by their textual name) are listed for the user. The user is able to select a partition in order to browse its file system hierarchy.
List of Exception Use Cases	E1 - System detects file system is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.24 MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)

Actors	User
Pre-conditions	Infotainment System On Selected device is an iPod, which supports the iPod Authentication Protocol. Selected device only supports iAP v1 or v2
Scenario Description	The user chooses to Direct Browse an iPod with a Database Hierarchy via the HMI.
Post-conditions	The user is able to browse the iPod playlists, genres, albums, artists, composers, songs, etc., as if the user was browsing the GUI of the iPod

	device screen. The user shall have the option to make a selection from the database hierarchy and be presented with the next list of options, in the same order in which the iPod would present the options in the HMI of the iPod device screen when disconnected from System.
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.25 MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)

Actors	User
Pre-conditions	System is on. Media device is properly connected. The user is presented with an interface to search or jump-to and audio object.
Scenario Description	The user wants to quickly access an audio object from the library of the connected device. The user will enter text through V-HMI or G-HMI that will be used to search media library.
Post-conditions	User is able to jump to an alpha-sorted list of audio objects in their media library
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.26 MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user wants to browse a list of all podcasts on their connected device
Post-conditions	The user is presented with a list of the available Podcasts for playback.
List of Exception Use Cases	E1 - System detects communication errors with

	the media device. E2 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.27 MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user selects Browse audio podcast name
Post-conditions	Available podcast names are presented to user. The user can browse through available authors. Browse episode option is presented to user.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.28 MP-UC-REQ-019943/A-System detects Audio Object Is Not Available on the Media Device (TcSE ROIN-290515-1)

Linked Elements

MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)

MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects audio object is not available on the media source. Audio object unavailable message given to user
Post-conditions	System removes audio object from any stored indices or playlists. Next audio object in the Now Playing playlist is played based on repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.29 MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected.
Scenario Description	User selects to browse through the list of podcast episodes from a particular author.
Post-conditions	A list of podcast episodes, in order of newest episode first, is presented to the user. If available and supported by the connected device, the option to browse chapters for each episode is presented to each user.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.1.30 MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	The user selects browse audio podcast chapters for a particular podcast
Post-conditions	The user is able to browse through the chapters within a specific podcast episode. Available chapter artwork, chapter number, chapter titles, chapter time markers, and saved playback position for each chapter in numbered order is displayed
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.2.2 Requirements

2.2.2.1 MP-SR-REQ-019946/A-List Browse- Set Operation (TcSE ROIN-159115-1)

While in the Media Player list Browser, if there is no child list available for current list, the browser shall issue a SetLBPItem.Rq command to the Media Player Server.

The Media Player Server shall then respond to this SetLBPItem.Rq by issuing a MediaInformation.St TP message, with Set Operation encoding for the DataUpdate parameter.

This shall trigger the Media Player Client to update the HMI of the display to the Media Player home screen.

2.2.2.2 MP-FUR-REQ-019947/A-Browsing – Metadata Categories (TcSE ROIN-295809-1)

Browsing by the GUI shall enable the user to select a metadata category from the HMI and then refine the list by selecting additional criteria.

2.2.2.3 MP-FUR-REQ-019948/C-Browsing – Indexed Data (TcSE ROIN-295810-1)

The user shall be able to browse indexed metadata as well as metadata available from the media source which has not been indexed (example: some iAP1 devices support browsing while indexing).

2.2.2.4 MP-FUR-REQ-019949/A-Browsing – candidates list over SUI (TcSE ROIN-295811-1)

If the user initiates a SUI session and there is more than one possible selection available, then the user shall be prompted to refine their selection via the HMI. For example, if multiple tracks exist with the same name, such as Song Title "Alive" by Artist "MJ12" and Song Title "Alive" by Artist "The Who", the user shall be prompted to select between the songs after being given the appropriate title and artist information. This selection may happen via the GUI and/or SUI.

2.2.2.5 MP-FUR-REQ-019950/A-Browsing - Folders (TcSE ROIN-295812-1)

The user shall be able to browse for media files and playlists by folder on MTP devices, USB MSC devices, and any other device that supports a file system hierarchy.

2.2.2.6 MP-FUR-REQ-019951/A-Browsing – Supported Files (TcSE ROIN-295813-1)

The Media Player shall only show supported media files. Files used for other system operations (such as an XML file or a install.lst file) shall be hidden from the user.

2.2.2.7 MP-FUR-REQ-019952/A-Browsing – File Name and Extensions (TcSE ROIN-295814-1)

The Media Player shall show media file names with the file extensions.

2.2.2.8 MP-FUR-REQ-019954/A-Browsing – Empty directories (TcSE ROIN-295816-1)

The Media Player shall remove folders from the directory structure that do not have media files or playlists anywhere in their folder tree. Playlists shall show up in the File Folder browsing view with the playlist file extension.

2.2.2.9 MP-FUR-REQ-019955/A-Browsing – Sorting Folders (TcSE ROIN-295817-1)

While in direct browse or folder view, the folders shall be shown alphabetically before individual files are shown alphabetically.

2.2.2.10 MP-FUR-REQ-019956/A-Browsing – Text Search (TcSE ROIN-295818-1)

The media player shall support text search capabilities to help a user find their content over SUI or VUI.

2.2.2.11 MP-FUR-REQ-134111/A-AVRCP Browsing not available

When Browsing is not available on the connected Bluetooth device via AVRCP 1.4 or later, system shall not present the browse option on HMI.

2.2.2.12 MP-FUR-REQ-134190/A-AVRCP Database Unaware Browsing

System shall allow user via it's HMI to explore and select media content from the connected AVRCP database unaware device. While exploring the media content, system shall consistently obtain the new list of UIDs at each hierarchy within the Bluetooth device.

2.2.2.13 MP-FUR-REQ-134191/A-AVRCP Browsing for Apple Devices

If system does not support iAP over Bluetooth, AVRCP shall then be utilized to allow user browse the media content of the A2DP sourced Database Unaware Apple devices.

2.2.2.14 FUR-REQ-155151/B-AVRCP 1.4 Library HMI Requirements

If the connected device is communicating the folder type, the IVIS shall use an appropriate associated icon for this folder type.

For more information about supported folder types and icons see also USB and iPOD requirements and HMI specifications

Value Parameter Description
0x00 Mixed
0x01 Titles
0x02 Albums
0x03 Artists
0x04 Genres
0x05 Playlists
0x06 Years
0x07 – 0xFF Reserved

2.2.2.15 FUR-REQ-155149/A-AVRCP Database Unaware Voice Commands

System shall not support play all, play and browse voice commands for Bluetooth AVRCP database unaware devices.

2.2.2.16 FUR-REQ-155152/A-AVRCP 1.4 Devices that do not expose any available players

If the connected device does not expose any available players but it reports the presence of folders and media items in its virtual filesystem, the IVIS shall consider the device as database unaware and allow the user to browse the filesystem.

2.2.2.17 FUR-REQ-155153/A-AVRCP 1.4 Root folder Browsing

If the connected device at the root of its virtual file system presents to the IVIS only one folder, and no other media items, then the IVIS shall “hide” this folder level to the user while browsing up and down the filesystem.

2.2.2.18 FUR-REQ-205706/A-Bottom Up Browsing Support

Bottom Up Browsing feature rules are listed in the H22l HMI spec.

Bottom Up Browsing feature shall be available for all connected USB and Bluetooth AVRCP browsed devices.

2.2.2.19 FUR-REQ-205712/A-Bottom Up Browsing persistence rules

Bottom Up Browsing history shall be persisted in the following use cases:

Audio source has changed while media device is still connected.

Bottom Up Browsing history shall not be persisted in the following use cases:

1. Connected device has been disconnected
2. User has changed the play plan via the device’s HMI, example: Device touch screen or Device’s VR such as Siri, Google Now…etc

3. Index for the connected device has been updated.
4. Carplay session has started on the Apple device.
5. Master reset has been performed for the infotainment system.

2.2.2.20 FUR-REQ-250153/A-Browse Order Configuration

IVIS shall be able to use two different sorting order strategies in the browse main menu.

Standard Browse Order:
1 Play All
3 iTunes Radio
4 Playlists
5 Artists
6 Albums
7 Songs
8 Genres
9 Podcasts
10 Audiobooks
11 Composers
12 Explore Device

FSAO Browse Order:
1 Explore Device
2 Play All
4 iTunes Radio
5 Playlists
6 Artists
7 Albums
8 Songs
9 Genres
10 Podcasts
11 Audiobooks
12 Composers

Below is an example from the SYNC3 DE03 Data block configuration of the countries that are considered part of South America.

Row No.	Destination Country	WERS country code	2 letter Destination Code	DE03 Byte1,Byte2	Main Browse Screen Sort Order
109	ARGENTINA	WASAB	AR	0x4152	FSAO
116	BOLIVIA	WSSAC	BL	0x424C	FSAO
119	BRAZIL	WASAC	BR	0x4252	FSAO
121	CHILE	WSSAE	CI	0x4349	FSAO
124	COLOMBIA	WSSAF	CO	0x434F	FSAO
132	ECUADOR	WSSAH	EC	0x4543	FSAO
141	GUYANA	WSSAK	GY	0x4759	FSAO
155	SURINAM	WSSAN	NS	0x4E53	FSAO
159	PARAGUAY	WSSAL	PA	0x5041	FSAO

161	PERU	WSSAM	PE	0x5045	FSAO
172	URUGUAY	WSSAP	UY	0x5559	FSAO
174	VENEZUELA	WASAD	VE	0x5645	FSAO

2.2.3 Sequence Diagrams

2.2.3.1 MP-SD-REQ-019967/B-Browse of Media Player (TcSE ROIN-150468-2)

Scenarios

Normal Usage

The user is browsing Media Player sources/ features via the Cluster display.

Constraints

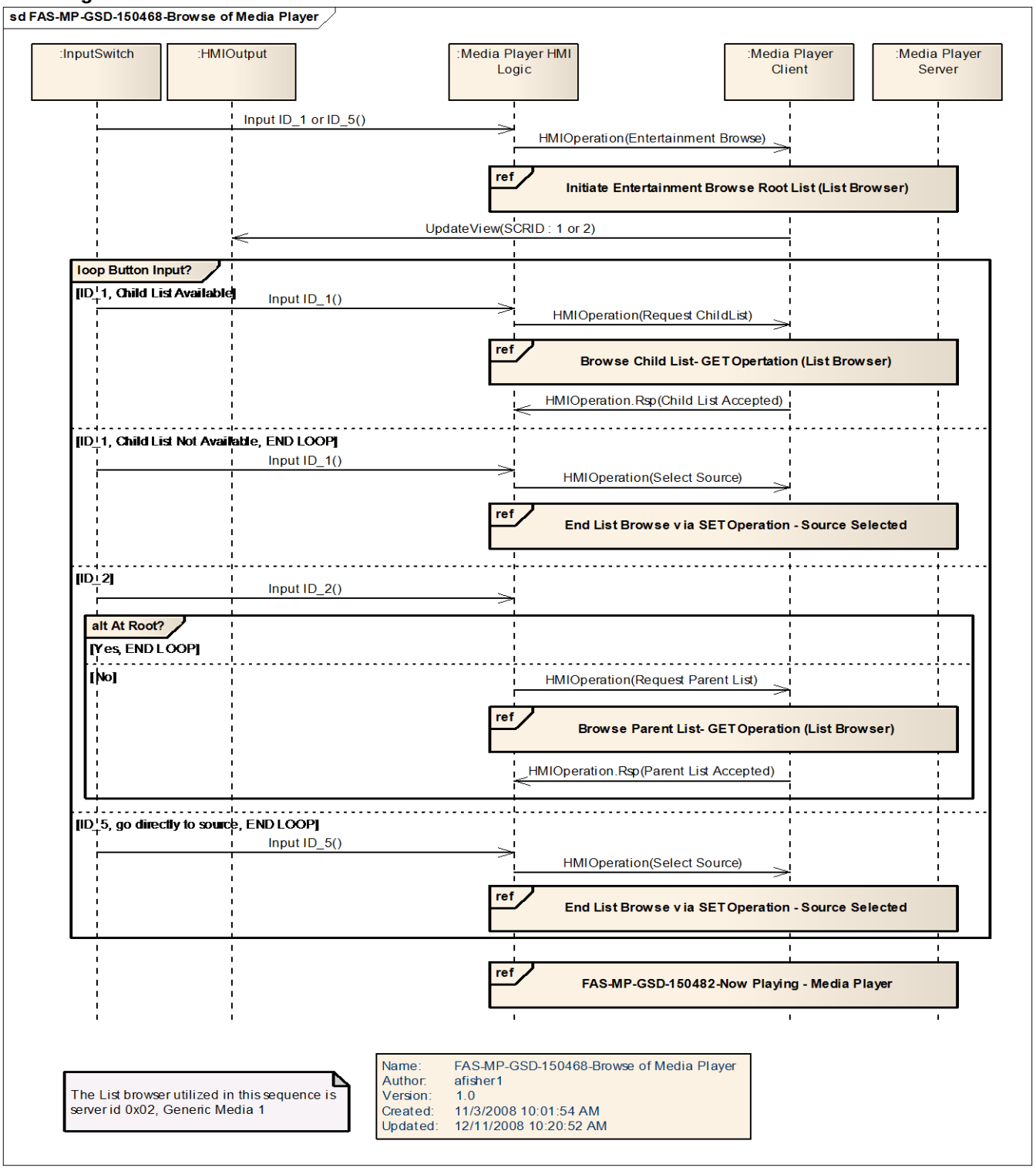
Pre-condition

The user is browsing the ~~RH side~~ media screen of the cluster, and is at the Media Player home screen.

Post-condition

The HMI is displaying {Media Source Now Playing screen}

Sequence Diagram



2.3 MP-FUN-REQ-019968/B-View Media Player Now Playing Information (TcSE ROIN-294230-1)

2.3.1 Requirements

2.3.1.1 MP-FUR-REQ-239458/A-Sending MediaInformation signals

If both interfaces are applicable, the Media Player Server shall transmit the new MediaInformation2_St signal first followed by the old MediaInformation.St() signal.

2.3.2 Sequence Diagrams

2.3.2.1 MP-SD-REQ-019969/C-Now Playing - Media Player (TcSE ROIN-118694-2)

Linked Elements
MP-FUN-REQ-019968/B-View Media Player Now Playing Information (TcSE ROIN-294230-1)

Scenarios

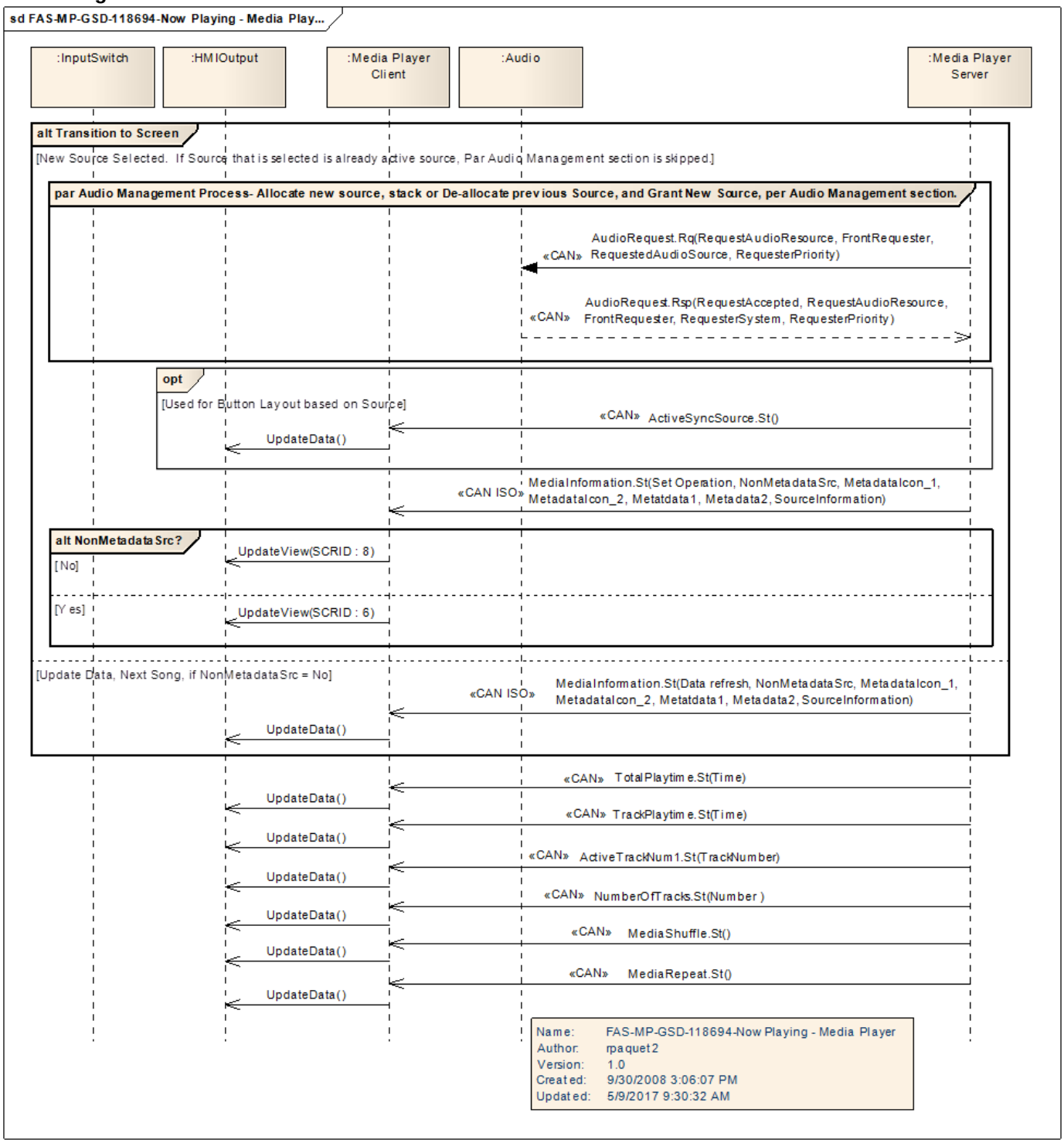
Normal Usage
The User is viewing the Media Player Home Screen.

Constraints

Pre-condition
Media Player source is connected, and User is on the Media Player Home Screen.

