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The role of the EMDH in Half Hourly Settlement

ElectraLink White Paper

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1. Introduction

On 20th of April 2021, Ofgem released a document [1]outlining the way forward for the Half-Hourly Settlement programme. This was followed by the Architecture Working Group's (AWG) publication of their proposed reference architecture, with a preference for an Event Driven Architecture (EDA)[2]. These proposals are currently under consultation, with a particular focus on how moving to an EDA will impact on you. We, at ElectraLink, your current provider of data infrastructure for settlement, felt it would be helpful to provide an initial comparison between the existing Data Transfer Network (DTN) and new EDA styles of communication and outline their future roles in the energy market.

The information provided in this paper should allow you to assess options ranging from full adoption of the new architecture model through to using the EMDH as a bridge to the new architecture from your existing system. We hope that this will prove helpful when responding to the current consultations.

EDA is a significant move away from the DTN system. Rather than transferring data between parties, a party would publish that an 'event' has happened, and the EDA system would inform subscribed parties that something of significance has occurred. An event is a change in state; for example, when a consumer changes supplier, the meter's state changes from "Supplier A" to "Supplier B". An event system architecture will make this information known to other relevant parties or applications within the architecture, such as the DCC, to ensure they are aware of this change and can act accordingly. Put simply, when something happens, someone is notified straight away.

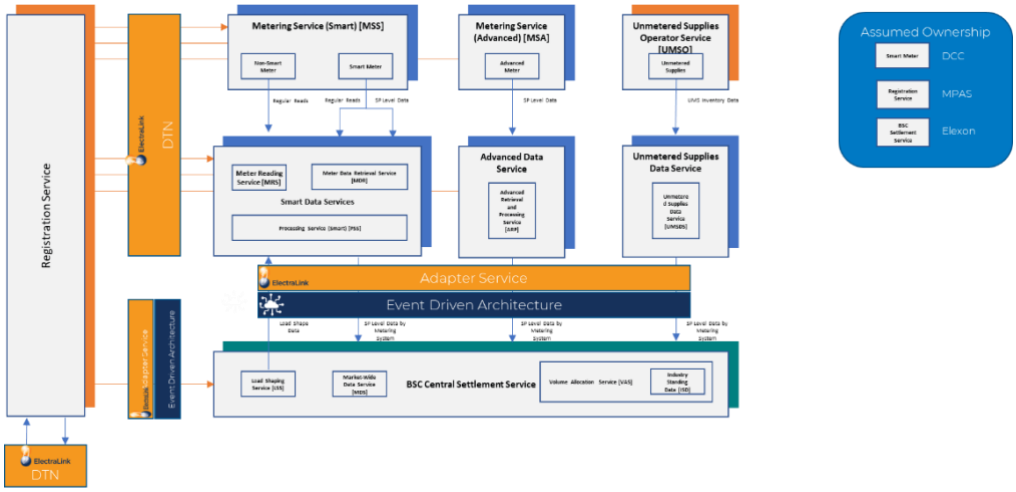
As the AWG outlined, it is not necessary for the whole settlement system to be working on EDA or real time. Some processes will continue to use the DTN (as outlined in the AWG documents) as, in settlement, most 'events' happen outside of the settlement process and settlement information is transferred post-event. We support the AWG recommendation to limit the changes to IT systems, so this paper will explain how ElectraLink's Energy Market Data Hub can support the industries transition to half-hourly settlement and integration with the Event Driven Architecture component within the new settlement system.

We believe that there is a benefit to introducing an Event Driven Architecture in a smart modern energy system. For this reason, we have reviewed how the introduction of an Event Driven Architecture can happen in a way that is cost effective so that there is no need for the DTS users to incur the cost and risk of moving to a new data architecture until they are ready or need to do so. Integration with existing systems would also reduce the requirement to run multiple data connections and formats to manage multiple different processes in the retail energy market.

In the hybrid model, the EDA will work as a central broker to alert parties when an event has taken place in the settlement systems, but existing industry systems (including batch and API file transfer) will integrate with the EDA, via adaptors, to receive event updates. This will still meet the requirements of MHHS, which do not mandate real time data transfer. An example of how this could work is below:

[1] Electricity Retail Market-wide Half-hourly Settlement: Decision and Full Business Case | Ofgem

[2] Consultation on reference architecture to support MHHS - Elexon BSC



1.1. To summarise ElectraLink's position:

1.1.1. In a modern data architecture, real-time data is not a "nice-to-have". It is increasingly becoming a requirement of the smart energy system. Internet of Things, smart homes devices and electric vehicles all enable real time data exchange and these devices will play an increasingly important role in the energy market. Therefore, the industry should move towards an Event Driven Architecture (EDA).

