SEC Modification Proposal, SECMP0099

DCC Change Request 1297

Incorporation of Multiple Issue Resolution Proposals (IRPs) into the SEC – Batch 4

Full Impact Assessment (FIA)

|  |  |
| --- | --- |
| Version: | 0.3 |
| Date: | 9th December, 2020 |
| Author: | DCC |
| Classification: | DCC Public |

Contents

[1 Executive Summary 3](#_Toc58405117)

[2 Revision History 3](#_Toc58405118)

[2.1 Associated Documents 4](#_Toc58405119)

[2.2 Document Information 4](#_Toc58405120)

[3 Solution Requirements and Overview 5](#_Toc58405121)

[3.1 Context 5](#_Toc58405122)

[3.2 Issue 5](#_Toc58405123)

[3.3 Business Requirements 5](#_Toc58405124)

[**3.3.1** Req. 1: IRP571 ‘Historic Data when Device does not know the time’ 6](#_Toc58405125)

[**3.3.2** Req. 2: IRP586 ‘Modify use cases so ESME, GSME, and GPF behave in the same way’ 6](#_Toc58405126)

[3.4 Business Benefits 6](#_Toc58405127)

[4 Solution Overview 7](#_Toc58405128)

[4.1 DSP Solution 7](#_Toc58405129)

[4.2 CSP North Solution 7](#_Toc58405130)

[4.3 CSP South and Central 8](#_Toc58405131)

[5 Testing Considerations 9](#_Toc58405132)

[5.1 DSP Testing 9](#_Toc58405133)

[5.2 CSP North Testing 9](#_Toc58405134)

[5.3 System Integrator Effort 9](#_Toc58405135)

[5.4 CSP South and Central Testing 9](#_Toc58405136)

[5.5 Pre-Integration Testing 10](#_Toc58405137)

[5.6 System Integration Testing and User Integration Testing 10](#_Toc58405138)

[6 Implementation Timescales and Releases 12](#_Toc58405139)

[6.1 Change Lead Times and Timelines 12](#_Toc58405140)

[6.2 Costs and Charges 12](#_Toc58405141)

[6.3 Application Support 13](#_Toc58405142)

[6.4 Impact on Contracts and Schedules 13](#_Toc58405143)

[Appendix A: Risks, Assumptions, Issues, and Dependencies 14](#_Toc58405144)

[Risks 14](#_Toc58405145)

[Assumptions 14](#_Toc58405146)

[Issues 15](#_Toc58405147)

[Dependencies 15](#_Toc58405148)

[Appendix B: Glossary 16](#_Toc58405149)

# Executive Summary

The Change Board are asked to approve the following:

* Total cost to implement SECMP0099 of £307,683 (see section 6.2 for a breakdown) as a standalone release
* The timescales to complete the implementation of eight (8) months
* Include SECMP0099 as part of the November 2021 SEC Systems Release

**Benefit Summary**

IRPs 571 and 586 add clarity and corrections to the Technical Specifications documents. Device manufacturers are required to follow these documents for the specifications of their Devices.

The solution for IRP571 will ensure the proposed drafting for the GPF and ESME should not share historic data from this store with other HAN Devices where:

* The Device has no meaningful time
* There has been at least one change of tenancy recorded on the Device since installation

The solution for IRP586, using drafting in GBCS will make it explicit that:

* The GPF will align to GBCS requirements and an ESME for Remote Party Commands and when providing snapshots to HAN devices
* GSMEs will align to Zigbee standards and are different from GPF and ESMEs

It should be noted that these issues have already been addressed by defect fixes in CSP North devices, and as part of this Modification, CSP North will make no cost changes to their documentation.

# Revision History

| Revision Date | Revision | Summary of Changes |
| --- | --- | --- |
| 15/07/2020 | 0.1 | Initial compilation from Service Provider |
| 20/11/2020 | 0.2 | Challenge by DCC, Service Providers publish new version. |
| 9/12/2020 | 0.3 | DCC internal review completed |

## Associated Documents

This document is associated with the following documents:

|  |  |  |  |
| --- | --- | --- | --- |
| # | Title and Originator's Reference | Source | Issue Date |
| 1 | MP099 Business-Requirements | SECAS | 19/02/2020 |
| 2 | DP099 Problem-Statement | SECAS | 12/12/2019 |
| 3 | SECMP0099 CR1297 – PIA – IRPs into SEC Part 4 v0.5 | DCC | 16/04/2020 |

## Document Information

The Proposer for this Modification is Chun Chen of SmartDCC. The original proposal was submitted on the 12th December 2019.