Post-condition
HMI displays {Source name, Track#, total Tracks, Current time of track, Metadata 1 and Metadata 2 data with their icons} if this data is available. If not, HMI displays {audio/video generic in display}

Sequence Diagram



2.4 MP-FUN-REQ-019970/B-Control Media Playback from a Connected Device (TcSE ROIN-294236-1)

2.4.1 Use Cases

2.4.1.1 MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)

Actors	User, Device, Media Player
Pre-conditions	Infotainment System On Media player is the active source Audio is heard through speakers
Scenario Description	The user chooses to pause the audio playback from the connected source.
Post-conditions	Audio is halted from the currently playing audio object. Elapsed Track Timer/Progress bar stops in current position
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with media device. E3 - System detects that the audio object is corrupt. E4 - System detects audio object is already paused.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.2 MP-UC-REQ-019943/A-System detects Audio Object Is Not Available on the Media Device (TcSE ROIN-290515-1)

Linked Elements

MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)

MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects audio object is not available on the media source. Audio object unavailable message given to user
Post-conditions	System removes audio object from any stored indices or playlists. Next audio object in the Now Playing playlist is played based on repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.3 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)

MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.4 MP-UC-REQ-019972/A-System Detects that the Audio Object is Corrupt. (TcSE ROIN-290518-1)

Linked Elements
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)

MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is corrupt. User is presented with an audio object corrupt message. System removes audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed based off of repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.5 MP-UC-REQ-019973/A-System Detects Audio Object is Already Paused (TcSE ROIN-290534-1)

Linked Elements
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is the active source.
Scenario Description	The user has paused the audio object and something else in the system requests a pause to the audio.
Post-conditions	The audio object stays paused.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.6 MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing track from the media source
Scenario Description	The user selects to play the next available audio

	object in the now playing playlist
Post-conditions	System plays the selected audio object from the media source Media player displays the next tracks' metadata. Next track is set based off of Repeat and Shuffle settings.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt. E5 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.7 MP-UC-REQ-019975/C-System Detects Audio Object is Already Playing from the Media Device (TcSE ROIN-290517-1)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	User selects the current playing media file from the now playing list on HMI.
Post-conditions	System continues to play selected audio object from the media source. Audio object is not restarted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.8 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.9 MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)

Actors	Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing track from the media source Currently playing Audio object has completed playing
Scenario Description	The media player begins to play the next available audio object in the now playing playlist

Post-conditions	System plays the selected audio object from the media source Media player HMI is updated with the next tracks' metadata.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt. E5 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.10 MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing track from the media source
Scenario Description	The user selects to play the previous available audio object in the now playing playlist. If the Previous track is selected within the first two seconds of the audio object being played, the previous audio object in the now playing playlist is started.* If the Previous track is selected after the first two seconds of the audio object being played, the currently-playing track will start over.* Note: Some protocols might have their own threshold that can vary between software or

	firmware releases, example iAP.
Post-conditions	System plays the selected audio object from the media source Media player displays previous tracks' metadata (if button press was within 2 seconds*) * Some protocols might have their own threshold that can vary between software or firmware releases, example iAP.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt E5 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.11 MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing song from media source
Scenario Description	The user decides to fast forward the currently playing media object. User presses and holds the next track button to begin fast forward operation.
Post-conditions	Playback advances in 3 second increments for the first 5 seconds Playback advances in 20 second increments 5-10

	seconds into the operation Playback advances in 60 second increments 10+ seconds into the operation *Some devices maintain their own advance increment values, example iAP2 devices.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.12 MP-UC-REQ-019979/B-System Detects End of Object has been Reached (TcSE ROIN-290524-1)

Linked Elements
MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the end of an audio object is reached. Any previous Fast Forward commands are cancelled.
Post-conditions	Next audio object in the Now Playing playlist is played at original speed according to shuffle and repeat settings
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the audio object is corrupt. E4 - System detects that the audio object is unusable do to copyright protection. E5 – End of playlist is reached and repeat is off.

Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.13 MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)

Actors	User
Pre-conditions	System is on Media device is properly connected Fast Forward Operation in progress
Scenario Description	The user selects to cancel the fast forward of the currently playing media object.
Post-conditions	System continues song playback from the media source at the original speed Track timer/progress bar reflects the accurate time/placement within the audio object
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the audio object is corrupt. E4 - System detects that the audio object is unusable do to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.14 MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing song from the media source Audio object has been playing for >2 seconds.
Scenario Description	The user wants to restart the currently playing media object User presses the previous track button after the

	first two seconds of the track starting. Note: Some protocols might have their own threshold which can vary between software or firmware releases, example iAP
Post-conditions	System starts the playback of the Audio object from the beginning at a normal speed.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the audio object is corrupt. E4 - System detects that the audio object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.15 MP-UC-REQ-019982/A-System Detects that the Beginning of an Object Has Been Reached (TcSE ROIN-290525-1)

Linked Elements
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the beginning of an audio object is reached. Any previous Rewind commands are cancelled.
Post-conditions	The current audio object is played at original speed.
List of Exception Use Cases	N/A

Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.16 MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing song from the media source
Scenario Description	The user wants to rewind the currently playing media object User presses and holds the previous track button to begin rewind. Playback rewinds in 3 second increments for the first 5 seconds* Playback rewinds in 20 second increments 5-10 seconds into the operation* Playback rewinds in 60 second increments 10+ seconds into the operation* Note: Some devices maintain their own advance increment values, example iAP2 devices
Post-conditions	System continues song playback in reverse from the media source at increased speed and audio is heard at the increased speed throughout the operation. Song metadata provided by the song from the media source. Audio object is rewinding
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with

	the media device. E3 - System detects that the audio object is corrupt. E4 - System detects that the audio object is unusable due to copyright protection. E5 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.17 MP-UC-REQ-019984/A-Cancel Rewind Song from Media Player or Connected Device (TcSE ROIN-290444-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is rewinding song from the Media device.
Scenario Description	The user selects to cancel the rewind of the currently playing song.
Post-conditions	System continues song playback from the media source at original speed. Song metadata displayed
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.18 MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audiobook from the media source.
Scenario Description	The user selects to play the previous chapter in the current audiobook.

	If the Previous button is selected within the first two seconds of the audio object being played, the previous audio object in the now playing playlist is started. * If the Previous button is selected after the first two seconds of the audio object being played, the currently-playing track will start over.* * Actual values specified by linked requirements
Post-conditions	System plays selected chapter from the media source. Audiobook metadata is presented to user Audiobook specific controls are made available to the user – i.e. Playback speed controls.* If previous operation is executed within the first two seconds of the beginning chapter, the previous audiobook will begin.* Note: Actual values specified by linked requirements
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.19 MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)

Actors	User
Pre-conditions	Infotainment System On

	Media device is properly connected. Media device is selected as the source. System is playing audiobook from the media source.
Scenario Description	The user selects to play the next chapter in the current audiobook
Post-conditions	System plays selected chapter from the media source. Audiobook metadata displayed to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.20 MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing song from media source
Scenario Description	The user selects to fast forward the currently playing audiobook Playback continues in 5 second intervals for the first 5 seconds of press and hold* Playback continues in 30-second intervals between 5-10 second mark of press and hold.* Playback continues in 60-second intervals between 10-20 second mark of press and hold.*

	Playback continues in 300-second intervals at 21-second mark of press and hold.* * Actual values specified by linked requirements
Post-conditions	System continues playback at increased speed and audio at the increased speed is heard throughout the operation. Audiobook metadata is provided to user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the Media device. E3 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.21 MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audiobook from the media source.
Scenario Description	The user selects to cancel the fast forward of the currently playing audiobook
Post-conditions	System continues audiobook playback from the Media device at ~~original~~ the previous speed prior to Fast Forward. Audiobook metadata provided to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.22 MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audiobook from the Media device.
Scenario Description	The user selects to rewind the currently playing audiobook. Rewind begins in 5 second intervals for the first 5 seconds of press and hold.* Rewind continues in 30-second intervals between 5-10 second mark of press and hold.* Rewind continues in 60-second intervals between 10-20 second mark of press and hold.* Rewind continues in 300-second intervals at 21-second mark of press and hold.* Note: Actual values specified by linked requirements
Post-conditions	System continues song playback at increased speed and audio at the increased speed is heard throughout the operation. Audiobook metadata provided to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.23 MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	The user selects to cancel rewind of the currently playing audiobook
Post-conditions	System continues audiobook playback from the Media device at ~~original~~ the previous speed prior to rewinding. Audiobook metadata provided to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.24 MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing song from the media source.
Scenario Description	The user selects to play the previous chapter in the current audio podcast. If the Previous button is selected within the first two seconds of the audio object being played, the previous audio object in the now playing playlist is started. * If the Previous button is selected after the first two seconds of the audio object being played, the

	currently-playing track will start over.* Note: Actual values specified by linked requirements
Post-conditions	System plays previous chapter of podcast from the media source. Audio podcast metadata is provided to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.25 MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audio podcast from the media source
Scenario Description	The user selects to play the next chapter in the current audio podcast.
Post-conditions	System plays next chapter from the media source. Audio podcast metadata presented to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.26 MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audio podcast from the media source.
Scenario Description	The user selects to play the next audio podcast in the current playlist.
Post-conditions	System plays selected audio podcast from the media source. Audio podcast metadata is provided to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.27 MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audio podcast from the media source.
Scenario Description	The user selects to play the previous audio podcast in the current playlist. If the Previous button is selected within the first two seconds of the audio object being played, the previous audio object in the now playing playlist is started. * If the Previous button is selected after the first two seconds of the audio object being played, the

	currently-playing track will start over.* Note: Actual values specified by linked requirements
Post-conditions	System plays selected audio podcast from the media source. Audio podcast metadata is presented to the user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.28 MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)

Actors	User, Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing podcast from the media source
Scenario Description	The user selects to fast forward the currently playing podcast Playback continues in 5 second intervals for the first 5 seconds of press and hold.* Playback continues in 30-second intervals between 5-10 second mark of press and hold.* Playback continues in 60-second intervals between 10-20 second mark of press and hold.* Playback continues in 300-second intervals at 21-second mark of press and hold.*

	Note: Actual values specified by linked requirements
Post-conditions	System continues playback at increased speed and audio at the increased speed is heard throughout the operation. Podcast metadata is provided to user
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the Media device. E3 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.29 MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	The user selects to cancel the fast forward of the currently playing ~~audiobook~~ podcast.
Post-conditions	System continues audiobook playback from the Media device at ~~original~~ the previous playback speed. ~~Audiobook~~ Podcast Metadata Provided to the User
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.30 MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is playing audio podcast from the media source.
Scenario Description	The user selects to rewind the currently playing podcast. Rewind begins in 5 second intervals for the first 5 seconds of press and hold* Rewind continues in 30-second intervals between 5-10 second mark of press and hold.* Rewind continues in 60-second intervals between 10-20 second mark of press and hold.* Rewind continues in 300-second intervals at 21-second mark of press and hold.* Note: Actual values specified by linked requirements
Post-conditions	System continues playback at increased speed and audio at the increased speed is heard throughout the operation. User is notified that rewind operation is in progress Audio podcast metadata is presented to the user.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio

	In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.31 MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source. System is rewinding an audio object
Scenario Description	The user selects to cancel the rewind of the currently playing podcast. Playback continues at original speed.
Post-conditions	System continues ~~song~~ podcast playback from the media source at ~~original~~ the previous playback speed. Podcast metadata presented to the user.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt. E5 - System detects that the audio object is unusable due to copyright protection. E6 - System detects that the beginning of an object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.32 MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected

	Media device is selected as the source System is playing audiobook or podcast from the media source
Scenario Description	The user selects to skip 30 seconds of the currently playing audiobook or podcast.
Post-conditions	Metadata is provided to user. Playback advances 30 seconds from the current location of the audiobook or podcast.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the Media device. E3 - System detects end of object has been reached.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.33 MP-UC-REQ-134187/A-Skip back 30 Seconds within an Audiobook or Podcast

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Media device is selected as the source System is playing audiobook or podcast from the media source
Scenario Description	The user selects to skip back 30 seconds of the currently playing audiobook or podcast.
Post-conditions	Metadata is provided to user. Playback skips 30 seconds back from the current location of the audiobook or podcast.
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the Media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.1.34 MP-UC-REQ-134305/A-Muting System's Media Player

Actors	User, System
Pre-conditions	Infotainment System On Media player is the active source Audio playback is heard through speakers
Scenario Description	User chooses to mute the audio using the system's interface.
Post-conditions	System shall mute the audio immediately and shall not pause media playback. System shall unmute audio once user has chosen to unmute using the system's interface.
List of Exception Use Cases	
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.4.2 Requirements

2.4.2.1 MP-FUR-REQ-020000/A-Controls - Play (TcSE ROIN-295759-1)

The Play command shall render each audio object in the order in which it is queued in the Now Playing playlist.

The Play command shall resume rendering a selected audio object from the same point from which it was paused in the Now Playing playlist.

When a user switches sources from the previous source to the next source, a Play command shall be issued to the next source.

2.4.2.2 MP-FUR-REQ-020001/A-Controls – Play Resume (TcSE ROIN-295760-1)

If a device has been previously inserted and the content of the device has changed, the Media Player shall make every effort to play the last song that was previously playing once the device is sourced. Indexing shall ensue in the background.

2.4.2.3 MP-FUR-REQ-020002/B-Controls - Pause (TcSE ROIN-295761-2)

The Pause command shall ~~immediately~~ halt the rendering of audio objects in the Now Playing playlist of the currently active source and persist the exact position at which rendering was halted in the Now Playing playlist of the currently active source within 500 milliseconds from receiving the user's input.

After a Pause command is successfully issued to the currently active source, playback of the currently active source shall remain halted until another Play command is issued or the halted source is disconnected.

The paused state shall not persist across ignition cycles.

If playback is paused, Audio Source got DE allocated and RE allocated later, then System shall resume play.

2.4.2.4 MP-FUR-REQ-020003/B-Controls - Previous (TcSE ROIN-295762-1)

The previous command will not affect the system when there is no media playing.

The Previous command shall be executed by the media core within 500 milliseconds of receiving the user's input

The previous command will restart the currently playing track if executed while there is only one (1) media object in the Now Playing Playlist.

If the user engages the Previous Command within the first two (2) seconds of media playback, then playback shall begin at the start of previous audio object in the Now Playing Playlist.

If the user selects the Previous Command after the first two (2) seconds of track playback, then the current audio object must restart.

If the Previous Command is used within the first two seconds on the first audio object in the Now Playing Playlist while repeat all is ON, then the last track in the Now Playing Playlist shall be played.

If previous Command is executed within first two seconds of the first track in the Now Playing Playlist and repeat is set to ONE or OFF, then the playback shall be stopped and the user is prompted to make a new selection from the library.

2.4.2.5 MP-FUR-REQ-020004/B-Controls - Next (TcSE ROIN-295763-1)

The Next Command shall not affect the system while there is no media playing.

The next command shall be executed by the media core with 500 milliseconds of receiving the user's input

The Next Command shall immediately skip to the next media object in the Now Playing Playlist and begin playback.

If there is only one (1) audio object in the Now Playing Playlist, then selecting the Next Command shall have no effect on the System.

If the Next Command is used on the last audio object in the Now Playing Playlist with Repeat All active, then the first track in the Now Playing Playlist shall be played.

If the Next Command is used on the last track in the Now Playing Playlist with Repeat Off or One, the Next command shall prompt the user to make a new selection from the library and playback is stopped.

Once the end of an audio object has been reached, the next track in the now playing playlist shall begin. If there is only one track in the Now Playing Playlist, and repeat is set to All or One, the currently playing track shall restart.

2.4.2.6 MP-FUR-REQ-020005/A-Controls - Fast Forward and Rewind Support (TcSE ROIN-295764-1)

If the device supports it, the user shall have the ability to Fast Forward or Rewind an audio object.

If the device does not support Rewind or Fast Forward, then the user shall be informed that the operation is not available.

2.4.2.7 MP-FUR-REQ-020006/A-Controls - Fast Forward and Rewind while paused (TcSE ROIN-295765-1)

If a track is paused when the Fast Forward or Rewind operation begins, the track shall remain paused at the new track position when the operation is completed.

Audio shall be heard during the operation.

2.4.2.8 MP-FUR-REQ-020007/A-Controls - Fast Forward and Rewind (TcSE ROIN-295766-1)

If audio playback is not paused when the Fast Forward or Rewind operations begins, the track shall continue playing from the new track position after the operation is completed.

The track position shall advance depending on the amount of time that the Fast Forward or Rewind operation is in progress. The rate of the operation shall be configured by media type.

2.4.2.9 MP-FUR-REQ-020008/A-Controls - Fast Forward and Rewind at End of Object (TcSE ROIN-295767-1)

If the user continues the fast forward operation through the end of an audio track, then the fast forward operation shall not continue onto the next track in the Now Playing Playlist. Playback shall begin playing the current track at regular speed from the beginning if media was playing before the operation began.

2.4.2.10 MP-FUR-REQ-020009/B-Controls - Fast Forward and Rewind to beginning of object (TcSE ROIN-295768-1)

If the user continues the rewind operation to the beginning of an audio track, then the rewind operation shall not continue onto the previous track in the Now Playing Playlist. System shall begin playing the current track from the beginning at the same speed prior to rewind, if media was playing before the operation began.

2.4.2.11 MP-FUR-REQ-020010/A-Controls - Fast Forward and Rewind on device removal (TcSE ROIN-295769-1)

If the user removes a connected media device from the System during a fast forward or rewind operation and the user reconnects this device to the System, playback shall resume from the point where the fast forward or rewind operation was interrupted.

2.5 MP-FUN-REQ-020011/A-Media Player Audio Playback Scenarios (TcSE ROIN-294240-1)

2.5.1 Use Cases

2.5.1.1 MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	User, Media Player,
Pre-conditions	System is on Media device is properly connected Media device is selected as the current source
Scenario Description	The user wants to build a playlist based off of the tracks being presented to them via Browse scenarios.
Post-conditions	System plays selected playlist from the media source Media display is updated with the track/playlist metadata. System begins to play audio object in order according to browse mode and user selection within playlist. (i.e. if the user selects the 5th track of an album, the now playing playlist is built for the album, and track 5 begins to play).
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt. E5 - System detects that the audio object is unusable due to copyright protection. E6 - System detects playlist is already playing from the media device. E7 - System detects media source is currently not connected. E8 - Speech commands not available for connected device.

Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.2 MP-UC-REQ-019943/A-System detects Audio Object Is Not Available on the Media Device (TcSE ROIN-290515-1)

Linked Elements

MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects audio object is not available on the media source. Audio object unavailable message given to user
Post-conditions	System removes audio object from any stored indices or playlists. Next audio object in the Now Playing playlist is played based on repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.3 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message

Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.4 MP-UC-REQ-019975/C-System Detects Audio Object is Already Playing from the Media Device (TcSE ROIN-290517-1)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	User selects the current playing media file from the now playing list on HMI.
Post-conditions	System continues to play selected audio object from the media source. Audio object is not restarted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.5 MP-UC-REQ-019972/A-System Detects that the Audio Object is Corrupt. (TcSE ROIN-290518-1)

Linked Elements
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.

Scenario Description	System detects that the audio object is corrupt. User is presented with an audio object corrupt message. System removes audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed based off of repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.6 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.7 MP-UC-REQ-020013/A-System Detects Playlist is Already Playing from the Media Device (TcSE ROIN-290521-1)

Linked Elements
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	User has selected a playlist that is already playing System detects playlist is already played from the media source. The playlist is played from the beginning.
Post-conditions	System plays selected playlist from the media source.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.8 MP-UC-REQ-019850/B-System Detects that the Media Source is Currently Not Connected (TcSE ROIN-290540-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	User
Pre-conditions	Infotainment System On
Scenario Description	User enters a scenario where they try to access a media device, and during the connection or sourcing process the device is not connected (either logically or physically)
Post-conditions	System detects the device being disconnected from the system System notifies user that the device has been removed or is not currently available. System remains on the current audio source.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.9 MP-UC-REQ-020014/A-Speech Commands Not Available for Connected Device (TcSE ROIN-290544-1)

Linked Elements
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	User
Pre-conditions	Infotainment System On Device is in the process or has finished indexing
Scenario Description	The user chooses to access content through the VUI, and indexing has not completed.
Post-conditions	The device remains connected to the system. System notifies user that the content they are trying to access is not currently available. If an audio object is currently playing, the audio object continues to play If no audio object is playing, and user is viewing media player source, user is prompted to select a track User is given the option to perform the search against the media library once speech commands are available.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.10 MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	User
Pre-conditions	System is on Media device is properly connected Media device is selected as the current source
Scenario Description	The user wants to build a playlist based off of the tracks being presented to them via Browse scenarios.
Post-conditions	System plays selected playlist from the media source Media display is updated with the track/playlist metadata. System begins to play audio object in order according to browse mode and user selection within playlist. (i.e. if the user selects the 5th track of an album,

	the now playing playlist is built for the album, and track 5 begins to play).
List of Exception Use Cases	E1 - System detects audio object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media device. E4 - System detects that the audio object is corrupt. E5 - System detects that the audio object is unusable due to copyright protection. E6 - System detects a permissions issue on a file or folder in the system. E7 - System detects a non-audio media object in the playlist (e.g., video object, image) that is supported by the system. E8 - System detects that the media source is currently not connected. E9 - Speech commands not available for connected device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.11 MP-UC-REQ-020016/A-System detects a non-audio media object in the playlist that is supported by system (TcSE ROIN-290533-2)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is the active source.
Scenario Description	When the user is playing a playlist that contains audio files and another type of media object is encountered, System shall play/view the media object if it is supported by the system.
Post-conditions	The media object is rendered fully from beginning to end and the playlist continued. Should the media object be still media (e.g., an image) or the like, the still media shall be

	rendered for five seconds* and the playlist continued. Note: Actual values specified by linked requirements
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.1.12 MP-UC-REQ-020017/A-System Detects a Permissions Issue on a File or Folder in the System (TcSE ROIN-290537-1)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	User, Media Player
Pre-conditions	System is On Media Player is Active Media device is inserted
Scenario Description	A user plugs in a device that has files/folders with permission settings that prohibit the audio object from playback
Post-conditions	User is notified that the file is not accessible by System System finds the next available audio object that it has permission to playback according to repeat and shuffle settings Audio object is removed from any stored indices/databases
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.5.2 Requirements

2.5.2.1 MP-FUR-REQ-020018/A-Playback (TcSE ROIN-295782-1)

The Media Player shall generate the Now Playing playlist by selecting a discrete, ordered set of media content. Note: A Now Playing playlist can exist and be read from a device or can be automatically generated by the Media Player.

2.5.2.2 MP-FUR-REQ-020019/A-Playback - Devices that support Now Playing Playlists (TcSE ROIN-295783-1)

The Media Player shall use, maintain, and persist the Now Playing playlist exposed by a device or protocol which is capable of using, maintaining and persisting its own Now Playing playlist.

2.5.2.3 MP-FUR-REQ-020020/A-Playback - Devices that don't support Now Playing Playlists (TcSE ROIN-295784-1)

The Media Player shall use, maintain and persist a local Now Playing playlist on the Media Player for any device or protocol which cannot maintain and persist its own Now Playing playlist.

2.5.2.4 MP-FUR-REQ-020021/A-Playback - Order (TcSE ROIN-295785-1)

All Now Playing playlists that are created by the Media Player shall follow this order, unless playlist order has been determined by a user-defined playlist, shuffle mode, the device-defined Now Playing playlist, or another valid means:

Play all artists alphabetically.

Play all albums by a specific artist alphabetically.

Play all tracks in an album in track number order.

Play all tracks in an album alphabetically if track number order is not available.

Play all tracks without a track name by filename alphabetically.

2.5.2.5 MP-FUR-REQ-020022/A-Supported Playlists – File Types (TcSE ROIN-295938-1)

The System shall support the following playlist file formats:

1. M3U version 1 and 2, including files with the ".m3u" extensions.

2. WPL playlists version 1.0, including files with the ".wpl" extensions.

3. ASX playlists version 3.0, including files with the ".asx" extension.

4. MTP playlists with any file extension.

5. iPod Playlists.

2.5.2.6 MP-FUR-REQ-020023/A-Supported Playlists (TcSE ROIN-295939-1)

The System shall support nested or embedded playlists.

2.5.2.7 MP-FUR-REQ-020024/A-Supported Playlists – iPod (TcSE ROIN-295940-1)

The System shall navigate playlists using the iPod's Playlist category, which flattens nested playlists for selection and playback. See "Nested Playlists" in the iPod Accessory Protocol Extended Specification for details.

2.5.2.8 MP-FUR-REQ-020025/A-Supported Playlists – Unsupported Playlist Handling (TcSE ROIN-295941-1)

The System shall skip any item in a playlist that is not a supported media file.

2.5.2.9 MP-FUR-REQ-020026/A-Supported Playlists – Sorting Strategy (TcSE ROIN-295942-1)

Playlists shall be shown in alphabetical order by title. If the playlist does not have a title, then it shall be alphabetized by filename. Both playlists with titles and playlists without titles shall be alphabetized together.

2.5.2.10 MP-FUR-REQ-020027/A-Supported Playlists – Handling Unplayable songs (TcSE ROIN-295943-1)

Songs included in the playlist that are not present on the storage medium shall be skipped without notifying the user.

If the user selects a song directly from the playlist that is not present on the storage medium, then the media player shall present HMI explaining that this file is not available. After the message timeout, media playback shall attempt to continue with the next track in the playlist.

Songs included in the playlist that are present but protected by DRM which isn’t supported by the media player shall be skipped without notifying the user.

If the user selects a song directly from the playlist that is protected on the storage medium, then the media player shall present HMI explaining that this file is protected. After the message timeout, media playback shall attempt to continue with the next track in the playlist.

2.5.2.11 MP-FUR-REQ-020028/A-Supported Playlists - Browsing (TcSE ROIN-295944-1)

The user shall be able to browse and select the songs that are in a playlist. The Now Playing playlist created by the selection shall consist of the tracks in the user defined playlist starting with the selected song.

2.5.2.12 MP-FUR-REQ-020029/A-Supported Playlists – Relative and absolute Paths (TcSE ROIN-295945-1)

The System shall support relative paths for songs inside playlists.

The System shall support absolute file paths. If the media player detects that a playlist attempts to link to an audio track that starts with “<drive letter>:\” then these characters shall be replaced with the path for the media device as it is connected to the System. For example: "C:\MyPlaylist.wma" would be modified to become \USB Drive\MyPlaylist.wma".

2.5.2.13 MP-FUR-REQ-020030/A-Supported Playlists – Formats (TcSE ROIN-295946-1)

The System shall support shall support WPL playlists up to 1 MB in size. WPL playlists must be converted into Unicode before the XML files can be parsed. The file size of other playlist types is limited to 4 GB by FAT 32.

2.5.2.14 MP-FUR-REQ-020031/A-Supported Playlists – Playlist Error handling (TcSE ROIN-295947-1)

The System shall not search for a media object in a playlist in another location if a file is not in the expected location then the media application shall not search for it in another location.

2.5.2.15 MP-FUR-REQ-020032/A-Video Playlists (TcSE ROIN-295974-2)

~~The Picture and~~ Video Viewer shall adhere to all playlist requirements listed in the Media Player Functional requirements.

2.5.2.16 MP-FUR-REQ-020033/A-Video Playlist Support (TcSE ROIN-295975-1)

Playlists which list at least one video objects within them shall be designated as a video playlist.

2.5.2.17 MP-FUR-REQ-020034/A-Mixed Multimedia Playlist Support (TcSE ROIN-295976-2)

If any combination of audio, video, and image objects are listed in the same playlist, the ~~Picture and~~ Video Viewer shall cooperate with the Media Player to render audio, video, and/or image objects in the order listed in the playlist.

2.6 MP-FUN-REQ-020035/A-Shuffle (TcSE ROIN-294248-1)

2.6.1 Use Cases

2.6.1.1 MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)

Actors	Media Player, User, Device
Pre-conditions	System is On Media device is properly connected Now playing playlist of the media source is available Shuffle setting is currently On Audio is playing
Scenario Description	User selects Shuffle Off
Post-conditions	The currently playing audio object continues to play.

	The Now Playing Playlist is regenerated in appropriate order (by track number if playing album, alphabetical order if playing by artist or genre, in sorted order if playing by playlist) User receives notification that the shuffle operation is off Shuffle setting is persisted upon device disconnect/reconnect, IGN cycles, etc.
List of Exception Use Cases	E1 - System detects that the connected device is not supported. E2 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.6.1.2 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)

MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.6.1.3 MP-UC-REQ-019851/A-System detects that the connected device is not supported (TcSE ROIN-290547-2)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The user has connected a device which is not supported by the system (i.e. USB Keyboard, mouse, etc)
Post-conditions	The user is notified that the device they have tried to access is not supported for use on this system. The current active audio source shall not be interrupted.
List of Exception Use Cases	N/A

Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.6.1.4 MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)

Actors	User
Pre-conditions	System is On Media device is properly connected Now playing playlist of the media source is available Audio is playing
Scenario Description	User selects Shuffle On
Post-conditions	The currently playing audio object must continue~~s~~ to play and shall become the first track in the shuffled list. The Now Playing Playlist is regenerated in a randomized order User receives notification that the shuffle operation is on Shuffle setting is persisted upon device disconnect/reconnect, IGN cycles, etc.
List of Exception Use Cases	E1 - System detects that the connected device is not supported. E2 - System detects communication errors with the media device. E3 - Only one audio object available on the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.6.1.5 MP-UC-REQ-019926/B-Only One Media Type Available on the Media Device (TcSE ROIN-290528-2)

Linked Elements
MP-UC-REQ-019924/A-Browse All Connected Devices (TcSE ROIN-290464-1)
MP-UC-REQ-019927/A-Browse Specific Connected Device (TcSE ROIN-290465-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)

Actors	Media Player, User
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that only one media type is

	available on the source. The user is able to browse through the media category of the single media type.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.6.2 Requirements

2.6.2.1 MP-FUR-REQ-020038/B-Controls - Shuffle (TcSE ROIN-295770-1)

Shuffle Songs mode shall play each song in a Now Playing Playlist once in an undefined order. The same song shall not be heard again until all songs have been played once. The media core shall apply the shuffle state within 500 milliseconds from receiving the user's input.

On each Shuffle request, the songs shall be re-shuffled.

2.6.2.2 MP-FUR-REQ-020039/A-Controls – Shuffle across ignition cycles (TcSE ROIN-295771-1)

Shuffled playlists shall be persisted across power cycles.

2.6.2.3 MP-FUR-REQ-020040/A-Controls – Shuffle while paused (TcSE ROIN-295772-1)

If the user turns shuffle on when media has been paused, then the System shall shuffle the playlist and then play the newly shuffled media files when playback is returned.

2.6.2.4 MP-FUR-REQ-020041/A-Controls – Shuffle and Now Playing Behavior (TcSE ROIN-295773-1)

If shuffle is executed during track playback, then the current track shall finish before beginning the next shuffled track.

2.6.2.5 MP-FUR-REQ-020042/A-Controls – Shuffle Off Behavior (TcSE ROIN-295774-1)

Turning shuffle mode off shall revert the Now Playing Playlist back to the original order. The currently playing audio object shall not be affected. The Now Playing Playlist shall move to the next track that comes after the current track is completed.

2.6.2.6 MP-FUR-REQ-020043/A-Controls – Shuffle Default (TcSE ROIN-295775-1)

The Shuffle setting shall be set to OFF by default within the media player.

2.6.2.7 MP-FUR-REQ-020044/B-Controls – Shuffle on Smart Devices (TcSE ROIN-295776-1)

For connected devices that are capable of maintaining their own shuffle states, the System shall recognize and apply the shuffle states upon device connection.

When the connected media device is the active audio source, the HMI shall reflect the shuffle status within 500 milliseconds of detecting a change to the shuffle status of the active media player application in the connected media device.

2.7 MP-FUN-REQ-020045/A-Repeat (TcSE ROIN-294260-1)

2.7.1 Use Cases

2.7.1.1 MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Now Playing Playlist is active User chooses to repeat the currently playing song by selecting 'Repeat One'
Scenario Description	User changes the repeat setting to 'One'
Post-conditions	The currently playing audio object is repeated when the end of the object is reached Repeat state is persisted across disconnect/reconnect and IGN on/off. If the device cannot persist it's own repeat settings, the system shall remember these settings and enforce them upon reconnection.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.7.1.2 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)

MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.7.1.3 MP-UC-REQ-019851/A-System detects that the connected device is not supported (TcSE ROIN-290547-2)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The user has connected a device which is not supported by the system (i.e. USB Keyboard, mouse, etc)
Post-conditions	The user is notified that the device they have tried to access is not supported for use on this system. The current active audio source shall not be interrupted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.7.1.4 MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Now Playing Playlist is active
Scenario Description	User changes the repeat setting to 'All'
Post-conditions	The currently playing playlist is repeated when the end of the last object is reached Repeat state is persisted across disconnect/reconnect and IGN on/off. If the device cannot persist it's own repeat settings, the system shall remember these settings and enforce them upon reconnection.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out,

	Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.7.1.5 MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Now Playing Playlist is active User selects Repeat Off setting.
Scenario Description	The user chooses to end audio once the Now Playing Playlist has finished.
Post-conditions	Playback of the current Now Playing playlist is completed. Once the last audio object is completed, audio playback is stopped. The user may select to begin playback of the Now Playing playlist again or make another playback selection. If the device cannot persist it's own repeat settings, the system shall remember these settings and enforce them upon reconnection.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.7.2 Requirements

2.7.2.1 MP-FUR-REQ-020049/B-Controls – Repeat All Behavior (TcSE ROIN-295777-1)

The option of Repeat All applies to all tracks in the Now Playing Playlist. Once the end of the Now Playing Playlist is reached, the first track in the Now Playing Playlist is played again and each subsequent track after.

If the user has RepeatAll set to On for the now playing playlist and then a new playlist is selected, the Repeat settings shall not change

2.7.2.2 MP-FUR-REQ-020050/B-Controls – Repeat One (TcSE ROIN-295778-2)

The option of Repeat One only applies to the currently playing or paused audio object.

If the Now Playing Playlist contains more than one audio object and Repeat is set to One, then the Next command shall move to the next track in the playlist and the Repeat setting must not change.

If the following conditions are true:

- Repeat is set to One

- There are multiple audio objects in the Now Playing Playlist

- Previous button is executed within the first two (2) seconds

Then:

- The previous track will begin to play and the Repeat setting must not change.

If the user has RepeatOne set to On for a specific track and then a new playlist is selected, the Repeat settings shall not change.

If the user selects next track while RepeatOne is On for the last track in the now playing playlist, then the user shall be prompted to select media from the browse menu.

If the user selects previous track while RepeatOne is On for the first track in the now playing playlist, then the track shall be restarted.

2.7.2.3 MP-FUR-REQ-020051/B-Controls – Repeat Off (TcSE ROIN-295779-1)

The option of repeat off applies to all tracks in the Now Playing Playlist. Once the end of the Now Playing Playlist is reached, playback is stopped and the user is prompted to make another selection or play the currently-queued Now Playing Playlist again.

If the user has RepeatOff is set to On for the now playing playlist and then a new playlist is selected, the Repeat settings shall not change

2.7.2.4 MP-FUR-REQ-020052/B-Controls – Repeat default setting (TcSE ROIN-295780-1)

The default Repeat Setting shall be set to ALL by default on the media player.

The repeat setting shall be applied within 500 milliseconds from receiving the user's input.

2.7.2.5 MP-FUR-REQ-020053/B-Controls – Repeat on smart devices (TcSE ROIN-295781-2)

For connected devices that are capable of maintaining their own repeat states, the System shall recognize and apply the repeat state upon device connection. The system shall not persist the old repeat status if the user chooses to change the repeat setting after disconnection.

For all Bluetooth devices only, the repeat state shall be set to ALL by default upon device connection, for the case the system recognizes repeat state is OFF upon device connection

When the connected media device is the active audio source, the HMI shall reflect the repeat status within 500 milliseconds of detecting a change to the repeat status of the active media player application in the connected media device.