1.1.2. However, ElectraLink believes that most settlement datasets do not require real-time data transfer – settlement is not and never will need to be a real time process. Most datasets and settlement parties do not have, nor require, real time settlement data and, therefore, could utilise existing data transfer mechanisms to minimise costs to the industry. Where an EDA solution is required and used in industry in settlement, industry parties could be supported through adapters to integrate with an EDA.

1.1.3. As outlined by the AWG, users can manage their own transition to an EDA – whether this is full adoption or a hybrid solution. For those not ready to transition to EDA, ElectraLink believes that the Data Transfer Network and adaptors can help minimise the impact of real-time settlement data management and can support your integration into new settlement systems at low risk and cost. Moving the industry to EDA, with the support of adaptors, will prepare industry for the future real-time data architecture and support those who need more time to move to an EDA.

1.1.4. ElectraLink would like all DTS parties to understand the impacts of moving towards an EDA and we will continue to work with the AWG to minimise the impact on existing systems and utilise existing systems, where able. Moreover, we believe that Ofgem and industry participants should reassess the cost impact of HHS considering this new architectural position was not included in the assumptions for the Ofgem Request for Information and Impact Assessment for half hourly settlement.

We'd like to know your thoughts! We know that the industry will be progressing with a move to EDA at a different pace; therefore, as not all DTS users will use a DTN solution, progressing with a DTN solution will be managed in conjunction with the DTS User Group and it will be delivered on an 'as required by DTN user's basis'.

If you would support a DTN adaptor solution, then please register interest here as soon as possible. This will ensure we can engage with the DTS User Group to meet your future needs. Please contact ElectraLink if you have any concerns regarding the AWG recommendations, the move towards and EDA and the impact on your DTS connection.

2. Existing features of the DTN

ElectraLink is the current provider of the infrastructure used to communicate data related to retail settlement. The Data Transfer Network (DTN) is part of ElectraLink's Energy Market Data Hub (EMDH), an accessible, extensible, scalable, and secure platform which has been designed to fully meet the needs of industry, including the requirements of market-wide Half Hourly Settlement (MHHS).

As the industry is assessing the future architecture, ElectraLink believes it is important to provide visibility and clarity over the current capabilities of the DTN. This should help guide the industry's response to the future architecture, support decision-making in moving to the EDA and inform the industry's future investments in IT infrastructure.

The AWG report outlines several high-level features that are required by HHS that the DTN is described as lacking. However, these are based on assumptions regarding the DTN infrastructure, which, following the EMDH upgrade3, are out of date, as outlined by the table below:

Features the AWG suggested the DTN 'lacked'[4]	DTN features that support AWG proposed architecture
Speed of data transmission	The DTN transfers 99.97% of all messages within 5 mins. **It can also provide near real time data transfer with DTS adaptors and API services**
Speed of acceptance of messages sent	The DTN provides automatic acceptance of messages against technical data validation data requirements
Moving away from batch processing to real-time processing of small data packets	Data packet size and frequency is at the behest of the individual sender - Batch data processing is an industry driven mechanism for data transfer. By 2022, the DTN will be able to send small data packets, either via the existing mechanism or via API and replication.
Real time validation	Data validation is part of the DTN where data be is validated against industry data standards and requirements
End to end encryption & protection of sensitive data	End to end encryption and protection of sensitive data is a core component of the DTN
Replay of event history	The DTN can support visibility of event history through data portals, such as EMPRIS. The DTN, via webtools, can also support the resending of historic datasets that have already been sent by parties, if required

ElectraLink agrees that there are some features the DTN does not currently have within its architecture however, given the statements in the AWG, it is our understanding that these are not requirements of the AWG target operating model, or the requirements outlined by Ofgem as assessed by the HHS Impact Assessment. These are limited to real-time data transfer and event history similar to control systems (though this could be achieved through the introduction of an adapter service) and acceptance and validation of messages against business rules, which are not a requirement of the AWG or Ofgem TOM.

[3] Energy Market Data Hub - ElectraLink

[4] pg 27 - MHHS AWG: Recommendation

3. A comparison between the existing DTN and new EDA styles of communication for data interfaces

The key differences between the DTN and EDA is that the DTN does not allow for real time data exchange, though 99.97% is delivered within 5 mins, whereas an EDA would enhance the energy market's capability to move towards the future, real time architecture of the smart energy system but this could cause issues for smaller organisations or those with significant technology debts that are currently not well placed to make significant change to their own systems.

