

SEC Modification Proposal, SECMP0176

Portal Access to Customer Analytics Reporting

Second Full Impact Assessment (FIA)

| | |
|------------------------|-------------------------------------|
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1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to implement SECMP0176, Customer Portal Access, which comprises:
 - £466,065 in Design, Build, Testing, and Implementation
- Additional support costs for this reporting will be absorbed into the existing Business As Usual (BAU) support structure already in place
- A timescale to complete the implementation of eight (8) months

Note that DCC are recommending that if this Modification is approved, this work should begin after the DCC Data Science and Analytics (DS&A) team complete their transition to a cloud-based platform.

Problem Statement

As part of SECMP0122A the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success, or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting applies to all SEC Parties in an anonymised view, and is distributed in PDF files over a month later from the reporting period.

Benefit Summary

This Modification will provide a standardised set of benchmarked individualised reports to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to allow them to diagnose reasons for poor performance so that they can take steps to address it.

In addition, this second FIA proposes the implementation of a Customer Portal that permits secure online access to anonymised differential and comparative analysis of aggregated data using a web browser. The current format for the majority of DCC reports (such as the SECMP0122A suite of reports) is as PDF documents and CSV files, which can be large and difficult to navigate. Online access to data will permit DCC Users, who may not otherwise have the technical capability to analyse data provided by DCC, to more quickly and effectively locate the relevant analysis, and gain insights from the data.

2 Document History

2.1 Revision History

| Revision Date | Revision | Summary of Changes |
|---------------|----------|---------------------|
| 01/10/2023 | 0.1 | DCC Internal Review |
| 06/10/2023 | 0.3 | Published to SECAS |

2.2 Associated Documents

This document is associated with the following documents:

| Ref | Title and Originator's Reference | Source | Issue Date |
|-----|--|--------|------------|
| 1 | MP176 Modification Report | SECAS | 17/11/2021 |
| 2 | MP176 Business Requirement v0.2 | SECAS | 17/11/2021 |
| 3 | MP176 Legal Text v0.1 | SECAS | 17/11/2021 |
| 4 | MP176 Preliminary Assessment Request | SECAS | 17/11/2021 |
| 5 | SECMP0176 Portal Access to Customer Analytics Reporting Second PIA | DCC | 21/07/2022 |

References are shown in this format, [1].

2.3 Document Information

The Proposer for this Modification is David Walsh from the Data Communications Company (DCC).

The initial Preliminary Impact Assessment was requested of DCC on 17th November 2021. A second PIA was offered by DCC with the inclusion of a "Customer Portal" or front end to deliver extra data.

Note that the DCC Technical Operations Centre (TOC) previously identified as the DCC team providing the reporting has been renamed to the Data Science and Analytics (DS&A) team and is described in Section 4 as part of the Technical Solution.

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

Following the implementation of SECMP0122A, the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting is an anonymised view of reporting which does not provide customers with a view of their own performance, how they compare with other SEC Parties, or the ability to simply diagnose factors (Devices, Firmware, Geographic Location, Orchestration) that could be affecting their performance against key business processes, which in turn reduces the ability of Users to drive improvement, and the ability of the DCC to assist them in doing so.

DCC is seeking to provide a standardised set of benchmarked reporting to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to enable them to diagnose reasons for poor performance so that they can take steps to address it. The DCC's workshops with DCC Users (including Import Suppliers, Export Suppliers, Gas Suppliers, and Electricity Distributors) and via DCC's Quarterly Finance Forum (QFF) provided a unanimous view that this should be implemented via a SEC Modification as it would mandate receipt of this information by all Parties and therefore offer equal benefit to them.

DCC have indicated that it would be possible to provide access to most of the required data through a Customer Portal or landing zone which Users could use to interactively select their own data and to download the results.

3.2 Business Context and Requirements

During the initial development of SECMP0122A, the reporting requirements were dimensioned by SRV and Region. To better understand the shortcomings in performance, the DCC extended the reporting model to Device and Party levels, which revealed a significant disparity in performance levels between DCC Users across several key business processes. As not all SEC Parties have the reporting capabilities to assess their own performance against these key metrics, they have a reduced ability to drive improvement within their own businesses and in their interactions with the DCC. The inability to identify areas of concern can lead to delays in industry processes and have financial and reputational costs across all Parties.

3.3 Business Requirements

This solution will be applied to Smart Metering Equipment Technical Specifications (SMETS) 1 and SMETS2+ Devices.

The DCC will provide anonymised league tables for key business processes, identifying average performance per Smart Energy Code (SEC) Party for that Business Process and identifying the positioning on those league tables of only the SEC Party to whom that report is directed. DCC Customer Analytics Reporting will not share any Device Level data with any party other than the target SEC Party. Any SEC Party which is active in DCC Systems can request a further, new report to be added to the Customer Analytics Reporting suite, or

request a change to an existing report, by making a request to a DCC group mailbox, but additional design, build, and test costs will be incurred.

| Ref. | Requirement |
|------|--|
| 1 | For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate. |
| 2 | The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role. |
| 3 | The DCC shall provide reporting on DCC, and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users. |

Requirement 1: For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate

1. A single bar graph for each Device Type (Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), In Home Display (IHD), Pre-Payment Meter Interface Device (PPMID), and Other identifying each Device Model (on the x-axis) and the volume of meters and of each firmware model (on the y-axis).
2. A single Device Model bar graph giving a breakdown of each SEC Party's estate firmware version, highlighting the report recipient and the industry average.

