

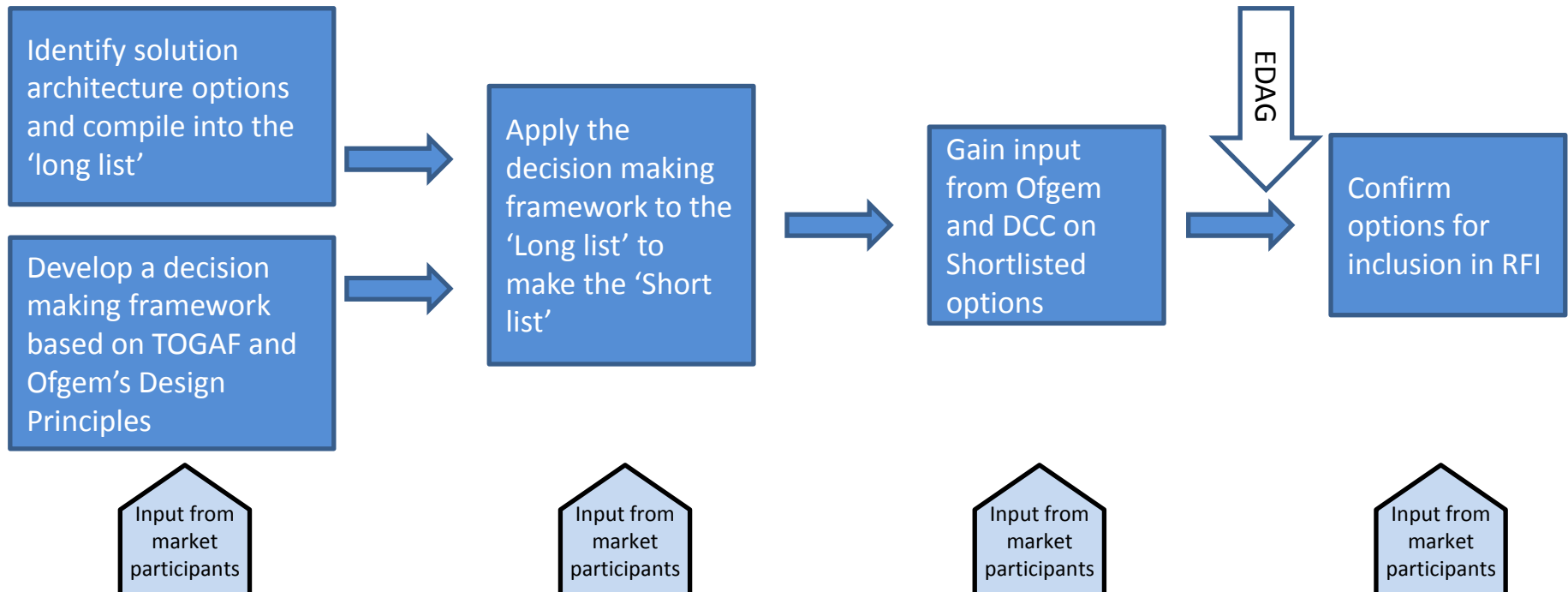
**Refinement of solution architecture options  
for inclusion in the RFI  
Version 3.0 for EDAG**

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11/08/16

ofgem

## This paper sets out the solutions architecture options which we propose for inclusion in the RFI, for consideration by EDAG

- Ofgem plans to use an RFI to gather information from market participants to further inform their approach to faster, more reliable switching
- The focus of the RFI will be cost, resource, and implementation implications of different options
- Part of the RFI will present different solution architecture options
- This paper invites EDAG views on:***
  - The solution architecture we propose to be included in the RFI***
  - The preferred approach to seeking market participant feedback on key questions we anticipate asking in the RFI***



**Our process has allowed us to evolve the long list of options to develop a short list which we propose to include in the RFI**

**We have followed an evolutionary process to identify the options we propose to include in the RFI**

**After we developed and tested the long list of options, we were able to identify key themes which were attractive to market participants.**

**We used these to influence and inform the options we have proposed for inclusion in the RFI**

## Do minimum

- Run current batch processes every calendar day
- Eliminate legacy gas nominations process
- Implement improved business processes, including cooling off and compressed objections
- Supports next day to two day switching.

Directly equivalent to long list Option 1

## Switching database with middleware

- A centralised switching database with the necessary data elements to reliably allow a consumer to switch
- Supports start of next day switching
- Technology agnostic
- Requires many of the system enhancements outlined in the 'do minimum' option'

Comparable to long list Option 3

## Switching database and MIS database with middleware

- A centralised switching database with the necessary data elements to reliably allow a consumer to switch
- A centralised management information system (MIS) with additional data elements needed by market participants to support additional switching activities
- Supports start of next day switching
- Technology agnostic
- Requires many of the system enhancements outlined in the 'do minimum' option'

Comparable to long list Options 4, 6 and 9

See supporting slides for a detailed definition of each option

In line with HMT's guidance on options appraisal, as set out in The Green Book, the short-list of options must include both a 'do nothing' and a 'do minimum' option. The 'do nothing' option provides an essential baseline against which the other options can be consistently compared, while the 'do minimum' should be used as a benchmark to check that the benefits of the more interventionist options are sufficient to justify the increased costs.

