

SEC Modification Proposal, SECMP0242

Change to Operational Metrics to Measure on Success

Full Impact Assessment (FIA)

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1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to implement SECMP0242, Change to Operational Metrics to Measure on Success, which comprises:
 - £262,079 in Design, Build, Testing, and Implementation
- Expected DCC effort to develop the Business Processes of 350 Working Days to complete, a duration of 110 Working Days. The reports will be available approximately seven (7) months from Approval.

An indicative first year Application Support cost has been estimated at £13,000 per month, or £156,000 per annum.

Problem Statement

Using a previous Modification, the Data Communications Company (DCC) reports on the Round Trip Times of messages sent across the DCC Total System. However, this reporting does not give any indication of whether a business process has completed successfully from the point of view of a customer, nor does it give a view of the detail of the delay associated with a particular point in the process.

The Operations Group (OPSG) and Performance Measures Review Group (PMRG) have requested monthly reports containing the Success or Failure and execution of each of the Business Process Service Request Variants broken down by DCC outcome and Business Process outcome. The overall volume of transactions for the Service Reference Variant (SRV) for that month should also be included.

Benefit Summary

This Modification will measure the 'success' of a Service Request (SR), Service Reference Variant (SRV), or Alert as well as the perceived success of selected Business Processes with a view to identify the basis of any failures, and potentially identify areas of investigation to remove problem causes.

By including Business Processes the impact on the customer, and a differentiation between processes impacted by DCC concerns or user error, can be identified and examined.

The inclusion of Future Dated information in the Service Audit Trail (SAT) will facilitate a significant improvement in DCC being able to track business processes where either a DSP Future Dated or Device Future Dated command or SRV is invoked.

DCC views this SEC Modification as a report to provide operational indicators of end consumer outcomes, which will be used by SEC Parties to identify issues in performance and assist in rectifying orchestrations and inventories. The reports will be graphical and tabular in their nature, and provided as single reports to each SEC Party, along with a view of aggregated results.

This is a new way of viewing Business Processes and provides a valuable opportunity to use DCC knowledge and insights to assist SEC Parties in identifying areas to investigate with the ultimate intention of improving performance and the end consumer experience.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
23/01/2024	0.2	DCC Internal Review
26/01/2024	0.3	Revised duration

2.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	DP242 Modification Report v0.2	SECAS	13/06/2023
2	MP242 business requirements v0.4	SECAS	13/06/2023
3	SECMP0242 Change to Operational Metrics to Measure on Success, PIA	DCC	8/09/2023

References are shown in this format, [1].

The Proposer for this Modification is Rochelle Harrison from British Gas.

The initial Preliminary Impact Assessment was requested of DCC on 8th August 2023.

3 Context and Requirements

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

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

3.1 Problem Statement

Smart Energy Code (SEC) Modification SECMP122A 'Operational Metrics' (implemented on 25 February 2021) introduced Target Response Times (TRTs) to the Operational Performance Regime (OPR).

However, the DCC is not currently able to measure TRTs, and instead can only measure Round Trip Times (RTTs). Without TRT data, only the RTTs can be reported against the targets captured in SEC Section H 'DCC Services', reducing the value of these reports generated as part of the OPR. Within the Proposed Solution for SECMP122A, it was agreed that the criteria for measuring the success or failure of an entire business process would be determined by the number of responses and those that returned a failed response. This would be assessed by the Operations Group (OPSG) upon the presentation of the Performance Measurement Report (PMR) based on commentary provided by the DCC on each failure.

3.2 Business Context and Requirements

The OPSG and PMRG have stated that it would be more beneficial if the DCC could measure the 'success' of a Service Request (SR), Service Reference Variant (SRV), or Alert. Where a corresponding 'failure' is not due to the DCC Total System, then exceptions will be allowed.

SRs, SRVs, and Alerts from both Smart Metering Equipment Technical Specifications (SMETS) 1 and SMETS 2+ Devices will be within scope of this proposal.

This SEC Modification provides an operational report to assist in observation and triaging to improve DCC Total System performance, consequently and improving customer efficiencies and effectiveness. For this Modification, the measures it will produce will be performance indicators only, and as such will form no part of DCC's incentive regime.

The Modification will produce reporting in addition to the existing formal reports produced by DCC. It is possible the OPSG and DCC will agree that certain reports provided under SECMP0122 may become redundant and can be removed with a reduction in DS&A operating costs, but this will be reviewed after an initial run of at least three months.

3.3 Business Requirements

Requirement 1: This modification will capture the consumer experience and pinpoint areas of concern through determining the success or failure of an agreed set of Service Reference Variants (SRVs).

The Proposer has stated that the current reporting captured under the PMR does not reflect the consumer experience. The intent of this Modification is to provide additional reporting from a consumer-centric perspective, to help identify areas where performance may be improved.

Requirement 2: The DCC is to measure the success and execution of an agreed set of Business Processes and SRVs. The agreed set of Business Processes are:

- **Install and Commission**
- **Change of Supplier (Gain)**
- **Pre-Payment**
- **Top Up Device**
- **Update Device Firmware**
- **Meter Reads**
- **Tariff Updates**

The Proposer has indicated that the following Business Processes and associated SRVs are critical to the end consumer experience.

Install and Commission	8.11 Update HAN Device Log
	6.21 Request Handover of DCC Controlled Device (Update Supplier Certificates)
	8.1.1 Commission Device
	8.7.2 Join Service (Join GPF with GSME)
	6.20.1 Set Device Configuration' (Import MPxN)
	1.1.1 Update Import Tariff (Primary Element)
	6.8 Update Device Configuration (Billing Calendar)
	8.14.1 Communications Hub Status Update Install Success.
Change of Supplier (Gain)	6.23 Update Security Credentials (CoS)
	1.1.1 Update Import Tariff (Primary Element)
	6.8 Update Device Configuration (Billing Calendar)
Pre-Payment	1.6 Update Payment Mode
	2.1 Update Prepay Configuration
Top Up Prepayment	2.2 Top Up Device (Update Balance with positive value)
Update Device Firmware	11.1 Update Firmware
	11.2 Read Firmware Version
	11.3 Activate Firmware (Individual SR for each GUID for firmware activation)
	11.4 Update PPMID Firmware
Meter Reads	4.6.1 Retrieve Import Daily Read Log
	4.6.2 Retrieve Export Daily Read Log
	4.8.1 Read Active Import Profile Data
	4.8.2 Read Reactive Import Profile Data
	4.8.3 Read Export Profile Data
	4.10 Read Network Data
	4.17 Retrieve Daily Consumption Log