Industry Requirement	DTN	EDA
Security	✓	✓
Scalability	✓	✓
Options to stream data	✓	✓
Robust governance layer	✓	✓
Real time data exchange	✗	✓

An EDA enables notification and response for every event within a system, or associated systems. Within the settlement system, understanding when the data from the device has changed ownership (from a supplier, a customer or consent to share data) or status would be an 'event'.

An EDA would allow for real time notification of events, but would require a departure from the options for data transfer currently afforded to energy market participants e.g. batch and APIs. This limitation could counter the benefits brought about by EDA. Therefore, we believe it is important for industry to consider which is more valuable; having flexibility within data transfer options or real time data?

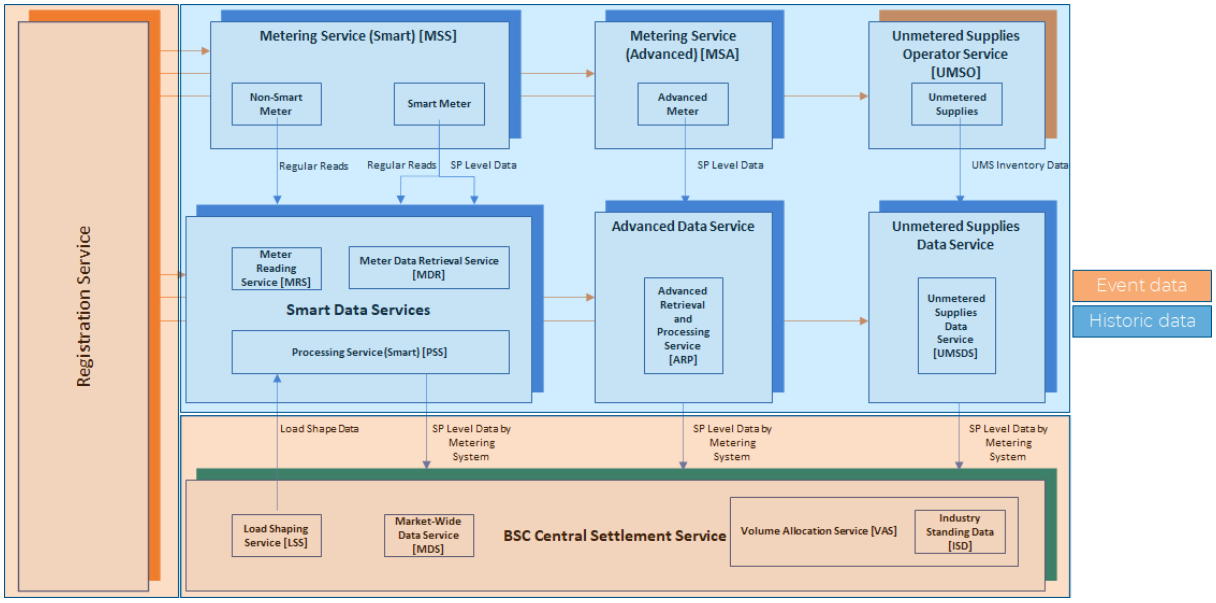
As it stands, under current arrangements, there are no processes in the TOM or AWG model that are real-time (the lowest processing time is end of day (registration updates). There is no requirement for systems to be real time because these 'events' are communicated either in advance of the event happening (registration updates) or post the event (batch acceptance of settlement data), which are not real time events.

As industry systems were not intended to work in real time and the requirements of settlement (which focuses on post-event information) do not require it, most data is likely to be obtained at one point in time. Therefore, we are in danger of an event stream that would stress systems at various points in the day, i.e. collecting ½ hourly data at midnight across every meter, and sending that into settlement resulting in circa 60m packets of 48 half hourly consumption datapoints arriving at or about the same time. For the rest of the day, the systems would remain largely idle.

As we move to the smart world, where meters can be seen as Internet of Things (IOT) endpoints, this move to EDA could be a step towards information flowing across the network in real-time. Therefore, the move to EDA for settlement, rests upon the necessity to operate in real-time. The current remit of the settlement process is not to settle in real-time, but to reduce the settlement window, and therefore settlement is still an out-of-scope process.

