MHHS PROGRAMME

Industry-led, Elexon facilitated

End to End Walkthrough One: Introduction and Basics

8 August 2022

MHHS-DEL561

Version 1.0: MHHS Design Team

Session Overview

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Approach

- Our Design Team SMEs will provide an overview of the topics for discussion today focusing on a specific section of the E2E Design

- We will reference the Design Artefacts to familiarise Programme Participants with the business process, methodology statements, etc.

- It is important to note that this session is one of four dedicated walkthroughs that join up the E2E Design

Purpose

- Today's session is dedicated to improving and enhancing your understanding of the E2E Design and the Artefacts that are a part of it

- Specifically, today's session will focus on the history so far, the TOM, Design approach and deliverables, Programme approach to testing and consequential change

- We will also respond to any questions, comments or queries you may have

Outcomes

- By the end of today's session, you will have:
    - An increased understanding of this section of the E2E Design and its Artefacts
    - Your specific questions answered or logged to follow up on later
    - Answers to questions and comments being raised by Programme Participants

Outputs

- We will issue the slide pack and a link to the recording for this session

- All questions submitted on Slido and asked in person will be logged and the answers transcribed and edited for comprehension

- These will also be issued to all attendees

Slido and Rules of Engagement

- There will be dedicated time after the Walkthrough for questions, we may answer questions after each topic if it helps

- Questions can be submitted at Slido.com with the code below

- These questions will be grouped into themes by the facilitator and answered in the dedicated time after the walkthrough

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What we'll cover today

1. Background to the MHHS Design

2. MHHS Target Operating Model (TOM) & architecture

3. Design Approach and Deliverables

4. Data Integration Platform and Interface Basics

5. Approach to Testing

6. Approach to Consequential Change

7. Further Playback Sessions

8. Slido Review

Background to the MHHS Design
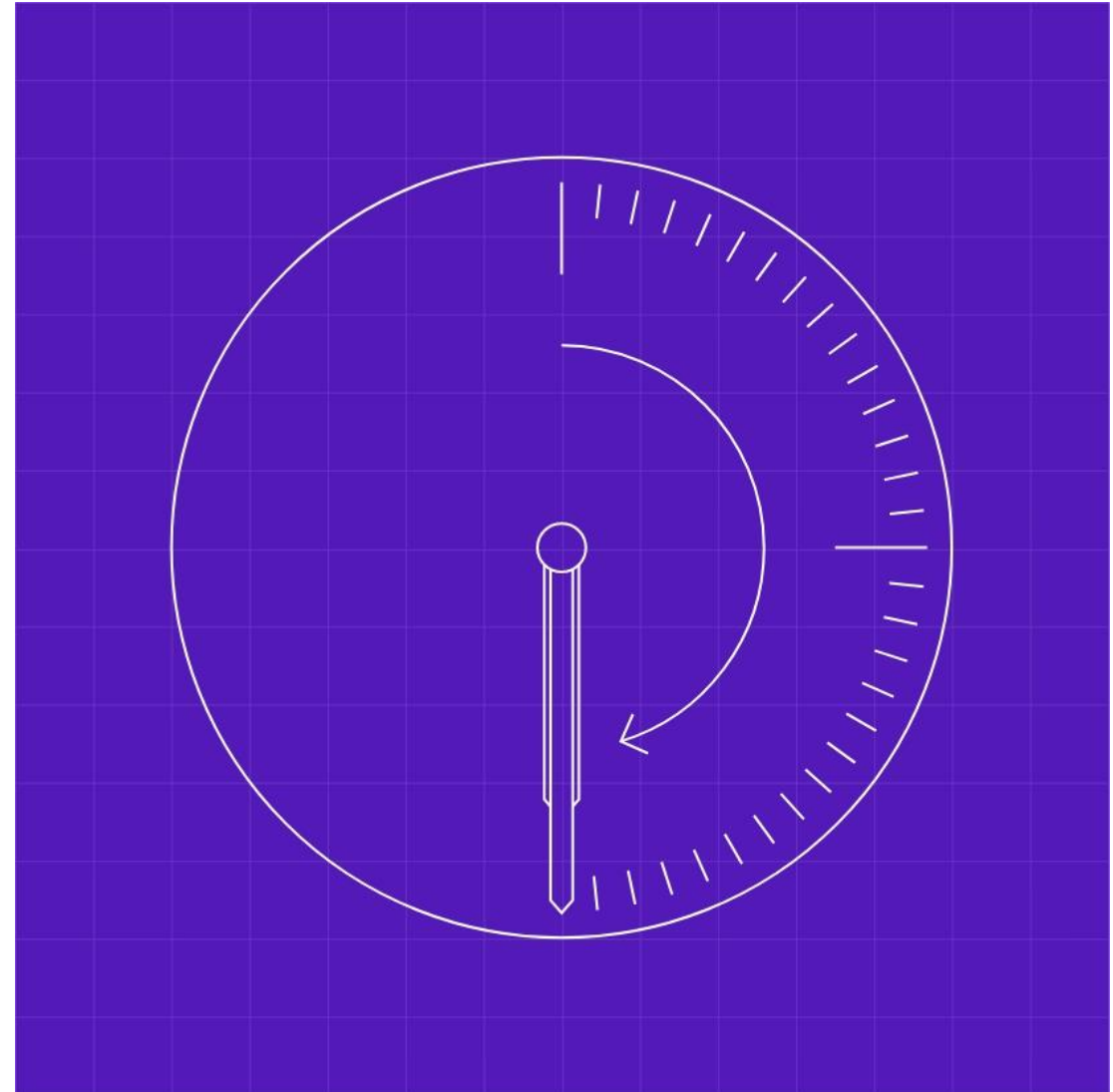
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Before the MHHS Programme, the HHS journey:
• Profiling and Settlement Review Group, Settlement Reform Export Group, Settlement Reform Advisory Group, P0272

Target Operating Model and event driven architecture:
• Industry working groups; DWG, CCDG and AWG

These documents formed the basis of the MHHS Design

Design Working Group

DWG (2017 - 2019) designed the MHHS Target Operating Model (TOM) and the high-level transition approach from the current Settlement arrangements.