Tariff Updates	1.1.1 Update Import Tariff (Primary Element)
	1.2.1 Update Price (Primary Element)

Requirement 3: The DCC will measure against the following conditions to determine success:

Scenario	DUIS Response Code	GBCS Execution Status	DCC Outcome	Business Outcome
SRV passes DSP validation	I99	N/A	ACK	N/A
SRV fails DSP validation	E1 – E100*	N/A	Success	Failure
Failed to send request to CSP/S1SP	E20	N/A	Failure	Failure
No response from Device	E21	N/A	Failure	Failure
No response from Device at Future Dated execution time (T)	E30	N/A	Failure	Failure
Failed to send request to CSP/S1SP or No response from Device for Scheduled or Future Dated SRV (T)	E31	N/A	Failure	Failure
Failed to send request to ECoS Party (T)	E66	N/A	Failure	Failure
No response from ECoS Party (T)	E67	N/A	Failure	Failure
Response received – GBCS Success	I0	Success	Success	Success
Response received – GBCS Failure	I0	Failure	Success	Failure

Table 1: Conditions to be Measured (Original)

Note: * excludes the E codes E20, E21, E30, E31, E66, E67

(T) indicates messages related to Timeouts

The four conditions will set out the criteria for determining the success or failure of the SRVs included within the seven Business Processes.

The Business Outcome indicates the outcome as seen by the end Consumer. Further notes on the DS&A solution for these, and the following requirements, are given in Updated Condition and Outcomes Table on page 13 following and subsequent sections.

Requirement 4: The conditional success / failure will be agreed by the Working Group before the commencement of the DCC Full Impact Assessment and any additional conditional status will be agreed by the Panel (delegated to the SEC Operations Group).

The Working Group reviewed the PIA to determine the criteria for the success or failure of an SRV delivered to the User. If the modification is approved and implemented into the SEC, SEC Panel, who are likely to delegate to the OPSG, may choose to add further conditional statuses. This will likely be through a guidance document and a DCC Change Request, to not require further amendments to the SEC.

Requirement 5: If a timeout occurs before an SRV is received by the User, it will automatically be categorised as a failure.

Requirement 6: When measuring the success and failure of the agreed Business Processes, the DCC is to provide reporting that includes retries, and also without, for transparency.

During discussion with the OPSG, it was agreed that the DCC will provide reporting that will factor in SEC User retries, and also report without them. This will provide transparency to SEC Parties on how retries impact DCC performance. An example of this is a Supplier Party sending the same SRV repeatedly to commission a newly installed Device. This will be displayed as a measurement of retries against each SRV.

Requirement 7: The data included in the report will be classified as a Business Process Indicator.

During the Refinement Process, the DCC has stated that categorising the data as measures will likely have high associated costs. As such, the data will remain as indicators.

4 Description of Technical Solution

Following analysis of the Requirements above, the DSP and DCC teams propose the following solution:

- The addition of Future Dated SRV information by the DSP to help the DCC DS&A team review and report on business processes overall.
- Creation of a dedicated data-model within the DCC production data platform.
- Using the data model to produce a simple summary report detailing the Success / Fail of the Business Process broken down by DCC Outcome and Business Process outcome as a percentage, volume of transactions for the combined Business Process SRVs will also be provided to help give context, and with no exclusions.
- Using the data model to produce a more detailed report containing the Success / Failure and execution of each of the Business Process SRVs broken down by DCC outcome and Business Process outcome. The overall volume of transactions for the SRV for that month will also be included.
- Journey tracking will be used to help explain gaps between the simple raw SRV reporting and E2E consumer and SEC Party experience of the success / failure and execution of the request ID within the business process, and it's associated journey using SRVs. Journey tracking will require much larger data models and processing.
- Reports will be compiled and shared with SEC Parties via SharePoint.

4.1 DSP Solution Description

Changes to the DSP are required to provide the execution date and time within the SAT log for Future Dated requests .

For DSP Future Dated requests, the first SAT log entry written for the request will have the northbound sent date and time populated with the execution date and time (instead of being empty). This will be the SAT record with:

- Mode of Operation = 10 (DSP Future Dated)
- Transaction status = 18 (Stored for Future Delivery)
- Report status id = 3 (DCC Only/Transform Complete)

For Device Future Dated requests, this will be the SAT record with:

- Mode of Operation = 4 (Device Future Dated)
- Transaction status = 1 (Pending Completion)
- Report status id = 1 (On Demand Southbound Pending Completion)

To minimise the change impact, the existing fields will be utilised for the date and time, and there will be no additional field added to SAT records.

Given the scope of the changes and DCC's desire to only use feature switches where necessary, it is proposed that the DSP application changes are not protected by a feature switch.

4.1.1 DSP Application Component Changes

Two small changes are being made to the DSP:

Request Management	When first logging a Future Dated request, populate the 'northbound sent time' field in the SAT entry with the future dated execution time.
Self Service Interface	For the two SAT log entry types where the 'northbound sent time' field contains the future dated execution time, the SSI application needs to ignore/remove this data (from display/downloaded file) so that the "response sent" data continues to reflect northbound sent time.

In addition, the Logging Functional Specification will be updated to define the contents of the 'northbound sent time' field for Future Dated requests.

No changes to the Security model, required infrastructure, performance, or other elements of the DSP are expected. There are no change to DUIS, GBCS, or any other Technical Specification.

4.2 DCC Teams

Both the DCC Data Science and Analytics (DS&A) and Service Ownership teams will be responsible for the reporting design, development, implementation, and Business as Usual (BAU) maintenance of the solution for this Modification.

4.2.1 DCC Service Ownership

DCC's Service Ownership (SO) function was formed in March 2023. It has particular focus on having accountability of performance management of End to End (E2E) Business Processes within the DCC. This means a focus on consumer and customer outcomes, so DCC can deliver optimal service. The SO team own and act as the experts of the E2E processes and controls that enable a seamless DCC managed Smart Meter experience, as well as translating Service and Technology into Operational insight, which enables in depth understanding of the factors that impact performance. The SO team will also drive proactive continuous improvement to deliver optimal end user outcomes, for future and current services.

4.3 DS&A Solution Overview

Utilising the data contained within the SAT and Inventory datasets received from the DSP, a bespoke data pipeline will be developed to produce a data model. The data model will be used to categorise and report on DCC and Business Process success or failure as per Requirement 3 above.

