Ofgem Cover Note

The recent Ofgem Call for Input on the Future of Distributed Flexibility has sparked widespread interest. This report is published as further background work that has contributed to the Call for Input, to ensure the information and analysis is openly available to all.

The work was commissioned by Ofgem as an initial exercise in understanding and developing information on the technical feasibility of digital infrastructure for flexibility markets. The work was put out to open tender via Crown Commercial Services and the competitive tender was won by IBM.

IBM undertook a design and assessment study of possible digital infrastructure for flexibility markets. The IBM report follows a robust digital design methodology, it proposes various options, and evaluates them providing useful information on the functionality and feasibility of the archetypes*. It also recommends one archetype from the assessment as likely to offer a reasonable balance of providing net new functionality while being technically feasible to deliver.

However, it should be made absolutely clear that Ofgem is not proposing *any* archetype as a 'preferred' option. It is expected that there will be many different options and views across industry. The archetypes are just examples on a spectrum of intervention, proposed to facilitate wider debate. Ofgem want to actively use the Call for Input as an open opportunity for all views and information to be gathered to inform ongoing work.

The study and the associated conversations were valuable in informing our early thinking. We extend our thanks to the IBM team for their diligence and challenge.

Clarification on nomenclature: In the Ofgem Call for Input, the archetypes are called thin "directory", middle "exchange", and thick "central platform". In the IBM report, all archetypes are called a "System-wide Flexibility Exchange Platform" but still cover the full spectrum from directory through exchange to central platform (despite all being called an "exchange").

Flexibility Markets:
Digital Design Study Appendices

on behalf of Ofgem

Contents

Appendix A – Use Case Catalogue

A.1 Use Case List

Table 1 lists all use cases identified throughout the course of this engagement. Rows highlighted in red were deemed to be out of scope at this time, but could be reintroduced in the future.

Use Case ID	Title	Brief Description
1	Maintain Taxonomy	An easy way for the SFE admin user to make changes to the taxonomy through the UI
2	User Registration	Registration of users onto the exchange facilitating access to multiple markets through a unified experience.
3	Asset Registration	FSPs register assets 'once', by providing detailed information (such as asset type, location, asset size, connection point) common to all products/markets.
4	Product Registration	Allow a SO to register a product in full detail.
5	Rule Enablement	A rules engine, ensuring adherence to the rules around participation in multiple markets.
6	Reporting on prices and volumes for market trends	Provision of information around prices and volumes that were sold, broken down by product and asset type, to support FSPs, analysts and investors in understanding market trends.
7	External information provision (market rules)	Presenting current market rules in a single place to make them easy to find
8	Asset value based on historic data	Enable FSPs to develop a high-level understanding of what their asset would have been worth in the past to support building an initial business case. Asset value per asset type.
9	Understand Eligibility for Prequalification	Enables FSPs to easily understand which products their asset(s) could get prequalified for.
10	Reporting on trade, dispatch and settlement for asset performance	Provision of information around trades, dispatch and settlement broken down by asset type and product to support market and asset performance analyses
11	Market Conflict Identification	If one asset is participating in two markets and there is a conflict, users are alerted to it.
~~12~~	~~Visualisation of Assets - De-prioritised~~	~~Enable users to visualise both single and grouped assets to better understand their value, making analytics more accessible to other parties.~~
13	Market testing of Products	Enable SOs to test new products by allowing FSPs to provide early feedback.
14	Streamlining Contracts across markets and products	Simplifying and digitalising contracts across multiple markets.
15	Centralised Pre-Qualification	Enable FSPs to enter data that is common to the pre-qualification processes for many products in one place, reducing admin burden and repetition.
16	Visibility of Current & Future Flexibility Needs for all Networks	Create a list or heat map with details on where there is a flex need in short/medium/long term. Enables FSPs to find or build assets in the right locations. Enable retailers/suppliers to identify which of their customers are particularly attractive for provision of flex.
~~17~~	~~Fully Informing Consumers - De-prioritised~~	~~Provide a portal for consumer facing information on flexibility, enabling consumers to understand how their assets are being used in markets, the roles of market participants, and market governance arrangements.~~
18	Transparency of DER Positions & Actions	Enable market coupling by creating transparency of asset position and action.
~~19~~	~~Grid Supply Point Visibility for DER Assets - De-prioritised~~	~~Provide visibility of grid supply point for all DER assets (which have been accepted into markets)~~