Code Change & Development Group

CCDG (2019 - 2021) further developed DWG's TOM design and transition approach and identified the changes needed to Industry Codes and subsidiary documents to enable the TOM.
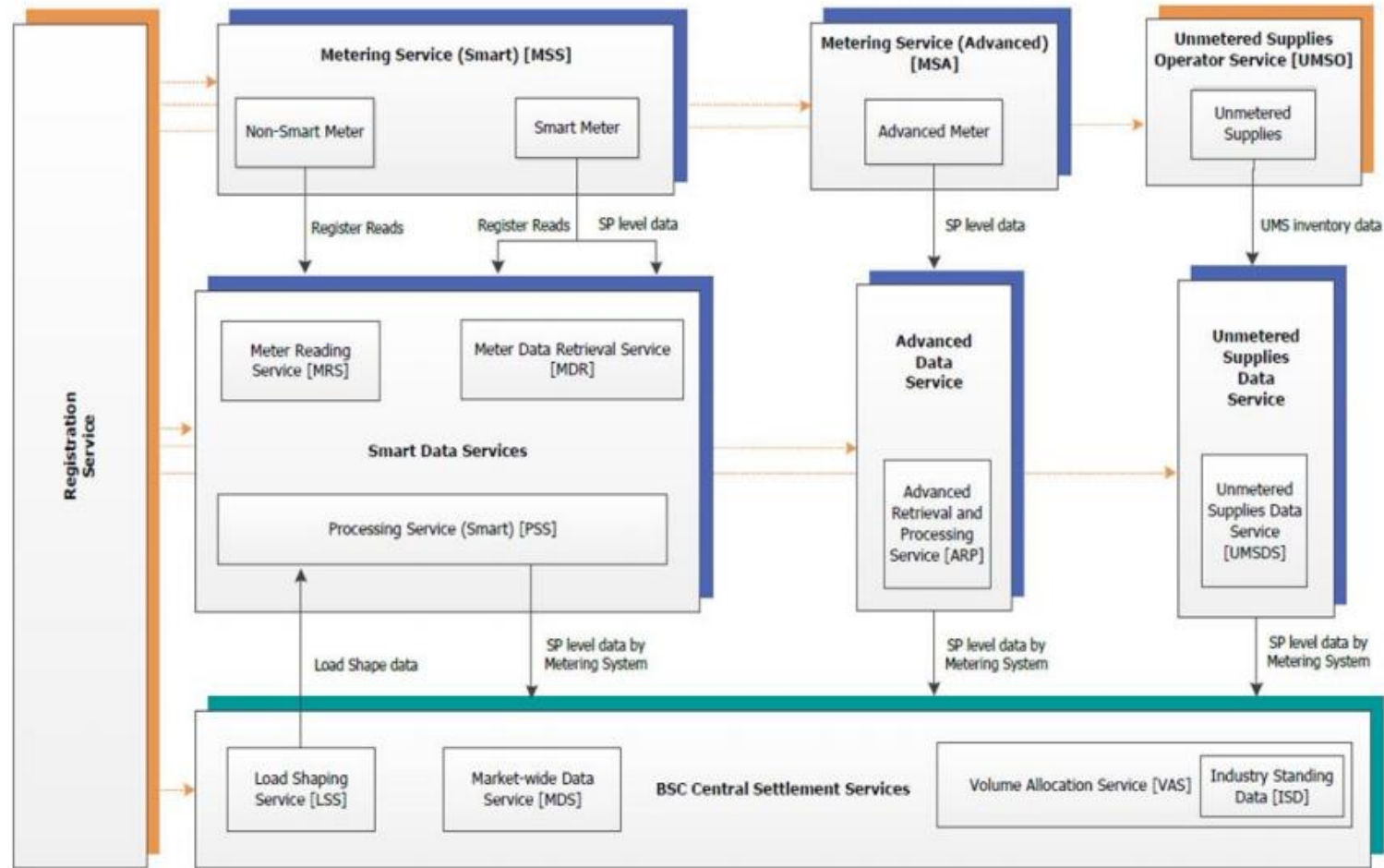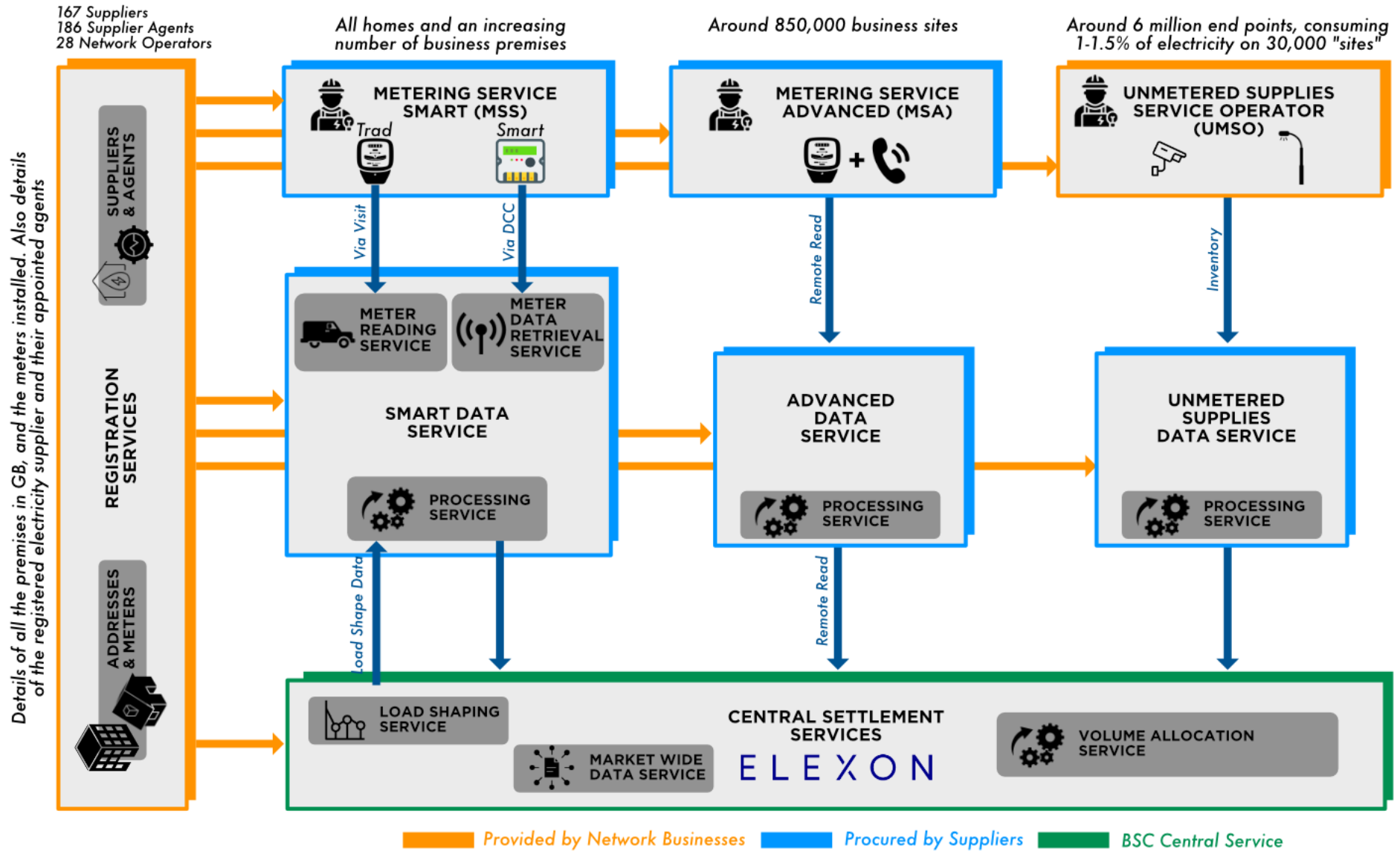
Architecture Working Group

AWG (2019 - 2021) developed the reference architecture that will set the framework for suitable data integration that is appropriate to the new MHHS services.

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MHHS Target Operating Model (TOM)

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TOM Diagram

METERING SERVICE SMART (MSS)

METERING SERVICE ADVANCED (MSA)

UNMETERED SUPPLIES SERVICE OPERATOR (UMSO)

SUPPLIERS & AGENTS

REGISTRATION SERVICES

ADDRESSES & METERS

METER READING SERVICE

SMART SERVICE

PROCESSING SERVICE

PROCESSING SERVICE

PROCESSING SERVICE

The principle functions of a Metering Service (smart or advanced) are to install, commission, test, maintain and rectify faults in respect of Metering Equipment (including, where applicable, associated Communication Equipment). The MSS and MSA will also maintain and make available Meter asset information and, where required, Meter configuration information