The categorisation of each individual Request in isolation may not give an accurate indication of the real-world end-user experience of performance.

This is where journey tracking comes into play. Journey tracking looks at the requests sent to a device and uses the SRVs and alert responses data to understand if the process was ultimately successful. A simplistic example of this could be SRV 8.11 used in the Install and Commission (I&C) process. It could be the outcome of the 8.11 was E20 or E21 but there

could still be a N24 Alert in close proximity to (but after) the 8.11 showing the join was successful, even if the outcome appeared to be a failure.

Journey tracking will also look to see if multiple similar SRVs were sent to a device in a short space of time. If one of the requests were to succeed and the rest were to fail, the outcome of the Journey would be considered a success.

Measurement of success of a journey and the data points that can be used will vary significantly. Prepayment SRV 2.2 is an example of where DS&A have data around the Unique Transaction Reference Number (UTRN) generation that can be combined with other alerts to not only identify the Journey outcome but also give a much better indication of where the cause of failure could be.

The output of Journey tracking will be broken down by Business Process. If Journey tracking indicates a journey was ultimately successful it will be broken down into categories and added to the baseline success figure defined in Requirement 2 of this document. The inclusion of the DSP Future Dated information will enhance the reporting accuracy wherever a Future Dated Service Request is used by a SEC party.

Notes on the requirements and solutions follow. It should be noted that any changes listed in the sections below have been reviewed and refined during the FIA development.

Requirement 1: This report will attempt to ensure the timescales align with Business Process Indicators.

Requirements 2 & 3 are part of the same dataset as the tabled criteria. For Device dated SRVs, a count of 8F66's will be considered execution success against the business outcome and 8F67 will be execution failure.

Requirement 3: In addition to stated conditions, DCC will add a "delayed success" in which evidence of the Service Request being successful is measured. This condition relates to DCC receiving an Unsolicited Service Response from the device post SRV completion which signals that the request was processed successfully by the device. This conflicts with Requirement 5 which should be removed as a requirement of the reporting.

Anomaly Detection Threshold and Attribute checks are completed on Service Request Variants included in the business processes. SEC Parties receive either an N46, N47 or N48 DCC Alert as a response to quarantine service requests. Therefore, an "Anomaly Detection Quarantine" condition will be included.

It is proposed that the "No response from Device at Future Dated execution time" condition is changed to a DCC Outcome of Success. For this condition to be true, the command must have been set up at the meter and for an unknown reason, the meter at the time of execution did not fully execute the command. This is therefore a Business Outcome failure but not a DCC failure as the command has been delivered.

It is further proposed that an additional scenario is added in which the DCC has successfully received a response to the service request, but the SEC Party systems have failed to acknowledge / rejected receipt of the response. This would be a DCC success but a business failure.

Table 2 shows the proposed revised Scenario and Outcomes table with changes and additions shown in **Red**.

Scenario	DUIS Response Code	GBCS Execution Status	DCC Outcome	Business Outcome
SRV passes DSP validation	I99	N/A	ACK	N/A
SRV fails DSP validation	E1 – E100*	N/A	Success	Failure
SRV fails Anomaly Detection checks	N/A	N/A	Success	Failure
Failed to send request to CSP/S1SP	E20	N/A	Failure	Failure
No response from Device	E21	N/A	Failure	Failure
Delayed Response from Device	I0	N/A	Success	Success**
No response from Device at Future Dated execution time (T)	E30	N/A	Success	Failure
Failed to send request to CSP/S1SP or No response from Device for Scheduled or Future Dated SRV (T)	E31	N/A	Failure	Failure
Failed to send request to ECoS Party (T)	E66	N/A	Failure	Failure
No response from ECoS Party (T)	E67	N/A	Failure	Failure
Response received – User Rejection	NA	NA	Success	Success**
Response received – GBCS Success	I0	Success	Success	Success
Response received – GBCS Failure	I0	Failure	Success	Failure

Table 2: Updated Condition and Outcomes Table

Note: * excludes the E codes E20, E21, E30, E31, E66, E67

Note: ** for any configuration state change this will be seen as Journey success, for any read related responses this will be seen as a Journey failure.

(T) indicates messages related to Timeouts

Requirement 4 – Journey Tracking is defined as a review of the end-to-end execution of the successful outcome of the business process and the associated SRVs. Included in the Journey Tracking are:

- Looking at unsolicited SRVs to understand the outcome of a transaction outside of the response window.
- Looking at subsequent success – so the first request may fail but if there is a success within a reasonable time window the journey is considered a success.
- Where an SRV can be utilised for purposes other than the specific business process DS&A will look to allocate the SRV to the appropriate process. An example of this is 1.1.1 which can be used for I&C, Change of Tariff and CoS.

SECMP0242 is looking at reporting the ultimate outcome of a Business Process. The report will consider timeout to be deemed a failure in the context of understanding the number of attempts required for a Successful outcome.

The end-to-end execution will look at the intent of the specific business process and whether it ultimately succeeded. Failures will be broken down into buckets of likely DCC or non-DCC

responsibility. For instance, an E4 is likely to be non-DCC while an E66 is likely to be DCC's responsibility.

Due to the complexity of defining and building Journey outcome measurements, defining all conditional measurements across the seven business processes was not in the scope of the FIA. DCC has focused on detailing the Change of Supplier (CoS) process as an example of how Service Requests within Journeys will be associated to produce the Journey outcome, and this has been used as a sizing template to assess the expected duration and cost of the development as a whole.

For all other business processes except CoS, during the Detailed Design phase the Working Group and DCC Development team will agree the method by which they wish to handle the timelines for agreement of success statuses.

Requirement 5 – Timeouts categorised as failures

DCC cannot currently measure TRTs accurately and as such, timeliness of Service Requests will not be included within the reporting outputs beyond retries and timeouts. Only the success metrics will be included in the outputs.

There is a scenario in which a meter does not respond back to a command within the allotted Service Request timeout limit. For these requests, DCC does see evidence of a successful command despite the timeout and return of a DUIS error code to the SEC Parties. For any configuration state change, SRVs such as 1.6, 8.11 or 1.1.1 will be considered as a DCC and Business Outcome success. For read requests such as 4.6.1, 4.8.1 and 4.10, these will be considered as a DCC outcome success but a Journey outcome failure because the intended purpose of those commands has not been met.

The benefit of using a delayed success measure is that it provides an indication of when activities as part of the Journeys that are thought initially to have failed have, with delay, succeeded at the meter. This will give an additional view never provided before of meter delay which may be used to assist in identifying and investigating issues. If not included, this detail would be lost in a generic E21 failure bucket.