20	Probabilistic Products enabling Small Assets	Allowing FSPs to send us the actual profile they ran after probabilistic dispatch
21	Facilitate Small Asset Participation	1. Enable comparison with other existing entry requirements to help consistency between markets for SOs 2. Help SOs see how many more assets could enter their market of they lowered a specific market entry rule 3. Ratings for Buyers
22	SO Disclosure of rational behind asset dispatch	Add transparency around dispatch decisions
23	Ability for SO to veto another SO planned dispatch -De prioritised	Ability for SO to veto another SO's planned dispatch.
24	Transparency of Proposed and Planned Assets - Deprioritised	Provide transparency on planned flex asset projects, to give investors a view on the momentum in the market to build confidence in the longevity/stability of the market.
25	Secondary Market	Creating a Secondary market where FSPs can resell their successful bids. This allows FSPs to be less locked into their positions, enabling them to earn as much money with their assets as possible.
26	Transparency of assets below 3.5kW	Simplify PQ process for smaller assets and incentivising their registration.
27	Bid strategy support - 3rd party	Enable 3rd party to help FSPs to understand the best deal for their assets at any point in time
28	Asset value prediction - 3rd party	Third party service to forecast the asset value for a specific asset (group)
29	Change Management	Business process implementation around market, standards, taxonomy and rule changes where Regulators/ SOs have to follow a defined process within SFE to implement market changes. Allow market participants to engage in the change management process.
30	Streamlining user rating	Streamlined process for rating the performance of that user (eg like Airbnb), so that FSPs/SOs can see past performances of the users assets and comments from people who they previously traded with
31	Risk Calculation	Calculation on how likely it is that an asset won't perform (based on historic performance and participation in multiple markets). This should be both on asset level and aggregated for predefined geographies to flag areas where the SO might have an issue
32	Settlement	The determination and settlement of amounts payable in respect of trading charges (including reconciliation charges) in accordance with the code (including where the context admits volume allocation)
33	Dispatch	Send instruction signal to assets to confirm set point, start and end time.
34	Optimisation across all markets and voltage levels	Optimizing demand, supply and constraints across all markets
35	Auctions	Undertake a market clearing ("auction") process for buying and selling flexibility at the lowest cost.
36	Simple market participant search	A search function to find other market participants and point you at their APIs so that you can find out more about them Inform people who the different market players are
37	Market monitoring	Enable continuous observation of market activities to enable identification of regulatory issues, market faults and security issues. Includes analytics.
38	Impartial route to recourse in case of dispute	A process to manage disputes around platform processes.
F1	Feature	Collect data on prices, volumes, dispatch, trades, metering and settlement

Table 1. List of use cases for SFE platform. Red line items out of scope.

A.2 Use Case Details

The Subsidiary Appendix A.2 document provides a full write-up for each identified use case. For each use case it includes:

- a goal
- the users involved
- a description of how the user achieves that goal
- implementation options (where appropriate)
- barriers and dependencies
- outstanding questions
- data groups and sources

A.3 Prioritisation Rationale

Each use case was qualitatively assessed on 1) alignment to the Strategic Goals of the SFE platform and the degree to which the use case was core to implementing the SFE; 2) the degree to which they address the pain points surfaced from stakeholder interviews; and 3) on the effort and complexity of the IT implementation (the effort to define cross-industry standards has been excluded from this effort assignment). The rationale underpinning the assignments of value and effort are detailed in Table 2.

Use Case ID	Title	Value (L/M/H)	Value Rationale	Effort Estimate (L/M/H)	Effort Rationale for IT Implementation only (Business analyses, Architecture, Development/Delivery)
1	Maintain Taxonomy	H	Standards and implementing their updates, are underpinning enablers to other UCs. Net new functionality bringing bigger change to existing market.	L	Allowing an admin user to add/amend the database structure of the taxonomy for changes is relatively straight forward. Would probably include a UI element for simple additions. Complex additions with trickle effect would always have to be done through the backend and are not included in this.
2	User Registration	H	Hygiene, this is a key underpinning functionality needed to support many other UCs.	L	Assuming reuse of existing assets of the technology provider (e.g. software, reference architecture). Some business analyses around which user groups and which privileges we need.
3	Asset Registration	H	Feeds into easier market access, simplified processes etc. Need unanimously agreed in stakeholder interviews. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	M	Dependant on the architectural option. Only UI would be L, but UI + APIs starts pushing it into medium, if we have to build translation mechanism to existing ARs that would be high. Average assignment of M most appropriate at this point in time.
4	Product Registration	H	Feeds into easier market access, simplified processes etc. Key objective of SFE to support market coordination. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	M	We would need to understand which data items are needed, probably more than just an API + UI. Also needs business analyses to understand which variables can be used to define all products. (strong dependency on taxonomy)
5	Rule Enablement	H	Drives cross market accessibility, and enables revenue stacking with confidence for FSPs and MOs. Net new functionality bringing bigger change to existing market.	H	Rules are usually complex, challenges presented around how to manage their lifecycle, how to formulate, rules are natural language and vague which makes it hard to translate them into machine readable format.
6	Reporting on prices and volumes for market trends	H	Supports transparency and trust in the market ecosystem, and builds investor confidence through market analytics.	L	Complexity handled by the data ingestion feature, this use case is only describing the report.
7	External information provision (market rules)	M/H	Assumption: UC only covers showing all info in one place. Functionality improved (e.g. by centralisation) but less of a	L	Use case defined as just displaying data from disparate sources into a single location, hence L assignment. If use case evolves to translation of information into analytics+