The DCC will provide for each customer a CSV data file identifying all Devices on their estate with the following data fields:

- Device Identifier;
- Smart Metering System (SMS) Identifier;
- Device Type;
- Device Model;
- Firmware version;
- Communication Service Provider (CSP) Id;
- Energy Supplier Id;
- Distribution Network Operator (DNO) Id;
- MPxN;
- Postcode;
- Last Meter Read time/date;
- Last Alert time/date;
- Last Alert Code;
- Commissioned Status;
- Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts);
- Prepayment flag;

- SMETS version;
- whether the Device expires on the Central Products List (CPL) within 30 days;
- Devices whose Security Certificates are due to expire; and
- Change of Supplier Start and End dates.

Note 1: The above request was captured at a DCC Workshop. The DCC believe that this data could run to many millions of rows and therefore suggest some form of exception reporting. The format of this report is therefore to be discussed with customers as part of the Detailed Design phase, however the FIA costs and duration will be based on the full dataset.

Note 2: A limited subset of these data fields would be provided through the Portal. This is noted in the Solution Overview in section 4.2.1 following.

Requirement 2: The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.

1. The DCC will report for each of the requirements noted in this section, identifying in separate graphs:
 - A monthly average benchmark of success or failure against other customers operating in the same User Role.
 - A monthly view of Round-Trip Time or Alert delivery time, identifying customer best, worst, mean and median against those same metrics at an industry level for other customers operating in the same User Role.
 - A daily average view of success/failure and average Round Trip Time for that customer compared to industry average. Where relevant, performance will be broken down by meter type, Region and SMETS1/SMETS2, and 'Category 1 & 2' Incidents will be highlighted. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.
2. The DCC will provide a monthly CSV data file for each Service Reference Variant (SRV), identifying at an aggregated level all dimensions that Speed, Volume, Payload (SVP) report on:
 - Success/Failure;
 - Failure reason code;
 - Communications Hub Manufacturer;
 - Communications Hub Model;
 - Communications Hub Function;
 - Communications Hub Firmware;
 - Device Type;
 - Device Manufacturer;
 - Device Model;
 - Device Firmware Version;

- Region; and
- Round Trip Time.

Requirement 3: The DCC shall provide reporting on DCC, and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Electricity Distributors will receive reporting on the following subset of Alerts:

- AD1 – Power Outage Alert;
- 8F35 – Supply Outage Restored;
- 8F36 – Supply Outage Restored - Outage \geq 3 minutes;
- 8F58 – Supply interrupted on Phase 1;
- 8F59 – Supply interrupted on Phase 2;
- 8F5A – Supply interrupted on Phase 3;
- 8F37 – Supply Outage Restored on Phase 1;
- 8F38 – Supply Outage Restored on Phase 2 Restored - Outage \geq 3 minutes;
- 8F39 – Supply Outage Restored on Phase 2 Restored;
- 8F3A – Supply Outage Restored on Phase 2 Restored - Outage \geq 3 minutes;
- 8F3B – Supply Outage Restored on Phase 3 Restored;
- 8F3C – Supply Outage Restored on Phase 3 Restored - Outage \geq 3 minutes;
- 8F0C – Clock not adjusted (adjustment greater than 10 seconds);
- 81C6 – Clock not adjusted (outside tolerance);
- N12 – Failure to deliver Command to Device;
- N13 – Failure to receive Response from Device;
- N53 – Command not delivered to ESME; and
- N55 – SMETS1 Service Provider (S1SP) Service Request Validation Failure

This reporting will provide the following views:

1. A daily average view of success/failure of Alert sending and average delivery time for that customer compared to industry average.
2. A monthly summary of success compared to industry average.
3. The DCC will provide a monthly CSV data file for each Alert type, identifying at an aggregated level all dimensions that SVP report on:
 - Success/Failure
 - Failure reason code
 - Comms Hub Manufacturer
 - Comms Hub Model

- Comms Hub Function
- Comms Hub Firmware
- Device Type
- Device Manufacturer
- Device Model,
- Device Firmware Version,
- Region,
- Round Trip Time

Reports for the Electricity Distribution role for the Alerts N13 'Failure to receive Response from Device' and N55 'S1SP Service Request Validation Failure' will receive an additional view identifying a breakdown of the Alerts split by Meter Make, Model, Firmware Version.

In addition, the following reports will be produced specifically for the Electricity Distribution role:

- Report comparing the daily monitoring of N16 'Device Identity Confirmation' Alerts with N42 'Security Credentials Updated on the Device' Alerts identifying volumes which haven't a seven-day Service Level Agreement (SLA) for receipt of the N42 following N16 and those that have failed this metric, sorted by Energy Supplier.
- Standardised Reporting identifying Power Outage Alerts with no Power Restoration Alerts:
 - AD1 with no 8F35
 - AD1 with no 8F36
 - 8F35 with no AD1
 - 8F36 with no AD1

3.4 Overlap with Other SEC Modifications

There are four other Modifications related to reporting, although the original Modification, SECMP0122, was split into two to accommodate required changes in Service Provider data as follows.