Having said that, in relation to settlement, there are two key 'events' – an update to registration and the transfer of settlement data by the central settlement systems (either accepted or rejected) that

could benefit from EDA. This is because they are communicating an event that may require a response or may trigger a resultant action from other parties.



While we agree the industry should move towards a real-time, modern data architecture, most settlement activities are a retrospective activities and real time data is not a requirement. Therefore, we, at ElectraLink, agree with the AWG, that the best of both worlds could be achieved by providing a middle ground utilising adaptor that facilitate near real-time data sharing, where it is needed, with the flexibility of not moving all systems to EDA (this is explored in Section 4). We believe that parties could transfer all this data to an Event Driven Architecture, via the DTS, until they are ready to transition to a new data architecture.

This conclusion is based on our understanding that there are very few datasets within settlement that need to be real time (even in the future world), so there is limited upfront benefit of moving the whole settlement system to EDA. With the support of the AWG documentation and the Target Operating Model, ElectraLink has performed a review to highlight which areas are most likely to benefit from EDA to support your understanding of the impact of MHHS on your future use of the DTS. A summary is below, with more detail, including the DTC flows impacted, in Appendix 1. This assessment is in line with the AWG recommendation that not all areas of the settlement system is required to move to EDA.

Interface data transfer requirements

Interface:	Frequency:	DTN Capable	EDA Benefit
Registration Service Appointment to Metering	**Variable depending on business processes** These processes could benefit from EDA, as these processes reflect an 'event' that has happened. EDA would only be a benefit, if the current processes and systems supported real time data transfer. However, changes to a customer or meter point are not real time (it happens at midnight) and are notified +1 to +28 days in advance, therefore, under current arrangements for registration, there is no requirement for systems to be 'event' driven because these events are planned events, not real time events.	✓	✓
Registration Service De-Appointment to Metering			
Registration Service Updates to Metering			
Metering Service Accept or Reject Appointment			
Metering Service Updates to Registration			
Registration Service Appointment to Data Service			
Registration Service De-Appointment to Data Service			
Registration Service Updates to Data Service			
Data Service Accept or Reject Appointment			
Registration Service to Central Settlement			
Metering Service to Data Service UMS Inventory			
Data Service to Metering UMS Response			
Consumption Data Service to Central Settlement	**Minimum: once per day** These processes are unlikely to benefit from EDA, as the datasets shared would be post-event data.	✓	TBC
Consumption Central Settlement LSS Period to Data Service	**Twice per day** These processes would benefit from EDA, as the datasets shared would be communicating an event within settlement (i.e. validation) However, this information is not processed in real time and, therefore, under current arrangements for registration, there is no requirement for systems to be 'event' driven because these events are planned events, not real time events.	✓	✓
Consumption Central Settlement LSS Totals to Data Service			
ISD Specification	**Ad-hoc as needed** These processes are unlikely to benefit from EDA, as the datasets shared would be post-event data.	✓	TBC
ISD (Transitional MDD) Specification			
Registration Service to Supplier	**Variable depending on business processes** These processes could benefit from EDA, if the current processes and systems supported real time data transfer.	✓	✓
Supplier to Registration Services			
Supplier to Registration Services			
Registration Service Updates			
Registration Service to LDSO Updates			
LDSO to Registration Service Updates			

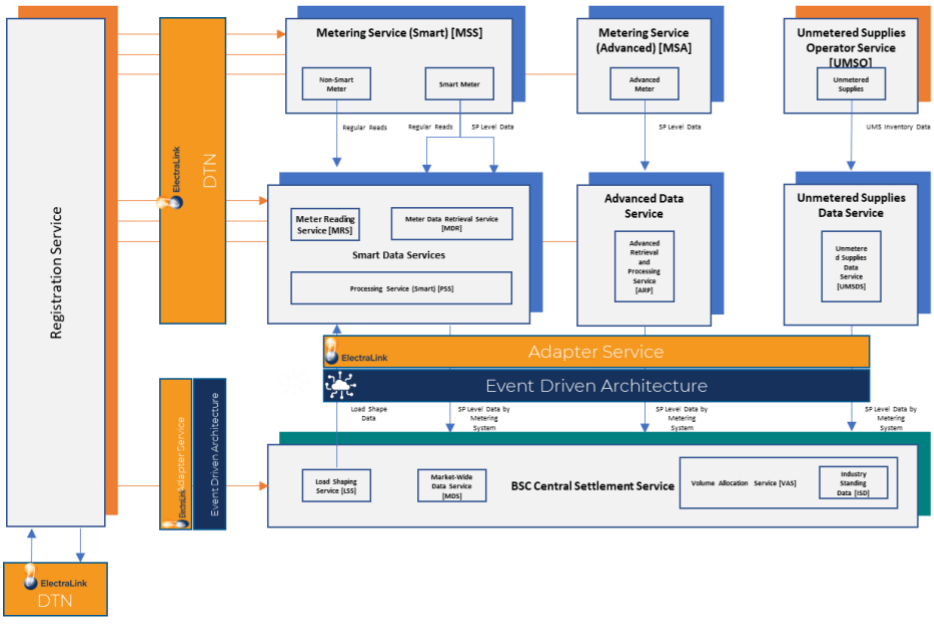
4. A hybrid DTN-EDA architecture meets the programme's requirements