The proposed solution provides more detailed information than a straightforward compliance with Requirement 5.

Requirement 6 -- Retry Tracking

DCC will factor retry tracking into all Business Process Journeys which will give an indication of first time and subsequent success and how many attempts it took to complete. It will also provide a view of SEC Party orchestrations that include multiple attempts to send, and SRV's which lead to redundantly sending multiple attempts after a success.

This methodology provides transparency to SEC Parties on how retries impact DCC performance. An example of this is a SEC Party sending the same SRV repeatedly to commission a newly installed Device. This would be reporting at the atomic level as the number of attempts and at the Journey level as one install.

For **Requirement 7**, all the relevant service requests, and any re-submissions within the end-to-end process will be included.

4.3.1 Solution Methodology

Following analysis of the requirements above, the DCC solution will focus on:

- Creation of new logic relating to aggregation of Service Requests into Business Processes to give a new view of consumer experience.
- Creation of reporting output of Service Request level and Journey level indicators for each SEC Party, along with an aggregated view of all outputs. This will assist SEC Parties in identifying operational issues and where improvements may be available.

For this scope to be realised the DCC proposes the outputs for each of the seven Business Processes be metric indicators with no exclusions, provided at:

- Atomic Service Request level, as defined in section 4.3.2 following; and
- Business Process Indicator level, as defined in section 4.3.3

Indicators will be calculated based only on success and not related to timeliness metrics. To calculate success metrics, SRV status flags within the SAT will be utilised to determine the terminal status of each attempt.

A report should be made available to all SEC Parties covering their own individual activities as well as an aggregated view.

In the following sections, the Change of Supplier (CoS) Journey is used for illustrative purposes unless otherwise stated.

4.3.2 Atomic Service Request Indicator

Atomic Service Request Indicators relate to metrics on an SRV-by-SRV basis including all unique attempts for that individual SRV. A success percentage based on the scenario table in Table 2 will then be calculated to provide DCC Outcome and Business Outcome indicators of success.

The Change of Supplier process will include Atomic SRV metrics for:

- 6.23 – Update Security Credentials (CoS)
- 1.1.1 – Update Import Tariff (Primary Element)
- 6.8 - Update Device Configuration (Billing Calendar)

4.3.3 Business Process Indicators

The categorisation of each individual Request at an atomic level may not give an accurate indication of the genuine end consumer experience.

Business Process Indicators relate to aggregating multiple service requests into one combined Journey metric. Business Process Indicators will contain the SRVs specified in section 3.2 requirement 2.

Measurement of success of a Journey is based on if the intended purpose of the journey initialisation was realised. For example, in Change of Supplier the intended purpose is to replace meter or GPF in-use supplier certificates, update the tariff and set up a billing calendar. If all these criteria are successful, then that Journey has been successful.

The data points will vary significantly across Business Processes. For example, the prepayment top-up SRV 2.2 is an example of where DCC has UTRN generation information

that can be combined with other alerts to not only identify the Journey outcome but also give an improved indication of potential causation of outcomes.

The following are examples of how Business Process Indicators will be processed during Change of Supplier include:

- If a meter had a 6.23, 1.1.1 and 6.8 and each SRV was successful, this would be considered as one successful Journey.
- If a meter had two 6.23s and only the second one was successful, as well as successful 1.1.1, this would be considered as one successful Journey, as the meter has ultimately undergone a successful Change of Supplier.
- If a meter had a successful 6.23 but an unsuccessful 1.1.1 this would be considered as a failed Change of Supplier as the Journey has not completed with the fallout being the 1.1.1.

If an SRV has not been attempted as part of a business process, then it shall not be counted towards the success of a Journey. An example for Change of Supplier would be if a 6.8 had not been attempted to set up the billing calendar, then a lack of 6.8 will not influence the Journey outcome and only the 6.23 and 1.1.1 would be used to calculate the indicator.

The benefit of joining and aggregating SRVs at a device level into Journeys is that it provides a more reflective indicator of genuine end consumer experience with process fallout created, rather than a simplistic view of total counts of unique service request attempts at the atomic service request level.

An example of indicator processing for the CoS could be:

1. 1,000 unique 6.23 attempted.
2. 980 had been assigned successful under DCC Outcome measures.
3. 950 had been assigned successful under Business Outcome measures.
4. DCC Outcome Indicator calculated at 98%
5. Business Outcome Indicator calculated at 95%

Business Process Indicator reporting requires larger data processing capabilities as well as a larger data model than seen in previous reporting Modifications. This is due to the requirement to process and aggregate multiple Service Requests as well as processing the aggregated Journeys.

4.3.4 Summary Views

DCC has created some exemplar mock-ups of reporting outputs to show both Business Process and Atomic Service Request indicators. During the development lifecycle specified in Figure 20n page 22 these are subject to change in line with SEC Party feedback.

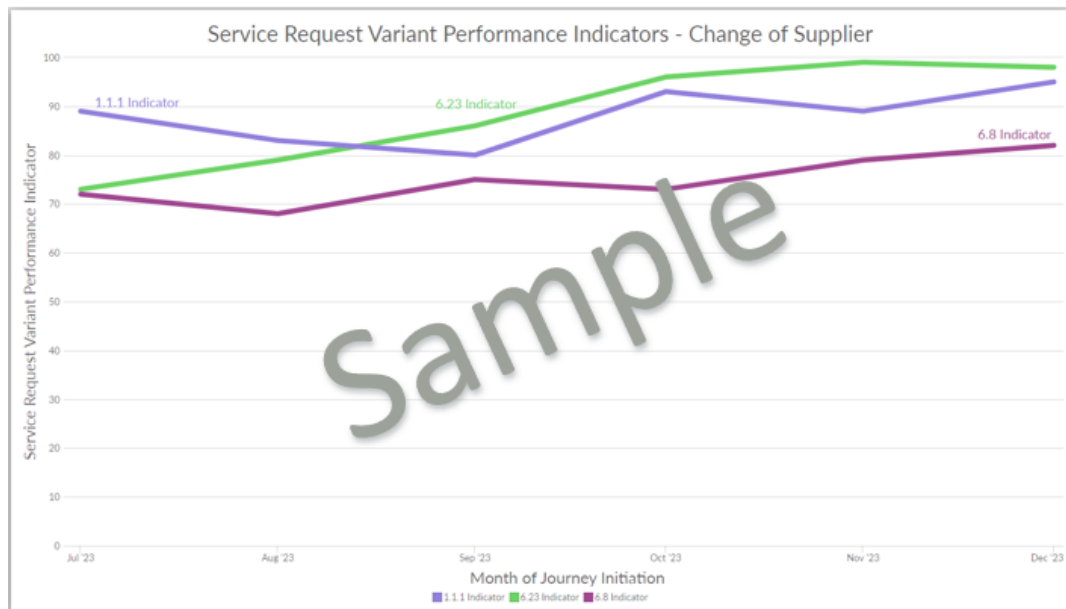
The mock ups below are provided for illustrative purposes only, with the final outputs to be developed alongside SEC Parties to ensure effectiveness.

