

# Insights on Fuel Demand Aggregation for Sustainable Maritime Fuels

Webinar  
22<sup>nd</sup> May 2025



**Mærsk Mc-Kinney Møller Center**  
for Zero Carbon Shipping

5/28/2025

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# Agenda

- 01 **Context** & Project Overview
- 02 Introduction to **Demand Aggregation**
- 03 The **Center's** Fuel Demand Aggregator Design
- 04 Enabling **Increased Fuel Supply**
- 05 **Enhancements** to the Aggregation Design
- 06 Way Forward & **Next Steps**



# Who are we?

## Our vision and mission

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**Our vision** is to sustainably decarbonize the maritime industry by 2050

**Our mission** is to be an independent and significant driver of a sustainable maritime decarbonization



## Our approach to decarbonization

### **Not-for-profit**

Money earned by or donated to the Center is used entirely to finance Center work.

### **Independent**

We are un-biased, solution agnostic and have no vested interest in any technology. We work collaboratively and bring together key players across the value chain.

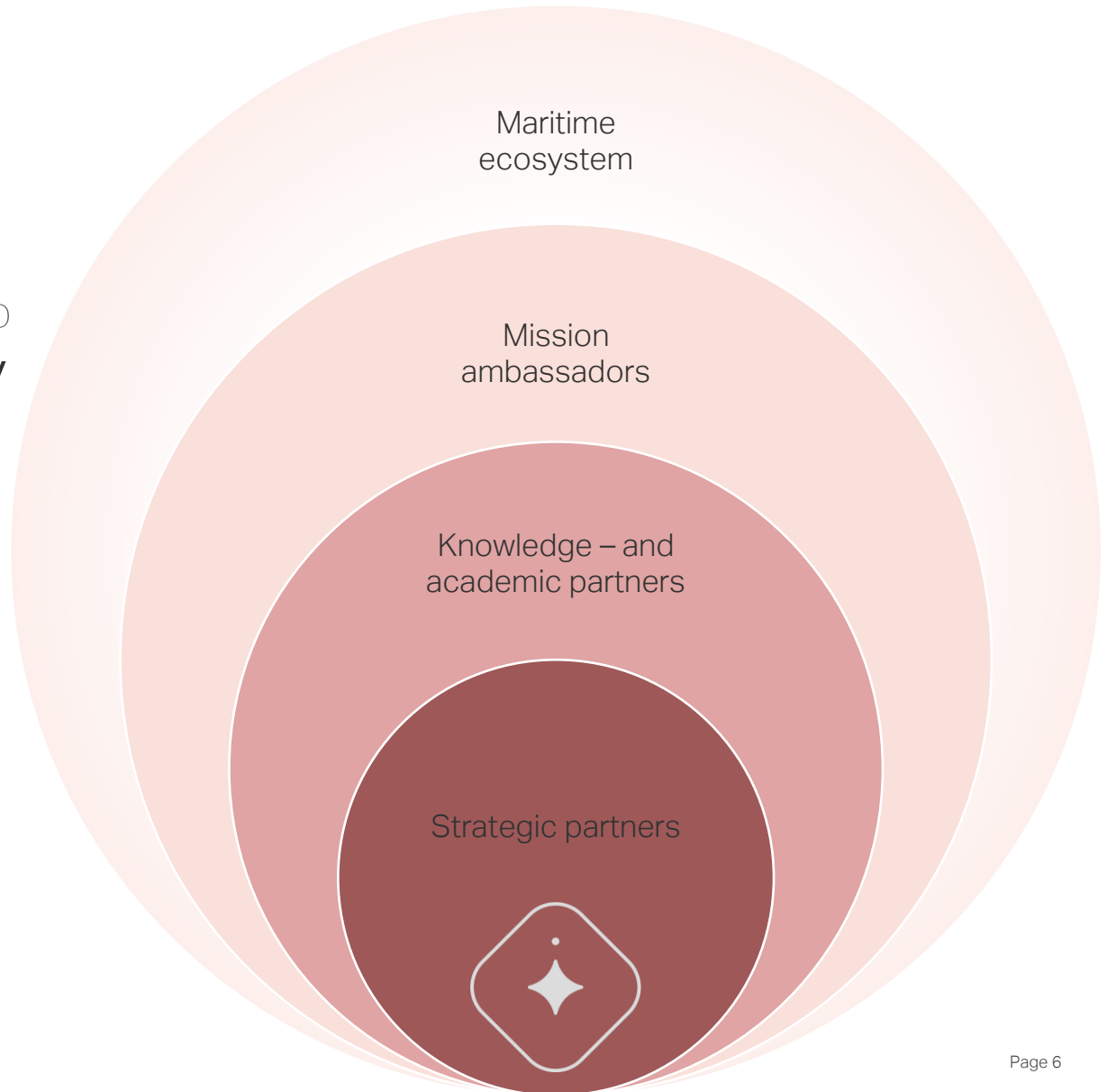
### **Science-based**

We commit to climate science and use a data driven approach to explore viable decarbonization pathways.

# Who are we?

The Center works with **dedicated partners** committed to collaborative climate action and a **motivated community** supporting the Center vision and mission.

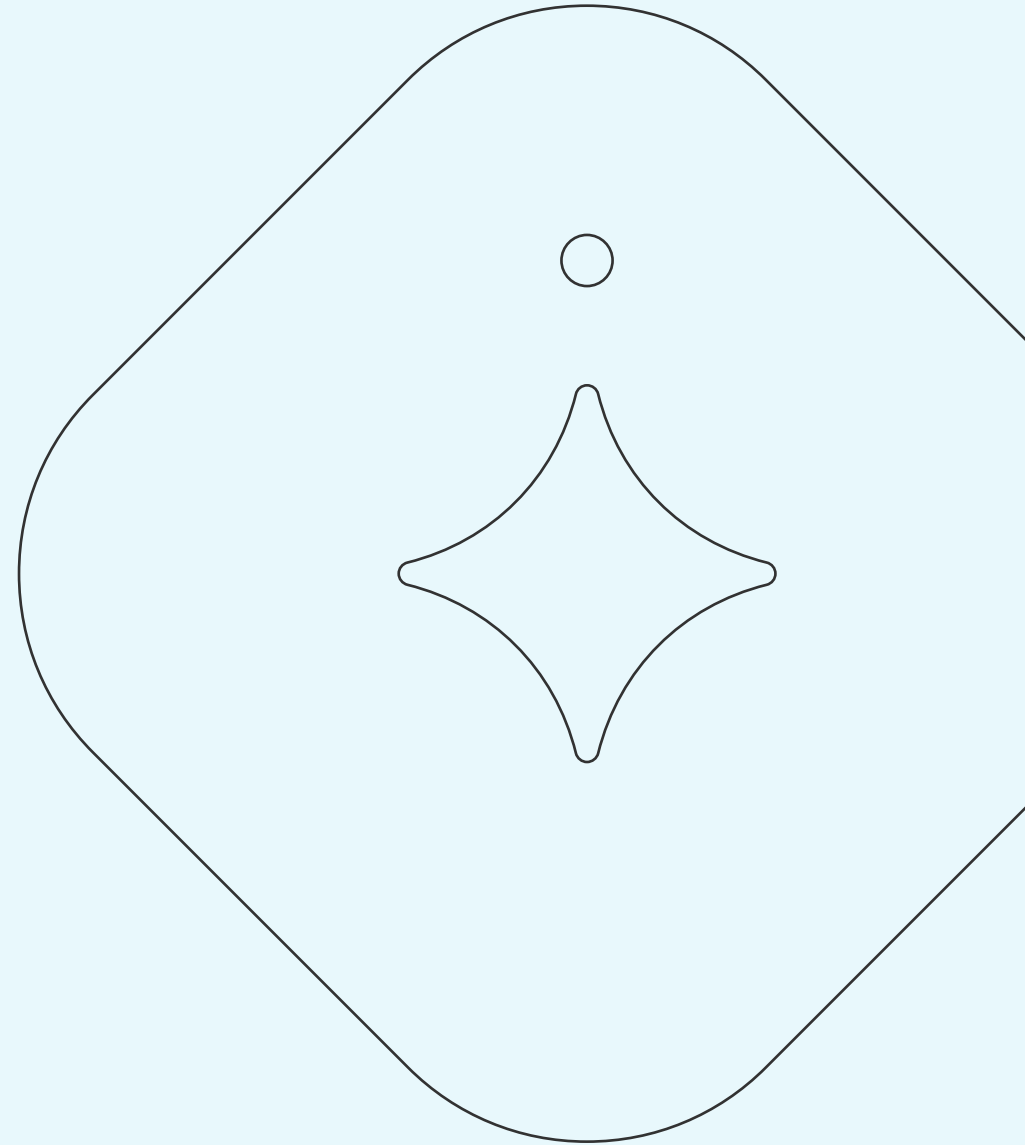
Proven ability to take ideas **from concept and design** through to **real-world implementation** with cross-industry participation





