Data Communications Company

SEC Modification Proposal, SECMP0172, DCC CR4670

Reduced CPA & CPL Requirements for Innovation and Device Field Trials

Preliminary Impact Assessment (PIA)

Version:	**0.4**
Date:	**13th June, 2022**
Author:	**DCC**
Classification:	**DCC Public**

Data Communications Company

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1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to complete the Full Impact Assessment of £12,194
- The timescales to complete the Full Impact Assessment of 30 days
- ROM costs for SECMP0172 Design,, Build and PIT of £85,000 – 115,000. Full costs including Integration Testing and Implementation of up to £150,000
- To note the risks identified by DCC and potential added security measures

Problem Statement

The Proposed Solution will allow Device Manufacturers to request the SSC to allow trial Devices in limited numbers onto the live DCC network without passing through CPA Certification, where that would otherwise be a requirement.

Modification Benefit

The Proposed Solution will allow Device Manufacturers to request the SSC to allow trial Devices in limited numbers onto the live DCC network without passing through CPA Certification, where that would otherwise be a requirement. The DCC shall be able to produce reports on Trial Devices for the SSC.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
31/05/2022	0.1	Initial DCC Review with Service Providers
10/06/2022	0.32	Second review and additional information
13/06/2022	0.4	Included tighter range for DSP costs

2.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP172-Modification-Report-v0.4	SECAS	18/06/2021
2	MP172-Business-Requirements-v0.3	SECAS	23/11/2021

References are shown in this format, [1].

2.3 Document Information

The Proposer for this Modification is Eric Taylor from SLS. The problem statement was submitted to SECAS on the 18th June 2021.

The Preliminary Impact Assessment was requested and accepted on the 5th May 2022.

3 Context and Requirements

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

The requirements have been provided by SECAS, the Proposer, and the Working Group.

3.1 Context

Currently, the requirements of the Smart Energy Code (SEC) are designed around the mass deployment of Devices and offer no leeway to support Minimum Viable Product (MVP) trials on the live Data Communications Company (DCC) network.

The Proposed Solution will be to request the Security Sub-Committee (SSC) to approve Devices for a trial in limited numbers and duration.

3.2 Problem Statement

The DCC uses the Central Products List (CPL) to manage the Devices it can communicate with. If a Device is not listed on the CPL, the DCC cannot add it to the Smart Metering Inventory (SMI) and therefore cannot communicate with it. Only once a Device has met the requirements set out in SEC Appendix Z 'CPL Requirements Document' can it be added to the CPL. The CPL is a list of Device Models that are either:

- Smart Metering Equipment Technical Specifications (SMETS) 2 Devices which have received all relevant Assurance Certificates
- SMETS1 Devices which have been notified by the DCC and have been included as entries on the SMETS1 Eligible Products Combination list (EPCL)

The Proposed Solution will allow Device Manufacturers to request the SSC to allow trial Devices in limited numbers onto the live DCC network without passing through CPA Certification, where that would otherwise be a requirement. The SSC would assess whether they had the necessary assurance that the security risk from the small number of Devices was sufficiently low to allow the trial to proceed. If the SSC is satisfied with the application, a "Trial" CPA certificate reference would be provided. The Device Manufacturer would then use this CPA certificate reference in the CPL submission sent to the Smart Energy Code Administrator and Secretariat (SECAS). If approved then Devices could be added to the CPL, with detail on existing fields to highlight it as a trial Device, but without affecting the format of the CPL to ensure no impact on DCC systems. If the SSC requires further assurance, the Device Manufacturer would need to make a trial Device available to a CPA Test Laboratory to carry out an independent risk assessment. That would then be passed to the SSC to accompany the Device Manufacturer's application and enable the SSC to decide. If necessary, the SSC will seek guidance from the NCSC to assist them. The DCC will provide reporting to the SSC to confirm trial Devices that are in the field.

3.3 Business Requirement

The Requirements for this Modification are as follows.

Ref.	Requirement
1	Device Manufacturers, that have previously produced a Smart Metering Device that has Commercial Product Assurance (CPA) certification shall be able to place limited numbers of trial Devices on the DCC Network without that Device going through CPA certification.
2	Trial Devices shall undergo all other certification required under the SEC and Device Manufacturers shall provide statements of compliance of this, with evidence made available upon request.
3	All trials shall be limited in terms of duration, Device quantity and frequency which shall be determined by the Security Sub-Committee (SSC).
4	The Central Products List (CPL) format must be unaffected.
5	At the end of the trial period Devices shall either be removed or receive firmware update to CPA certified firmware.
6	All relevant organisation Smart Metering Key Infrastructure (SMKI) certificates shall be placed on the trial Devices, and those organisations notified.
7	The DCC shall be able to produce reports on Trial Devices for the SSC.

This solution will be applied where Device Manufacturers wish to undertake a trial of any Device that would usually require CPA certificates. All trials will be subject to approval by the SSC.