| SECMP | Summary | Status |
|-------|---|--------------------------|
| 122A | Using DS&A data, provides Performance Measure reporting based on performance against SLAs for Service Requests and Business Processes which was added to the PMR. | Implemented |
| 122B | Includes Alert Timestamps for SMETS2 CSPs plus DS&A reporting to support Alert Throughput reporting | Go Live December 2023 |
| 187 | SECMP0122A measures Round Trip Times (RTT) which includes Home Area Network (HAN) wait times, and which are not defined or included in the SEC. These RTTs are compared to the Target Response Times (TRT) in the SEC. This Modification is intended to determine and introduce the appropriate RTT targets and reporting into the SEC. | On Hold |

| | | |
|-----|--|--|
| 217 | Introduces valid timestamps for each Service Provider boundary related to the TRT to see potential issues more clearly and allow better management of performance issues. Proposed updated legal text for SECMP0122A to provide correct definitions of the reporting measures. Added availability measures and consequential contract changes with potential to update legal text provided in SECMP0122. | PIA Complete, technical solution rejected, currently On Hold |
| 242 | Captures the consumer experience and pinpoint areas of concern through determining the success or failure of an agreed set of Service Reference Variants (SRVs) which make up the overall outcomes a set of Business Processes. | PIA complete, expected to go to FIA in December 2023. |

SECMP0187 and SECMP0217 were proposed to address the nature of the timing measurements in the SECMP0122B monthly reporting, but even if implemented will not affect the number of reports and their formats.

However, as part of the output from the October Working Group on SECMP0242, it was suggested that Operations Group should consider the need for the full suite of reporting currently provided and indeed the scope of the reporting in this Modification, in light of the additional information provided by SECMP0242. While it is not possible to immediately quantify, clearly reducing the number of reports given in the above requirements would reduce the effort and hence cost associated with producing a Customer Portal as identified in this Modification.

4 Description of Technical Solution

In a previous FIA for this Modification, DCC described, presented, and costed a solution with limited analytics functionality to provide a standardised set of benchmarked individualised reports to all DCC Users. This would enable a SEC Party to identify their organisation's performance for key business processes in comparison to their peers and to allow them to diagnose reasons for poor performance so that they can take steps to address it. The key functionality allowed Users to view their own reporting data, and create CSV file downloads of this data.

In this version of the FIA, the solution will contain the same functionality but will include for each User the technical flexibility to add or amend metrics to the reporting suite by logging into a Customer Portal. This enhanced service will mean SEC Parties can access a range of curated data reports and the underlying data sets held by the DS&A team.

4.1 DS&A Changes and Approach

Separately from this Modification, DCC is currently finalizing, and from November 2023 expects to embark on, a major overhaul of its data infrastructure which will see DCC reporting transition to cloud-native technologies. The transition will unlock the following:

- **Scalability:** Cloud-native databases offer unparalleled scalability. As DCC reporting, and DS&A, grows and our data needs expand, the new system will adapt seamlessly.
- **Performance:** Enhanced speed and performance metrics will ensure that data retrieval and processing occur at unprecedented rates, facilitating faster decision-making.
- **Cost-Efficiency:** Over time, cloud-native solutions tend to be more cost-effective. Their flexible pricing models, based on actual usage rather than potential peak capacity, mean we only pay for what we use.
- **Reliability:** Cloud-native databases offer better redundancy and automatic backup solutions, ensuring our data is safe, recoverable, and always available.
- **Innovation:** With the power of the cloud, we can rapidly deploy new technologies and tools that integrate seamlessly with our database, driving innovation in data analytics, machine learning, and AI.

This will require a period of building the infrastructure and loading data assets which when complete a complex migration of the thousands of regulatory mandated and customer reports in existence today. This new structure would be used as part of the existing architecture to serve data from the DS&A Data Warehouses into the Customer Portal as shown in Figure 1 below. The Customer Portal would then be built on top of the new infrastructure.

4.2 Customer Portal Solution

The following sections describe the components and architecture required to deliver the Customer Portal functionality for this Modification.

4.2.1 Solution Components

The Customer Portal service will initially feature as a secure Power Pages portal, through which each SEC Party will be able to access personalised, curated reports and underlying datasets based on their data. Several challenges must be resolved, from selecting a straightforward, flexible portal which is not hardcoded as far as possible, adheres to key security requirements, and implements the Microsoft Power BI¹ capability effectively.

The key elements of the solution include:

- An initial Customer Portal build
- A suite of Power BI providing dynamic and interactive Business Intelligence
- Reporting development to meet the requirements listed in section 3.3 above
- A solution to query the underlying datasets

These elements have some simple, yet key, low-level requirements associated with them as follows:

1. The Customer Portal must be future proof, and both easy to extend and maintain
2. The solution must be secured in alignment with DCC security standards and best practices

Further detailed requirements for the Customer Portal are given in Appendix C: Detailed Requirements at the end of this document.

¹ Microsoft Power BI is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence.

4.2.2 High Level Architecture

The following diagram gives a high-level view of the anticipated architecture for this solution.