2.8 MP-FUN-REQ-020054/A-Device Features and Options (TcSE ROIN-294252-2)

2.8.1 Use Cases

2.8.1.1 MP-UC-REQ-020055/A-Re-Indexing a Connected Device (TcSE ROIN-290496-2)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media is being played back from connected device Device is in the process or has finished indexing
Scenario Description	The Media Player requires an updated index on the device due to recently-changed content.
Post-conditions	The device remains connected to the system. The index for the selected device is either updated or deleted and a new index is built for the device. The media player application notifies the speech application. The media device continues to playback the audio content currently being played. The now playing playlist continues to play
List of Exception Use Cases	E1 - Device does not support concurrent playback of this device while indexing.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.2 MP-UC-REQ-020056/A-Device does not support concurrent playback of this device while indexing (TcSE ROIN-290548-2)

Linked Elements
MP-UC-REQ-020055/A-Re-Indexing a Connected Device (TcSE ROIN-290496-2)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The user has connected a device which cannot ~~autoplay~~ play media while the system collects the library information on it.
Post-conditions	The user is notified that the system cannot play media while the device is indexing.

	Playback will start immediately after the device has finished indexing
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.3 MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)

Actors	System
Pre-conditions	Infotainment System On Media device is properly connected Now Playing playlist of the media source is available. Audio object is playing
Scenario Description	User is given cover artwork of the currently playing audio/video object
Post-conditions	If it exists on the device, album artwork is displayed for the currently playing track If no artwork exists, the Media Player will provide cover artwork for the currently playing track.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported. E3 - Cover artwork for currently playing track is not available.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.4 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)

MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization ‘On’ for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization ‘Off’ for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.5 MP-UC-REQ-020058/B-Cover artwork for currently playing track is not available (TcSE ROIN-290545-1)

Linked Elements
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)

Actors	User, Media Player
Pre-conditions	Infotainment System On Cover Artwork priority is set to Media Player Media is being played back from connected device Now Playing Playlist is built Audio is streaming
Scenario Description	A new track is queued for playback No cover artwork available for the currently playing track.
Post-conditions	No cover artwork will be shown
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.6 MP-UC-REQ-019851/A-System detects that the connected device is not supported (TcSE ROIN-290547-2)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The user has connected a device which is not supported by the system (i.e. USB Keyboard, mouse, etc)
Post-conditions	The user is notified that the device they have tried to access is not supported for use on this system. The current active audio source shall not be interrupted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.7 MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	For end-user support purposes, System collects vital information for the connected device – Device name, hardware type, firmware type, OS version, and Mobile Phone Carrier (if applicable)
Post-conditions	Device information is readable from an option setting in the media player menu. Device information is collected and stored by the System for data collection purposes.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	USB Interface, BT Interface, Wifi Interface, G-HMI

2.8.1.8 MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected Now Playing playlist of the media source is available. Audiobook is streaming through media player app in “Normal” or “Fast” mode System recognizes currently playing track as an audiobook and presents audiobook track controls (i.e. playback speed)
Scenario Description	User changes audiobook speed to "Slow".
Post-conditions	The audiobook is played back at 2/3 (66.66%) the original playback speed without a change in the pitch of the audio.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.9 MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)

Actors	User, Media Player, Connected Device
Pre-conditions	Infotainment System On Media device is properly connected Now Playing playlist of the media source is available. Audiobook is streaming through media player app in “Normal” or “Slow” mode System recognizes currently playing track as an audiobook and presents audiobook track controls (i.e. playback speed)
Scenario Description	User changes audiobook speed to "Fast".
Post-conditions	The audiobook is played back at 1 1/4 (125%) the original playback speed without a change in the pitch of the audio.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.10 MP-UC-REQ-020062/B-What’s playing (TcSE ROIN-290501-2)

Actors	User, Media Player, Device, V-HMI, G-HMI
Pre-conditions	System is on Media device is properly connected
Scenario Description	The user requests all of the available information related to the currently-playing audio object
Post-conditions	Audio level of the currently playing track lowers to allow V-HMI to present the track information to the user. The System displays the Title, Artist and Album information both through VUI (if supported) and GUI for the current playing song.
List of Exception Use Cases	E1 - System detects that there is currently no information given for the audio object.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.11 MP-UC-REQ-020063/A-System Detects that there is Currently No Information Given for the Audio Object (TcSE ROIN-290541-1)

Linked Elements
MP-UC-REQ-020062/B-What's playing (TcSE ROIN-290501-2)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)

Actors	User
Pre-conditions	Infotainment System On Device Connected Media Player active Track number metadata field is null No track metadata is given for the audio object(s) Normalization technology (i.e. Gracenote) is not capable of retrieving track metadata from the audio object(s) on the device
Scenario Description	The user wants to view information about the currently playing audio object. Track metadata can be retrieved using HMI.
Post-conditions	File name shall used as the track title Unknown shall be used for all other metadata categories
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.12 MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)

Actors	User
Pre-conditions	Infotainment System On Device is connected properly Now Playing Playlist is playing Normalization is off allowing user to view their original media metadata in the media library and on the Now Playing interface. HMI allows access to content via official names as well as association to collaborative artists.
Scenario Description	User selects normalization on The user wants to view their artist, album, and

	genre information in a consistent manner. The normalization process will ensure that all of the metadata fields are presented in same way (i.e. A user will have artist metadata Ac/Dc, ACDC, ac/dc, and acdc. In this scenario, all files with this metadata will be changed, or normalized, to AC/DC.)
Post-conditions	The metadata viewed in the media library as well as on the Now Playing screen will be displayed in the same fashion.
List of Exception Use Cases	E1 - System detects communication errors with the media device. E2 - System detects that the connected device is not supported. E3 - System detects that there is currently no information given for the audio object.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.13 MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)

Actors	User
Pre-conditions	Infotainment System On Device is connected properly Now Playing Playlist is playing Normalization is on (by default), allowing user to view their media metadata in the media library and on the Now Playing interface. HMI allows access to content via official names as well as association to collaborative artists.
Scenario Description	The user has selected Normalization Off. The user wants to view their multimedia in the way it is currently embedded in the audio object. That is, all metadata within their library is presented the same way on the System displays (I.e. audio tracks with ac/dc. ACDC, and Ac/Dc within the artist category are shown as AC/DC.)
Post-conditions	The metadata viewed in the media library as well as on the Now Playing screen matches the metadata as read directly from the user's media source.
List of Exception Use Cases	E1 - System detects communication errors

	with the media device. E2 - System detects that the connected device is not supported.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.14 MP-UC-REQ-020066/A-Disable Indexing for Connected Media Device (TcSE ROIN-290504-1)

Actors	User
Pre-conditions	Infotainment System On Media device is properly connected
Scenario Description	User decides not to index the connected device when it connects to the system.
Post-conditions	Connected media device will not index during current and future connection cycles Only basic voice commands are available for device (Play, Pause, Previous, Next) System continues to index other connected devices User is able to directly browse the file system hierarchy or iPod
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.15 MP-UC-REQ-020067/B-Master Reset (TcSE ROIN-290505-1)

Actors	User, Media Player
Pre-conditions	System is on
Scenario Description	The user selects the master reset function to bring the system back to factory defaults.
Post-conditions	All media indices and playlists are deleted from the system Any devices physically connected to the system are immediately reconnected and re-indexed once the system has come back up. Repeat setting is All or current device state Shuffle setting is Off or current device state Normalization is On
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out,

	Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.16 MP-UC-REQ-020068/A-Charging a Connected Device (TcSE ROIN-290506-1)

Actors	User
Pre-conditions	System is on Device is inserted Auto play is On
Scenario Description	The user plugs in their device to allow for charging.
Post-conditions	USB Receptacle identifies charging profile for connected device Charging indicator is shown on device System begins to source and play audio content from the device
List of Exception Use Cases	E1 - Device does not support the charging profiles that the system offers.
Interfaces	USB Interface, BT Interface

2.8.1.17 MP-UC-REQ-020069/A-Device does not support the charging profiles that the system offers (TcSE ROIN-290542-1)

Linked Elements
MP-UC-REQ-020068/A-Charging a Connected Device (TcSE ROIN-290506-1)

Actors	User
Pre-conditions	Infotainment System On Device Connected
Scenario Description	The user wishes to charge their connected device by plugging it in or via menu selection.
Post-conditions	The user is given a notification that charging is not supported on this device
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.18 MP-UC-REQ-019923/B-System Detects Media File is Not Supported (TcSE ROIN-290530-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)

Actors	Media Player, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.

Scenario Description	System detects the file type, sampling rate, or bitrate are not supported
Post-conditions	User is given an indication that the selected file is not supported If available, the reason for media file not being supported shall be shown on HMI. System moves on to the next track according to repeat and shuffle settings
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.19 MP-UC-REQ-020072/A-System is low on available storage space (TcSE ROIN-290549-1)

Linked Elements
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)

Actors	System
Pre-conditions	Infotainment System On Device is properly connected
Scenario Description	The system cannot complete the requested file operation because it has run out of available memory.
Post-conditions	The user is notified that they cannot store a file on the system because it has run low on available memory. The user is given the option to modify/remove currently-stored files from the system in order to free up space.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.20 MP-UC-REQ-019975/C-System Detects Audio Object is Already Playing from the Media Device (TcSE ROIN-290517-1)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	Media Player
Pre-conditions	Infotainment System On

	Media device is properly connected. Media device is selected as the source.
Scenario Description	User selects the current playing media file from the now playing list on HMI.
Post-conditions	System continues to play selected audio object from the media source. Audio object is not restarted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.21 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.22 MP-UC-REQ-020074/A-System Detects that the Playlist is Not Available on the Media Device (TcSE ROIN-290520-1)

Linked Elements
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the playlist is not available on the media source. Playlist not available indication is given to user. System removes playlist from any stored indices.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.23 MP-UC-REQ-019922/A-System Detects Playlist is Corrupt (TcSE ROIN-290523-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)

Actors	Media Player, User, Device
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the playlist is corrupt. User is presented a notification that indicates playlist is corrupt System removes playlist from any stored indices.
Post-conditions	Previous system operation is continued.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.1.24 MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)

Actors	Media Player, Device
Pre-conditions	System is On Media device is properly connected User selects an audio object for saving into a playlist
Scenario Description	The user wants to create an on-the-go playlist and store it on their device. The System shall create a playlist for the user to save songs into while driving.
Post-conditions	System checks if it has already created a playlist on the device. If the playlist has not yet been created, System shall create a playlist on the device. Playlist name will be formatted such that the System can identify the one it has created.
List of Exception Use Cases	E1 - System detects that audio object is unusable due to copyright protection. E2 - System detects playlist is corrupt. E3 - System is low on available storage space. E4 - System detects audio object or playlist is already playing from the media device. E5 - System detects that the playlist is not available on the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.8.2 Requirements

2.8.2.1 MP-FUR-REQ-020076/A-What's Playing (TcSE ROIN-295819-1)

The "What's Playing" feature shall lower the volume of the currently playing track and announce the metadata associated with the audio track using text-to-speech (TTS). The Media Player shall resume playing the current track at its normal volume once the TTS is complete.

If the "What's Playing" feature is initiated while a track is paused, the metadata associated with the current audio track shall be announced; however, the Media Player shall not resume playback until the user issues a Play command.

2.8.2.2 MP-FUR-REQ-020077/B-Auto Play (TcSE ROIN-295786-2)

Auto Play shall refer to media beginning to play as soon as a media device is sourced by the user via VHMI or SHMI for the first time. Autoplay should always be enabled. A USB or Bluetooth device shall not be automatically sourced at connection.

2.8.2.3 MP-FUR-REQ-020078/B-Auto Play Rendering 1 (TcSE ROIN-295787-1)

When a device is sourced, the Media Player shall render the persisted Now Playing playlist of the sourced device immediately. The Now Playing playlist may be persisted on the device (preferred) or on the System.

2.8.2.4 MP-FUR-REQ-020080/B-Auto Play – Now Playing Order (TcSE ROIN-295788-2)

If there is no persisted Now Playing playlist when a device is sourced, the Media Player shall build a Now Playing playlist of all content found on the device and render the Now Playing playlist immediately.

For USB MTP and USB MSC Now Playing playlist shall begin with the first file in the root directory of the device and continue playing through the rest of the files and folders in an alphabetical order. If indexing was completed before sourcing device, the system shall build a playlist of all songs on the device in an alphabetical order of the Track Titles in metadata.

For USB iPod audio devices, the System shall send a play all command to the device which will start playing all songs in an alphabetical order. For iOS7 devices connected over iAP2, system shall limit the list of tracks to a maximum of 500.

For Bluetooth Audio the System will just send a play command to the media device, or play all if applicable.

2.9 MP-FUN-REQ-020087/A-Video Playback (TcSE ROIN-294256-2)

2.9.1 Use Cases

2.9.1.1 MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)

Actors	User
Pre-conditions	Infotainment System is On. Vehicle speed is under 5km/h Media device is properly connected. Media device is selected as the current source.

Scenario Description	The user browses all recognized video files and selects one to play.
Post-conditions	System shall persist/store it's previous playback position System plays selected video objects with title in alphabetical order from the USB source. Track controls, progress bar are presented to user
List of Exception Use Cases	E1 - System detects ~~audio~~ video object is not available on the media device. E2 - System detects communication errors with the media device. E3 - System detects audio object or playlist is already playing from the media source. E4 - System detects that the ~~audio~~ video object is corrupt. E5 - System detects that the ~~audio~~ video object is unusable due to copyright protection.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface

2.9.1.2 MP-UC-REQ-019943/A-System detects Audio Object Is Not Available on the Media Device (TcSE ROIN-290515-1)

Linked Elements

MP-UC-REQ-019978/B-Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290440-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects audio object is not available on the media source. Audio object unavailable message given to user
Post-conditions	System removes audio object from any stored indices or playlists. Next audio object in the Now Playing playlist is played based on repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.1.3 MP-UC-REQ-019842/A-System Detects Communication Errors with the Media Device (TcSE ROIN-290516-1)

Linked Elements

MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)
MP-UC-REQ-019852/A-Resume Media Operation Upon Source Transition (TcSE ROIN-290488-1)
MP-UC-REQ-019928/A-Browse Music (TcSE ROIN-290466-1)
MP-UC-REQ-019934/A-Browse all Song Titles (TcSE ROIN-290471-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019996/B-Cancel Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290456-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019929/B-Browse All Music Genres (TcSE ROIN-290467-1)
MP-UC-REQ-019932/B-Browse All Music Composers (TcSE ROIN-290469-1)
MP-UC-REQ-019936/A-Browse Audiobook Chapters (TcSE ROIN-290473-1)
MP-UC-REQ-019939/A-Direct Browse of an iPod with a Database Hierarchy (TcSE ROIN-290476-1)
MP-UC-REQ-019940/A-Search for Audio Objects from Media Player (TcSE ROIN-290477-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019942/A-Browse Audio Podcast Name (TcSE ROIN-290479-1)
MP-UC-REQ-019945/A-Audio Podcast Chapter Browse (TcSE ROIN-290481-1)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-019985/A-Previous Chapter Audiobook in Media Player or Connected Device (TcSE ROIN-290445-1)
MP-UC-REQ-019986/A-Next Chapter in the Audiobook from Media Player or Connected Device (TcSE ROIN-290446-1)
MP-UC-REQ-019987/A-Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290447-1)
MP-UC-REQ-019988/A-Cancel Fast Forward Audiobook from Media Player or Connected Device (TcSE ROIN-290448-2)
MP-UC-REQ-019989/A-Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290449-1)
MP-UC-REQ-019990/A-Cancel Rewind Audiobook from Media Player or Connected Device (TcSE ROIN-290450-2)
MP-UC-REQ-019991/A-Previous Chapter in Audio Podcast from Media Player or Connected Device (TcSE ROIN-290451-1)
MP-UC-REQ-019992/A-Next Chapter in the Audio Podcast from Media Player or Connected Device (TcSE ROIN-290452-1)
MP-UC-REQ-019993/A-Next Audio Podcast from Media Player or Connected Device (TcSE ROIN-290453-1)
MP-UC-REQ-019994/A-Previous Audio Podcast from Media Player or Connected Device (TcSE ROIN-290454-1)
MP-UC-REQ-019995/A-Fast Forward Audio Podcast from Media Player or Connected Device (TcSE ROIN-290455-1)
MP-UC-REQ-019997/A-Rewind Audio Podcast from Media Player or Connected Device (TcSE ROIN-290457-1)
MP-UC-REQ-019999/A-Advance 30 Seconds within an Audiobook or Podcast (TcSE ROIN-290459-1)

MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020036/A-Shuffle Off for Connected Media Device (TcSE ROIN-290491-1)
MP-UC-REQ-020037/A-Shuffle Songs for Connected Media Device (TcSE ROIN-290492-2)
MP-UC-REQ-020046/A-Repeat One from Media Player or Connected Media Device (TcSE ROIN-290493-1)
MP-UC-REQ-020047/A-Repeat All from Media Player or Connected Media Device (TcSE ROIN-290494-1)
MP-UC-REQ-020048/A-Repeat Off from Media Player or Connected Media Device (TcSE ROIN-290495-1)
MP-UC-REQ-020057/A-Display Cover Artwork of Currently Playing Track (TcSE ROIN-290497-1)
MP-UC-REQ-020059/A-Collect and Store Connected Device Information (TcSE ROIN-290498-1)
MP-UC-REQ-020060/A-Change Audiobook Speed to Slow (TcSE ROIN-290499-1)
MP-UC-REQ-020061/A-Change Audiobook Speed to Fast (TcSE ROIN-290500-1)
MP-UC-REQ-020064/A-Metadata Normalization 'On' for Media Device (TcSE ROIN-290502-1)
MP-UC-REQ-020065/A-Metadata Normalization 'Off' for Media Device (TcSE ROIN-290503-1)
MP-UC-REQ-019931/B-Browse All Music Artists (TcSE ROIN-290468-1)
MP-UC-REQ-019933/B-Browse All Music Albums (TcSE ROIN-290470-1)
MP-UC-REQ-019944/B-Browse Audio Podcast Episode (TcSE ROIN-290480-1)
MP-UC-REQ-019856/D-Handling iAP1 Devices with Multiple Connection Methods (TcSE ROIN-298031-2)

Actors	Media Player, USB Controller
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects communication errors with the media source. Customer is presented with a communication error message
Post-conditions	System will attempt reconnect (based off of functional specification) and user will be given indication of device connection attempt, System logs error information.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.1.4 MP-UC-REQ-019975/C-System Detects Audio Object is Already Playing from the Media Device (TcSE ROIN-290517-1)