The Preliminary Impact Assessment (PIA) was requested of DCC on 4th February 2020, and submitted on 16th April, 2020.

The Full Impact Assessment was requested on the 11th May 2020. Initial responses from the Service Providers were challenged on the basis of costs and content and resulted in the further releases of the FIA responses by both CSP North as well as CSP South and Central.

This document should be treated as a Confidential document and must be treated as a RED basis for SECAS distribution.

# Solution Requirements and Overview

In this section, the context of the Modification, assumptions, and the requirements are stated.

The SEC Definitions, issue statement, and requirements following have been provided by SECAS, TSIRS and the Proposer.

## Context

Issue Resolution Proposals (IRPs) identify issues within the SEC Technical Specification documents and put forward a solution to the identified problem. In the early stages of the Smart Metering Implementation Program, BEIS took the lead in developing the Technical Specifications that sit under the SEC. As part of this, BEIS also took responsibility for receiving and responding to issues raised internally, by the DCC, and by other interested industry parties. Since its inception, several hundred issues have been raised in relation to technical specifications under the SEC through the Technical Specification Issue Resolution Sub-Group (TSIRS). In some cases, these queries have been resolved by providing an explanation of the specifications, whilst others have resulted in proposed amendments to the specifications in the form of IRPs.

BEIS has previously implemented the required IRPs via BEIS-led designations; however, this process has now been handed over to SECAS for changes to be implemented through the Modifications Process. To improve efficiency, it was agreed these changes should be progressed under a single proposal at regular intervals. This will be the fourth batch of these changes.

## Issue

In general, IRPs add clarity and corrections to the Technical Specification documents. Device manufacturers are required to follow these documents for the specifications of their Devices. Therefore, any errors or miscommunication of these specifications will mean the Device will not work as intended. TSIRS have agreed that these are issues and have agreed upon the solutions. Not implementing these solutions would mean that these problems would not be resolved.

## Business Requirements

This section contains the considerations and assumptions for each business requirement. Excerpts from each of the IRPs and it is expected that the DCC will develop solution(s) to the consequential changes these IRPs will have on the DCC Systems. The document text changes are contained within each of the IRPs.

The following table contains supporting information about each IRP as well as the IRP title.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Requirement | Impacted Users | Impacted Devices | Complexity |
| 1 | IRP571, ‘Historic Data when Device does not know the time’ | Gas Supplier, Electricity Suppliers | GSME, ESME | Low |
| 2 | IRP586, ‘Modify use cases so ESME, GSME, and GPF behave in the same way | Gas Supplier | GPF | Medium |

Table 1: Business Requirements for SECMP0099, CR1297

* + 1. Req. 1: IRP571 ‘Historic Data when Device does not know the time’

To avoid the risk of sharing historic data with other Home Area Network (HAN) Devices that may relate to a prior tenant, the proposed drafting is that the Gas Proxy Function (GPF) and Electricity Smart Metering Equipment (ESME) should not share historic data from this store with other HAN Devices where:

* The Device has no meaningful time
* There has been at least one change of tenancy recorded on the Device since installation

Further details on IRP571 are included in the attached file: .

Note this file is as provided by BEIS and has not been edited or updated in any way.

* + 1. Req. 2: IRP586 ‘Modify use cases so ESME, GSME, and GPF behave in the same way’

SEC Schedule 8 ‘GB Companion Specifications’ (GBCS) explicitly requires that, when reading logs, the log entries returned are inclusive of any with a timestamp equal to the ‘toDateTime’ in the Command.

ZigBee is, in a number of cases, explicit on inclusivity, open to interpretation as to such inclusivity or exclusivity and, in one case, at odds with it.

Further details on IRP586 are included in the attached file: 

This file is as provided by BEIS and has not been edited or updated in any way.

Note: there are two versions of this IRP. CSP North’s response is the same although the system behaviour will be slightly different.

