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# Introduction

## Document Purpose

The Feature Implementation Specification (FIS) specifies the deployment of the logical functions of a feature to an electrical architecture. The FIS specifies all interactions between the ECUs of the electrical architecture required for the feature including the technical signals and the interfaces. It also gives interface and integration requirements, which are specific to the feature for the electrical architecture.

To get more information about the concept of feature, function and component level abstraction refer to the [Ford RE Wiki](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Engineering+for+SW+Enabled+Features).

## Document Scope

This FIS describes the deployment of the feature <Feature> to the following electrical architecture(s):

| **Electrical Architecture Name** | **Owner** | **Reference** |
| --- | --- | --- |
| e.g. CGEA1.3 |  | <Add VSEM Link> |
|  |  |  |

Table 1: Electrical Architecture(s) referenced in this document

The following functions from the [Global Feature & Function List](https://www.vsemweb.ford.com:443/tc/launchapp?-attach=true&-s=226TCSession&-o=ZmZNi0JHx3NrTDAAAAAAAAAAAAA) are referenced in this Feature Implementation Specification:

| **Function ID** | **Function (Group) Name** | **Owner** | **Reference** |
| --- | --- | --- | --- |
| <Add VSEM ID> | Locking | n/a | <Add VSEM Link> |
|  |  |  |  |

Table 2: Functions referenced in this document

## Document Audience

The FIS is authored by Daniel King, Feature Owner. All Stakeholders, i.e., all people who have a valid interest in the feature implementation should read and, if possible, review the FIS. It needs to be guaranteed, that all stakeholders have access to the currently valid version of the FIS.

### Stakeholder List

For the latest list of the function stakeholders and their roles & responsibilities refer to <Put VSEM Link here>.

**#Hint:** Refer to [Ford RE Wiki – Stakeholder List](http://wiki.ford.com/display/RequirementsEngineering/Stakeholder+Analysis) on how to create a stakeholder list. The stakeholder list should be stored in VSEM in the pseudo folder “General Data Artifacts” of the corresponding feature / function / component.

## Document Organization

### Document Context

Refer to the [Specification Structure page](http://wiki.ford.com/display/RequirementsEngineering/Specification+templates) in the [Ford RE Wiki](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Engineering+for+SW+Enabled+Features) to understand how the FIS relates to other Ford Requirements Documents and Specifications.

### Document Structure

The structure of this document is explained below:

**Section 1** – Introduction – Giving an explanation how to use this document including responsibilities and the scope of the document. Additionally it contains the revision history and a list of unsettled but known issues that have to be consolidated in future versions. It explains the terminology and gives a clarification of the definitions, concepts and abbreviations used in the document.

**Section 2** – Feature Implementation Description – Giving an overview of the platform and listing assumptions, constraints or dependencies

**Section 3** – Feature Implementation Architecture – Describing 3 Architecture Views:

* Functional Architecture – Showing the logical architecture of functions
* Physical Architecture – Showing the physical architecture (first of all the E/E Architecture), which the Logical Functions get allocated to.
* Function Deployment – Presenting the allocation of logical functions and signals to the electrical and other components

**Section 4** – Deployment Specific Modeling –Modeling techniques providing additional detail on e.g. interface behavior

**Section 5** – Deployment Specific Requirements – Deployment specific requirements for ECUs, Network Communication, and Process

**Section 6** – List of Open Concerns

**Section 7** – Revision History

**Section 8** – Appendix - Presenting additional data mainly in a tabular form, e.g., a data dictionary

## Document Conventions

### Requirements Templates

Each requirement in this specification shall follow the corresponding template given in the document template *Specification\_Macros.dotm* on Wiki page [“Specification Templates”](http://wiki.ford.com/display/RequirementsEngineering/Specification+templates?src=contextnavpagetreemode). This document template also provides macros to insert the requirement templates. Refer to “[How to use the Specification Templates](http://wiki.ford.com/display/RequirementsEngineering/How+to+use+the+Specification+Templates?src=contextnavpagetreemode)” on how to enable the macros and the requirements templates in this specification.

The requirements macro and requirements templates also enable the import of the specification to VSEM (refer to ["How to import specifications into VSEM as separate requirements"](http://wiki.ford.com/pages/viewpage.action?pageId=104991616&src=contextnavpagetreemode)).

#### Identification of requirements

The unique requirement ID given in the headline of any requirement follows the requirement throughout the development process. The requirement ID format follows a well-defined syntax.

All identifiers in an FIS shall be composed of 4 parts:

* A leading prefix, which indicates the type of requirement (R=Requirement, UC=Use Case, SC=Scenario, …)
* A prefix, which indicates the abstraction level (F=Feature, FNC=Function, CMP = component).
* Followed by a name, indicating the scope, which the requirement belongs to (e.g. feature or function name )
* Ending with the actual requirement number

*Example:*

*R\_CMP\_LockArbitrator\_00004* This is the fourth requirement on component level for the function Lock Arbitrator.

#### Requirements Attributes

Additionally attributes can be added to each requirement. This helps to classify requirements. A [list of available attributes](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes?src=contextnavpagetreemode) is given in the RE Wiki.

# Feature Implementation Overview

## Description

**#Hint:** Give a short overview on what E/E systems / platforms the feature is implemented and what special considerations have to be taken into account for E/E systems / platforms.

## Input Requirements

*#Hint: In this section all input requirements affecting the system development phase are collected, which have an effect on system development in addition to the function requirements. Typically, ARL and SDS requirements are listed here. The goal is to get a complete view of all requirements affecting all aspects of the system under development. Not all these requirements are further developed in the Platform Spec. As some requirements only affect the electrical components and are common to all similar components in the complete system of the vehicle they are left to be further investigated in the electrical component development phase. This means that the Platform Spec serves as the input document for the electrical component development phase rather than a lot of high level documents describing the product and properties of the complete project. The list below gives an idea of requirements, which should be listed here.*

* *Cost requirements*
* *Legal requirements*
* *Ergonomic requirements*
* *Electrical requirements*
* *EMC requirements*
* *Crashworthiness requirements*
* *Reliability requirements*
* *Weight requirements*
* *Styling requirements*
* *Security requirements*
* *Service requirements*
* *Accessories requirements*
* *Environmental care requirements*
* *Performance, fuel economy requirements*
* *Ride comfort requirements*
* *Noise, vibrations requirements*
* *Handling requirements*
* *Climate comfort requirements*
* *Fire prevention requirements*
* *Aerodynamic requirements*
* *Corrosion and surface treatment requirements*
* *Durability requirements*
* *Theft protection requirements*
* *Polymer material requirements*
* *Audio and communication requirements*
* *Inner dirt contamination requirements*
* *Ground clearance requirements*
* *Waterproof requirements*
* *Thermic requirements*
* *Production requirements*
* *Complete Electrical System requirements*
* *Communication requirements*
* *Diagnostic requirements*

## Assumptions

## References

### Ford Documents

The list of all Ford internal documents, which are directly related.

| **Reference** | **Title** | **Doc. ID** | **Revision** | **Document Location** |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |

Table 3: Ford internal Documents

### External Documents and Publications

The list of external documents could include books, reports and online sources.

| **Reference** | **Document / Publication** |
| --- | --- |
| [bbb] |  |
|  |  |

Table 4: External documents and publications

## Glossary

### Definitions

| **Definition** | **Description** |
| --- | --- |
|  |  |
|  |  |
|  |  |

Table 5: Definitions used in this document

### Abbreviations

| **Abbr.** | **Stands for** | **Description** |
| --- | --- | --- |
| FS |  |  |
| E/E | Electrical and Electronics |  |
|  |  |  |
|  |  |  |

Table 6: Abbreviations used in this document.

# Feature Implementation Architecture

## Functional Architecture

### Description



Figure 1: Functional Architecture

### Function List

|  |  |  |
| --- | --- | --- |
| **Function ID** | **Function Name** | **Function Description** |
|  | BEC Open/Close Requests |  |
|  | BEC center stack Open/Close Requests |  |
|  | BEC Remote Access |  |
|  | BEC Remote Service Requests |  |
|  | BEC Exterior Switch Enable |  |
|  | BEC Hands-Free Activation |  |
|  | BEC Validation of User Requests |  |
|  | Arbitration of User Inputs |  |
|  | BEC Position Programming |  |
|  | Verify BEC Operation Preconditions |  |
|  | Determine BEC Move Request |  |
|  | BEC Audible Feedback |  |
|  | Control BEC Operation |  |
|  | BEC Manual Mode HMI |  |
|  | BEC Status Feedback |  |

Table 7: List of Functions

### Signal List

*#Hint: Refer to the Data Dictionary - Logical Signals.*

## Physical Architecture

### E/E Architecture

#### E/E Architecture Variants

|  |  |  |
| --- | --- | --- |
| E/E Architecture Variant Name | Variant Description | Variant Condition (optional) |
| FNV2.5 | Similar to FNV2, except using a GEN 3 BCM on CAN FD1 which supports Message Authentication. FNV2.5 also introduces the Interior PDB on CAN FD1. |  |
| FNV3 | Similar to FNV2.5, except using an ECG Service Oriented architecture which supports API based enclosure requests from ECG to BCM |  |

##### E/E Architecture “FNV2.5”



Figure 2:E/E Architecture (Network Topology Style)

#### E/E Components

|  |  |
| --- | --- |
| **Component Name** | **Description** |
| RGTM | Rear Gate Trunck Module |
| BCM | Body Control Module |
| ECG | Enhanced Central Gateway |
| PCM | Powertrain Control Module |
| IPC | Instrument Panel Cluster |
| APIM / APIM\_CDC | APIM(Sync Module) / APIM\_CDC(Phoenix Domain controller) |
|  |  |
|  |  |