Linked Elements
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	User selects the current playing media file from the now playing list on HMI.
Post-conditions	System continues to play selected audio

	object from the media source. Audio object is not restarted.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.1.5 MP-UC-REQ-019972/A-System Detects that the Audio Object is Corrupt. (TcSE ROIN-290518-1)

Linked Elements
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019971/A-Pause Audio Object from Media Player or Connected Device (TcSE ROIN-290436-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)
MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is corrupt. User is presented with an audio object corrupt message. System removes audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed based off of repeat and shuffle settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.1.6 MP-UC-REQ-019837/A-System Detects that the Audio Object is Unusable Due to Copyright Protection (TcSE ROIN-290519-1)

Linked Elements
MP-UC-REQ-019920/A-Browse Playlist (TcSE ROIN-290463-1)
MP-UC-REQ-019935/A-Browse Audiobooks (TcSE ROIN-290472-1)
MP-UC-REQ-019981/C-Restart Song From Media Player or Connected Device (TcSE ROIN-290442-2)
MP-UC-REQ-019983/B-Rewind Song From Media Player or Connected Device (TcSE ROIN-290443-1)
MP-UC-REQ-019841/B-Connect Media Device (TcSE ROIN-290483-1)
MP-UC-REQ-019977/B-Previous Operation from Media Player or Connected Device (TcSE ROIN-290439-1)
MP-UC-REQ-020075/A-System Creates Playlist on Connected Device (TcSE ROIN-290510-1)
MP-UC-REQ-020088/A-Decode Video from Connected Media Device (China Requirement) (TcSE ROIN-290512-2)
MP-UC-REQ-019998/B-Cancel Rewind Podcast from Media Player or Connected Device (TcSE ROIN-290458-2)
MP-UC-REQ-019836/B-Immediate Playback First Indexing (TcSE ROIN-290482-1)
MP-UC-REQ-019941/A-Browse Podcasts (TcSE ROIN-290478-1)
MP-UC-REQ-019974/A-Next Audio Object from Media Player or Connected Device (TcSE ROIN-290437-1)
MP-UC-REQ-019976/A-Automatic Next Audio Object from Media Player or Connected Device (TcSE ROIN-290438-1)

MP-UC-REQ-019980/A-Cancel Fast Forward Song from Media Player or Connected Device (TcSE ROIN-290441-1)
MP-UC-REQ-020012/A-Build Playlist from Media Player or Connected Device (TcSE ROIN-290460-1)
MP-UC-REQ-020015/A-Play Playlist from Media Player or Connected Device (TcSE ROIN-290461-1)

Actors	Media Player
Pre-conditions	Infotainment System On Media device is properly connected. Media device is selected as the source.
Scenario Description	System detects that the audio object is unusable due to copyright protection. Audio object copyright protection message displayed to user System skips audio object from any stored indices or playlists.
Post-conditions	Next audio object in the Now Playing playlist is played/viewed according to shuffle and repeat settings.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.1.7 MP-UC-REQ-019848/C-System detects that there is no Now Playing playlist persisted on the device or the system (TcSE ROIN-290532-1)

Linked Elements
MP-UC-REQ-019846/A-Resume Media Operation upon Ignition Cycle (TcSE ROIN-290487-1)

Actors	User, Media Player
Pre-conditions	Infotainment System On Media device becomes the active source.
Scenario Description	When the user connects a media source, System detects that there is no Now Playing playlist persisted on the device or on System.
Post-conditions	The Media Player shall build a Now Playing playlist of all content found on the device and render the Now Playing playlist immediately. The user is able to browse the media library for the device to select a song for playback.
List of Exception Use Cases	N/A
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.9.2 Requirements

2.9.2.1 MP-FUR-REQ-020090/A-Video Settings – Full and Widescreen Support (TcSE ROIN-295977-2)

A customer shall be able to select between two options for the video aspect ratio: Full Screen and Widescreen. Video aspect ratio can be changed as long as the image is not distorted and does not expand beyond the screen limits.

2.9.2.2 MP-FUR-REQ-020091/A-Video Aspect Default (TcSE ROIN-295978-1)

The default option for the video aspect ratio shall be Full Screen.

2.9.2.3 MP-FUR-REQ-020092/A-Video Settings (TcSE ROIN-295979-1)

The default option for video Text shall be Video Text Off.

A customer shall be able to select between three options for video text during playback: Closed Captioning, Subtitles, or Video Text Off.

2.9.2.4 FUR-REQ-212740/A-MP4 Video

IVIS shall support MPEG-4 Video playback including audio.

2.10 MP-FUN-REQ-020158/A-Gracenote Media Management (TcSE ROIN-296622-1)

2.10.1 Requirements

2.10.1.1 MP-FUR-REQ-020159/A-Gracenote - Genre Mapping (TcSE ROIN-295820-1)

The System shall map common genres and other metadata together and produce a Now Playing list based on these common genres and metadata. The mapping shall be based on the connected device track metadata. NOTE: Gracenote Playlist Plus technology shall be used for this feature.

2.10.1.2 MP-FUR-REQ-020160/A-Gracenote Media Management - Components (TcSE ROIN-295953-2)

The implemented media player architecture shall allow for the ability to upgrade and expand the Gracenote components to ensure the customer has a robust in-vehicle media experience. Upgrades and expands can be such as new Gracenote features and incremental updates to Gracenote's media database.

It shall be possible to configure each Gracenote component in the system to be available or unavailable by market and language.

Please Note: This is most important in the global implementation to ensure that, if a specific feature is not supported by that country and/or language, that we have a means to configure it off.

2.10.1.3 MP-FUR-REQ-020161/A-Gracenote Media Management – Local Lookups (TcSE ROIN-295954-1)

It shall be possible to perform local lookups for digital files on a connected device and return Album Name, Artist Name, Genre, Track Title, and Track Number information upon a successful lookup using Gracenote Playlist Plus functionality.

2.10.1.4 MP-FUR-REQ-020162/A-Gracenote Media Management – Gracenote Album Art (TcSE ROIN-295955-2)

It shall be possible to provide album art locally when using Gracenote.

System shall first check the currently-playing multimedia track to see if Cover Art is available. If no cover art is available, the System shall check the Gracenote database(s) for an album, then artist ~~image~~, then genre image (in that order). If no image is available, the System shall not display an image.

The System shall support providing artist images in the event the device or Gracenote Database does not have an album cover art match available.

System shall be able to dynamically switch between the Gracenote database on internal flash and the larger, more extensive Gracenote lookup database when external memory is inserted and removed.

2.10.1.5 MP-FUR-REQ-020163/A-Gracenote Media Management – MediaVOCS (TcSE ROIN-295956-1)

It shall be possible to provide phonetic transcriptions for genres, artists, albums, and track names for Music ID and Playlist Plus resolved metadata using Gracenote MediaVOCS technology.

The phonetic transcription data provided by the Gracenote MediaVOCS component shall cover the top 85% of media for a specific region/country wherever possible.

It shall be possible to map the phonetic transcription data to the desired phonetic alphabet including, but not limited to, XSAMPA and L&H+.

2.10.1.6 MP-FUR-REQ-020164/A-Gracenote Media Management – Collaborative Artists 1 (TcSE ROIN-295957-1)

It shall be possible to recognize collaborative artists within artist metadata and associate each artist identified with the appropriate artist mapping for voice recognition.

The following concatenation text shall be used as a baseline for recognizing main and secondary artists:

"Feat.", "Featuring", "f/", "feat", "Ft.", "with", "W/"

"& The", "And The", "& The"

"&", "And"

"Present", "Presents"

"," (a comma)

2.10.1.7 MP-FUR-REQ-020165/A-Gracenote Media Management – Collaborative Artists 2 (TcSE ROIN-295958-1)

If a user wants to play a specific set of collaborative artists using voice commands, only an exact match for that collaborative artist shall be executed.

For example, if the user says, "Play Artist Michael Jackson & the Jackson 5", only songs for which the artist name is "Michael Jackson & the Jackson 5" would be played. Songs for which the artist name is "Michael Jackson" or "The Jackson 5" would not be played.

Collaborative artists are two or more artists that, together, contribute to a work – such a song, painting, etc. For the purposes of this spec, we specifically focus on music and other audible media when referring to collaborative artists.

Collaborative artists consist of a main artist and one or more secondary artists, often concatenated in textual form by a conjunction, article, verb and/or other symbols or words. For example, "Michael Jackson & the Jackson 5" would be considered a collaborative artist, where "Michael Jackson" was the main artist and "Jackson 5" was the secondary artist. "& the" is the text used to concatenate the main and secondary artist.

If a user wants to play an artist using voice commands, all songs shall be played for which the artist is the sole match, a main artist in a set of collaborative artists, and/or a secondary artist in a set of collaborative artists. A candidate list will not be provided. This functionality is on by default, regardless of the Gracenote Media Management state.

For example, if the user says, "Play Artist Michael Jackson", songs for which the artist name is "Michael Jackson", "Michael Jackson & the Jackson 5", and "Elvis Presley and Michael Jackson" would be played.

2.10.1.8 MP-FUR-REQ-020166/A-Gracenote Media Management – Collaborative Artists 3 (TcSE ROIN-295959-1)

The System shall persist metadata, album art, etc. in its local cache from Gracenote no matter the source – a Gracenote database on internal flash or a Gracenote database on external memory.

2.11 MP-FUN-REQ-020167/A-Supported Media Types (TcSE ROIN-296624-1)

2.11.1 Requirements

2.11.1.1 MP-FUR-REQ-020168/A-Media Types - categories (TcSE ROIN-295821-1)

The media player shall recognize the following media types: music, audiobooks, and podcasts.

2.11.1.2 MP-FUR-REQ-020169/A-Media Types – File Rendering (TcSE ROIN-295822-1)

If no audio objects or files are associated with a specified media type, the media type selection shall not be displayed to the user.

2.11.1.3 MP-FUR-REQ-020170/A-Media Types – Music Identification (TcSE ROIN-295823-2)

Music shall first be identified by using a protocol-specific designation. If no protocol-specific designation exists, then the file extension, file header or genre metadata field may be used to identify a media file as music.

2.11.1.4 MP-FUR-REQ-020171/A-Media Types – Identifying unknown types (TcSE ROIN-295824-1)

If the media type cannot be determined, it shall be associated with the media type of Music.

2.11.1.5 MP-FUR-REQ-020172/A-Media Types – Audiobook Identification (TcSE ROIN-295825-1)

Audiobooks shall first be identified using a protocol-specific designation. If no protocol-specific designation exists, then the file extension or genre metadata field may be used to identify a media file as an audiobook.

2.11.1.6 MP-FUR-REQ-020174/A-Media Types – Audiobooks Genre Identification (TcSE ROIN-295827-1)

All audio objects or files with a genre of "Audiobook" or "Audio Book" shall be identified as audiobooks.

2.11.1.7 MP-FUR-REQ-020175/A-Media Types – Audiobooks meta genres (TcSE ROIN-295828-1)

All media objects exposed over the MTP protocol with a meta genre of "0x0012 Spoken-Word Audio Book Files" shall be identified as audiobooks.

2.11.1.8 MP-FUR-REQ-020176/A-Media Types – Podcasts Protocol Identificaiton (TcSE ROIN-295829-1)

Podcasts shall first be identified using a protocol-specific designation. If no protocol-specific designation exists, then the file extension or genre metadata field may be used to identify a media file as a podcast.

2.11.1.9 MP-FUR-REQ-020177/A-Media Types – Podcasts Genre identifications (TcSE ROIN-295830-1)

All audio objects or files with a genre of "Podcast" shall be identified as podcasts.

2.11.1.10 MP-FUR-REQ-020178/A-Media Types – Podcasts Meta Genre (TcSE ROIN-295831-1)

All audio objects exposed over the MTP protocol with a meta genre of "0x0013 Spoken-Word Files (non-Audio Book)", "0x0014 Spoken-Word News", "0x0015 Spoken-Word Talk Shows", or "0x0040 Audio Mediacast" shall be identified as podcasts.

2.12 MP-FUN-REQ-020179/A-Audio File Formats and Codec Support (TcSE ROIN-296626-1)

2.12.1 Requirements

2.12.1.1 MP-FUR-REQ-020180/B-Audio Codec Support (TcSE ROIN-295832-1)

The Media Player shall support the following audio types: MP3, WMA, PCM WAV, AAC, FLAC, APE, ALAC and Audible Audiobook Format.

2.12.1.2 MP-FUR-REQ-020181/E-Audio File Support (TcSE ROIN-295833-1)

The Media Player shall recognize files with the following extensions:

.wma

.m4a, .m4b

.mp3

.wav

.aac,.aa, .aax

.flac

.ogg

.ape

.aiff, .aif,

.dsf

2.12.1.3 MP-FUR-REQ-020183/A-WMA Pro Support (TcSE ROIN-295835-1)

The Media Player shall support the WMA Pro (up to and including 5.1 multi-channel audio support), WMA Lossless, and WMA Voice derivatives of the Windows Media Audio format.

2.12.1.4 MP-FUR-REQ-020182/A-Audio File Formats and Codec Support – Time Limits (TcSE ROIN-295834-1)

The Media Player shall not impose a limit on the duration of a media file if its format is supported.

2.12.1.5 MP-FUR-REQ-020184/A-WMA Sampling Rates (TcSE ROIN-295836-1)

The Media Player shall support the following sampling rates for the WMA format: 8kHz, 11.025kHz, 16kHz, 22.05kHz, 32kHz, 44.1kHz, 48kHz, 88kHz, and 96kHz.

2.12.1.6 MP-FUR-REQ-020185/A-WMA Bit Rates (TcSE ROIN-295837-1)

The Media Player shall support WMA files with 16 and 24 bits per sample, truncating the least significant 8 bits of 24 bit samples and normalizing the audio signal with no loss of amplitude.

2.12.1.7 MP-FUR-REQ-020186/A-WMA CBR Profile Support (TcSE ROIN-295838-1)

The Media Player shall decode all CBR profiles for WMA files from bitrates of 5 kbps to 192 kbps for mono and stereo channels.

2.12.1.8 MP-FUR-REQ-020187/A-WMA CBR V9 Support (TcSE ROIN-295839-1)

The Media Player shall decode all Windows Media Version 9 CBR profiles from 5 kbps to 320 kbps for both mono and stereo channels.

2.12.1.9 MP-FUR-REQ-020188/A-WMA VBR Profiles (TcSE ROIN-295840-1)

The Media Player shall decode all Windows Media VBR profiles.

2.12.1.10 MP-FUR-REQ-020189/A-WMA V1 and V2 Support (TcSE ROIN-295841-1)

The Media Player shall support WMA v1 and v2 bit streams.

2.12.1.11 MP-FUR-REQ-020190/A-WMA Lossless Support (TcSE ROIN-295842-1)

The Media Player shall support Windows Media Audio 9 lossless files with 44.1kHz 16-bit 2 channel audio up to 940 kbps.

2.12.1.12 MP-FUR-REQ-020191/A-MP3 Sampling Rate Support (TcSE ROIN-295843-1)

The Media Player shall support the following sampling rates for the MP3 format: 8kHz, 11.025kHz, 12 kHz, 16kHz, 22.05kHz, 24 kHz, 32kHz, 44.1kHz, and 48kHz.

2.12.1.13 MP-FUR-REQ-020192/A-MP3 Bitrate Support (TcSE ROIN-295844-1)

The Media Player shall support the following bit rates for the MP3 formats: 8kbps, 16kbps, 24kbps, 32kbps, 40kbps, 48kbps, 56kbps, 64kbps, 80kbps, 96kbps, 112kbps, 128kbps, 144kbps, 160kbps, 192kbps, 224kbps, 256kbps, and 320kbps.

2.12.1.14 MP-FUR-REQ-020193/A-MP3 8/16 Bit Support (TcSE ROIN-295845-1)

The Media Player shall support MP3 files with 8 and 16 bits per sample.

2.12.1.15 MP-FUR-REQ-020194/A-MPEG Support (TcSE ROIN-295846-1)

The Media Player shall MPEG-1 Layer 3, MPEG-2 Layer 3, MPEG-2.5 Layer 3 (Fraunhofer extension).

2.12.1.16 MP-FUR-REQ-020195/A-MP3 CBR, ABR, and VBR Support (TcSE ROIN-295847-1)

The Media Player shall decode MP3 Constant Bit Rate (CBR), Average Bit Rate (ABR), and Variable Bit Rate (VBR) profiles.

2.12.1.17 MP-FUR-REQ-020196/A-WAV Sample Rate Support (TcSE ROIN-295848-1)

The Media Player shall support the following sampling rates for the PCM WAV format: 8kHz, 11.025kHz, 12kHz, 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, and 48kHz, 64kHz, 88.2kHz, and 96kHz.

2.12.1.18 MP-FUR-REQ-020197/A-PCM WAV Support (TcSE ROIN-295849-1)

The Media Player shall support PCM WAV files with 8 and 16 bits per sample.

2.12.1.19 MP-FUR-REQ-020198/A-PCM WAV Mono and Stereo Support (TcSE ROIN-295850-1)

The Media Player shall support PCM WAV files with mono and stereo channels.

2.12.1.20 FUR-REQ-205746/C-HD Audio Codecs Bit Rate

IVIS shall support all bit rates for the following audio formats: APE, FLAC, DSD, AIFF and ALAC.

2.12.1.21 FUR-REQ-212765/A-AOA USB Audio

IVIS shall support USB Audio over AOAV2.

2.12.1.22 MP-FUR-REQ-020202/A-AAC File Support (TcSE ROIN-295854-1)

The Media Player shall support AAC files with the ".m4a", ".m4b", and ".aac" extensions.

2.12.1.23 MP-FUR-REQ-020203/A-AAC LC, HE Support (TcSE ROIN-295855-1)

The Media Player shall support the Low Complexity, High Efficiency version 1, and High Efficiency version 2 profiles for AAC.

2.12.1.24 MP-FUR-REQ-020204/A-AAC Mono and Stereo Support (TcSE ROIN-295856-1)

The Media Player shall support AAC files with mono and stereo channels.

2.12.1.25 MP-FUR-REQ-020199/A-AAC Sample Rate Support (TcSE ROIN-295851-1)

The Media Player shall support the following sampling rates for the AAC format: 8kHz, 11.025kHz, 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, and 48kHz.

