Data Communications Company

SEC Modification Proposal, SECMP0117

Bulk Communications Hub (CH) Returns

Full Impact Assessment (FIA), DCC CR1368

Version:	**0.4**
Date:	**12th March, 2021**
Author:	**DCC**
Classification:	**Public**

Data Communications Company

Contents

1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to implement SECMP0117 is £412,286 (see the Code Red Annex for a breakdown).
- The timescale to complete the implementation of nine (9) months
- Include SECMP0117 as part of the June 2022 SEC Systems Release

Problem Statement

Smart Energy Code (SEC) Section F5 allows any SEC Party to place orders for Communications Hubs (CHs) from the DCC. Specified SEC Parties can notify the DCC under SEC Section F8.7 in the event of needing to return the CH. This is done by submitting DCC User Interface Specification (DUIS) Service Requests, either 8.14.3 or 8.14.4.

Currently, these Service Requests allow DCC Users to input one Device ID per request. This means that DCC Users must send an individual Service Request to notify the DCC of each CH return. This takes a significant amount of time and effort when multiple CHs require return.

DCC data shows that since the beginning of SMIP Programme, over 66,000 Comms Hubs, did not submit a DUIS SRV 8.14.3 or 8.14.4 within five days of removal making the Service Users non-compliant. This includes 15,000 decommissioned Comms Hubs for which the above SRVs were not sent at all.

DCC Users have stated that this is not a sustainable approach in dealing with returns and have requested a mechanism that allows for bulk CH returns.

This Modification solution proposes the DCC shall provide DCC Users the ability to return Comms Hubs in bulk using a single Service Request.

Benefit Summary

The benefits of delivering this change is reduction in number of requests for large quantity of CH returns. This would result in:

- Less time and effort in CH returns notification means logistical benefits and efficiencies for Supplier parties.
- Improved DCC services to DCC Users by reducing the network traffic and making efficient use of the existing capacity.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
02/03/2021	0.1	Initial compilation from Service Provider
09/03/2021	0.2	Update following internal DCC review
09/03/2021	0.3	Update following internal DCC review
11/03/2021	0.4	Update following internal DCC review

2.2 Associated Documents

This document is associated with the following documents:

#	Title and Originator's Reference	Source	Issue Date
1	MP117-Modification-Report-v0.6	SECAS	18/11/2020
2	MP117 Business Requirements	SECAS	17/08/2020
3	SECMP0117 CR1368 - PIA - Bulk CH Returns v0.2	DCC	16/07/2020

2.3 Document Information

The Proposer for this Modification is Sasha Townsend of Data Communications Company (DCC). Here are the timelines of this Modification.

February 2020	Proposal submitted
June 2020	Preliminary Impact Assessment (PIA) requested of DCC
July 2020	PIA submitted by DCC (DCC Change Request 1368)
November 2020	Full Impact Assessment (FIA) requested of DCC
March 2021	FIA submitted by DCC (DCC Change Request 1368)

Table 1:SECMP0117 Timeline

3 Solution Requirements and Overview

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

3.1 Current Arrangements

Smart Energy Code (SEC) Section F5 “Communication Hub (CH) Forecasts & Orders” allows any SEC Party to place orders for Communications Hubs (CHs) from the DCC. Specified SEC Parties can notify the DCC under SEC Section F8.7 in the event of needing to return the CH.

SEC Appendix I ‘Communications Hub Installation and Maintenance Support Materials’ (CHIMSM) currently sets out the procedures for notifying the DCC of a CH return. It requires DCC Users to submit one of two Service Requests (SR) depending on the reason for return:

- SRV 8.14.3 ‘Communications Hub Status Update – Fault Return’; or
- SRV 8.14.4 ‘Communications Hub Status Update – No Fault Return’.

On submission of a SRV 8.14.3 or a SRV 8.14.4, a Returns Remedy Record is automatically generated, which starts a CH returns process (approx. 90 days) from the DCC User back to the DCC.

3.2 Business Requirements for this Modification

This section contains the considerations and assumptions for each business requirement as provided by the Proposer and SECAS.

