|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | |  |
|  |  | | |  |
|  | Function Group Spec  Profile Settings Server - FnG  <<Logical>> (Allocated) | | |  |
|  |  |
|  |  |
|  |  | | |  |
| Document Type | **Function Specification** | | |  |
| Template Version | **6.0** | | |  |
| SysML Report Template Version | **O Beta (11/6/2019)** | | |  |
| Document ID | **VDOC089824** | | |  |
| Document Location | [**VSEM Link to Specification**](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=1hsBES7Lx3NrTDAAAAAAAAAAAAA&servername=Production_Server) | | |  |
| Document Owner | **Justin Bauer, Walter Stephens** | | |  |
| Document Revision | **1.1** | | |  |
| Document Status | **Draft** | | |  |
| Date Issued | **2021-03-10** | | |  |
| Date Revised | **2021-06-02** | | |  |
| Document Classification | GIS1 Item Number: | **27.60/35** | |  |
| GIS2 Classification: | **Confidential** | |
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|  | | | | |
| Document Approval | | | | |
| Name | Role | | Email Confirmation | Date |
|  |  | |  |  |
|  |  | |  |  |

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# Introduction

## Document Purpose

The Function (Group) Specification (FS) specifies an individual function / a group of functions.

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Function ID** | **Function Name** | **Owner** | **Reference** |
| Fn012421 | Send All Profile Settings | Jbauer50 |  |
| Fn012438 | Send Changed Profile Setting | Jbauer50 |  |
| Fn012467 | Execute Profile Settings | Jbauer50 |  |

**Table 1: Functions described in this specification**

## Document Audience

The FS is authored by the owners of the individual functions. All Stakeholders, i.e., all people who have a valid interest in the functions and their behavior should read and, if possible, review the FS. It needs to be guaranteed, that all stakeholders have access to the currently valid version of the FS.

**#Hint:** The FS template has the IP Classification “Proprietary” by default. IP Classification “Confidential” might be required in some cases, e.g. by Ford Functional Safety.

### Stakeholder List

For the latest list of the feature stakeholder and their roles & responsibilities refer to [PPP Stakeholder List](https://www.vsemweb.ford.com/tc/launchapp?-attach=true&-s=226TCSession&-o=S5U9Hrgbx3NrTDAAAAAAAAAAAAA&servername=Production_Server)

**#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 function.

## 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 FS relates to other Ford Requirements Documents and Specifications.

### Document Structure

The structure of this document is explained below:

**Section 1** – Introduction how to use this document including responsibilities and requisite documents. Explains the terminology. Gives a clarification of the definitions, concepts and abbreviations used in the document.

**Section 2** – Function Group Description. Gives an overview and the purpose of the function group.

**Section 3** – Functional Architecture: Specifies the overall functional architecture of the function group

**Section 4** – Function Specifications: Specifies the logical functions of the function group in detail

**Section 5** – List of Open Concerns

**Section 6** Revision history including a list of new or modified requirements. The requirements in this document are tagged, and this section contains different types of tables listing all, new, or changed requirements by their title and page no.

**Section 7** – Appendix: Presenting additional data mainly in a tabular form, e.g., a data dictionary

**#Hint:** All sections are mandatory, unless explicitly marked by the tag “#Classification” as “optional” or as applicable e.g. to certain domains like “Functional Safety”.

## Document Conventions

### Requirements Templates

Each requirement, use case or scenario in this specification shall follow the corresponding template given in the document template *Specification\_Macros.dotm* at [RE Wiki - Specification Templates](http://wiki.ford.com/display/RequirementsEngineering/Specification+templates?src=contextnavpagetreemode).

#### Identification of Requirements

#### Requirements Attributes

The templates provided by *Specification\_Macros.dotm* define a list of attributes for each requirement. This helps to classify the requirement. The attributes are explained at [RE Wiki - Requirements Attributes](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes?src=contextnavpagetreemode).

# Function Group Description

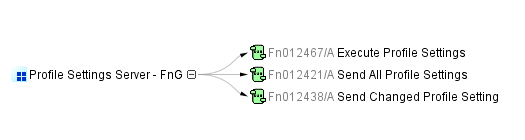
**#Classification:** Function Group only (remove section, if only a single Function is specified in this document)

**#Hint**: Provide an overview / a description of the Function Group

This Function Group consists of all functions allocated to 1052860247.jpg **Profile Settings Server - FnG** <<Logical>> including all functions in their corresponding call trees.

Description of Profile Settings Server - FnG:

The Profile Setting Server logical block is a generic term for any vehicle module that owns the execution and storage of profile settings. The scope of the logical block is how each module interacts with the Profile System, and not with the customer. This specification describes the general design each Profile Setting Server must follow to enable Personal and Portable Profiles.



**Figure 1: Functional Decomposition**

# Functional Architecture

**#Classification:** Function Group only (remove section, if only a single Function is specified in this document)

**#Hint:** The Functional Architecture shall reflect the result of the functional decomposition for a given feature or parts of it.

Refer to the [*RE Wiki – Functional Decomposition*](http://wiki.ford.com/display/RequirementsEngineering/Functional+Analysis+and+Architecture) for some guidance on how to decompose a feature into functions, i.e., how to find the right functional partitioning for the function level. The functions shown here are those, which are specified in section 5 “Function Specifications”.

## Description

**#Hint:** Provide some informal description of the characteristics of the chosen architecture. Also give some graphical representation of the Functional Architecture. Either SysML Internal Block diagrams or [Data Flow Diagrams](http://wiki.ford.com/display/RequirementsEngineering/Data+Flow+Diagram?src=contextnavpagetreemode) could be used to depict such a Functional Architecture.

**#Link:** [*SysML – Internal Block Diagrams*](https://pd3.spt.ford.com/sites/SystemsEngineering/SEC/sysml-teamsite/SysML%20Wiki/Internal%20Block%20Diagram%20Basics.aspx) or [*RE Wiki - Data Flow Diagrams*](http://wiki.ford.com/display/RequirementsEngineering/Data+Flow+Diagram?src=contextnavpagetreemodehttp://wiki.ford.com/display/RequirementsEngineering/Data+Flow+Diagram?src=contextnavpagetreemode)

## Function List

|  |  |  |  |
| --- | --- | --- | --- |
| **Function ID** | **Function Name** | **Function Description** | **ASIL** |
| Fn012421/A | -1231279064.jpg [Send All Profile Settings](#_d87526d82351cb0bfa8bdff9c1927106) <<Subsystem Function>> | This function sends profile data associated to a user profile that is stored on the Profile Setting Server to the Profile Management Server when the PPPSettings\_Rq with OperationCode = QUERY  is received. The received query operation can be for a specific Feature Number or can be a batch query (FeatureNumber = NULL in PPPSettings\_Rq) of all profile data associated to a profile. |  |
| Fn012438/A | -1231279064.jpg [Send Changed Profile Setting](#_0d06effb0fabf3e76d017fc30043088d) <<Subsystem Function>> | A function of the Profile Setting Servers that sends a change notification to the Profile Management Server when a change is made to a profile setting of an active profile. The notification does not determine which profile setting was changed, just that a change occurred and the Profile Management Server must query the active profile to refresh the local copy. |  |
| Fn012467/A | -1231279064.jpg [Execute Profile Settings](#_cdcb376e446ca387b6a13a78b43e5875) <<Subsystem Function>> | This is a function of the Profile Setting Servers with the purpose of receiving and applying profile settings that are sent by the Profile Management Server. This function executes profile settings using Feature Number, Feature Value and Pers Index as inputs. The Profile Setting Servers utilize this function when receiving OperationCode = SET from Profile Management Server. |  |

Table 2: List of Logical Functions

## Signal List

Refer to the [Data Dictionary](#_Data_Dictionary) - [Logical Signals](#_Logical_Signals).

# Function Specifications

## -1231279064.jpg Execute Profile Settings

### Function Overview

#### Description

**#Hint:** Some descriptive text to explain the purpose and functionality of the function.

Function is allocated to:

* 1052860247.jpg Profile Settings Server - FnG <<Logical>>

This is a function of the Profile Setting Servers with the purpose of receiving and applying profile settings that are sent by the Profile Management Server. This function executes profile settings using Feature Number, Feature Value and Pers Index as inputs. The Profile Setting Servers utilize this function when receiving OperationCode = SET from Profile Management Server.

#### Variants

**#Classification**: Mandatory (State “Not applicable”, if not used)

**#Hint:** If different variants of the same function are specified in this section, list those variants in the table below.

Variants on Function level could be driven technology or feature content. Example: There could be a “Low Content” and a “High Content” variant of some exterior lighting function. The Low Content variant applies for Conventional Headlight technology, the High Content variant applies for LED and Xenon technology. In this case we call the different technologies the Variant Options (for the time being you could think of them as Logical Parameters) which the Variant depends on. The optional column “Variant condition” allows to express the dependency of a Variant based on Variant Options/Logical Parameters.

If requirements/signals are not applicable for all variants/variant options, those requirements should state explicitly, which function variant/variant option they apply to.

**#Link:** [RE Wiki – Variant Management](http://wiki.ford.com/display/RequirementsEngineering/Variant+Management).

Not Applicable

#### Input Requirements

**#Classification**: Mandatory (State “Not applicable”, if not used)

**#Hint:** List any input requirements here (legal, Trustmark), which need to be taken into account, beyond what is specified in the corresponding Feature Documents.

Not Applicable

#### Assumptions

**#Classification**: Mandatory (State “Not applicable”, if not used)

**#Hint:** A list of known assumptions concerning the effects of the function’s behavior on other functions or elements (i.e., dependencies) as well as assumptions on the behavior expected by the function (e.g. known limitations). During the course of the development most of those assumptions are typically either converted into actual requirements or discarded at some point – such that this chapter remains mostly empty.

Not Applicable

#### References

##### Ford Documents

List here all Ford internal documents, which are directly related to the feature.

| **Reference** | **Title** | **Doc. ID** | **Revision** |
| --- | --- | --- | --- |
|  | Enhanced Memory Feature Specification | VDOC041625 | V3.1 |

Table 3: Ford internal Documents *(not specified in model)*

##### External Documents and Publications

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

**#Hint:** You may refer to [IEEE Citation Reference](http://www.ieee.org/documents/ieeecitationref.pdf) on how to format a reference.

| **Reference** | **Document / Publication** |
| --- | --- |
|  |  |

Table 4: External documents and publications *(not specified in model)*

#### Glossary

See Appendix for Definitions and Abbreviations.