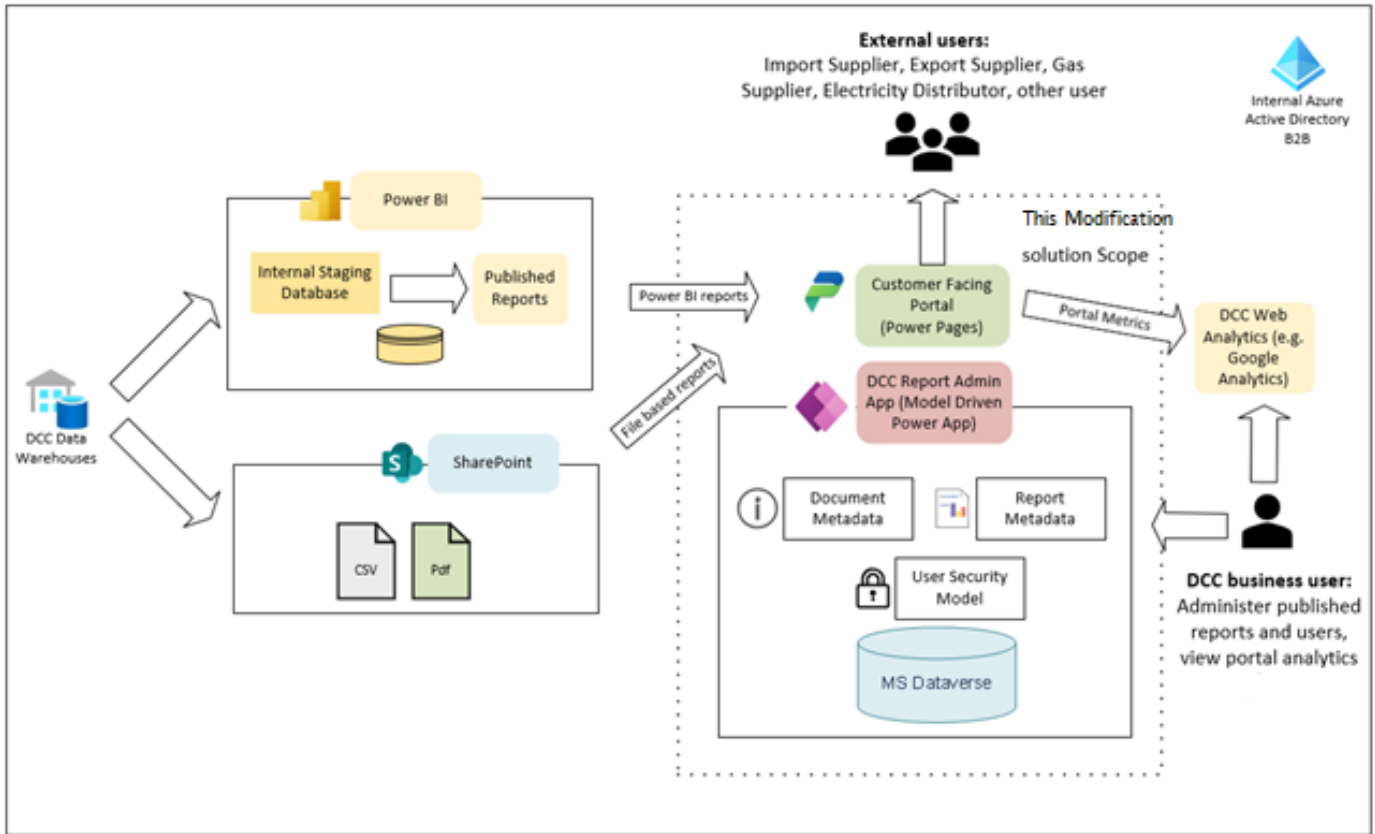


Figure 1: High Level Architecture of DS&A Solution with Customer Portal

The solution components include:

1. DCC Data Warehouses established as part of the updates described in section 4.1. Note there are no costs for that work included in this Modification.
2. Integration with existing Power BI and SharePoint as the source of reporting dashboards and file-based reports.
3. Secure Customer Portal for SEC Parties using Microsoft Power Pages providing report functionality to each User. The access control is managed by the DCC's existing Azure Active Directory.
4. DS&A-facing DCC Report Admin App (Power App²) – accessed by DCC business users to manage visibility of reporting to SEC Parties with data managed in the Microsoft Dataverse database. Dataverse is a low-code platform with data within Dataverse stored in a set of tables.
5. Portal Analytics feed for analysis of portal usage.

The Power BI component provides a feed into the Power BI published reports which in turn are accessed through the Customer Portal. The development of the Power BI component will require analysis of the format of the DCC Data Warehouse, and will

² Microsoft PowerApps are used to modify data, and are designed as a low-code application. Low-code platforms use visual tools, drag-and-drop functionality, and automation to create apps.

establish the correct Power BI licensing plan. The structure and process for Power BI to publish data into Power Pages must be established, and then be validated by SEC Party and DCC user testing. Once the security and performance of the solution is established and verified, then work can begin on producing the reporting functionality for all SEC Parties using the Customer Portal.

4.3 Requirement and Solution Comparison

Whilst this solution is defined to meet the requirements covered in section 3.3 it is prescriptive and limited, by its nature, in which analytics that would be available to SEC Parties. However, by building this solution on top of the new DS&A platform with the solution using Microsoft Power BI and Power Pages this Modification is not limited to a one-off delivery of prescribed reports and analytics, but rather the start of a change giving access to:

1. **Current DCC Reporting** – SharePoint is complex to navigate and DCC customers are not always aware of what is there. DCC will be able to move or replicate all reporting to the Customer Portal, and create interactive guidance content explaining the reporting available and human friendly user guides with on-screen tips.
2. **Dynamic Reporting** – the current reporting is often weekly or monthly based, and in PDF or CSV file format. The Customer Portal is an enabler for all future reporting to be dynamic with current reporting migrated to it.
3. **Future DCC Reporting** – For SEC Parties requiring a faster way to request new reporting and analytics, the DCC development time would be significantly reduced. New reports should be available in days and weeks not weeks and months.
4. **Comparative Analytics** – The Customer Portal will allow a framework of report delivery that create anonymised league tables (comparative analytics) by design.
5. **DCC-Driven Insights** - As well as analytics being available, customers have indicated they want to see DCC driving the conversation with, for example, splash pages indicating where there may be a problem. Whilst data visualisation is delivered via Power BI, the Power Pages Customer Portal will allow much richer content delivery. Publishing insights garnered by the DCC team can be automated into the Portal, and manual content from a DCC investigation can be simply delivered.
6. **Prescriptive Analytics** – The solution will not just highlight anomalies but could indicate the path to resolution. The design will enable DCC to publish any form of content, in turn positively helping DS&A by allowing a simple methodology for delivering prescriptive insight and driving improvement across the ecosystem.
7. **Filtering and Dimensioning** - The solution permits multiple dimensions across much wider date ranges, such that instead of fixed monthly reporting, data can be filtered across any date range and dimension, such as CSP Region, or firmware version.
8. **Downloading Filtered Data** - The solution will allow downloading of any data associated with the visualisation by the User. This will allow the user to drill down on specific, problematic areas, and download the data.

4.4 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.

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 6.1 below.

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 6.1 following. This will be run by the DS&A team and will act as an extra form of user validation.

5 Impact on Systems, Processes and People

As defined the change included in this document is 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, the 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 3 below. 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, using the same methodology as SECMP0122. This is considered the fastest and most exact method in ensuring the requirements are fulfilled and is described further in Section 6.

5.2 Infrastructure Impact; Microsoft Azure and Amazon Web Services Platforms

As DCC DS&A are moving their new reporting functionality to an Amazon Web Services (AWS) based cloud infrastructure, there might be issues in implementing the proposed solution which is predominantly Microsoft-based components. As part of the detailed design, this will be investigated, and any design changes required will be taken. However, DCC believes the Microsoft-based solution would meet the requirements more closely and provide the ability to provide the functionality to allow a straightforward implementation of future reporting requirements and features, e.g., the AWS Quicksight application does not allow for extensive customisation and is limited compared to Power BI which could affect the quality of any QuickSight reports and dashboards produced.

DCC are working with their Commercial and Procurement teams to ensure the best possible license agreements with Microsoft are achieved and would support the proposed solution in the most effective costs. DCC already has significant SharePoint and Power BI licensing in place as part of the current reporting hub and this would most likely be used as the basis for future license requirements.

5.3 Security Impact

The DCC is already responsible for all security controls and assurance associated with the infrastructure and user data and is in alignment with security recommendations and best practices. Identity and Access Management processes and policies are owned and managed by DCC including assigning identities within DCC's tenant, granting and revoking permissions, Joiners-Movers-Leavers (JML) procedures, etc. The DCC cloud tenant will be used to implement the solution, including cloud computing and data storage entities potentially across different platforms, and will implement the existing controls and best practices, with security controls and policies in scope aligned with ISO 27001 standards.

Whilst developing the High-Level Architecture through the FIA DCC have been unable to fully review all aspects and ensure that the solution is 100% compliant with DCC Security

standards. More detailed security reviews will be required by DCC Security Assurance and DCC Security Architecture teams once the programme reaches the Low-Level (Detailed) Design stage. As this Modification surrounds increased data sharing through a new mechanism with other SEC Parties this activity will be critical. If there were security concerns identified at the LLD which required different solutions there is a risk this may impact the initial costing provided following, but the DCC would be responsible for providing solutions and fixes.

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.

5.4 Technical Specifications

No change to DUIS, GBCS, or any other Technical Specification.

5.5 Training

As the initial screens in the Customer Portal may appear initially complex, DCC will provide User training when development is complete, and the Customer Portal is ready for use for the SEC Parties.

6 Implementation Timescales and Approach

Assuming acceptance and approval of this Modification, commercial acceptance can be put in place once the initial DS&A work on a transition to a cloud-based platform is complete as described in section 4.1 above.

It is important to note DCC would not be able to implement SECMP0176, if approved, for the next 12 months. DCC is currently finalizing, and from November 2023 will embark on, a major overhaul of its data infrastructure which will see DS&A transition to cloud native technologies as described in section 4.1 above. This will require a period of building the infrastructure and data assets across the remainder of this financial year and then complete a complex migration of the thousands of regulatory mandated and customer reports in existence today. Post this activity DS&A would look to build the Customer Portal and suite of self-serve dashboard and reports required as part of this Modification.

A key factor in planning and delivering this Modification's implementation and release is that the changes are neither part of the Smart Metering System, nor do they impact any Technical Specifications, such that they can be implemented separate from the now-standard SEC Release dates. This work should be completed within six (6) months of approval.

6.1 Modification Development Methodology and Timescales

As described in Section 4.4 and shown in Figure 2 an iterative approach will be utilised to deliver this Modification.