			change as existing market provides in some form already.		search+summary, assignment will need to change to H.
8	Asset value based on historic data	M/H	Delivers market transparency by surfacing data which enables analytics to increase investor and FSP confidence in the use of DERs for flexibiltiy.	M	Significant Business analyses needed around how asset value is determined. Architecture and Development is relatively straight forward once the business analyses is completed. The effort for getting the data is considered in the feature. This is just about using the data in the right way.
9	Understand Eligibility for Prequalification	M/H	Simplifies market access and removes complexity, also improves investor confidence. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	M/H	Both cost and benefit dependant on how rigorous the prequalification is. If we also implement prequalification there is a lot of logic that we can reuse. Prequalification varies significantly across products and markets, so there will be a large amount of business analyses to understand those processes, identify what they have in common and what is unique to each product and create UI and the data model behind it.
10	Reporting on trade, dispatch and settlement for asset performance	H	Supports transparency and trust in the market ecosystem, and supports asset business model development through performance analytics.	L	Complexity handled by the data ingestion feature, this use case is only describing the report.
11	Market Conflict Identification	H	Enables revenue stacking with confidence for FSPs and MOs. Net new functionality bringing bigger change to existing market.	H	Will need to be near time and includes rules, which are usually complex. Also a lot of business analyses needed to identify the most suitable process.
13	Market testing of Products	L/M	Could enable products to be a more level playing field for DER participation. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	L	Dependent on central taxonomy but in itself not complex. No large business analyses required beyond understanding the general elements that products consist of. Includes a functionality to allow for comments against the product.
14	Streamlining Contracts across markets and products	H	Simplifies market access and removes complexity. Important pain point surfaced in seller interviews. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	M	Additional functionality for storing documents, only considers standard contracts for a specific product. Business analyses work to understand which contract types exist and how they could be simplified
15	Centralised Pre-Qualification	H	Simplifies market access and removes complexity. Important pain point surfaced in seller interviews. Functionality improved (e.g. by centralisation or simplification) but less of a change as existing market provides in some form already.	H	Highly dependant on the complexity of the pre-qualification processes defined by product owners. Results in complex business analysis, architecture and delivery.
16	Visibility of Current & Future Flexibility Needs for all Networks	L	Enables analytics to increase investor and FSP confidence, however, it is predicting the future and hence subject to uncertainty and will depend on the assumptions and forecast model used.	M/H	M/H assignment dependent on data formats eg heat map versus a simple list. Providing a link to the SO websites would be a L.

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18	Transparency of DER Positions & Actions	H	Enables trust in the market ecosystem, revenue stacking and increased buyer confidence. Net new functionality bringing bigger change to existing market.	H if Real time, else M	The effort to get the data is considered in the feature. We need to structure the data and identify a good way to display it. Key challenge from an architecture perspective would be if we have to do this in real time/near time. Another element that adds complexity is the granularity of the data.
20	Probabilistic Products enabling Small Assets	L/M	Could reduce barriers to entry and improve market liquidity, but could be quite product/asset specific, so relatively lower value as might be niche. Value is dependent on market design (e.g. secondary trading would make UC20 less valuable)	L	We need to structure the data the FSPs send us and possibly compare it to the planned profile.
21	Facilitate Small Asset Participation	L	Could reduce barriers to entry and improve market liquidity, but could be quite product/asset specific, so relatively lower value as might be niche.	M	Business analyses required on how to do the rating, and how we can enable the comparison and find out how much more liquidity could be achieved. Quite a lot of functionality covered.
22	SO Disclosure of rational behind asset dispatch	L	Would improve trust and confidence for FPS. Functionality improved (e.g. by centralisation) but less of a change as existing market provides in some form already (e.g. ESO operational transparency forum).	L/M	We would just get and display the data. Needs to be easily comprehensible and might vary slightly between SOs
25	Secondary Market	L/M	Could lower market entry financial/risk barriers, importance dependant on market design and on penalties.	M/VH	Requires significant business analysis to answer following questions: Does the actual trade happen on SFE? Algorithm vs parties find themselves? What level of verification required? Also architecturally a new function that is not used in other use cases.
27	Bid strategy support - 3rd party	L	Depends on how coupled markets become, more valuable with more coupling. Overall, already a service provided by actors in the sector today, so has a lower relative value.	M	Key effort will be to understand what data they need, writing an API to allow them to get that data and create some authorizations/tokens. We also need user interface.
28	Asset value prediction - 3rd party	L	Enables analytics to increase investor and FSP confidence, however, it is predicting the future and hence subject to uncertainty and will depend on the assumptions and forecast model used.	M	Business analyses effort to understand what data they need. We need to provide an API for them to get the data and need authorizations/tokens. Also user interface.
29	Change Management	M/H	Important functionality needed to keep platform up to date and retain stakeholder trust in platform governance.	L/M	Depends on the implementation. Assumption that this is about reporting on the process of change management and displaying recent changes. If the change process is managed on the SFE it would be M
30	Streamlining user rating	L	Needs more testing with stakeholders. Could provide information which enables participants to make more informed decisions about who to buy/sell services from/to.	M	Assumes significant design effort to define rating criteria and analytics process to implement it. Could be high depending on the complexity of the process.
31	Risk Calculation	M	Could add some value to buy and sell side by enabling improved	H	This is a potentially complex analytical process that has to establish risk across multiple