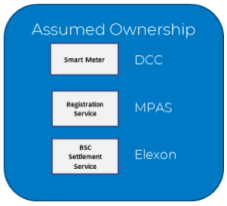
Moving towards a real time data sharing mechanism is likely to be the future state for the energy market. The introduction of EDA will require a significant overhaul in how industry manages and interacts with data. It will present a number of challenges in its implementation, including the need to make, sometimes, significant system changes at a local level.

A hybrid, where the DTN is integrated with an EDA, supported by an adaptor system, would deliver the benefits of EDA and move the industry forward in terms of a modern architecture and allow parties to choose when to upgrade their systems and so optimise their cost spend.

A hybrid DTN-EDA meets the following key architecture requirements for the AWG[5]:

- "Allow transition between older and newer technologies so that existing system logic can be maintained across generations of hardware/software
- Meet aspirational targets for speed of data exchange but allow for exceptions (e.g., may use batch interfaces where needed)
- Provide the opportunity to use improved technology which will encourage faster execution of data transfers
- Data created by data producers can be immediately passed to a data integration component (an adapter), resulting in minimal technology changes within each organisation"





A hybrid solution will support the industry's transition to a smart, reliable energy system, while:

[5] pg 15/16 MHHS AWG: Recommendation

1. Reducing the barriers to entry, such as those experienced by small suppliers in the CSS programme
2. Reducing the costs to respond to HHS
3. Supporting parties who have minimal resources, including people, costs or capability, to manage changes to internal systems

This mechanism will be beneficial to parties who:

1. Have minimal interactions or need for real time settlement data (such as an LDSO or supplier agents)
2. Do not have big IT or regulatory teams able to understand the scale of the change
3. Want to avoid big bang changes to architecture
4. Do not want to overhaul existing IT systems
5. Want to minimise internal IT changes
6. Want to reduce costs to integrate into HHS

5. Conclusion

The EMDH can support all the communication needs of retail settlement as defined under the MHHS consultation[6]. Our service is competitively procured and is designed to support the changing requirements of a smart, flexible system. In an increasingly fragmented energy market, ElectraLink facilitates vibrant competition by ensuring that the communication of and access to data is provided on a low cost, reliable and secure interface. Moreover, through the flexible, yet secure and robust, governance structures of the EMDH, access to data has been established to support the changing nature of the market.

Event streaming is a real-time ingestion of data from potentially multiple sources and a way of accelerating data to the point where insights can be obtained. These events are sent as small packets of information at the time they happen (or, rather, at the point they are generated). Our industry systems do not work this way and the requirements of settlement (which focuses on post-event information) do not require it.

Given that most data is obtained at midnight, we are in danger of an event stream that would stress systems at various points in the day, i.e. collecting ½ hourly data at midnight for every meter and sending that into settlement, leading to circa 60m packets of 48 half hourly consumption datapoints arriving at or about the same time. When, for the rest of the day, the systems would remain largely idle.

As we move to the smart meter world, where those meters can be seen as Internet of Things (IOT) endpoints, this could be a move towards information flowing across the network in real-time. The move to EDA can undoubtedly bring benefits but is it not without risk or cost. Therefore, the decision on what should be included as into an EDA rests upon the necessity to operate in real-time. We believe that, as the current remit of the settlement process is not to settle in real-time but to reduce the settlement window, and therefore settlement is still an out-of-scope process.

[6] Design Working Group preferred TOM report | Ofgem

In order to introduce “real time” dataflow into the industry, these up and downstream systems would need significant reengineering, as well as changes agreed to the underlying processes and procedures. In addition, to ensure compliance, it would also require changes to the governance codes underlying them.