## Business Benefits

The solution for IRP571 will ensure the proposed drafting for the GPF and ESME should not share historic data from this store with other HAN Devices where:

* The Device has no meaningful time
* There has been at least one change of tenancy recorded on the Device since installation

In IRP586, the drafting in GBCS will make it explicit that

* The GPF will align to GBCS requirements and an ESME for Remote Party Commands and when providing snapshots to HAN devices
* GSMEs will align to Zigbee standards and are different from GPF and ESMEs

# Solution Overview

IRPs 571 and 586 add clarity and corrections to the Technical Specifications documents. Device manufacturers are required to follow these documents for the specifications of their Devices.

## DSP Solution

To support the GBCS changes introduced by IRP571 and IRP586, no changes to the DSP technical solution are required.

Integration testing as defined following will require work from the System Integrator and is detailed in section 5 below.

## CSP North Solution

For IRP571, The current behaviour of the Communications Hub is that when a Change of Tenancy (CoT) restriction is set which covers historical data the GPF maintains (i.e. the last 13 months) the data is not shared when the Communications Hub does not have meaningful time (set by the SM WAN at least once post boot). This was changed in the Maintenance Release 2.1 (Single Band Communications Hub firmware 2.03.x/Dual Band Comms Hub firmware 2.13.x releases) while fixing defect IP-8600. An EDMI technical requirement and test case shall be added to ensure Communications Hub firmware continues to align to this requirement. The internal EDMI requirement shall become ‘a shall’ rather than ‘should’ as required by GBCS.

For IRP586, the change seeks to clarify if the ‘Latest End Time’ when specified to read log entries over a time range is inclusive or not. DLMS defines it as inclusive and ZigBee mostly defines this as exclusive. This has the effect of making it impossible to read items in a log with a timestamp of 0xFFFFFFFF (unreliable time) from ZigBee end devices (including the GPF). The EDMI Communications Hub is currently aligned to this IRP (see table below).

|  |  |  |
| --- | --- | --- |
| **GBCS Use Case** | **Comms Hub behaviour in 2.03.x/2.13.x firmware Inclusive of ‘Latest End Time’** | **Notes** |
| GCS15b Read GSME Billing Data Log (change of mode/tariff triggered) | Yes (ZigBee) | Already aligned to expected IRP586 by fixing defect (CIP186/SMJTT-1726/ IP-6278) |
| GCS15c Read GSME Billing Data Log (billing calendar triggered) | Yes (ZigBee) | Already aligned to expected IRP586 by fixing defect (CIP186/SMJTT-1726/ IP-6278) |
| GCS16a Read GSME Daily Read log(s) | Yes (ZigBee) | Already aligned to expected IRP586 by fixing defect (CIP186/SMJTT-1726/ IP-6278) |
| GCS16b Read GSME Daily Read log(s) (prepayment) | Yes (ZigBee) Already aligned to expected IRP586 by fixing defect (CIP186/SMJTT-1726/ IP-6278) |  |
| CS10a Read Zigbee Device Event Log | Yes (ZigBee) | Changed functionality while fixing CIP926 |
| CS10b Read Zigbee Device Security Log | Yes (ZigBee) | Changed functionality while fixing CIP926 |

## CSP South and Central

To deliver this Modification, CSP South and Central's suppliers will uplift the Communications Hub software to address the business requirements listed above as follows.

* Implement event logs changes to allow remote parties to retrieve the event logs which include timestamp value 0xFFFFFFFF
* Ensure the CH can add new events to logs irrespective of the status of the time synchronisation.

In their first FIA response, CSP South and Central provided estimates and a plan to provide these changes as a standalone release. However after discussion with the DCC, CSP South and Central revised their implementation method to use a standard Firmware Management Policy (FMP) release, leading to significantly reduced regression testing and project support costs. The FMP is more appropriate in cases where there is a relatively small functional change to Comms Hub firmware, taking advantage of existing programmes who provide services such as testing and CPA, rather than up separate projects or programmes to accommodate small changes.

The Communications Hub Detailed Specification (CH02) will be updated to match the changes.

# Testing Considerations

This Full Impact Assessment includes the cost to develop, fully test and deliver this SEC Modification.

## DSP Testing

From a DSP SIT perspective, this impacts SMETS2 only and involves the following:

1. SMETS 2 devices to be used for testing and the GBCS and SMETS2 versions to be tested against will be defined by the CSPs at the time of execution of this testing.