<b>Title</b>	<b>Topic</b>
<b>Shortlist criteria</b>	Our assessment of the options has been informed by the agreed design principles
<b>Do minimum</b>	It is important to include a do minimum option
<b>Solution architecture options</b>	The choice of options is driven by three main factors
<b>Solution architecture options</b>	All options offer differing factors of functional complexity, communications layer and existing or new infrastructure
<b>Solution architecture options</b>	Middleware provides the best fit with the shortlist criteria
<b>Solution architecture options</b>	No strong basis to choose between a low complexity switching system or a higher complexity switching and market intelligence system (MIS)
<b>Preferred options for RFI</b>	It is therefore proposed three options are included in the RFI
<b>Questions for EDAG</b>	EDAG are invited to offer comment and offer direction on two areas
<b>Supporting slides</b>	
<b>Solution architecture options</b>	The 10 long list options mapped on the communications/complexity matrix
<b>Definition of options</b>	Each option reviewed for its main features
<b>Blockchain</b>	Why Blockchain is discounted as a solution at this stage
<b>Market engagement</b>	How market engagement guided the selection of preferred options
<b>Decision criteria</b>	How decision criteria were developed and used to guide the selection process
<b>Implementation approach</b>	Potential implementation routes for the preferred options










The Switching Programme Design Principles (V1.0) were agreed by the Programme Board on 25 January 2016, following input from the External Design Advisory Group (EDAG). The Design Principles act as a guide for the Blueprint Workstreams, EDAG, the Design Authority and the Programme Board in their roles of developing, reviewing and approving the content of the Design Baselines during the Blueprint Phase.

The table below highlights the Design Principles which are relevant criteria for the assessment of Solutions Architecture options. Further details on the application of the Design Principles to architectural decisions is provided in the Appendix to this paper.

### Proposed shortlist criteria

	The Solutions Architecture should ...	Original Design Principle
C1	Facilitate the robust governance, delivery and maintenance of data quality.	1. Reliability for customers
C2	It is desirable that the technology does not prevent providing customers with real time confirmation of switching status.	2. Speed for customers 4. Customer switching experience
C3	Minimise the fixed implementation costs borne by (smaller) suppliers.	5. Competition
C4	Minimise the number of interfaces that suppliers need to manage to quote and enter into a contract.	5. Competition
C5	Support equivalent design and governance across electricity and gas.	6. Design simplicity
C6	Be robust to greater volumes of switching.	7. Design robustness
C7	Minimise information and privacy risks.	8. Design flexibility
C8	Have the inherent flexibility to adapt to future requirements and new business models.	8. Design flexibility
C9	Be capable of being delivered in a staged way.	10. Implementation

## How can a do minimum approach meet the aims of the programme?

Do minimum	Design criteria	Comments
	C1. Facilitate the robust governance, delivery and maintenance of data quality	Under all options we anticipate the industry would embark on a data cleansing activity. However, this would not be accelerated under this option, nor would there be changes to data governance arrangements
	C2. Desired not to prevent providing real time confirmation of switching status	This option cannot deliver real time confirmation of switching
	C3. Minimise the fixed implementation costs borne by (smaller) suppliers.	No changes to interfaces, but cost will be incurred due to higher availability expectations (24/7x365), and the implementation of enhanced processes
	C4. Minimise the number of interfaces that suppliers need to manage to quote and enter into a contract	Interfaces will stay the same, but they will need to run every calendar day
	C5. Support equivalent design and governance across electricity and gas.	Gas and electricity remain divergent after the initiation of the switch by the PCW or gaining supplier
	C6. Be robust to greater volumes of switching.	Limited growth supported, capped by limitations of current systems
	C7. Minimise information and privacy risks.	Federated data offers security benefits
	C8. Have the inherent flexibility to adapt to future requirements and new business models.	Current systems are not inherently flexible, and would be costly to change
	C9. Be capable of being delivered in a staged way.	Do minimum could be phase implemented

**A 'do minimum' does not adequately deliver the aims of the programme**

Does not meet      Fully meets

**The solution options can be grouped according to three key decisions****Complexity**

**What is the extent of the data elements to be held in the switching system?**

- A minimum set of elements, which supports switching alone?
- An extended set, creating a Management Information Systems (MIS)?

**Interface technology**

**How should a centrally hosted switching system/MIS be accessed by market participants?**

- Use hub and spoke and build direct links from participants systems to the central system?
- Use Middleware as a flexible message layer to communicate to the central system?