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			operative strategies, however, they are likely to be undertaking activities of this kind in some form themselves already.		markets. It is assumed that not additional data is required
32	Settlement	L	Functionality is already provided adequately by existing market services and systems.	H	Settlement is a complex process that requires high levels of governance to ensure that all parties trust the outcome.
33	Dispatch	L	Functionality is already provided adequately by existing market services and systems.	H	This would make the system a critical part of the operational chain of events and increase non-functional requirements significantly. This is also likely to differ between products and therefore increase functional scope significantly.
34	Optimisation across all markets and voltage levels	L	Has a large number of big dependencies (not just technical, but general market acceptance etc) so it is unclear when, or even if, any value will be realised, so has a lower relative value.	VH	This is a mathematically complex and computationally intensive requirement.
35	Auctions	L	Functionality is already provided adequately by existing market services and systems, and approaches used are specific to different markets.	H	This is a very complex area that has to accommodate different markets and products.
36	Simple market participant search	H	Key basic functionality to improve market visibility (buy side and sell side) for participants, which could improve market access and liquidity.	L	Simple search function
37	Market monitoring	M	An independently governed platform lends itself well to this activity. Functionality improved (e.g. by centralisation or independence) but less of a change as existing market provides in some form already.	H	This assumes that this use case would require relatively complex analysis to be done but no additional data required.
38	Impartial route to recourse in case of dispute	M/H	Important functionality for an independent facilitating platform and to enable stakeholder trust in platform governance.	M	Architecture/development effort is low based on the assumption that this is a message exchange mechanism and that resolution itself would be handled outside the system, but business analyses around disputes is M as we need to agree a process
F1	Feature	H	Data provision is an underpinning enabler to other UCs. Net new functionality bringing bigger change to existing market.	H	A lot of business analyses work to understand the exact data sets we need and where to get them from. Data model needs to be built. We need to enable push/pull of the data. Various sources and large data sets, so will be a lot of effort!

Table 2. Use case prioritisation rationale

Appendix B – Logical Architecture

B.1 System Context Diagram

The System Context work product (Figure 1) represents the entire system as a single object or process and identifies the interfaces between the system and external entities. It depicts how many interfaces are needed, and the market actors involved.

The purpose of this work product is:

- To clarify and confirm the environment in which the system must operate. Once agreed, the System Context becomes very useful for maintaining focus on the development effort.
- To provide the scope at an adequate level to allow the creation of the relevant technical specification.
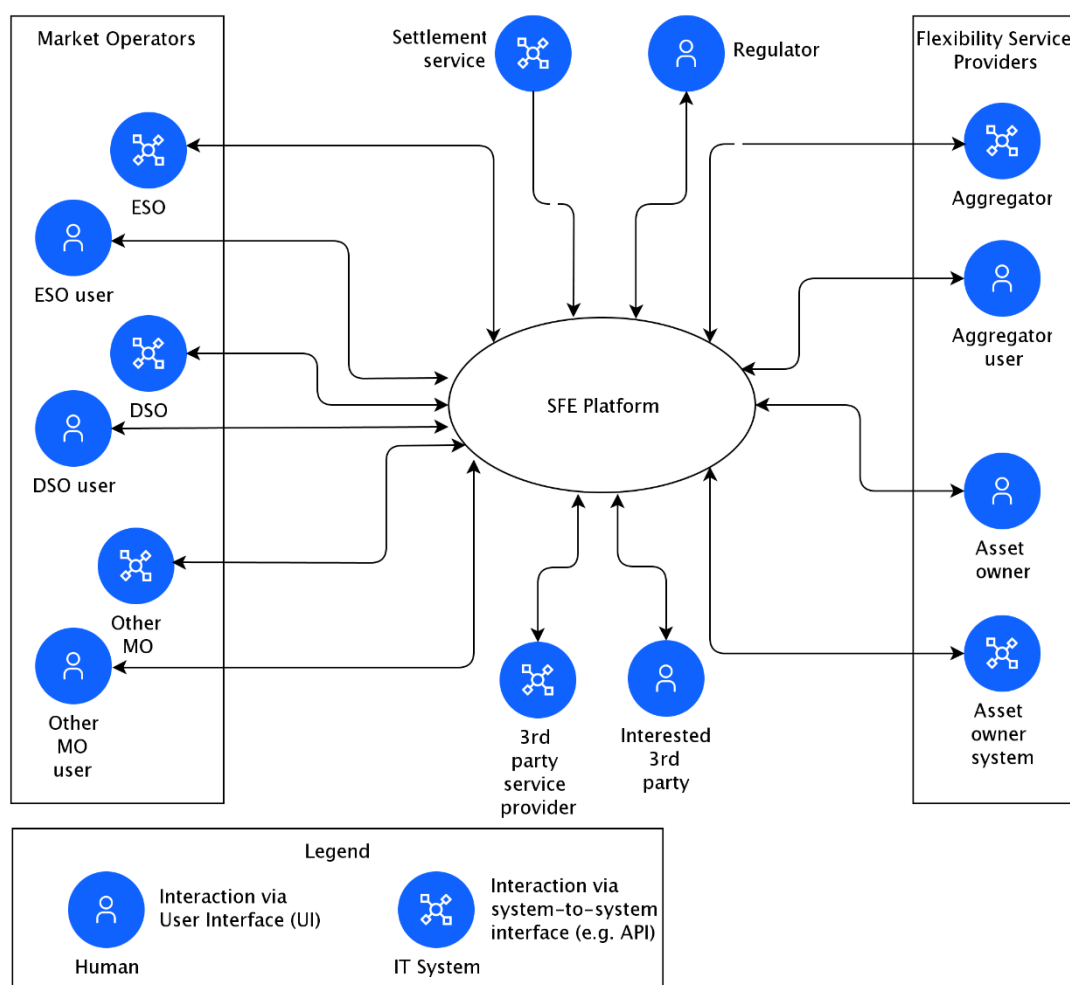- Verify that the information flows between the solution to be internal and external entities align.