2. Creation of two new test scenarios and test scripts.

a. One new scenario and test script to execute the GSME use cases and associated SRVs to verify that the response contains entries between “FromDateTime” to “Todate Time”

b. One new scenario and script to execute the ESME and GPF use cases and associated SRVs to verify that the response contains entries between “FromDateTime” to “Todate Time” inclusive.

3. Execution of the scenarios for each defined device set;

It is assumed that regression testing will be covered by the wider release within which this change is implemented.

The change is assumed to require triage support.

## CSP North Testing

CSP North will ensure their technical requirements and test case continue alignment to IRP571 and IRP586.

At the point of writing this Impact Assessment, the changes required for IRP571 and IRP586 have already been delivered in existing Maintenance Release 2.1 Single Band Communications Hub 2.03.x firmware and Maintenance Release 2.1 Dual Band Communications Hub 2.13.x firmware. Consequently, there is no requirement for CSP North to conduct any testing.

## System Integrator Effort

There will be a requirement for SI Release Management to coordinate deployment of the CSP functionality to B-Stream environments (SIT-B and UIT-B), A-Stream environments (SIT-A and UIT-A) and finally into Production.

## CSP South and Central Testing

CSP South and Central will uplift the SLS Device Emulator test stub capability to align Meter and PPMID behaviour with IRP571 and 586, allowing the assurance of the Communication Hub software uplift.

CSP South and Central will add new test scripts as part of the set of test scripting tools used for regression testing in order to automate some of the testing involved for this Modification. The delivery plan for CSP South and Central is shown following.

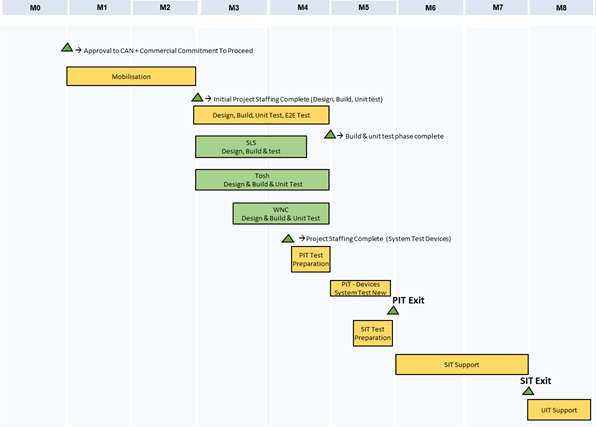


Figure 1: CSP South and Central Plan

Updates to the SLS Emulator and CSP South and Central ACB Emulator will be included as part of the Release CR, and those costs and efforts will be part of that CR.

## Pre-Integration Testing

Pre-Integration Testing (PIT) will be required to align DSP functionality and the functionality described above. The development team will carry out unit testing and the build will be subject to continuous build and automated testing to identify build issues at the earliest opportunity. The implementation team will carry out system testing consisting of positive and negative path testing.

In this stage CSP South and Central will design, build and system test modifications to test tooling required to assure the CSP solution in the PIT environment. By using the FMP approach, no additional PIT CH, test hardware or software needs to be procured.

## System Integration Testing and User Integration Testing

The SIT phase of testing will be aligned with other Modifications and Change Requests in a SEC Release, which is currently set as the November 2021 release.

This Modification impacts both SMETS1 and SMETS2. However the new functionality does not need to be tested against each Device Meter Combination (DMC) or repeated for each CSP.

SMETS1 testing will include:

* Any DMCs from CGI IE and Secure and FOC to be used as Device Sets
* Brand new device sets not migrated as yet
* Two dual fuel Active Sets and One Single Fuel Active Device Set for FO

For SMETS2 testing, the test execution is to be spread across the different CHF types and will require at least four new dual device sets which are Not Installed and Not Commissioned.

The scope of this testing will be detailed in a heatmap and Solution Test Plan associated to the release that this will be delivered against, as SIT completes Solution Test Plans for a SEC Release, and not for individual CRs. This will be included as part of the November 2021 SEC Release.

Following each of the SMETS1 and SMETS2 tests, the ESI reports listed at the end of Section 4 will be executed, to check that the DCC Service Status is reflected correctly in these reports for the Device Sets under test.