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# 01 Introducing the **Context** for today's webinar and the Center's work in this space



## Situation & background

Status of the maritime fuel ecosystem at the start of the Center's project work

No fuel regulations on a global level, with EU ETS & FuelEU Maritime only recently introduced within the EU

- Great expectations for MEPC83, but significant regulatory uncertainty ahead of the key meetings in early 2025
- Wide range of low-carbon fuels emerging to comply with regulations, with only small incentives towards use of RFNBOs

Fragmented supply and demand across sustainable fuels for the maritime sector

Chicken-and-egg situation blocking both upstream and downstream investment

Previous investigations in the aggregation space had been carried out by WEF, BCG & GMF



WORLD  
ECONOMIC  
FORUM

- General agreement that aggregation was a powerful tool to address fuel access
- Highlighted concerns around how aggregation could be implemented in practice
- Impact of competition law compliance seen as a key challenge to overcome

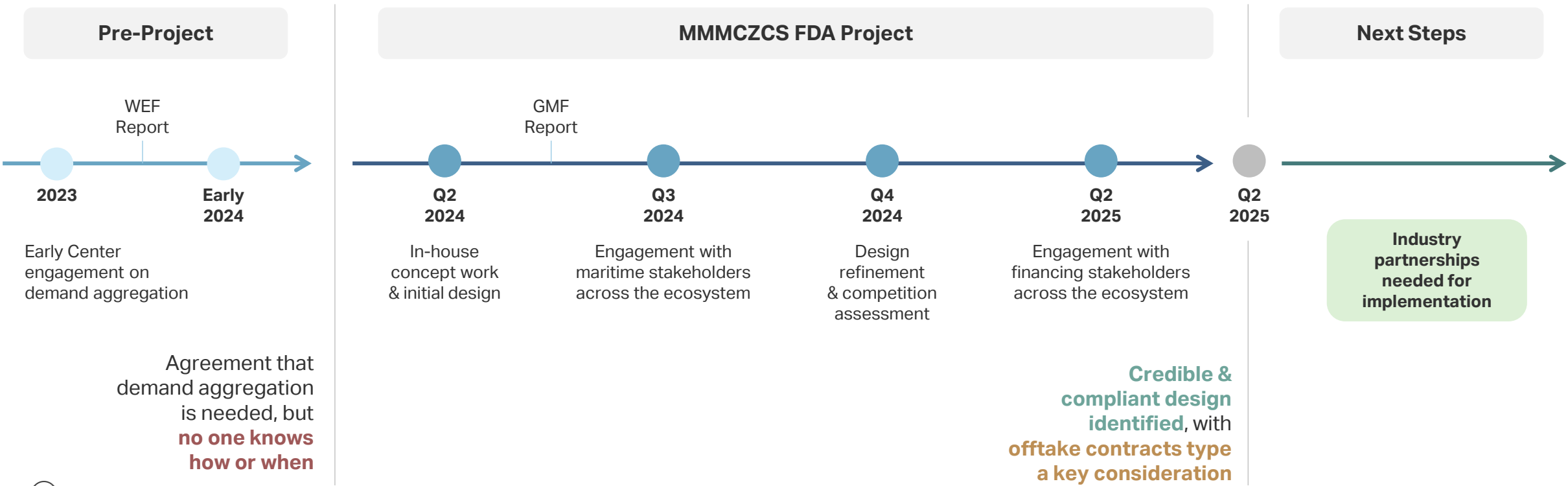




# The Center's fuel demand aggregation project

Working together with industry stakeholders to investigate fuel demand aggregation

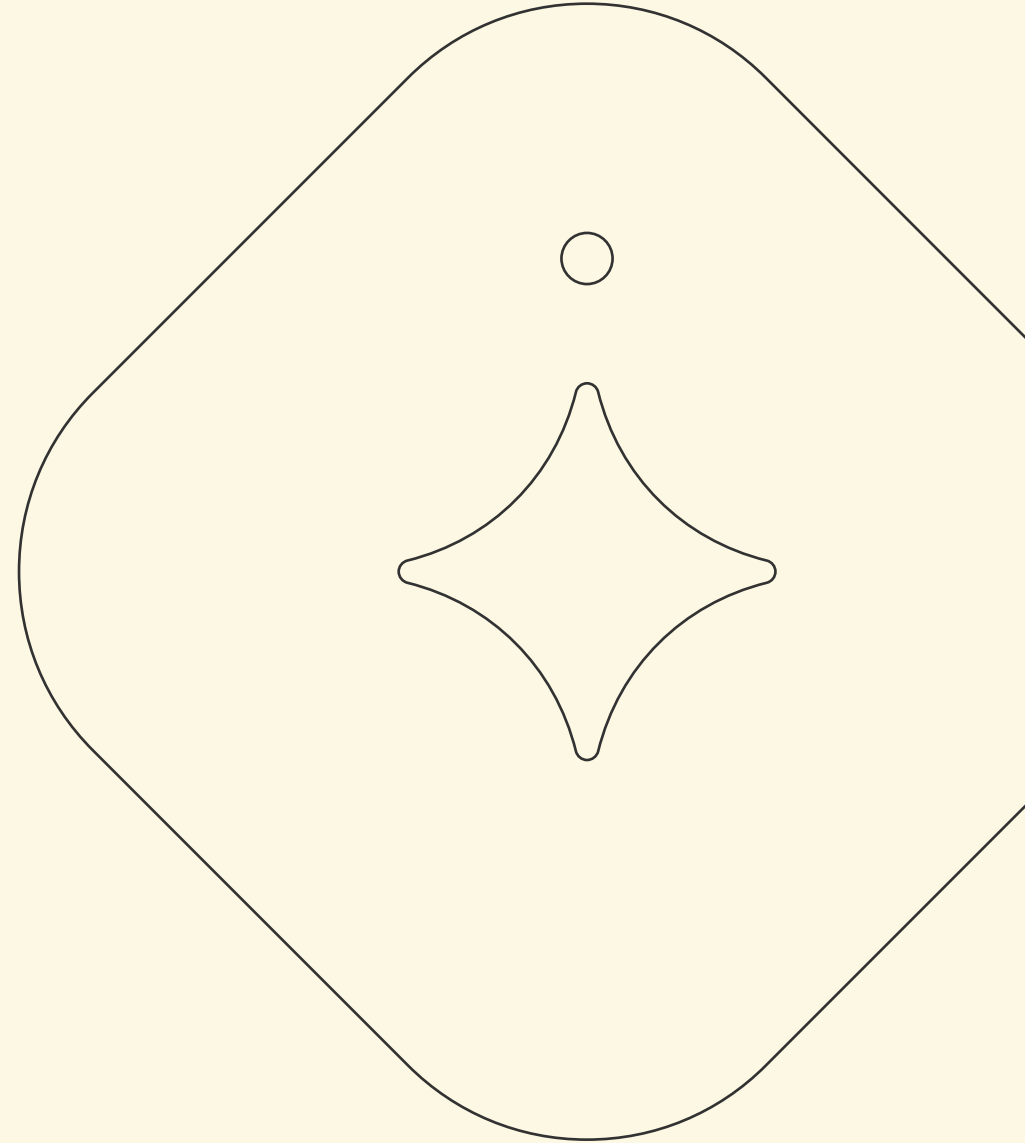
The Center has been investigating demand aggregation as **one potential pathway** for unlocking supply of sustainable fuels for maritime  
Neutral, non-profit, **cross industry stance** aligns well with the need to design an aggregator that balances the needs of the wider sector





