

Agenda Item	Lead	Duration
Introduction	Anthony Riding	5 mins
Other Workstreams Update	Kevin Spencer / Mark De Souza-Wilson / Andy Roberts	10 mins
Registration to Metering-Service Interfaces	Andy Roberts	10 mins
Appointment Interface Specification	Andy Roberts	20 mins
Break		10 mins
Integration (introduction)	Andy Roberts	20 mins
Next Steps	All	10 mins
AOB & Close	Anthony Riding	10 mins

CCDG-06

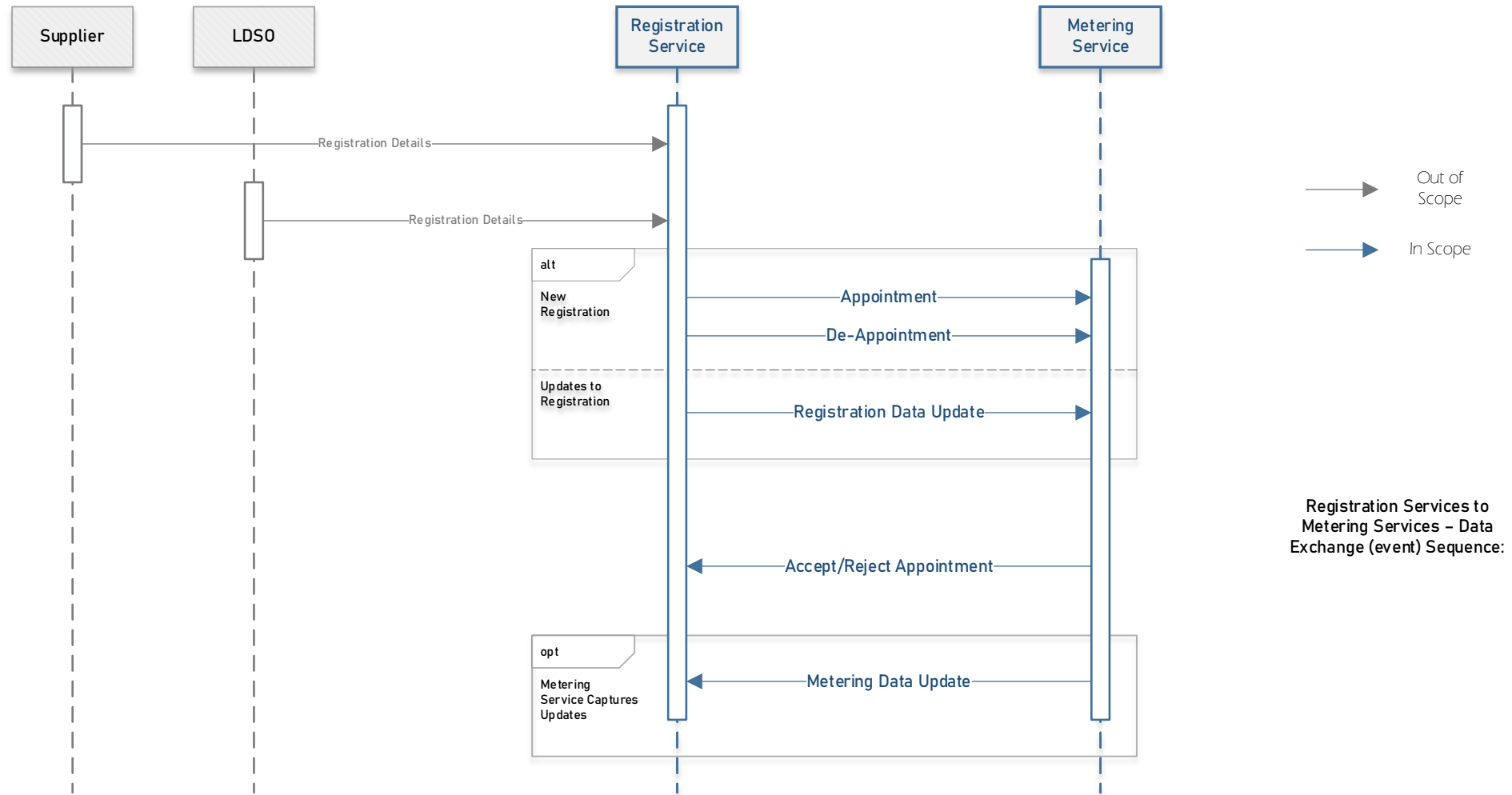
Completed: 19th May

Registration/Metering-Service Sub-Group

Completed: 20th May

Registration/Data-Service Sub-Group

Due: 3rd June



MHHS – ARCHITECTURE WORKING GROUP

INTERFACE DEFINITION

1 Appointment of a Metering Service

1.1 Overview

Item	Description
Interface:	Registration Appointment
Source:	SMRS
Source Owner:	Registration Services
Target:	MSS, MSA, UMSO
Target Owner:	Metering Services
Business Condition:	A supplier has appointed a metering service to manage a metering point.
Business Context:	A supplier and a metering service have agreed contractual terms for management of metering point(s). The registration service is required to issue the appointment of a metering point to the meter service.