A hybrid, where the DTN is integrated with an EDA architecture, supported by an adaptor system, would deliver the benefits of EDA without the additional costs incurred with integrating EDA end-to-end directly within systems.

We’d like to know your thoughts! We recognise that different parts of the industry will be progressing with a move to EDA at a different pace therefore, as not all DTS users will use a DTN solution, progressing with a DTN solution will be managed in conjunction with the DTS User Group and it will be delivered on an ‘as required by users basis’. If you would support a DTN adaptor solution, then please register interest here as soon as possible. This will ensure we can engage with the DTS User Group to meet your future needs.

Appendix 1

1 Detail on the Interfaces

MWHHS Interface	MWHHS Interface Description	Party From	Party To	Impacted DTC Flows	DTS v EDA
MHHS 151	Registration Service Appointment to Metering	SMRS	MSS, MSA, UMSO	D0209, D0304, D0312	These interfaces cover the existing/CSS interfaces from / to SMRS (MPAS) ElectraLink agrees that any change to the status of a customer (e.g. consent to data being shared or retrieved at half-hourly granularity) or the meter point (e.g. changes to supplier or the agent) would benefit from real time data transfer. This will ensure that the customers data is only retrieved by those parties with the appropriate consent. However, changes to a customer or meter point are not real time (it happens at midnight) and, therefore, under current arrangements for registration, there is no requirement for systems to be real time because these events are planned events, not real time events. These processes could continue to utilise the DTS, as these interfaces are: - Batch Processed up/downstream (so no Real-time benefit) - Notifying future events 1-28 days (so no Real-time benefit) If there is a move towards moving the cadence of the process behind these interfaces to a more “real time” basis, then there would be a real benefit to industry to moving to EDA.
MHHS 152	Registration Service De-Appointment to Metering	SMRS	MSS, MSA, UMSO	D0209, D0304, D0312	
MHHS 153	Registration Service Updates to Metering	SMRS	MSS, MSA, UMSO	D0209, D0304, D0312	
MHHS 156	Registration Service Appointment to Data Service	SMRS	SDS, ADS, UMSDS	D0209	
MHHS 157	Registration Service De-Appointment to Data Service	SMRS	SDS, ADS, UMSDS	D0209	
MHHS 158	Registration Service	SMRS	ADS, SDS, UMSDS	D0209	

	Updates to Data Service				
MHHS 181	Supplier to Registration Service	Supplier	SMRS	D0055, D0205, D0358	
MHHS 182	Supplier to Registration Service	Supplier	MSS, MSA, UMSO	D0055, D0205, D0358	
MHHS 154	Metering Service Accept/Reject Appointment	MSS, MSA, UMSO	SMRS		These cover new interfaces from / to SMRS (MPAS). These events are not currently notified to SMRS (MPAS) from these parties but if needed, could utilise the DTS as MPAS flows are: - Batch Processed up/downstream (so no Real-time benefit) - Notifying future events 1-28 days (so no Real-time benefit)
MHHS 155	Metering service updates to Registration	MSS, MSA, UMSO	SMRS		
MHHS 159	Data Service Accept/Reject Appointment	ADS, SDS, UMSDS	SMRS		
MHHS 160	Registration Service Updates to Central Settlement	SMRS	LSS, MDS		
MHHS 180	Registration Service to Supplier	SMRS	Supplier		
MHHS 183	Registration Service Updates		SMRS		
MHHS 186	Registration Service to LDSO Updates	SMRS	LDSO		

MHHS 187	LDSO to Registration Service Updates	LDSO	SMRS		
MHHS 165	Metering Service to Data Service UMS Inventory	UMSO	UMSDS	D0052, D0310	These cover existing UMSO interfaces across the DTS Could easily utilise the DTS as MPAS flows are: We are assuming that: - UMSO Systems are batch processed up/downstream so limited Real-time benefit) - Use pseudo HH consumption, not real metered data
MHHS 166	Data Service to Metering UMS Response	UMSDS	UMSO		Covers new UMSO interfaces across the DTS Events not currently notified from these parties Could easily utilise the DTS as we are assuming that: - UMSO Systems are batch processed up/downstream so limited Real-time benefit) - Use pseudo HH consumption, not real metered data : -
MHHS 176	Industry Standing Data Specification	VAS	SMRS, MSS, MSA, UMSO	D0227, D0269, D0270	Covers existing Standing Data interfaces across the DTS Could easily utilise the DTS as: - UMSO Systems were batch processed up/downstream when I was last involved in them (so no Real-time benefit) - Used pseudo HH consumption, not real metered data (so no Real-time benefit)
MHHS 177	ISD Transitional MDD Specification	VAS	SMRS, MSS, MSA, UMSO	D0227, D0269, D0270	
MHHS 171	Consumption Data Service to Central Settlement	PSS, ARP, UMSDS	LSS, MDS	D0040, D0041, D0278, D0286, D0298,	Covers existing Consumption Data interfaces across the DTS There may potentially be some benefit to the market by a move to a more real-time EDA approach, but this will depend on the real-time capability of parties up/downstream systems