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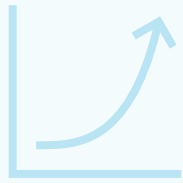
## 02 Setting the scene for what **Demand Aggregation** is and what it entails



# The starting point for Fuel Demand Aggregation

Maritime access to clean fuels entails certain challenges in a market with low liquidity / maturity

## Growth of volume



Initial maritime uptake driven by small volumes due to gradual phase-in of regulation, whilst cost-effective production requires economies of scale

## Distribution of volume



Global nature of shipping and variability in operating patterns leads to a scattered demand profile across and within different geographies

## Magnitude of volume



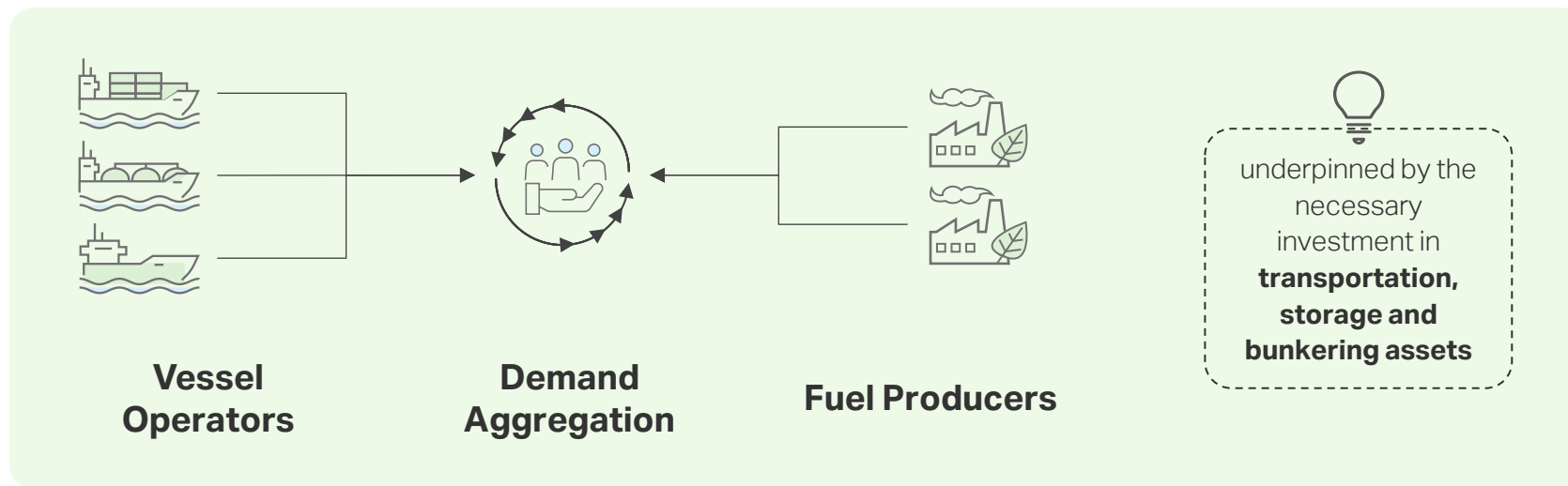
Other sectors may provide more attractive offtakers due to greater willingness / ability to pay, as well as due to greater volume demand



# The starting point for Fuel Demand Aggregation

With limited market liquidity in clean fuels, and ambitious regulation and/or strategies for decarbonization, fuel demand aggregation can be part of the solution

## What is Fuel Demand Aggregation?



## What needs to be true for aggregation to succeed?

Willingness and ability to pay

Aggregation procurement can be made compatible with competition law

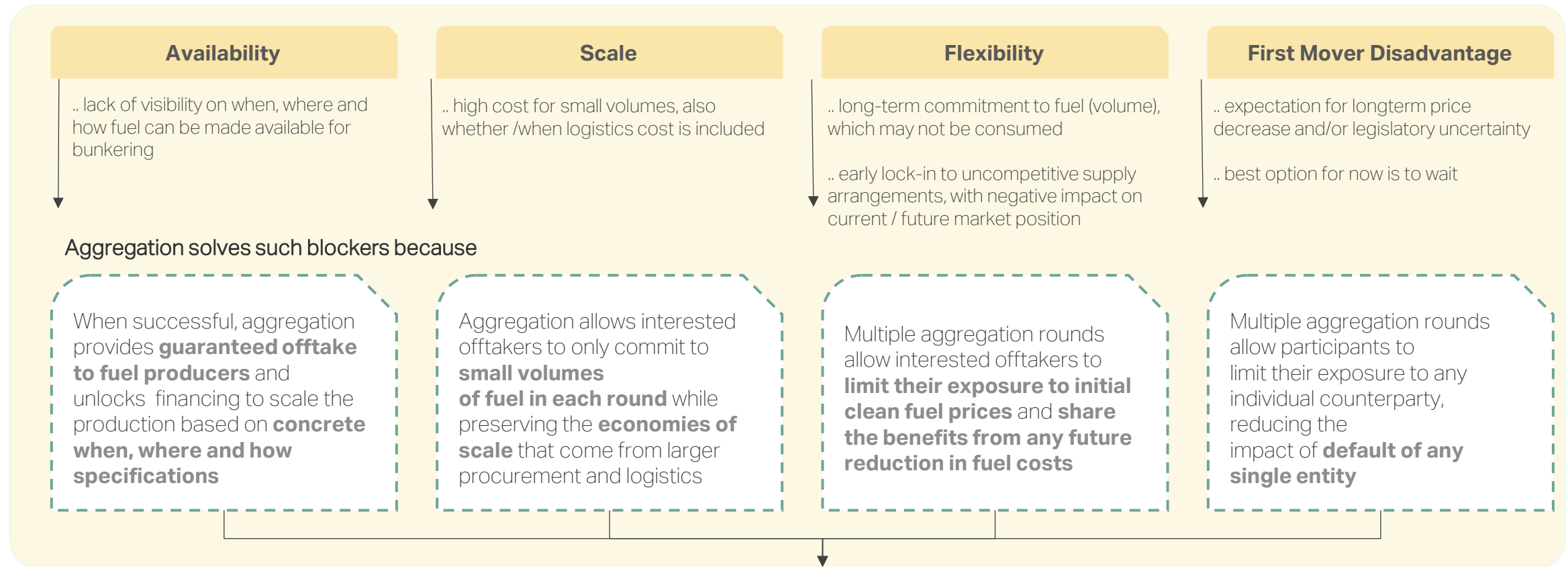
- Ambitious regulation and/or decarbonization strategies necessitate a **solution to challenges related to low liquidity markets**, as well as to the risks entailed for upstream, midstream and downstream actors
- Fuel Demand Aggregation is one possible way to solve such challenges and associated risks, driving investment across the entire value chain