Req.	Requirement
1	The DCC will provide DCC Users the means to provide multiple Device IDs in SRV 8.14.3 so that multiple Communications Hubs (CH) can be returned to DCC with one SRV rather than the current process of sending one SRV for one CHs fault return.
2	The DCC will provide DCC Users the means to provide multiple Device IDs in SRV 8.14.4 so that multiple CHs can be returned to DCC with one SRV rather than the current process of sending one SRV for one CHs no fault return.

Table 2: Business Requirements for SECMP0117, CR1368

3.2.1 Requirement 1 Solution Constraints

This requirement obligates the DCC to provide a solution which can increase the number of Device IDs for a single Service Request:

- SRV 8.14.3 ‘Communications Hub Status Update – Fault Return’

Currently this Service Requests only allow DCC Users to input one Device ID per request. This requirement will increase the number of Device IDs per request so that multiple Fault found Communications Hubs can be notified to the DCC for a return. These groups of Device IDs per Service Request should then be fit for purpose to deal with the bulk return of Communications Hubs. Any process that allows for the User to submit these multiple Device IDs must require less time and effort than the existing process of issuing individual Device ID per Service Request.

3.2.2 Requirement 2 Solution Constraints

This requirement obligates the DCC to provide a solution which can increase the number of Device IDs for a single Service Request:

- SRV 8.14.4 'Communications Hub Status Update – No Fault Return'

Currently this Service Request only allows DCC Users to input one Device ID per request. This requirement will increase the number of Device IDs per request so that multiple No Fault Return Communications Hubs can be notified to the DCC for a return. These groups of Device IDs in each Service Request should then be fit for purpose to deal with the bulk return of Communications Hubs. Any process that allows for the User to submit these multiple Device IDs must require less time and effort than the existing process of issuing individual Device ID per Service Request.

3.3 Business Case

The Modification looks to address the following issue:

Currently, to notify the return of Comms Hubs, Service Request 8.14.3 or 8.14.4 allows DCC Users to input only one Device ID per request. This takes a significant amount of time and effort when multiple CHs require return.

DCC data shows that since the beginning of CH installation, for more than 66,000 Comms Hubs, SRV 8.14.3 or 8.14.4 is not sent within five days of Comms Hub removal including 15,000 decommissioned Comms Hubs for which the above SRs were not sent.

DCC Users have stated that this is not a sustainable approach in dealing with returns and have requested a mechanism that allows for bulk CH returns.

This impacts the SEC Parties as follows:

Suppliers	Suppliers would need to uplift to a new DUIS version in order to benefit from the proposed solution and make internal changes to accommodate this.

In summary, this Modification would improve the efficiency in CH return notification process and usage of DCC services existing capacity.

4 Solution Overview

This Modification only impacts the DSP component of the DCC Total System for SMETS2.

4.1 DSP Solution Overview

In order to support bulk Comms Hub returns, DCC Data Systems will modify the definition of SRV8.14.3 and SRV8.14.4 such that it can accept a list of multiple CH Returns records. This list of CH Returns records will be introduced as an optional attribute in the DUIS Schema (*DeviceIDList* xml element in Figure 1). This will ensure that the existing mechanism to notify individual CH Return records can remain operational with no changes to the Service Users' systems.