				D0355, D0356, D0376, D0377, D0378, D0385	
MHHS 172	Consumption Central Settlement LSS Period Data to Data Service	LSS	PSS, ARP, UMSDS	D0018, D0028, D0039	
MHHS 173	Consumption Central Settlement LSS Totals to Data Service	LSS	PSS, ARP, UMSDS	D0018, D0028, D0039	

Appendix 2 The DTN's ability to meet Ofgem's Target Operating Model Requirements

ElectraLink meets all the technical requirements of MHHS as outlined in Ofgem's report:

1. "Common Interfaces" between all participants: ElectraLink provides a single, independent, flexible, secure and low-cost data transfer service between UK energy market participants that delivers all data transfer requirements relating to settlement-critical market processes. These processes include customer switching, settlement, agent management and meter administration. ElectraLink's platform currently provides the functionality for non-Domestic HH settlement as well as elective HH Settlement to the domestic market. ElectraLink's EMDH currently connects to 308 industry participants which includes every HH Settlement party.

2. "Options to stream data" including "APIs and file transfer": Through over 20 years' experience of managing the DTS, and now the transformative EMDH, ElectraLink has gained significant understanding of the main barriers to the sharing of data. Alongside this, ElectraLink has invaluable experience of establishing governance arrangements to ensure effective sharing of those datasets. Through the DTS and now the EMDH, ElectraLink has provided the functionality for file transfer between all relevant MHHS actors since 1998.

   Since 2012, ElectraLink has been working with industry participants to create analytical solutions (including APIs and file transfer) for the industry. Through collecting and storing data for the benefit of the energy market, ElectraLink has been building a detailed governance framework to support innovation and provide data to those who require it, while also protecting the data controllers. This dataset and governance framework are agnostic of technology and are currently being implemented through event-driven data transfer from:

   - a process (e.g. the sending of all relevant data in the data store to agents from the EMDH following their appointment);
   - APIs, where data is accessible to users immediately for real time decision-making – removing the reliance on bilateral data transfer; and
   - online dashboards to provide high level overviews.

3. "Allow future innovation options…to access meter level data": ElectraLink's ability to collect all DTS data flows enables ElectraLink to store, enrich and analyse the DTS dataset. We do so to provide insights which drive business value and operational efficiency for UK energy market participants, including settlement agents and suppliers, as they enter the smart flexibility market, such as HH APIs.

   The governance structure of the DTS, namely the Data Transfer Services Agreement (DTSA), enables ElectraLink to provide secure access to settlement data to market actors, which is proven to facilitate innovation and drive market transformation.

   An example of key use cases for access to the settlement data within the DTS dataset, include:

   - National Grid's utilisation of ElectraLink's Embedded Generation dataset to support Grid's forecasting of Embedded Generation output;
   - Ofgem's tracking of eServe ECO submissions; and
   - ELEXON's use of settlement data to support their performance assurance.

4. **"Robust governance layer":** The DTSA includes a flexible governance structure that allows the EMDH to operate data exchange defined across a number of industry codes (currently SPAA, MRA, BSC) and between bilateral parties through flows defined using FlowBuilder (a tool within the DTS to define new message structures). This governance structure would facilitate the necessary changes to the HHS message definitions within existing codes to the new MHHS arrangement.

   A structured, mature governance arrangement for data sharing, such as the DTSA, reduces data risks (e.g. the wrong people accessing the data) and ensures independence and competitiveness, as the industry itself governs how industry data can be used. For ElectraLink, the governance arrangements of the DTS dataset ensures that the data sharing is provided flexibly and **always to the right people**, including new market actors. The rules of data sharing can be updated, as appropriate, and agreed by the industry. This mechanism has been used to provide settlement data to new market actors, such as Innogy, to support their DER offerings.