Table 8: Electrical Components

#### E/E Connections

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Connection Name** | **Type** | **Description** | **Allocated Messages** | **Connected Nodes** |
| CANFD1 | CAN FD | CAN FD 1 Network |  | BCM, AVPIM, DAPL, DAPR, PCM |
| MSCAN1 | MSCAN | Medium Speed CAN |  | RGTM |
| HS3CAN | HSCAN | High Speed CAN Network 3 |  | IPC, APIM/APIM\_CDC |
| Ethernet | SOA | Service Oriented Architecture |  | ECG, AVPIM, DAPL, DAPR, BCM, DXP\_FL, DXP\_FR, DXP\_RL, DXP\_RR |

Table 9: E/E Connections

#### Signal List

***#Hint:*** *Refer to the* [*Data Dictionary*](#_Data_Dictionary) *-* [*Technical Signals*](#_Technical_Signals)*.*

## Function Deployment



Figure 7: Deployment Diagram

### Function Allocation

|  |  |  |
| --- | --- | --- |
| **Function ID** | **Logical Function Name** | **Component Name** |
|  | BEC Open/Close Requests | BCM |
|  | BEC center stack open/Close Requests | APIM/ APIM\_CDC |
|  | Verify BEC center stack open/Close count | BCM |
|  | BEC Remote Access request | BCM |
|  | BEC Remote Service request | ECG |
|  | BEC Exterior Switch Enable | BCM |
|  | BEC Validation of User Requests | RGTM |
|  | BEC Arbitration of User Inputs | RGTM |
|  | BEC BEC Position Programming | RGTM |
|  | BEC Hands free activation | BCM |
|  | Determine BEC Move Request | RGTM |
|  | BEC verify vehicle stationary | RGTM |
|  | BEC Audible Feedback | RGTM |
|  | BEC Status Feedback | RGTM |
|  | BEC Authenticated Communication | BCM, RGTM |
|  | BEC User Select Manual Mode | IPC |
|  | BEC Manual Mode HMI | APIM / APIM\_CDC, IPC |  |
|  | BEC Determine manual mode | RGTM |  |
|  | BEC Obstacle Detection | RGTM |  |
|  | Control BEC Operation | RGTM |  |

Table 10: Function Allocation Table

#### Functional Safety

***#Classification:*** *Functional Safety Only*

***#Hint:*** *For each architectural component implementing the safety goal fill out the following 2 tables.*

*The table below provides the ability to allocate requirements directly to components. This is necessary for requirements such as ASIL hardware metric values and safety measures that don’t relate to E/E functions (ex. thermal shielding or something like a fan cover to prevent access to moving parts)*

***#Link:***[*Functional Safety Sharepoint*](https://pd3.spt.ford.com/sites/GlobalFunctionalSafety/Pages/default.aspx)

| Component / Interface | Overall Component ASIL | Req IDs | Req ASIL | Function | Req IDs | Req ASIL |
| --- | --- | --- | --- | --- | --- | --- |
| Component 1 | C(D) | Req a | B | Function 1 | Req d |  |
| Req b | QM |  | Req e | B(C) |
| Req c | C(C) | Function 3 | Req f | C(D) |
|  |  | Function 4 | Req g | B(D) |
| Component 2 | B(C) | Req b | QM | Function 1 | Req d |  |
| Req h | B(C) |  |  |  |

Table 11: Function Allocation Table

***#Hint:*** *Most of the analysis and classification for Architectural Redundancy should be accomplished via a safety analysis and implemented via requirements. Those should be referenced in the table below. The rationale section is used to provide a quick summary of the need for the redundancy. If an element does not facilitate any redundant functions or purpose enter ‘n/a’ in all the remaining columns starting with the 2nd (Redundant Component/Subsystem).*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Affected Components/**  **Subsystems/ Data** | **Redundant Component/ Subsystem/ Data** | **If redundancy is used:** | | |
| **Rational for why the redundant component is needed/ suitable** | **Reference to Safety Analysis** | **Requirements Calling for redundancy (Reference to Req IDs)** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Table 12: Architectural Redundancy Summary

# Feature Implementation Modeling

## Component Interaction Diagrams



Figure : Back End Closure Authenticated Communication DataFlow Diagram



Figure 4: Receive BEC Remote Access Requests Dataflow Diagram

### Functional Safety

#### Fault Handling Time Analysis

***#Classification:*** *Functional Safety Only - Optional*

***#Hint:*** *The purpose of this table is to check the individual component Fault Handling Time (FHT) contributions of the TSRs against the stated FHT of the (refined) FSRs (as derived from the Functional Safety Concept) from which the TSRs were derived (checking for consistency or violations). The table serves as a quick summary of the key information. For help in determining the FHT values of the TSRs please use the expanded version of the table in the* [*Functional Safety Sharepoint*](https://pd3.spt.ford.com/sites/GlobalFunctionalSafety/Pages/default.aspx) *along with its accompanying instructions.*

***#Link:***[*Functional Safety Sharepoint*](https://pd3.spt.ford.com/sites/GlobalFunctionalSafety/Pages/default.aspx)

| **Component/ Subsystem**  [or Communication Channel] | **F-S-Req-ID** | **Fault Handling Time (FHT)** | **T-S-Req-ID** | **Portion of the FHT**  [or Time Delay of Communication Channel] |
| --- | --- | --- | --- | --- |
| Component A | Functional Safety Requirement X |  |  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| Component B | Functional Safety Requirement Y |  |  |  |
|  |  |
|  |  |

Table 13: Fault Handling Time Table

#### Requirements Derivation Diagram

***#Classification:*** *Functional Safety Only - Optional*

***#Hint:*** *Optionally include a Requirements Derivations Diagram (SysML Requirements Diagram) or a Goal Structuring Notation (GSN) Diagram to illustrate the relationship between requirements.*

## Component Interface Behavior Diagrams

### Scenario: Request power operation from exterior switch with valid passive entry device



### Scenario: Remote Toggle/Stop Request



### Scenario:Remote Open/Close Request



### Scenario: Lock/Unlock All Doors Exterior Handle



### Scenario: Enable BEC Exterior Handle



### Scenario: Trim Switch Inhibit



### Scenario: Valet Mode



# Feature Implementation Requirements

***#Hint:*** *The Feature Implementation Specification is first of all an architecture document. It shows the Functional and the E/E architecture as well as the deployment of the Functional one to the E/E one.*

## Requirements on Components

### BCM

#### Implemented Function BEC Open/Close Requests

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** | **Subscriber Interface** | **Connection**  (*Optional)* |
| RKE\_PLG\_Rqst | Same |  |  | Internal to BCM |
| Paak\_PLG\_Rqst | Same |  |  | Internal to BCM |
| NFC\_PLG\_Rqst | Same |  |  | Internal to BCM |
| CPP\_DL\_LGG\_LG\_Rqst | Same |  |  | Internal to BCM |
| SmartUnlockPLG\_Rqst | Same |  |  | Internal to BCM |
| BEC\_RemoteAccessStopToggle\_Rqst | Same |  |  | Internal to BCM |
| BEC\_RemoteAccessOpenClose\_Rqst | Same |  |  | Internal to BCM |
| Remote\_PDL\_Rqst | Same |  |  | Internal to BCM |
| HandsFree\_DL\_Rlse\_Rqst | Same |  |  | Internal to BCM |
| Closure\_Vehicle\_Speed | Same |  |  | Internal to BCM |
| LiftgateSwitch\_Status | Same |  |  | Internal to BCM |
| LG\_Ajar\_Status | Same |  |  | Internal to BCM |
| RePA\_BLEM\_Status | Same |  |  | Internal to BCM |
| ~~NFC BUN signals~~ |  |  |  |  |
| ~~PaakCtrlActionCode~~ | ~~PaakCtlActv\_D\_Rq~~ |  |  | ~~HS3CAN to CANFD1~~ |
| ~~PaakCtrlRKEData~~ | ~~PaakCtlActvData\_No\_Actl~~ |  |  | ~~HS3CAN to CANFD1~~ |
| ~~PaakCtrl\_RKESubID~~ | ~~PaakCtlActv\_No\_Actl~~ |  |  | ~~HS3CAN to CANFD1~~ |
| Ignition\_Status | Same |  |  | Internal to BCM |
| Decklid\_LG\_PKAccess\_Rslt | Same |  |  | Internal to BCM |
| Decklid\_LGAccessSearch\_Rqst | Same |  |  | Internal to BCM |
| HandsFreeLGDL\_Rqst | Same |  |  | Internal to BCM |
| PassivePwrDecklidRlse\_Rqst | Same |  |  | Internal to BCM |
| APIM\_BEC\_Rqst | Same |  |  | Internal to BCM |

Table 14: Input Signal mappings of Function BEC Open/Close Requests

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_Toggle\_Rqst | Same |  |  | Internal to BCM |
| BEC\_OpenClose\_Rqst | Same |  |  | Internal to BCM |
| PowerDecklidLG\_Rlse\_Rqst | Same |  |  | Internal to BCM |
| PLG\_Flash\_Rqst | Same |  |  | Internal to BCM |
| PLG\_Illum\_Entry\_Rqst | Same |  |  | Internal to BCM |
| PLG\_Switch\_Remote | Same |  |  | Internal to BCM |

Table 15: Output Signal mappings of Function BEC Open/Close Requests

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |
|  |  |  |  |  |

Table 16: Parameter mappings of Function BEC Open/Close Requests

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_OCR\_00001 | Accept Remote BEC Toggle Requests |  |
| R\_FNC\_BEC\_OCR\_00002 | Verify Passive Entry on Exterior Request |  |
| R\_FNC\_BEC\_OCR\_00003 | Accept Exterior BEC Toggle Request |  |
| R\_FNC\_BEC\_OCR\_00004 | User Feedback for accepted Toggle request |  |
| R\_FNC\_BEC\_OCR\_00005 | Inhibit Perimeter Alarm |  |
| R\_FNC\_BEC\_OCR\_00006 | Toggle Request due to Smart Unlock |  |
| R\_FNC\_BEC\_OCR\_00007 | Enable Exterior Switch on Toggle Request |  |
| R\_FNC\_BEC\_OCR\_00008 | Accept Interior BEC Toggle Request |  |
| R\_FNC\_BEC\_COC\_00002 | Disable front interior touchscreen softkey |  |