Within this interface there are three data flows:

1. SMRS to MSS
2. SMRS to MSA
3. SMRS to UMSO

Each data flow has differences within the set of data items to be transported as well as different volumetric characteristics.

The overview describes:

- Source and target for an interface
- Business conditions
- Data flows within the interface

The data catalogue describes:

- Interface specific semantics
- Ownership of each item
- Data item meta-data

1.2 Data Catalogue

The data catalogue describes the super-set of data items within the registration appointment interface.

Data Item	Description	Item Owner	Meta-Data
Data Sender ID	A unique identifier representing the organisation of the data source, that generated this interface.	Interface meta-data	Public
Data Created Date	The timestamp when the interface data was generated.	Interface meta-data	Public
MPAN Core	A business key used to uniquely identify the metering point being appointed to a metering service.	Registration Service	PII (restricted) Integer 13
Meter ID	Serial number of the physical meter.	Metering Service	Public String 10
Contract Reference	The unique reference of the contractual agreement between a supplier and the metering service. A registration appointment cannot occur without a contract reference.	Supplier	Public String 10

1.3 Transport Details

Item	Description
Triggered By:	A supplier request to the Registration Service.
Frequency:	Variable depending on business processes.
Typical Volume:	20% of the number of active metering points (yearly).
Transport Timing:	Real-time (no sending delay)
Delivery Receipt:	Yes (default)
Idempotent:	Yes (default)
Sender meta-data:	Data Sender ID (a unique identifier representing the source of the data) Data Created Date (the date and time the data flow was generated)
Technical meta-data:	Use only self-describing (machine readable) interoperable formats. Use XML (i.e. for AS4). Use JSON (i.e. for REST).
Profile meta-data	Not required for operational data exchange.

The transport details describe:

- What triggers a data flow
- Frequency and timing
- Data integrity + Delivery Receipt
- Transport meta-data

1.4 Data Flows

1.4.1 Volumetric

This table describes the number (volume) and size of expected data flows between the registration and metering services.

Metric	SMRS to MSS	SMRS TO MSA	SMRS TO UMSO
Typical Yearly Volume (estimate)	6 million	200,000	2,000
Max Yearly Volume	30 million	1 million	20,000
Typical Daily Volume	16,438	547	5
Single Interface Size (estimate)	350 bytes	340 bytes	300 bytes
Typical Daily Interface Size	5.4 Mbytes	181 Kbytes	1 Kbyte
Max Daily Interface Size	27.4 Mbytes	909 Kbytes	15 Kbytes
Max Yearly Interface Size	9.7 Gbytes	324 Mbytes	5.3 Mbytes

The volumetric characteristics describe:

- Typical/Max number of data flows
- Estimated message size
- Estimated daily and annual data sizes

1.6 Security

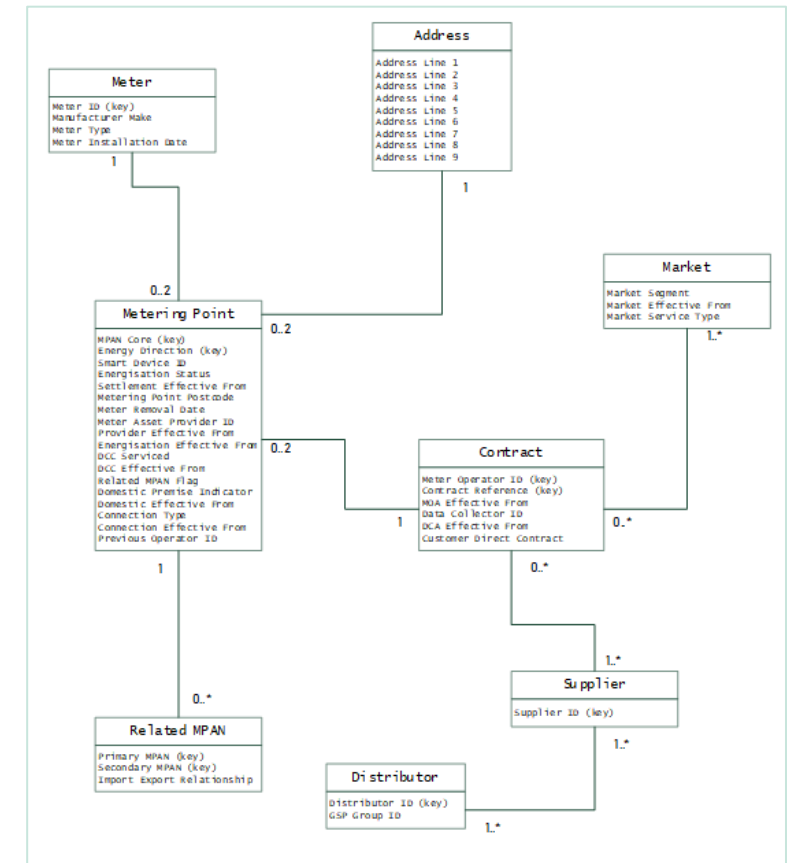
Item	Description
Security Role:	Registration Service can initiate any data exchange.
Role Permissions:	Create and send data.
Privacy Classification:	Restricted (overall)
GDPR:	Yes. The interface contains MPAN identifiers.
In Transit Encryption:	Yes.
Message Encryption:	Yes.
Key Management:	Transport level key/certificates required between the registration and metering service endpoints.