LOAD SHAPING SERVICE

MARKET WIDE DATA SERVICE

CENTRAL SETTLEMENT SERVICES

E L E X O N

VOLUME ALLOCATION SERVICE

Provided by Network Businesses   *Procured by Suppliers*   *BSC Central Service*

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METER READING SERVICE

METER DATA RETRIEVAL SERVICE

SMART DATA SERVICE

PROCESSING SERVICE

The Smart Data Service comprises three sub-services:
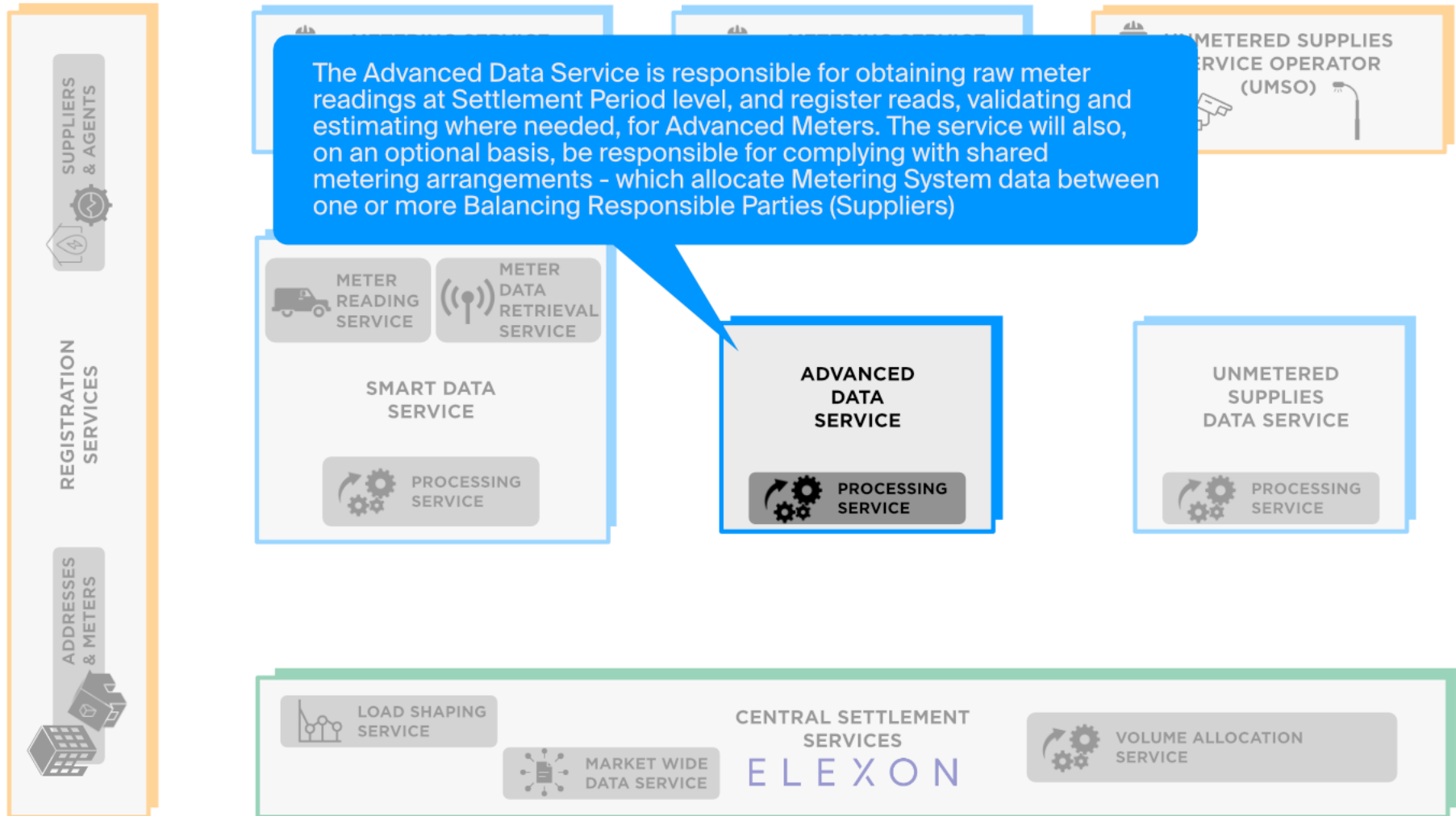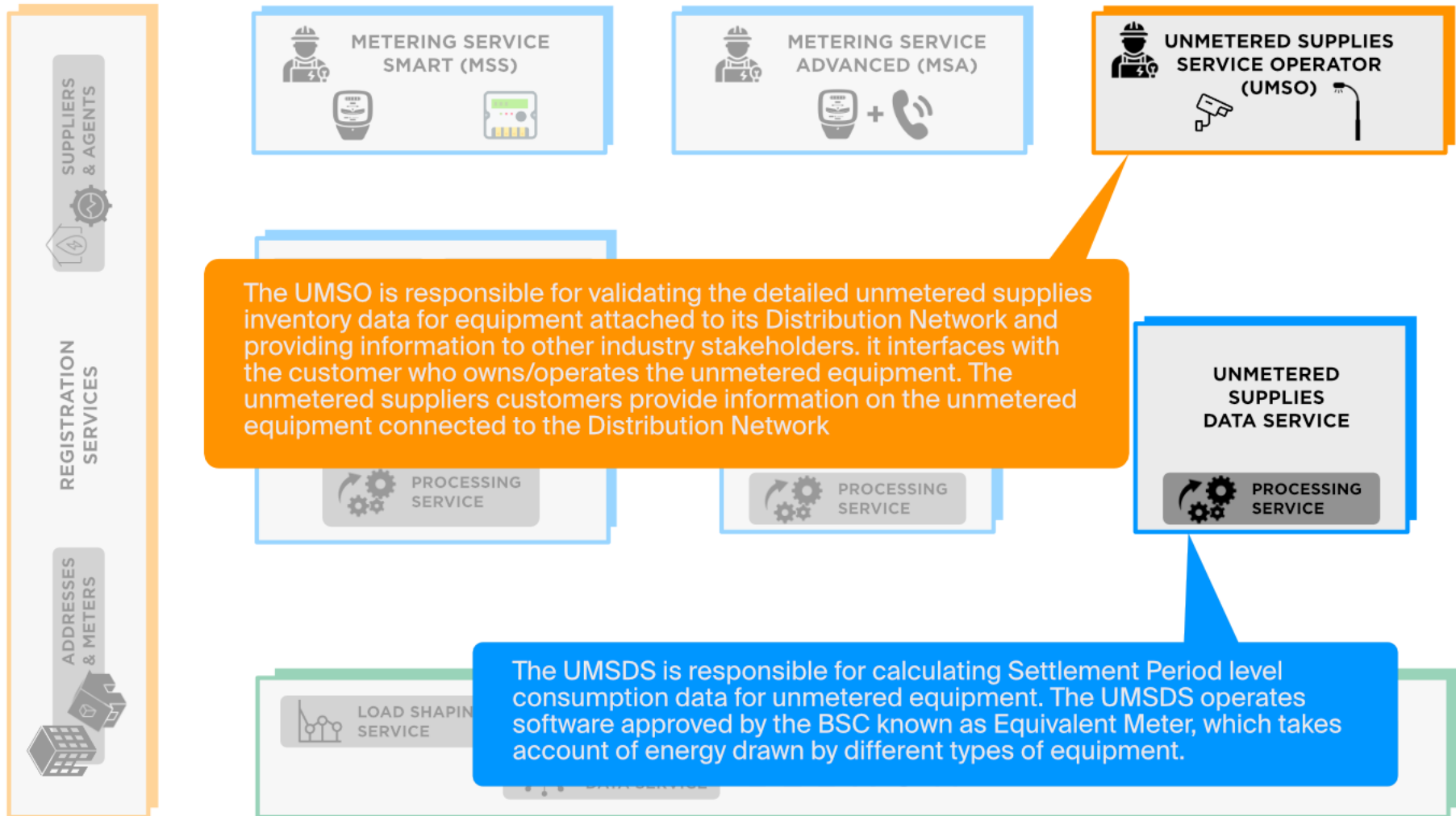
1. Metering Data Retrieval - submits service requests to DCC. The request type and schedule are provided by the Processing Service Smart for each MPAN for which the PSS is responsible. The MDR will have to accede to the SEC and other codes as appropriate and will have read only access to smart meter data and will not be able to configure the devices.

2. The Meter Reading Service provides register readings for meters where Settlement Period level data is not available or cannot be accessed from the meter. The service will operate on a transactional basis providing reads to the PSS. The MRS can obtain readings by making a physical site visit or collect remote readings where appropriate communications are available.