Summary views will be provided for each SEC Party of Business Process Indicators over the previous six (6) months and a graph showing the same month the previous year with the

Journey indicator success percentage as a line view and volume of initialised Journeys across the bars. An aggregated view of all indicators across all SEC parties will also be provided. Note the first set of reports provided are likely to not show data prior to the solution implementation.



A similar format will be used for the Atomic Service Request indicators with each individual SRV success indicator having its own line view as displayed.



Tabular breakdowns per Business Process and per atomic service request as well as multiple success measures including overall success and first-time success will be shown as below:

SRV	Attempted in Journey	DCC Success	1st Time Success DCC	Business Success	1st Time Success Business	Avg Attempts
6.23	100%	95%	85%	91%	82%	1.1
1.1.1	90%	98%	89%	97%	88%	1.03
6.8	85%	96%	90%	94%	87%	1.2

Further metrics such as subsequent success and delayed success are also in the reporting to provide a more detailed breakdown.

One of the purposes of this modification is to provide Business Process Indicators. It is proposed that as an optional extra requirement, a breakdown of error fallout could be provided as part of the reporting. The view of Journey fallout would be a flying brick with success metrics along the x-axis, initial bricks showing success, and subsequent bricks of fallout which have caused the impacted Journeys to be assigned as failures. A mock up flying brick view is displayed below.

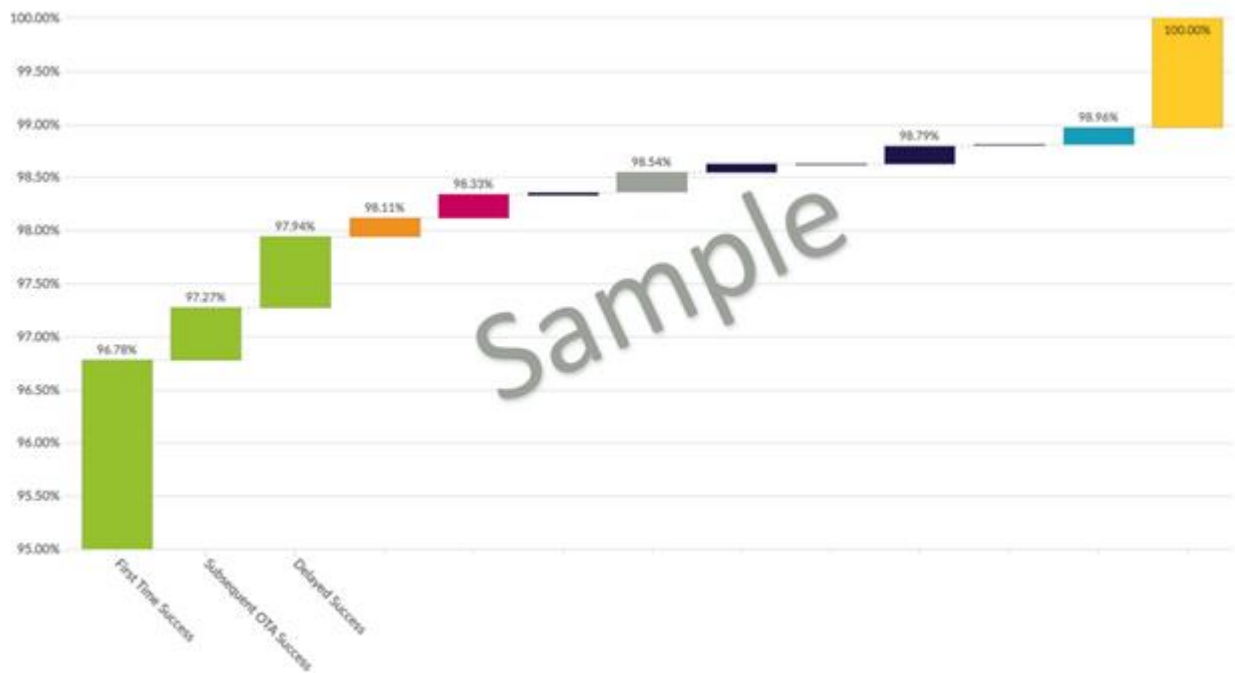


Figure 1: Sample Flying Brick View

For each business process, the buckets of fallout would vary significantly but with some shared categories. For example, a Change of Supplier view could have ECoS certificate fallout whilst Prepay top-up could have duplicate UTRN entries. Both criteria are subject only to their business processes and as such will not appear in others. Examples of shared buckets would be validation failures such as E4 – invalid User and E5 – Invalid device status.

The buckets of fallout for each business process will be defined in the development / SEC Party feedback steps of the development cycle in Figure 2 on page 22.

The flying brick views will be accompanied by a tabular view of the bricks (categories) detailing the associated error. The following shows a sample tabular view.

Category	DUIS Response Code	Journeys Impacted
First Time Success	IO	2400
Success Failed GBCS Execution	IO	100
Delayed Success	n/a	302
Anomaly Detection	N46, N47, N48	480
Device in Incorrect State	E5	23
CH Exclusion	n/a	34
Failed to send to CSP/S1SP	E20	67
No response from Device	E21	1000
No Response at Future Dated time of Execution	E30	89
Failed to send to CSP/S1SP or no device response at scheduled or future dated time of execution	E31	774
Failed to send to ECOS	E66	2
No response from ECOS	E67	2

Table 3: Sample Tabular View for a Business Process

Both the flying brick and tabular fallout breakdown will cover only the most recent month of data to ensure information consumed is relevant and not related to historical issues.

Note that the full list of planning considerations, constraints, and design decisions for the Journey Tracking is included in Appendix B: Journey Tracking Considerations near the end of this document.

4.3.5 Report Delivery Mechanism

The initial plan is that reports for each SEC Party will be added to SharePoint.