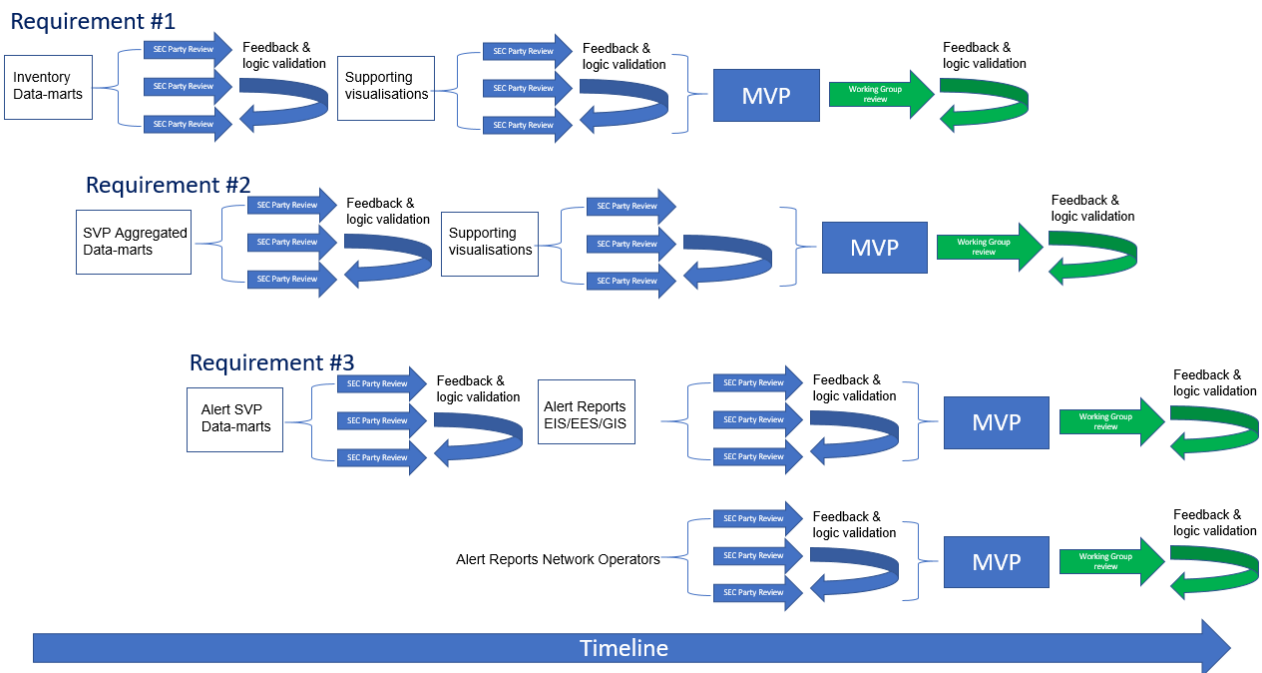


Figure 2 Implementation approach

The initial Sprint 1 output is planned to be available for Working Group (or a selection of volunteer Users) review after just over one-month post-commercial acceptance.

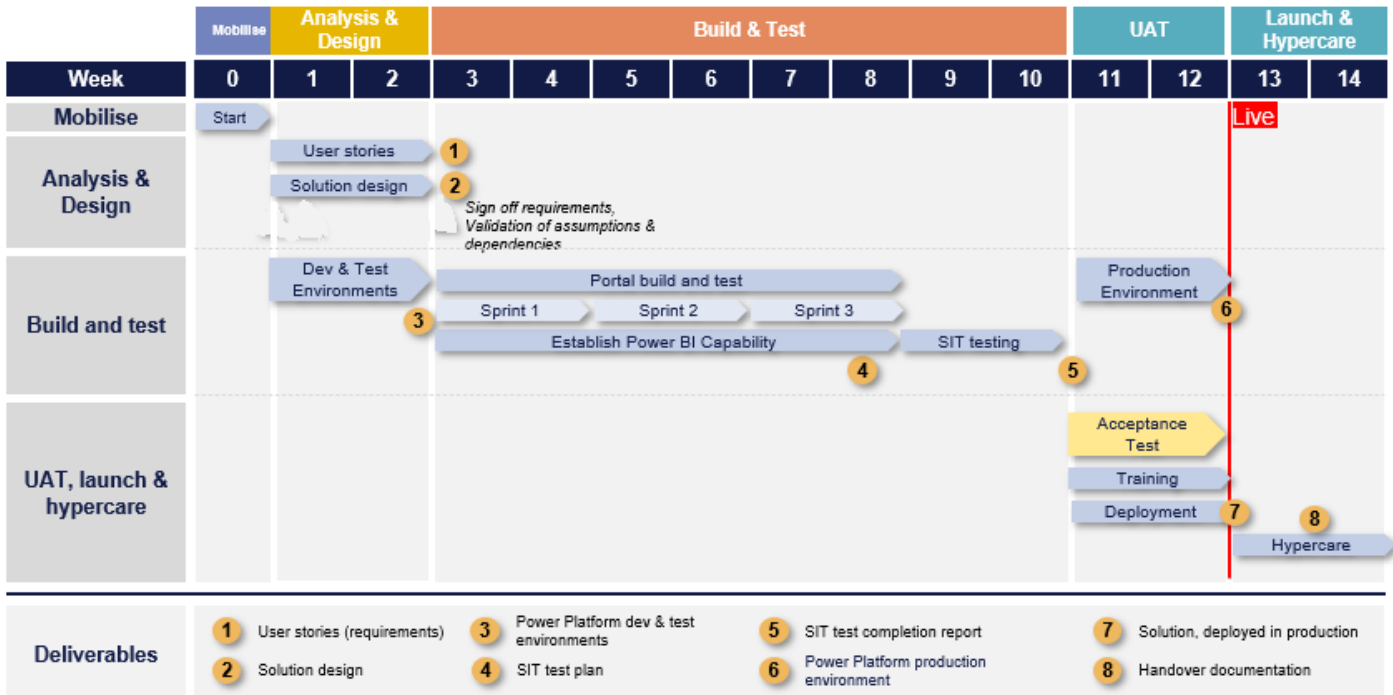


Figure 3: Proposed Implementation Timelines

As indicated in Figure 3 this will involve Service User participation within this period. These timescales assume no significant delays are encountered within Working Group review phases. In summary, DCC will deliver the solution to a limited number of Users, ideally those included in the User Acceptance Testing and Working Group review within three (3) months from Commercial Acceptance and the start of working with the full release available in the middle of month four (4).