3. The Processing Service Smart is responsible for obtaining, validating and estimating Settlement Period level data from smart and non-smart meters. It receives data from the MDR and MRS and passes validated Settlement Period level data to the Load Shaping Service and Market Wide Data Service

LOAD SHAPING SERVICE

MARKET WIDE DATA SERVICE

CENTRAL SETTLEMENT SERVICES

ELEXON

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The Advanced Data Service is responsible for obtaining raw meter readings at Settlement Period level, and register reads, validating and estimating where needed, for Advanced Meters. The service will also, on an optional basis, be responsible for complying with shared metering arrangements - which allocate Metering System data between one or more Balancing Responsible Parties (Suppliers)

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ADDRESSES & METERS

UNMETERED SUPPLIES SERVICE OPERATOR (UMSO)

METER READING SERVICE

METER DATA RETRIEVAL SERVICE

SMART DATA SERVICE

PROCESSING SERVICE

ADVANCED DATA SERVICE

PROCESSING SERVICE

UNMETERED SUPPLIES DATA SERVICE

PROCESSING SERVICE

LOAD SHAPING SERVICE

MARKET WIDE DATA SERVICE

CENTRAL SETTLEMENT SERVICES

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METERING SERVICE ADVANCED (MSA)

UNMETERED SUPPLIES SERVICE OPERATOR (UMSO)

The UMSO is responsible for validating the detailed unmetered supplies inventory data for equipment attached to its Distribution Network and providing information to other industry stakeholders. it interfaces with the customer who owns/operates the unmetered equipment. The unmetered suppliers customers provide information on the unmetered equipment connected to the Distribution Network

UNMETERED SUPPLIES DATA SERVICE

PROCESSING SERVICE

PROCESSING SERVICE

PROCESSING SERVICE

LOAD SHAPIN SERVICE

The UMSDS is responsible for calculating Settlement Period level consumption data for unmetered equipment. The UMSDS operates software approved by the BSC known as Equivalent Meter, which takes account of energy drawn by different types of equipment.

Provided by Network Businesses   *Procured by Suppliers*   *BSC Central Service*

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MHHS Introduces 4 new services that will be operated by Elexon

1. The Market Wide Data Service is responsible for processing Settlement Period level data from the MHHS Data Services. The MDS will provide data aggregations for Imbalance Settlement and other purposes (such as network charges)

2. Load Shaping Service is responsible for calculating energy consumption (import and export) Load Shapes for a number of defined categories of metering systems. The LSS uses validated Settlement Period level data accessed from the Smart Data Service. The Load Shape data will then be used by the PSS to convert register readings or daily consumption values into Settlement Period level data. The Load Shape data will also be used to estimate invalid Settlement Period level data for smart meters and default where data is missing or unavailable

3. Volume Allocation Service accesses Settlement Period level data from the MDS. The VAS also accesses Grid Supply Group take from the Central Data Collection Agent. Using these two data sets, the VAS calculates Settlement Period level energy volumes for Balancing Mechanism Units. The data is processes for each Settlement day in a scheduled run called a Volume Allocation Run. The processed BMU data is used in Imbalance Settlement calculations

4. Industry Standing Data – replaces the existing Market Domain Data service and will publish relevant meta data to be used by other services.
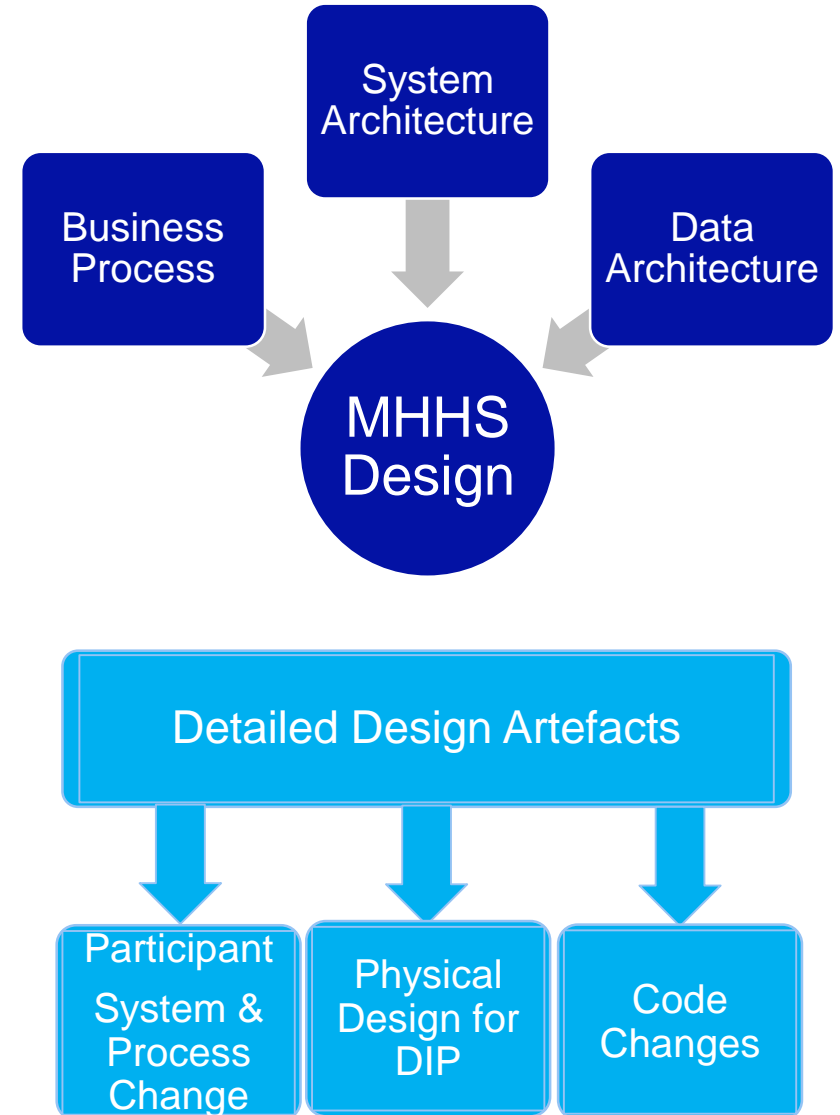
SUPPLIERS & AGENTS

REGISTRATION SERVICES

ADDRESSES & METERS

LOAD SHAPING SERVICE

INDUSTRY STANDING DATA

MARKET WIDE DATA SERVICE

CENTRAL SETTLEMENT SERVICES

ELEXON

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Design Approach & Deliverables

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The objective of the MHHS Design is to develop a complete set of design artefacts that will:

- Provide clarity around the business processes, system, and data architecture to deliver a detailed system design that enables all market participants to design, build and test their individual system and business changes

- Define requirements and connection patterns to enable procurement and subsequent detailed physical design for the Data Integration Platform