### Function Scope

The 1252473301.jpg **– “Execute Profile Settings”** function is called by the following functions:

* 1752067592.jpg – “[1 Link New Vehicle Profile w/ FP Account](#_c7936deeb1761a08d89f9bdda21212fb)”
* 1752067592.jpg – “[2 Link Pre-existing Vehicle Profile w/ FP account](#_b41eb465d9315ee196e5167f41f4c3b4)”
* 1752067592.jpg – “[9 Recall Profile and ID User](#_dad9f3c94cdce0896d2f4bf03c43c78b)”
* 1752067592.jpg – “[14 Send Profile to vehicle from Off-Board Interface](#_ee11f99639648f12fccf539b57cd0f40)”
* 1752067592.jpg – “[15 Restore Changed Profile](#_3c640802a8440e99e854190da39d1d1e)”

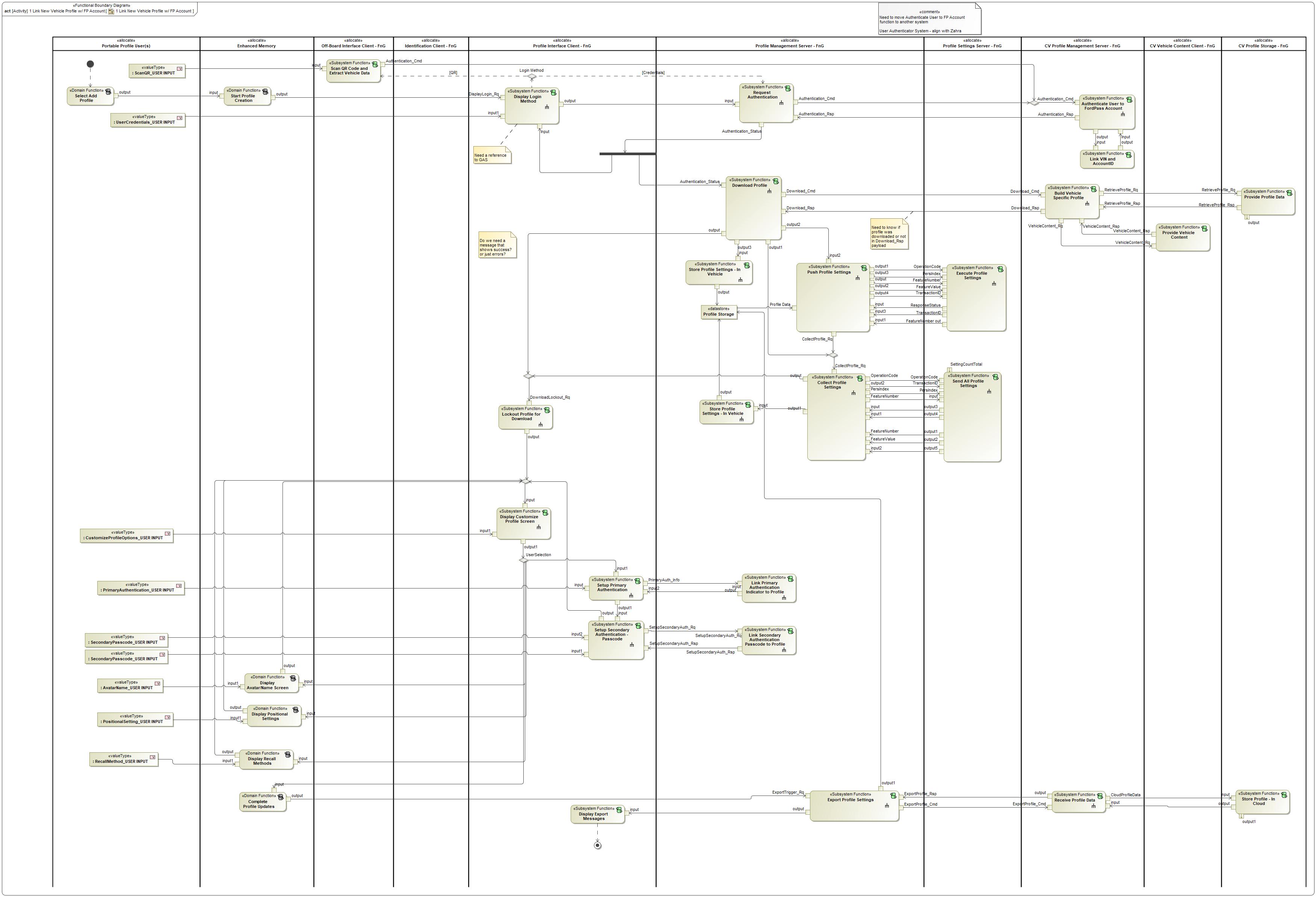


Figure : Activity Diagram of 1752067592.jpg “1 Link New Vehicle Profile w/ FP Account” calling 1252473301.jpg “Execute Profile Settings”

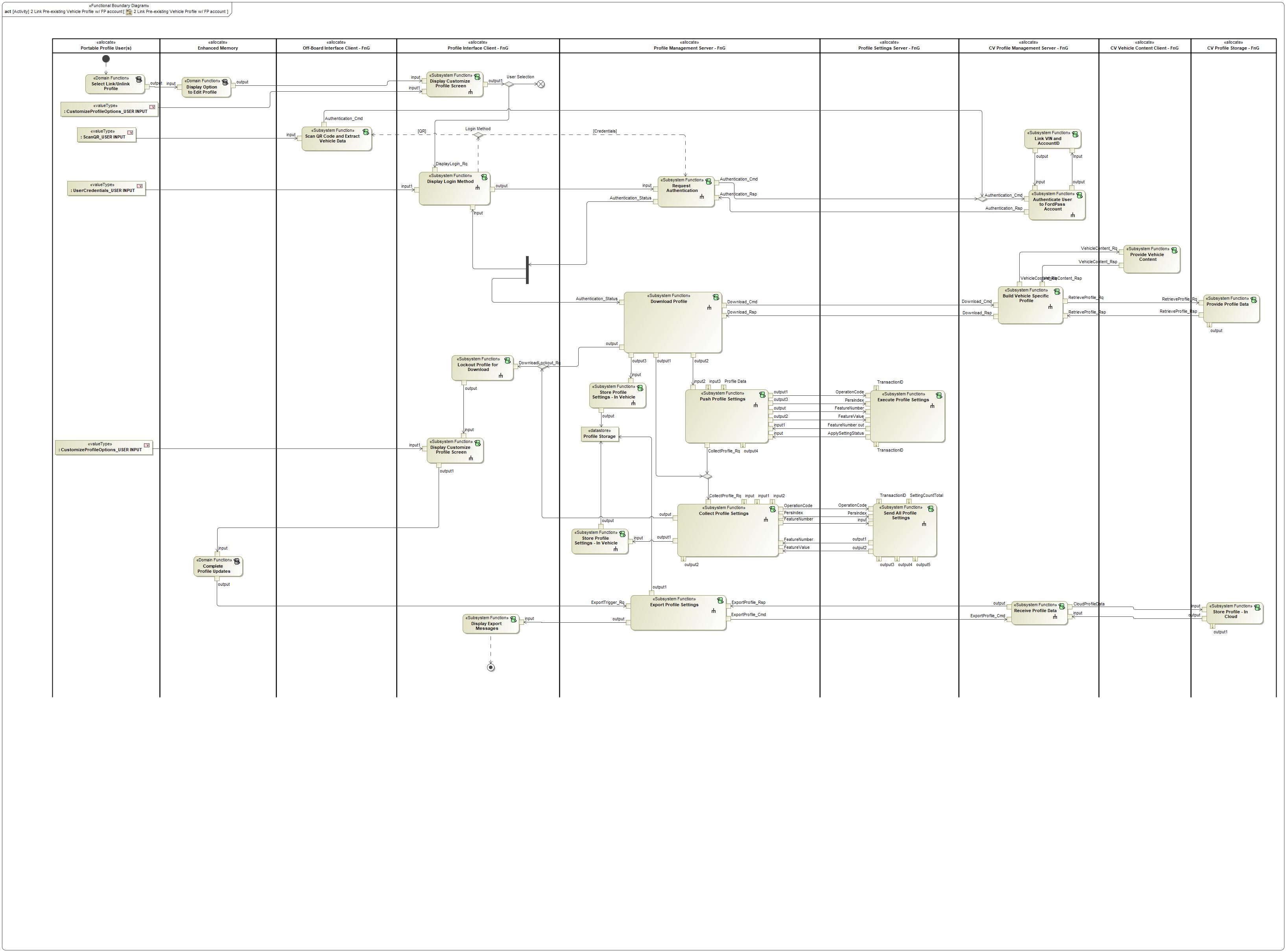


Figure 3: Activity Diagram of 1752067592.jpg “2 Link Pre-existing Vehicle Profile w/ FP account” calling 1252473301.jpg “Execute Profile Settings”

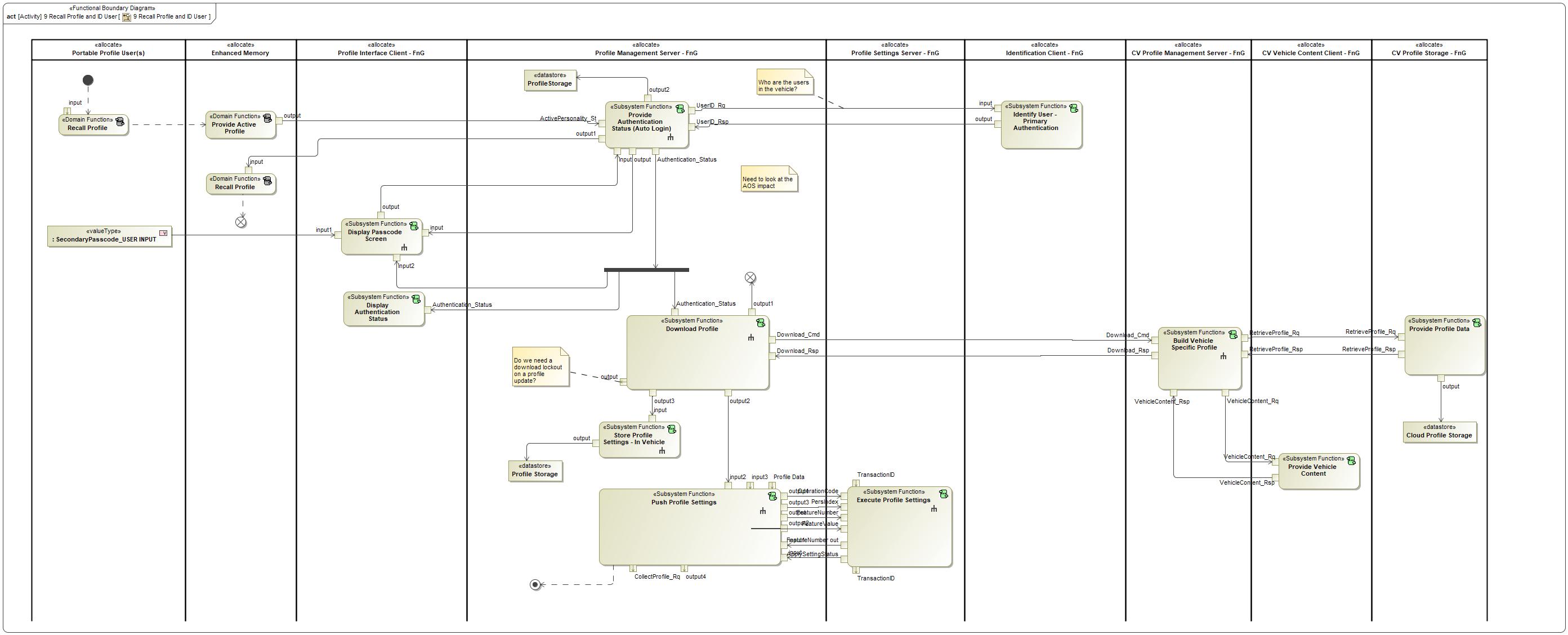


Figure 4: Activity Diagram of 1752067592.jpg “9 Recall Profile and ID User” calling -370587239.jpg “Execute Profile Settings”