**Use of legacy systems**

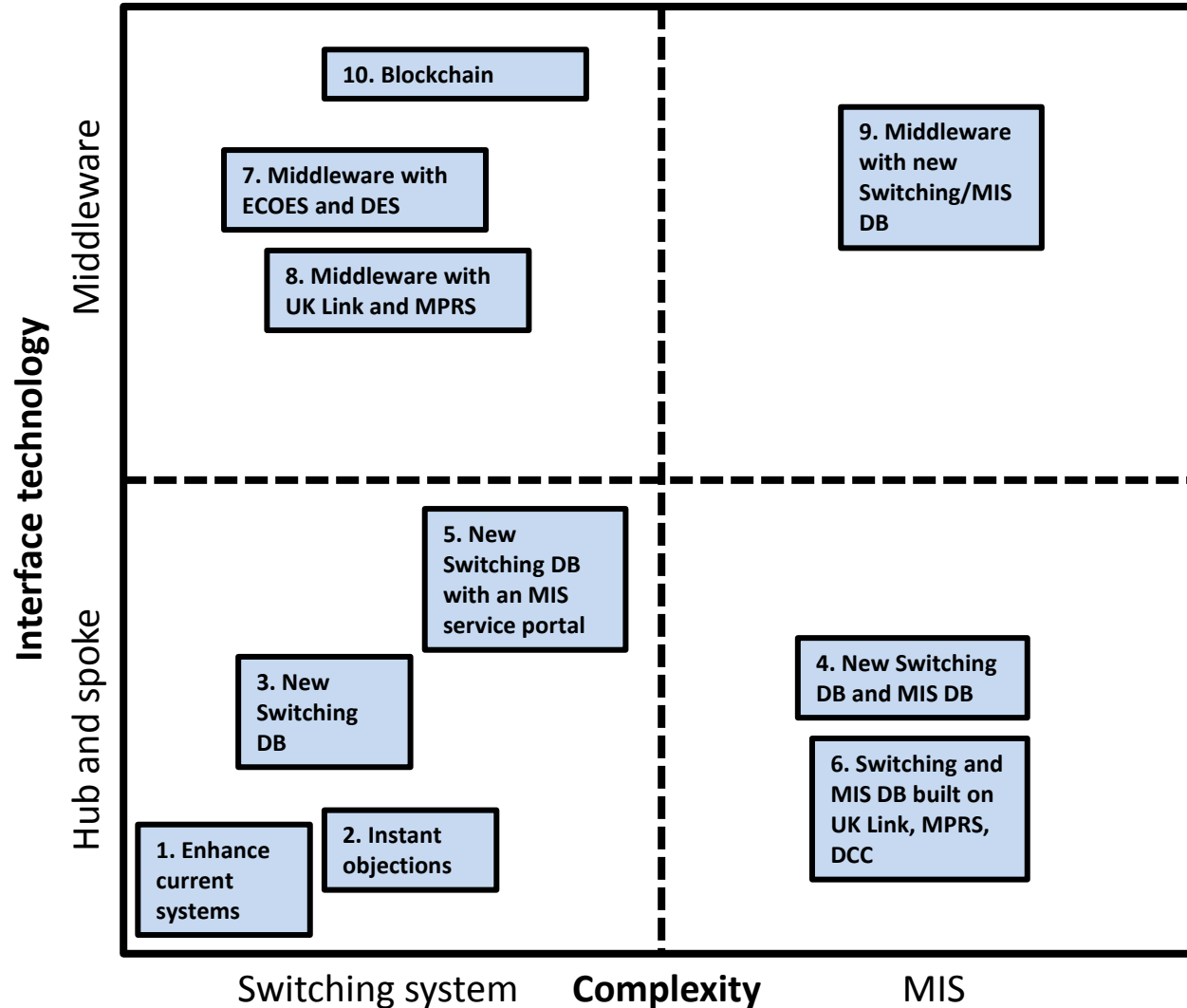
**Should the switching system be based on existing or new infrastructure?**

- Upgrade or expand ECOES, MPRS, new UK Link, DCC DSP register, etc.
- Or build on completely new technology?



All options offer differing factors of technical complexity, interface technology and use of existing or new infrastructure

Conceptually, this means that all options can be mapped to a point on a matrix



The long list of solution architecture options (1 to 10) were developed in collaboration with industry, and are plotted against the interface/ complexity matrix

## We propose to focus on options which are based on a middleware interface layer

### Feedback from Market participants

- Broad support for middleware as a way to deliver a switching/MIS
- Acknowledged that a middleware only solution could continue to propagate poor data and bad habits
- Middleware acknowledged as being a sensible and flexible integration layer
- Many participants already using, or investing in, middleware to meet the needs of current market developments

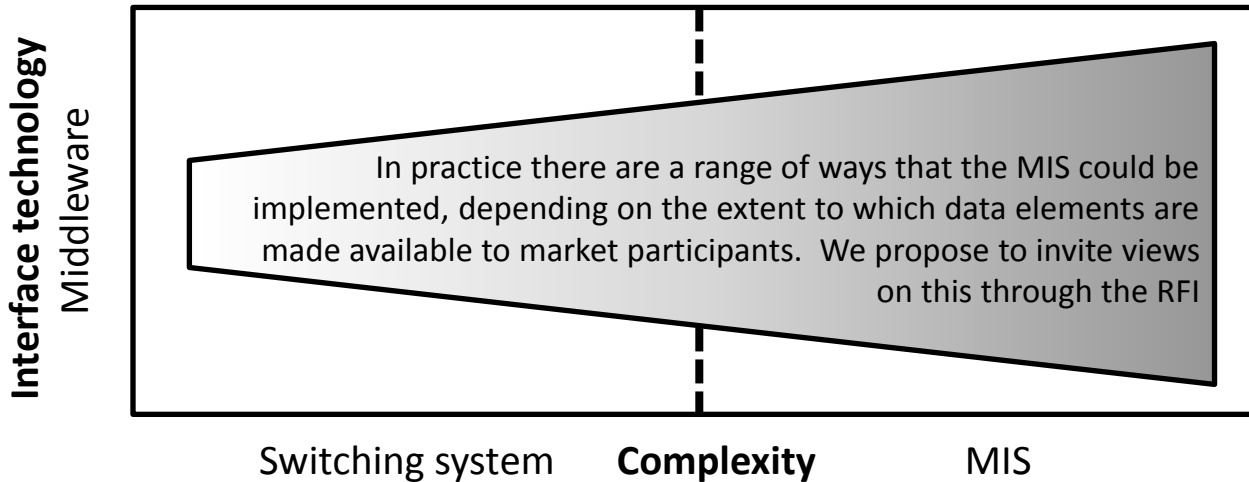
Design criteria	Hub & spoke	Middleware	Comment
C1. Facilitate the robust governance, delivery and maintenance of data quality	●	●	When allied to a centralised solution, both offer equally robust mechanisms for data maintenance
C2. Not prevent providing real time confirmation of switching status	●	●	When allied to a centralised solution, both offer real time confirmation capability
C3. Minimise the fixed implementation costs borne by (smaller) suppliers.	◐	◐	Equal investment needed in the creation of direct interfaces (h&s) and middleware communications
<b>C4. Minimise the number of interfaces that suppliers need to manage to quote and enter into a contract</b>	◐	●	<b>Middleware gives a single, configurable, XML based communications layer. Preferred over h&amp;s</b>
C5. Support equivalent design and governance across electricity and gas.	●	●	When allied to a centralised solution, both offer gas and electricity design and governance equivalence
C6. Be robust to greater volumes of switching.	◑	◑	Equally matched
C7. Minimise information and privacy risks.	◑	◑	Equally matched
<b>C8. Have the inherent flexibility to adapt to future requirements and new business models.</b>	◐	●	<b>Middleware inherently significantly more flexible. New systems/participants easily added or removed</b>
C9. Be capable of being delivered in a staged way.	◑	●	Middleware message routing offers flexibility