Adopting a **Design led** rather than industry Code led approach

System Architecture

Business Process

Data Architecture

MHHS Design

Detailed Design Artefacts

Participant System & Process Change

Physical Design for DIP
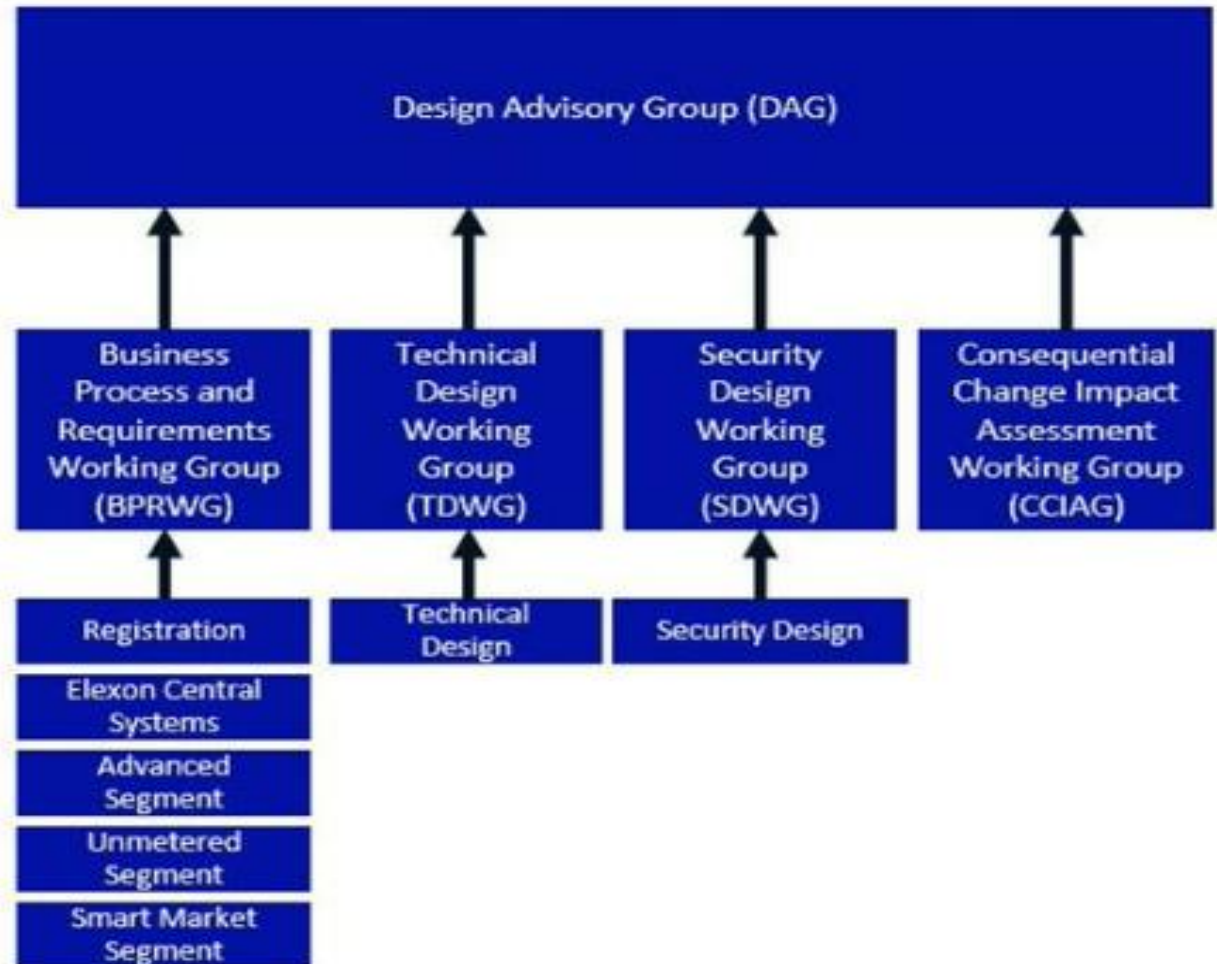
Code Changes

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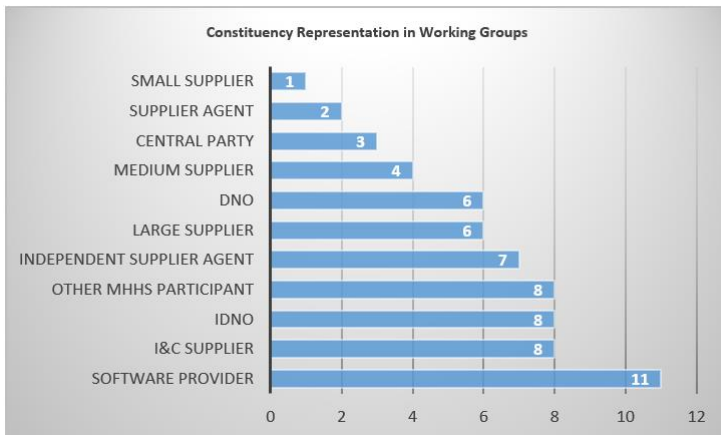Industry-led, Elexon facilitated

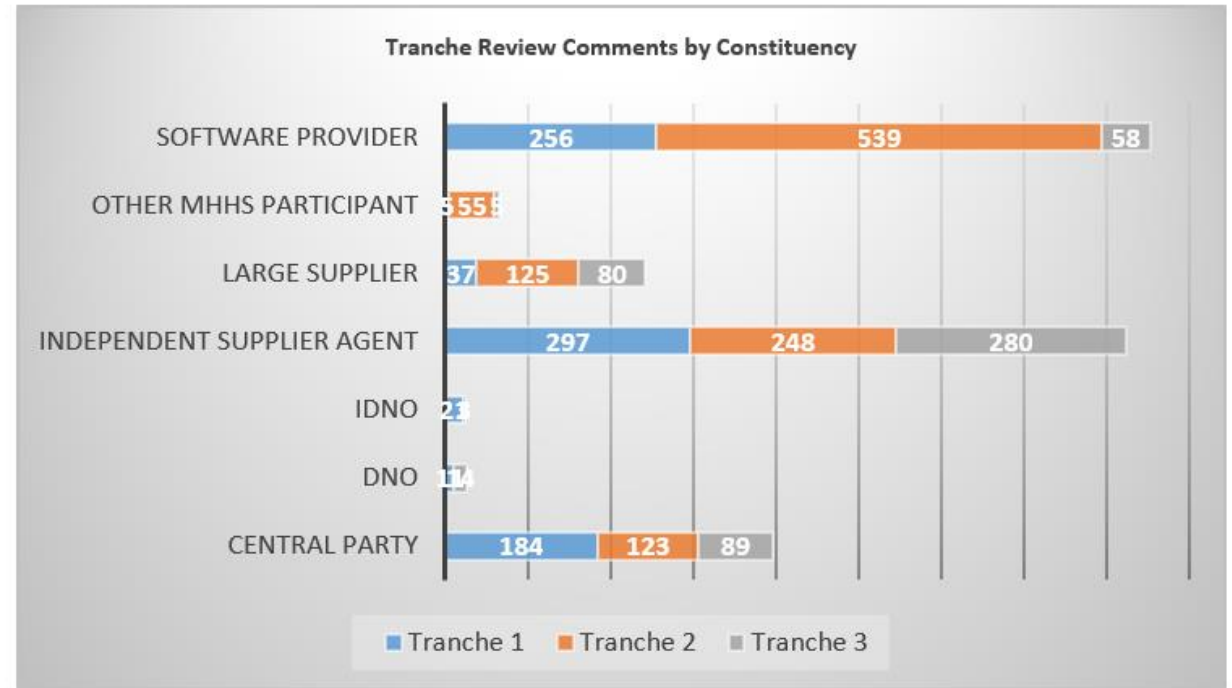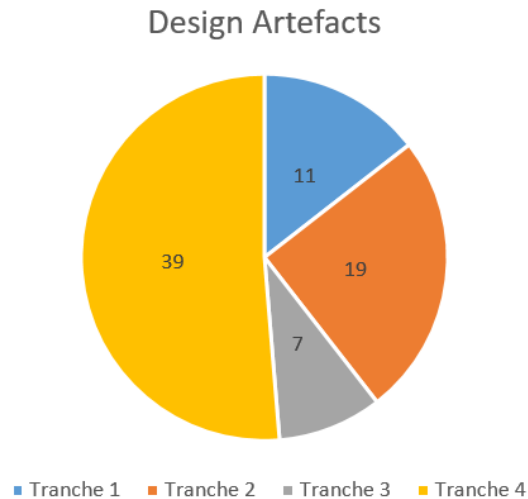MHHS Programme established industry Working Groups:
- responsible for further developing the detailed design
- agreeing an integrated cross-referenced set of Design Artefacts

Since Nov. 2021 there have been **107** Working Group meetings:
- regularly attended by representatives from **64** organisations (over all constituencies)
- have contributed to over **200** hours of review to agree the core elements of the design

Constituency Representation in Working Groups

Constituency	Value
SMALL SUPPLIER	1
SUPPLIER AGENT	2
CENTRAL PARTY	3
MEDIUM SUPPLIER	4
DNO	6
LARGE SUPPLIER	6
INDEPENDENT SUPPLIER AGENT	7
OTHER MHHS PARTICIPANT	8
IDNO	8
I&C SUPPLIER	8
SOFTWARE PROVIDER	11

Design Advisory Group (DAG)

Business Process and Requirements Working Group (BPRWG)	Technical Design Working Group (TDWG)	Security Design Working Group (SDWG)	Consequential Change Impact Assessment Working Group (CCIAG)
Registration	Technical Design	Security Design	
Elexon Central Systems			
Advanced Segment			
Unmetered Segment			
Smart Market Segment			

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- **37** Design Artefacts have also been released for industry review in 3 tranches, receiving over **2000** comments from across **15** organisations, and subsequently being Conditionally Approved by the Design Advisory Group (DAG)

Design Artefacts

■ Tranche 1 ■ Tranche 2 ■ Tranche 3 ■ Tranche 4

Tranche Review Comments by Constituency

■ Tranche 1 ■ Tranche 2 ■ Tranche 3

The MHHS Design is a collection of **75** individual artefacts which follow an orthodox approach and have been developed collaboratively with industry participants through a series of Working Groups.