2.12.1.26 MP-FUR-REQ-020200/A-AAC Bitrate Support (TcSE ROIN-295852-1)

The Media Player shall support the following sample rates for the AAC format: 16kbps, 32kbps, 48kbps, 64kbps, 80kbps, 96kbps, 112kbps, 128kbps, 160kbps, 192kbps, 224kbps, and 256kbps.

2.12.1.27 MP-FUR-REQ-020201/A-AAC Bit Sample Rate (TcSE ROIN-295853-1)

The Media Player shall support AAC files with 8 and 16 bits per sample.

2.12.1.28 FUR-REQ-212557/A-DSD Sampling Rates

IVIS shall support DSD audio files with the following sample rates: 2822400 HZ and 5644800 HZ.

2.12.1.29 FUR-REQ-212567/A-DSD Bit Depth

IVIS shall support DSD audio samples with one and eight bits per sample.

2.12.1.30 FUR-REQ-212569/A-DSD Audio Channels

2.12.1.31 FUR-REQ-212300/A-APE Sampling Rates

IVIS shall support APE audio sample rates from 1HZ up to and including 384KHZ in 1 Hz increments.

2.12.1.32 FUR-REQ-212302/A-APE Bit Depth

IVIS shall support APE audio samples with a resolution of 4 up to and including 32 bits per sample.

2.12.1.33 FUR-REQ-212301/A-APE Audio Channels

IVIS shall support DSD audio files with mono, stereo and 5.1 channels.

2.12.1.34 FUR-REQ-212045/A-AIFF Sampling Rates

IVIS shall support AIFF audio sample rates from 1HZ up to and including 384KHZ in 1 Hz increments.

2.12.1.35 FUR-REQ-212298/A-AIFF Bit Depth

IVIS shall support AIFF audio samples with a resolution of 4 up to and including 32 bits per sample.

2.12.1.36 FUR-REQ-212293/A-AIFF Audio Channels

IVIS shall support AIFF audio files with mono, stereo and 5.1 channels.

2.12.1.37 FUR-REQ-211601/A-FLAC Sampling Rates

IVIS shall support FLAC audio sample rates from 1HZ up to and including 384KHZ in 1 Hz increments.

2.12.1.38 FUR-REQ-212295/A-FLAC Bit Depth

IVIS shall support FLAC audio samples with a resolution of 4 up to and including 32 bits per sample.

2.12.1.39 FUR-REQ-212291/A-FLAC Audio Channels

IVIS shall support FLAC audio files with mono, stereo and 5.1 channels.

2.12.1.40 FUR-REQ-211755/A-ALAC Sampling Rate

IVIS shall support ALAC audio sample rates from 1HZ up to and including 384KHZ in 1 Hz increments.

2.12.1.41 FUR-REQ-212297/A-ALAC Bit Depth

IVIS shall support ALAC audio samples with a resolution of 4 up to and including 32 bits per sample.

2.12.1.42 FUR-REQ-212292/A-ALAC Audio Channels

IVIS shall support ALAC audio files with mono, stereo and 5.1 channels.

2.13 MP-FUN-REQ-020206/A-Device Support (TcSE ROIN-296628-1)

2.13.1 Requirements

2.13.1.1 MP-FUR-REQ-020207/A-Bluetooth Connections – Concurrent Devices (TcSE ROIN-295858-1)

The Media Player shall support one A2DP/AVRCP connection.

2.13.1.2 MP-FUR-REQ-020208/A-Bluetooth Connections – A2DP Disconnection (TcSE ROIN-295859-1)

The Media Player shall disconnect the A2DP audio channel when transitioning from the Infotainment power state to another power state.

2.13.1.3 MP-FUR-REQ-020209/A-Bluetooth Connections – Handling Dual Source Connections (TcSE ROIN-295860-1)

For iOS devices, the System shall be able to detect when the same device is connected over both USB and Bluetooth A2DP/AVRCP. If both connections are available to the device:

1. System shall send a notification over USB to the device to determine if it supports Bluetooth Connection Status Notifications.

2. If support is verified, System shall notify the device of its Bluetooth capabilities.

3. The iOS device will send back its connection status for every Bluetooth MAC address it owns.

4. System will then default to the “Dock Connector” source on the device and suspend all AVRCP commands while the device is connected over USB.

Note: Media Player must tell the iOS device whenever its Bluetooth-capable component statuses change.

2.13.1.4 MP-FUR-REQ-020210/B-Bluetooth Connections – Reconnection Attempt (TcSE ROIN-295861-2)

Each time the System’s power state changes from Infotainment power state to another power state and back to Infotainment, the System Media Player shall attempt to resume the previous A2DP source, please refer to BTP-FUR-REQ-033782/B-Connection Order and Requirements.

Each time the user selects a disconnected Bluetooth source using the System’s Media Player, the Bluetooth A2DP connection shall be re-established and the Bluetooth device shall be sourced.

2.13.1.5 MP-FUR-REQ-020211/A-Bluetooth Connections – Connecting while not sourced (TcSE ROIN-295862-1)

The Bluetooth A2DP connection shall be maintained if the user changes the Media Player source away from Bluetooth A2DP.

2.13.1.6 MP-FUR-REQ-020212/B-Bluetooth Connections – Reconnection Order (TcSE ROIN-295863-1)

The Media Player shall attempt to reconnect to the list of paired A2DP devices, please refer to BTP-FUR-REQ-033782/B-Connection Order and Requirements. If there are no paired A2DP sources to which a connection can be made, then the A2DP source choice inside the Audio sources menu shall guide the customer to add a Bluetooth device.

2.13.1.7 MP-FUR-REQ-020213/A-iPod Accessory Protocol Support (TcSE ROIN-295864-1)

All new Ford infotainment systems must implement both versions of the iPod Accessory Protocol in order to support Apple devices.

2.13.1.8 MP-FUR-REQ-020214/A-iPod Accessory Protocol Additional Requirements (TcSE ROIN-295865-1)

The System shall meet all requirements defined by the MFi Accessory Interface Specifications, and the Digital iPod Out specification.

2.13.1.9 MP-FUR-REQ-020215/A-iPod Accessory Protocol – EA Protocol Support (TcSE ROIN-295866-1)

The System must support External Accessory Protocol requirements for both versions of iAP, as well as Digital iPod Out.

2.13.1.10 MP-FUR-REQ-020216/A-iPod Accessory Protocol – iAP2 Lingos (TcSE ROIN-295867-1)

The system must support the Device Authentication, Media Library Access, Digital Audio, Human Interface Device, App Launch, Role Switch, and Bluetooth Pairing and Connection Status sections of the MFi Accessory Interface Specification.

2.13.1.11 MP-FUR-REQ-020217/A-iPod Accessory Protocol – Mfi Product Plan Rules (TcSE ROIN-295868-1)

iOS Applications requesting to work with the System over AppLink must be integrated into the Apple MFi Product Plan.

2.13.1.12 MP-FUR-REQ-020218/A-iPod Accessory Protocol – ATS Certification (TcSE ROIN-295869-1)

The System must adhere to and pass all of the Apple Accessory Test System tests before it can be launched. Any errors detected by the ATS tool or during certification testing shall be fixed before launch.

2.13.1.13 MP-FUR-REQ-020219/A-iPod Accessory Protocol – EA Protocol Delcarations (TcSE ROIN-295870-1)

The System shall declare a list of available communication protocol names during the initial identification process. These protocol names will be used to set up communication sessions with onboard iOS applications.

2.13.1.14 MP-FUR-REQ-020220/A-iPod Accessory Protocol – EA Names (TcSE ROIN-295871-1)

The System shall support up to 30 External Accessory protocol names. The protocol names shall increment from com.ford.sync.prot0, com.ford.sync.prot1, com.ford.sync.prot2… com.ford.sync.prot29

2.13.1.15 MP-FUR-REQ-020221/A-iPod Accessory Protocol – EA Protocol Lists (TcSE ROIN-295872-1)

The System shall maintain the list of the available and in-use protocol names.

The System will make available the lowest numbered protocol name first, then increment up. Protocol names in use must be flagged so as to not be handed to a new iOS application.

Once a protocol connection is closed by either the System or the device, the protocol name shall be made available for other applications.

2.13.1.16 MP-FUR-REQ-020222/A-iPod Accessory Protocol – Severed Connections on EA (TcSE ROIN-295873-1)

When the physical connection is severed with an Apple device, the System shall release all protocol identifiers and clear the list of in-use or available strings.

2.13.1.17 MP-FUR-REQ-020223/A-iPod Accessory Protocol – EA Ign Off Behavior (TcSE ROIN-295874-1)

The System shall release all protocol identifiers at IGN OFF.

2.13.1.18 MP-FUR-REQ-020224/A-iPod Accessory Protocol – App Autolaunch (TcSE ROIN-295875-1)

The System shall be capable of automatically launching an application on an Apple device.

The System shall pass an Application ID string to specify which application to launch. The device shall respond with a status of either OK or Command Failed. The Command Failed response shall indicate that the application either does not exist on the iOS device or that the iOS device is in a condition that prevents the launch.

The System shall not retry the application launch if the Command Failed response is returned from the device.

2.13.1.19 MP-FUR-REQ-020225/A-iPod Accessory Protocol – App Registration (TcSE ROIN-295876-1)

When ready to leverage content from an iOS app, the System shall not assume that the requested iOS app is running, and it must either wait to receive a notification for the External Accessory protocol that is expecting to use; or register for and receive notifications for which applications are currently active.

2.13.1.20 MP-FUR-REQ-020226/A-iPod Accessory Protocol (TcSE ROIN-295877-1)

All track metadata, including artwork and other ID3-related tags shall be transferred as part of every new media object playback.

2.13.1.21 MP-FUR-REQ-020227/A-iPod With Video Support (TcSE ROIN-295878-1)

The System shall support command, control, and playback of video from iPod devices which support video browsing using a special Apple Composite A/V cable (USB + composite RCA jack).

2.13.1.22 MP-FUR-REQ-020228/A-iPod Accessory Protocol Devices (TcSE ROIN-295879-1)

The Media Player shall support iPod Accessory Protocol version 1 and version 2, Media Transfer Protocol (MTP, Enhanced MTP, MTPz), USB Mass Storage Class (MSC), and Bluetooth A2DP/AVRCP devices.

2.13.1.23 MP-FUR-REQ-020229/A-Device Multiprotocol Support (TcSE ROIN-295880-1)

The Media Player shall support the ability to configure a USB device to communicate over one specific protocol should the device communicate over more than one protocol. This configuration shall be able to be specified using a portion or all of the VID and/or PID of a USB device inside the system registry.

2.13.1.24 MP-FUR-REQ-020230/A-USB Role Swap Mode (TcSE ROIN-295881-1)

The System shall be capable of receiving and accepting a request to change from USB Host to USB Client mode. (i.e. in the instance we would like to enable Digital iPod Out and/or MirrorLink capabilities).

2.13.1.25 MP-FUR-REQ-020231/A-Device Support (TcSE ROIN-295882-1)

The system shall support and comply with iPod Accessory Protocol version 1 and version 2.

2.13.1.26 MP-FUR-REQ-020232/A-Device Support – Declining Support of Device (TcSE ROIN-295883-1)

The Media Player shall support the ability to configure any USB device connected to the system to be unsupported. The configuration shall be able to be specified using a portion or all of the VID and/or PID of each unsupported USB device.

2.13.1.27 MP-FUR-REQ-020233/A-MTP Connectivity Approach (TcSE ROIN-295884-1)

The System shall attempt to connect over the MTP interface by default for devices that support both MTP and USB MSC interfaces.

If a device supports both MTP and USB MSC and the System detects the inability to connect to a device over MTP after three successful attempts, System shall attempt to connect to the device over the USB MSC interface.

2.13.1.28 MP-FUR-REQ-093951/C-Bluetooth Audio Volume Set

System should advertise itself as an AVRCP target to be able to implement the absolute volume feature described in the AVRCP 1.4 Bluetooth specifications.
System shall advertise support of the volume changed event notification.
System should advertise its current absolute volume to be 0x7f (100%).
System will never send an event to notify the connected phone that the volume changed, and will not change its volume in case the phone sends absolute volume change commands.

2.14 MP-FUN-REQ-020234/A-Metadata Support (TcSE ROIN-296630-1)

2.14.1 Requirements

2.14.1.1 MP-FUR-REQ-020235/A-Metadata Support – ID3 (TcSE ROIN-295885-1)

The media player shall support metadata in the ID3 version 1 and 2 forc MP4 file format (ISO 14496-14), ASF format, , and Audible format, as well as using the MTP, iPod, and Bluetooth AVRCP protocol interfaces.

2.14.1.2 MP-FUR-REQ-020236/A-Unrecognized Text Encoding (TcSE ROIN-295886-1)

Media files with filenames and metadata that cannot be converted into the appropriate character set shall be populated with block lettering (for example, "[][][][][][][]"). Unicode shall be used wherever possible to ensure locale conversion.

2.14.1.3 MP-FUR-REQ-020237/A-Unknown Metadata for MP3 (TcSE ROIN-295887-1)

MP3 files with headers larger than 2 MB shall be indexed and all metadata values shall be assigned to "Unknown".

2.14.1.4 MP-FUR-REQ-020238/A-WMA and MP3 Indexed Metadata (TcSE ROIN-295888-1)

WMA and MP3 files have metadata in both the Standard and Extended areas. The media player shall try to find this metadata in first the Extended and then in the Standard metadata sections. See below:

WMA:

Standard: Artist, Title

Extended: Artist, Title, Genre, Album, Track

MP3:

Standard: Artist, Title, Genre, Album

Extended: Artist, Title, Genre, Album, Track

2.14.1.5 MP-FUR-REQ-020239/A-Metadata Indexing and Presentation (TcSE ROIN-295889-1)

All metadata fields for each supported metadata and protocol interface format shall be able to be accessed for indexing, processing, and/or presentation to the user.

2.14.1.6 MP-FUR-REQ-020240/A-Metadata Support – Handling Duplicates (TcSE ROIN-295890-1)

Duplicate metadata track titles shall be ordered alphabetically by album.

2.14.1.7 MP-FUR-REQ-020241/A-Metadata Support – Handling Unsupported Characters (TcSE ROIN-295891-1)

Metadata shall be sent to the display driver as it exists in the file. Unsupported characters in the metadata shall not be removed by the Media Player application.

2.14.1.8 MP-FUR-REQ-020242/A-Metadata Support – Handling unknown fields (TcSE ROIN-295892-1)

“Unknown” and unknown metadata shall map together to “Unknown”.

2.14.1.9 MP-FUR-REQ-020243/A-Metadata Support – Handling Cases (TcSE ROIN-295893-1)

Collecting items into the same album, artist, or genre shall be case sensitive when normalization is not applied.

2.14.1.10 MP-FUR-REQ-020244/A-Metadata Support – ID3 tags (TcSE ROIN-295894-1)

The Media Player shall be able to access and use all metadata fields from media files which use the ID3v1 and ID3v1.1 standards.

2.14.1.11 MP-FUR-REQ-020245/A-Metadata Support – ID3 Genre Info (TcSE ROIN-295895-1)

The genre information for MP3 files shall be strings converted from the ID3v1 genre codes.

2.14.1.12 MP-FUR-REQ-020246/A-Metadata Support – ID3 Genre Translation (TcSE ROIN-295896-1)

The System shall support ID3v1 value to genre translation. For example, ID3v1 genre value 0 = Blues, 1 = Classic Rock, etc. A complete mapping for all genres should be referenced on the ID3 website (id3.org/ID3v1).

2.14.1.13 MP-FUR-REQ-020247/A-Metadata Support – ID3 v2 Support (TcSE ROIN-295897-1)

The Media Player shall be able to access and use all metadata fields from media files which use the ID3v2 standard, include ID3v2.3 and ID3v2.4.

2.14.1.14 MP-FUR-REQ-020248/A-Metadata Support – Device Querying (TcSE ROIN-295898-1)

The System shall support the ability to query any portable device connected to the system for queryable data defined in the USB 2.0 specification, the Media Transfer Protocol specification, the Apple accessory specifications, the USB Mass Storage Class specification, the Bluetooth protocol specifications, and the Android Open Accessory (v1/v2) protocol specification.

2.14.1.15 MP-FUR-REQ-020249/B-Metadata Support – Device Information (TcSE ROIN-295899-1)

The following device information shall be available to a user:

iPod Interface Device: Device Name, Product Name, Device Version Number, Serial Number, Firmware Version, Protocol Version, Vendor ID and Product ID.

Mass Storage Class Device: Name, Manufacturer, Product Name, Serial Number, Device Version Number, Vendor ID and Product ID.

MTP Device: Name, Manufacturer, Model Number, Serial Number, Firmware Version, Protocol Version, Vendor ID and Product ID.

Bluetooth Audio Device: Device Name, Manufacturer, Model Number, Bluetooth MAC Address.

2.14.1.16 FUR-REQ-212840/A-Metadata Support - APE Tag

IVIS shall be able to access and use all metadata fields from media files which use APE tag version 1 and 2.

2.14.1.17 FUR-REQ-212841/A-Metadata Support - Vorbis Comments

The Media Player shall be able to access and use all metadata fields from media files which use the Vorbis Comment Tag.

2.15 MP-FUN-REQ-020134/B-USB Product Type Summary (TcSE ROIN-296319-1)

2.15.1 Requirements

2.15.1.1 MP-FUR-REQ-020135/A-USB Product Type Summary 1 (TcSE ROIN-295980-1)

The System system shall meet all applicable requirements to be certified as a USB High-Speed Embedded Host.

The System shall support high-speed, full-speed, and low-speed USB devices.

The System shall support Control, Bulk, Interrupt, and Isochronous transports.

2.15.1.2 MP-FUR-REQ-020136/A-USB Product Type Summary 2 (TcSE ROIN-295983-1)

The System shall support charging devices at 500mA.

2.15.1.3 MP-FUR-REQ-020137/A-Suspend and Resume Signalling (TcSE ROIN-295981-1)

The System shall support USB suspend and resume signaling.

2.15.1.4 MP-FUR-REQ-020138/A-Downstream Port Support (TcSE ROIN-295982-1)

The System shall support multiple downstream ports.

2.15.1.5 MP-FUR-REQ-020139/A-Charging Support (TcSE ROIN-295984-1)

The System shall facilitate the software requirements needed for charging devices at 1A on select media control modules.

The System shall facilitate the software requirements needed for charging devices at 2.1A on select media control modules.