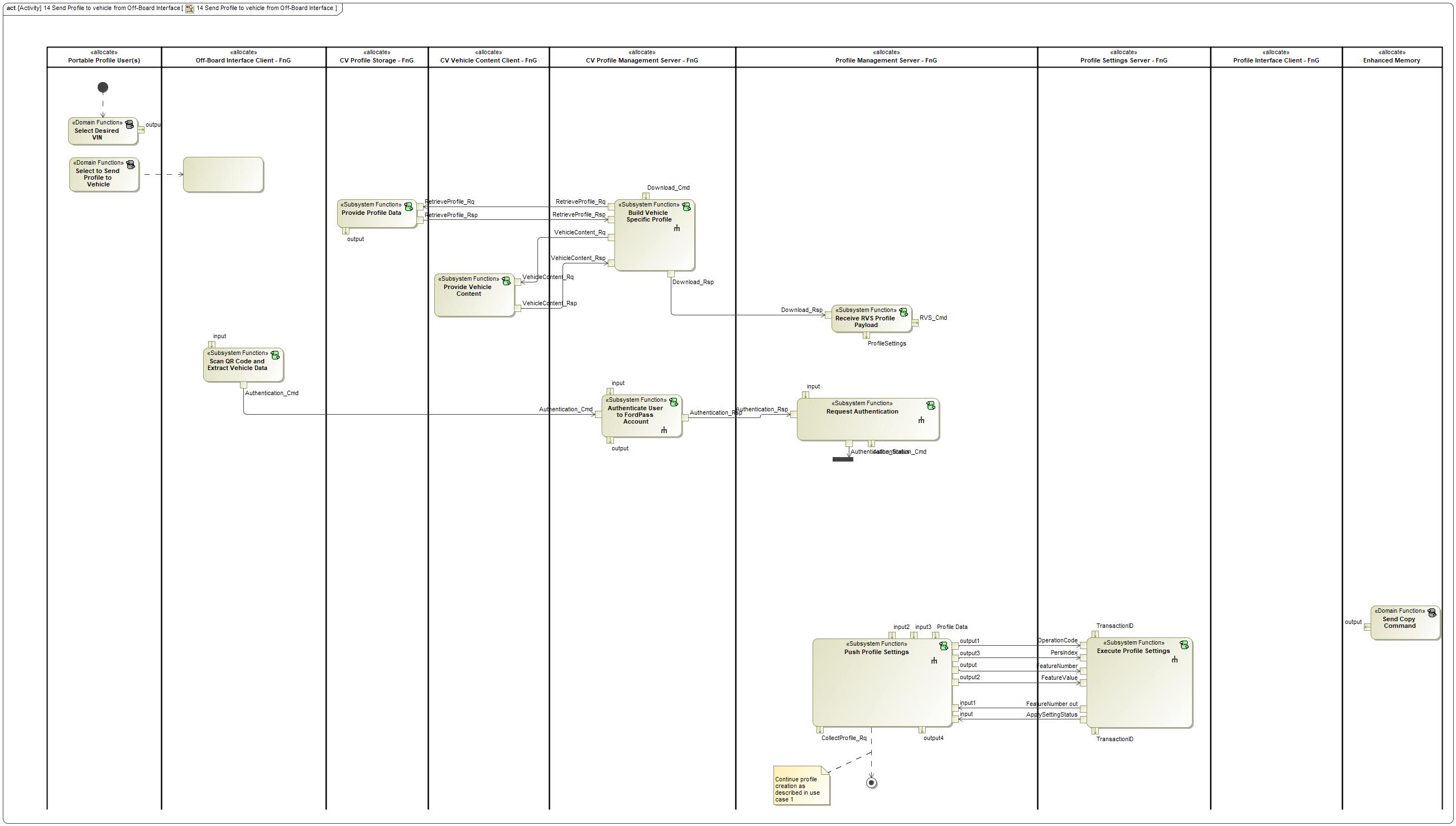


Figure 5: Activity Diagram of 1752067592.jpg “14 Send Profile to vehicle from Off-Board Interface” calling -370587239.jpg “Execute Profile Settings”

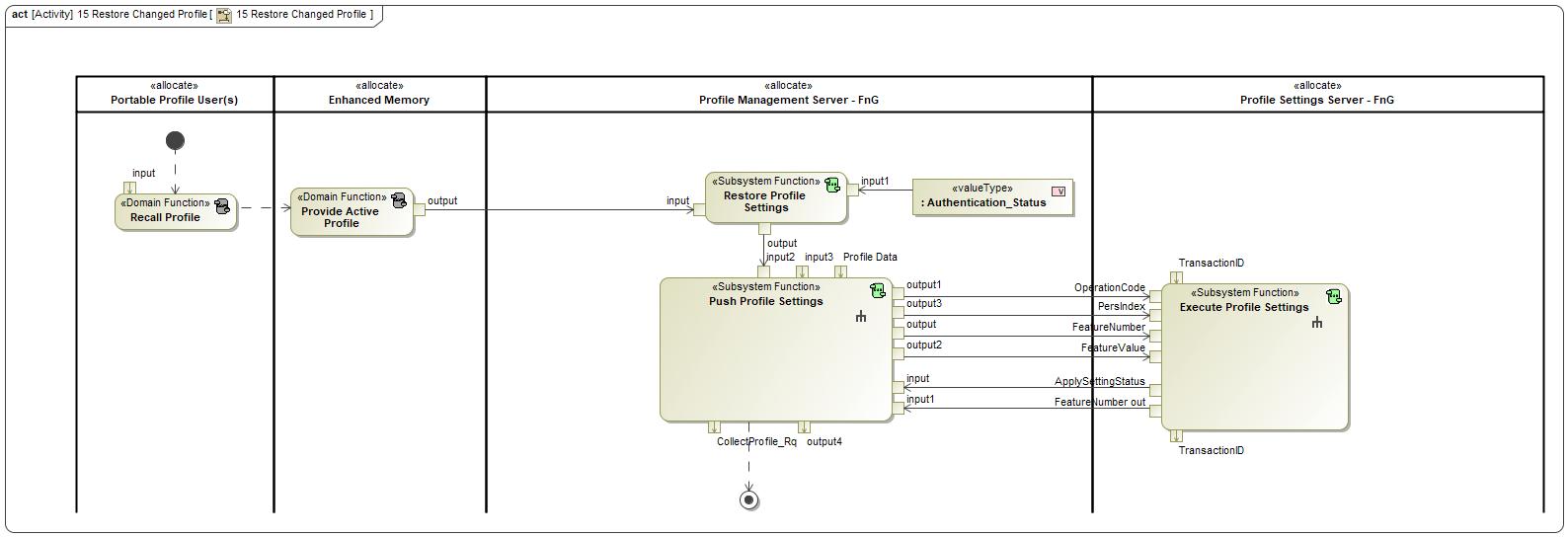


Figure 6: Activity Diagram of 1752067592.jpg “15 Restore Changed Profile” calling -370587239.jpg “Execute Profile Settings”

### Function Interfaces

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

#### Logical Inputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| FeatureNumber  Type:  -371981602.jpg [FeatureNumber](#_be1610b646d0bf0400409c8014d7a238) | Signal Description:  Signal that carries the hexadecimal values assigned to each setting that is stored in the profile.  Received from:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| OperationCode  Type:  -371981602.jpg [OperationCode](#_bef0308dbb462d28a861bd83368d80b6) | Signal Description:  Determines which operation the Profile Setting Server is requested to execute. Depending on the operation code, the following signals could contain more or less data.  Received from:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| PersIndex  Type:  -371981602.jpg [PersIndex](#_38e4377d355042fcbc255a263fdd2506) | Signal Description:  Determines the profile number that the Profile Setting Server needs to execute an operation on.  Received from:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| TransactionID  Type:  -371981602.jpg [TransactionID](#_7115a0d1217c20ab61d4adb9ca753f23) | Signal Description:  Unique ID for each request that is valued 1-7. Response echo's back the same transaction ID to ensure a valid request/response transaction.  Received from:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| FeatureValue  Type:  -371981602.jpg [FeatureValue](#_2f76653b22964d52e41633e4e1a7ce9a) | Signal Description:  Carries the setting configuration for a Feature Number. Feature Numbers and Feature Values are always paired together.  Received from:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |

#### Logical Outputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| ResponseStatus  Type:  -371981602.jpg [ResponseStatus](#_c41c0b93ae5b0211d9badc06bb0869ab) | Signal Description:  Determines the status of the response to a PPPSettings\_Rq. The ResponseStatus can indicate if an operation is successful, in-progress, failed or if there are errors.  Sent to:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| FeatureNumber out  Type:  -371981602.jpg [FeatureNumber](#_be1610b646d0bf0400409c8014d7a238) | Signal Description:  Signal that carries the hexadecimal values assigned to each setting that is stored in the profile.  Sent to:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |
| TransactionID  Type:  -371981602.jpg [TransactionID](#_7115a0d1217c20ab61d4adb9ca753f23) | Signal Description:  Unique ID for each request that is valued 1-7. Response echo's back the same transaction ID to ensure a valid request/response transaction.  Sent to:   * 790882915.jpg [Push Profile Settings](#_99a1ac3ff5a6459a3ff9cedd9b7d4406) |

#### Logical Parameters

**#Hint**: Put requirements for parameters here, which are implemented as configuration parameters using Method 2 or 3 or as parameters for calibration.

None

### Function Modeling

**#Classification:** Mandatory

**#Hint:** Typical modeling artifacts in this section are State Machines, Activity Diagrams / Flow Charts, Decision Tables, and possibly Sequence Diagrams, which can all be used as techniques to analyze the function requirements.

**#Links:** Analyze / Model Requirements: [RE Wiki – Analyze / Model Requirements](http://wiki.ford.com/pages/viewpage.action?pageId=110594919&src=contextnavpagetreemode)

#### State Charts / Activity Diagrams / Sequence Diagrams / Decision Tables

**#Classification:** Mandatory

**#Hint:** It is highly recommended to use at least one of the following modeling techniques for modeling and analyzing the Function behavior and derived requirements (refer to sample diagrams below):

State Machines, Activity Diagrams / Flow Charts, or Decision Tables

Optionally, Sequence Diagrams might help to analyze the interaction between Functions.