# What challenges does aggregation solve?

Aggregation can provide solutions to a range of the roadblocks that are currently preventing cross-value chain commitment and investment

## Selected examples of downstream investment and/or uptake blockers



# How can aggregation take place?

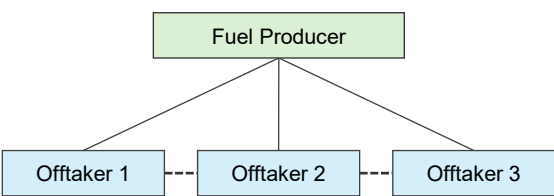
Multiple framework options exist for an aggregator design – with varying levels of aggregator obligations



## A) Informal Network

Aggregator facilitates **knowledge sharing** between operators, including information on **best practices** and **sourcing strategy**

Setup: voluntary or in-kind work (coordinated by the aggregator)

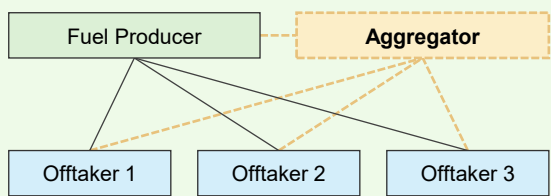


## B) Sourcing Facilitator

Aggregator facilitates **sourcing**, engaging with interested offtakers and potential suppliers to identify credible demand clusters

Participants still need to **negotiate and sign individual contracts** with the fuel producer, manage delivery and payment, and ensure they provide the necessary bankability.

Setup: fee-based to cover services provided

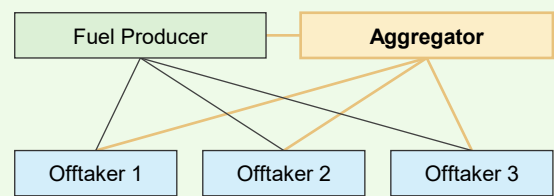


## C) Purchasing Service Provider

Aggregator provides **full purchasing services** to the identified cluster participants, establishing standard terms with the producer, negotiating price on behalf of cluster.

Participants **sign individual standardised contracts**, providing the necessary bankability, and then manage delivery and payment.

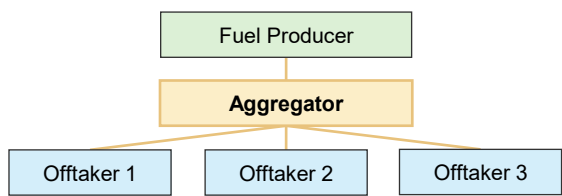
Setup: fee-based to cover services provided



## D) Group Buyer

Aggregator acts as an intermediary to manage joint sourcing, negotiating and **signs the final offtake** agreement with the fuel producer on behalf and **carries the price and volume** risk to provide the necessary bankability to the fuel producer while managing delivery.

Setup: fully capitalized entity



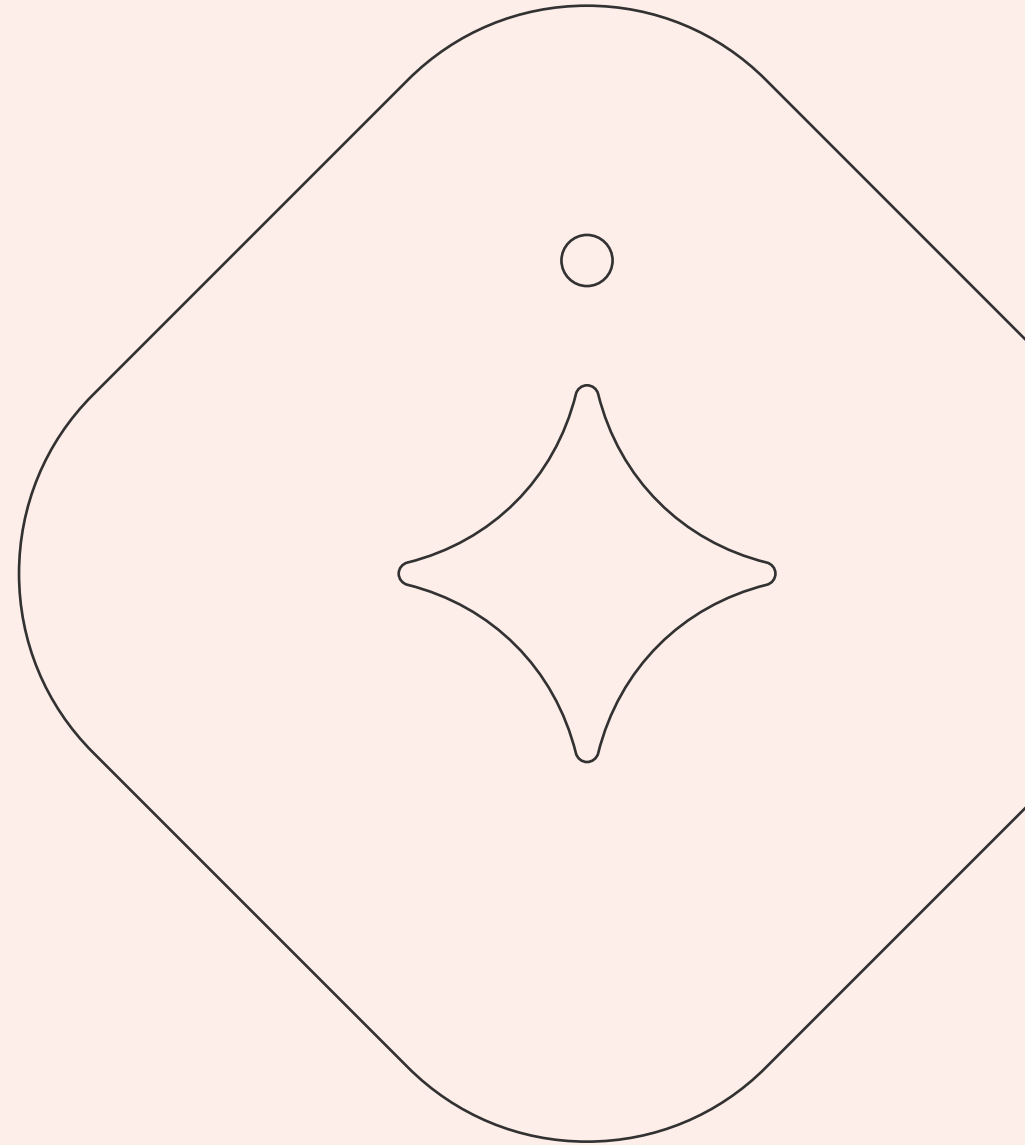
Proposed Target Frameworks  
Neutral, independent and capital-light facilitation entity