There is no requirement to test this Modification in the UIT environments.

CSP South and Central testing requirements specify a 2-week window for Device Set Up which gives reasonable contingency for onsite working restrictions which may be in place at the time of set up due to Covid-19.

The CSP South and Central testing requires 5 SIT test sets and will be executed over 4 weeks - this is based on an average calculation based against previous test activity. DCC have challenged the level of testing proposed for a relatively simple change.

# Implementation Timescales and Releases

This Modification was expected to be included in a SEC release in November 2021. Implementation timescales will be finalised as part of the relevant SEC Release Change Request.

## Change Lead Times and Timelines

From the date of approval (in accordance with Section D9 of the SEC), to implement the changes proposed DCC requires a lead time of approximately **8 months**.

The broad breakdown of the testing regime is shown in the following table in months after an approval decision date (D).

| **Phase** | **Duration** |
| --- | --- |
| SECAS agreement on scope of release |
| CAN signature, CSP South and Central Mobilisation starts | D + 1 Month |
| Design, Build and PIT Phase | D + 5 Months |
| SIT and UIT Phases Complete | D +8 Months |
| Transition to Operations and Go Live | D + 8 Months |

## Costs and Charges

This section indicates the quote per application phase for this Modification.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| £ | | Design | Build | PIT | SIT | UIT | TTO | SP Total | |
| Phase Total | | 14011 | 85197 | 89238 | 89238 |  |  | **307,683** | |
| Design | | The production of detailed System and Service designs to deliver all new requirements. | | | | | |
| Build | | The development of the designed Systems and Services to create a solution (e.g. code, systems, or products) that can be tested and implemented. | | | | | |
| Pre-Integration Testing (PIT) | | Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC. | | | | | |
| Systems Integration Testing (SIT) | | All the Service Provider's PIT-complete solutions are brought together and tested as an integrated solution, ensuring all SP solutions align and operate as an end-to-end solution. | | | | | |
| User Integration Testing (UIT) | | Users are provided with an opportunity to run a range of pre-specified tests in relation to the relevant change. | | | | | |
| Implementation to Live (TTO) | | The solution is implemented into production environments and made ready for use by Users as part of a live service. | | | | | |

It should be noted that no savings would be generated by grouping these into a Release. The nature of the Firmware Management Policy has already resulted in savings to the charges above.

## Application Support

It is assumed that this change will not result in a material increase in support required however an allowance has been included in the System Integrator charges to allow knowledge transfer to the DSP Application Support team to ensure any issues can be supported.

## Impact on Contracts and Schedules

At a minimum, the following schedules will be updated as a result of the changes introduced by this Modification:

* Schedule 6.1 - to reflect delivery milestones
* Schedule 7.1 - to reflect payment milestones under this Modification
* Schedule 11 - to reflect an uplift to the CH specifications
* Schedule 12 - to reflect the uplifted technical specification versions

# Appendix A: Risks, Assumptions, Issues, and Dependencies

The tables below provide a summary of the Risks, Assumptions, Issues, and Dependencies (RAID) observed during the production of the Full Impact Assessment. DCC requests that the Working Group considers this section and considers any material matters that have been identified. Changes may impact the proposed solution, implementation costs and/or implementation timescales.

## Risks

|  |  |  |
| --- | --- | --- |
| Ref | Description | Status/Mitigation |
| CSC-R3 | Risk that this Change Request is seen to be poor value for money given the expectation that all Test Comms Hub variants have been included in scope. The Test Comms Hub variants in operation today have significant overlapping scope and use cases. CSP South and Central recommend considering reducing the scope and complexity of this Modification by simplifying the Test Comms Hub product line. | Open, there are no plans to reduce Comms Hub product line |
| CSC-R8 | As additional CRs are included in FMP scheduled releases, there may be a priority call on which defects can be fixed within the available slots in FMP. There is a risk that defect fixes may be delayed to accommodate CRs to be in scope for FMP release candidates. Prioritising and scheduling of CR and defects within the FMP will be agreed within the Firmware Management Forum. | Open, but management will also involve DCC In Life Change Delivery team |

## Assumptions

These assumptions have been used in the creation of this Full Impact Assessment. Any changes to the assumptions may require DCC to undertake further assessment, prior to the contracting and implementation of this change.