The System shall have the ability to detect devices that support higher wattage charging (5V, 2.1A/9.5W, 5V,1A/5W). See A12 Media Player functional specification for additional details.

2.15.1.6 MP-FUR-REQ-020140/A-USB Hub Support (TcSE ROIN-295985-1)

The System shall support hubs specified by the Ford team. The system shall not support “brought-in” consumer-grade hubs.

2.15.1.7 MP-FUR-REQ-020141/A-USB Current Draw Handling (TcSE ROIN-295986-1)

The System shall detect and report any hub or peripheral which consumes more power than supplied.

2.15.1.8 MP-FUR-REQ-020142/A-USB Product Type Summary - Supported Classes (TcSE ROIN-295987-1)

The System shall support the following approved USB device classes:

Audio Device Class

Battery Charging

Communications Device Class

Human Interface Device

Mass Storage Class

Media Transfer Protocol

Network Control Model

Note: The specifications for the above USB device classes are created and maintained by the USB-IF.

2.15.1.9 MP-FUR-REQ-020143/A-USB Protocol Support (TcSE ROIN-295988-1)

The System shall provide full support of the following vendor-specific USB device classes and/or protocols:

Media Transfer Protocol for Zune (MTPz)

Enhanced Media Transfer Protocol

WMDRM10-ND

iPod Accessory Protocol (iAP) v1/v2

Remote NDIS

Android Open Accessory Protocol v1/v2

NOTE: The Media Transfer Protocol for Zune (MTPz) specification is maintained by Microsoft Corporation and will need to be obtained. The WMDRM10-ND specifications are available in Microsoft Auto PDK documentation. The iPod Accessory Protocol (iAP) is defined in the iPod Accessory Protocol Interface Specification and the iPod Extended Interface Specification maintained by Apple, Inc. The implementation of Remote NDIS shall be specified by the S14 RNDIS USB and Driver Installation Functional Specification. The Android Open Accessory Protocol is maintained by Google.

2.15.1.10 MP-FUR-REQ-020144/A-MTP Authentication Support (TcSE ROIN-295989-1)

The System system shall support the proprietary authentication mechanisms required to support the MTPz protocol.

2.15.1.11 MP-FUR-REQ-020145/B-Apple Authentication Support (TcSE ROIN-295990-1)

The System shall support version 2.0 of the Apple device authentication protocol required to support the iPod Accessory Protocol over USB. Note: Any Apple device must not enumerate as a mass storage class device. See requirement S09.R050.01 for details.

The Media Core shall use the appropriate requirements per the Apple specifications for the version of the Apple Authentication Core Processor that is being used.

The Media Core must support Apple Authentication Chip versions 2.0B and 2.0C.

The Media Core shall have the ability to identify the version of the Apple Authentication Core Processor that is being used by the Sync hardware and allow authentication using that specific hardware and its capabilities appropriately.

When Apple Authentication Chip version 2.0B has been identified as the version being used within the Sync hardware, the SCL speed must not be greater than 50kHZ and the reset cycle delay should be set to 30 milliseconds (refer to Apple Specifications for more details).

2.15.1.12 MP-FUR-REQ-020146/B-USB Product Type Summary - Security (TcSE ROIN-295991-1)

The System shall support authentication using the wide temperature configuration of the Apple 2.0B and 2.0C coprocessor chip.

2.15.1.13 MP-FUR-REQ-020147/A-WMDRM-ND Authentication (TcSE ROIN-295992-1)

The System shall support WMDRM-ND authentication mechanisms required to support playing protected content over the MTP protocol.

2.15.1.14 MP-FUR-REQ-020148/A-USB Host Control Initialization (TcSE ROIN-295993-1)

Each USB driver in the system shall be able to independently power and initialize its host controller and shall not block the power-up and initialization of other host controllers in the system.

2.15.1.15 MP-FUR-REQ-020149/A-USB Product Type Summary - Certification 1 (TcSE ROIN-295994-1)

Devices matching the following USB Vendor and Product IDs shall never be mounted as a mass storage device:

iPod/iPhone:

- USB vendor ID = 0x05AC

- USB product ID = 0x12nn (check first byte only; second byte will vary)

iPod shuffle:

- USB vendor ID = 0x05AC

- USB product ID = 0x13nn (check first byte only; second byte will vary)

2.15.1.16 MP-FUR-REQ-020150/A-USB Product Type Summary - Certification 2 (TcSE ROIN-295995-1)

It shall be possible to register a device as unsupported device for each USB device class by populating the registry with the USB Vendor ID and any portion of the USB product ID.

Note: This requirement is a generic implementation of the iPod/iPhone requirement for mass storage and should be able to be applied to any device which may not work correctly with The System.

2.15.1.17 MP-FUR-REQ-020151/A-USB Performance - Availability (TcSE ROIN-295996-1)

Each device supported by the USB subsystem must be enumerated and available for use by the user within five (5) seconds of attachment to the user-exposed Standard A receptacle if this device is in its normal, functional mode.

Note: A USB device must be in normal functional mode, and not an unpowered or suspend mode, for this requirement to hold. Some devices require an extended period of time (e.g., 30 seconds) to become fully operational when in the unpowered or suspend state.

2.15.1.18 MP-FUR-REQ-020152/A-USB Hub Support Notifications (TcSE ROIN-295997-1)

A message, such as "Too Many Hubs", shall be presented to the customer should the number of supported tiers of hubs connected to the system be exceeded. Source: USB Embedded Host Compliance Plan v1.0, C.2.3.a

2.15.1.19 MP-FUR-REQ-020153/A-Unsupported Devices (TcSE ROIN-295998-1)

A message, such as "Unsupported Device", shall be presented to the customer should a device which is known to be unsupported be connected to the system. Source: USB Embedded Host Compliance Plan v1.0, C.2.4.a

2.15.1.20 MP-FUR-REQ-020154/A-USB Brought-in Hub Compliance (TcSE ROIN-295999-1)

A message, such as "Hubs Not Supported", shall be presented to the customer should the system not support hubs. Source: USB Embedded Host Compliance Plan v1.0, C.2.4.b

2.15.1.21 MP-FUR-REQ-020155/C-USB Excessive Power (TcSE ROIN-296000-1)

A message, such as "Excessive Power", shall not be presented to the user should the system detect any of the following:

1) A peripheral or hub consumes more power than the system can provide.

2) A short to ground fault is detected at any MCM downstream port.

. Source: USB Embedded Host Multiple Receptacles v1.0, 4.2.6

Once the Excessive Power condition is cleared from the USB port, system shall immediately cycle power only on affected ports allowing attached devices to enumerate.

2.15.1.22 MP-FUR-REQ-020156/A-USB Error Handling – Unique Messages (TcSE ROIN-296001-1)

Each unique, detectable USB error condition shall have a unique message associated with it. Each unique message shall be able to be presented to a customer, service technician, or developer if necessary.

2.15.1.23 MP-FUR-REQ-020157/A-USB Unsupported Peripheral (TcSE ROIN-296002-1)

The system must report a warning message to the user when an unsupported peripheral is connected, no matter the speed of the peripheral. Source: USB Embedded Host Multiple Receptacles v1.0, 4.2.4

2.15.1.24 FUR-REQ-155231/C-SYNC Gen3 Supported USB Hubs

IVIS shall only support the following USB Hubs:

1. VID 0x0424
   PID 0x2514

2. VID 0x2996
   PID 0x0118
   PID 0x0119
   PID 0x011A
   PID 0x0105
   PID 0x0120

3. VID 0x042f

PID 0x0600
PID 0x500 …. 0x509

2.15.1.25 FUR-REQ-212848/A-Gen3.2 Type-C Hub

IVIS shall support Gen3.2 USB HUB with one Type-C and one Standard-A port.
IVIS shall enable support using the VID and PID of the Hub.
IVIS shall integrate all required drivers and APIs for the new HUB, to enable USB functionality for Charging, Media, Carplay, Android Auto and IVSU…etc.

2.16 MP-FUN-REQ-020132/A-System Settings (TcSE ROIN-296317-1)

2.16.1 Requirements

2.16.1.1 MP-FUR-REQ-020133/B-Master Reset (TcSE ROIN-296003-1)

A Master Reset operation shall securely delete any available media indices and playlists on the system.

Any device connected to the system via USB before a Master Reset shall be immediately available to the system for indexing and playback after a Master Reset function is performed. A re-insertion of the device shall not be necessary to re-connect and re-index the device.

2.17 MP-FUN-REQ-020130/B-Certification Requirements (TcSE ROIN-296315-1)

2.17.1 Requirements

2.17.1.1 MP-FUR-REQ-020131/A-Certification Requirements (TcSE ROIN-296004-1)

The System Media Player shall support all applicable requirements to achieve the following certifications and compliance:

• Universal Serial Bus (USB) Specification Revision 2.0 Certification

• Universal Serial Bus (USB) Specification Revision 3.0 Certification

• Bluetooth Specification 2.0 + EDR Certification/Qualification

• Made for iPod / Made for iPhone / Made for iPad Certification

• Wi-Fi Certification

2.17.1.2 MP-FUR-REQ-134454/A-USB Certified Components

System shall only use USB Certified connectors, cables and HUBs.

2.18 MP-FUN-REQ-020125/A-Performance Requirements (TcSE ROIN-296313-1)

2.18.1 Requirements

2.18.1.1 MP-FUR-REQ-020126/A-Performance Requirements - Playback (TcSE ROIN-296005-1)

Playback of a media object or file shall begin less than two (2) seconds from the point at which the object or file was selected for rendering.

2.18.1.2 MP-FUR-REQ-020127/A-Performance Requirements - Browse (TcSE ROIN-296006-1)

A user shall be able to browse a device which supports direct browse functionality (e.g., a USB MSC device) within five (5) seconds of the device being accessed.

NOTE: For USB MSD, the performance may vary depending on the following factors:

1) storage type (flash or hard-disk based devices)

2) total number of files on the USB MSD

3) total number of media files on the USB MSD

4) the total amount of storage space due to seek times

5) Performance of the USB MSD microcontroller.

For MTP devices the performance may vary depending on the following factors:

1) storage type (flash or hard-disk based devices)

2) total number of files on the MTP device

3) total number of media files on the MTP device

4) the total amount of storage space due to seek times

5) Performance of the MSD microcontroller or hard disk controller.

6) Media device support for efficient MTP operations such as GetPartialObject()

2.18.1.3 MP-FUR-REQ-020128/A-Playback Priorities (TcSE ROIN-296007-1)

No background indexing, connections, or other operations on the System shall interrupt or affect the playback of audio from a media source.

2.18.1.4 MP-FUR-REQ-020129/B-Maximum Connected Devices (TcSE ROIN-296008-2)

The maximum number of wired devices is dependent on the total number of available USB data ports and the total number of partitions on each USB device, as brought-in hubs are not supported.

The infotainment system shall support up to two partitions per connected USB device ex: A mobile device with an external SD-Card.

2.19 MP-FUN-REQ-020121/A-HMI Requirements (TcSE ROIN-296311-1)

2.19.1 Requirements

2.19.1.1 MP-FUR-REQ-020122/A-USB HMI Requirements (TcSE ROIN-296009-1)

All USB human machine interface (HMI) requirements shall be implemented. Please refer to the USB specification and the Media Player screen flows.

2.19.1.2 MP-FUR-REQ-020123/A-Regional HMI / SUI Dependencies (TcSE ROIN-296010-1)

Audio prompts and messages for the Media Player shall be able to be enabled or disabled based on region.

2.19.1.3 MP-FUR-REQ-020124/A-Device Type HMI Dependencies (TcSE ROIN-296011-1)

HMI elements, such as buttons, shall be able to be enabled, disabled, and/or not displayed based on a specific region, media type, file format type, or device connection type (e.g., iAP, MTP, MSC, etc.).

2.20 MP-FUN-REQ-020110/A-Configurable Settings (TcSE ROIN-296309-2)

2.20.1 Requirements

2.20.1.1 MP-FUR-REQ-020111/A-Repeat Options (TcSE ROIN-296012-2)

A customer shall be able to select between three options for repeating audio objects: Repeat All, Repeat One, and Repeat Off. If multiple media devices are connected and the repeat settings were changed within the media player screen, the settings should only change for the active media device.

2.20.1.2 MP-FUR-REQ-020112/A-Repeat Default Setting (TcSE ROIN-296013-2)

The default option for repeat shall be Repeat All. Repeat settings shall be persisted in the system if the media device is not capable of doing so.

2.20.1.3 MP-FUR-REQ-020113/A-Shuffle Options (TcSE ROIN-296014-2)

A customer shall be able to select between two options for shuffling audio objects: Shuffle Off, Shuffle On. If multiple media devices are connected and the shuffle settings were changed within the media player screen, the settings should only change for the active media device.

2.20.1.4 MP-FUR-REQ-020114/B-Shuffle Default (TcSE ROIN-296015-2)

The default option for shuffle shall be Shuffle Off. Shuffle settings shall be persisted by the system if the media device is not capable of doing so.

2.20.1.5 MP-FUR-REQ-020115/A-Audiobook Speed Options (TcSE ROIN-296016-1)

The User shall be able to select between three options for audiobook speed: Normal, Slower, and Faster.

Audiobook speed settings shall not change when the currently playing audiobook or chapter has been completed.

If the user selects a different audiobook, the speed playback settings shall be applied to the newly-selected audiobook.

The System shall also maintain these settings across ignition cycles.

2.20.1.6 MP-FUR-REQ-020116/A-Audiobook Speed Default Settings (TcSE ROIN-296017-1)

The default option for audiobook speed shall be Normal.

2.20.1.7 MP-FUR-REQ-020118/A-Gracenote Management Options (TcSE ROIN-296019-1)

A customer shall be able to select between two options for Gracenote metadata normalization: Gracenote Media Management On or Gracenote Media Management Off.

If Gracenote Media Management is turned off, the System shall not perform any metadata normalization as will affect the overall indexing time.

When Gracenote Media Management is On, the System shall attempt to normalize and build phonetic transcriptions for all media in which it recognizes.

2.20.1.8 MP-FUR-REQ-020119/A-Gracenote Cover Artwork (TcSE ROIN-296020-1)

Gracenote Cover Art shall only be used for the music media type on a device. All other media types (e.g., podcasts, audiobooks, etc.) shall use the album art associated with the media object and/or file from the device for presentation.

2.20.1.9 MP-FUR-REQ-020120/A-Metadata Language Settings (TcSE ROIN-296021-1)

If media objects or files support metadata in multiple languages, the system language setting shall be used to set the metadata language. If the system language does not match one of the supported metadata languages, then the default metadata language of the media object or file shall be used.

2.21 MP-FUN-REQ-020107/A-API Requirements (TcSE ROIN-296307-1)

2.21.1 Requirements

2.21.1.1 MP-FUR-REQ-020108/A-API Scenarios 1 (TcSE ROIN-296022-1)

It shall be possible for multiple applications to use the media core simultaneously.

2.21.1.2 MP-FUR-REQ-020109/A-API Scenarios 2 (TcSE ROIN-296023-1)

The Media Player shall provide the following API capabilities:

Playback Operations

1.Play a supported media file.

2.Stop media playback.

3.Pause media playback.

4.Fast forward playback.

5.Rewind playback.

6.Play the next media file in a playlist.

7.Play the previous media file in a playlist.

8.Resume media playback.

9.Get playback status.

10.Change repeat setting.

11.Change shuffle setting.

Metadata and Indexing Operations

1. Get any metadata field from a supported media file or device.

2. Build index of all the supported media files.

3. Determine the number of media files present.

4. Delete an index.

5. Rebuild an index.

Event Notifications

1. Receive notifications when a device is connected.

2. Receive notifications when a device is disconnected.

3. Receive notifications when the System's power state changes.

Browsing Operations

1. Navigate through metadata categories.

2. Filter metadata categories.

3. Navigate through files and folders of a filesystem hierarchy.

4. Navigate through the database hierarchy of an iPod.

5. Set the media player locale.

Audio Zone and Audio Source Operations

1. Ability to assign an audio source to a specific zone.

2.22 MP-FUN-REQ-020102/A-Test Requirements (TcSE ROIN-296305-1)

2.22.1 Requirements

2.22.1.1 MP-FUR-REQ-020103/A-USB-IF EHCI Compliance (TcSE ROIN-296024-1)

The system shall pass all tests specified by the USB-IF Embedded Host Compliance Plan.

Certification must be completed within enough time to allow for fixing issues that the USB certification team has identified.

2.22.1.2 MP-FUR-REQ-020104/A-Apple Certification (TcSE ROIN-296025-1)

The system shall pass all relevant tests specified by the Made for iPod/Made for iPhone / Made for iPad Self-Certification Test.

Certification must be completed within enough time to allow for fixing issues that the Apple certification team has identified.

2.22.1.3 MP-FUR-REQ-020105/A-Bluetooth Testing (TcSE ROIN-296026-1)

The system shall pass all relevant tests specified by the Bluetooth Specification 2.0 + EDR Certification/Qualification.

2.22.1.4 MP-FUR-REQ-020106/A-Wifi Certification (TcSE ROIN-296027-1)

The system shall pass all relevant tests specified for Wi-Fi Certification.

2.23 MP-FUN-REQ-020093/A-Media Player Errors (TcSE ROIN-296301-1)

2.23.1 Requirements

2.23.1.1 MP-FUR-REQ-020094/A-Media Player Errors – Bad and Protected Media 1 (TcSE ROIN-296028-1)

Bad media, or corrupt media, is defined as media that is unplayable.

Protected media is viable media protected with Digital Rights Management technologies.

Bad or corrupt media shall be distinguished from protected media which cannot be rendered.

Attempting to play a file that is bad shall generate HMI explaining that the selected media is unplayable.

Media files or objects with any errors during indexing shall be marked as bad or corrupt media.

If during playback a file can only play partway before the file becomes unplayable, then the Now Playing playlist shall skip to the next media file in the playlist with HMI displayed to the user. Likewise, if the user goes to the previous track then the Bad Media track would be skipped again and playback shall begin on the track before the bad or corrupt media track.

If the user has selected one specific track for playback and this one file becomes unplayable partway through playback, then this track shall still repeat and play the portion that is playable.

If the user has selected one specific track for playback and this one media object is unplayable from the start, then the user shall be notified via the HMI. After the HMI timeout, the playback should advance to the next track.

Bad media in a Now Playing playlist on a connected media device shall be skipped each time it is detected.