- **Business Process Diagrams** (20 in total)– typically a single business process illustration with multiple swimlanes following established modelling conventions

- **Business Process Descriptions** (20 in total)- documents providing a description of each of the steps within the associated Business Process Diagram

- **Business Requirements Specifications** (13 in total) – documents defining the detailed business requirements underpinning each TOM Service

- **Interface Catalogue** (1 document comprising of 35 Logical Interface Specifications) – documents defining the data models and data catalogues for interfaces

- **Reporting Catalogue** (2 documents comprising of 18 Reporting Interface Specifications) – documents defining the data models and data catalogues for reporting interfaces

- **Supporting Artefacts** (13 in total)- documents providing additional detail to support the design, including Method Statements, Operational Choreography and Logical Data Model.

- **Technical Artefacts** (6 in total)- documents detailing the technical aspects of the design, including the End-to-End Technical Architecture, Non-functional Requirements, and Security Architecture.
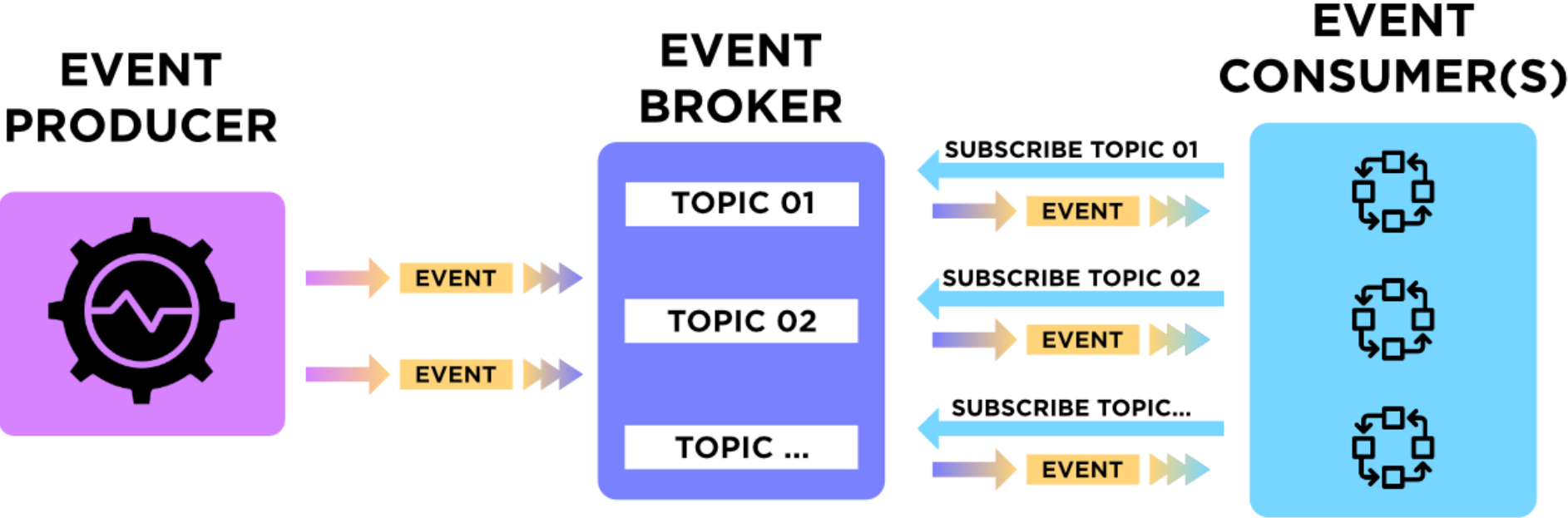
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The Design Artefacts have been grouped into themes which underpin the End-to-End Walkthrough Design Playback Sessions:
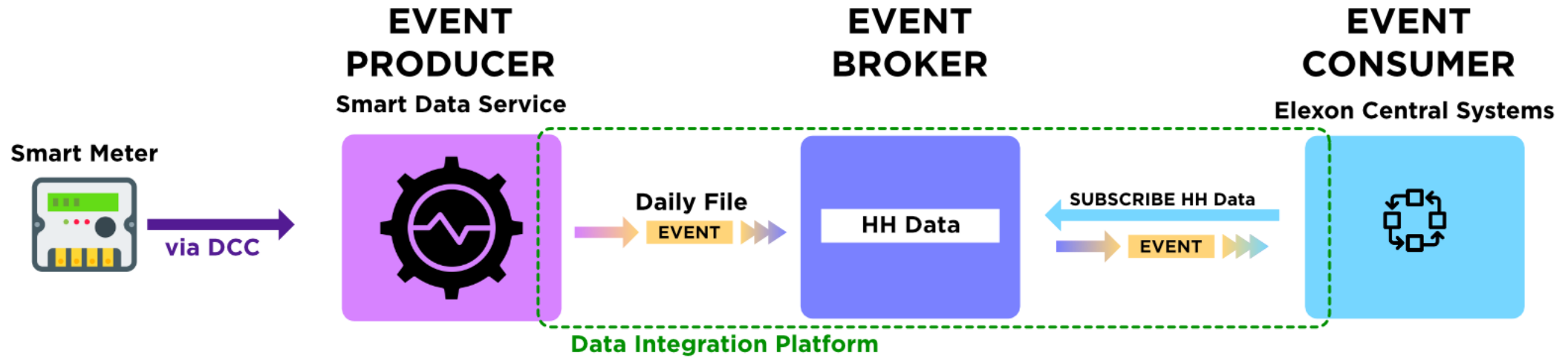
➢ **MPAN Ownership** – processes associated with the appointment of parties such as supplier, metering service or data service

➢ **Metering Changes**- processes associated with metering such as disconnections, changes to energization status or change of meter

➢ **Meter to Bank**- processes associated with the collection and processing of data through to settlement