|  |  |  |
| --- | --- | --- |
| Ref | Description | Status/Mitigation |
| CSC-A3 | Assume that when the associated GBCS/SMETS/CHTS specifications to support the changes for this Modification are defined, there will be no material changes from the documentation beyond those specified in this document. | Accepted, but noted that there are no changes in SMETS or CHTS, and that CSP South and Central will update CH02 |
| CSC-A7 | Assume that DCC-L have an agreed Change Request to implement CH firmware version to align to GBCS version 3.x prior to the approval of this Impact Assessment | Rejected, there is no requirement for this assumption. |
| CSC-A8 | Assume that a single Impact Assessment will be created to support this Modification and all other changes for the proposed June 2022 release. | Accepted |
| CSC-A9 | Assume that as per the current discussions in GBCS Working Group, the GPF should execute all commands upon receipt and ignore information relating to execution at a future date | Accepted |
| CSC-A10 | Assume that there are no more than four firmware maintenance releases per annum. | Accepted |
| CSC-A11 | Assumes the following:  • No additional PIT CH or other test hardware/software needs to be procured to support this testing;  • Test Approach is broadly in line with previous and current 'Production Support Testing PST' approach in SIT  • This testing only on the SIT A environment  • Requires 5 SIT test sets and will be executed over 4 weeks - this is based on an average calculation based against previous PST activity  • Requires 2-week window for Device Set Up which gives reasonable contingency for onsite working restrictions which may be in place at the time of set up due to Covid-19  • Meters for SIT are provided by DCC to support this testing  • No downtimes or maintenance activities takes place during this period in SIT A environment. Any planned outages are agreed with SI/DCC | Accepted, although DCC challenges the requirement for this duration and quantity of SIT testing as well as 2 weeks to set up a test lab |
| CSC-A12 | Assumes that the functional changes to CH firmware can be delivered with the application layer and do not require stack developments from the ZigBee chip provider, or the WAN modem providers.  Should a new stack be needed, besides additional development time, experience has shown a lengthy CPA accreditation is also needed. | Accepted |

## Issues

None at this time.

## Dependencies

|  |  |  |  |
| --- | --- | --- | --- |
| Ref. | Dependency | Implication if dependency not met | Status |
| CSC-D1 | Dependency on DCC to provide and confirm the GBCS/SMETS/CHTS specifications to support the changes in this Modification | Work cannot start and a further FIA may be required | Accepted but noted that there are no changes in SMETS or CHTS, and that CSP South and Central will update CH02 |
| CSC-D2 | Dependency on updating the Parse and Correlate application |  | Rejected; no changes in Parse and Correlate are required. |

# Appendix B: Glossary

The table below provides definitions of the terms used in this document.

|  |  |
| --- | --- |
| **Acronym** | **Definition** |
| ACB | Access Control Broker |
| BEIS | Department for Business, Energy & Industrial Strategy |
| CH, Comms Hub | Communications Hub |
| CoT | Change of Tenancy |
| CHF | Communications Hub Function |
| CPA | Commercial Product Assurance |
| CR | (DCC) Change Request |
| CSP | Communication Service Provider |
| DCC | Data Communications Company |
| DSP | Data Service Provider |
| DUIS | DCC User Interface Specification |
| ESI | Enterprise Systems Interface |
| ESME | Electricity Smart Metering Equipment |
| FIA | Full Impact Assessment |
| FMP | Firmware Management Policy |
| FOC | Final Operating Capability |
| GBCS | Great Britain Companion Specification |
| GFI | GBCS Integration Testing For Industry |
| GPF | Gas Proxy Function |
| GSME | Gas Smart Metering Equipment |
| HAN | Home Area Network |
| IRP | Issue Resolution Proposal |
| PIA | Preliminary Impact Assessment |
| PIT | Pre-Integration Testing |
| SEC | Smart Energy Code |
| SECAS | Smart Energy Code Administrator and Secretariat |
| SIT | Systems Integration Testing |
| SMETS | Smart Metering Equipment Technical Specification |
| SM WAN | Wide Area Network |
| SP | Service Provider |
| SRV | Service Request Variant |
| TSIRS | Technical Specification Issue Resolution Sub-Group |
| TTO | Transition to Operations |
| UIT | User Integration Testing |