# Market participants gave no strong basis to choose between a low complexity switching system or a higher complexity switching and market intelligence system (MIS)

**Market engagement offered no clear preference for a switching (only) system, or a system which delivers both switching and MIS. Hence further engagement will be sought during the RFI**

**Feedback from Market participants**

- Centralised solutions are attractive ('richer the better'), but concerns about complexity of development and go live
- 'The thinner the CRS, the less difference there is between a CRS and just middleware'
- 'Good but difficult to build'
- 'Deliver incrementally using middleware'
- Many comments about data ownership, cleansing, migration and speed of availability
- A centralised database solution needs a data model broad enough to allow confident reliable switching (this will help new participants too)
- 'Needs to have the right data at the right time'



For details of the assessment of switching versus switching and MIS systems, please refer to slide 29 in the supplement slide section

### Do minimum

- Run current batch processes every calendar day
- Eliminate legacy gas nominations process
- Implement improved business processes, including cooling off and compressed objections
- Supports next day to two day switching.

Directly equivalent to long list Option 1

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Comparable to long list Option 3

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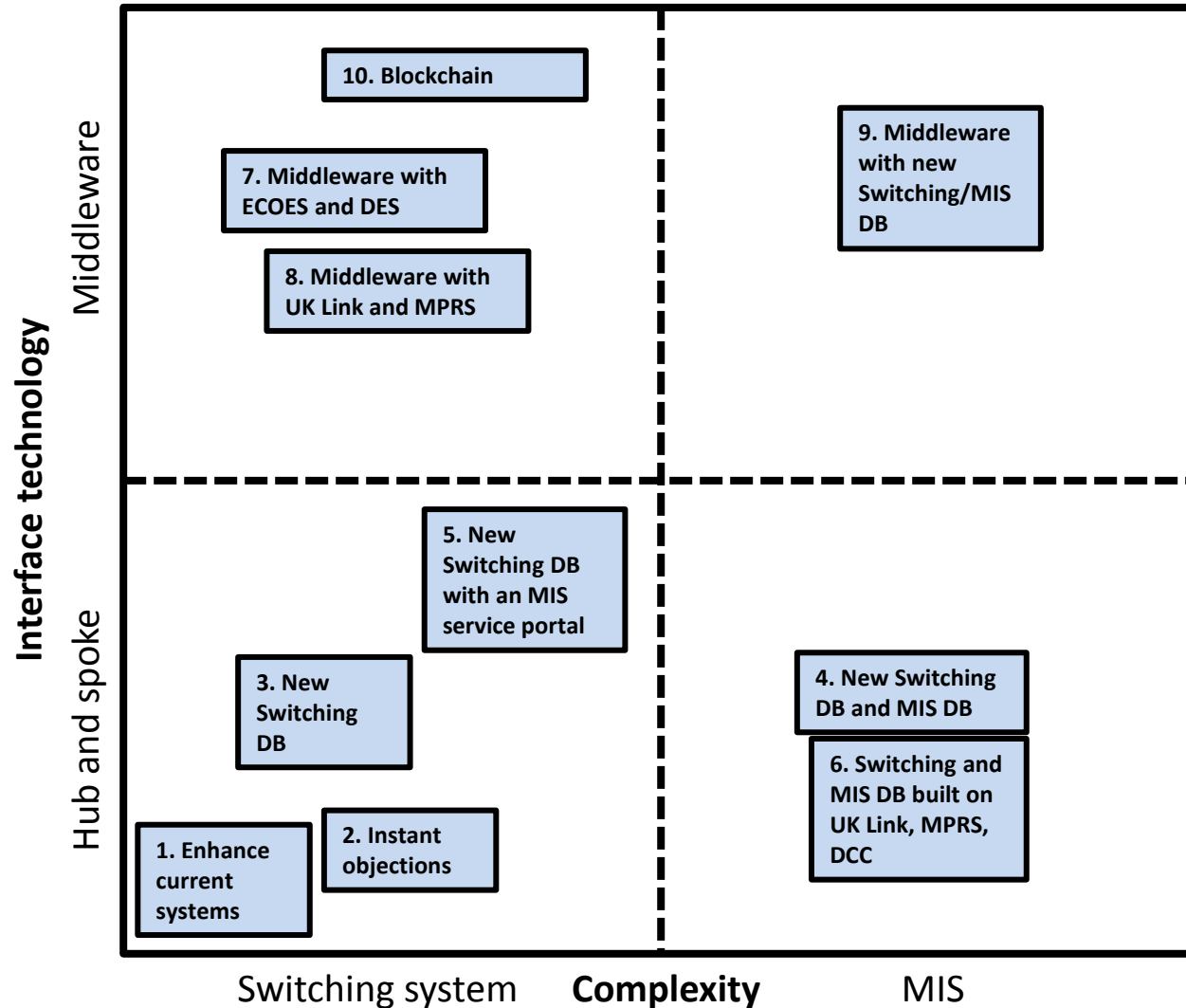
## **The rationale for the selection of the three options presented in this paper, and their suitability for inclusion in the RFI**

- Is the rationale fair and comprehensive?
- Are there other options which should be considered?