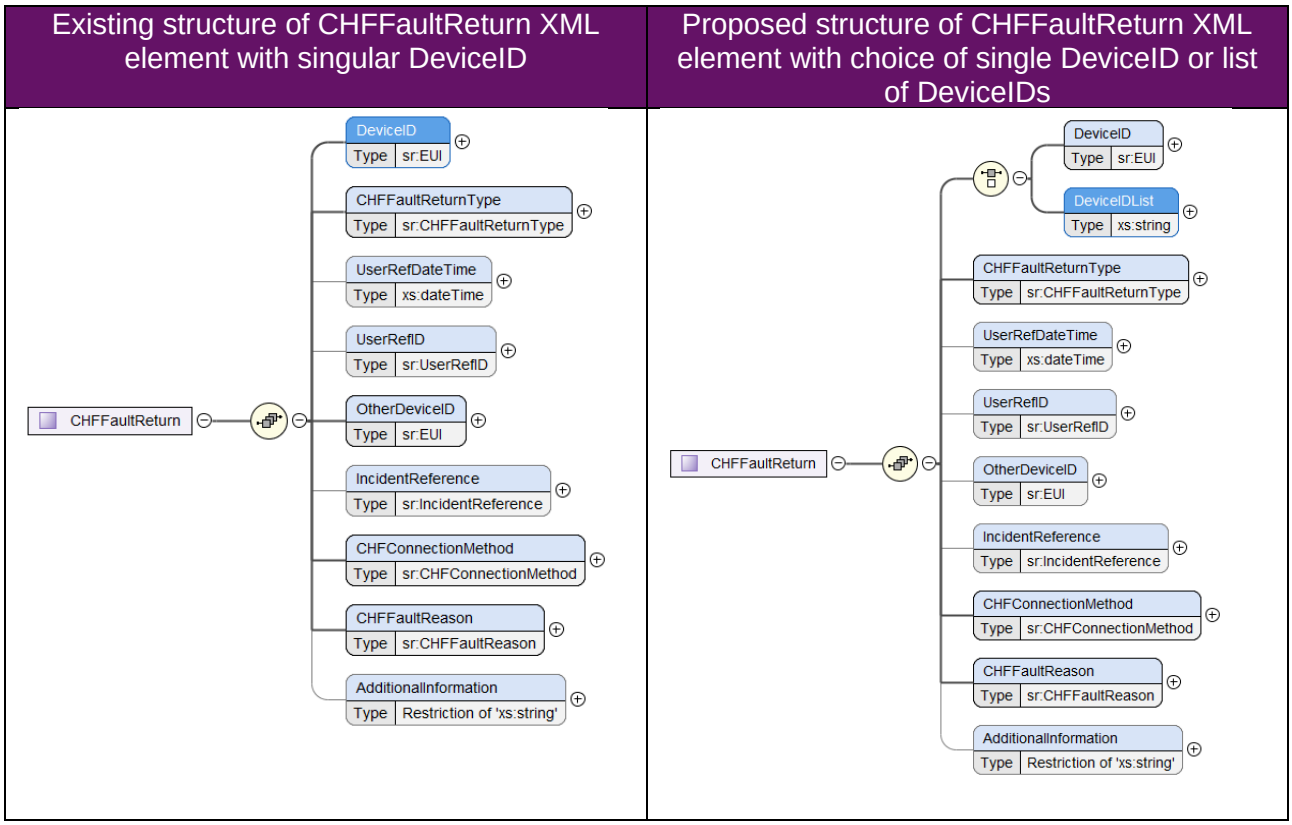

Figure 1: Changes in DUIS SRV 8.14.3

Figure 1 shows the proposed changes for SRV8.14.3. If associated information for each Device IDs in list of Device IDs are different, multiple SRVs can be submitted.

Similar changes will apply for SRV8.14.4.

The maximum number of Device IDs supported within a single Service Request will be limited to 999.

After a SRV8.14.3 or SRV8.14.4 has been received by DCC Data Systems, the same validation checks for a single CH Return currently in force for these SRVs will be carried out for each CH Returns record included.

The synchronous response provided to the Service Users will contain the lists of CH Returns records consolidated under the existing Response Codes (Figure 2).

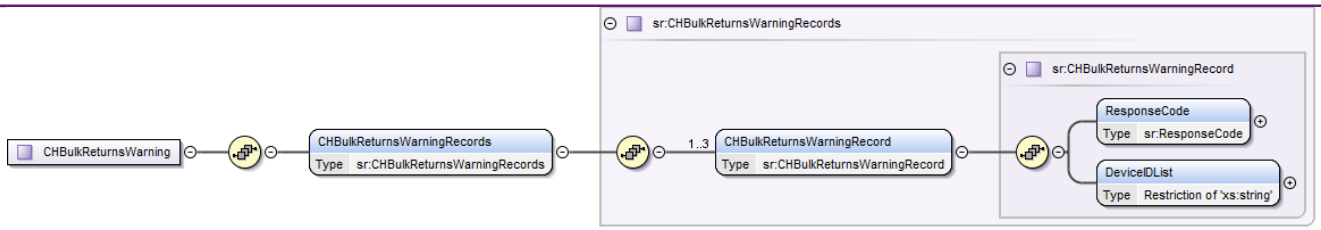

Figure 2: Response structure for SRV 8.14.3 and 8.14.4 for list of Device IDs

DSP will also create individual Service Audit Trail (SAT) log entries for each CH Returns record with the specific error code that indicates the status of validation checks within DCC Data Systems. For each successfully validated CH Returns record, the Comms Hub Logistics Status in the Smart Meter Inventory (SMI) will be set to “Returned”.

