1 Executive Summary

1.1 Introduction

Ofgem has published the Smart Metering Implementation Programme proposal in the July 2010 consultation. The proposal sets out a staged approach to implementation with an obligation on suppliers to start rolling out smart meters in Summer 2012, 12 to 18 months prior to the central data and communication services become available.

During this transition period, a significant volume of smart meters will have been installed by suppliers under the Government's mandate. It is important to maximize the ability of meters to remain 'smart' after a change of supply so as to ensure a continuation of consumer experience, and to reduce the risk of asset replacement which can deter investment.

An automated process to support interoperability arrangements amongst the suppliers will be desirable to facilitate the smooth market operation during this period as volume of smart meters will be ramping up. It may also facilitate the transition over to the DCC operation in Autumn 2013.

To date, around half a million of consumers have already been benefiting from various smart metering trials and pilot scheme, more will share the experience before any standard technical specifications have been confirmed. Thus, the sooner we implement interoperability arrangements, the more customers will benefit from them and from smart meters ahead of Summer 2012 'Go-Live' Roll-out date.

1.2 Key Principles

We agree with the ERA the basic principles for Interim Interoperability[1]. In particular, we believe any commercial and technical options must be built on four basic principles:

1) Quick to deliver
2) Has a breakeven or positive economic value
3) Easy to integrate with existing industry processes and systems
4) Does not undermine the enduring DCC solution
5) Protect consumers' smart experience
6) Maintain single fuel competition

[1] ERA SRSM Interim Interoperability – Principles and Issues September 2010

Whilst pure interoperability requires DCC to support every meter that any supplier may possibly choose, an interim arrangement may have a looser set of requirements. The arrangement may vary from a minimum, facilitative approach to an extensive fully automated data delivery service. Any additional solution evaluation criteria need to be tested against the fundamental principles.

1.3 Key Requirements and Issues

Like the enduring DCC solution, there is a wide range of options for the potential scope for the interim arrangement. We need to strike the right balance based on the basic principles as set out above. A wider scope will take a longer time to implement and may introduce economic risks. Too narrow a scope will prohibit interoperability to be achieved by all suppliers in the given time.

The key issues considered in this document are (i) the requirements and (ii) the realization of interoperability through an interim central intermediary agent.

1.4 The Key Requirements

Through our analysis, we believe the minimum set of requirements must include at least the following three levels of capabilities:

1) Secure communication and access control to the gas and electricity meters

2) Translation services for communicating to the gas and electricity meters

3) Scheduled data retrieval from electricity and gas meters

These are typical activities offered by Head End systems.