## **The preferred approach for seeking market participant feedback on key questions we anticipate asking in the RFI. These are still in progress, but they are expected to cover;**

- Design, implementation and ongoing operational costs
- Support for the use of middleware as a communications layer
- Do suppliers have any technology preference for the central system (for example, evolve ECOES or develop on a new technology platform)
- Thoughts on the data elements to be stored centrally for use by the switching and MIS (as illustrated on slide 10)
- Approach to implementation – phased through a number of individual steps, or a single project delivering all functionality at once? Illustrative options are presented on slide 35 in the supplemental slides section
- Confirmation of the scope for a ‘Do minimum’ model

<b>Title</b>	<b>Topic</b>
<b>Supporting slides</b>	
<b>Solution architecture options</b>	The 10 long list options mapped on the communications/complexity matrix
<b>Definition of options</b>	Each option reviewed for its main features
<b>Blockchain</b>	Why Blockchain is discounted as a solution at this stage
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<b>Decision criteria</b>	How decision criteria were developed and used to guide the selection process
<b>Implementation approach</b>	Potential implementation routes for the preferred options



## 1. Do minimum

Feature	Approach
<b>Switching timeframe</b>	Next day
<b>Objections</b>	All market participants will be required to compress the timescale for responding to objections so that a response is provided within 5 hours. There will be no instant objections functionality for this option
<b>Switching system</b>	There will be no new, centrally hosted switching system. Switching will be managed by existing systems (UK Link and the MPRS systems)
<b>MIS</b>	MIS information will continue to be provided by ECOES, DES and the existing market participant systems
<b>Communications</b>	All data communications will continue to pass through the Electralink DTC and Xoserve IX platforms
<b>Availability</b>	UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**



## 2. Instant objections

Feature	Approach
<b>Switching timeframe</b>	Next day
<b>Objections</b>	Deliver objection status in real time at the point of sale. This can be achieved by either 1) initiating a query message to the losing suppliers customer database asking for objection status, or 2). Querying a centralised database for the same information
<b>Switching system</b>	There will be no new, centrally hosted switching system. Switching will be managed by existing systems (UK Link and the MPRS systems)
<b>MIS</b>	MIS information will continue to be provided by ECOES, DES and the existing market participant systems
<b>Communications</b>	All data communications will continue to pass through the Electralink DTC and Xoserve IX platforms
<b>Availability</b>	The objections system would be required 24/7x365. A central objections database would need real time updates from supplier customer master systems. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 3. Central switching system

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	A switching system will be developed and hosted centrally, accessed via either hub and spoke or middleware. The data model for switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information will continue to be provided by ECOES, DES and the existing market participant systems.
<b>Communications</b>	For hub and spoke, development of the Electralink DTC and Xoserve IX platforms may be pragmatic. For a middleware solution the benefits of using these networks needs review.
<b>Availability</b>	The switching system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 4. Central switching system and central MIS

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	A switching system will be developed and hosted centrally, accessed via either hub and spoke or middleware. The data model for switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information held centrally and accessed by all market participants as necessary. No ongoing need for DES. Ongoing use of MPRS for switching will need review. Ongoing use of ECOES for enquiry purposes will also need review, with real time access to the single main database a potential opportunity.
<b>Communications</b>	For hub and spoke, development of the Electralink DTC and Xoserve IX platforms may be pragmatic. For a middleware solution the benefits of using these networks needs review.
<b>Availability</b>	The switching and MIS system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 5. Central switching system, MIS service

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	A switching system will be developed and hosted centrally, accessed via either hub and spoke or middleware. The data model for switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information will be provided via a single portal, to either existing enquiry services, or a new streamlined single enquiry platform holding all relevant MIS data.
<b>Communications</b>	For hub and spoke, development of the Electralink DTC and Xoserve IX platforms may be pragmatic. For a middleware solution the benefits of using these networks needs review.
<b>Availability</b>	The switching system and MIS service will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

### 6. Central switching and MIS system built on existing infrastructure

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	A switching and MIS system will be developed and hosted centrally, accessed via either hub and spoke or middleware, and built on UK Link, MPRS or alternative existing technologies. Data model for switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information held centrally and accessed by all market participants as necessary. No ongoing need for DES. Ongoing use of MPRS for switching will need review. Ongoing use of ECOES for enquiry purposes will also need review, with real time access to the single main database a potential opportunity.
<b>Communications</b>	For hub and spoke, development of the Electralink DTC and Xoserve IX platforms may be pragmatic. For a middleware solution the benefits of using these networks needs review.
<b>Availability</b>	The switching and MIS system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365.

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 7. Middleware using ECOES and DES

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	Switching system will use middleware to pass the necessary data between market participants to execute a successful switch. ECOES and DES will be the primary source of the necessary switch information.
<b>MIS</b>	MIS information will continue to be provided by ECOES, DES and the existing market participant systems
<b>Communications</b>	The benefits of using the existing Electralink DTC and Xoserve IX platforms for a middleware solution needs review. Its is not a given that they are needed in this solution.
<b>Availability</b>	The middleware based switching system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 8. Middleware direct to MPRS and UK Link

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	Switching system will use middleware to pass the necessary data between market participants to execute a successful switch. UK Link and MPRS will be the primary source of the necessary switch information, eliminating the 24 hour lag if ECOES and DES are used.
<b>MIS</b>	MIS information will continue to be provided by ECOES, DES and the existing market participant systems.
<b>Communications</b>	The benefits of using the existing Electralink DTC and Xoserve IX platforms for a middleware solution needs review. Its is not a given that they are needed in this solution.
<b>Availability</b>	The middleware based switching system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