Figure 1. SFE platform System Context diagram

B.2 Information Flows

Table 3 is a simple list of the type of information market participants (depicted in Figure 1) send to and receive from the SFE platform. There is no implied relationship between the 'from' and 'to' messages by their sequence.

Actor	From	To
Asset owner / flex provider	Registration information Asset specification Pre-qual request Secondary flex offer Secondary flex bid Secondary flex bid acceptance	Asset / product mapping Pre-qual result Secondary flex bid result Reports
Asset owner / flex provider system	Asset specification Pre-qual request Secondary flex offer Secondary flex bid Secondary flex bid acceptance	Asset / product matches Pre-qual result Secondary flex bid result Reports
Aggregator	Registration information Assets under management Asset specification Pre-qual request Secondary flex offer Secondary flex bid acceptance	Asset product matches Pre-qual result Secondary flex bid result Reports
DSO User	Registration information Flex market definition Flex product specification	
DSO System	Flex market definition Flex product specification Flex ask / requirement Copy of successful bid notification Copy of dispatch notification	Flex trade notification
ESO User	Registration information Flex market definition Flex product specification	
ESO System	Flex market definition Flex product specification Flex ask / requirement Copy of successful bid notification Copy of dispatch notification	Flex trade notification
Third party service providers	Registration information Service specification Service API	Data required to provide service
Interested third parties	Registration information Reports	Custom report definition
Power Exchanges	Flex market definition Flex product specification Flex ask / requirement Copy of successful bid notification	Flex trade notification
Regulator	Policy documents	Market performance reports
Settlement Service	Settlement information	

Table 3. Potential information flows between SFE platform and market participants

B.3 Architecture Overview Diagrams

The AOD is an informal rich picture or storyboard that illustrates the essential nature of the proposed architecture. It conveys the governing ideas and major building blocks of the architecture.

The purpose of this work product is to:

- communicate to the sponsor and external stakeholders a conceptual understanding of the architectural goals and intended architecture.
- provide a high-level vision of the architecture and its scope.
- explore and evaluate alternative architectural options.
- enable early recognition and validation of the implications of the architectural approach.
- facilitate effective communication between different communities of stakeholders and developers.
- facilitate orientation for new people who join the project.

This document provides two views of the architecture, a logical services view (Figure 2), and an IT system view (Figure 3).

B.3.1 Logical Services View

The Logical Services diagram (Figure 2) provides a functional overview of the system expressed as services that interact with each other to deliver the use cases defined as categories 1, 2 and 3 in the middle archetype. Individual services (e.g. reports) are grouped by subsystem (e.g. 3rd party UI). Arrows denote interactions between subsystems. Subsystem and service descriptions are provided in Table 4 and Table 5 respectively.
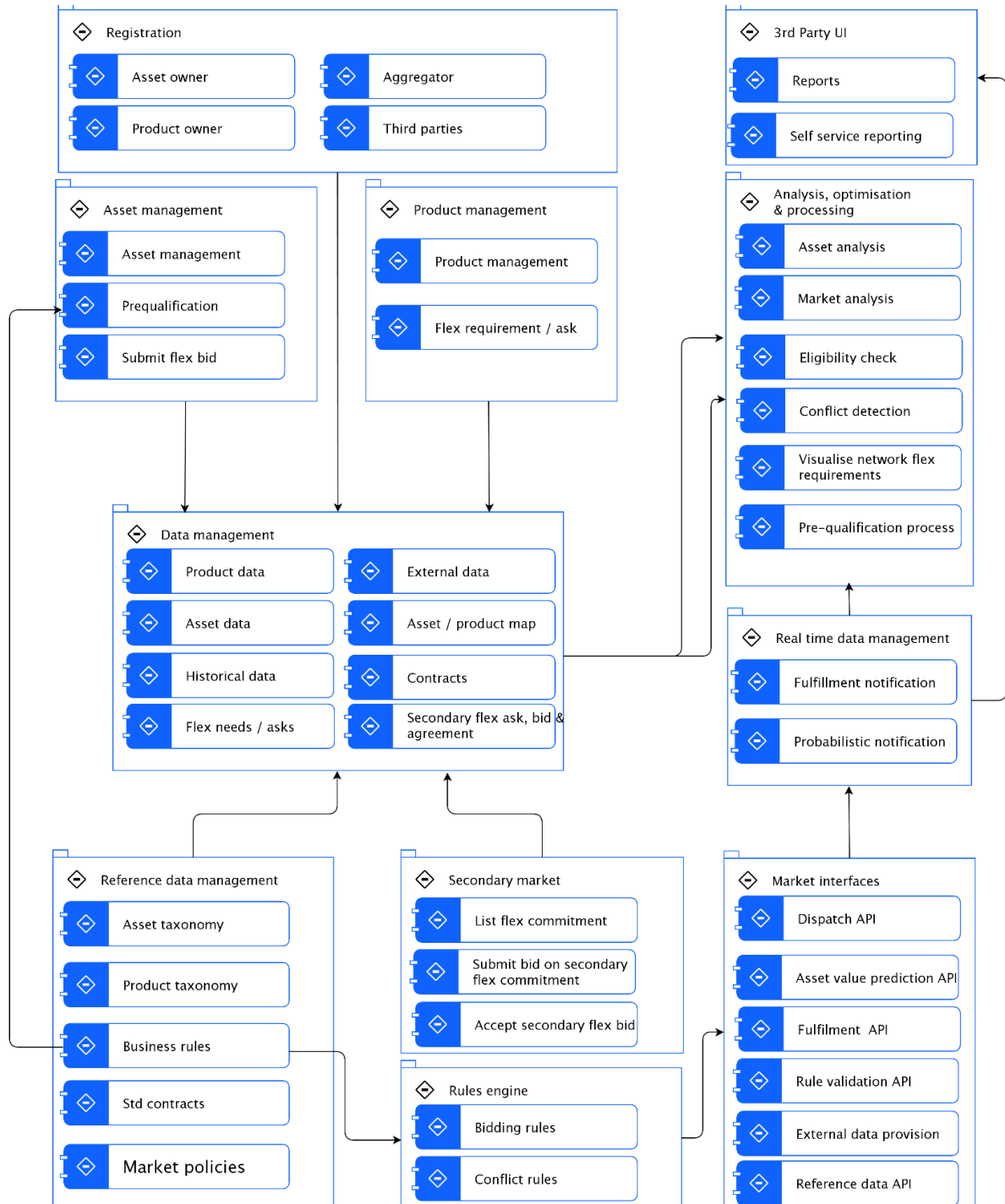