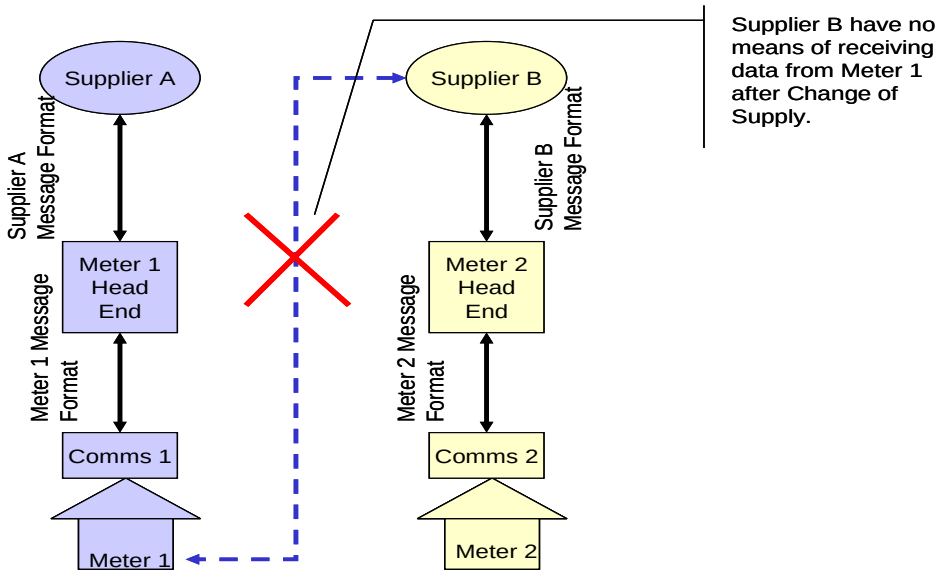


Figure 1 - Lack of Ability to achieve Interoperability

At present, each supplier has a small pocket of non-DCC compliant smart meters. Each supplier has its own method to achieve communication with its meters which, with no exception, involves some form of secure access control through a Head End system. On change of supply, although meter ownership changes hand, the data communication service does not. This means that a gaining supplier may not be able to communicate with the gained meter, or assimilate the data into their existing business systems.

For each supplier to offer its Head End system as a service to the gaining supplier cannot be an acceptable option when it raises more legal questions than removing barriers. Any bilateral arrangement may introduce exclusion rather than promoting interoperability amongst all suppliers in the market.

To overcome the inability of one or more suppliers to achieve a two-way communication with the meter after a change of supply, a centrally run Head End service has to be made available and operated by a supplier neutral intermediary agent with collaborative effort from all suppliers.

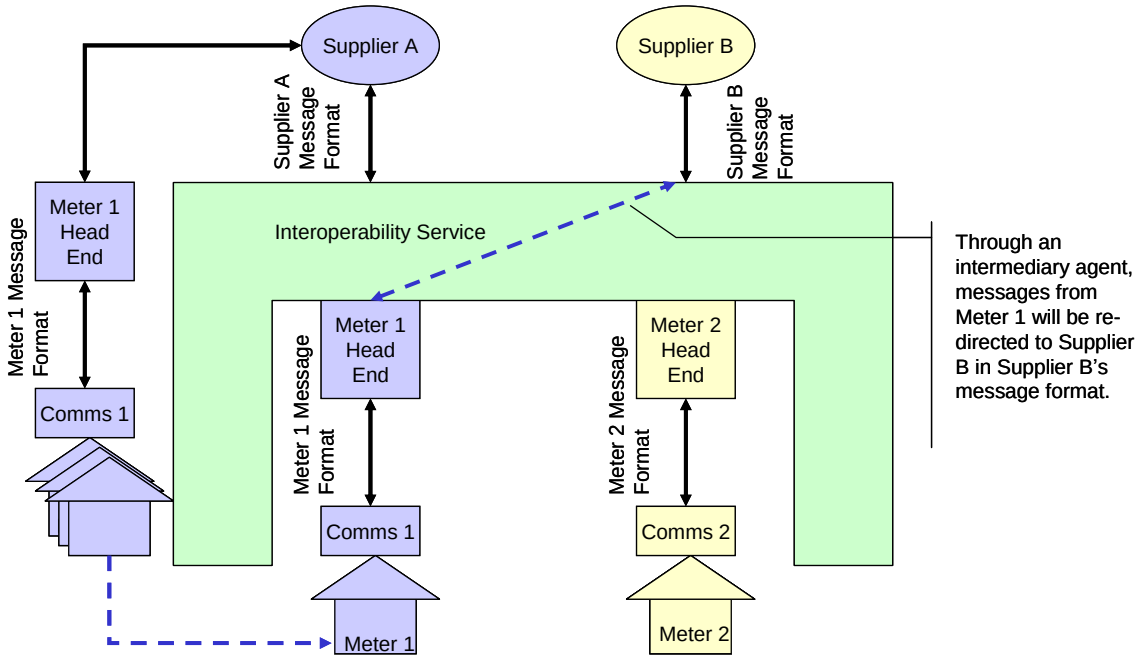


Figure 2 - Interoperability can be achieved by applying an intermediary layer between the Head End system and the suppliers

As illustrated in Figure 2, an intermediary agent can operate a version of the Head End which is capable of communicating with the suppliers' meters. Suppliers have the choice of using the intermediary service to run its entire portfolio of meters for the entire duration of the interim period or choose only to migrate its portfolio of meters to the central service on change of supply.