## 9. Middleware, central switching system and central MIS

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or either of the instant objections technical solutions.
<b>Switching system</b>	A switching system will be developed and hosted centrally, accessed via middleware. The data model for the switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information held centrally and accessed by all market participants as necessary. No ongoing need for DES. Ongoing use of MPRS for switching will need review. Ongoing use of ECOES for enquiry purposes will also need review, with real time access to the single main database a potential opportunity.
<b>Communications</b>	The benefits of using the existing Electralink DTC and Xoserve IX platforms for a middleware solution needs review. Its is not a given that they are needed in this solution.
<b>Availability</b>	The switching and MIS system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**



## 10. Block chain

Feature	Approach
<b>Switching timeframe</b>	Switch confirmation in real time, with operational execution next day (via UK Link and MPRS). High confidence for start of day operational switching.
<b>Objections</b>	Objections to be supported by either a new compressed objections process or via the block chain solution.
<b>Switching system</b>	A block chain switching system will be developed and hosted centrally, accessed via nodes on the block chain. The data model for the switching system should allow for high confidence in delivering the consumer a reliable switch.
<b>MIS</b>	MIS information could be held on the block chain if all participants were members of the block chain environment. The alternative is to continue to secure MIS information from ECOES, DES and the existing market participant systems.
<b>Communications</b>	No current understanding of the preferred communications layer for block chain.
<b>Availability</b>	The switching and MIS system will have high availability approaching 24/7x365. UK Link and the MPRS systems will run their batch operations every calendar day. Consumer facing supplier systems will be expected to have increased availability approaching 24/7x365

**All options assume the replacement of the current UK Link system by next generation UK Link (Project Nexus)**

**Block chain (a proprietary name for the system that supports Bitcoin) is an example of distributed ledger technology. This technology offers a highly secure, virtualised database, available to nominated participants in the ‘block chain’**

Block chain has been the subject of intense media coverage. It is being described as a potentially revolutionary technology with the promise to transform the way individuals and organisations manage and control data.

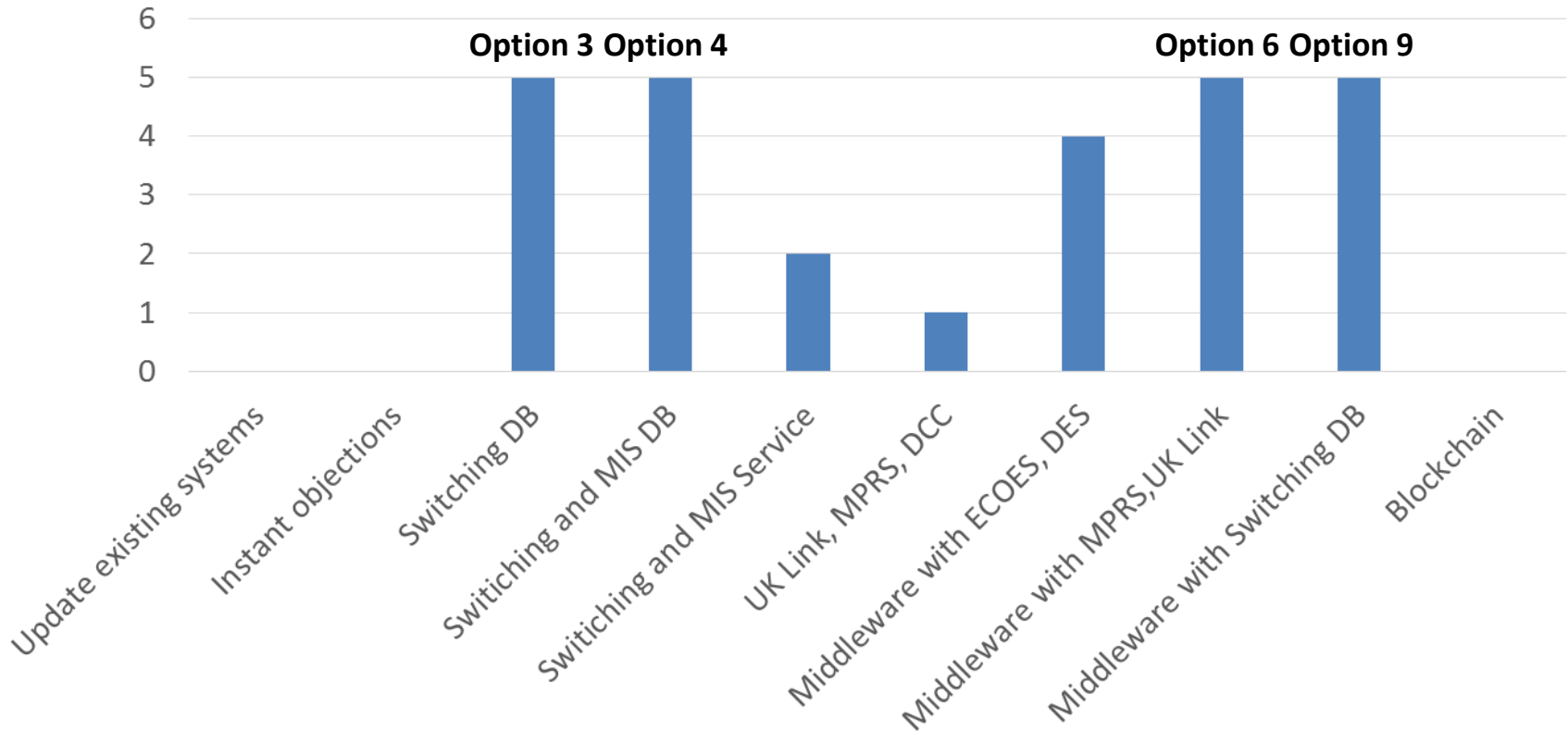
Our assessment has concluded that Block chain should not be progressed as a viable solution for switching, *at this time*. It is considered that Block chain/distributed ledger technology solutions are ;