Table 17: Inherited Requirements - BEC Open/Close Requests

Component Specific Requirements

N/A

#### Implemented Function Verify BEC Center Stack open/close count

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| APIM\_BEC\_Release\_Cnt | BecRleas\_No\_RqMnu |  |  | HS3CAN to CANFD1 |

Table 18: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| APIM\_BEC\_Rqst | Same |  |  | Internal to BCM |

Table 19: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 20: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
|  |  |  |
|  |  |  |

Table 21: Inherited Requirements - BEC Exterior Switch Enable

Component Specific Requirements

### R\_CMP\_PLG\_FIS\_00040### Verify APIM Toggle Stop Request Count

The BCM shall maintain an event counter (APIM\_BECRelease\_Cnt) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the subscriber
* The event counter is classified as single feature event counter
* When the counter is incremented to next value, the APIM\_BEC\_Rqst is set to BEC\_REL

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00040### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

#### Implemented Function BEC Exterior Switch Enable

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Lock\_Requestor | Same |  |  | Internal to BCM |
| Lock\_Status | Same |  |  | Internal to BCM |
| PowerLiftgate\_Lock\_Ev | Same |  |  | Internal to BCM |
| PLG\_NewEnable\_Flag | Same |  |  | Internal to BCM |
| Perimeter\_Alarm\_Veh\_Mode | Same |  |  | Internal to BCM |
| LG\_Ajar\_Status | Same |  |  | Internal to BCM |
| TrimInhibit | Same |  |  | Internal to BCM |
| PLG\_Switch\_Remote | Same |  |  | Internal to BCM |
| BEC\_RemoteAccessLock\_Rqst | Same |  |  | Internal to BCM |
| LG\_ExteriorSwitch\_Status | Same |  |  | Internal to BCM |
| Decklid\_Status | Same |  |  | Internal to BCM |

Table 18: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_Lock\_Unlock | Same |  |  | Internal to BCM |
| PowerLGDL\_ExtSwitch\_Status | Same |  |  | Internal to BCM |

Table 19: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 20: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_ESE\_00001 | Enable Back End Closure Exterior Switch – Power Liftgate |  |
| R\_FNC\_BEC\_ESE\_00002 | Disable Back End Closure Exterior Switch – Power Liftgate |  |

Table 21: Inherited Requirements - BEC Exterior Switch Enable

Component Specific Requirements

N/A

#### Implemented Function BEC Remote Access

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| SOA\_PLG\_Rqst | ClsrOprtPrxmChk\_D\_Stat  ClsrOprtSrvcId\_No\_Rq  ClsrOprtSrvcSrc\_B\_Rq  ClsrOprtSrvc\_D\_Rq  ClsrOprtSrvcType\_B\_Rq  LckUnlckSrvcId\_No\_Rq  LckUnlckSrvcSrc\_B\_Rq  LckUnlckSrvc\_D\_Rq  LckUnlckSrvcType\_B\_Rq |  |  | FD1 CAN |

Table 22: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | | **Mapping Details**  *(Conditional)* | | **Publisher Interface** | | **Connection**  *(Optional)* |
| BEC\_RemoteAccessLock\_Rqst | Same | |  | |  | | Internal to BCM |
| BEC\_RemoteAccessOpenClose\_Rqst | Same | |  | |  | | Internal to BCM |
| BEC\_RemoteAccessStopToggle\_Rqst | Same | |  | |  | | Internal to BCM |
| SOA\_PLG\_Stat | | ClsrOprtSrvc\_D\_Arb  ClsrOprtSrvcId\_No\_Actl  ClsrOprtSrvc\_D\_Res  LckUnlckSrvc\_D\_Arb  LckUnlckSrvcId\_No\_Actl  LckUnlckSrvc\_D\_Res | |  | |  | FD1 CAN |

Table 23: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 24: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_RA\_00001 | Enable Exterior Handle when Unlock is requested |  |
| R\_FNC\_BEC\_RA\_00002 | Disable Exterior Handle when Lock is requested |  |
| R\_FNC\_BEC\_RA\_00003 | Request Open Operation |  |
| R\_FNC\_BEC\_RA\_00004 | Request Close Operation |  |

Table 25: Inherited Requirements - BEC Remote Access

Component Specific Requirements

N/A

#### Implemented Function BEC Hands-Free Activation

Refer to BCM Functional Spec FS-NU5T-14B476-AGx, Section 2.4.56.

#### Implemented Function Back End Closure Authenticated Communication

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| PowerDecklidLG\_Rlse\_Rqst | Same |  |  | Internal to BCM |
| BEC\_Toggle\_Rqst | Same |  |  | Internal to BCM |
| BEC\_OpenClose\_Rqst | Same |  |  | Internal to BCM |
| BEC\_Lock\_Unlock | Same |  |  | Internal to BCM |
| PowerLGDL\_ExtSwitch\_Status | Same |  |  | Internal to BCM |
| TrimInhibit | Same |  |  | Internal to BCM |
| ValetMode\_Status | Same |  |  | Internal to BCM |
| BEC\_PurposeCode\_Exec | DrPrpsCode\_D\_RqBec |  |  | MS1CAN to CANFD1 |
| BEC\_AAC\_Key\_Exec | DrAuthntctnCodeBec\_D\_Res |  |  | MS1CAN to CANFD1 |

Table 26: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_PurposeCode\_Rqstr | DrPrpsCodeBec\_D\_Res |  |  | CANFD1 to MS1CAN |
| BEC\_RAC\_ECI\_Rqstr | DrActnCode\_D\_RqBec |  |  | CANFD1 to MS1CAN |
| BEC\_AAC\_Key\_Rqstr | DrAuthntctnCode\_D\_RqBec |  |  | CANFD1 to MS1CAN |

Table 27: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 28: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
|  |  |  |

Table 29: Inherited Requirements

Component Specific Requirements

###R\_CMP\_PLG\_FIS\_00001### Manage Local Toggle Stop Request Count

The BCM shall maintain an event counter (BEC\_LocalToggleStop\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal PowerDecklidLG\_Rlse\_Rqst to TRUE is considered an event that causes an increment of the counter to MutEx B (next even value).
* MutEx A is not used (reserved).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00001### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00002### Manage Remote Toggle/Stop Request Count

The BCM shall maintain an event counter (BEC\_RemoteToggleStop\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal BEC\_Toggle\_Rqst to TOGGLE is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal BEC\_Toggle\_Rqst to STOP is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00002### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00003### Manage Open/Close Request Count

The BCM shall maintain an event counter (BEC\_RemoteOpenClose\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal BEC\_OpenClose\_Rqst to CLOSE is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal BEC\_OpenClose\_Rqst to OPEN is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00003### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00004### Manage Lock/Unlock All Exterior Count

The BCM shall maintain an event counter (BEC\_LULAllExt\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal BEC\_Lock\_Unlock to LOCK is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal BEC\_Lock\_Unlock to UNLOCK is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00004### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00005### Manage Lock/Unlock BEC Exterior Count

The BCM shall maintain an event counter (BEC\_LULLocalExt\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal PowerLGDL\_ExtSwitch\_Status to DISABLE is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal PowerLGDL\_ExtSwitch\_Status to ENABLE is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00005### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00006### Manage Switch Inhibit Count

The BCM shall maintain an event counter (BEC\_LULLocalInterior\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal TrimInhibit to INHIBIT is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal TrimInhibit to NO\_INHIBIT is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00006### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00007### Manage Valet Mode Count

The BCM shall maintain an event counter (BEC\_ValetMode\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The BCM is the Publisher.
* A change to the value of logical signal ValetMode\_Status to ACTIVE is considered an event that causes an increment of the counter to MutEx A (next odd value).
* A change to the value of logical signal ValetMode\_Status to INACTIVE is considered an event that causes an increment of the counter to MutEx B (next even value).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00007### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00008### Sign BEC Message Data

The BCM shall secure the following signals using the protocol specified in “Point-to-Point Authentication

Protocol Specification Version 0.1” (Reference VSEM item VDOC077948):

* BEC\_LocalToggleStop\_Count
* BEC\_RemoteToggleStop\_Count
* BEC\_RemoteOpenClose\_Count
* BEC\_LULAllExt\_Count
* BEC\_LULLocalExt\_Count
* BEC\_LULLocalInterior\_Count
* BEC\_ValetMode\_Count

Where

* The BCM is the Requestor.
* DrPrpsCodeBec\_D\_Res is used for the P2PA\_PurposeCode of the Requestor.
* DrActnCode\_D\_RqBec is used for the P2PA\_RAC\_ECI of the Requestor.
* DrAuthntctnCode\_D\_RqBec is used for the P2PA\_AAC\_Key for the Requestor.
* DrPrpsCode\_D\_RqBec is used for the P2PA\_PurposeCode of the Executor.
* DrAuthntctnCodeBec\_D\_Res is used for the P2PA\_AAC\_Key of the Executor.
* There is no CAN signal defined for the P2PA\_RAC\_ECI of the Executor.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00008### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00009### Calculate Requested Action Code for Back End Closure

The BCM shall calculate the Requested Action Code (RAC) Frame 1 for the Back End Closure Authenticated Communication function when any of the Event Counters changes value to other than zero according to the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| msb | | Bits for Requested Action Code Frame 1 | | | | | | | | | | | | | | | | | | | | | | | | | lsb | |
| 27 | 26 | | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| BEC\_LUL~~Local~~Ext\_Count | | | | BEC\_LULLocalInterior\_Count | | | ~~BEC\_LULAllExt\_Count~~ | | | BEC\_~~Local~~ToggleStop\_Count | | | ~~BEC\_RemoteToggleStop\_Count~~ | | | BEC\_~~Remote~~OpenClose\_Count | | | BEC\_ValetMode\_Count | | | 0 | 0 | 0 | 0 | 0 | Executor Challenge Index (ECI) | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00009### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00010### Calculate Authenticated Data

The BCM shall calculate the Action Authentication Code (AAC) for the Back End Closure Authenticated Communication function when any of the Event Counters changes value and the corresponding RAC Frame has been calculated.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00010### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00011### Send Authenticated Data

The BCM shall send the authenticated data once the AAC is calculated and until a P2PA Outcome Code is received.