Figure 2. Logical Services view of services required to deliver middle archetype use cases.

Subsystem Descriptions

Name	Description
3rd Party UI	Interested parties can access data via pre-defined or user defined reports
Analysis, optimisation & processing	Value-add services that analyse data and provide interface to external service providers.
Asset management	This subsystem allows asset owners to register and specify the attributes of the assets. These can be assets that they already have or candidate assets that they are considering investing in.
Data management	Data management services responsible for asset, product, transactional and historic data
Market interfaces	APIs that provide an interface to the market participants to retrieve and provide data
Product management	Manage registration of assets and maintenance of product specification.
Real time data management	Services that manage despatch of small assets. NOTE: This is still TBD
Reference data management	Data management services responsible for reference data
Registration	Most users will need to register (there may be limited access to information without registering). This subsystem provides user registration services that allows users to create a profile and enter information about themselves and their organisation.
Rules engine	Execute business rules.
Secondary market	Services that manage the secondary flexibility trading market

Table 4. Subsystem Descriptions

Service Descriptions

Name	Description
Accept secondary flex bid	Service to Accept a secondary flexibility bid. This service should also inform the flexibility provider that responsibility has been transferred to the bid winner.
Aggregator	Aggregator registration service
Asset / product map	Mapping of which assets can bid against products.
Asset analysis	Analyse asset performance
Asset data	Data that specifies characteristics of assets
Asset management	Interface to maintain asset information
Asset owner	Asset owner registration service.
Asset taxonomy	Breakdown of all applicable asset types
Bidding rules	Rules that define asset and asset owner characteristics for each product type.
Business rules	Rules to be executed by the rules-engine
Conflict detection	Detect conflict between different despatch notifications
Conflict rules	Rules that define when two product dispatch notices are deemed tox conflict with each other.
Contracts	Agreed contracts NOTE: This may be removed from scope
Dispatch API	Receives despatch notifications from product providers and makes them available NOTE: Should this include commercial information?
Eligibility check	Evaluate rules to verify whether an asset is eligible to service a product
External data	Such as policies, trends etc. NOTE: This service may be removed
External data provision	APIs to access data externally. Data access will be governed by user / user type.
Flex needs / asks	Flexibility asks available in the market
Flex requirement / ask interface	Interface that allows submission of flexibility requirements / asks for flexibility
Fulfilment notification	Receive fulfilment notification from flexibility provider.
Historical data	History of all flexibility requirements / asks, bids, dispatches and fulfilment notices.
List flex commitment	Make an existing flexibility commitment available for sale.
Market access rules	Rules on who can access which market
Market Analysis	Reports that analyse market performance
Market policies	Policies that govern each market (unstructured text) NOTE: This may be removed from scope
Pre-qualification process	Process that manages Pre-qualification

Prequalification	Service to initiate a prequalification process for asset to participate in a product
Probabilistic notification	Send notification of probabilistic flexibility opportunity to flexibility providers
Product data	Product description and lifecycle management. Allows registration of potential new products
Product management	Interface to maintain product information
Product owner	Product owner registration service
Product taxonomy	Breakdown of all product types
Reference data API	API to update reference data
Reports	Predefined reports
Rule validation API	API to expose rules executed in the rules-engine to external users.
Secondary flex ask, bid & agreement	Final results of secondary flexibility auctions listing winning bid. NOTE: This may be removed
Self-service reporting	User defined reports
Std contracts	Standard contracts NOTE: This may be removed from scope
Submit bid on secondary flex commitment	Submit a bid to buy an existing flexibility commitment.
Submit flex bid	Service that facilitates the submission of a flexibility bid . NOTE: Not clear yet if this should be inside the platform
Third parties	Third party registration service. This allows third parties service providers to register the services they offer.
Visualise network flex requirements	Service to visualise flexibility requirements provided by DSOs in a consistent way for FSPs.