1.5 The Need for an Interim Intermediary Agent

This agent needs to undertake the following responsibilities:

1) Identify to the gaining supplier that a smart meter has been acquired.

2) Identify to the gaining supplier the Head End capabilities associated with the meter in situ.

3) Switch access control from the losing supplier to the gaining supplier on Supply Start Date.

4) Run a suite of translation services for the gaining supplier so that the gaining supplier can communicate with different types of smart meters without the need to build different Head End interfaces.

5) Convert data from the Head End system to a standard format of supplier's choice and vice versa.

Industry participants may facilitate the availability of an interim interoperable arrangement early by entering into some binding agreement and adopting best practices. For example:

1) Use of open standards and protocols in all aspects of any current and future smart metering implementation

2) Be transparent about the available data interface

Suppliers should also consider the novation or assignment of existing Communication and Head End service contracts to the Interim Head End Service Provider.

1.6 Characteristics of a Suitable Intermediary Agent

An intermediary agent needs to be an organization neutral to all suppliers.

It needs to be familiar with the industry process, data flows and operations.

Ideally, it has established credentials in amongst suppliers dealing with mission critical data at scale.

It needs to have the experience of managing high volume of data across data network.

It needs to be able to demonstrate a track record of managing project delivery in a very tight timescale.

1.7 The Benefit of the Approach

We see that the establishment of an intermediary agent has the following benefits:

1) The approach is applicable for both fuels.

2) It provides flexibility e.g. the approach can be extended to include new communication and meter technology.

3) It is an inclusive approach to all suppliers.

4) It can deliver a continuation of consumer experience from as early as 2011 including prepayment experience.

5) It will minimize the need to change meters on churn.

6) It can be extended to other consumer segments, e.g. SME customers

1.8 The Next Steps

We seek acceptance of the views expressed in this paper by the Interim Interoperability Subgroup.

We recommend that the IISG uses the principles as laid out in this document to refine the scope of Interim Interoperability arrangements.

We seek acceptance of the approach of using an intermediary agent. We recommend the IISG commences an assessment process to determine the most appropriate body to be the intermediary agent.

2 Introduction

2.1 The Government's Implementation Plan

Ofgem has published the Smart Metering Implementation Programme proposal in the July 2010 consultation. The proposal sets out a staged approach to implementation with suppliers having an obligation to install meters ahead of DCC services being available. The mandated supplier rollout will commence in summer 2012 and the mandated use of DCC for the domestic sector will commence by autumn 2013.

We agree with Ofgem that interoperability is important in preventing barriers to customers switching supplier and for the effective operation of the competitive market. Given that there is a 12 to 18 months time gap between mandated supplier rollout and mandated use of DCC, measures need to be put in place so that technical and commercial interoperability can be achieved.

2.2 The Need for Interim Arrangements

Based on the Government's aspiration to rollout smart metering to the 27 million homes by 2020 starting from 2012, the industry as a whole may need to achieve 5 to 6 millions smart meter installations each year as a minimum. This will involve a very steep ramping up process in the first year alone and thereafter. We understand that Ofgem may be considering even more ambitious targets.

As the volume is going to be substantial, it will require some level of automation. Suppliers will need to have an interim arrangement to house the smart meter installations. If there is not any arrangement provided to the suppliers centrally, each supplier will have to invest in data communication systems for the transitional period of 12 to 18 months. Such an investment of smart metering infrastructure is a substantial undertaking which is not economically justified if it is to run only for a short period.

We also need to give considerations to the time of the DCC solution 'Go-Live'. In autumn 2013, these installations will need to be migrated to the DCC solution. A unified interim arrangement across all suppliers may enable a smoother migration of data communication services over to DCC.