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## 03 Introducing the Center's **Approach & Entity Design** for Fuel Demand Aggregation

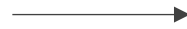


# The Center's Fuel Demand Aggregator

The Fuel Demand Aggregator designed is delimited by its key foundational principles – this design is not the only way forward in the space of aggregation

## Foundational Features

On what the aggregator sets out to solve and how



## Foundational Features

On how the aggregator aims to operate

1

Transitional

.. operating until a threshold of market liquidity emerges

2

Fuel agnostic

.. building clusters bottom-up based on demand/supply

3

Focused on physical fuel delivery

.. enabling commitment and economies of scale in logistics

4

Does not solve willingness-to-pay

.. requiring an existing business case, but not dependent on availability of specific subsidies

5

Facilitator and service provider

.. with all contracts remaining bilateral

6

Non-profit

.. charging fees only to cover costs of operation

7

Capital-light facilitator

.. with no investment capital or assets

8

Open to all users with credible need

.. subject to vetting and due diligence

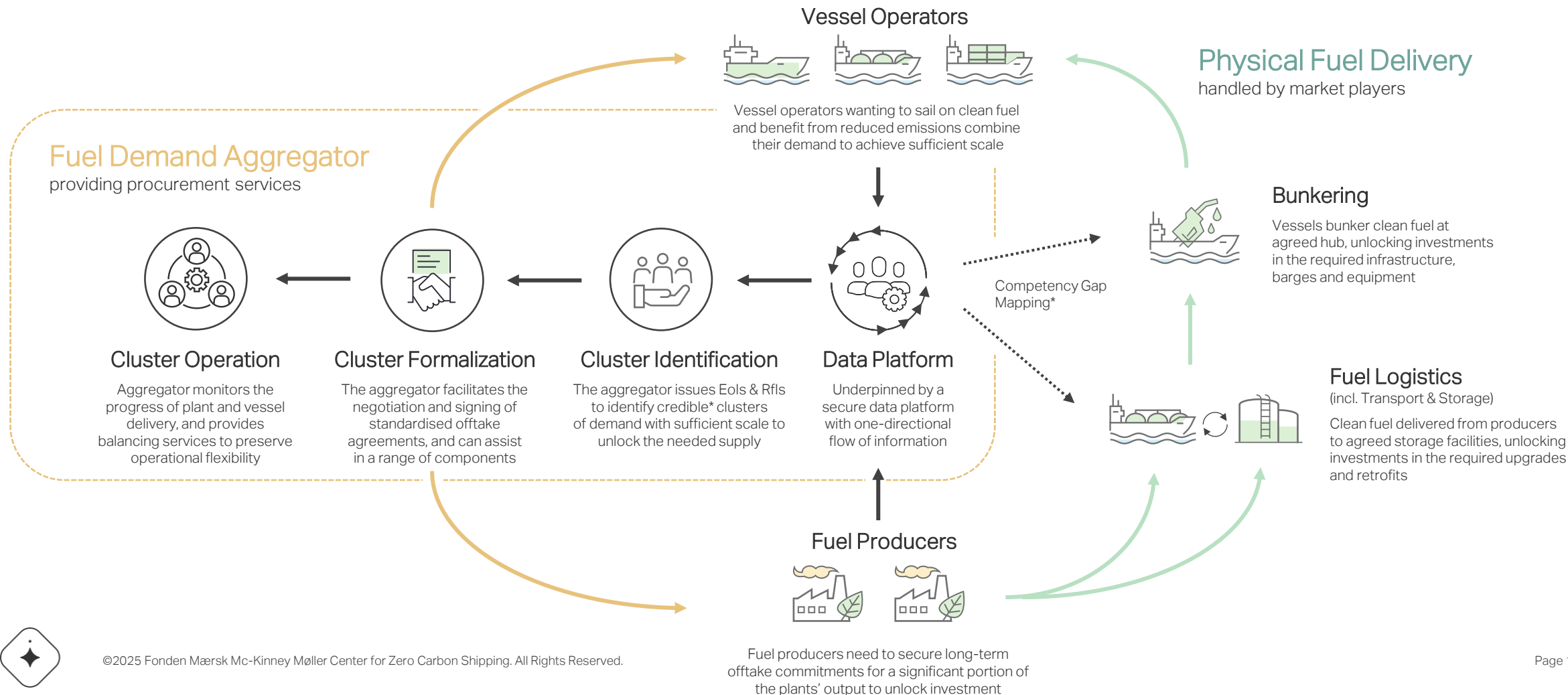
**A change in one or more of the foundational features can unlock different structural or operational design choices.**





# The Center's Fuel Demand Aggregator

The design aims to sequentially bring together up-, mid- and downstream actors to lean-in and commit to clean fuels for the maritime sector



# The Center's Fuel Demand Aggregator

The design aims to sequentially bring together up-, mid- and downstream actors to lean-in and commit to clean fuels for the maritime sector