   The industry, via the DTS User Group, and Ofgem retain oversight of the DTSA and therefore would have direct visibility of any EMDH performance, service or governance issues relating to its support of the MHHS .

5. **"Role based access controls":** The EMDH security controls ensure that access to the services are user-specific and each user's access controls are based on the role of the user.

6. **"Auditing and monitoring":** The EMDH contains audit functions and a data store to provide assurance and monitoring capabilities. This would allow for a comprehensive understanding of the effectiveness of change as and when market participants move to market-wide HHS and a smart, flexible, coordinated system.

   ElectraLink also supports the overall programme aims set out by Ofgem:

7. **Promotes a cost effective and competitive solution:** ElectraLink competitively procured the EMDH on behalf of industry, compliant with OJEU procurement procedures.

   In the EMDH, the industry has a competitively procured network service connected to 100% of the SVA settlement participants, that can deliver the functionality required to meet the current and future needs of the MHHS at a limited incremental cost. ElectraLink believes, therefore, that the most cost-effective solution for industry is to re-use this network as the communication mechanism for the MHHS .

   ElectraLink firmly believes that its management of the DTS over the last 22 years demonstrates a clear centre of excellence in the procurement and delivery of data transfer services to support the UK energy industry. We believe that the most cost-effective way of delivering communication infrastructure to support the MHHS is to include MHHS communication in the scope of the EMDH and we have therefore factored this requirement into the EMDH.

   Combined with the opportunities to support innovation (point 3 above), the EMDH already removes barriers to competition for new entrants through low cost connections and a trusted service that is undifferentiated between the largest and the smallest market participants. (Connections to the EMDH are provided for as little as £480 per year.)

8. **Reliability of the transition**: It is important to monitor performance across the transition to the new arrangements and to publish how suppliers and market actors are performing. Existing market monitoring can incur an overhead on market participants as they must 'self-report' performance to the regulator, which can also lead to inconsistencies.

ElectraLink has successfully demonstrated how market monitoring can be delivered centrally with reporting derived from the collection of DTS data supporting ELEXON's PAF process, Ofgem's eServe monitoring and National Grid's monitoring of embedded generation growth. The continuation of the EMDH as the communication mechanism for HHS would allow the EMDH to continue providing these monitoring services. This would also allow the EMDH to support monitoring of the new settlement arrangements' performance.

Appendix 3 The Energy Market Data Hub (EMDH)

ElectraLink operates at the heart of the UK energy market with unique insights into the challenges and opportunities the industry faces. For over 20 years, ElectraLink has supported the evolution of the UK energy market with the consistent and reliable delivery of the Data Transfer Service (DTS). From its inception in 1998, the DTS has underpinned competition and growth in the market through flexible, secure and trusted data transfer. Always staying ahead of the technology curve, the DTS adopted virtual private cloud technology and open-source platforms in 2013 to ensure it can support dramatic growth while reducing costs to industry.

However, this is only one aspect of what ElectraLink has been delivering during this time. Since 2012, ElectraLink has had permission to collect DTS data flows (from April 2012) and retain this data. This data lake is used to support settlement processes (such as ELEXON's PAF process) and the transition to a smart, flexible network (by proving Half-Hourly data to National Grid to support its forecasting of embedded generation output). Through the DTS, ElectraLink is already connected to and integrated with all settlement-critical market participants and currently provides the system architecture that supports the data transfer for all relevant retail settlement processes, such as agent appointment and meter reading data.

Beyond this, with all the necessary and appropriate governance in place, we were able to make use of our unique position to monitor and identify trends in the energy market, providing a level of transparency and insight into the challenges and opportunities the industry faces. This allows us to support industry to develop solutions, facilitate innovation and reduce costs to consumers. These solutions are under the governance of the Data Transfer Service Agreement (DTSA), a multi-party agreement overseen by Ofgem.

The EMDH data lake enables key innovative data transfer solutions to be delivered to market. The EMDH can facilitate physical data transfer where participants require it; however, the data lake also enables data exchanges to be performed using other methods such as through service platforms. The EMDH already offers the ability to access data via APIs (meeting the TOM requirements) and the recent re-procurement will also allow innovators to develop their own products and services for the benefit of the utilities industry.

The EMDH is our way of bringing together all the products, services and solutions we offer in one place. ElectraLink believes that it is critical that access to industry data falls under industry governance and is centrally available, from a trusted entity, to ensure that all participants have equal, timely and secure access to industry data. It is noted that ElectraLink already fulfils this trusted, governance-bound role for the provision of the settlement system architecture.