From a contingency planning perspective, an interim arrangement can also act as a safety buffer for the DCC solution 'Go-Live' in case there is any delay for any reasons.

Furthermore, in the absence of any DCC service and assuming a 10% switching rate, the volume of smart meters at risk of not being usable as 'smart' by the new supplier after churn is very high. An interoperable arrangement is important to protect the customers' experience and also to prevent stranding for the interim period.

A workable interim interoperable arrangement is therefore highly desirable for both market operation and smooth delivery of Government's Smart Metering implementation plan.

2.3 Interim Arrangements – The Need to 'Go-early'

To-date, around half a million of consumers have already been benefiting from various smart metering trials and pilot scheme, more will share the experience before any standard technical specifications have been confirmed. These smart meters may not be 'DCC compliant'; nonetheless, consumers have already experienced the benefit of smart meters. Their experience needs to be protected before and after DCC Go-live.

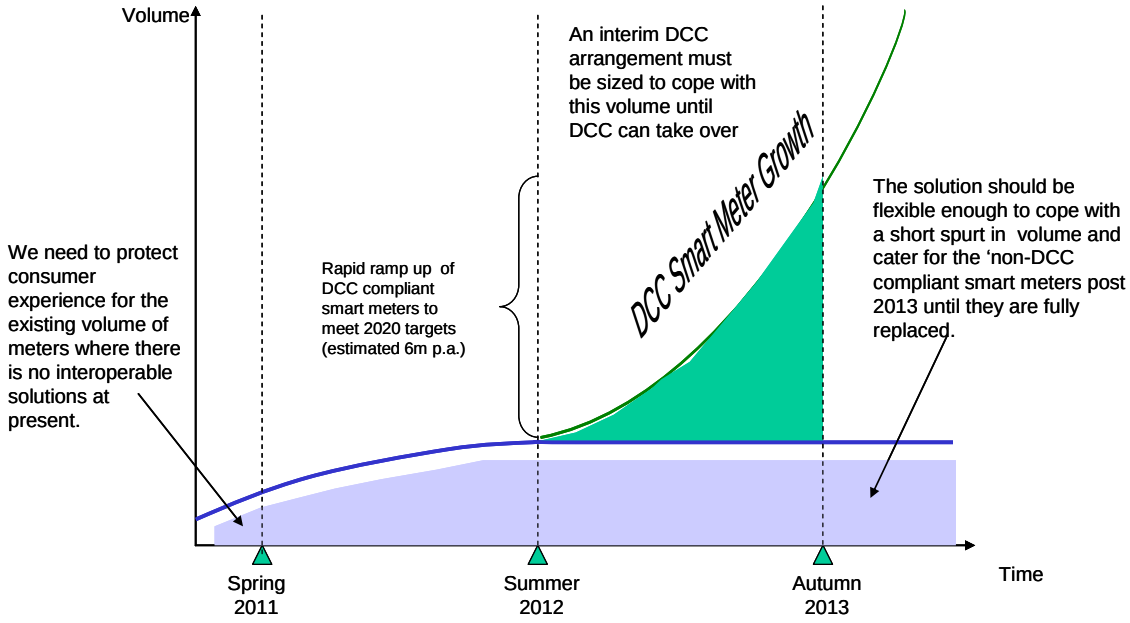


Figure 3 – Illustrative profile of 'smart meter' volume that the Interim Arrangement needs to consider

Suppliers are worried about stranding of asset on churn. The sooner we implement interoperability arrangements, the more attractive it will be for suppliers to rollout smart meters to customers ahead of the published timescale. This will give suppliers a head start in working out the rough edges when implementing such a big programme of work.