2.23.1.2 MP-FUR-REQ-020095/A-Media Player Errors – Bad and Protected Media 2 (TcSE ROIN-296029-1)

Playback shall stop if all tracks in a Now Playing playlist are bad/corrupt or protected media tracks after showing the cause of the error.

2.23.1.3 MP-FUR-REQ-020096/A-Media Player Errors – Device Connections (TcSE ROIN-296030-2)

When the media device is disconnected while there is an active media player audio source, then the previously active media source shall be sourced and the user shall be notified via the HMI.

If communication errors are detected between the System and the media source which affects playback, the user shall be notified while the connection is being reestablished.

If communication errors are detected between the System and the media source which the media device stopped responding to the System's commands, the user shall be notified via HMI that the media device is not responding .

If the attached media device does not have supported media files and the user attempts to start media playback, then the system shall inform the user that there are no available media files present and that the user should connect a media device with supported media files.

2.23.1.4 MP-FUR-REQ-020097/A-Media Player Errors – Media No Longer Available (TcSE ROIN-296031-1)

There may be a case where the user does not remove the media device but for some reason the file that was playing prior to an interruption is no longer available. If the user tried to access a file that does not exist on the media device, then the user shall be notified via the HMI.

If the media files are corrupted for some reason and not playable then the media player shall still index these files but if they are selected for playback they shall give the user an error. During a playlist these files would be skipped without notifying the user.

2.23.1.5 MP-FUR-REQ-020098/A-Media Player Errors – Browsing Unavailable Media (TcSE ROIN-296032-1)

If the user attempts to browse playlists on a media device on which there are no playlists available, the user shall be notified via the HMI.

2.23.1.6 MP-FUR-REQ-020099/A-Media Player Errors – Index Full (TcSE ROIN-296033-1)

If there are more files available on the media device that the media player can index, a notification shall be given to the user. The extra files shall simply not be added to the index.

2.23.1.7 MP-FUR-REQ-020100/A-Media Player Errors – Too Many Devices Connected (TcSE ROIN-296034-1)

If there are more devices connected to the system than the System can support, the user shall be notified via the HMI to remove one or more of the devices.

2.23.1.8 MP-FUR-REQ-020101/A-Media Player Errors – Unsupported Device (TcSE ROIN-296035-1)

If the user connects a USB device to the System that is not supported, for example a USB keyboard, a USB mouse, or an unsupported USB MSC device, then the media player shall notify the user via the HMI once the device is sourced.

2.23.1.9 FUR-REQ-213649/A-USB hub detection recovery

In the event of a USB hub not being detected at system startup, IVIS shall attempt once to re-enumerate the Hub. Wait time before re-enumeration attempt shall be configured based on performance test data collected from vehicles of different architectures. Hub re-enumeration strategy shall only apply to vehicles that are equipped with a Ford USB hub.

2.24 MP-FUN-REQ-052277/B-Apple Authentication Chip Handling

Apple Authentication Chip Handling

2.24.1 Use Cases

Use Cases

2.24.1.1 MP-UC-REQ-052262/A-Customer attaches an Apple device to USB while chip is not operational and tries to access it via SYNC

Actors	USB Controller, Media Player
Pre-conditions	Cabin temperature drops below -25C Customer turns ignition to ON
Scenario Description	Customer attaches an Apple device to USB while chip is not operational and tries to access it via SYNC
Post-conditions	User is not able to access the Apple device via SYNC. User is notified via HMI that the Apple device is temporarily unavailable. SYNC attempts to re-initialize the Apple authentication chip and notifies user once the Apple device is accessible.
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.24.1.2 MP-UC-REQ-052275/A-SYNC fails to resume playback from previous ignition cycle while cabin temperature is below -25C

Actors	USB Controller, Media Player
Pre-conditions	Cabin temperature is greater than -25C Infotainment System On Apple device is properly attached to the infotainment system via USB. Media device is selected as the source. Customer Turns ignition off. Infotainment System Off Cabin temperature drops below -25C Customer turns ignition to ON
Scenario Description	SYNC fails to resume playback from previous ignition cycle while cabin temperature is below -25C

Post-conditions	User is notified via HMI that the Apple device is temporarily unavailable. SYNC attempts to re-initialize the Apple authentication chip and notifies user once the Apple device is accessible.
List of Exception Use Cases	E1 - System detects communication errors with the media device.
Interfaces	G-HMI, V-HMI, USB Interface, Audio Out, Audio In, SWC, CBI, BT Interface, Vehicle System Interface

2.24.2 Requirements

Requirements

2.24.2.1 MP-FUR-REQ-052261/A-System Startup Diagnostic Check

Upon vehicle startup, SYNC must perform a diagnostic check and verify that the Apple authentication chip is operational.

2.24.2.2 MP-FUR-REQ-052264/A-Handling Authentication when Chip is Unavailable

If SYNC detects that the Apple authentication chip is not responding SYNC shall not attempt to connect to the apple device via USB. The Apple device should not appear as a selectable audio source to the user.

2.24.2.3 MP-FUR-REQ-052265/A-Unavailable Apple device notification

If he Apple authentication chip is not available at startup and the user tries to access the Apple device, SYNC must notify the user via HMI that the attached Apple device is temporarily not accessible via SYNC.

2.24.2.4 MP-FUR-REQ-052270/B-Re-Initializing Strategy

If the Apple authentication chip is not available at vehicle startup, SYNC must retry initializing the Apple authentication chip and detect the Apple devices that are attached via USB. The time interval between each attempt of initialization must be configurable. ~~SYNC should not supply power to the Authentication chip between each initialization attempt~~. After a configurable number of failed attempts to initialize the Apple Authentication chip, SYNC shall stop trying.

2.24.2.5 MP-FUR-REQ-052272/B-Recovery Strategy

Once SYNC detects that the Apple authentication chip is in an operational state, SYNC should wait thirty seconds then start to reinitialize the authentication process for the USB attached Apple devices. SYNC should notify the User that the Apple devices are selectable as an audio source via HMI. The attached Apple devices should become available to the user to access via HM. If the authentication process fails after the chip becomes operational, SYNC must wait 2 minutes then attempt to reinitialize again. SYNC should only attempt the initialization process twice per ignition cycle, to avoid continuous resetting of the USB port.

~~Once SYNC detects that the Apple authentication chip is in an operational state, SYNC should reinitialize the authentication process for the Apple devices that are attached via USB. SYNC should notify the User that the Apple devices are selectable as an audio source via HMI. The attached Apple devices should become available to the user to access via HMI.~~

2.25 MP-FUN-REQ-212842/D-Media Smart Search

2.25.1 Requirements

2.25.1.1 FUR-REQ-212767/A-Smart Search Description

IVIS shall offer a smart search function to allow the user find a specific artist, track title, album, genre, Podcast, Audiobook, Composer, iTunes Radio station... etc.

2.25.1.2 FUR-REQ-212768/A-Smart Search Full Keyboard

IVIS UI shall offer a full keyboard to the user.

2.25.1.3 FUR-REQ-212769/A-Smart Search Multilanguage Support

Language dependent keyboards shall be offered per HMI specifications.

2.25.1.4 MP-FUR-REQ-261297/A-Case Sensitivity

The search shall not be case sensitive.

2.25.1.5 FUR-REQ-212770/A-Smart Search Devices

IVIS shall allow smart search functionality only for media devices that can be indexed.

2.25.1.6 FUR-REQ-212771/A-Smart Search Media Source

IVIS shall only search the indexed database of the sourced media device.

2.25.1.7 FUR-REQ-212772/A-Smart Search Categories

IVIS shall allow search functionality for all indexed metadata categories offered by the GUI, like artist, album, track name, etc.

2.25.1.8 FUR-REQ-212773/A-Smart Search Active Category

Smart search shall only query the category metadata selected by the user in the browse menu.
Example: searching in Album browse view shall only look in album metadata.

2.25.1.9 MP-FUR-REQ-212774/C-Smart Search Speller

A smart speller functionality shall be implemented; only some keys of the keyboard should be activated – the keys that correspond to valid completion of the previously entered string.

2.25.1.10 FUR-REQ-212775/A-Smart Search Candidates

IVIS shall narrow down the number of possible search candidates (based upon a reference database) with each successive character entered by the user.

2.25.1.11 FUR-REQ-212776/A-Smart Search Multiword

For entries with more than one word, all of them shall be searchable simultaneously.
Example: “Hits” search shall result in “Greatest Hits.

2.25.1.12 FUR-REQ-212777/A-Smart Search Multiword Sequence

For entries with more than one word, the words can only be searched in the original sequence.
Example: “Hits Greatest” search shall not result in “Greatest Hits”.

2.25.1.13 FUR-REQ-212778/B-Smart Search String Order

Searches begin from the beginning of the words. For words within a text field, special characters shall be valid word separators as defined in within the HMI spec.
Example” searching for “est” shall not show results for “Greatest”.

For a simple example, two artists are available:

- The Great Audio Band
- Sample Artist & Orchestra Buddies

The keyboard for search will initially only activate the following letters: T, G, A, B, S, O
If the user presses initially T, then only one artist will match the search.
If the user presses initially G, then only one artist will match the search.
If the user presses initially A, then the following letters will be activated: U, R
If the user presses initially B, then the following letters will be activated: A, U
If the user presses initially S, then only one Artist will match the search.
If the user presses initially O, then only one Aritst will match the search.

Note: The given examples do not consider requirement *FUR-REQ-226429 - Smart Search Chinese Acronyms.*

2.25.1.14 MP-FUR-REQ-235406/B-Smart Search Special Character Handling

The defined special characters need a specific handling, as also described in the HMI spec.

1. A Space shall be a valid input for any special characters, and should be handled as such.
2. Special characters (incl. Space) shall be handled as a separator.
3. Consecutive special characters shall be handled as one separator. As soon as the first separator is detected, the search shall move to the next valid character/word.
4. Special character and space work as wildcard for any other special character or space. Therefore special character keyboard shall not be smart spelled. Whenever the special character keyboard is available, all special characters on this keyboard will be available.
5. In front of words, user can input special characters. This applies to subsequent words as well. Refer to example 7 and 8.

Example: The media player library entry *Dr Alpha* shall be found using the following inputs:

- Dr.Alpha
- Dr. Alpha
- Dr._Alpha
- Dr Alpha
- Dr_Alpha
- Dr.-(%§! /**())Alpha
- #*+Dr Alpha
- #*+Dr_&%Alpha

2.25.1.15 FUR-REQ-212779/B-Smart Search Chinese Keyboard Inputs

For the country of China and Taiwan, IVIS shall provide the user with English input keyboard only.

2.25.1.16 MP-FUR-REQ-212782/D-Smart Search Multilanguage String

For the country of China and Taiwan, IVIS shall map all the Chinese characters to Pinyin, and each Pinyin shall be treated as an English word. The search results shall contain both English metadata and Chinese metadata. User shall be able to search for metadata that contains both Chinese characters and English letters.

Example
If these artists are available:

Artists	Corresponding Word
周杰伦	Zhou Jie Lun
陈奕迅	Chen Yi Xun
Coldplay	Coldplay

邓丽君	Deng Li Jun
DJ 小可	DJ Xiao Ke

The keyboard for search will initially only activate the following letters: Z , J , L , C , Y , X , D , K .
If user presses C, then the following letters shall be activated :H , Y , O .
If user presses C and then H , only one artist will match the search : 陈奕迅 .
If user presses D , then the following letters shall be activated: E , L , J .
If user presses D and then L , then only one artist will match the search : 邓丽君.
If user presses J, then the following letters shall be activated: I, U.
If user presses K, then only one artist will match the search: DJ 小可 .

Note: The given examples also consider requirement *FUR-REQ-226429 - Smart Search Chinese Acronyms.*

2.25.1.17 FUR-REQ-226429/A-Smart Search Chinese Acronyms

For the country of China and Taiwan, multiword entries shall be searched when the letters entered match the initial letters from each word simultaneously.
This logic is valid for all media categories, which can be searched, like artist, album, genre, song, etc.

Example: The search GH shall results in The Greatest Hits and Ghost or search TEOA shall result in The End Of August. The Search EA shall not result in The End Of August.

2.25.1.18 FUR-REQ-247491/A-Smart Search Simplified input method for fly-out characters

All applicable fly-out characters on a keyboard, which are associated to a main character, shall be considered for the search when selecting this main character.
This will simplify the input method for those characters.

Example:
When the customer is selecting “O” the search result shall contain the item “Oasis”, and “Österreichisches Staatsorchester”.

The association between a main character and special character is defined by the applicable HMI specification.

3 Appendix A: Definitions and Acronyms

Acronym name	Acronym Description
Media Player	Media Player refers to the software components installed on the embedded system that allow for media playback of a connected device.
Connected Device	Any device that can connect to the System over an medium – USB, Bluetooth, Wifi, etc.
MSC	Mass Storage Class device. A class within the USB specification
MTP	Media Transfer Protocol – A class with the USB specification that's tailored specifically towards transferring media – pictures, video, audio, and more.
AOA, AOAv2	Android Open Accessory Protocol – a communications protocol specifically for Android devices
iAP1, iAP2	iPod Accessory Protocol – a communications protocol specifically for Apple devices
BC 1.2	Battery Charging Specification 1.2 is the latest USB charging specification that supports devices with higher power charging requirements
YD/T 1591	Requirements doc for charging and interfacing with USB devices according to Chinese Regulations
Smart Charger	A charging device that has a microcontroller to help identify and apply charging profiles according to the connected device.
Audio/Video Remote Control Profile (AVRCP)	A Bluetooth profile for controlling audio playback on devices. The most recent version of this protocol (1.4) provides media functions (e.g., Play, Pause, Next Track, Previous Track, etc.), as well as the ability to read metadata fields for media objects (e.g., Title, Artist, Album, etc.).
Advanced Audio Distribution Profile (A2DP)	A Bluetooth profile for streaming audio content from a device.
Indexing	The procedure by which the system scans the contents of an attached media device and creates a list of all playable media files present on the device. The created index shall allow for users to browse or search the playable media using supported metadata, as well as be the basis for speech grammar build.
Media source	A resource from which a customer wants to play content. Examples include a CD, iPod, USB Mass Storage Class device (i.e., pen drive), etc.
Now Playing playlist	The media set that is currently queued for playback. Also often referred to as a play plan, it is generated when a user selects to play a set of media content.

Playlist	A list of audio objects or files.
Audio object	An item which contains or references audio to render. Types of audio objects include songs, audio books, and podcasts.
Video object	An item which contains or references video to render.
Image object	An item which contains or references an image to render.
Graphical User Interface (GUI)	This refers to a combination of buttons and graphical radio displays that allow the user to interact with the media player interface.
Speech User Interface (SUI)	This refers to the media player recognized speech commands and text-to-speech responses that allow the user to interact with the media player interface.
Human Machine Interface (HMI)	Items related to user interactions on the System device by either manual buttons, touch, or speech interfaces.
Universal Serial Bus Mass Storage Device (USB MSD)	Devices that connect to the System via the USB Mass Storage Class.
MPEG-1 Audio Layer 3 (MP3)	A lossy audio codec standard. The term MP3 may also refer to a file with the ".mp3" extension.
Moving Pictures Experts Group (MPEG)	A working group of the International Standards Organization/International Electrotechnical Commission charged with the development of video and audio encoding standards.
Windows Media Audio (WMA)	Microsoft's proprietary audio codec. Also refers to audio files with a ".wma" extension which contain audio encoded with Microsoft's proprietary audio codec.
Advanced Audio Coding (AAC)	Also known as MPEG-2 Part 7. A digital audio encoding and lossy compression format.
Windows Media Digital Rights Management for Network Devices (WMDRM-ND)	This refers to the Microsoft digital rights management schema that allows streaming of protected content over USB. Also known as Cardea and Plays From Device.
Advanced Stream Redirector (ASX)	Also known as Windows Media Metafiles. This refers to text files which provide information about a file stream and its presentation. Often having the ".asx" extension, these files often are used as playlists for audio and video.
MPEG Audio Layer 3 URL (M3U)	This refers to a computer file format that stores multimedia playlists. These files often have the ".m3u" or ".M3U" file extension.
Windows Media Player Playlist (WPL)	Client-side playlist files written in a Microsoft proprietary format. These files often have the ".wpl" file extension.
Single Play	Audio is being played to the primary audio zone in the vehicle only. Control may be coming from any zone.
Dual Play	Two different audio streams are being played to two separate audio zones in the vehicle. Control of each zone is separated.
Shared Play	The same audio stream is being played to all available zones in the vehicle. Control can

	come from any zone.
Variable Bit Rate (VBR)	Encoding schema for media that varies the amount of output data per time segment. VBR allows a higher bit rate (and therefore more storage space) to be allocated to the more complex segments of sound files while less space is allocated to less complex segments.
Constant Bit Rate (CBR)	Encoding schema for media with a constant amount of output data per time segment.
Auto Play	User configurable setting inside the Media Player that shall begin playing media as soon as either a supported, wired media device is connected to the system or a wireless media device is sourced.
Now Playing playlist	The track collection that is generated on the system when the user selects to play content using the system's media player application. May also refer to the track collection that is generated by a portable electronic device and exposed to the system once connected.
User-Defined Playlist	Track collections that the user has defined and saved on a portable media device before connecting the portable media device to the system.
Audio Control Module (ACM)	The module in the system responsible for radio tuning, Compact Disc (CD) playback, etc.
iPod Accessory Protocol (iAP)	The proprietary communication protocol used by Apple devices to communicate over serial and USB connections. iAP has two major versions, 1 and 2. Version 1 is supported only on the 30-pin proprietary connector. Version 2 is supported only on devices equipped with the lightning connector (with the exception of the iPod Nano, 7th gen).
Gracenote Normalization	Includes the Gracenote Playlist Plus feature. Also specified as "Gracenote Media Management".

4 Appendix B: Reference Documents

Reference #	Document Title
1	iPod Accessory Protocol Extended Specification
2	iPod Accessory Protocol Standard Specification
3	iPod Accessory Coprocessor 2.0B Specification
4	iPhone Accessory Specification
5	Made for iPod / Works with iPhone Self-Certification Test Form
6	A05 Picture/Video Viewer Functional Specification
7	Digital Living Network Alliance (DLNA) Home Networked Device Interoperability Guidelines – Part 1: Architecture and Protocols, IEC 62481-1
8	P06 Power Management Specification
9	P08 Device Compatibility List
10	S09 USB Subsystem Specification