**#Links:** Analyze / Model Requirements: [RE Wiki – Analyze / Model Requirements](http://wiki.ford.com/pages/viewpage.action?pageId=110594919&src=contextnavpagetreemode)

State Charts [RE Wiki – State Charts](http://wiki.ford.com/display/RequirementsEngineering/State+Charts?src=contextnavpagetreemode)

Activity Diagrams: [RE Wiki – Activity Diagram](http://wiki.ford.com/display/RequirementsEngineering/Activity+Diagram?src=contextnavpagetreemode), [SysML User Group – Activity Diagram Basics](https://pd3.spt.ford.com/sites/SystemsEngineering/SEC/sysml-teamsite/SysML%20Wiki/Activity%20Diagram%20Basics.aspx)

Sequence Diagrams: [RE Wiki – Sequence Chart](http://wiki.ford.com/display/RequirementsEngineering/Sequence+Chart?src=contextnavpagetreemode), [SysML User Group – Sequence Diagram Basics](https://pd3.spt.ford.com/sites/SystemsEngineering/SEC/sysml-teamsite/SysML%20Wiki/Sequence%20Diagram%20Basics.aspx)

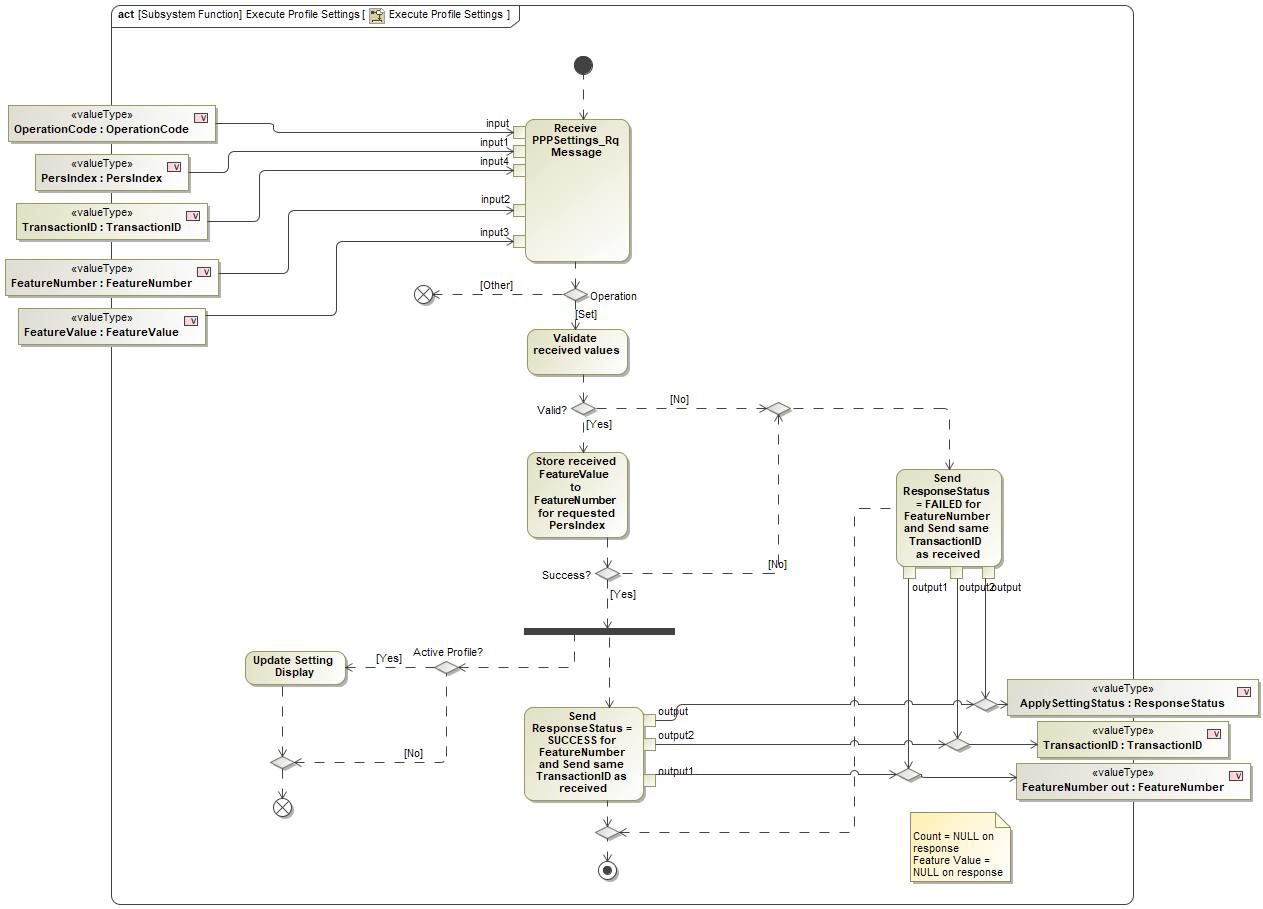


Figure 7: Execute Profile Settings

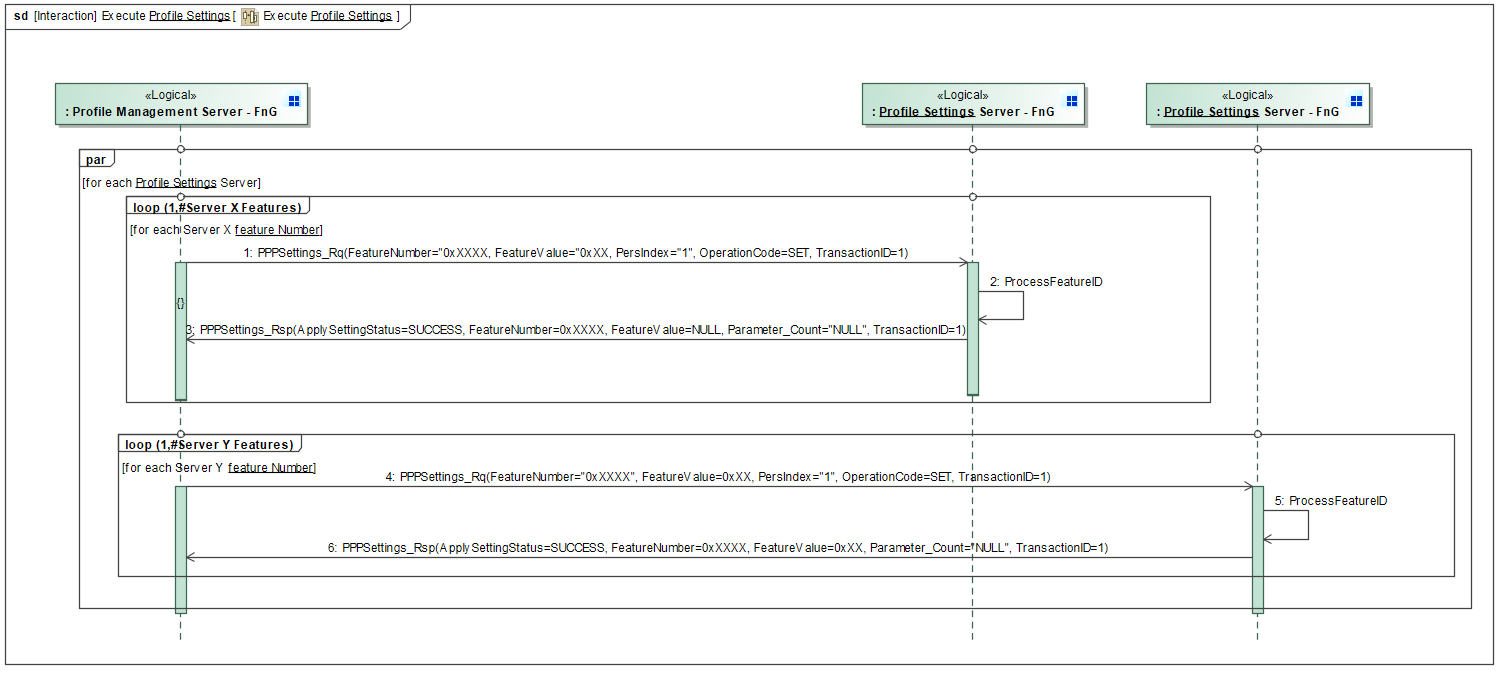


Figure 8: Execute Profile Settings Sequence Diagram

### Function Requirements

#Link: [*RE Wiki – How to write good requirements*](http://wiki.ford.com/display/RequirementsEngineering/How+to+write+better+requirements?src=contextnavpagetreemode)

#### Functional Requirements

***#Hint:*** *Please also consider specific situations like Initialization (Startup) and Deinitialization (Shutdown) apart from Normal Operation and Error Handling. E.g. a* state chart or activity diagram might help for better understanding.

##### Normal Operation

REQ-352214/A Receiving and Processing PPPSettings\_Rq

When a Profile Setting Server receives the PPPSettings\_Rq message from the Profile Management Server that contains a OperationCode = SET, PersIndex = PROFILE\_1 - 4, FeatureNumber = 0x0000 - 0xFFFE and FeatureValue = 0x0000 - 0xFFFF, the Profile Setting Server shall apply the Feature Value to the Feature Number for the requested Pers Index once the signal parameters are validated.

The requested Pers Index does not need to be the active profile to receive and apply the profile settings.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-352214/A | | | | | | | |
| **Rationale** | PPP requires a central profile storage in the Profile Management Server, thus requiring a means to apply settings from the central storage to each Profile Setting Server. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-352219/A Profile Setting Servers remember valid Feature Number

Profile Setting Servers shall only apply Feature Value for Feature Numbers supported by the settings server.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-352219/A | | | | | | | |
| **Rationale** | Do not want the Profile Setting Server to apply a Value for an incorrect Feature ID. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405855/A PPPSettings\_Rq Message Parameters

When profile settings are being pushed from the Profile Management Server to the Profile Setting Servers, the following signals shall all be packaged into a single message:

- OperationCode

- PersIndex

- TransactionID

- FeatureNumber

- FeatureValue

\*Note: Signal definitions can be found in the data dictionary at bottom of specification.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405855/A | | | | | | | |
| **Rationale** | FeatureNumber and FeatureValue signals must be paired together in an array so the profile setting server can apply the correct feature value to the feature number. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405857/A Display active profile settings after being applied

If the Profile Setting Server has just applied a new profile setting received via the PPPSettings\_Rq message from the Profile Management Server to the active profile, the Profile Setting Server shall update their own HMI client to display the updated setting.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405857/A | | | | | | | |
| **Rationale** | PPP does not own HMI for all profile settings. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405859/A Memory capability

Each Profile Setting Server shall support enough memory to support at least 5 profile memory positions:

1. Profile 1

2. Profile 2

3. Profile 3

4. Profile 4 (transitional)

5. Vehicle/Guest

\*\*This is not incremental to the Enhanced Memory requirement. PPP and EM use the same memory.\*\*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405859/A | | | | | | | |
| **Rationale** | PPP allows for 3 locally saved profiles that can be recalled without needing to push data from the profile management server to the setting servers on every recall. The Profile 4 (transitional) is used to allow more than 3 profiles to be saved to the vehicle and recalled by pushing profile data for every recall. | | | | | | |
| **Acceptance Criteria** | - Memory 1-4 + Guest available for all personalized settings on setting server | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405862/A Validate PPPSettings\_Rq

When a Profile Setting Server receives the PPPSettings\_Rq, the Profile Setting Server shall validate that the received parameters are within a valid range identified by the Profile Attribute Specification. Invalid parameters received shall result in ResponseStatus = FAILED sent to Profile Management Server.