Given the recent approval of SECMP0176, Customer Analytics Reporting where each SEC Party will have their own login and Portal to view DS&A reporting, the optimal location for sharing each Parties' reports will be the Portal landing area. This option will be considered due to the detailed planning stage, and if implemented would reduce application support costs.

Based on requirement 6 above, DCC can generate the Business Process Indicators by the 3rd Monday of each month.

4.4 DSP Testing

The development and testing will not follow the Pre-Integration Testing (PIT), System Integration Testing (SIT), and User Integration Testing (UIT) pattern associated with a "standard" SEC Release, and will not require the testing services of the System Integrator or CSPs.

For the DSP changes, As the generation, format, and content rules of the files will be validated in the PIT environment the SIT team will not repeat this testing in the SIT environment. SIT will focus on the integration aspects of the change.

The following total test volumes and test throughputs are the basis of the pricing estimate for the DSP change in this Modification. 27 tests will be carried out over a period of 18 Working Days, with no specific testing required.

No new devices are required for this change as the Maintenance environment uses the existing Maintenance Release devices for SIT-A.

The new behaviour does not introduce any changes to system integrations within the DCC Toal System since the changes to the functionality are entirely within the DSP component. Any testing executed as UIT would be a repeat of a subset of the testing executed under other phases of testing covered by this Modification, therefore, no UIT execution is proposed or recommended.

4.5 DS & A Testing

Note that the development will include selected SEC Party participation working in sprints, and validating the progress of the reports through the development phase as described in sections 5.1 and 6.2 following. This will be run by the DS&A team and will act as an extra form of user validation.

PIT will be provided and carried out by the Service Provider and assured by DCC Testing Assurance. SIT will be carried out in a similar way, but User Acceptance Testing will replace the "standard" UIT be carried out with participation from a subset of SEC Parties as described in section 6.2.

4.6 Future Scope Changes and Development

It should be noted that only the seven business processes stated in Requirement 2:

- **Install and Commission**
- **Change of Supplier (Gain)**
- **Pre-Payment**
- **Top Up Device**
- **Update Device Firmware**
- **Meter Reads**
- **Tariff Updates**

are in scope for this Modification. It will require a DCC Change Request and agreed costs and durations agreed between OPSG and DCC to add further processes, individual SRs, SRVs, or other functionality.

A list of further, potential changes is given in Appendix C: Future Options, at the end of this document. These have not been included as part of the FIA costs and durations.

5 Impact on Systems, Processes and People

As defined the change included in this document is mostly confined to data already within DCC and available to DS&A, with no expected changes impacting SMETS1 or SMETS2 Service Providers.

5.1 Working Methodology

During the requirement gathering and refinement, principally as part of the SECMP0122 process which drove the original SECMP0122 and 176 requirements, DCC and SECAS hosted workshops with the Working Group. These workshops aimed to validate the proposals in the Operational Metrics Review (OMR) in terms of the viability of implementing the recommendations, to refine the requirements further, and to enable fast delivery of new requirements and improvements.

It is proposed that the reporting as specified within this Modification will be delivered by DS&A via an iterative delivery mechanism, whereby a Minimum Viable Product (MVP) will be available in a first Sprint in the Implementation phase as shown in Figure 2. Following consultation with the Working Group, further functionality can be delivered in a fast and frequent continuous delivery mechanism until the final product is complete. This is considered the fastest and most exact method in ensuring the requirements are fulfilled and is described further in Section 6.

5.2 Security Impact

The solution will be designed and implemented to ensure that only data related to the relevant SEC Party is made available and will be security assured during the implementation phase through standard DCC reviews. No impact from such assessments is anticipated. Penetration testing will be required and is included in the costs following.

The solution will be security assured during the implementation phase and will comply with standard DS&A reviews, however no impact from such assessments is anticipated.

5.3 Data Science & Analytics Team and Wider DCC Operations

The full range of activities required to implement these requirements including design, development, testing, and implementation would be performed by DCC utilising in-house contractors and permanent staff. There will be a slight increase in the Full Time Equivalent (FTEs) required to do this and support, maintain, and deliver the reporting monthly. These Application Support efforts are costed in section 7 below.

6 Implementation Timescales and Approach

A key factor in planning and delivering this Modification's implementation and is that the reporting is not part of the Smart Metering System, and that the DSP and reporting changes do not impact any Technical Specifications, such that they can be implemented separate from the now-standard SEC Release dates. In an ideal scenario the DSP changes would be implemented in a Maintenance Release early in the DCC development cycle such that the additional SAT data is available for the DCC teams to code and test against.

Once this Modification is Approved, detailed planning of the implementation will take place, with a view to providing the quickest path to delivery.

6.1 DSP Timescales

From CAN approval to the completion of testing and implementation in a maintenance release, a period of four (4) months is anticipated.

6.2 DS&A Development and Timescales

The scope of SECMP242 is the creation of new Journey tracking logic for use in the Business Process Indicators, as well as building reporting output for those indicators at the Atomic Service Request level.

DCC is committed to working with SEC Parties, some of whom have already expressed an interest with working in partnership throughout the development. SEC Party feedback will be vital in testing logic and output for accuracy and usability.

A high-level development pipeline is proposed:

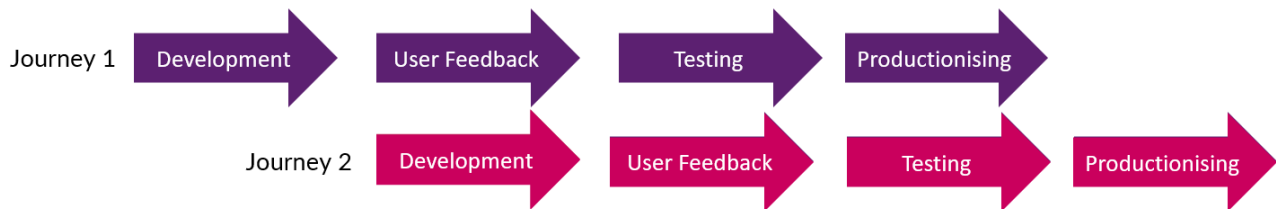


Figure 2: Development Cycle for Operational Metrics Reporting

A pipeline approach has been chosen to allow time for User feedback on the development of Journey logic and reporting output without halting further development work on other processes while waiting. The first Journey attempted will be CoS as agreed with the Business Proposer, but the order for the remaining Journey development will be agreed during the planning stage. As I&C is the most complex, DCC request that this is left to the last to enable DCC to take advantage of the lessons learned from implementing the previous six Journeys, in order to maximise benefit and knowledge.