3 Key Principles on Interoperable Arrangements

We agree with the ERA the basic principles for Interim Interoperability[2]. In amongst the principles that different suppliers have raised at the ERA, we believe some principles are more fundamental than some others. In particular, any commercial and technical options must be built on four basic principles:

[2] ERA SRSM Interim Interoperability – Principles and Issues September 2010

1. Quick to deliver
2. Has a breakeven or positive economic value
3. Easy to integrate with existing industry processes and systems
4. Does not undermine the enduring DCC solution
5. Protect consumers' smart experience
6. Maintain single fuel competition

3.1 Principle 1 – Quick to Deliver

Interim Interoperability arrangements will need to be implemented as soon as practicable in order to ensure consumers' ability to continue benefiting from smart metering services. This has to be not only in advance of the formal DCC arrangements coming into force but also supportive of different suppliers' rollout programme.

The aspired time scale for the commencement of an interim arrangement should ideally be in spring 2011 in line with the Government's milestone of introducing enhanced consumer protections.

Any interim interoperable arrangements are not intend to replicate or reform the current industry design. It needs to take into account of what has been implemented in the market to-date and look for the simplest method to integrate the existing solutions. In doing so, we shall be able to maximize the usage of the interim solution to make it commercially viable.

3.2 Principle 2 – Deliver Breakeven or Positive Economic Value

The interim interoperable arrangement should have a break-even business case if not an overall net benefit.

We ought to develop a single solution for all suppliers in order to minimize the investment which is of a tactical nature.

Any solution options should minimize the asset stranding risk thereby encouraging suppliers, big and small, to participate in rolling out smart meters at the earliest opportunity.

It will be highly desirable for the solution to minimize the need for the gaining suppliers to visit the consumers' premises. For instance, we should seek to minimize the need to swap out the communication module on change of supply or attend the consumer's premises just to change access control.

3.3 Principle 3 – Easy to Integrate with Existing Industry Processes

The majority of meters in consumers' homes are still traditional meters. All suppliers have established systems and processes compliant with the current industry rules, processes and data exchange format.

Any interim interoperable solution should be easy to integrate into existing suppliers' systems and processes by its 'interim' nature. It should be designed to support suppliers in exploiting their existing systems.

Any solution should require minimal new investment and effort on the suppliers for it is only used for a relatively short transitional period. Suppliers' investment and resource should be focused on the enduring solution.

3.4 Principle 4 – Does not undermine the Enduring DCC solution

The interim interoperability arrangements are to be developed and delivered in parallel to the development work of DCC. Any interim arrangement should not compromise or undermine the final solution.

Whilst it needs to enable suppliers to continue its obligations without any adverse impact on consumer experience, it should minimize the change to the existing industry infrastructure, data-flows, processes and industry participants' systems until the final solution is designed and specified.

3.5 Principle 5 – Protect Consumers' Smart Experience

One of the main objectives of an interim arrangement is to ensure that smart meters may remain 'smart' in operation after switching to another supplier.

It is a natural conclusion that an interim interoperable arrangement must try to protect consumers' smart experience as much as possible.

3.6 Principle 6 – Maintain Single Fuel Competition

Any interim interoperable arrangement must be able to support either or both fuels in a change of supply situation. It should not prejudice any one fuel during switching.

4 Key Issues and Requirements

4.1 Requirement for a Fit for Purpose Solution

The enduring DCC solution is required to support every meter that any supplier may possibly choose, it needs to support the volume and the service requirements from various stakeholders.

An interim arrangement, on the other hand, may have a looser set of requirements. It needs to be fit for purpose but not necessarily perfect.

The arrangement may vary from a minimum, facilitative approach to an extensive fully automated data delivery service. We must strike the right balance between the business value of an interim solution and the level of functional richness, automation and security for a solution of such transient nature.

A wider scope will take a longer time to implement and may introduce economic risks. Too narrow a scope will prohibit interoperability to be achieved by all suppliers in the given time.

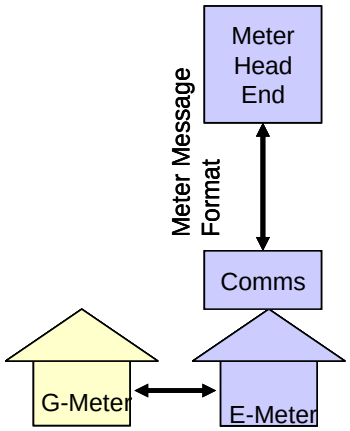
We need to look for a solution which can be assemble quickly, meet the objective of interoperability for a short period of time and flexible enough to dismantle equally easily when the enduring solution comes into force.