Once the P2PA Outcome Code is received, the BCM shall send an Idle Purpose Code and clear the RAC Frame 1.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00011### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

### RGTM

#### Implemented Function BEC Validation of User Requests

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| LockInhibit\_Cmd | Same |  |  | Internal to RGTM |
| Interior\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| BEC\_Lock\_Unlock | Same |  |  | Internal to RGTM |
| RGT\_Handle\_Sw\_Enable\_Stat | Same |  |  | Internal to RGTM |
| Exterior\_Handle\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Ajar\_Stat | Same |  |  | Internal to RGTM |
| PassivePwr\_DL\_LG\_Rqst | Same |  |  | Internal to RGTM |
| BEC\_Toggle\_Rqst | Same |  |  | Internal to RGTM |
| BEC\_OpenClose\_Rqst | Same |  |  | Internal to RGTM |
| Shutface\_Sw\_In | Same |  |  | Internal to RGTM |
| RGT\_Position\_Count | Same |  |  | Internal to RGTM |
| RGT\_Latch\_Status | Same |  |  | Internal to RGTM |

Table 34: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| Valid\_Interior\_Rqst | Same |  |  | Internal to RGTM |
| Valid\_Exterior\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Passive\_Handle\_Rqst | Same |  |  | Internal to RGTM |
| Remote\_RGT\_Rqst | Same |  |  | Internal to RGTM |
| RawOpenCloseStop\_Rqst | Same |  |  | Internal to RGTM |
| Shutface\_Sw\_Rqst | Same |  |  | Internal to RGTM |

Table 35: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 36: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_VUR\_00001 | Validate Front Interior Switch |  |
| R\_FNC\_BEC\_VUR\_00002 | Validate Local Exterior User Requests |  |
| R\_FNC\_BEC\_VUR\_00004 | Validate Remote User Stop Requests |  |
| R\_FNC\_BEC\_VUR\_00005 | Validate Remote User Open Requests |  |
| R\_FNC\_BEC\_VUR\_00006 | Validate Remote User Close Requests |  |
| R\_FNC\_BEC\_VUR\_00007 | Validate Remote User Toggle Request |  |
| R\_FNC\_BEC\_VUR\_00008 | Validate Local Interior Requests |  |

Table 37: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function Liftgate / Decklid Position Programming

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Shutface\_Sw\_Status | Same |  |  | Internal to RGTM |
| RGT\_Movement\_Stat | Same |  |  | Internal to RGTM |

Table 38: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| Shutface\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Programmed\_Open\_Position | Same |  |  | Internal to RGTM |
| ProgrammableStop\_Chime\_Rqst | Same |  |  | Internal to RGTM |

Table 39: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 40: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC-PROG\_00001 | Program User Selected Open Position |  |
| R\_FNC\_BEC-PROG\_00002 | User Feedback for Programming Open Position |  |
| R\_FNC\_BEC-PROG\_00003 | Toggle Request on Short Activation of Shutface Switch |  |

Table 41: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function Arbitration of User Inputs

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Valid\_Interior\_Rqst | Same |  |  | Internal to RGTM |
| Valid\_Exterior\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Passive\_Handle\_Rqst | Same |  |  | Internal to RGTM |
| Remote\_RGT\_Rqst | Same |  |  | Internal to RGTM |
| RawOpenCloseStop\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_ValetMode | Same |  |  | Internal to RGTM |
| CarMode | Same |  |  | Internal to RGTM |
| RGT\_Lockout\_Status | Same |  |  | Internal to RGTM |
| Interior\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| Exterior\_Handle\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| Shutface\_Sw\_Rqst | Same |  |  | Internal to RGTM |
| Slam\_Protection\_Stat | Same |  |  | Internal to RGTM |
| RGT\_Drift\_Count | Same |  |  | Internal to RGTM |

Table 42: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| Valid\_User\_Rqst | Same |  |  | Internal to RGTM |
| Raw\_User\_Rqst | Same |  |  | Internal to RGTM |
| OpenCloseStop\_Rqst | Same |  |  | Internal to RGTM |

Table 43: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 44: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_ARB\_00001 | Accept Toggle Requests from User Input |  |
| R\_FNC\_BEC\_ARB\_00002 | Toggle Requests become Unlatch requests |  |
| R\_FNC\_BEC\_ARB\_00003 | Requests while Factory Mode |  |
| R\_FNC\_BEC\_ARB\_00004 | Toggle Requests become Unlatch Rquests - Factory Mode |  |
| R\_FNC\_BEC\_ARB\_00005 | Accept Stop Requests |  |
| R\_FNC\_BEC\_ARB\_00006 | Accept Open requests |  |
| R\_FNC\_BEC\_ARB\_00007 | Accept Close Requests |  |

Table 45: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function BEC Verify Vehicle Stationary

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Ignition\_Status | Ignition\_Status |  |  | MS1CAN |
| Vehicle\_Speed | Veh\_V\_ActlEng |  |  | MS1CAN |
| Gearbox\_Type | Gearbox\_Type |  |  | GGCC CDID 110 |
| Transmission\_Status | GearLvrPos\_D\_Actl |  |  | MS1CAN |
| CarMode | LifeCycMde\_D\_Actl |  |  | MS1CAN |

Table 46: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| Precondition\_Status | Same |  |  | Internal to RGTM |

Table 47: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 48: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_STAT\_00001 | Vehicle Speed Status |  |
| R\_FNC\_BEC\_STAT\_00002 | Vehicle Stationary Determination |  |
| R\_FNC\_BEC\_STAT\_00003 | Allow Power Operation |  |

Table 49: Inherited Requirements

Component Specific Requirements

###R\_CMP\_PLG\_FIS\_00037### Use Gearbox Type from ECVC

The RGTM shall determine the Gearbox\_Type using data from the requirements found in version 002,

dated October 6, 2015, of the Economized Central Vehicle Configuration Specification published by the Ford NetComm group and currently maintained at

<https://www.vsemweb.ford.com/tc/webclient?argument=zhSNtS9Ex3NrTD>

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00037### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00038### Use ECVC Database to Decode CDIDs

The RTM shall decode the ECVC CDIDs to determine Gearbox\_Type using the requirements found in the VSEM

version dated January 7, 2015 of the EconomizedCentralVehicleConfigurationDatabase(ECVC\_DB) published by the Ford NetComm group and currently maintained at

https://www.vsemweb.ford.com/tc/webclient?argument=UlZRaT9dx3NrTD

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00038### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

#### Implemented Function Determine BEC Move Request

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Precondition\_Status | Same |  |  | Internal to RGTM |
| Valid\_User\_Rqst | Same |  |  | Internal to RGTM |
| Raw\_User\_Rqst | Same |  |  | Internal to RGTM |
| OpenCloseStop\_Rqst | Same |  |  | Internal to RGTM |
| Glass\_Ajar\_RGT\_Op\_Stat | Same |  |  | Internal to RGTM |
| ObstacleDetect\_Stat | Same |  |  | Internal to RGTM |
| RGT\_Movement\_Stat | Same |  |  | Internal to RGTM |
| RGT\_Operation\_Zone | Same |  |  | Internal to RGTM |
| RGT\_Drift\_Control\_Rqst | Same |  |  | Internal to RGTM |
| OCCR\_Cmd | Same |  |  | Internal to RGTM |

Table 50: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| Valid\_RGT\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Obstacle\_Chime\_Rqst | Same |  |  | Internal to RGTM |
| Invalid\_RGT\_FeedbackChime | Same |  |  | Internal to RGTM |

Table 51: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 52: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_MOVE\_00001 | User request for Unlatch Operation |  |
| R\_FNC\_BEC\_MOVE\_00002 | User Request for Open Operation |  |
| R\_FNC\_BEC\_MOVE\_00003 | User Request for Close Operation |  |
| R\_FNC\_BEC\_MOVE\_00004 | User Request for Stop Operation |  |
| R\_FNC\_BEC\_MOVE\_00005 | Inhibit User Requested Operation |  |
| R\_FNC\_BEC\_MOVE\_00006 | Move Request due to BEC Manage Drift |  |
| R\_FNC\_BEC\_MOVE\_00007 | Move Request Due to Diagnostics |  |
| R\_FNC\_BEC\_MOVE\_00008 | Move Request Due to User Request |  |
| R\_FNC\_BEC\_MOVE\_00009 | Request Manual Close Message |  |
| R\_FNC\_BEC\_MOVE\_00010 | Warning on Rejected User Request |  |
| R\_FNC\_BEC\_MOVE\_00011 | Warning Due to Obstacle Detection |  |

Table 53: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function Control BEC Operation

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Valid\_RGT\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Programmed\_Open\_Position | Same |  |  | Internal to RGTM |
| RGT\_Latch\_Status | Same |  |  | Internal to RGTM |
| RGT\_Latch\_Cinch\_Position\_Status | Same |  |  | Internal to RGTM |
| RGT\_Position\_Count | Same |  |  | Internal to RGTM |

Table 54: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| RGT\_DriveControl\_Rqst | Same |  |  | Internal to RGTM |
| Latch\_CinchControl\_Rqst | Same |  |  | Internal to RGTM |
| Latch\_ReleaseControl\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Close\_Chime\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Movement\_Stat | Same |  |  | Internal to RGTM |

Table 55: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 56: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_CTRL\_00001 | Request to Power Unlatch |  |
| R\_FNC\_BEC\_CTRL\_00002 | Request to Power Open |  |
| R\_FNC\_BEC\_CTRL\_00003 | Completion of Power Open |  |
| R\_FNC\_BEC\_CTRL\_00004 | Request to Power Close |  |
| R\_FNC\_BEC\_CTRL\_00005 | Power Cinch from Manual Close |  |
| R\_FNC\_BEC\_CTRL\_00006 | Completion of Power Cinch |  |
| R\_FNC\_BEC\_CTRL\_00007 | Request to Stop Power Open or Close |  |
| R\_FNC\_BEC\_CTRL\_00008 | Request to Power Hold |  |