The security details describe:

- Role and permissions
- Privacy considerations
- Encryption requirements

The data model shows:

- Entities contained
- All interface data items
- Logical relationships



**Return at
11:00**

What is Integration

- “Enabling different applications and data structures to work together, regardless of whether they are internal or external”
- “Making independently designed systems work well together”

Impact to Architecture

- Integration architecture must address technology **interoperability** and resolve **incompatibilities** between applications and data models

Impact to MHHS

- Integration should address the issues that exist in a de-centralized business topology
- Data exchange
- Process coordination

Three Integration Patterns

Any complex integration task (use-case) can be reduced to a combination of these patterns

1. DATA CONSISTENCY

Different systems must all contain and agree on the same information (data stores).

- Provides Flexible Data Provisioning
- Synchronise Data (Business Rules)
- Adaptable to Volume Changes
- Governance (access / lineage / owners)

To make sure that data about certain business entities (e.g. Meter Assets, Metering Points, Addresses) scattered across multiple databases and applications is in sync. e.g., the address of customer A is the same across the SMRS, MSA, MSS and MDS services.

2. MULTISTEP PROCESSING

Independent applications collaborate in sequence to automate a business process.

- Model Business Processes
- Chains of Business Capabilities
- Scalable Process Execution
- Stateful (has a business context)

Independent applications collaborate in order to streamline a certain business process by automatically synchronizing the activity and exchanging data. e.g., a customer switches supplier, who notifies the registration service (SMRS), who in turn notifies the meter service (MSS), through the exchange of registration data related to a metering point.

3. PROCESS COMPOSITION

A single consumable service coordinates between multiple hidden application services.

- Shared Services
- Increases Productivity
- Create a Business Ecosystem
- Business Evolution

When creating a new application service that must access or modify data in multiple existing applications. The new service may remove the need for other services to build custom functionality to access legacy applications. e.g., the supplier must perform an appointment and de-appointment across multiple registration services, which in turn will be required to update their applicable metering services.

Eight Technology Patterns used in Integration

MFT (MANAGED FILE TRANSFER)

Batch, ETL

EDI (ELECTRONIC DATA INTERCHANGE)

Proprietary formats & standards, batch, ETL

CDC (CHANGE DATA CAPTURE)

Data & database replication, batch/real-time

MDM (MASTER DATA MANAGEMENT)

Semantic accuracy, data publish/subscribe, data replication, real-time

MOM (MESSAGE ORIENTED MIDDLEWARE)

Data publish/subscribe, data brokers (JMS, AMQP, web sockets, DDS), real-time

ESB (ENTERPRISE SERVICE BUS)

Data publish/subscribe, messages, events, real-time

API (APPLICATION PROGRAMMING INTERFACE)

Data send/retrieve, webhooks, de-centralisation, real-time

EDA (EVENT DRIVEN ARCHITECTURE)

Event grids & event hubs, real-time

Registration to Metering Service Interface Specification Reviews (5)

Data Model reviews?

Target: 12th June

Registration to Metering Service Integration Patterns?

Which patterns & why: AWG feedback

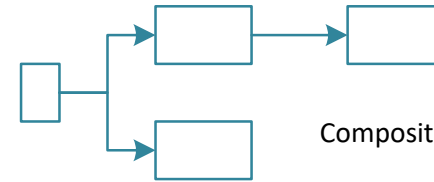
Target: 12th June



Consistency?



Multistep?



Composition?

Registration to Data Service Interface Specification Creation (?)

AWG-07: 23rd June

Data Exchange Pattern Options

AWG-07: 23rd June