- Commercially underdeveloped, with a lack of off the shelf solutions and a limited vendor landscape
- Low level of solution understanding and potential with market participants, making process design problematic

It is advised that the programme continues to monitor the status and maturity of Block chain, potentially asking RFI recipients to offer their view of its use as a solution for switching

# Our ranking exercise found no leading option, instead offering 4 equivalent choices

**All participants**  
Number of times the option appears in top 3



**Reliability vs Speed**

- Increased reliability is more important than faster switching (speed will happen anyway)
- Continue to work towards real time, as participants are investing in their systems to deliver this.
- Objections needs to be real time (prepayment implications)

**Centralised systems**

- Centralised solutions are attractive ('richer the better'), but concerns about complexity of development and go live
- 'The thinner the CRS, the less difference there is between a CRS and middleware'
- 'Good but difficult to build'
- 'Deliver incrementally using middleware'

**Data**

- Many comments about data ownership, cleansing, migration and speed of availability
- A centralised database solution needs a data model broad enough to allow confident reliable switching (this will help new participants too)
- 'Needs to have the right data at the right time'
- Need to cleanse data during migration, then keep it clean
- Some participants, particularly meter agents, continue to use old technology and slow processes

**Middleware**

- Broad support for middleware as a way to deliver a CRS
- Middleware acknowledged by most as being a sensible and flexible integration layer (but a middleware only solution will continue to propagate poor data and bad habits)

**Blockchain**

- Respondents didn't feel qualified or educated enough to respond

## Refined selection criteria

C1	<b>The architecture should facilitate the robust governance, delivery and maintenance of data quality</b>
C2	<b>The architecture should not prevent providing real time confirmation of switching status</b>
C3	<b>The architecture should minimise the fixed implementation costs borne by (smaller) suppliers.</b>
C4	<b>The architecture should minimise the number of interfaces that suppliers need to manage to quote and enter into a contract</b>
C5	<b>The architecture should support equivalent design and governance across electricity and gas.</b>
C6	<b>The architecture should be robust to greater volumes of switching.</b>
C7	<b>The architecture should minimise information and privacy risks.</b>
C8	<b>The architecture should have the inherent flexibility to adapt to future requirements and new business models.</b>
C9	<b>The architecture should be capable of being implemented in a staged way.</b>

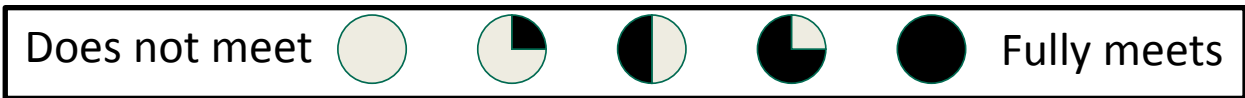


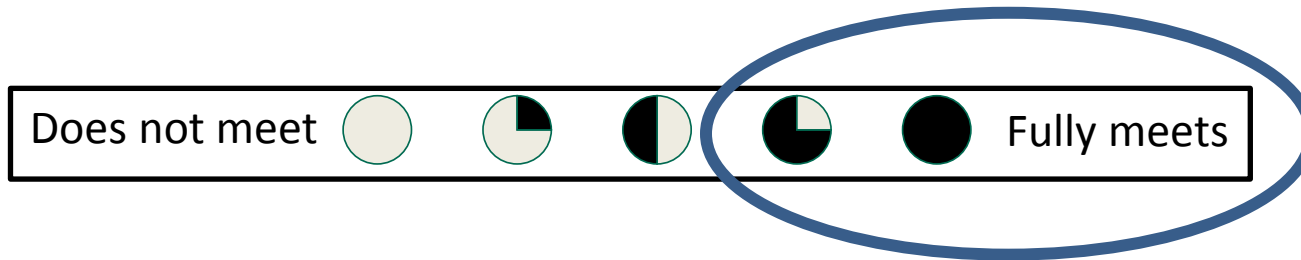
Ofgem design principles

Refined  
selection  
criteria

# The Programme design principles were used to influence and identify the short list

No.	Option	C1	C2	C3	C4	C5	C6	C7	C8	C9	Comment	
1	Update existing systems										Improves speed, but not reliability	RFI recommended
2	Instant Objections										Eliminates the potentially lengthy objections process	
3	Switching DB										Depending upon the data model, increases speed and reliability. Hub and spoke.	RFI recommended
4	Switching DB and MIS DB										Substantially improves reliability. One source of the truth in one location	RFI recommended
5	Switching DB and MIS Service											
6	UK Link, MPRS, DCC										Leverages existing investments. More complex than new build.	
7	Middleware with ECOES/DES										ECOES and DES have a 24 hour lag from underlying systems	
8	Middleware with MPRS/UK Link										Real time integration with underlying systems	
9	Middleware with Switching/MIS DB										Brings the best of middleware flexibility and centralised sources of truth	





**Options which fulfil the aims of the programme are preferred. Based on the assessment against the criteria, these are identified as;**

- Switching DB
- Switching DB and MIS DB
- UK Link, MPRS, DCC
- Middleware with Switching/MIS DB

**It must be acknowledged that delivery of options 1 and 2 are prerequisites to the successful delivery of the above options, and to meet treasury and SEC guidelines they will be necessary 'counter factual' options to be included in the RFI.**