Table 5. Service descriptions

B.3.2 IT Systems View

This view provides an overview of the technical components that are required to deliver the functional services and operate the system.
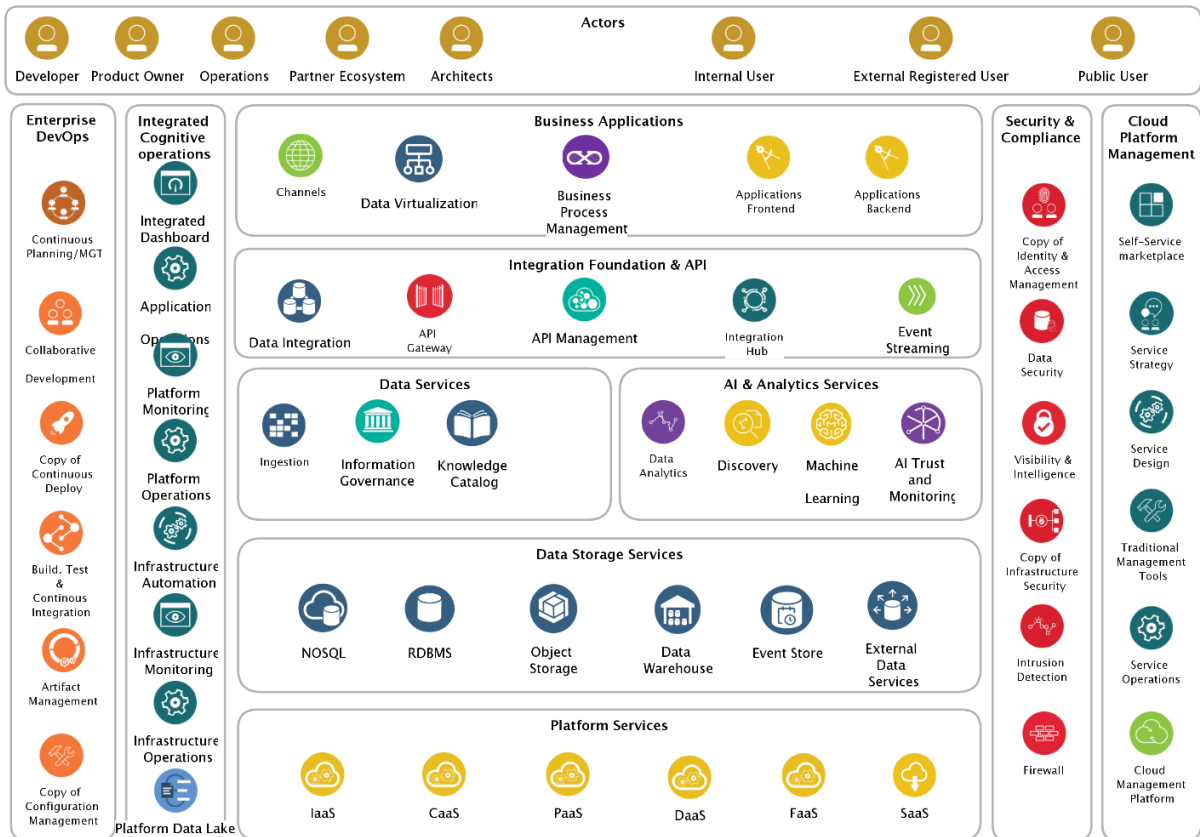

Figure 3. IT Systems technical components

Appendix C – Component Business Model Descriptions

Table 6 describes the individual business components in the proposed component business model for the organisation that would ultimately implement and run the SFE platform.

Component Name	Description
Analytics and Reporting	Analysis of financial and non-financial data. Also involves the timely production of all required reports.
Audit & Assurance	Independent checks on the financial performance. Involves conducting risk analysis, system failure identification and control recommendations.
Business Administration	Overseeing and supervising the business operations. Covers all areas, such as accounting, development, marketing etc.
Business Change	Approves and coordinates the deployment of all changes/releases to IT services and solutions. It ensures that individual changes/releases comply with deployment policies and standards, confirms correct approvals have been gained and manages risks and dependencies associated with conducting multiple deployments in a similar situation.
Business Performance Management	Involves monitoring business performance and making informed decisions based on performances.
Business Resilience	Involves conducting IT projects to improve the organisation's business resilience, maintaining, and regularly testing IT business continuity plans, and successfully executing these plans when necessary.
Business Strategy	Encapsulates all capabilities for defining how the organization and its sub-units will fulfil its purpose and return positive result to its stakeholders.
Business Support Execution	Using analyses of current situations to trade and facilitate smooth flow of goods and the functioning of business as such.
Business Support Services Planning	Planning for business support execution by considering strategic methods to trade and facilitate smooth flow of goods.
Consultation Standards, Policies and Procedures	Running consultations to create or modify policies and procedures pertaining to the platform.
Corporate Governance	The system by which management directs and controls. Encourages robust and effective decision-making through processes, practices and policies.
Customer Registration Management	Managing customer registration between IT and internal/external customers.
Data and Information Governance	Involves setting internal standards and policies that apply to how the data is gathered, stored, processed and disposed of.
Data Collection, Processing and Validation	Ensures that all required information is identified, and policies and procedures are put in place to ensure it is correctly collected, processed and validated.
Data Ownership & Control	Addresses issues and risks related to an organisation's ability to control access to business/personal information and data assets. Its scope includes both physical and logical security