➢ **Supporting Documents**- additional supporting documents including Method Statements, Operational Choreography and Technical artefacts
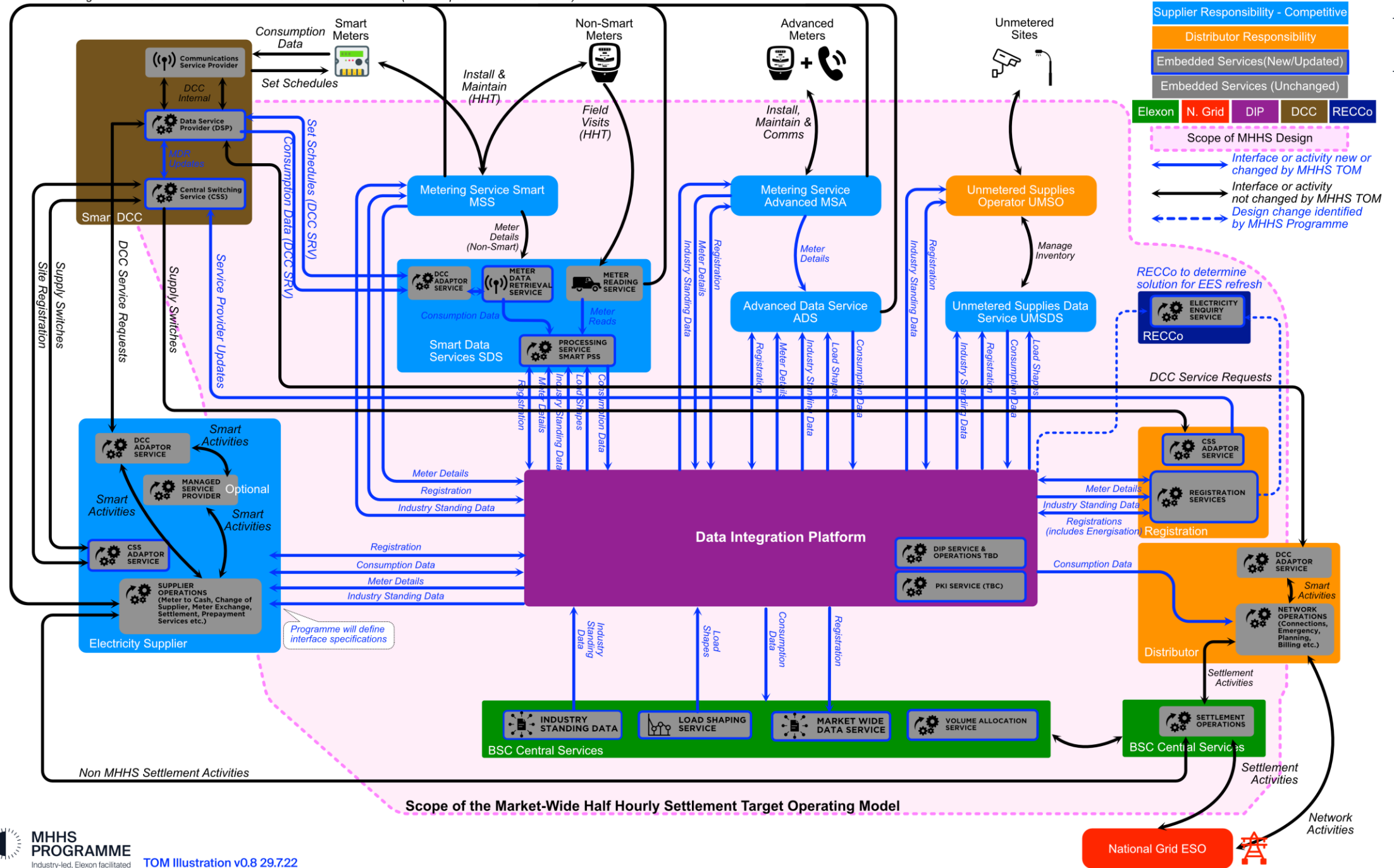
- This table provides guidance on the processes that we recommend each constituency prioritise as part of their review process.

- Further detail of the Design Artefacts which support each process can be found on the following slides.

- A detailed breakdown of all of the Design Artefacts can also be found ir the Design Artefact Matrix

E2E Walkthrough	Reference	Business Process	Supplier	Independent Agent	Supplier Agent	DNO	iDNO	Smart DCC	Elexon
				Constituency					
MPAN Ownership	MHHSP-BP001	Change of Supplier	Y			Y	Y	Y	Y
	MHHSP-BP006	New Connection	Y			Y	Y		
	MHHSP-BP010	Change of Registration Data	Y	Data & Metering Service		Y	Y		
	MHHSP-BP002	Change of Service - Metering Service	Y	Metering Service		Y	Y	Y	
	MHHSP-BP003	Change of Service - Data Service	Y	Data Service		Y	Y	Y	
	MHHSP-BP003A	CSS and DCC Update		Data Service				Y	
	MHHSP-BP003B	Change of Existing Service Appointment Details	Y	Data & Metering Service				Y	
	MHHSP-BP003C	Transfer of Reads - Change of Data Service	Y	Data Service					
Metering Changes	MHHSP-BP007	Disconnection	Y			Y	Y		
	MHHSP-BP008	Change of Energisation Status	Y	Data & Metering Service		Y	Y		
	MHHSP-BP009	Change of Meter	Y	Data & Metering Service		Y	Y		
	MHHSP-BP011	Change of Market Segment and/or Connection Type	Y	Data & Metering Service					
Meter to Bank	MHHSP-BP004	Data Collection	Y	Data Service				Y	
	MHHSP-BP005	Data Processing	Y	Data Service				Y	Y
	MHHSP-BP013	Demand Disconnection Events				Y	Y		Y
	MHHSP-BP016	Consumption Amendment	Y	Data Service					Y
	MHHSP-BP018	Load Shaping Service (ECS)	Y	Data Service		Y	Y		Y
	MHHSP-BP019	Market-wide Data Service (ECS)							Y
	MHHSP-BP020	Volume Allocation Service (ECS)							Y
	MHHSP-BP021	Industry Standing Data (ECS)	Y	Data & Metering Service		Y	Y	Y	Y

DIP and Interface Basics

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Scope of the Market-Wide Half Hourly Settlement Target Operating Model

TOM Illustration v0.8 29.7.22

Approach to Testing

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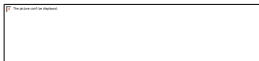
Pre-Integration Testing (PIT)

- Will be performed by all users of the new settlement arrangements to validate every system or service that is included in the MHHS design

Systems Integration Testing (SIT)

- Will be performed by the service providers of the central systems as well as other parties to test the E2E operation of the systems

User Integration Testing (UIT)

- This is broken down into two sub-parts:

    - Qualification must be performed by all participants who wish to participate in the market and each programme participant is responsible for ensuring their successful completion of Qualification

    - The second part is the End-to-End Sandbox, where a participant can optionally use this testing service to test its systems and processes

Testing & Migration Advisory Group (constituency reps)

Data Working Group (Open)

Migration Working Group (open)

Environments & Configuration Management Working Group (pending)

Qualification & E2E Sandbox Working Group (pending)

Approach to Consequential Change
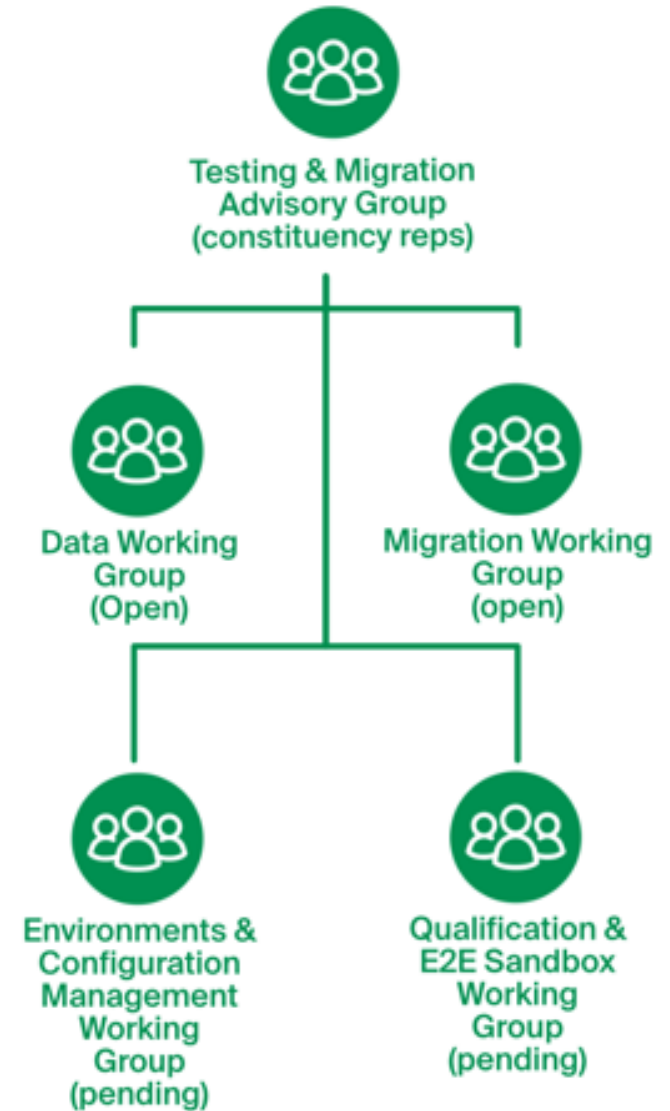
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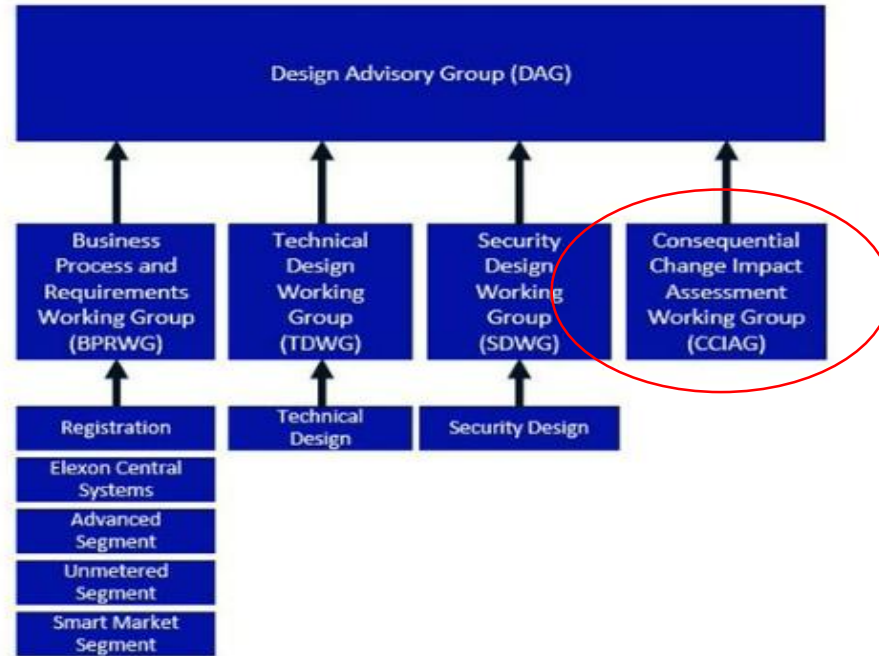
CCIAG Terms of Reference to discuss items that:

- are not being considered as part of the scope of the MHHS TOM or design
- may have an impact on existing systems and processes for Programme Parties
- where there is value to those parties in discussing and sharing information on those item

Examples include replacement for the EAC; SSCs and TPR

Other Playback Sessions

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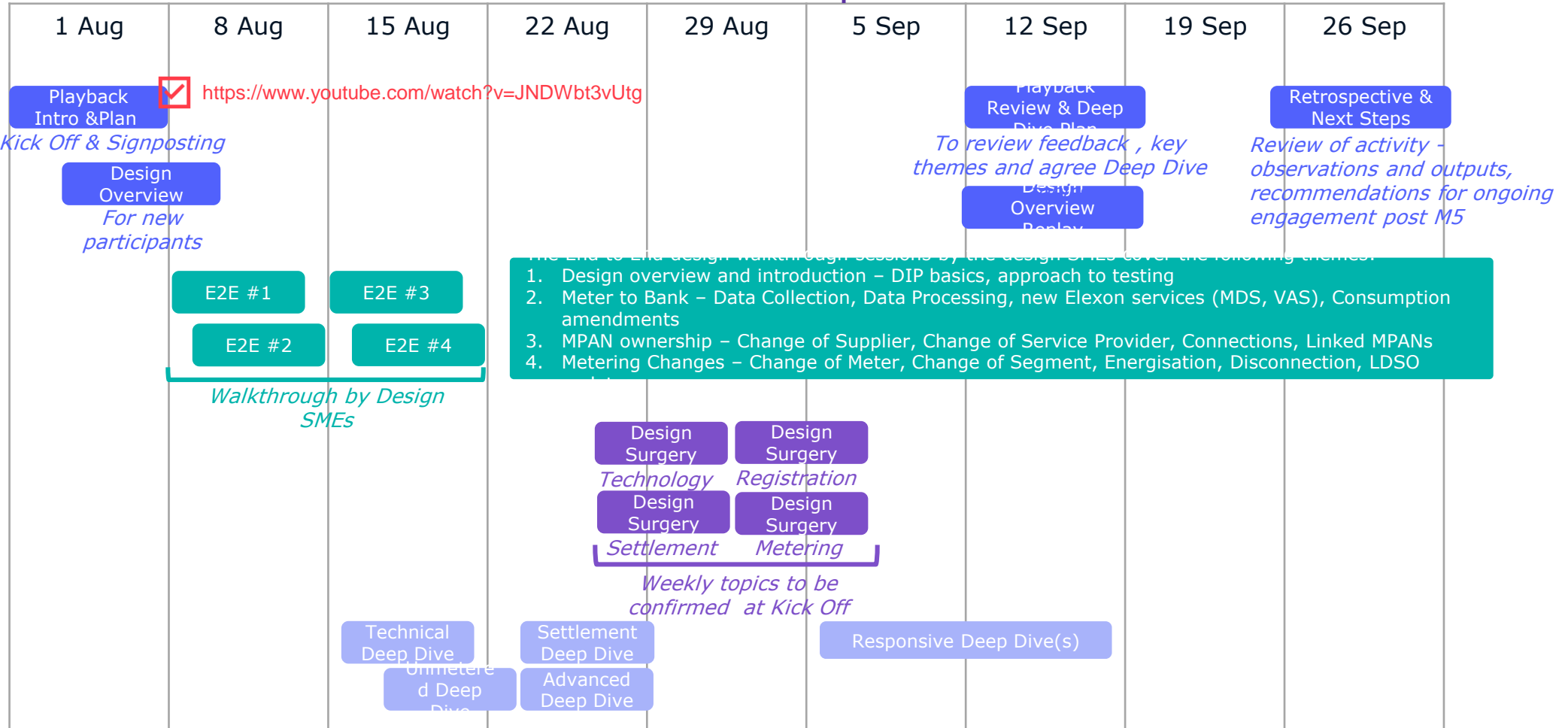# MHHS Design Playback Plan on a Page

🚩 All Design Artefacts Issued for review

🚩 Comments to L4 Working Groups opens

🟪 MHHS Open Day

🚩 Comments to L4 Working Groups closes

	1 Aug	8 Aug	15 Aug	22 Aug	29 Aug	5 Sep	12 Sep	19 Sep	26 Sep

Design Overviews
Playback plan & design introductions

- Playback Intro &Plan
- ☑ https://www.youtube.com/watch?v=JNDWbt3vUtg
- *Kick Off & Signposting*
- Design Overview
- *For new participants*
- Playback Review & Deep Dive Plan
- *To review feedback , key themes and agree Deep Dive*
- Design Overview Replay
- Retrospective & Next Steps
- *Review of activity - observations and outputs, recommendations for ongoing engagement post M5*

E2E Walkthrough
Playback of business processes and architecture/security content

- E2E #1
- E2E #3
- E2E #2
- E2E #4
- *Walkthrough by Design SMEs*

The End to End design walkthrough sessions by the design SMEs cover the following themes:
1. Design overview and introduction – DIP basics, approach to testing
2. Meter to Bank – Data Collection, Data Processing, new Elexon services (MDS, VAS), Consumption amendments
3. MPAN ownership – Change of Supplier, Change of Service Provider, Connections, Linked MPANs
4. Metering Changes – Change of Meter, Change of Segment, Energisation, Disconnection, LDSO

Design Surgeries
Drop-in sessions with access to design SMEs

- Design Surgery *Technology*
- Design Surgery *Registration*
- Design Surgery *Settlement*
- Design Surgery *Metering*
- *Weekly topics to be confirmed at Kick Off*

Design Deep Dives
Subject specific replays of design topics

- Technical Deep Dive
- Unmetered Deep Dive
- Settlement Deep Dive
- Advanced Deep Dive
- Responsive Deep Dive(s)

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I'm new to the programme

I'm aware of and have engaged with the programme, but am no expert

I've been an active contributor to the design workstream

I'm a subject matter expert with an interest in Settlement, metering etc.

Relevant Sessions

Sessions of interest

Sessions of interest

Global Playback Sessions
Kick off, review, retrospective

Design Overview Sessions
Introductory high level

End to End Walkthrough Sessions
High Level Themes

Design Expert Surgeries
Q&A sessions with MHHS SME's

Deep Dive Sessions
Detailed playback and discussion of specific themes

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Any questions?

Please join at Slido.com

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