Notes

DCC believes that trial devices will be limited to SMETS2+ specification devices.

Requirement 1: Part of the CPA certification requires a Device Manufacturer's to show that it has the quality, security, and engineering processes and systems in place to ensure that secure development can take place. This is covered in the CPA Build Standard requirements. Therefore, to be eligible for a trial, the Device Manufacturer must have previously brought a SMETS2 Device product to market that had achieved CPA certification.

Requirement 2: The SEC specifies the certification that each Device Type needs. Manufacturers of trial Devices would need to demonstrate compliance with all certifications specified in the SEC except for CPA certification.

It is noted that GBCS and SMETS both follow a self-certifying methodology, requiring the Device Manufacturer to provide statements of compliance with these specifications and be able to provide evidence of compliance if requested.

Requirement 3: Individual trials should be planned to be limited to 100 Devices over a period not exceeding 18 months. Device Manufacturers should also only be eligible to be involved in one Device trial per Device Type (e.g. ESME, GSME, HCALCS) and Device Variant (e.g. ESME Single Phase, ESME Polyphase) at any one time. However, it is noted there may be circumstances where defining specific limits could be prohibitive and the SSC should have the ability to approve trials of differing limits if there is a justified reason to do so. This would allow the SSC to make final decisions that could consider a wider range of variables that may be subject to change over time.

Requirement 4: The CPL is used by the DCC to verify the Devices that can be used on the DCC Network. It is envisaged that the Device Manufacturer, supported by the Device Operator (e.g., Energy Supplier) would apply to the SSC for approval to use a Device in a trial. If the SSC is satisfied with the application, a "Trial" CPA certificate reference would be provided. The Device Manufacturer would then use this CPA certificate reference in the CPL submission sent to the Smart Energy Code Administrator and Secretariat (SECAS). If approved then Devices could be added to the CPL, with detail on existing fields to highlight it as a trial Device, but without affecting the format of the CPL to ensure no impact on DCC systems.

Requirement 5: DCC Users operating these trial Devices must have processes in place to enable trial Devices to be removed, or to have the firmware updated to a CPA certified version. These processes should account for situations where the consumer chooses to change Supplier during the trial. The SEC states the requirements for Devices whereby CPA Certification has expired to be upgraded and as part of this modification the SEC must be updated to state that these trial Devices will follow the same processes.

Requirement 6: All trial Devices must have the same configuration as non-trial Devices of the same Device Type. Therefore, any relevant Network Party and Supplier SMKI Certificates must be added to the Device, as well as all Post-Commissioning obligations would also need to be met. Notification of these trial Devices will be via reference to the newly updated CPL and not by Device Manufacturer to Network Party as and when trial Devices get installed at consumer premises.

Requirement 7: The SSC has requested that the DCC be capable of producing reports on the trial Devices on the network. It is not expected that there will be any further development of new functionality or changes outside of this reporting as this would not be required as part of this modification.

3.4 Solution Context

It is proposed that the solution to deliver these business requirements will be by request to the SSC. The SSC would be responsible for notifying the Department of Business, Energy and Industrial Strategy (BEIS) of ongoing trials. The DCC and other Parties would be informed of a new Device trial via the usual notification of updates to the CPL which would indicate a trial device has been added. It was noted during the Working Group discussions that this process could impact the DCC's Operational Performance Regime (OPR) or internal processes and these would need to be considered. It is envisaged that the Device Manufacturer would send a CPL submission to the SSC for approval, instead of SECAS, and that prior notification of Devices to the DCC should be sufficient for awareness.

4 Description of Technical Solution

Changes to the DSP are required for implementing this Modification.

4.1 DSP Solution

The solution requires the DSP to add a new attribute to the Devices entity to indicate whether a device is a "trial" device.

In the event that the device is determined to be a trial then the new “trial” flag will be set. Additional processing shall be implemented in the processing of SRV12.2 (for pre-notification) and SRV 8.4 (for updating a device) such that a check will be performed of the manufacturer, model, and firmware version against a configured list. If the manufacturer and model and firmware version that is notified is in an agreed list of trial devices and firmware then the “trial” flag will be set in the Device table entry for that device.

The “agreed list” is populated as a local configuration parameter within the DSP that is populated by the DSP Service team upon instruction and agreement with the DCC Service team.

The ESI reporting specification will need to be amended to add the “trial” device attribute to ESI-034 and ESI-034i.

The functionality provided as a result of this Modification shall be implemented behind a feature switch to allow the functionality to be enabled only when required in a defined release, or turned off at a later date. DCC requests that the Working Group consider if this feature switch is required.

4.2 DCC Service Team Impact

The DCC Service Team would require notification from the SSC of a trial event, as well as a list of the manufacturer, model, and firmware version of the trial devices. This information would be passed to the DSP Service team.