Table 57: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function Manage Drift

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| RGT\_Strut\_Speed | Same |  |  | Internal to RGTM |
| RGT\_Strut\_Direction | Same |  |  | Internal to RGTM |
| Diag\_ClearDriftCount\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Movement\_Stat | Same |  |  | Internal to RGTM |
| ObstacleDetect\_Stat | Same |  |  | Internal to RGTM |

Table 58: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| RGT\_Drift\_Count | Same |  |  | Internal to RGTM |
| RGT\_Conrol\_Drift\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Drift\_Event\_Warning\_Rqst | Same |  |  | Internal to RGTM |

Table 59: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
| Drift\_Speed\_High\_Cfg | Same |  | Method 3 |  |
| Detect\_Drift\_Time\_Cfg | Same |  | Method 3 |  |
| Drift\_Time\_at\_Speed\_Cfg | Same |  | Method 3 |  |

Table 60: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_DRIFT\_00001 | Falling Gate Determination After Each Power Operation |  |
| R\_FNC\_BEC\_DRIFT\_00002 | Hold Liftgate When Falling Gate Detected |  |
| R\_FNC\_BEC\_DRIFT\_00005 | Power Close After Hold Due to Falling Gate |  |
| R\_FNC\_BEC\_DRIFT\_00007 | Warning Chime for Falling Gate |  |
| R\_FNC\_BEC\_DRIFT\_00006 | Obstacle During Power Close Due to Falling Gate |  |
| R\_FNC\_BEC\_DRIFT\_00004 | Falling Gate Determination Calibration |  |

Table 61: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function BEC Slam Protection

TBD

#### Implemented Function BEC Obstacle Detection

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| DriveUnitPositionCounts | Same |  |  | Internal to RGTM |
| RightPinchStrip\_Stat | Same |  |  | Internal to RGTM |
| LeftPinchStrip\_Stat | Same |  |  | Internal to RGTM |

Table 62: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| ObstacleDetect\_Stat | Same |  |  | Internal to RGTM |

Table 63: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 64: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_OD\_00001 | Primary Obstacle Detection |  |
| R\_FNC\_BEC\_OD\_00002 | Secondary Obstacle Detection |  |
| R\_FNC\_BEC\_OD\_00003 | Obstacle Detection Status |  |
| R\_FNC\_BEC\_OD\_00004 | Faulted Pinch Strip |  |
| R\_FNC\_BEC\_OD\_00005 | Primary Obstacle Detection Performance |  |

Table 65: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function BEC Audible Feedback

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| RGT\_Close\_Chime\_Rqst | Same |  |  | Internal to RGTM |
| RGT\_Obstacle\_Chime\_Rqst | Same |  |  | Internal to RGTM |
| Invalid\_RGT\_FeedbackChime | Same |  |  | Internal to RGTM |
| RGT\_Drift\_Event\_Warning\_Rqst | Same |  |  | Internal to RGTM |
| ProgrammableStop\_Chime\_Rqst | Same |  |  | Internal to RGTM |

Table 66: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| RGT\_Chime\_Cmd | DrTgateChime2\_D\_Rq |  |  | MS1CAN |

Table 67: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 68: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_CHIME\_00001 | Sound Warning Chime for Closing |  |
| R\_FNC\_BEC\_CHIME\_00002 | Sound Urgent Warning Due to Falling Gate |  |
| R\_FNC\_BEC\_CHIME\_00003 | Sound Warning Chime due to Rejected User Request |  |
| R\_FNC\_BEC\_CHIME\_00004 | Sound Short Chime to Indicate Successful Opening Position Programming |  |
| R\_FNC\_BEC\_CHIME\_00009 | Sound Warning Chime for Opening |  |

Table 69: Inherited Requirements

Component Specific Requirements

N/A

#### BEC Determine Manual Mode

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_UserMode\_Rqst | Power\_Liftgate\_Mode\_Cmd |  |  |  |

Table 70: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| RGT\_Lockout\_Status | Same |  |  | Internal to RGTM |
| BEC\_UserMode\_Status | Power\_Liftgate\_Mode\_Stt |  |  | MS1CAN |

Table 71: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 72: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_MAN\_00001 | User Requests BEC to bo in Manual Mode |  |
| R\_FNC\_BEC\_MAN\_00002 | User Requests BEC to be in Power Mode |  |
| R\_FNC\_BEC\_MAN\_00003 | Store User Selected Mode in NVM |  |
| R\_FNC\_BEC\_MAN\_00004 | User Selected Mode on System Initialization |  |

Table 73: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function Back End Closure Status Feedback

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| Exterior\_Sw\_Auth\_Stat | Same |  |  | Internal to RGTM |
| ManualCloseMsg\_Rqst | Same |  |  | Internal to RGTM |
| ObstacleDetect\_Stat | Same |  |  | Internal to RGTM |
| RGT\_Movement\_Stat | Same |  |  | Internal to RGTM |

Table 74: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| DrTGate\_D\_Rq | Same |  |  | MS1CAN |
| PwLftgtObstcl\_D\_Stat | Same |  |  | MS1CAN |
| PwLftgtLatchLck\_B\_Stat | Same |  |  | MS1CAN |
| PwLftgtMsgTxt\_D\_Rq | Same |  |  | MS1CAN |

Table 75: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 76: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_Stat\_00001 | Report BEC Movement |  |
| R\_FNC\_BEC\_Stat\_00002 | Report Obstacle Detection |  |
| R\_FNC\_BEC\_Stat\_00003 | Report Exterior Switch Lock Status |  |
| R\_FNC\_BEC\_Stat\_00004 | Request Manual Close Message |  |

Table 77: Inherited Requirements

#### Implemented Function Back End Closure Authenticated Communication

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_PurposeCode\_Rqstr | DrPrpsCodeBec\_D\_Res |  |  | CANFD1 to MS1CAN |
| BEC\_RAC\_ECI\_Rqstr | DrActnCode\_D\_RqBec |  |  | CANFD1 to MS1CAN |
| BEC\_AAC\_Key\_Rqstr | DrAuthntctnCode\_D\_RqBec |  |  | CANFD1 to MS1CAN |

Table 78: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_PurposeCode\_Exec | DrPrpsCode\_D\_RqBec |  |  | MS1CAN to CANFD1 |
| BEC\_AAC\_Key\_Exec | DrAuthntctnCodeBec\_D\_Res |  |  | MS1CAN to CANFD1 |
| PassivePwr\_DL\_LG\_Rqst |  |  |  | Internal to RGTM |
| BEC\_Toggle\_Rqst |  |  |  | Internal to RGTM |
| BEC\_OpenClose\_Rqst |  |  |  | Internal to RGTM |
| BEC\_Lock\_Unlock |  |  |  | Internal to RGTM |
| RGT\_Handle\_Sw\_Enable\_Stat |  |  |  | Internal to RGTM |
| LockInhibit\_Cmd |  |  |  | Internal to RGTM |
| RGT\_ValetMode |  |  |  | Internal to RGTM |

Table 79: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 80: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
|  |  |  |

Table 81: Inherited Requirements

Component Specific Requirements

###R\_CMP\_PLG\_FIS\_00012### Authenticate BEC Message Data

The RGTM shall verify the authenticity of the following signals using the protocol specified in “Point-to-Point Authentication Protocol Specification Version 0.1” (Reference VSEM item VDOC077948):

* RGT\_LocalToggleStop\_Count
* RGT\_RemoteToggleStop\_Count
* RGT \_RemoteOpenClose\_Count
* RGT \_LULAllExt\_Count
* RGT \_LULLocalExt\_Count
* RGT \_LULLocalInterior\_Count
* RGT \_ValetMode\_Count

Where:

* The RGTM is considered the Executor.
* DrPrpsCodeBec\_D\_Res is used for the P2PA\_PurposeCode of the Requestor.
* DrActnCode\_D\_RqBec is used for the P2PA\_RAC\_ECI of the Requestor.
* DrAuthntctnCode\_D\_RqBec is used for the P2PA\_AAC\_Key for the Requestor.
* DrPrpsCode\_D\_RqBec is used for the P2PA\_PurposeCode of the Executor.
* DrAuthntctnCodeBec\_D\_Res is used for the P2PA\_AAC\_Key of the Executor.
* There is no CAN signal defined for the P2PA\_RAC\_ECI of the Executor.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00012### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00013### Verify BEC Action Authentication Code

The RGTM shall verify the Action Authentication Code received from the BCM in DrAuthntctnCodeBec\_D\_Res when a Purpose Code of RAC\_Frame\_1 is received in DrPrpsCodeBec\_D\_Stat per the “Point-to-Point Authentication Protocol Specification Version 0.1” (Reference VSEM item VDOC077948).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00013### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00014### Report BEC Authentication Outcome Code

Once the Action Authentication Code has been verified, the RGTM shall send a P2PA Outcome Code by setting signal DrPrpsCode\_D\_RqBec to P2PA\_Outcome (0xE) and setting signal DrAuthntctnCodeBec\_D\_Res as follows:

* Outcome Code of 0x01 when a received Action Authentication Code has been verified as correct (success).
* Outcome Code of 0x02 when a received Action Authentication Code has been verified as not correct (failure).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00014### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00015### Parse BEC Requested Action Code Frame 1

Once the Action Authentication Code has been verified as correct, the RGTM shall decode the Requested Action Code Frame 1 per the following Table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| msb | | Requested Action Code Frame 1 bits | | | | | | | | | | | | | | | | | | | | | | | | | lsb | |
| 27 | 26 | | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| RGT \_LULLocalExt\_Count | | | | RGT \_LULLocalInterior\_Count | | | RGT \_LULAllExt\_Count | | | RGT \_LocalToggleStop\_Count | | | RGT \_RemoteToggleStop\_Count | | | RGT \_RemoteOpenClose\_Count | | | RGT\_ValetMode\_Count | | | Not Used | Not Used | Not Used | Not Used | Not Used | Executor Challenge Index (ECI) | |

If the Action Authentication Code is verified as not correct, then no change occurs to any of the Event Counters.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00015### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00023### Generate New Executor Challenge

Once a P2PA Outcome Code is provided, the RGTM shall continue to send the P2PA Outcome Code until the Requestor (BCM) sends a Purpose Code of Idle (0x0).