DCC Data Systems will also create individual Service Returns Records within DSMS (Remedy) for each Comms Hub (CH Returns record) in the list. This approach ensures that no changes are required to DSMS and all the changes are handled within DCC Data Systems. This will also make sure that there are no changes required within DSMS for the subsequent notifications that are required to be sent to the appropriate CSPs.

The Service Users will be able to track the progress of the returns for individual Comms Hubs using the existing SSI interface. There will not be a mechanism that provides a consolidated status of CH Returns records that were part of a Service Request submitted to the DCC Data Systems.

The definition of SRV8.14.3 and 8.14.4 within DUIS Schema will be updated to support bulk CH Returns.

4.2 SEC Changes

The DCC and Service Providers have proposed the following legal text changes in SEC Appendix AD - DCC User Interface Specification (DUIS).

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xt%20Draft%20-%20S

The changes in DUIS XML schema would be available during design phase of this Modification. No MMC XML schema changes are required for this Modification.

4.3 Deliverables

The deliverables of this Modification are described in the table below.

Phase Deliverables	Deliverable	Changes Required
Design	SD2.1.1 Functional Specification - Instant Energy	Changes required due to additional processing for SRV 8.14.3 and SRV 8.14.4
	SD2.1.1.6 Functional Specification – Logging	

	SD4.1 DCC User Gateway Interface Design Specification	Changes required due to updated definition of Request and Response of SRV 8.14.3 and SRV 8.14.4
	SD2.2.1.2 Component Design Specification - Request Manager	
	SD2.2.1.2 Component Design Specification - Request Manager	
	SD2.2.1.4 CDS - Data Management	
PIT Completion	System Test and FAT Completion Report	To be created

4.4 Impact on DSP Components

The following sub-systems and components of the DSP are impacted by this change.

4.4.1 DUIS and DUGIDS

DUGIDS and DUIS will need to be updated to describe the revised behaviour of SRV8.14.3 and 8.14.4. The DUIS Schema will also be updated with the revised definition of these SRVs, which includes changes to the input Service Request format and the Service Response format.

4.4.2 Request Management

Processing within Request Management will be modified to support multiple CH Returns records within SRV8.14.3 and 8.14.4.

4.4.3 Data Management

Data Management requires changes to support multiple CH Returns records within SRV 8.14.3 and 8.14.4.

4.4.4 Incident Client (DSMS)

Request Management will place individual requests to the Incident Client for each CH Returns record, which conforms to the existing behaviour. However, this Modification has the potential to increase the load on Remedy with large peaks of Comms Hub Returns records being sent to DSMS at any one time.

5 Impact on DCC Systems, Processes, and People

This section describes the impact of SECMP0117 on DCC Services and Interfaces that impact Users and/or Parties.

5.1 Impact on DSP Services

Change in Request and Response processing of SRV 8.14.3 and 8.14.4 require a change in Request Management and Data Management components at DSP.

5.2 Technical Specifications

There will be changes in DUIS as shown in section 0 and corresponding changes in DUGIDS for the changes in DUIS. No other changes required in any Technical Specification.

5.3 Impact on Security

The DSP Security Assurance team has reviewed this change. There is no material impact on the DSP security implementation. The Security Assurance team will provide general security oversight of the implementation throughout its implementation in accordance with DSP's contractual requirements:

- Provide design time guidance through the review of design documentation to maintain alignment with contractual requirements and minimise security risks
- Review test artefacts and outcomes where there is a potential security consideration
- Attend meetings where required by the implementation teams
- Liaise with DCC as necessary on any security related concerns.

No additional Penetration Testing will take place as a result of this change on the basis that:

- there are no material changes to DSP interfaces
- there are no material changes to the security implementation
- there is no new infrastructure being introduced.

As a result of the above, there is no requirement to update the Protective Monitoring implementation.