See reference documents for link to Profile Attribute Specification.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405862/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** | - Valid parameters applied  - Invalid parameters not applied, ResponseStatus = FAILED sent | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405864/A Sending ResponseStatus = SUCCESS

When the Profile Setting Server successfully applies the feature parameters received in PPPSettings\_Rq, the Profile Setting Server shall send the following signal values in the PPPSettings\_Rsp:

- ResponseStatus = SUCCESS

- TransactionID = TransactionID(received)

- FeatureNumber = FeatureNumber(Received)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405864/A | | | | | | | |
| **Rationale** | Profile Management Server knows not to attempt a retry. | | | | | | |
| **Acceptance Criteria** | - ResponseStatus = SUCCESS sent to Profile Management Server  - Correct Feature Number sent to Profile Management Server  - Correct PersIndex sent to Profile Management Serversent | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-421979/A PPPSettings\_Rsp Message Parameters

When the Profile Setting Server is responding to a SET operation from the Profile Management Server, the Profile Setting Server shall send non-NULL values for the following signals:

- ResponseStatus

- TransactionID

- FeatureNumber

\*Note: Signal definitions can be found in the data dictionary at bottom of specification

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421979/A | | | | | | | |
| **Rationale** | The ResponseStatus is specific for each Feature Number, so the two signals must be paired together and the TransactionID determines if the request/response transaction is valid. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-421980/A TransactionID for Executing Profile Settings

When the Profile Setting Server receives PPPSettings\_Rq with a TransactionID = 1-7, the Profile Setting Server shall send PPPSettings\_Rsp with the same Transaction ID the was received in the PPPSettings\_Rq.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421980/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

##### Error Handling

***#Hint:*** *FMEA counter measures could be considered as requirements in this chapter*

REQ-353147/A Setting Server Unable to Apply Setting

If a Profile Setting Server is unable to apply a Feature Value for a Feature Number that is sent from the Profile Management Server, the Profile Setting Server shall retain the previous Feature Value for the requested Feature Number and send the following signal values in the PPPSettings\_Rsp:

- ResponseStatus = FAILED

- TransactionID = TransactionID(received)

- FeatureNumber = FeatureNumber(Received)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-353147/A | | | | | | | |
| **Rationale** | Do not want to change to a default setting, but would rather the user decide the setting preference. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405858/A Priority of applying profile settings

If a Profile Setting Server receives a request to change a profile setting from the PPPSettings\_Rq signal and the setting's HMI Client simultaneously, the Profile Setting Server shall retain the setting value received from HMI Client.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405858/A | | | | | | | |
| **Rationale** | Priority should be given to the customer actions. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405863/A PPPSettings\_Rq parameters are out of range

If a Profile Setting Server receives a PPPSettings\_Rq that contains Feature Numbers that are not owned by the receiving Profile Setting Server or are out of the defined range, the Profile Setting Server shall send the following signal values in the PPPSettings\_Rsp:

- ResponseStatus = INVALID

- TransactionID = TransactionID(received)

- FeatureNumber = FeatureNumber(Received)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405863/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** | - ApplySettingStatus = FAIL sent to Profile Management Server  - Correct Feature Number sent to Profile Management Server  - Correct PersIndex sent to Profile Management Server | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

#### Non-Functional Requirements

***#Hint:*** *Non-functional requirements specify some performance criteria in addition to the functional behavior given defined by the functional requirements. Timing (if not already included in the functional requirements), security details (e.g. how secure does an algorithm have to be) or reliability (e.g. mean time between failure) could be specified in this section.*

REQ-405861/A Execute Profile Settings Performance

The Profile Setting Servers shall be able to receive a PPPSettings\_Rq, process and send a PPPSettings\_Rsp within xx ms of receiving the PPPSettings\_Rq.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405861/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** | - PPPSettings\_Rsp sent within xx ms of receiving PPPSettings\_Rq | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

#### Functional Safety Requirements

**#Classification**: Functional Safety only – If not used, remove content and state “Not Applicable”

***#Hint:*** *Add Functional Safety Requirements (FSRs) derived for this function.*

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

[RE Wiki - Requirements Attributes](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes)

Not Applicable

##### ASIL Decomposition of Functional Safety Requirements

**#Classification**: Functional Safety only – If not used, remove content and state “Not Applicable”

***#Hint:*** *Sometimes an ASIL decomposition of Functional Safety Requirements is required. The decomposed FSRs should be listed beneath each ASIL Decomposition table below and referenced inside the table by ID and Title*

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

Not Applicable

#### Other Requirements

##### Design Requirements

***#Hint:*** *Requirements of a Logical Function should be typically agnostic of their SW/HW implementation*. If for specific reasons the function owner needs to define explicitly design constraints, it can be done in this chapter.

No Design Requirements specified.

## 1201103667.jpg Send All Profile Settings

### Function Overview

#### Description

Function is allocated to:

* -214814297.jpg Profile Settings Server - FnG <<Logical>>

This function sends profile data associated to a user profile that is stored on the Profile Setting Server to the Profile Management Server when the PPPSettings\_Rq with OperationCode = QUERY  is received. The received query operation can be for a specific Feature Number or can be a batch query (FeatureNumber = NULL in PPPSettings\_Rq) of all profile data associated to a profile.

#### Variants

Not Applicable

#### Input Requirements

Not Applicable

#### Assumptions

Not Applicable

#### References

##### Ford Documents

List here all Ford internal documents, which are directly related to the feature.

| **Reference** | **Title** | **Doc. ID** | **Revision** |
| --- | --- | --- | --- |
|  | Enhanced Memory Feature Specification | VDOC041625 | V3.1 |

Table 5: Ford internal Documents *(not specified in model)*

##### External Documents and Publications

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

| **Reference** | **Document / Publication** |
| --- | --- |
|  |  |

Table 6: External documents and publications *(not specified in model)*

#### Glossary

See Appendix for Definitions and Abbreviations.

### Function Scope

The -370587239.jpg **– “Send All Profile Settings”** function is called by the following functions:

* 1752067592.jpg – “[1 Link New Vehicle Profile w/ FP Account](#_c7936deeb1761a08d89f9bdda21212fb)”
* 1752067592.jpg – “[2 Link Pre-existing Vehicle Profile w/ FP account](#_b41eb465d9315ee196e5167f41f4c3b4)”
* 1752067592.jpg – “[7 Synchronize Profile with the Cloud](#_d2fb3c8fa292b8aa3da2233f366733a0)”

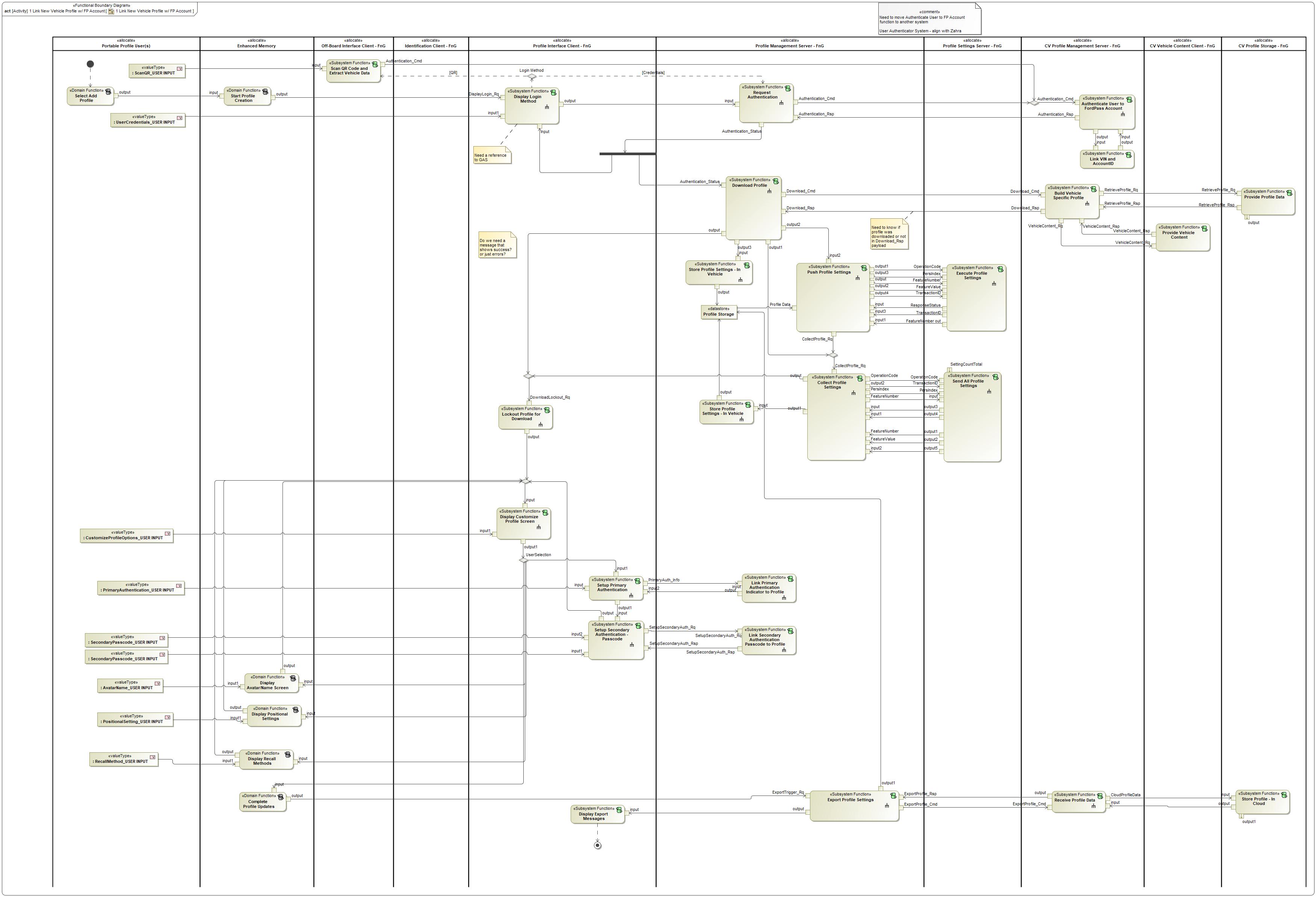


Figure 9: Activity Diagram of 1752067592.jpg “1 Link New Vehicle Profile w/ FP Account” calling -370587239.jpg “Send All Profile Settings”