Once the Purpose Code of Idle is received by the RGTM, the RGTM shall generate a new random number ot use as the Executor challenge and then set DrPrpsCode\_D\_RqBec = Regular\_Frame and DrAuthntctnCodeBec\_D\_Res = Random Number + Executor Challenge Index.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00023### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00016### Verify Local Toggle Stop Request Count

The RGTM shall maintain an event counter (RGT\_LocalToggleStop\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx B (next even value), the PassivePwr\_DL\_LG\_Rqst is set to ACTIVE.
* MutEx A is not used (reserved).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00016### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00017### Verify Remote Toggle/Stop Request Count

The RGTM shall maintain an event counter (RGT\_RemoteToggleStop\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the BEC\_Toggle\_Rqst is set to TOGGLE.
* When the counter is incremented to MutEx B (next odd value), the BEC\_Toggle\_Rqst is set to STOP.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00017### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00018### Verify Open/Close Request Count

The RGTM shall maintain an event counter (RGT\_RemoteOpenClose\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the BEC\_OpenClose\_Rqst is set to CLOSE.
* When the counter is incremented to MutEx B (next odd value), the BEC\_OpenClose\_Rqst is set to OPEN.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00018### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00019### Verify Lock/Unlock All Exterior Count

The RGTM shall maintain an event counter (RGT\_LULAllExt\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the BEC\_Lock\_Unlock is set to LOCK.
* When the counter is incremented to MutEx B (next odd value), the BEC\_Lock\_Unlock is set to UNLOCK.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00019### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00020### Verify Lock/Unlock BEC Exterior Count

The RGTM shall maintain an event counter (RGT\_LULLocalExt\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the RGT\_Handle\_Sw\_Enable\_Stat is set to DISABLE.
* When the counter is incremented to MutEx B (next odd value), the RGT\_Handle\_Sw\_Enable\_Stat is set to ENABLE.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00020### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00021### Verify Switch Inhibit Count

The RGTM shall maintain an event counter (RGT\_LULLocalInterior\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the LockInhibit\_Cmd is set to INHIBIT.
* When the counter is incremented to MutEx B (next odd value), the LockInhibit\_Cmd is set to NO\_INHIBIT.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00021### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00022### Verify Valet Mode Count

The RGTM shall maintain an event counter (RGT\_ValetMode\_Count) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The RGTM is the Subscriber.
* When the counter is incremented to MutEx A (next odd value), the RGT\_ValetMode is set to ON.
* When the counter is incremented to MutEx B (next odd value), the RGT\_ValetMode is set to OFF.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00022### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

### IPC

#### Implemented Function BEC User Select Manual Mode

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_User\_Menu\_Selection | CtrStkFeatConfigActl  CtrStkFeatNoActl  CtrStkPersIndex\_D\_Actl  CtrStkDsplyOp\_D\_Rq |  |  | HS3CAN |
| BEC\_UserMode\_Status | Power\_Liftgate\_Mode\_Stt |  |  | HS3CAN |

Table 82: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_UserMode\_Rqst | Power\_Liftgate\_Mode\_Cmd |  |  | HS3CAN |
| BEC\_UserMode\_Display | FeatConfigIpcActl  FeatNoIpcActl  PersIndexIpc\_D\_Actl MsgCntrDsplyOp\_D\_Rq MsgCntrFeatConfigRq MsgCntrFeatNoRq MsgCntrPersIndex\_D\_Rq |  |  | HS3CAN |

Table 83: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 84: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_USER\_00001 | User Selects Manual Mode |  |
| R\_FNC\_BEC\_USER\_00002 | User Selects Power Mode |  |
| R\_FNC\_BEC\_USER\_00003 | Update Menu Display of User Selected Mode |  |
| R\_FNC\_BEC\_USER\_00004 | User Selected Mode on System Initialization |  |

Table 85: Inherited Requirements

Component Specific Requirements

#### Implemented Function BEC Manual Mode HMI

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_mode\_selection | Same |  |  | Internal to IPC |
| BEC\_UserMode\_Display | FeatConfigIpcActl  FeatNoIpcActl  PersIndexIpc\_D\_Actl |  |  | Internal to IPC |

Table 86: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_User\_Menu\_Selection | Same |  |  | Internal to IPC |

Table 87: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 88: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_ MODE\_HMI \_00001 | User Selects Manual Mode |  |
| R\_FNC\_BEC\_ MODE\_HMI \_00002 | User Selects Power Mode |  |
| R\_FNC\_BEC\_ MODE\_HMI \_00003 | Update Menu Display of User Selected Mode |  |

Table 89: Inherited Requirements

Component Specific Requirements

### APIM / APIM\_CDC

#### Implemented Function BEC Manual Mode HMI

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_mode\_selection | Same |  |  | Internal to APIM / APIM\_CDC |
| BEC\_UserMode\_Display | FeatConfigIpcActl  FeatNoIpcActl  PersIndexIpc\_D\_Actl |  |  | HS3CAN |

Table90: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| BEC\_User\_Menu\_Selection | CtrStkFeatConfigActl  CtrStkFeatNoActl  CtrStkPersIndex\_D\_Actl  CtrStkDsplyOp\_D\_Rq |  |  | HS3CAN |

Table 91: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 92: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_ MODE\_HMI \_00001 | User Selects Manual Mode |  |
| R\_FNC\_BEC\_ MODE\_HMI \_00002 | User Selects Power Mode |  |
| R\_FNC\_BEC\_ MODE\_HMI \_00003 | Update Menu Display of User Selected Mode |  |

Table93: Inherited Requirements

Component Specific Requirements

N/A

#### Implemented Function BEC center stack Open Close Request

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| APIM\_BEC\_softkey\_Rqst |  |  |  | Internal to APIM / APIM\_CDC |

Table 94: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| APIM\_BECRelease\_Cnt | BecRleas\_No\_RqMnu |  |  | HS3CAN to CANFD1 |

Table95: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 96: Parameter mappings of Function

###### Interface Requirements

N/A

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_COC\_00001 | Request liftgate operation from front interior touchscreen |  |
| R\_FNC\_BEC\_COC\_00002 | Disable front interior touchscreen softkey |  |

Table97: Inherited Requirements

Component Specific Requirements

### R\_CMP\_PLG\_FIS\_00039### Manage APIM Toggle Stop Request Count

The APIM / APIM\_CDC shall maintain an event counter (APIM\_BECRelease\_Cnt) per the “Feature Specification – Event Counter: DRAFT 10sept2018” where:

* The APIM is the publisher
* The event counter is classified as single feature event counter
* The event counter shall be incremented when APIM\_BEC\_softkey\_Rqst becomes ACTIVE

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00039### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0c | End of Requirement | | | | |

### ECG

#### Implemented Function BEC Remote Service Requests

##### Function Interfaces

###### Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details** *(Conditional)* | **Subscriber Interface** | **Connection**  (*Optional)* |
| BEC\_OpenClose\_Rqst\_Cloud | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_Cloud | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_AV | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_AV | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_LeftDAP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_LeftDAP | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_RightDAP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_RightDAP | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_FrontLeftDXP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_FrontLeftDXP | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_FrontRightDXP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_FrontRightDXP | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_RearLeftDXP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_RearLeftDXP | Same |  |  | Ethernet |
| BEC\_OpenClose\_Rqst\_RearRightDXP | Same |  |  | Ethernet |
| BEC\_StopToggle\_Rqst\_RearRightDXP | Same |  |  | Ethernet |
| SOA\_PLG\_Stat | ClsrOprtSrvc\_D\_Arb  ClsrOprtSrvcId\_No\_Actl  ClsrOprtSrvc\_D\_Res  LckUnlckSrvc\_D\_Arb  LckUnlckSrvcId\_No\_Actl  LckUnlckSrvc\_D\_Res |  |  | FD1 CAN |

Table 22: Input Signal mappings of Function

###### Outputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal Name** | **Technical Signal Name** | **Mapping Details**  *(Conditional)* | **Publisher Interface** | **Connection**  *(Optional)* |
| SOA\_PLG\_Rqst | ClsrOprtPrxmChk\_D\_Stat  ClsrOprtSrvcId\_No\_Rq  ClsrOprtSrvcSrc\_B\_Rq  ClsrOprtSrvc\_D\_Rq  ClsrOprtSrvcType\_B\_Rq  LckUnlckSrvcId\_No\_Rq  LckUnlckSrvcSrc\_B\_Rq  LckUnlckSrvc\_D\_Rq  LckUnlckSrvcType\_B\_Rq |  |  | FD1 CAN |

Table 23: Output Signal mappings of Function

###### Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Parameter Name** | **Technical Parameter Name** | **Mapping Details** *(Conditional)* | **Method** | **Method Details** |
|  |  |  |  |  |

Table 24: Parameter mappings of Function

###### Interface Requirements

Refer to Enclosure\_Service\_Specification\_RevH

###### Function Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement ID**  (of Logical Function) | **Requirement Title** | **Comment** |
| R\_FNC\_BEC\_RS\_00001 | Enable Exterior Handle when Unlock is requested |  |
| R\_FNC\_BEC\_RS\_00002 | Disable Exterior Handle when Lock is requested |  |
| R\_FNC\_BEC\_RS\_00003 | Request Open Operation |  |
| R\_FNC\_BEC\_RS\_00004 | Request Close Operation |  |

Table 25: Inherited Requirements - BEC Remote Access

Component Specific Requirements

###R\_CMP\_PLG\_FIS\_00041### Accept BEC Open/Close Requests from Remote access features/subsystems

Refer to Enclosure\_Service\_Specification\_RevH, Requirement FUR-REQ-391111

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00041### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0b | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00042### Accept BEC Unlock Requests from Remote access features/subsystems

Refer to Enclosure\_Service\_Specification\_RevH, Requirement FUR-REQ-391104

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00041### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0b | End of Requirement | | | | |

###R\_CMP\_PLG\_FIS\_00043### Report BEC status to Remote access features/subsystems

Refer to Enclosure\_Service\_Specification\_RevH, Requirement FUR-REQ-391117

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: ###R\_CMP\_PLG\_FIS\_00041### | | | | | | | |
| **Rationale** |  | | | | | | | |
| **Acceptance Criteria** |  | | | | | | | |
| **Notes** |  | | | | | | | |
| **Source** |  | | | | | **Owner** |  | |
| **Source Req.** |  | | | | | **V&V Method** |  | |
| **Type** | Choose an item. | | | **Priority** | Choose an item. | **Status** | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0b | End of Requirement | | | | |

## Requirements on Connections

### CAN Bus x

***#Hint:*** *For CAN most requirements are defined by Netcom and listed in the SDS CAN. Put in this section only those requirements, which deviate from that standard specification.*

#### Protocol Requirements

**#Hint:** *For CAN Ford currently mandates FNOS as SW implementation for the CAN protocol stack. This includes the CAN Network Management and Transport Protocol. If you deviate from this assumption or if you have specific requirements on FNOS, which are not contained in the standard package, put requirements in this section. F*or details the FNOS user guide and application notes could be referenced.