5.4 Impact on Processing, Storage or Transmission of DCC Data

This change does not materially increase processing, data storage or data exchange within the DSP solution. Therefore, it is not thought that the change on its own warrants the procurement of additional infrastructure.

Note that the aggregated impact of many such changes to the DSP solution will ultimately result in a reduction of the available processing headroom assumed as part of the original DSP agreement. As such, DSP reserves the right to raise a Change Request for the provision of additional infrastructure should the DCC Data System experience performance problems that are the direct result of such changes.

5.5 Impact on Safety

There will be no increased safety risk as there is no dependence on the content or timeliness of Comms Hub returns records to maintain the safety or continuity of energy supply to consumers. Prior to return of a faulty CH, a replacement CH would have been installed at each consumer's premises to maintain HAN / SMWAN communications. Comms Hub returns records are expected

to be used for fault investigation and logistics planning. Accordingly, SRVs 8.13.4 and 8.14.4 are not assessed as safety related (ref. DQ.0005, DSP System Hazard Analysis Report).

Each type of infrastructure appliance (i.e. manufacturer and model specific variant) in the DSP Production and DR environment is required to undergo Occupational Health, Safety and Environmental impact assessment (ref. DQ.0005 DSP System Hazard Analysis Report). No new appliance types for Production/DR environments are specified and, therefore, there is no requirement to update the DSP OHSE assurance evidence.

5.6 Impact on Performance and Infrastructure

DSP does not expect that there will be a material impact on system performance or infrastructure as a result of this change. Therefore, no performance assurance activities are included in this SEMP01117 FIA. Consideration of the impact of multiple similar changes is given in section 5.4.

5.7 Impacts on Resilience and Disaster Recovery

There will be no change to Resilience, the Disaster Recovery solution or BCDR procedures as a result of this Modification.

5.8 Impacts on Interfaces

The DUIS interface will be changed as described in section 4.1 and 4.2. This CR does not change the interface definitions for Remedy or the CSPs.

5.9 Transition to Operations (TTO) Approach

No TTO-specific charges related to the DSP have been included in this FIA on the basis that it is relatively small. It is assumed that other larger or more complex Change Requests will include partial provision for TTO and that the overall Release CR will address any collective shortfall.

5.10 Application Support

The Application Management Support team is responsible for the provision of application level support for the DCC Data System application. This change provides additional functionality that will be subject to support until the end of the DSP contract.

As a result, DSP has made a conservative estimate that the change will result in up to two (2) low complexity calls per month that need to be assimilated, investigated, resolved and the monitored.

The Service team will need to be prepared to support the change from the day it goes into live operation. As such, the team must review the functional solution and its technical implementation, ensuring a comprehensive understanding of the solution. The team must understand any configurable options and develop procedures to enable its support. This information must also be shared across the team.

6 Testing Considerations

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

6.1 Pre-Integration Testing

Pre-Integration Testing (PIT) will be required to align DSP functionality and the functionality described above. The PIT phase of implementation will be subject to standard test phases and level of DCC assurance as defined in previous releases. Specifically, 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 which will culminate in a short period of Factory Acceptance Testing (FAT), witnessed by DCC test assurance at DSP offices. The FAT tests will be a subset of System Tests.

Acceptance will be defined by:

1. An agreed set of design documentation.
2. DCC approving the Factory Acceptance Testing outcome in accordance with pre-agreed criteria, which shall not be unreasonably delayed or withheld.
3. Meeting Schedule 6.2 PIT exit criteria.
4. Approval for a MAC to be issued will be authorised by DCC's Test Assurance Board.

6.2 System Integration Testing and User Integration Testing

This Modification only affects SMETS2 functionality.

The SIT phase of testing will be aligned with other Modifications and Change Requests in the June 2022 release.

This will be tested for all CHF types within SMETS2 and will require at least six (6) CHFs from each CHF type (EDMI, Toshiba, WNC) that are listed in the SMI that are to be returned.

SMETS2 testing will include

- Execute SRV 8.14.3 (CHF Status Update – Fault Return) returning three CHFs from each of the three CHF manufacturers to verify that more than one CHF can be returned in a single Service Request. Verify that CHF data flows correctly to DSMS (Remedy) and that each CHF returned is displayed correctly in Remedy and subsequent notifications sent to the CSPs (Existing Functionality).
  For Telefonica recommend mix of WNC and Toshiba in the same Service Request.