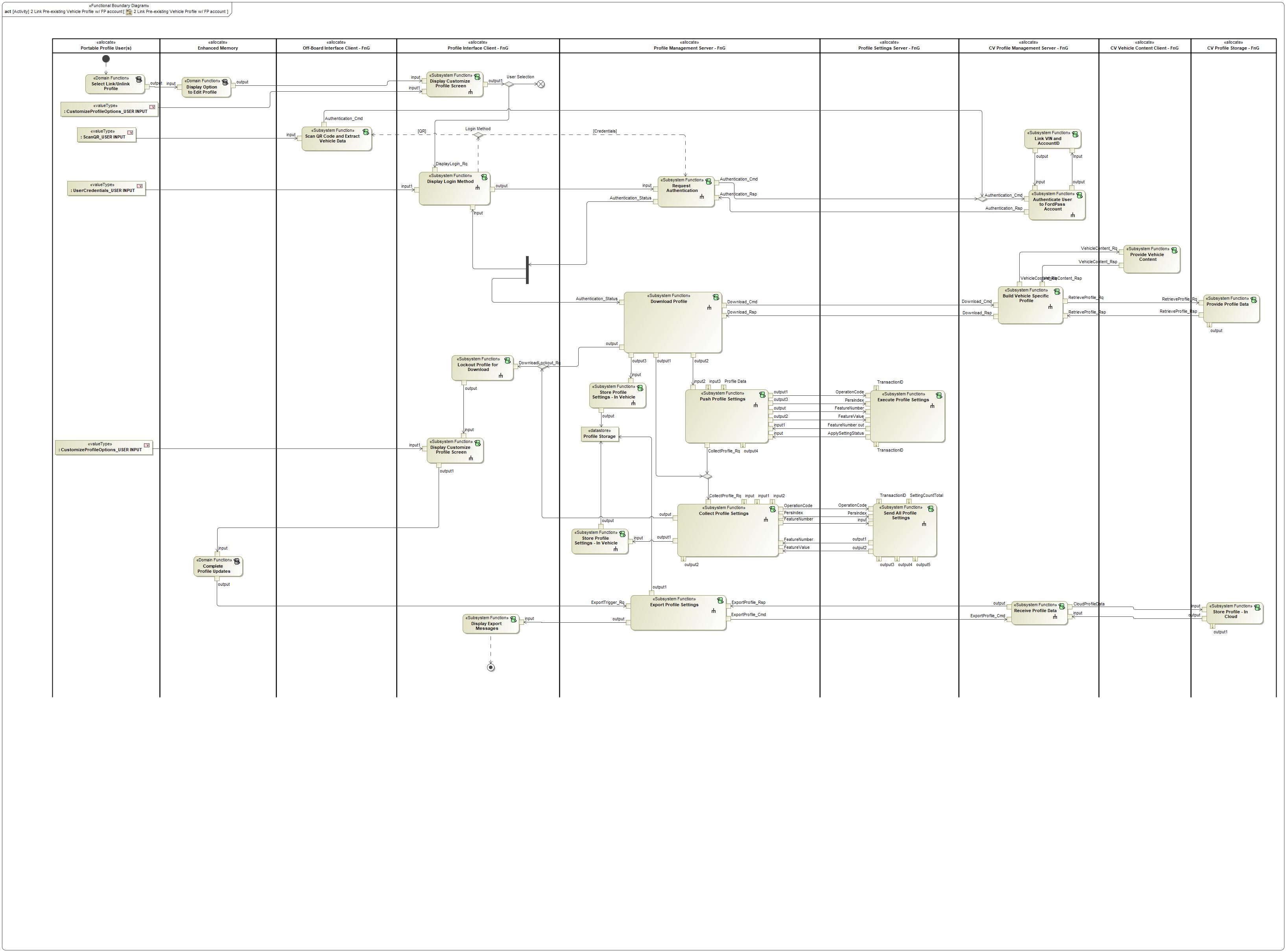


Figure 10: Activity Diagram of 1752067592.jpg “2 Link Pre-existing Vehicle Profile w/ FP account” calling -370587239.jpg “Send All Profile Settings”

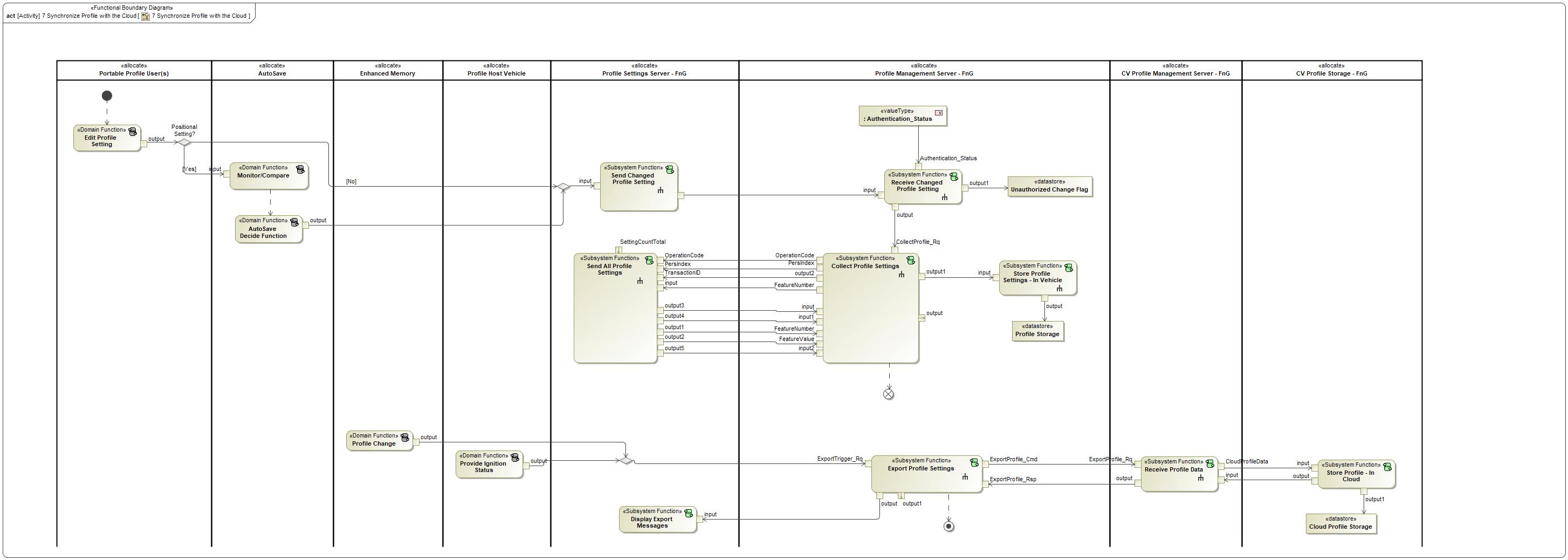


Figure 11: Activity Diagram of 1752067592.jpg “7 Synchronize Profile with the Cloud” calling -370587239.jpg “Send All Profile Settings”

### Function Interfaces

#### Logical Inputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| FeatureNumber  Type:  -371981602.jpg [FeatureNumber](#_be1610b646d0bf0400409c8014d7a238) | Signal Description:  Signal that carries the hexadecimal values assigned to each setting that is stored in the profile.  Received from:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| TransactionID  Type:  -371981602.jpg [TransactionID](#_7115a0d1217c20ab61d4adb9ca753f23) | Signal Description:  Unique ID for each request that is valued 1-7. Response echo's back the same transaction ID to ensure a valid request/response transaction.  Received from:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| OperationCode  Type:  -371981602.jpg [OperationCode](#_bef0308dbb462d28a861bd83368d80b6) | Signal Description:  Determines which operation the Profile Setting Server is requested to execute. Depending on the operation code, the following signals could contain more or less data.  Received from:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| PersIndex  Type:  -371981602.jpg [PersIndex](#_38e4377d355042fcbc255a263fdd2506) | Signal Description:  Determines the profile number that the Profile Setting Server needs to execute an operation on.  Received from:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |

#### Logical Outputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| output4  Type:  -371981602.jpg [TransactionID](#_7115a0d1217c20ab61d4adb9ca753f23) | Signal Description:  Unique ID for each request that is valued 1-7. Response echo's back the same transaction ID to ensure a valid request/response transaction.  Sent to:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| output1  Type:  -371981602.jpg [FeatureNumber](#_be1610b646d0bf0400409c8014d7a238) | Signal Description:  Signal that carries the hexadecimal values assigned to each setting that is stored in the profile.  Sent to:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| output2  Type:  -371981602.jpg [FeatureValue](#_2f76653b22964d52e41633e4e1a7ce9a) | Signal Description:  Carries the setting configuration for a Feature Number. Feature Numbers and Feature Values are always paired together.  Sent to:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| output3  Type:  -371981602.jpg [ResponseStatus](#_c41c0b93ae5b0211d9badc06bb0869ab) | Signal Description:  Determines if a profile setting had successfully been set by the Profile Setting Server.  Sent to:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |
| output5  Type:  -371981602.jpg [SettingCount](#_57c260f8678aab0a32041b735ad1c846) | Signal Description:  Number of profile settings remaining to be sent to the Profile Management Server.  Sent to:   * 790882915.jpg [Collect Profile Settings](#_a1c13b3cc6eb11f71c1f835170b26508) |

#### Logical Parameters

Not Applicable

### Function Modeling

#### Use Cases

Not Applicable

#### State Charts / Activity Diagrams / Sequence Diagrams / Decision Tables

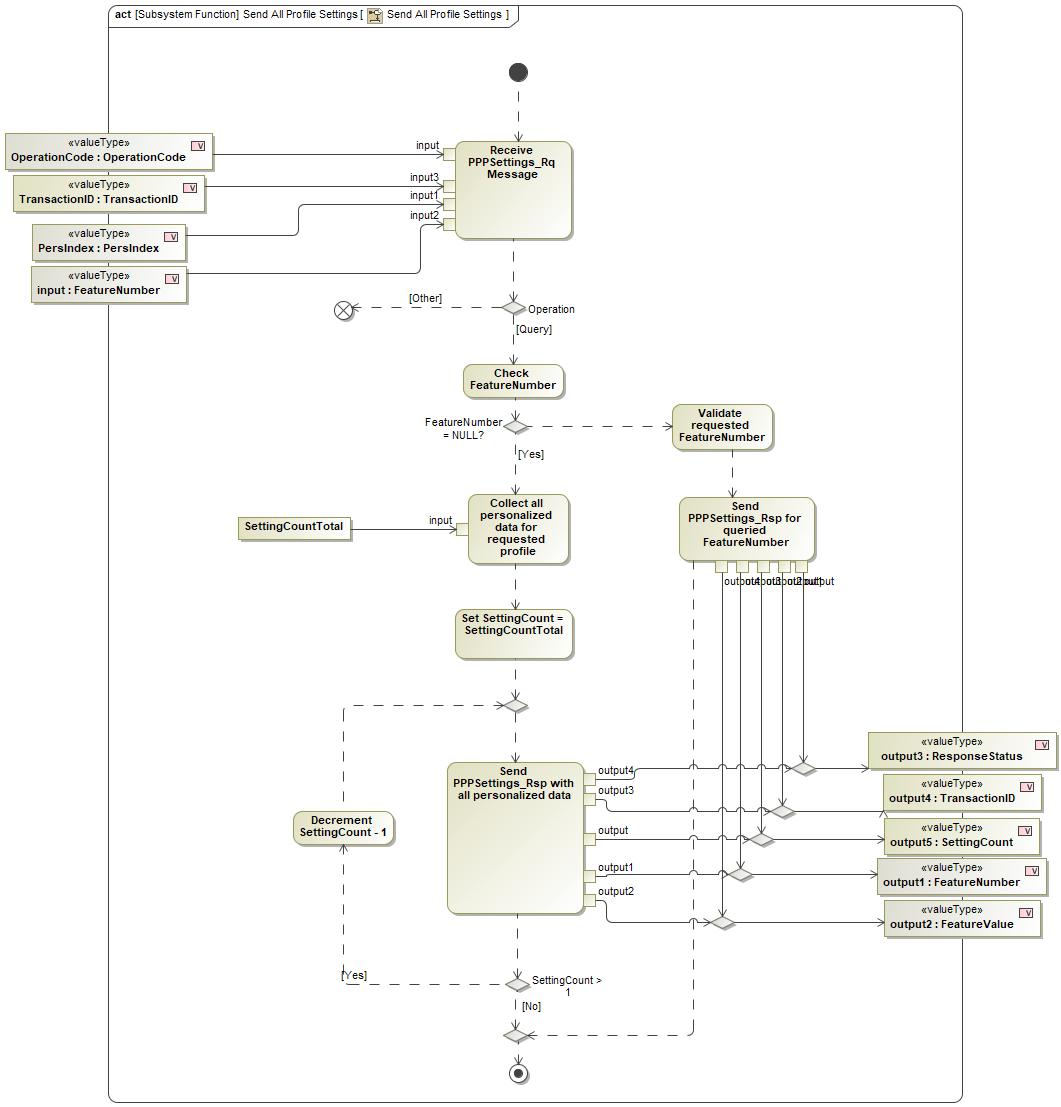


Figure 12: Send All Profile Settings



Figure 1: Send All Profile Settings Sequence Diagram

### Function Requirements

#### Functional Requirements

##### Normal Operation

REQ-352238/A Response to a Profile Management Server Query

When the Profile Setting Server receives a query all settings request (OperationCode = QUERY, TransactionID = 1-7, PersIndex = PROFILE 1-4, FeatureNumber = NULL) via the PPPSetting\_Rq from the Profile Management Server, the Profile Setting Server shall send the PPPSetting\_Rsp message for each FeatureNumber and FeatureValue combination stored by the Profile Setting Server for the requested PersIndex.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-352238/A | | | | | | | |
| **Rationale** | Profile Setting Server needs to respond for each possible Feature ID | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-352239/A Powermode conditions to send PPPSetting\_Rsp to Profile Management Server

Each Profile Setting Server shall be capable of sending the ReturnProfileSetting message to the Profile Management server when the vehicle Ignition = RUN and the Profile Setting Server is fully powered.