Three Phases  
& a defined  
timeline

Multiple  
Mechanisms  
& Services

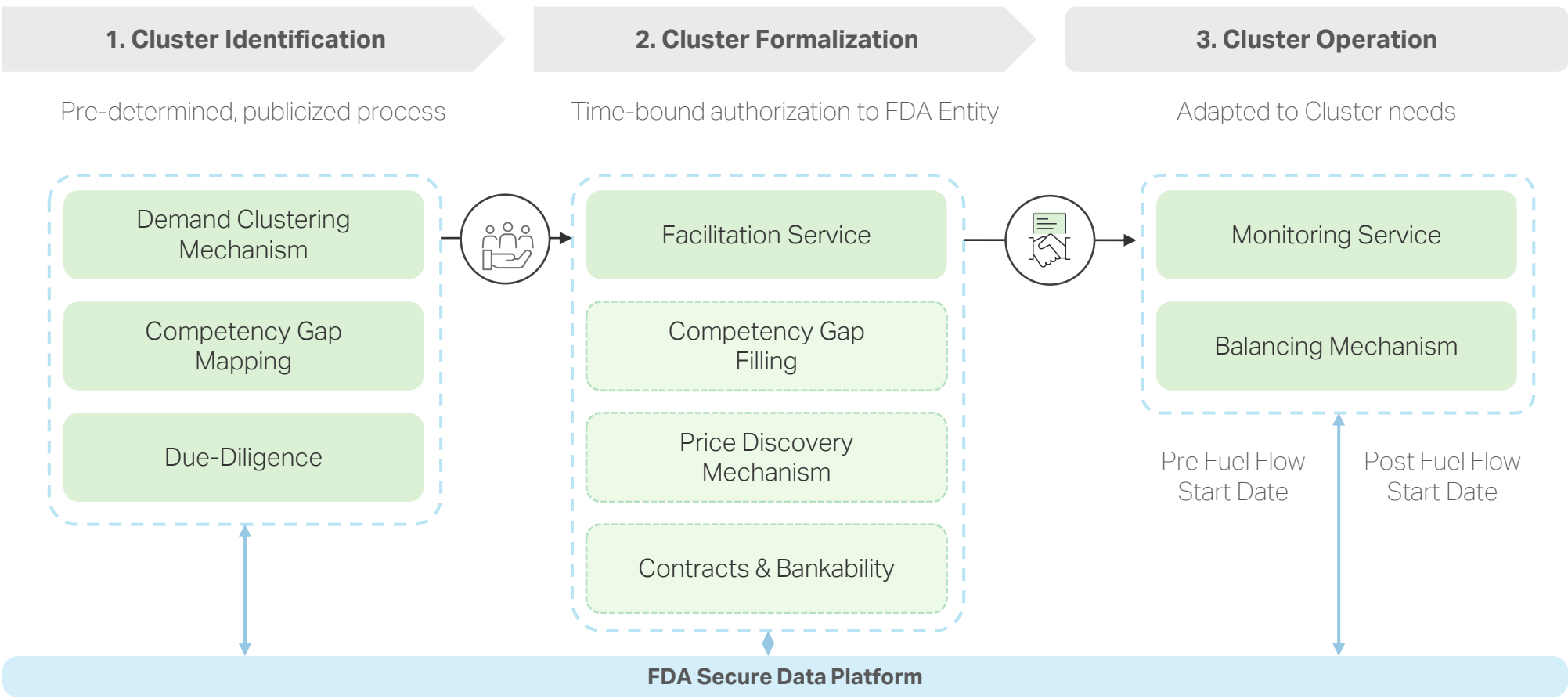
Core

Optional

One secure  
data platform

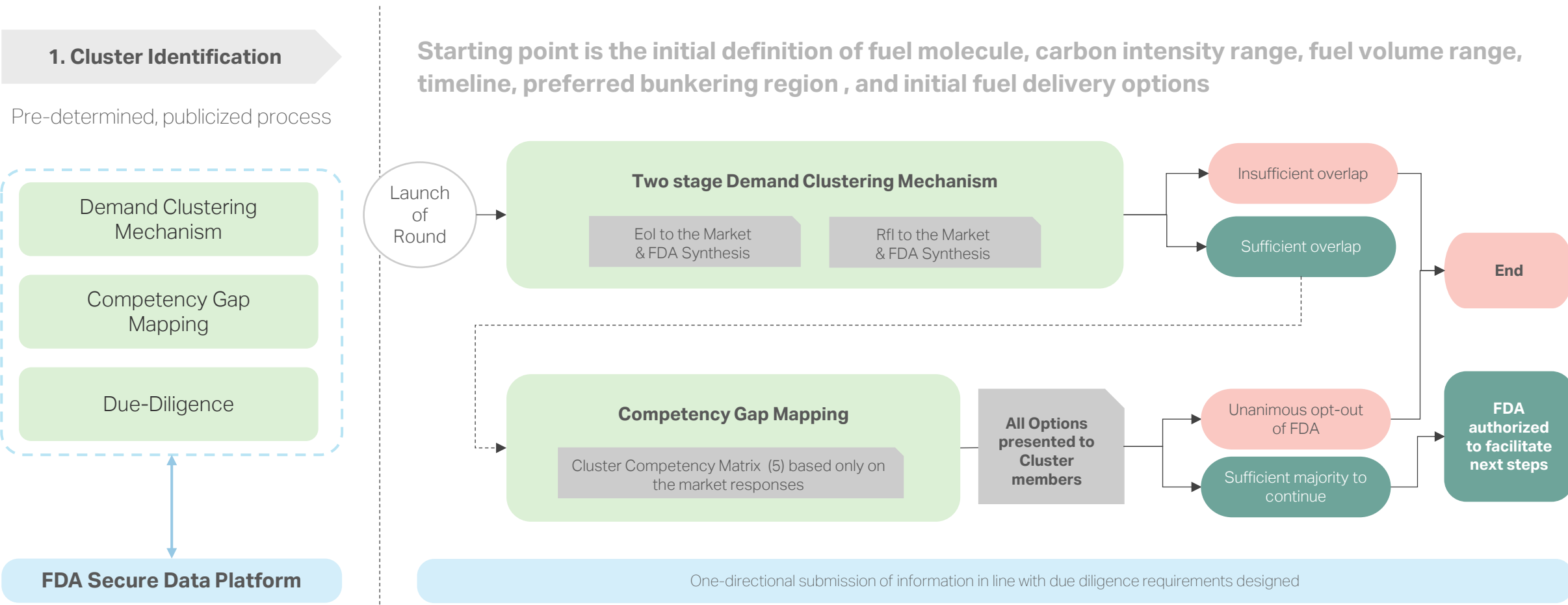


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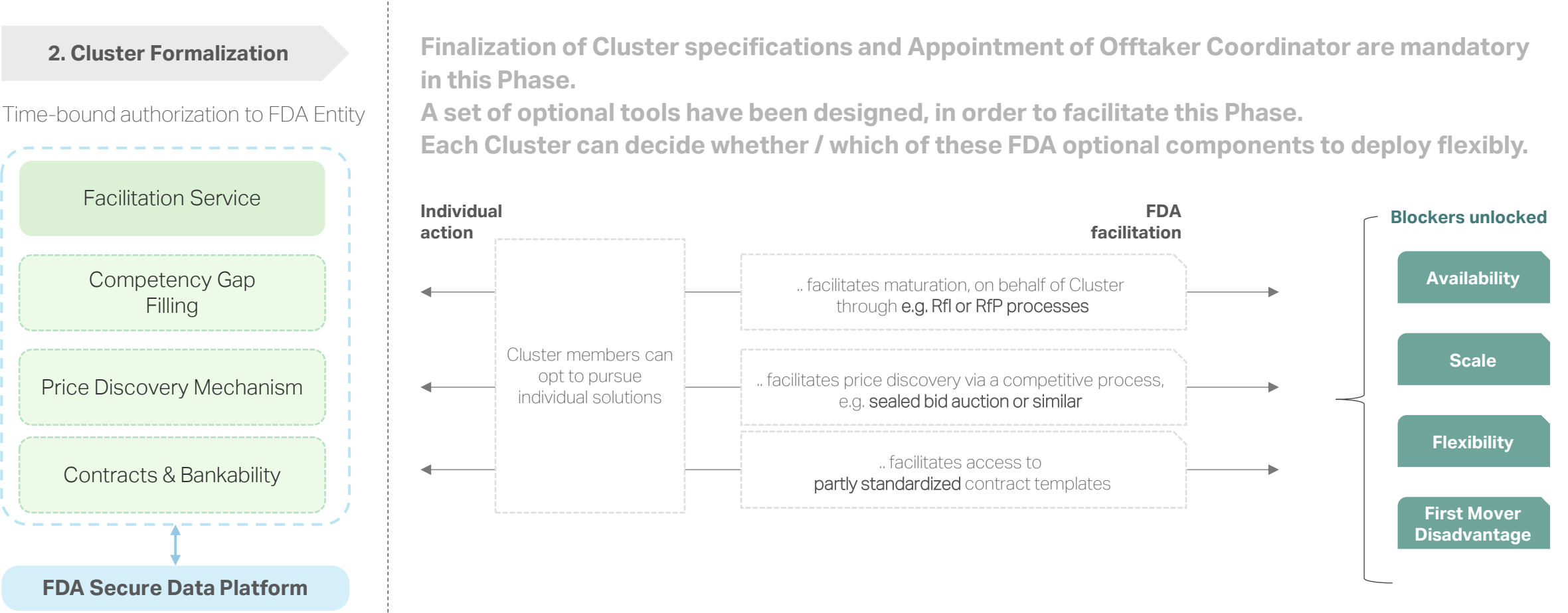
# The Center's Fuel Demand Aggregator : Cluster Identification