Note that the delivery to all SEC Parties would require further development potentially lasting up to five months. There are a large number of Parties requiring the Customer Portal functionality, and the solution would be scaled appropriately for a performant result, and the work in designing and implementing each report would be extremely similar with the main concern being security and ensuring that the appropriate data is presented to each Party.

6.2 Testing and Acceptance

It is assumed that the change will be implemented and tested as a separate release not necessarily at the same time as a SEC Release. It will include testing iteratively, sometimes with Users, during development. The development and testing will not require the specific testing services of any external parties and instead utilise a collaborative approach with Service Users marked as "Acceptance Test" in Figure 3.

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.

| | |
|---|----------|
| Detailed Design, Build and Pre-Integration Testing | £195,065 |
| Additional Cloud Infrastructure | £42,000 |
| Power BI Report build for 70+ per customer at £39,000 per month – expected to take 5 months | £195,000 |
| DCC Test Assurance (12 weeks PIT 0.5 FTE plus 16 weeks 0.25 FTE during individual report development) | £20,000 |
| Penetration Testing | £10,000 |
| DCC User Acceptance Testing (4 weeks) | £4,000 |
| Total for Platform, Implementation and Reports | £466,065 |

7.1 Licensing

DCC holds significant numbers of Microsoft licenses, but additional licensing for Microsoft Power Pages, the Microsoft Power App development tool, and Power BI used for creating and viewing reports will be required, and are included in the quote above as Design, Build, and PIT costs, as well as Application Support (running) costs noted following.

7.2 Design, Build and Testing Cost Impact

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.

Service Users would be engaged in the test phases for this Modification for each relevant MVP, although there would be no impacts on their systems beyond the option to download CSV files.

7.3 Application Support

This refers to keep the application maintained and running. It is quoted as a monthly cost and incorporates FTE effort, infrastructure, and software licensing costs.

Depending on SEC Party usage of the Customer Portal, the costs could range from £2500 - £7500 per month on an ongoing basis. Application Support costs will be considered as part of Business as Usual, and will be covered by annual DS&A costs.

Costs for 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.

Appendix A: Glossary

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

| Acronym | Definition |
|----------|--|
| AWS | Amazon Web Services |
| BAU, BaU | Business As Usual |
| CPL | Central Products List |
| CSP | Communication Service Provider |
| CSV | Comma Separated Variable |
| DCC | Data Communications Company |
| DNO | Distribution Network Operator |
| DS&A | Data Science and Analytics |
| DSP | Data Service Provider |
| DUIS | DCC User Interface Specification |
| ESME | Electricity Smart Metering Equipment |
| FIA | Full Impact Assessment |
| FTE | Full Time Equivalent |
| GBCS | Great Britain Companion Specification |
| GSME | Gas Smart Metering Equipment |
| HAN | Home Area Network |
| IHD | In Home Display |
| JML | Joiners-Movers-Leavers |
| LLD | Low Level Design |
| MVP | Minimum Viable Product |
| OMR | Operational Metrics Review |
| PIA | Preliminary Impact Assessment |
| PIT | Pre-Integration Testing |
| PPMID | Payment Meter Interface Device |
| QFF | Quarterly Finance Forum |
| RTT | Round Trip Time |
| 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 |
| SRV | Service Reference Variant |
| SVP | Speed, Volume, Payload |
| S1SP | SMETS1 Service Provider |
| TOC | Technical Operations Centre |
| TRT | Target Response Time |
| UIT | User Integration Testing |

Appendix B: Risks, Assumptions, Issues, and Dependencies

Risks

| Ref | Description | Status/Mitigation |
|------------|--|--|
| MP176-DSR1 | A poor Customer Portal solution will require significant cost and lead time to update, and have a poor response to stakeholder needs | Open The solution should include simple configuration and low-code technologies requiring relatively low overheads and staff to maintain and change the solution |
| MP176-DSR2 | Limiting the functionality in the Customer Portal, reporting, and data querying would most likely require further future investment in infrastructure and software to provide any new reporting capabilities | Open. The solution shall include the ability to scale the infrastructure to account for changes in demand as well as be configurable and require low- code changes to meet any new requests from SEC Parties |
| MP176-DSR3 | Infrastructure builds too small or too large | Open. With on-premises infrastructure, there is a significant risk that the infrastructure for a specific solution may be either built over or under capacity, particularly if it is difficult to forecast potential usage. With a cloud-based platform, it is relatively straightforward to scale down or up to meet customer usage. |
| MP176-DSR4 | If there were security concerns identified at the Low-Level Design (LLD) which required different solutions, this may impact the provided costing. | In the LLD there will be complete analysis of the security aspects of the solution. Any shortcomings would be addressed by the DCC. |

Assumptions

None at this time.

Issues

None at this time.