4.2 Key Issues

4.2.1 Tight Coupling of Head End system with Meters

At present, each supplier has a small pocket of non-DCC compliant smart meters. Each supplier has its own method to achieve communication with its meters which, with no exception, involves some form of secure access control through a Head End system.

The Head End system provides a translation service to ensure that low level meter messages can be interpreted into something more meaningful and readily usable in back office business systems.



On change of supply, although meter ownership changes hand, the data communication service does not. This means that a gaining supplier may not have the means to communicate with the meter gained, or assimilate the data into their existing business systems.

4.2.2 Gas Meter WAN Communication

In general, the current installation of an electricity smart meter includes an integrated communication module. Gas meters communications are reliant on the communication module provided by the electricity meter. This can give rise to a range of interoperability issues.

For instance, in the situation of a dual fuel installation, if the consumer switches its electricity supply to a new supplier, the incumbent supplier who is still supplying gas to the consumer will lose control over its communication with the gas meter because the communication module has switched over to the new supplier as a result of the transfer of meter ownership.

In the meantime, the gaining supplier may not be able to support the meter in ‘smart’ mode because it may not have the appropriate Head End system for communication.

4.3 Key Requirements

Any interim interoperable solution needs to fulfill three fundamental functional areas:

1. Secure communication and access control to the gas and electricity meters

2. Translation services for communicating to the gas and electricity meters

3. Scheduled data retrieval from electricity and gas meters

4.3.1 Secure Communication and Access Control

Through our experience of developing the Head End system and designing the meter functionality, we believe that meters need to be closely linked to its Head End system. In an active market like ours, continue switching of Head End when there is a change of supply gives rise to high security risk.

Given that there is power constraint on the gas meter, the technical solution for WAN communication for gas meter is likely to stay outside of the gas meter. For economy of scale, it is reasonable to assume that WAN communication will be shared between the gas and electricity meters.

With this architecture of smart metering system in mind, it is necessary for any interoperable solution to provide a secure communication and access control to the gas and electricity meters where the meters are tightly coupled with the Head End system.

4.3.2 Translation Service

Meters as end point devices are operating at a low level data format to save processing power. Data sent out from a meter is not immediately legible without some translation.

Translation of meter messages to a format that is usable by the back office system can be time consuming. Expecting each supplier to implement a Head End system and to develop a full set of translation service for each meter make and model within a short period of time is unrealistic.

An interim arrangement that addresses the need of access control but does not provide a translation service is meaningless. Any usable interoperable solution must provide a translation service where data can be readily used by suppliers for business purposes. The complexity of handling low level messages must be hidden away from the suppliers.

The intermediary agent should publish a set of common interfaces which provide suppliers the option to integrate with the service in a direct route and also to offer a standard data format, e.g. industry data flow format as an alternative. This will allow suppliers, big and small, who are at different levels of readiness in handling smart meters to participate in this market.

4.3.3 Scheduled Data Retrieval

Once the data is received into the Head End system, software applications can be written to make use of the data to support different business needs. Each supplier may have very different business requirements but all of us will have some common requirements to meet our licence obligations.

An interoperable solution needs to ensure that it can support a basic service level target where suppliers' existing obligations are not jeopardized. This may include some scheduled targets for posting data from the Head End system to the receiving supplier. For instance, it should strive to provide meter reading in standard industry meter reading flow format so that suppliers and their agents can use the information in the normal market operation.

5 The Need for a Central Intermediary Agent

It is accepted by the ERA and other utilities worldwide that a Head End system is required to operate a smart meter. With this as the main component to interoperability, there are four main options to achieve an interoperable arrangement:

1) Option 1 – A central translation service which may contain one or more Head End systems to cater for all meter makes and models.