	measures required to meet regulatory, corporate confidentiality and business process requirements.
Data Science	Data science helps in developing user-centric products using analysis of customer feedback, analysing current market trends, comparing products and finalising the best products with the ability to attract customers for the long-term.
Data Standards	Sets out how the data should be stored or exchanged for the consistent collection and interoperability of the data across different systems, sources and users.
Digital Risk & Security	Process of identifying digital and security risks and implementing plans to address them.
Dispute Resolution	Receiving, rectifying, and monitoring customer adjustments and deductions resulting from recalls off products and or services.
Facilities Management and Maintenance	Involves the provision and management of all IT facilities, including lease/purchase negotiation, operational set-up, meeting compliance requirements, managing facility risks, and supporting ongoing operations (security, utilities, maintenance, etc.).
Financial Accounting	Establishes and manages all financial aspects of IT function operations. Activities include creating functional and service-based budgets and accounting controls, establishing project accounting and funding mechanisms, processing and recording all IT financial management of IT assets.
Flex market policies and procedures	Maintain the policies and procedures that govern the flex market and its management.
HR Services	Refers to the function that supports and provides solutions for the employees.
IT Architecture	Provides the structure for organising and maintaining business information, based upon the organisation's overall IT requirements.
IT Architecture Review	Reviewing the enterprise information architecture, external information and tech access requirements, data ownership and custodianship, and IT architecture transition plan.
IT Production Support	Covers the practices and disciplines of supporting the production IT systems and applications.
IT Project Delivery	Includes overseeing projects for business analytics, software development, implementing IT services etc.
IT Project Management	Encompasses leading the successful execution of all IT-related projects and programs, ensuring that these are delivered on-time, within budget, and meet all functional and technical requirements. It is also responsible for establishing and supporting project/programme management methodologies, standards, and tools.
IT Strategy	Is the discipline that defines how Information Technology is used to deliver the businesses strategy.
Management Accounting	Implementing methods and models for the allocation of operating and overhead costs across products and or services, recording and analysing costs associated with the products or activities of an organisation, using accepted managerial accounting practices and methods such as standard cost accounting etc.

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Management of Data & Information	Managing all people, process, and technology aspects required to ensure that data and information are of sufficiently high quality to meet business needs and are adequately protected.
Market Administration Performance Management	Create market performance metrics and measure market performance to identify areas for improvement.
Market Administration Standards, Policies and Procedures	Developing the standards, policies and procedures to adhere to proper market functions, improving user experience and dealing with user issues.
Market Compliance	Managing to energy market regulations and procedure for procuring energy and executing settlements.
Market Consultation	Focuses on providing consulting assistance to its customer communities, enabling them to better define and plan their IT-enabled business transformation or process improvement opportunities.
Market governance arrangements	Processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, and broad-based participation.
Market monitoring	Surveillance and evaluation of the markets.
Market Participant Invoicing/Payment	Create invoices and track payment for market participants that are charged for using services provided by or via the platform.
Market Participant Registration	Registering all market participants between IT and internal/external participants.
Market Promotion	Marketing activities related to encouraging participants to join and participate in the market.
Market Strategy	Refers to creating the process of identifying, developing, and communicating the strategy, vision and appropriate business model for expansion of the total market for the products and or services from the company to achieve the corporate strategy.
Marketing Campaigns	Managing the marketing functions of the utility to inform customers as well as the marketing initiatives for non-core business areas (e.g. EE programs, maintenance programs, DER connection services).
Operational Strategy and Planning	The system implemented to achieve its long-term goals and mission. Involves planning and decisions based on multiple factors, including forecasting, supply chain, inventory etc.
Policies and Procedures	Maintain the policies and procedures that govern the platform and its management.
Procurement	Focused on the ordering, scheduling, receiving, validation, storage and invoicing of goods and services from suppliers.
Regulatory Compliance	Actively managing regulatory issues within the organisation for meeting compliance standards.
Regulatory Interaction	Actively managing and participating in regulatory compliance and demonstrating end customer requirements are being met.
Regulatory Reporting	Completion of all required financial statement reports, such as quarterly reports, as well as other reporting requirements for local and national jurisdictions.
Regulatory Strategy	Developing the strategy for rate case design and negotiation with regulators.
Reporting and Publishing	Covers preparation and publication or submission of external reports as part of compliance and other related requirements.
Revenue Forecasting	Using past and present sales data to make educated predictions on future revenue streams.

Risk Management	Accounting for and managing the risk of changes in the demand and being able to secure energy from the supply market.
Secondary Market Administration	Involves the provision and management of all secondary market IT facilities, including lease/purchase negotiation, operational set-up, meeting compliance requirements, managing facility risks, and supporting ongoing operations (security, utilities, maintenance etc.).
Secondary market operation	Is responsible for operating a market in which flexibility providers can find peers that are willing to take over a flexibility obligation and agree commercial terms for this exchange.
Strategy Development	Determines overall approaches to IT service and solution development that enable projects to meet their business objectives, while adhering to enterprise architecture standards. This includes defining and managing the processes, standards, methods, and told used throughout the development lifecycle.
Systems Support	IT and business support functions required to resolve issues and ensure smooth system operation.
Vendor & Commercial Management	Enables cost control, drives service excellence and mitigates risks to gain increased value from vendors throughout deal lifecycles.
Workforce Administration	Responsible for timely creation and updates to employee job records and position data.

Table 6. Business capability descriptions for Component Business Model

Appendix D – User Journeys

The Subsidiary Appendix D document is an infographic that depicts the interactions market participants could have with the SFE platform.