Dependencies

| Ref | Description | Status/Mitigation |
|------------|--|---|
| MP176-DSA1 | DCC cannot start the Customer Portal work until it has completed the move of its reporting functionality to a cloud-based platform | Open, Accepted DCC is carrying out a major overhaul of its data infrastructure which will see reporting transition to cloud-native technologies. The Customer Portal would be built on this new platform to use the scalability and improved performance of the cloud infrastructure. It would be extremely inefficient to build on the current infrastructure or very risky to build as a transition to cloud computing is taking place |

Appendix C: Detailed Requirements

These requirements will be used for the basis of testing and implementation criteria for this Modification.

| ID | Epic / Process | Requirement |
|--------|--------------------|---|
| DCC-1 | Content Management | As a DCC Report Administrator I want to see all Published csv/pdf files so that I can decide which ones to release to the Portal |
| DCC-2 | Content Management | As a DCC Report Administrator I want to approve a Published Report for release to the Portal so that End Users may view the report |
| DCC-3 | Content Management | As a DCC Report Administrator I want to revoke approval of a Published Report so that it can be removed from the portal and no longer visible |
| DCC-4 | Content Management | As a DCC Report Administrator I want to add descriptive text about a report so that it is clear to me and the users what the report is |
| DCC-5 | Content Management | As a DCC Report Administrator I want to categorise reports so that they appear within the relevant theme on the portal |
| DCC-6 | Content Management | As a DCC Report Administrator I want to be able to search for reports available in the portal so that I can quickly find the information about the relevant report |
| DCC-7 | Content Management | As a DCC Report Administrator I want to be able to set the status of a report (csv/pdf) to "archived" so that users no longer see the report (csv/pdf) |
| DCC-8 | Content Management | As a DCC Report Administrator I want to be able to add a version Number to the report so that I can see a history where changes have happened, and the users can be clear what version they are viewing |
| DCC-9 | User Management | As a DCC Report Administrator I want to see details of all registered external users (Customer) of the portal so that I can monitor take-up |
| DCC-10 | User Management | As a DCC Report Administrator I want to see details of portal usage (analytics) so that I can monitor usage over time |
| DCC-11 | User Management | As a DCC Report Administrator I want to see all types of Customers (Users) so that I can have a single view of Users in one place |
| DCC-12 | User Management | As a DCC Report Administrator I want to be able to find user contact information so that I can communicate where necessary |
| DCC-13 | User Management | As a DCC Report Administrator I want to be able to end a Customer access to the portal where necessary so that they are no longer able to log in |
| DCC-14 | User Management | As a DCC Report Administrator I want to assign Users roles and permissions so that they can only view the data/reports they are allowed to |
| DCC-15 | User Management | As a DCC Report Administrator I want to mark Users as approved at time of registration so that I am sure the user is from a relevant consumer of reports |
| DCC-16 | User Management | As a DCC Report Administrator I want to change Users roles and permissions so that they can only view the data/reports they are allowed to |
| DCC-17 | User Management | As a DCC Report Administrator I want to revoke users permissions when necessary so that they can no longer view data or reports |
| DCC-18 | User Management | As a DCC Report Administrator I want to delete/deactivate Users if they no longer need access to the portal so that I have a proper record of users |
| DCC-19 | User Management | As a DCC Report Administrator I want to remove personal data when a User is deleted so that I adhere to GDPR rules of data processing |

| ID | Epic / Process | Requirement |
|--------|------------------|--|
| DCC-20 | Data Consumption | As a Data Consumer I want my login to be authenticated so that I get secure access to the available content in the portal |
| DCC-21 | Data Consumption | As a Data Consumer I want to be able to register as an external user to the DCC portal so that I can view DCC content appropriate for me |
| DCC-22 | Data Consumption | As a Data Consumer I want email confirmation of my registration so that I am aware that I have successfully registered for the portal |
| DCC-23 | Data Consumption | As a Data Consumer I want to be informed if I am trying to register using credentials that are already registered so that there are no duplicate signups |
| DCC-24 | Data Consumption | As a Data Consumer I want to be able to reset my credentials if I have forgotten them so that I may enter the portal to view reports |
| DCC-25 | Data Consumption | As an external portal user I want to be able to see the Data privacy information so that I am aware of what personal data is held and how it is used |
| DCC-26 | Data Consumption | As a Data Consumer I want to be able to slice-and-dice the data I can see on screen so that I can do further analysis |
| DCC-27 | Data Consumption | As a Data Consumer I only want to see data relevant to me so that I do not find out information intended for other users |
| DCC-28 | Data Consumption | As a Data Consumer I want to be able to see all reports available to me so that I can select the relevant report when required |
| DCC-29 | Data Consumption | As a Data Consumer I want to be able to request different views / reports from DCC so that I may analyse data which is relevant/important to me |
| DCC-30 | Data Consumption | As a Data Consumer I want to be able to report errors in a report so that DCC can investigate |
| DCC-31 | Data Consumption | As a Data Consumer I want to be able to ask for help or get advice about a report so that I can better understand what I see on the portal |
| DCC-34 | Report Creation | As a Report Designer I want to be able to flag a report as "available for release on the portal" (ie. Publish it) when I have designed a report and had it reviewed and approved so that I can ensure that End Users only see validated reports / data |
| DCC-36 | Report Creation | As a Report Designer I want to be able to assign roles to reports so that I can be sure nobody can access data they are not allowed to (using Row level security) |
| DCC-37 | Report Creation | As a Report Designer I want to be able to access Data Warehouse Data so that I can create reports and datasets for end users |
| DCC-38 | Report Creation | As a Report Designer I want to be able to place CSVs and PDFs in an appropriate SharePoint location so that they become accessible to end users |