Note: Individual profile setting servers may have additional pre-conditions that prevent sending the ReturnProfileSetting message.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-352239/A | | | | | | | |
| **Rationale** | Each Profile Setting Server has different power mode conditions. | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405866/A PPPSetting\_Rsp message parameters

The PPPSetting\_Rsp message sent from the Profile Setting Server to the Profile Management Server shall contain the following signals:

- ResponseStatus

- TransactionID

- SettingCount

- FeatureNumber

- FeatureValue

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405866/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-405868/A Sending all profile settings via PPPSetting\_Rsp message

Each Profile Setting Server shall send as many PPPSetting\_Rsp messages as needed to send all profile settings to the Profile Management Server when OperationCode = Query is received.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405868/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-421981/A Populating the PPPSetting\_Rsp signal values for query all settings request

When responding to a query all settings request, the Profile Management Server shall send the PPPSettings\_Rsp message with all non-NULL signal values as follows:

- ResponseStatus = IN\_PROGRESS until SettingCount = 1

-TransactionID = TransactionID received in PPPSettings\_Rq

- SettingCount = SettingCountTotal for first response, and then decrements by 1 for each subsequent response until SettingCount = 1

- FeatureNumber = parameter of the Profile Setting Server

- FeatureValue = set value of the Feature Number for the queried PersIndex.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421981/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-421982/A SettingCountTotal parameter

Each Profile Setting Server shall maintain a parameter called SettingCountTotal, which stores the total personalized settings stored in the Profile Setting Server.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421982/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

##### Error Handling

No Error Handling Requirements specified.

#### Non-Functional Requirements

REQ-405867/A Performance to send PPPSetting\_Rsp

When the Profile Setting Server receives the OperationCode = Query signal from the Profile Management Server, the Profile Setting Server shall start sending its saved profile settings to the Profile Management Server using the ReturnProfileSetting message at a rate no slower than xx ms per profile setting.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-405867/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

#### Functional Safety Requirements

Not Applicable

##### ASIL Decomposition of Functional Safety Requirements

Not Applicable

#### Other Requirements

##### Design Requirements

No Design Requirements specified.

## 1201103667.jpg Send Changed Profile Setting

### Function Overview

#### Description

Function is allocated to:

* -214814297.jpg Profile Settings Server - FnG <<Logical>>

A function of the Profile Setting Servers that sends a change notification to the Profile Management Server when a change is made to a profile setting of an active profile. The notification does not determine which profile setting was changed, just that a change occurred and the Profile Management Server must query the active profile to refresh the local copy.

#### Variants

Not Applicable

#### Input Requirements

Not Applicable

#### Assumptions

Not Applicable

#### References

##### Ford Documents

List here all Ford internal documents, which are directly related to the feature.

| **Reference** | **Title** | **Doc. ID** | **Revision** |
| --- | --- | --- | --- |
|  | Enhanced Memory Feature Specification | VDOC041625 | V3.1 |

Table 7: Ford internal Documents *(not specified in model)*

##### External Documents and Publications

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

| **Reference** | **Document / Publication** |
| --- | --- |
|  |  |

Table 8: External documents and publications *(not specified in model)*

#### Glossary

See Appendix for Definitions and Abbreviations.

### Function Scope

The 840167805.jpg **– “Send Changed Profile Setting”** function is called by the following functions:

* 1752067592.jpg – “[7 Synchronize Profile with the Cloud](#_d2fb3c8fa292b8aa3da2233f366733a0)”

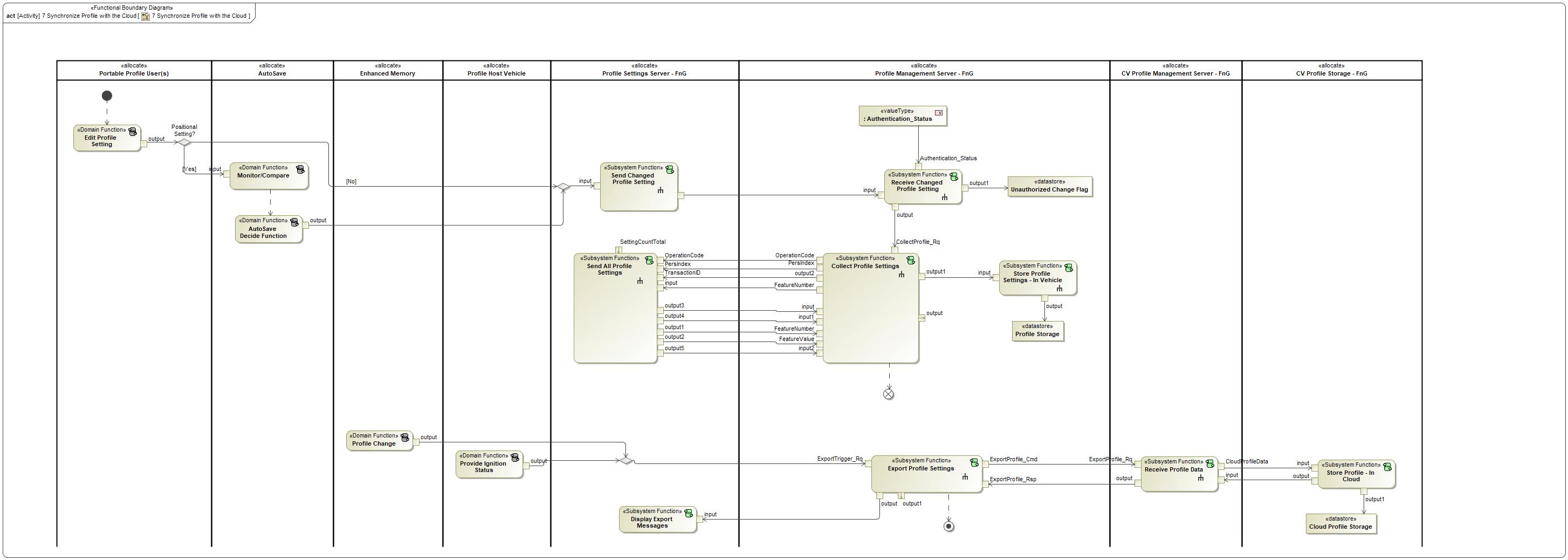


Figure 14: Activity Diagram of 1752067592.jpg “7 Synchronize Profile with the Cloud” calling 840167805.jpg “Send Changed Profile Setting”

### Function Interfaces

#### Logical Inputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| input  Signal:  2136721000.jpg [Setting Changed](#_8a1937d6bdcbccc7a4e815473f36f9f1) | Received from:   * 130315544.jpg [Edit Profile Setting](#_4a548e806b924f434f2caf972cf66426) * 130315544.jpg [AutoSave Decide Function](#_73be08bc890cd3755da4b8158c69c765) |

#### Logical Outputs

|  |  |
| --- | --- |
| **Signal Name** | **Description** |
| output2  Type:  1645473355.jpg [Change\_Notification](#_2f76653b22964d52e41633e4e1a7ce9a) | Signal Description:  Notifies the Profile Management Server that a change has been made to the active profile.  Sent to:   * 1201103667.jpg [Receive Changed Profile Setting](#_e8809aabcd0f92881c80878fad6591dd) |

#### Logical Parameters

Not Applicable

### Function Modeling

#### Use Cases

Not Applicable

#### State Charts / Activity Diagrams / Sequence Diagrams / Decision Tables

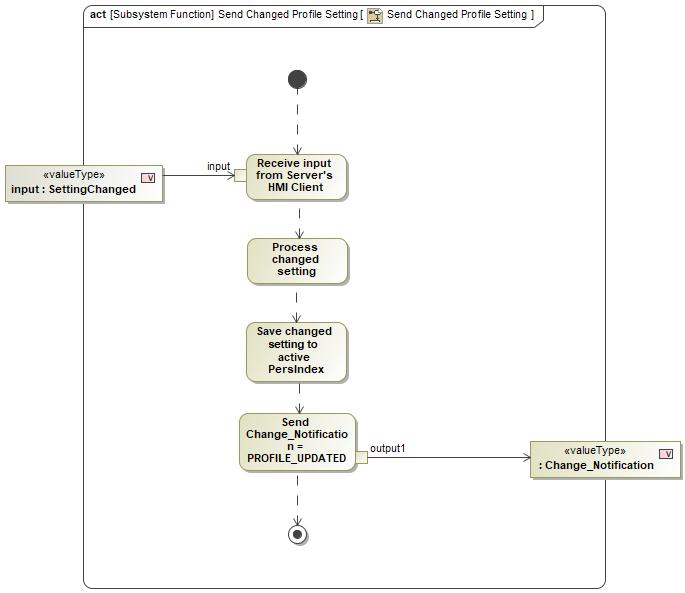


Figure 15: Send Changed Profile Setting

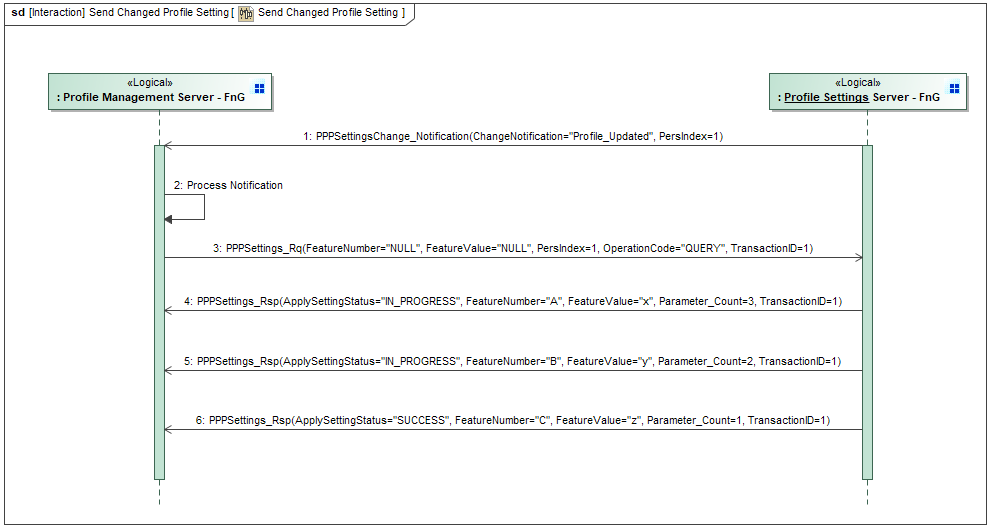


Figure 16: Send Changed Profile Setting Sequence Diagram

### Function Requirements

#### Functional Requirements

##### Normal Operation

REQ-421983/A Send Change\_Notification to Profile Management Server

When a customer makes a change to a profile setting and the setting is saved to the active profile, the Profile Setting Server that controls the changed setting shall send a Change\_Notification = PROFILE\_UPDATED signal and PersIndex = Active Profile signal to the Profile Management Server.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421983/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

REQ-421985/A Set Change\_Notification to NULL after a change

After the Profile Setting Server sends Change\_Notification = PROFILE\_UPDATED for a changed profile setting, the Profile Setting Server shall return the Change\_Notification to NULL after 2 cycles (2000ms).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421985/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

##### Error Handling

#### Non-Functional Requirements

REQ-421984/A Send Change\_Notification Performance Requirement

The Profile Setting Servers shall be able to send the Change\_Notification signal within XX ms after saving the changed profile setting to the active profile.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Requirement ID: REQ-421984/A | | | | | | | |
| **Rationale** |  | | | | | | |
| **Acceptance Criteria** |  | | | | | | |
| **Notes** |  | | | | | | |
| **Source** |  | | | | | **Owner** |  |
| **Source Req.** |  | | | | | **V&V Method** |  |
| **Type** |  | | | **Priority** |  | **Status** |  |
| [Req. Template](http://wiki.ford.com/display/RequirementsEngineering/Requirements+Attributes) Version | | 6.0 | End of Requirement | | | | |

#### Functional Safety Requirements

Not Applicable

##### ASIL Decomposition of Functional Safety Requirements

Not Applicable

#### Other Requirements

##### Design Requirements

No Design Requirements specified.