Design Principles		Comment
1. Reliability for customers	All switches should occur at the time agreed between the customer and their new supplier. The new arrangements should facilitate complete and accurate communication and billing with customers. Any errors in the switching process should be minimised and where they do occur, the issue should be resolved quickly and with the minimum of effort from the customer. The customer should be alerted in a timely manner if any issues arise that will impact on their switching experience.	<p>More reliable switching will be driven by improved data quality. Some architectures may provide more robust governance for data quality.</p> <p><b>Relevant assessment criterion: the solutions architecture should facilitate the robust governance, delivery and maintenance of data quality.</b></p>
2. Speed for customers	Customers should be able to choose when they switch. The arrangements should enable fast switching, consistent with protecting and empowering customers currently and as their expectations evolve.	<p>The speed of switching will be determined largely by decisions on policy and process design. However, the choice of Solutions Architecture could place constraints on the speed of switching.</p> <p><b>Relevant assessment criterion: the solutions architecture should not stand in the way of providing customers with real time confirmation of switching status.</b></p>
3. Customer coverage	Any differences in customer access to a quick, easy and reliable switching process should be minimized and justified against the other Design Principles.	We do not expect the architectural options to impact on customers' access to the switching process. This will be determined by policy and process decisions.



Design Principles		Comment
4. Customer switching experience	Customers should be able to have confidence in the switching process. The process should meet or exceed expectations, be simple and intuitive for customers and encourage engagement in the market. Once a customer has chosen a new supplier, the switching process should require the minimum of effort from the customer. The customer should be informed of the progress of the switch in a timely manner.	<p>The customer switching experience will be determined largely by policy and process decisions. However, the choice of Solutions Architecture could place constraints on the nature of the experience.</p> <p><b>Relevant assessment criterion: the solutions architecture should not stand in the way of providing customers with real time confirmation of switching status.</b></p>
5. Competition	The new supply point register and switching arrangements should support and promote effective competition between market participants. Where possible, processes should be harmonised between the gas and electricity markets and the success of the switching process should not be dependent on the incumbent supplier or its agents.	<p>Different architectures may imply different implementation and fixed costs, which could impact on the smaller suppliers.</p> <p>Architectural options may have a differential impact on the extent to which it is possible to harmonise gas and electricity arrangements.</p> <p>The number of interactions that a supplier needs to utilise in order to quote and enter into a contract impacts the ease of doing business.</p> <p><b>Relevant assessment criteria: the architecture should ...</b></p> <ul style="list-style-type: none"> <li>• <b>Minimise the fixed implementation costs borne by (smaller) suppliers</b></li> <li>• <b>Support equivalent design and governance across electricity and gas.</b></li> <li>• <b>Minimise the number of interfaces that suppliers need to manage to quote and enter into a contract.</b></li> </ul>

## Our assessment of the options has been informed by the agreed design principles

Design Principles		Comment
6. Design simplicity	The new supply point register and switching arrangements should be as simple as possible.	<p>The number of interactions that a supplier needs to utilise in order to quote and enter into a contract impacts the ease of doing business.</p> <p><b>Relevant assessment criterion: The solutions architecture should minimise the number of interfaces that suppliers need to manage to quote and enter into a contract.</b></p>
7. Design robustness	The end-to-end solution should be technically robust and integrate efficiently with other related systems. It should be clearly documented, with effective governance. The new arrangements should proactively identify and resolve impediments to meeting consumers' and industry requirements. These arrangements should be secure and protect the privacy of personal data.	<p>The longlist architectures should all be technically robust and clearly documented.</p> <p>Different architectures may imply different security and privacy risks. A central databased may become the focus of hostile activity, but may also provide stronger security.</p> <p>The systems need to be capable of handling a significantly greater volume of switching activities.</p> <p><b>Relevant assessment criteria: The solutions architecture should ...</b></p> <ul style="list-style-type: none"> <li>• minimise information and privacy risks</li> <li>• be robust to greater volumes of switching.</li> </ul>

## Our assessment of the options has been informed by the agreed design principles

Design Principles		Comment
8. Design flexibility	The new arrangements should be capable of efficiently adapting to future requirements and accommodating the needs of new business models.	<p>Middleware is inherently more flexible than a central database. Moreover, some architectural models may make it easier to accommodate changes, including changes which flow from other programmes (for example HH settlement).</p> <p><b>Relevant assessment criterion: the solutions architecture should be capable of adapting to future requirements and new business models.</b></p>
9. Solution cost / benefit	The new arrangements should be designed and implemented so as to maximise the net benefits for customers.	<p>Although different architectures will imply different levels of costs, information on costs will be obtained from the RFI. It would not be appropriate to use indicative views on cost to shortlist options at this stage in the process.</p>
10. Implementation	The plan for delivery should be robust, and provide a high degree of confidence, taking into account risks and issues. It should have clear and appropriate allocation of roles and responsibilities and effective governance.	<p>Different architectural options will potentially impact on the allocation of roles and responsibilities. However, it should be possible to establish effective governance regardless of the choice of architecture.</p> <p>All other things being equal, architectural options which are capable of being implemented in stages should carry lower risk than options which require a “big bang” implementation.</p> <p><b>Relevant assessment criterion: the solution architecture should be capable of being delivered in a staged way.</b></p>

**The options identified could be implemented in a number of ways.**

- **Plan 1 and 2** offer a staggered, phased approach. Following the do minimum step, the switching database can be implemented, separately, before *or* after the MIS database.
- **Plan 3** implements the do minimum step, then combines the switching and MIS phase
- **Plan 4** is equivalent to a big bang approach, combining all steps into a single phase
- The scope of the programme does not extend into development of systems to support half hourly settlements