The development and testing of Business Process tracking logic and reporting does not require testing in the PIT, SIT, or UIT pattern associated with a "conventional" SEC Release, and will not require the testing services of the System Integrator or CSPs.

The timescale to complete the implementation of each Business Process will be on average 50 Working Days (WD), and there are seven Business Processes. This is equivalent to an elapsed 350 WD with a development duration of 110 WD, or approximately five (5) months. User Acceptance testing will be completed by working with volunteering Service Users as indicated in Figure 2. These timescales assume no significant delays are encountered within review phases.

Figure 3 gives an indicative plan of the order of work and expected durations for the whole Modification. The Detailed Planning phase would identify the order of Business Process work, along with expected dates for Service User involvement.

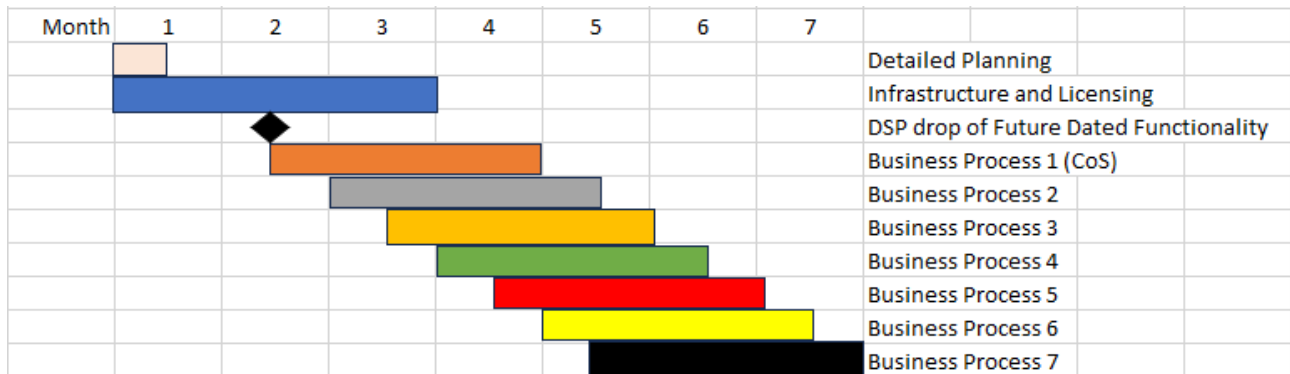


Figure 3: Indicative Plan for Implementing SECMP0242

7 Costs and Charges

This section indicates the total quote for the 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.

Design, build, testing and implementation will attract one off cost as identified and will not follow the PIT, SIT, and UIT pattern associated with a "conventional" SEC Release.

£	Design, Build, and Implementation
Metric Development (SO)	£90,000
Report Production (DS &A)	£110,000
Additional Future Dated SAT Data (DSP)	£62,079
Totals	£262,079

7.1 Application Support

Application Support refers to keep the application maintained and running. It is quoted as a monthly cost and incorporates Full Time Employee (FTE) effort, additional infrastructure, and software licensing costs. An indicative first year cost has been estimated at £13,000 per month, or **£156,000 per annum**. Subsequent Application Support costs will be considered as part of Business as Usual, and will be covered as part of the annual DS&A costs.

Futures changes in the reporting or additional data requested by SEC Parties would be directed to the DS&A team, and would be assessed on a case-by-case basis.

7.2 Contract Amendments

The DSP changes require approval through a CAN. The contract updates for this Modification will be detailed within the CAN and will impact the following schedules:

- Schedule 2.1 (DCC Requirements): update to reflect the addition of new DCC Requirements
- Schedule 3 (DCC Responsibilities): update to reflect the addition of new DCC Responsibilities
- Schedule 4.1 (Contractor Solution): Solution Design documents updates
- Schedule 6.1 (Implementation Planning): addition of new Milestones
- Schedule 7.1 (Charges and Payment): revisions to incorporate the charges and payment applicable

There will be no updates to any other schedules not listed above d this Modification, including Schedule 2.2 (Performance Measures and Monitoring).

Appendix A: Glossary

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

Acronym	Definition
BAU, BaU	Business As Usual
CAN	Contract Amendment Note
COS	Change of Supplier
CSP	Communication Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
DS&A	DCC Data Science and Analytics
DUIS	DCC User Interface Specification
ECOS	Enduring Change of Supplier
ESME	Electricity Smart Metering Equipment
E2E	End to End
FIA	Full Impact Assessment
FTE	Full Time Employees
GBCS	Great Britain Companion Specification
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
I&C	Install(ation) and Configuration
MVP	Minimum Viable Product
OMR	Operational Metrics Review
OPR	Operational Performance

	Regime
OPSG	Operations Group
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
PMR	Performance Measurement Report
PMRG	Performance Measures Review Group
PPMID	Payment Meter Interface Device
RTT	Round Trip Times
SAT	Service Audit Trail
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SO	DCC Service Ownership
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specification
SR	Service Request
SRV	Service Reference Variant
SSI	Self-Service Interface
S1SP	SMETS1 Service Provider
TRT	Target Response Times
UIT	User Integration Testing
UTRN	Unique Transaction Reference Number

Appendix B: Journey Tracking Considerations

There are several aspects that should be considered while mapping out Journey logic:

- Where an SRV is DCC only – 8.14.1 for instance – only the success (response Code) will be used to calculate success as it does not execute on the meter.
- For install and commission, only installs initiated between 7am – 7pm Monday – Saturday will be included within the reporting metrics.
- For Change of Supplier, DCC intend to determine the purpose of the request. Only Journeys where an end-user is moving from one Energy Supplier to another will be included.
- For service requests that appear in multiple Business Processes, the requests will be assigned to the Business Process they relate to. For example, SRV1.1.1 appears in I&C, COS, and the Tariff Change Journey.
- For device future dated SRVs, a count of 8F66's should be considered execution success against the business outcome and 8F67 will be execution failure.
- DCC will leverage this Modification to reduce the current overhead on reporting and after completing development, will seek guidance from OPSG on measures that are no longer required and can be removed.
- Once these performance indicators are produced, consistently poor performing processes leading to consistent failure within the business processes must be addressed by helping SEC Parties take the necessary action to improve.
- DCC and the SEC Parties will, as part of the Journey mapping, agree what good success measures look like and agree the minimum targets within each individual Journey.
- DCC expect to identify areas of performance that might require investigation in the infrastructure. Infrastructure investigation is out of scope for this Modification, but will need to be taken into account.