At the end of the trial the SSC would inform the DCC Service team of changes to device status.

4.3 Reporting Solution

Essentially the DCC Data Science and Analytics (DS&A) team would need to reciprocate any change that DSP makes in the ESI files. This will need to be tested in the integrated environments.

5 Impact on Systems, Processes and People

This section describes the impact of SECMP0172 on Services and Interfaces that impact Users and/or Parties.

5.1 Security Impact

DCC Security have reviewed this proposal and are concerned that admitting devices that haven't been through CPA into the CPL will necessarily increase the end to end risk profile. These risks include:

- malware spread due to devices that are more subject to vulnerabilities
- backdoor injection and exploitation that may result in increased risk of data harvesting from malicious actors
- denial of service for devices that may be used as malicious DDoS attack endpoints

These considerations will require:

- improved protective monitoring capabilities
- increased DDoS protection
- potential architecture review to increase segmentation and authentication (zero trust)

These impacts will be fully assessed in the Full Impact Assessment.

5.2 Reporting

The DCC have noted the impact the Devices have on DCC reporting as implemented in SECMP0122 and identified that issues with Devices would affect the DCC Operational Performance Regime (OPR) or internal processes. The Communication Service Providers (CSPs) have highlighted that 100 Devices could be the difference between their passing or failing a Service Level Agreement (SLA) and highlighted that the "noisy meters" on the network are currently removed from these metrics. This is likely to require additional work by the DCC and CSPs in the reporting stage.

The impact on wider reporting in general will be assessed in the Full Impact Assessment (FIA).

5.3 Service Impact

It is not thought that there will be a material service impact of this Modification although the release in which it is included will need to include an element of Early Life Support. DSP would like to highlight that use of trial devices does carry a risk of unexpected behaviour and spurious alerts that could impact the DSP Service. On the basis that the number of trial devices is assumed to be low, the risk of an adverse impact on the DSP service impact is thought to be low. However, the DSP will want to include some Service Level mitigation in the CAN in response to the risk of unexpected behaviour and spurious alerts from trial devices. The impact will be assessed in the Full Impact Assessment (FIA).

DCC Service Design will require a new documented process written in terms of adding, monitoring and removing devices and the associated governance with those, given it is not something DCC does for devices today. The impact will be assessed in the FIA.

5.4 Infrastructure Impact

There will be no change to the infrastructure design as a result of this change. Additional processing and storage will be required; however, they are not sufficiently large to warrant the procurement of additional compute power or storage. The change does not impact the DSP resilience or DR implementation.

6 Implementation Timescales and Approach

This change is expected to be included in a future SEC Release, although due to the low level of integration testing it could be scheduled as part of a maintenance release. Design, Build, and PIT is expected to take about three months to complete after the CAN is signed.

Details of the implementation will be finalised in the FIA.

6.1 Testing and Acceptance

There will be an impact to Systems Integration Testing (SIT) as a result of this change. SIT Testing will include executing a small volume of SRV tests and ESI Reports to verify the “trial” device attribute has been added. No UIT impact is expected.

System Regression testing and the SIT Management/Governance costs are not included in this PIA. The additional costs for SIT is likely to be relatively small, and will be included in the FIA.

7 Costs and Charges

The table below details the cost of delivering the changes and Services required to implement this Modification Proposal.

The Rough Order of Magnitude cost (ROM) shown below describes indicative costs to implement the functional requirements. The price is not an offer open to acceptance. It should be noted that the change has not been subject to the same level of analysis that would be performed as part of a Full Impact Assessment and as such there may be elements missing from the solution or the solution may be subject to a material change during discussions with the DCC. As a result the final offer price may result in a variation.

The table below details the cost of delivering the changes and Services required to implement this Modification. For a PIA, only the Design, Build and PIT indicative costs are supplied. However it should be noted that the addition of post-PIT costs are expected to keep the total price below £150,000.

	Design, Build and PIT
DSP	£85,000 to £115,000

Table 2: SECMP0172 Standalone Cost

The phases included are as follows.

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. It includes Unit Testing (also referred to as System Testing), Performance Testing and Factory Acceptance Testing by the Service Provider or supplier.
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.

Based on the existing requirements, the fixed price cost for a Full Impact Assessment is **£12,194** and would be expected to be completed in 30 days.

Appendix A: Glossary

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

Acronym	Definition
CAN	Contract Amendment Note
CoS	Change of Supplier
CR	DCC Change Request
CSP	Communication Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
DUGIDS	DCC User Gateway Interface Design Specification
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
HCALCS	HAN Connected Auxiliary Load Control Switch
HAN	Home Area Network
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
ROM	Rough Order of Magnitude (cost)
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specification
SMI	Smart Meter Inventory
SR	Service Request
TABASC	Technical Architecture and Technical Business Architecture Sub Committee
UIT	User Integration Testing