2) Option 2 – All meter manufacturers generate meter messages in a standard format to eliminate Head End incompatibility.

3) Option 3 – All suppliers implemented their own Head End capability.

4) Option 4 – All suppliers go into bilateral agreements in supporting each other's meters on churn

These options and their hybrids should be assessed in similar ways as for the enduring solution. If we agree that most of these options have been eliminated for reasons of complexity, economic value and practicality by Ofgem's own assessment for the enduring DCC, we see no reason to spend time to re-examine all the possibilities.

Instead, we should focus on our approach to Option 1 which shares a similar blue print as the enduring DCC on one hand, but aim to operate in a much reduced scope and scale on the other. In doing so, it will give all stakeholders a very useful learning experience on the challenges we need to face for the enduring solution.

5.1 The Role of a Central Intermediary Agent

Given that a central translation service is the most efficient way of achieving interoperability and most suppliers have their own Head End system arrangement at present, the quickest way of achieving interoperability is to commission a neutral central intermediary agent to be the custodian owner of all Head End systems.

This agent will take on the following responsibilities:

1) Identify to the gaining supplier that a smart meter has been acquired.

2) Identify to the gaining supplier the Head End capabilities associated with the meter in situ.

3) Switch access control from the losing supplier to the gaining supplier on Supply Start Date.

4) Run a suite of translation services for the gaining supplier so that the gaining supplier can communicate with different types of smart meters without the need to build different Head End interfaces.

5) Convert data from the Head End system to a standard format of supplier's choice and vice versa.

5.2 A Proposed Architecture of the Interoperable Arrangement

In British Gas, we are developing smart meters that will communicate over GPRS. We have invested in Trilliant to develop a Head End service to communicate with these GPRS meters. Other suppliers have chosen other Head End service providers for data communication.

To aid interoperability, we propose that a central agent is to be commissioned to build a wrapper around all Head End systems. Through this service, a gaining supplier will receive messages routed to it in a format of that is most convenient to the supplier. This may be standard industry data flow format or it may be an open published data interfaces.

Suppliers may choose to house all their meters in the central service or migrate the meters over to the central service as change of supply takes place.

In the case of British Gas, we will prefer to continue housing the Trilliant Head End for our meters until a change of supply takes place. From our own experience, the technology is evolving all the time and we do not believe we should subject an intermediary agent to the development complexity as we are experiencing now. We propose that the industry should operate from a stable version of the Trilliant Head End where the platform is robust and proven.