##### Message List

Refer to chapter “*Messages*” in the “*Data Dictionary*”.

#### Electrical Requirements

**#Hint:** List requirements here, only if they deviate from the SDS CAN.

### LIN x

**#Hint:** Place requirements here, which are common to all LIN nodes, but not covered by some SDS LIN.

#### Protocol Requirements

##### Message List

***#Hint:*** *The message list is typically documented in the LDF file.*

Refer to chapter “*Messages*” in the “*Data Dictionary*”

##### Schedule Table

***#Hint:*** *The LIN Schedule Table should be documented in the LDF file. The LDF file could be referenced here*

#### Electrical Requirements

***#Hint:*** *The LIN Schedule Table should be documented in the LDF file. The LDF file could be referenced here*

### Ethernet x

***#Hint:*** *On Ethernet we will see most likely the DoIP and MQTT protocol. Both protocols are described in separate specifications and are implemented in the Ford AUTOSAR stack. While DoIP might be not that relevant in this scope, MQTT (together with the Google Protocol Buffer (GPB) serialization of the payload) will become important for all features, which are mapped to a Service Oriented Architecture/Communcation (SoC). All application data, which is transmitted via MQTT (so called MQTT Topics) is managed in the IDB by Netcom.*

***#Link:***[*http://www.mqtt.org*](http://www.mqtt.org)*, https://developers.google.com/protocol-buffers/docs/proto*

### WLAN (IEEE 802.11.x)

### RF

### Hardwired I/Os

**#Hin**t: This section lists all hardwired signals relevant for the feature deployment. Those get typically mapped to EDAS signals (“ connections) – refer to list of connections in corresponding table in chapter “Hardwired Signals”

## Requirements on Development Process

# Open Concerns

| ID | Concern Description | e-Tracker Reference | Status | Solution |
| --- | --- | --- | --- | --- |
| 1 | Need to define criteria for Slam Protection. This is currently defined by the supplier. |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

Table 86: Open Concerns

# Revision History

*#Hint: A new version number is assigned to a document with a given revision each time it is checked in to Team Center (TCSE). After release of a revision, the document cannot be edited and no new versions can be created on that revision. When updating the document after that, a new revision has to be created and new versions on that revision will be created upon checking in.*

| Rev.  (revision) | Vers. | Date | Description | | Approved by | Responsible |
| --- | --- | --- | --- | --- | --- | --- |
| *001* | *A* | *1/31/20* | *Initial version* | |  | *DKING13* |
| *002* | *A* | *2/11/20* | *Revised R\_CMP\_PLG\_FIS\_00017-21 to define Mutex B properly.* | |  | *DKING13* |
| *003* | *A* | *10/12/20* | | *Added APIM and IPC functions* |  | *KPURI* |
| *004* | *A* | *4/23/21* | | *Added ECG Remote service Request function* |  | *KPURI* |

## Template Revisions

*#Important: Do not change this section*

| Version | Rev. | Date | Description | Responsible |
| --- | --- | --- | --- | --- |
| *0* | *2* | *2015-08-05* | * *TOC corrected* * *Document Properties adapted to match needs of VBA macros* | *Awegman1* |
| *1* | *0* | *2015-11-16* | * *Revision History moved to chapter 7* * *Table-Styles removed* | *Awegman1* |
| *1* | *1* | *2016-03-02* | * *Rework according to PCL example* | *Jbaden1* |
| *1* | *2* | *2016-03-22* | * *V1.3: Footer formating corrected (Issue 19)* * *“Constraints” chapter renamed to “Input Requirements” (Issue 20)* | *Jbaden1* |
| *1* | *3* | *2016-04-20* | * *Broken Wiki links repaired* | *Jbaden1* |
| *2* | *0* | *2016-05-23* | * *Prepared for Specification\_Macros.dotm v2.0* * *Additional explanations added to ch. 2.2 “Input Requirements” (ARL and SDS requirements often go here)* | *Jbaden1* |
| *2* | *1* | *2016-07-08* | * *Template version added to footer* | *Jbaden1* |
| *2* | *2* | *2016-07-15* | * *Sample SysML diagrams added* * *Data Dictionary reworked* * *Alignment with relevant sections in SRD templated* | *Jbaden1* |
| *3* | *0* | *2016-09-05* | * *Lessons learned from IPRB incorporated* | *Jbaden1* |
| *4* | *0* | *2016-09-27* | * *Alignment with QPIP Feature Function Ownership workstream. Platform Spec renamed to Feature Implementation Spec* | *Jbaden1* |
| *4* | *1* | *2016-11-04* | * *Chapters “Purpose” and “Scope” reworked.* | *Jbaden1* |
| *4* | *1* | *2016-11-10* | * *Subsection for “Logical Service Interfaces” added.* | *Jbaden1* |
| *5* | *0* | *2017-01-13* | * *Meta data updated for specification macros, version 3.1* * *SW Unit chapter removed for the time being* * *Green boxes added for user hints* | *Jbaden1* |
| *5* | *1* | *2017-01-18* | * *Minor editorial changes (e.g. hyperlinks highlighted in comments)* | *Jbaden1* |
| *5* | *1b* | *2017-01-20* | * *Some editorial corrections* * *Substructure of old Network Communication (now Connections) moved to Requirements on Connections* | *Jbaden1* |
| *6* | *0* | *2018-07-24* | * *CR53:* * *Add new cover sheet* * *Add disclaimer section* * *Add the following meta-data to the doc properties for the the new cover sheet*   + *DocGis1ItemNumber*   + *DocGis2Classification*   + *DocType*   + *DocStatus*   + *DocIssueDate*   + *DocReleaseDate* * *CR63: Update FuSa sharepoint references in templates* | *Jbaden1* |
| *6* | *0* | *2018-08-06* | * *CR81: Incorporate lessons learned from System Service Spec pilot (Vehicle Speed) into AFS and FIS* | *Jbaden1* |
| *6* | *0* | *2018-09-28* | * *Broken links to RE Wiki repaired* | *Jbaden1* |
| *6* | *0* | *2018-10-31* | * *Minor corrections on cover sheet and in footer to be more GIS compliant and VSEM aligned* * *“Overview” and “Description” exchanged in headings (following common sense)* | *Jbaden1* |
| *6* | *0* | *2018-11-30* | * *Update of Functional Safety sections after review by Functional Safety Team* * *Initial support for variant handling* | *Jbaden1* |
| *6* | *0* | *2018-12-01* | * *Variant condition fields added consistently* * *Links updated* | *Jbaden1* |
| *6* | *0* | *2018-12-11* | * *Variant condition fields removed from mapping/allocation tables* * *Mapping tables simplified* * *Explanatory text for “Variants” sections revised* | *Jbaden1* |
| *6* | *0a* | *2019-01-04* | * *Chapter heading “Inherited Function Requirements” removed. Corresponding table renamed to “Requirements not cascaded”.* * *E/E Connection table got another column for allocated messages* * *Naming conventions for Implemented Functions corrected (FncName\_CmpName instead of FncName\_on\_CmpName)* * *Editorial corrections on the cover sheet* * *Explanatory text added to “Ethernet” section in chapter “Requirements on Connections”* * *AIS templates updated. Linked to Wiki page* | *Jbaden1* |
| *6* | *0a* | *2019-01-04* | * *Minor restructuring in FuSa chapter – after aligning with ECU Functional Spec* * *Bugfix: table 13 renamed from FTTI table to FHT table, includes a bug fix: each FSR is allocated to only one ECU/component* | *Jbaden1* |
| *6* | *0b* | *2019-02-04* | * *Change: Chapter “Interface Requirements” added to “Implemented Function xxx” section (to have a single chapter for to collect subscriber/publisher interface and mapping requirements which to not conform to the corresponding Data Dictionary objects)* * *Change: “CAN Interface” subsection renamed to “AIS Interfaces” again. Although several Subscriber/Publisher interface attributes are probably CAN bus specific, other attributes seem to be well suited for other networks than CAN.* * *Change: Chapter “ECU Specific Requirements” renamed to “Component Specific Requirements” in chapter “Implemented Function xxx”. Table “Requirements not cascaded” renamed to “Component Specific Requirements” and refined to describe changes from Logical Function requirements set more formally. This is also to help during VSEM import to identify those requirements of the Logical Function which cannot be simply carried over to the ECU.* * *Change: Explanatory text in section “Implemented Function xxx” improved.* | *Jbaden1* |
| *6* | *0b* | *2019-02-05* | * *Change: Layout of AIS Interfaces in Data Dictionary reworked to enable Excel Import* | *Jbaden1* |
| *6* | *0c* | *2019-02-20* | * *Bugfix: In AIS Interfaces none-picklist fields formatted as invisible* | *Jbaden1* |

# Appendix

## Data Dictionary

### Logical Signals

**#Hint:** Logical Signals are managed in VSEM in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server).

**#Link**: [*RE Wiki – Adding a Logical Signal or Parameter*](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Logical+Signal+or+Parameter)

**#Macro**: Add Ins -> Add Requirement macro (select “Logical Signal” as type)

### Logical Parameters

**#Hint:** Logical Parameters are managed in VSEM in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server).

**#Link**: [*RE Wiki – Adding a Logical Signal or Parameter*](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Logical+Signal+or+Parameter)

**#Macro:** Add Ins -> Add Requirement macro (select “Logical Parameter” as type)

### Technical Signals

**#Hint:** This section lists all GSDB + GDT + SW signals relevant for the feature deployment.

**#Link**:

*[Technical Signal or Parameter](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Technical+Signal+or+Parameter)*

**#Macro:** Add Ins -> Add Requirement macro (select “Technical Signal” as type)

#### GSDB Signals

**#Hint:** This part of the Data Dictionary lists signals, which should go to the GSDB in VSEM, but do not exist in the GSDB in VSEM yet, but are or will be requested for the GSDB. Those would go temporarily to this section in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server) in VSEM.