# Open Concerns

**#Hint:** The following list presents open concerns, which have to be discussed or clarified over the course of the on-going requirements engineering.

| ID | Concern Description | e-Tracker / Reference | Responsible | Status | Solution |
| --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |

Table 9: Open Concerns *(Not supported by MagicDraw report generation.)*

# 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.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Rev. | Date | Description | Responsible |
| 1 | 0 | 2021-03-10 | Initial version. | Jbauer50 |
| 1 | 1 | 2021-06-02 | * Changed ApplySettingStatus to ResponseStatus * Revised logical signals to match Personalization Service signal encodings * “Send Changed Profile Setting” function flow changed to follow change notification strategy * Revised function descriptions * Added sequence diagrams for each function * Added logical parameter SettingCountTotal | Jbauer50 |
|  |  |  |  |  |

## Template Revisions

*#Important: Do not change this section*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Rev. | Date | Description | Responsible |
| *1* | *0* | *2016-02-26* | *Initial version, derived from FDS* | *Jbaden1* |
| *1* | *1* | *2016-02-26* | *Word properties corrected* | *Jbaden1* |
| *1* | *2* | *2016-03-10* | *Clean up of document meta data (Word properties)* | *Jbaden1* |
| *1* | *3* | *2016-03-22* | * *Footer formatting corrected (Issue 19)* * *“Constraints” chapter renamed to “Input Requirements” (Issue 20)* | *Jbaden1* |
| *1* | *4* | *2016-04-20* | * *Broken Wiki links repaired* | *Jbaden1* |
| *2* | *0* | *2016-06-10* | * *Document metadata adapted. Prepared for new macros* * *DTC table removed* * *HMI function added as a chapter (details still to be refined)* * *Signal / Parameter IDs column deleted interface tables* | *Jbaden1* |
| *2* | *1* | *2016-07-14* | * *Converted to SysML diagrams* * *HMI section further elaborated* * *Template version added to footer* * *Dedicated Startup / Shutdown sections removed (only hints added)* * *Data Dictionary reworked and Signal / Parameter IDs column re-introduced* | *Jbaden1* |
| *2* | *2* | *2016-12-07* | * *Minor formatting changes* | *Jbaden1* |
| *3* |  |  | *Skipped to synchronize with Specification\_Macros.dotm* |  |
| *4* |  |
| *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* | * *Some additional hints.* * *Hyperlinks highlighted in hints* | *Jbaden1* |
| *6* | *0* | *2017-04-28* | * *Editorial change. Hints added to chapter 4.1.4* * *Chapter “Traceability Matrix” removed* | *Jbaden1* |
| *6* | *0* | *2018-04-28* | * *CR69/63: New chapters added for Functional Safety (FTTI and Technical Safety Requirements)* * *CR53: New coversheet + additional meta-data* * *CR76: merge sections for configuration and for calibration parameters into one on Function Level* | *Jbaden1* |
| *6* | *0* | *2018-08-06* | * *CR66: Fix version numbering in footer of Function Spec* | *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* | *2018-11-12* | * *Explanatory text in Variants” section revised* * *Functional Safety modifications as agreed with FuSa core team (Baseline: November 2018 Dearborn On-Site)* | *Jbaden1* |
| *M* |  | *2019-04-02* | * *Initial version of SysML report template* | *snuesch* |
| *M* |  | *2019-04-05* | * *Improved dialog boxes to select function group* | *snuesch* |
| *M* |  | *2019-04-26* | * *Improved function interfaces (support of additional elements (e.g., send signal action, add structural feature action, merge node, decision node, activity parameter nodes, etc.) and pins)* | *snuesch* |
| *N* |  | *2019-08-19* | * *For each function now also requirements satisfied by activity parameter nodes and function outputs are populated.* | *snuesch* |
| *N* |  | *2019-08-21* | * *Improved glossary and acronym tables* | *snuesch* |
| *N* |  | *2019-09-20* | * *Updated Function Interfaces tables with better wording. Added a report template variable that allows to disable senders and receivers. Sorted requirements by ID.* | *snuesch* |
| *N* |  | *2019-09-27* | * *Green hints now only show up for first function.* * *labelTag variable can be used to filter revision history.* | *snuesch* |

# Appendix

## Data Dictionary

### Logical Signals

**#Macro:** [Add Ins -> Add Requirement macro](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Logical+Signal+or+Parameter) (select “Logical Signal” as type)

ResponseStatus

Determines if a profile setting had successfully been set by the Profile Setting Server.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Discrete |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Discrete  Encoding) | 0x0 | NULL |
| 0x1 | SUCCESS |
| 0x2 | PENDING |
| 0x3 | REJECTED |
| 0x4 | INTERRUPTED |
| 0x5 | FAILED |
| 0x6 | IN\_PROG |
| 0x7 | INVALID |
| 0x8 | NotUsed\_1 |
| 0x9 | NotUsed\_2 |
| 0xA | NotUsed\_3 |
| 0xB | NotUsed\_4 |
| 0xC | NotUsed\_5 |
| 0xD | NotUsed\_6 |
| 0xE | NotUsed\_7 |
| 0xF | FAULT |
| **Unit** | |  |

Change\_Notification

Notifies the Profile Management Server that a change has been made to the active profile.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Discrete |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Discrete  Encoding) | 0x0 | NULL |
| 0x1 | PROFILE\_UPDATED |
| 0x2 | DATA\_LOST |
| **Unit** | |  |

FeatureNumber

Signal that carries the hexadecimal values assigned to each setting that is stored in the profile.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Continuous |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Continuous Encoding) | Min Value | 0x0000 |
| Max Value | 0xFFFF |
| Resolution | 0x1 |
| Offset | None |
| **Unit** | |  |

FeatureValue

Carries the setting configuration for a Feature Number. Feature Numbers and Feature Values are always paired together.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Continuous |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Continuous Encoding) | Min Value | 0x0000 |
| Max Value | 0xFFFF |
| Resolution | 0x1 |
| Offset | None |
| **Unit** | |  |

OperationCode

Determines which operation the Profile Setting Server is requested to execute. Depending on the operation code, the following signals could contain more or less data.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Discrete |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Discrete  Encoding) | 0x0 | NULL |
| 0x1 | QUERY |
| 0x2 | SET |
| 0x3 | COPY |
| 0x4 | NotUsed\_1 |
| 0x5 | NotUsed\_2 |
| 0x6 | NotUsed\_3 |
| 0x7 | NotUsed\_4 |
| **Unit** | |  |

PersIndex

Determines the profile number that the Profile Setting Server needs to execute an operation on.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Discrete |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Discrete  Encoding) | 0x00 | Pers1 |
| 0x01 | Pers2 |
| 0x02 | Pers3 |
| 0x03 | Pers4 |
| 0x04 | Vehicle |
| 0x05 – 0xFF | Reserved |
| **Unit** | |  |

TransactionID

Unique ID for each request that is valued 1-7. Response echo's back the same transaction ID to ensure a valid request/response transaction.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Continuous |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Continuous Encoding) | Min Value | 0 (0x0) |
| Max Value | 7 (0xF) |
| Resolution | 1 (0x1) |
| Offset | None |
| **Unit** | |  |

SettingCount

Number of profile settings remaining to be sent to the Profile Management Server.

|  |  |  |
| --- | --- | --- |
| **ASIL** | | QM |
| **Encoding Type Name** | | Continuous |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed | | |
| **Value**  (Continuous Encoding) | Min Value | 0 (0x0) |
| Max Value | 31 (0x1F) |
| Resolution | 1 (0x1) |
| Offset | None |
| **Unit** | |  |

### Logical Parameters

**#Macro:** [Add Ins -> Add Requirement macro](http://wiki.ford.com/display/RequirementsEngineering/Adding+a+Logical+Signal+or+Parameter) (select “Logical Parameter” as type)

###LPR\_PPP Profile Setting Server\_00001### SettingCountTotal Parameter

Defines the total amount of profile settings that a Profile Setting Server has stored for one profile.

|  |  |  |
| --- | --- | --- |
| **Encoding Type Name** | |  |
| Note: An encoding is either discrete or continuous. Delete fields below which are not needed, | | |
| **Value**  (Continuous Encoding) | Min Value | 0 (0x0) |
| Max Value | 31 (0x1F) |
| Resolution | 1 |
| Offset | 0 |
| **Unit** | |  |

### Encoding Types

**#Macro:** [Add Ins -> Add Requirement macro](http://wiki.ford.com/display/RequirementsEngineering/Adding+an+Encoding+Type) (select “Encoding Type” as type)

## Glossary

**#Hint**: Terms, concepts and abbreviations used in the document shall be defined and illustrated here. Note that changes to terms and/or concepts described in this section tend to cause major updates to this document.

The tables below have feature specific definitions and abbreviations. For additional, non-feature specific terms please refer to the [RE Glossary](http://wiki.ford.com/display/RequirementsEngineering/Glossary?src=contextnavpagetreemode)

### Definitions

**#Hint:** The table below has definitions and abbreviations relevant for the functions in this document. For additional terms please refer to the [RE Glossary](http://wiki.ford.com/display/RequirementsEngineering/Glossary?src=contextnavpagetreemode)

| **Definition** | **Description** |
| --- | --- |
| Feature Number | A hexadecimal value assigned to a profile setting. This was established by the Feature Based Message Protocol (FBMP) and is used by PPP to create a common understanding of what the profile settings are between vehicles. |
| Feature Value | Determine the status of the active setting. For example, Easy Entry/Exit can be configured ON or OFF or a profile, the feature value can be either ON 0x01 or OFF 0x00. |
| HMI Client | The technology used to display a profile setting's current status to the user. Example, radio stations are displayed to the customer using the SYNC screen as an HMI client, but the stations are stored in the Audio Head Unit. |
| Pers Index | The index number provided to a profile in the vehicle. This helps determine which profile is activated throughout the vehicle. |
| PPP | Personal and Portable Profiles |
| Profile Setting Servers | The Profile Setting Server logical block is a generic term for any vehicle module that owns the execution and storage of profile settings. |
| Profile Settings | All user configurable settings in the vehicle that can be added to the user's profile. Examples include radio stations, ADAS settings, Ambient Light, etc. |

Table 10: Definitions used in this document

### Abbreviations

No acronyms specified.

Document ends here.