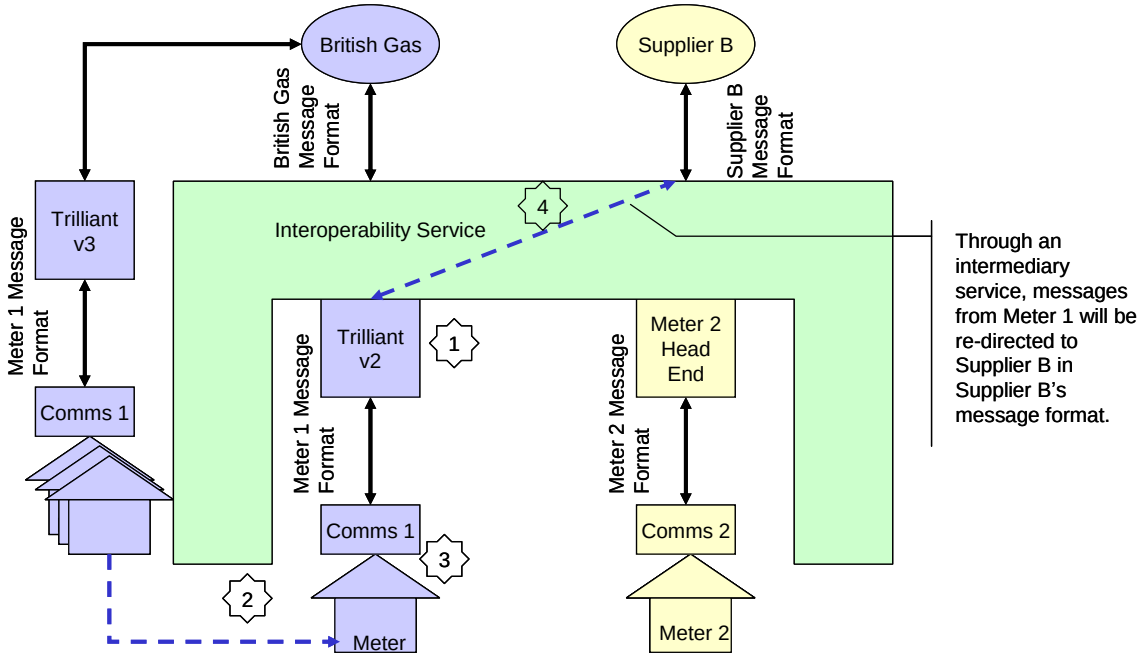


Figure 4 - Proposed Interim Arrangement Model

In summary, with reference to Figure 4, the proposed arrangement is envisaged to run as follows:

1) The Intermediary Agent will operate as many Head End systems as necessary to cover the market requirements.

2) We shall novate the communication contract to the central service and collection of the data communications charges will become the responsibility of the central service. This eliminates the need to visit the premise to swap out any communication module e.g. SIM cards. Meters and communication module remain intact in the home.

3) Meters will send messages to the designated Head End system. The central service will publish some open interfaces for suppliers to integrate with their own systems if desired or to convert the data received to a format of choice. We recommend that the adoption of the standard industry flow format as much as possible to minimize the complexity and impact on business systems.

We recognize that existing industry flows may not be sufficient to encapsulate the functional richness of smart meters. In those cases, other standard format will need to be agreed and developed.

5.3 Characteristics of a Suitable Intermediary Agent

Given that there is little time to develop and implement this interim arrangement, we need to choose an intermediary agent who can readily take on the role in a short space of time.

5.3.1 The Criteria for Selection

This intermediary agent needs to be an organization neutral to all suppliers.

It needs to be familiar with the industry process, data flows and operations to give us the best chance to minimize the industry normal operational impact.

Ideally, it has established credentials in amongst suppliers dealing with mission critical data at scale.

It needs to have the experience of managing high volume of data across data network and have a track record of managing project delivery in a very tight timescale.

5.3.2 Establishment of Service

We also foresee that different suppliers may have different service needs; these may invoke bilateral agreement between the intermediary agent and the supplier. An agreement will need to be put in place to establish a basic level of service to all suppliers and the mechanism to introduce additional choice of services to different suppliers.

5.4 Benefits of the Approach

We see that the advantage of having a central service as follows:

1) The approach is applicable for both fuels.
2) It is flexible. New meters and Head End's can be added to the wrapper service as technology advances.
3) A central service will encourage all suppliers to participate.
4) It uses existing Head End capabilities which mean it can ensure a continuation of consumer experience from as early as 2011 including prepayment experience.
5) It will minimize the need to change meters on churn.
6) It can be extended to other consumer segments, e.g. SME customers

6 Conclusion and Recommendation

6.1 Conclusion

In summary, we have examined the need for an interim interoperable arrangement from as early as 2011.

We have set out the technical challenges we as an industry need to overcome and presented the reasons for recommending a central service.

We have provided an overview as to how we see the central service working and the benefits of this approach.

6.2 The Way Forward

We seek acceptance of approach as discussed in this paper by the Interim Interoperability Subgroup.

We recommend that the Interim Interoperable Sub-Group take our proposal as the framework for moving forward in the forthcoming discussions.

We seek acceptance of the approach of using an intermediary agent. We recommend the IISG commences an assessment process to determine the most appropriate body to be the intermediary agent for providing the central service.