- Execute SRV 8.14.4 (CHF Status Update – No Fault Return) returning three CHFs from each of the three CHF manufacturer to verify that more than one CHF can be returned in a single Service Request. Verify that CHF data flows correctly to DSMS (Remedy) and that each CHF returned is displayed correctly in Remedy and subsequent notifications sent to the CSPs (Existing Functionality).
  For Telefonica recommend mix of WNC and Toshiba in the same Service Request.

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 June 2022 SEC Release.

This Modification will require a small amount of UIT testing to test one SRV 8.14.3 and one SRV 8.14.4 with more than one Comms Hub return contained within the body of each Service Request.

7 Implementation Timescales and Releases

This Modification was expected to be included in a SEC release in June 2022. Implementation timescales will be finalised as part of the relevant SEC Release Change Request.

7.1 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 **9 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	D + 1 Month
Design, Build and PIT Phase	4 Months
SIT and UIT Phase (functional changes only), aligned with Release Dates	4 Months
Transition to Operations and Go Live	D + 9 Months

7.2 SEC Release Allocation and Other Code Impacts

The allocation to any release may be dependent on other Modification timings and the suitability of a release. No functionality overlaps with other Modifications has been identified.

7.3 Costs and Charges

This section indicates the quote for all phases of application development stage for this Modification. Note these costs assume a standalone release of just this SEC Modification without any other Modifications or Change Requests in the release, which is not truly reflective of what the test costs or programme duration will look like. A calculation of those costs will be carried out when the contents of the future Release are finalised, and the post-PIT costs determined through a "Grouping CR" also referred to as a "Release CR".

Design, Build, Test (PIT)	Post PIT	Total
£300,000 - £350,000	£50,000-£100,000	£400,000-£450,000

DCC has challenged the Service Provider on the costs of this Modification and believe this to be a reasonable quote.

7.3.1 Application Support Costs

Application Support costs, which are costs associated with supporting the new functionality, have been calculated in the range of £5,000-£10,000 per annum.

7.4 Impact on Contracts and Schedules

Contract updates will be required for this change. The detailed updates will be determined as part of the resulting Contract Amendment Note (CAN). Updates will be required to the following schedules:

- Schedule 4.1: Solution Design documents will need to be updated as per section 4.3 Deliverables;
- Schedule 6.1: Inclusion of three new milestones referencing completion of Design, PIT and SIT for this change as detailed in section **Error! Reference source not found.**;
- Schedule 7.1: Update to include a payment against the Schedule 6.1 milestones and the Operational charge uplift.

There will be no change to Schedule 2.2 SLAs due to this Modification.

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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.

7.5 Risks

None at this time.

7.6 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
D117-A1	This Modification will form part of the June 2022 SEC release.	Accepted
D117-A2	General: The following activities will be covered by the release CR associated with the SEC release in accordance with the November 2019 and November 2020 releases: - Transition to Operations Activities; - Systems Integrator Planning and Release Management Activities; - Release SIT and UIT regression tests; - Release based security testing. The scope of such activities shall be defined by DCC as part of the release CR requirements.	Accepted
D117-A3	PIT & SIT: Volume and performance testing of number of CHFs within a single SR and the processing thereof are excluded.	Accepted

7.7 Issues

None at this time.

7.8 Dependencies

None at this time.

Appendix B: Glossary

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

Acronym	Definition
CAN	Contract Amendment Note
CH	Communications Hub or Comms Hub
CR	DCC Change Request
CSP	Communication Service Provider
DCC	Data Communications Company
DSMS	DCC Service Management System
DSP	Data Service Provider
DUGIDS	DCC User Gateway Interface Design Specification
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
FAT	Factory Acceptance Testing
FIA	Full Impact Assessment
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
RAID	Risks, Assumptions, Issues, and Dependencies
SAT	Service Audit Trail database in the DSP
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SMI	Smart Metering Inventory
SMETS	Smart Metering Equipment Technical Specification
SMIP	The Smart Meter Implementation Programme
SP	Service Provider
SR	Service Request
SRV	Service Request Variant
UIT	User Integration Testing
UTS	User Testing Services