.. departing from a theoretical exercise and leveraging structured market engagement /procurement to preliminary define and mature Cluster specifications



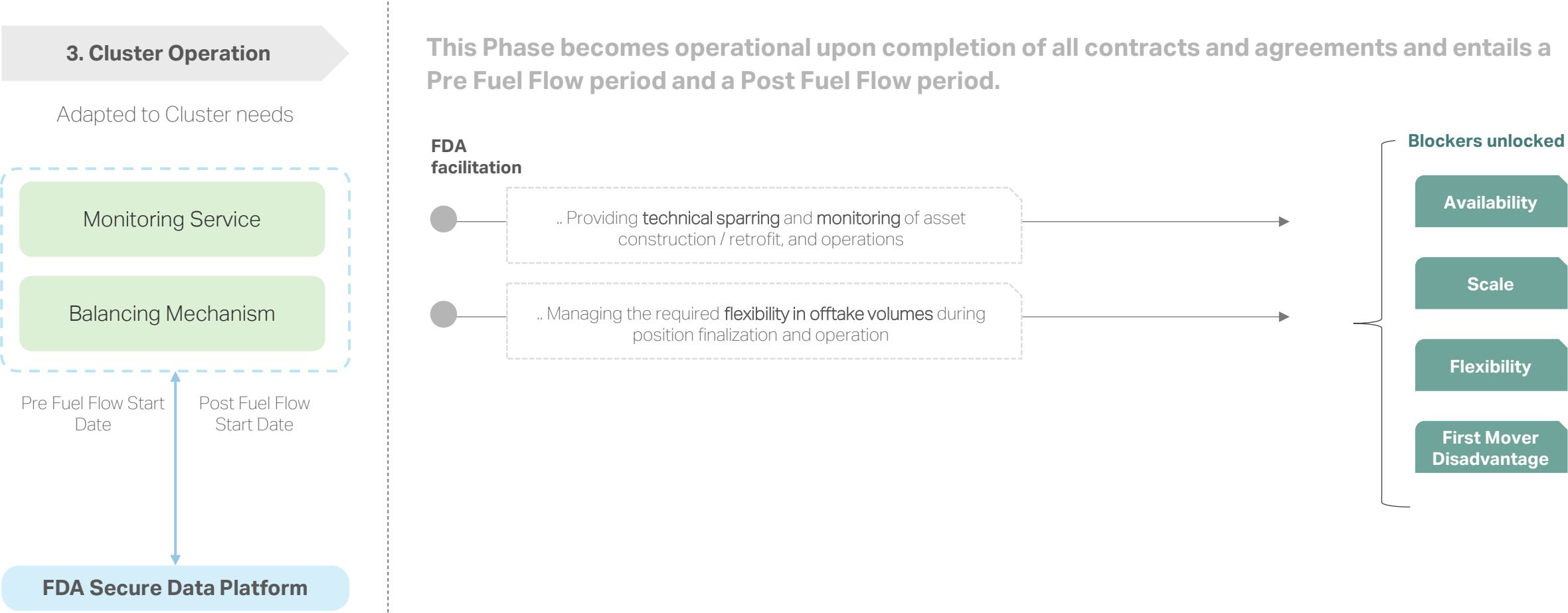
# The Center's Fuel Demand Aggregator : Cluster Formalization

.. resolving outstanding issues and finalizing operational framework, whilst providing flexibility and guidance to the Cluster



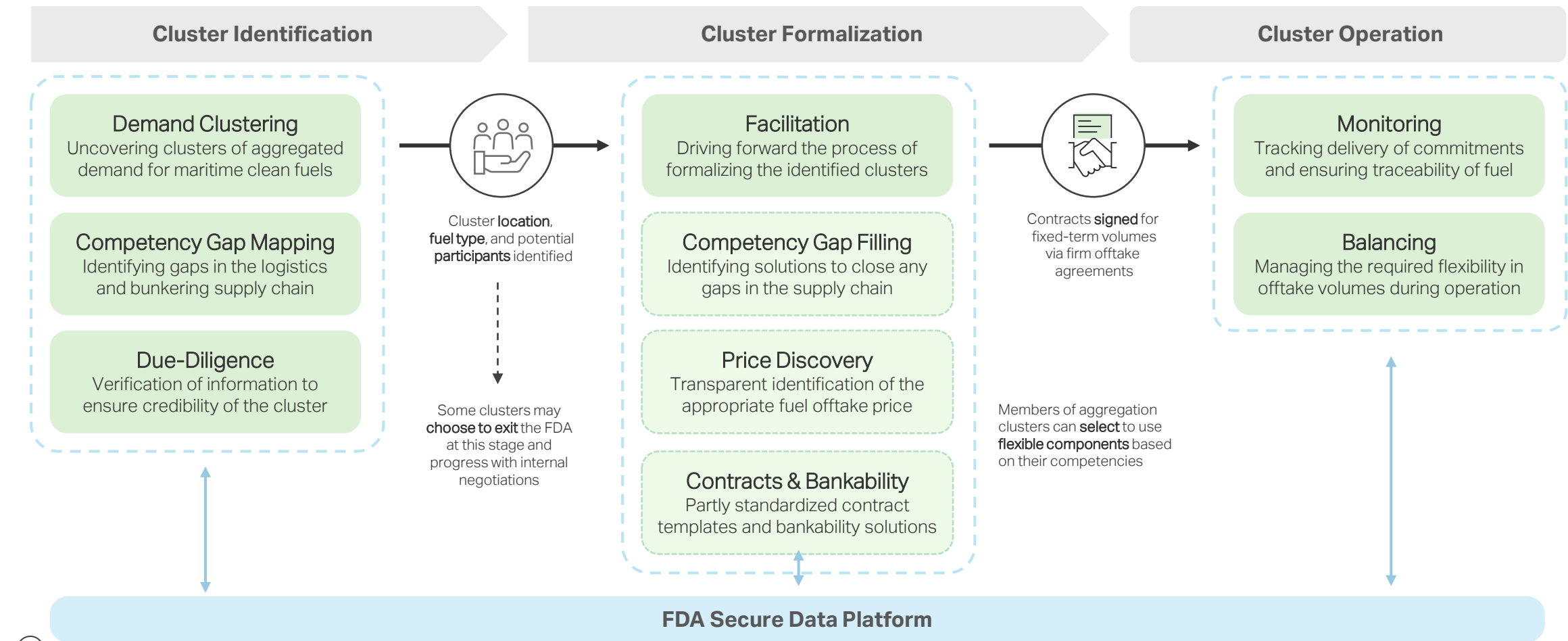
# The Center's Fuel Demand Aggregator : Cluster Operation

.. providing credible monitoring of the delivery of commitments and providing flexibility to adapt to operational requirements



# The Center's Fuel Demand Aggregator

The design aims to sequentially bring together up-, mid- and downstream actors to lean-in and commit to clean fuels for the maritime sector