#### Service Oriented Communication

**#Hint:** This part of the Data Dictionary lists signals, which are used for the Service Oriented Architecture (SoA), but do not exist in the IDB in VSEM yet, but are or will be requested for the IDB. Those would go temporarily to this section in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server) in VSEM.

#### Hardwired Signals

**#Hint:** This chapter lists signals, which will be mapped to hard-wired connections. Those get typically mapped to the signals (“connections”) in the logical schematics – refer to list of connections in corresponding table in chapter “Hardwired I/Os” in section “Requirements on Connections”.

**#ToDo:** Where do we manage hardwired signals / connections. While we do not have such a central repository in VSEM those signals will be managed as a workaround in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server).

#### Diagnostic Interfaces

**#Hint:** This chapter lists Diagnostic Interfaces (DTCs and DIDs), which get mapped to Logical Parameters in context of the Implemented Functions in chapter “Parameters” of the Function Interfaces. Those DTC/DID names should match the names in the diagnostics specification (Part 2).

**#ToDo:** Currently the template below is just a proposal. A macro still needs to be created

##### DTCs

###<DTC\_<ID>>### <DTC Name>

<Some Description of the DTC.

Refer to VSEM document “[Diagnostic Fault Coverage and DTC Numbers](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=yAUtrNhnx3NrTDAAAAAAAAAAAAA&servername=Production_Server)

[Design Consideration](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=yAUtrNhnx3NrTDAAAAAAAAAAAAA&servername=Production_Server)”, what to fill into the attributes below>

|  |  |
| --- | --- |
| **Test Period Time** |  |
| **Test Run Criteria,** |  |
| **Enable Criteria (EC)** |  |
| **Applicable** |  |
| **FailureTypeBytes** |  |
| **Test Period Time** |  |
| **Test Run Criteria,** |  |

##### DIDs

**#Hint**: This section lists diagnostic DID which Technical Parameters get mapped to.

**#Todo**: A proper template derived from the Part 2 spec still needs to be created.

### Technical Parameters

**#Hint:** This section lists all Method 2, Method 3 and calibration parameters relevant for the feature deployment.

**#Link**: [*RE Wiki – Adding a Technical Signal or Parameter*](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Technical+Signal+or+Parameter)

**#Macro:** [Add Ins -> Add Requirement macro](http://wiki.ford.com/display/RequirementsEngineering/How+to+use+the+Specification+Templates#HowtousetheSpecificationTemplates-AddNewRequirement) (select “Technical Parameter” as type)

### Mappings

**#Hint**: This section lists mapping objects for Logical Signals / Parameters to their GSDB + GDT + SW counterparts (1:N mapping is supported). Mapping objects are managed in VSEM in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server).

**#Link:** [RE Wiki – Adding a Signal or Parameter Mapping](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Signal+or+Parameter+Mapping)

**#Macro:** A macro still needs to be created. For the time being use a copy&paste approach.

*Please follow the naming convention “MAP\_LogicalSignalName\_TechnicalSignalName”.*

*Optionally, c*reate a Word bookmark for the Mapping Name of each Mapping object. This allows referencing the Mapping object in the rest of the document.

###<MAP\_MappingID>### <MAP\_LogicalSignalName\_TechnicalSignalName>

<Some Description of the Mapping>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Signal/Parameter** | | | **Technical Signal(s)/Parameter(s)** | |
| **Name** | | <Logical Signal Name> | **Name(s)** | <Technical Signal / Parameter Names> |
| **Encoding Type** | | <Name of Encoding Type> | **Mapping Details** | <Description how encoding of logical signal maps to the the one of the technical signal(s)/parameter(s)> |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (continuous encoding) | Min Value |  |
| Max Value |  |
| Resolution |  |
| Offset |  |
| **Value**  (discrete encoding) | Value 1 | <Interpretation of value 1> |
| Value 2 | … |
| … | … |
|  |  |
|  |  |
| **Unit** | |  |

### Technical Interfaces

**#Hint:** This section lists port/interface details, which define how network/SW/HW signals are published / subscribed.

**#Link:** [*RE Wiki – Adding a Technical Interface*](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Technical+Interface)

#### AIS Interfaces

**#Hint:** This chapter lists the AIS interface objects (managed in VSEM), which are needed to deploy the feature / service to the E/E architecture. If required AIS interfaces do not yet exist in VSEM, those may temporarily be managed as a workaround in the [*RE Data Dictionary*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=SoYl_k7px3NrTD&servername=Production_Server).

**#Link:** [RE Wiki - AIS Interfaces](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Technical+Interface#AddingaTechnicalInterface-AisInterfaces)

[*Publisher Interface AIS in VSEM*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=zjYtY3Jcx3NrTDAAAAAAAAAAAAA&servername=Production_Server)

[*Subscriber Interface AIS in VSEM*](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=LSYtewY7x3NrTDAAAAAAAAAAAAA&servername=Production_Server)

**#Macro:**. A macro still needs to be created. For the time being use a copy&paste approach.

##### Publisher Interfaces

|  |  |  |
| --- | --- | --- |
| Requirement ID: ###**PUBIF\_AIS\_InterfaceID**### | | |
| Interface Name | | **PubIf\_TechnicalSignalName**  *(Please follow the naming convention “PubIf\_TechnicalSignalName”. Optionally you may create a Word bookmark for the Interface Name. This allows referencing the Mapping object in the rest of the document)* | |
| Interface Description | | Some Description of the Publisher Interface of the Technical Signal | |
| **Signal Robustness/Integrity** | | | |
| Functional Safety Relevant | | Choose an item. | |
| Checksum | | Choose an item. | |
| Counter | | Choose an item. | |
| **Network Timing** | | | |
| Publishing Interval (ms) | |  | |
| Publisher Latency (ms) | |  | |
| Signal Transmit Strategy | | Choose an item. | |
| Signal Send Type | | Choose an item. | |
| Signal Refresh Rate (ms) | |  | |
| **Network Management** | | | |
| Publishing Network Sleep Inhibitor | |  | |
| Network Wake Up | | Choose an item. | |
| Signal Update While Network Asleep | | Choose an item. | |
| Fresh data on Network wakeup | | Choose an item. | |
| Max latency before signal is valid on Network wakeup(ms) | |  | |
| **Reset Behavior** | | | |
| Fresh data on ECU Reset | | Choose an item. | |
| Max latency before signal is valid on reset (ms) | |  | |
| **Functional Characteristics** | | | |
| ECU Power Mode | | Choose an item. | |
| CAN Node Type | | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | 6.0c | End of Requirement | |

##### Subscriber Interfaces

|  |  |  |  |
| --- | --- | --- | --- |
| Requirement ID: ###**SUBIF\_AIS\_InterfaceID**### | | | |
| Interface Name | | **SubIf\_TechnicalSignalName**  *(Please follow the naming convention “SubIf\_TechnicalSignalName”. Optionally you may create a Word bookmark for the Interface Name. This allows referencing the Interface object in the rest of the document)* | |
| Interface Description | | Some Description of the Subscriber Interface of the Technical Signal | |
| **Signal Robustness/Integrity** | | | |
| Functional Safety Relevant | | Choose an item. | |
| Checksum | | Choose an item. | |
| Counter | | Choose an item. | |
| **Network Timing** | | | |
| Subscribing Interval (ms) | |  | |
| Subscriber Latency (ms) | |  | |
| **Network Management** | | | |
| Subscribing Network Sleep Inhibitor | |  | |
| Network Wake Up | | Choose an item. | |
| **Network Routing** | | | |
| Gateway Required | | Choose an item. | |
| Max Gateway Latency (ms) | |  | |
| Gateway Message Type | | Choose an item. | |
| **Missing Message Strategy** | | | |
| Missing Message Strategy | | Choose an item. | |
| Time Period for Last Signal Value to be used | |  | |
| Missing Message Default Value | |  | |
| Missing Message DTC | |  | |
| Missing Message Strategy Details | |  | |
| **Functional Characteristics** | | | |
| ECU Power Mode | | Choose an item. | |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | 6.0c | | End of Requirement |

#### Service Oriented Communcation (SoC) Interfaces

#### AUTOSAR Ports (SW Interfaces)

### Messages

#### CAN Bus “<Bus Name>”

**#Hint:** This section gives the relevant extract from the [Central Message Database (CMDB) in VSEM](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=jXfpx2PHx3NrTDAAAAAAAAAAAAA&servername=Production_Server) .

###<MSG\_MessageID### MessageName

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Message Name** | **ID** | **Transmission Mode** | **Period** | **Signal Names** | **Transmitters** | **Receiver** |
|  |  |  |  |  |  |  |
|  |
|  |
|  |

#### LIN Bus “<Bus Name>”

### Encoding Types

**#Link:** [*RE Wiki – Adding Encoding Types*](http://wiki.ford.com/display/RequirementsEngineering/Adding+an+Encoding+Type)

**#Macro:** Add Ins -> Add Requirement macro (select “Encoding Type” as type)

Document ends here.