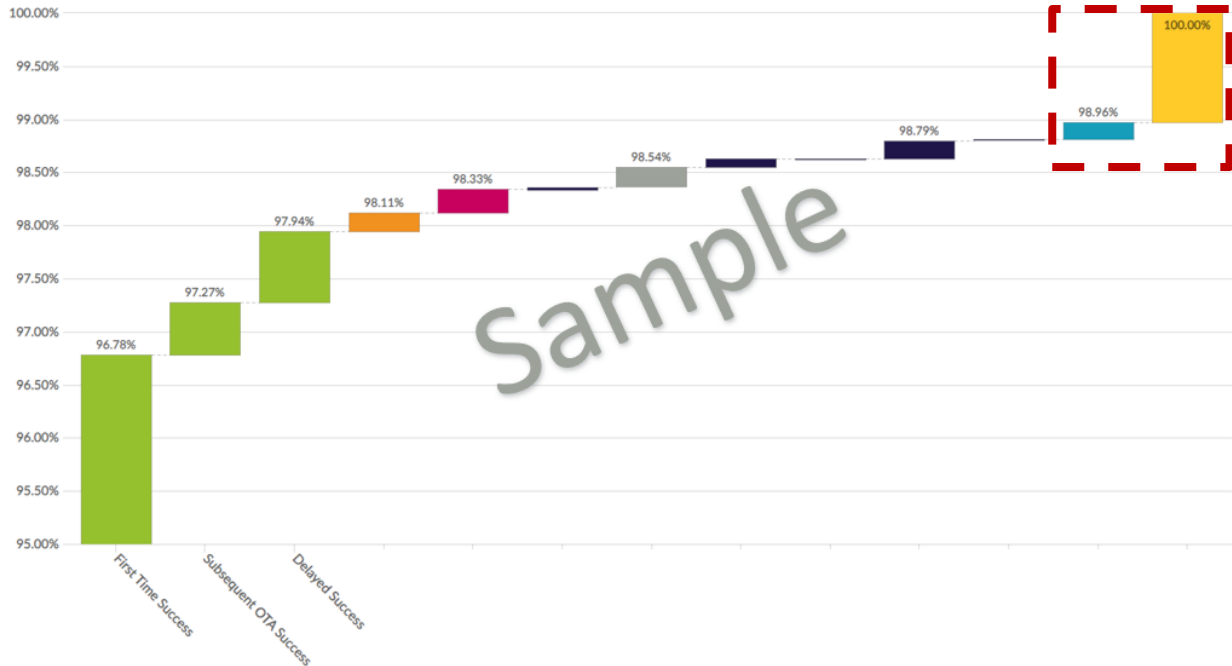
In terms of Journey tracking constraints:

- Journey tracking will be calculated based on the DSP SAT and Inventory datasets, rather than any CSP or adaptor data.
- As part of the implementation phase of Journey Tracking, DCC may identify Journeys that cannot be fully tracked. The inclusion of additional requested DSP data points would significantly improve accuracy, above what is currently available. However, these additions are out of scope for this FIA and Modification as a whole.
- Some key business processes have significant differences in the way SEC Parties deploy into the estate. DCC cannot measure every variance in these processes and in line with development of this Modification, the scope is strictly limited to that specified in the Requirements above.

Appendix C: Future Options

This section includes potential future additions to the Operational Metrics reporting.

1. The red dotted boxed buckets shown in the flying brick diagram below are a granular view of E21s. These are outside the scope of this Modification due to the need for CSP network level data associated with E21s being needed to break down this bucket into actionable owners



for triage and resolution.

2. For use alongside the SECMP242 reporting, DCC could produce additional technical specifications per Business Process to support each output. This could be focused on the optional waterfall and fallout views provided. The intention being to assist SEC Parties in understanding their service request / Journey indicators and identifying where improvements may be made.
3. In these additional technical specifications could be included knowledge articles detailing what makes up fallout buckets and, where available, how to resolve issues using existing handling strategies or best practise documents.
4. A further enhancement to SECMP242 reporting could be the addition of CSP level information in relation to breaking down the E20 and E21 errors. If made available, information from CSPs including last CHF time of communication at the network level would enhance reporting. A new fallout bucket would become available relating to whether a CHF attached to the meter is communicating and as such provide additional insight into the status of meters on the estate. Using these, SEC Parties could look to target problem meters and clean up inventories where devices are no longer "on-the-wall".
5. Active Schedule/ Meter Read Information; an additional data source for enhancement of Journey tracking in the meter reads Journey. This change would consist of DCC receiving DCC schedule information for all active schedules including:

- Device Id

- Schedule Type (Service Request Variant)
- Schedule Start/ End Date
- Schedule Frequency (daily, weekly, monthly etc)
- Schedule execution time
- Start and End date offsets.

In addition to this schedule information a further entry in the SAT for start and end date offsets would need to be added for any meter read SRV sent as on-demand or future dated. This information would enhance the meter reads Journey by indicating success based on length of read and being able to tie on-demand attempts to previous schedules for Journey tracking. This is beneficial for determining best chance of success as different types of Users utilise different lengths of read. For example, an Energy Supplier may use one day reads, while a DNO may read a week or a month at once.

This would be an enhancement similar to UTRN identification for prepayment top-up which DCC already receives.

6. Device Certificate Information would be an additional data source for enhancement of the flying brick view of fallout with device certificate information similar to that of supplier certificate information that DCC already possesses.

Included in this extract would be:

- Device Id
- Device Certificate serial numbers
- Certificate Status (pending/ in-use)
- Status Change datetimes
- Certificate type (DS/ KA)

By receiving in-use and latest device certificate information, DCC can tie device certificate misalignments to failed Journeys and display as a fallout view in the Journey Indicator outputs. DCC can then provide guidance on this bucket as to steps to help resolve issues.

7. CSP Information; the addition of CSP level information in relation to breaking down the E20 and E21 errors. If available, information from CSPs including last CHF time of communication at the network level would enhance reporting.

A new fallout bucket would become available relating to whether a CHF attached to the meter is communicating and as such provide additional insight into the status of meters on the estate. Using these, SEC Parties could look to target problem meters and clean up inventories where devices are no longer “on-the-wall”.

8. As part of the solution DCC could look to provide a mechanism to introduce additional datasets that can be used to understand lower than expected success rates. This could be SRVs sent during maintenance windows, as well as SRVs sent to ‘non-communicative’ or

non-compliant devices. Some of these datasets might require new supply, others might use data within the existing data warehouse.