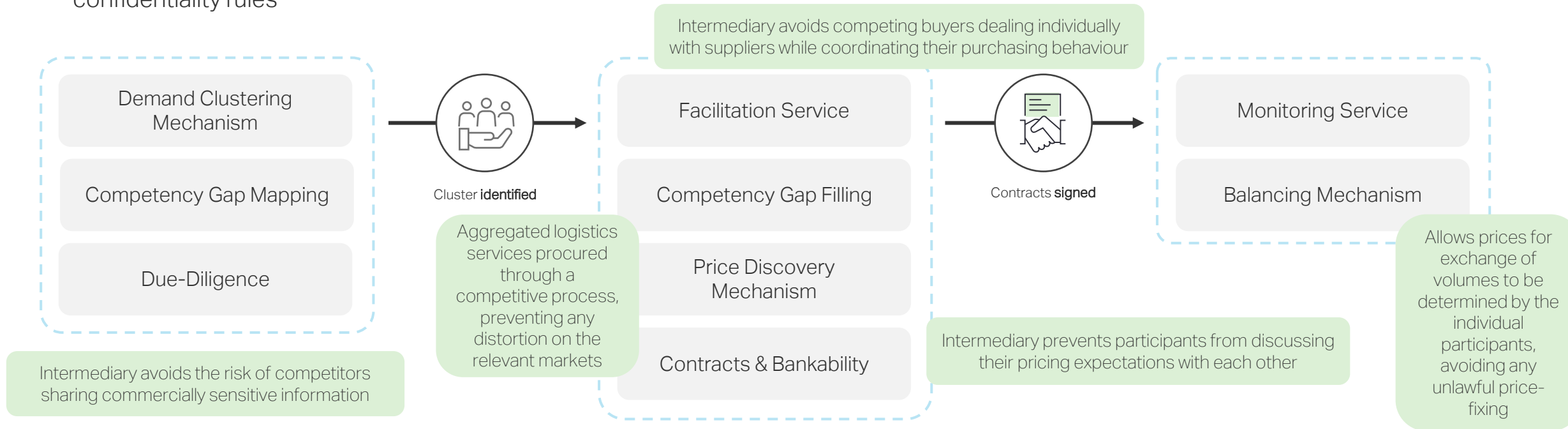


# The Center's Fuel Demand Aggregator

Initial competition law reviews confirm no red flags under Danish / EU laws

Focus on a joint purchasing setup is key to making the FDA compliant with competition law:

- Usually, no competition concerns if participants have a combined market share below 15% on both the relevant purchasing markets and the relevant selling markets where they use the jointly purchased product
- FDA must ensure access to the platform based on fair, reasonable, non-discriminatory and objective conditions and ensure effective confidentiality rules



**Fundamentally:** no competition law reason not to continue investigating the FDA concept at this stage<sup>2</sup>

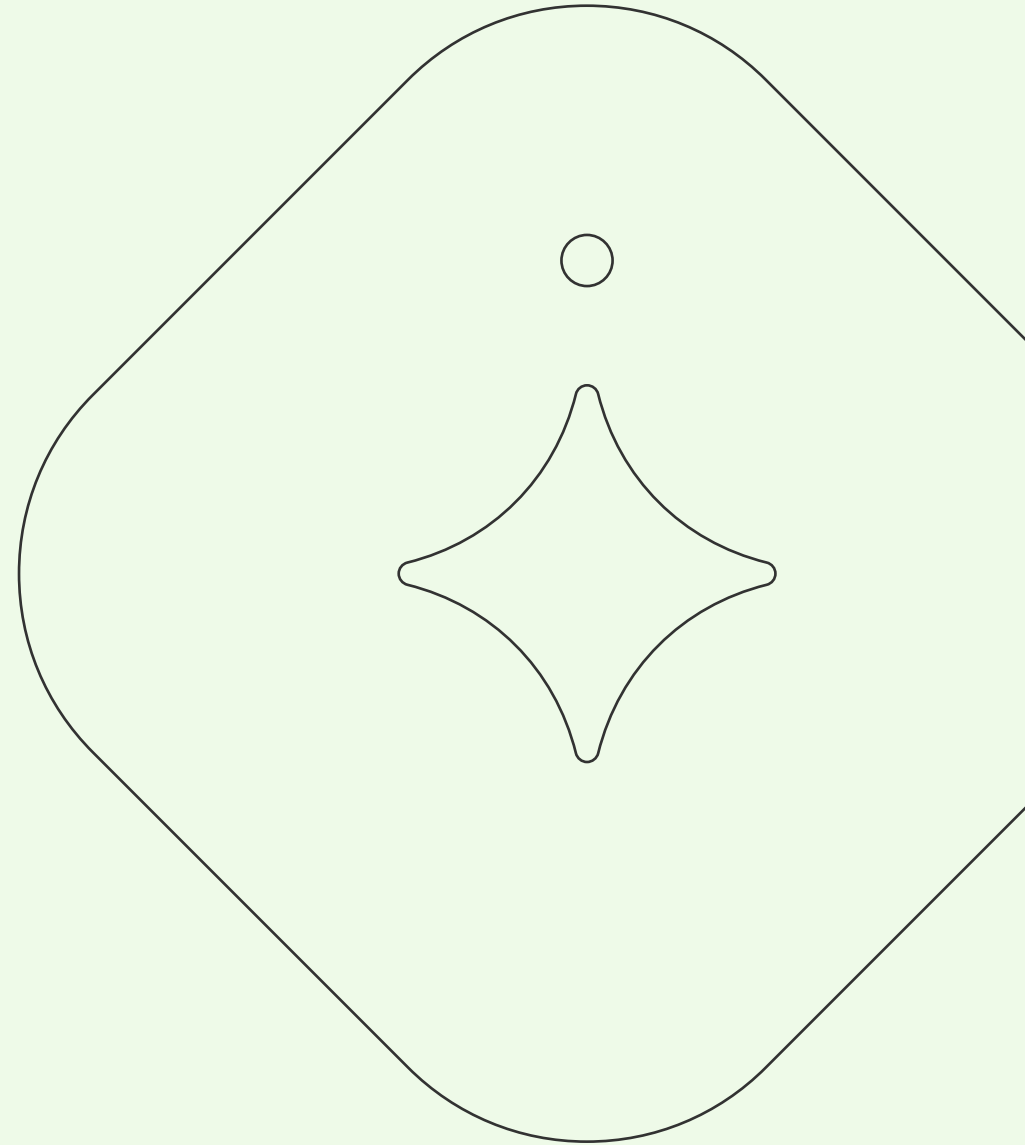


<sup>1</sup> If combined market share is > 15% on *one* of these markets, likely still sufficient efficiencies to counterbalance any concerns; if combined market share is > 15% on *both* markets, lawfulness depends on the agreement's effects on the market  
<sup>2</sup> A final competition law assessment will depend on the combined market share of the parties involved as well as other factors such as the set-up for the determination of the prices



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## 04 Fuel demand aggregation in a **World of Increasing Demand** & implications for the aggregator design



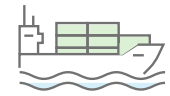


# Maritime would make a significant impact if it could contribute to unlocking new production

In a world of increasing demand, supply becomes the constraint

With the recent outcome from MEPC83, there is expected to be **increasing global demand** for sustainable maritime fuel:

- Facilitating access to existing volumes can help drive maritime uptake in the short-term
- Expanding the availability of sustainable fuel production is a necessity for wider decarbonisation in the longer-term



There is a **significant pipeline** of new sustainable fuel projects in development:

- Large portion of these are at the pre-FID stage, technically advanced but awaiting a positive investment decision
- Previous work by the Center has identified securing the necessary offtake contracts as one of the key challenges
- The bankability of these contracts is a key factor in unlocking FID on the needed new production facilities

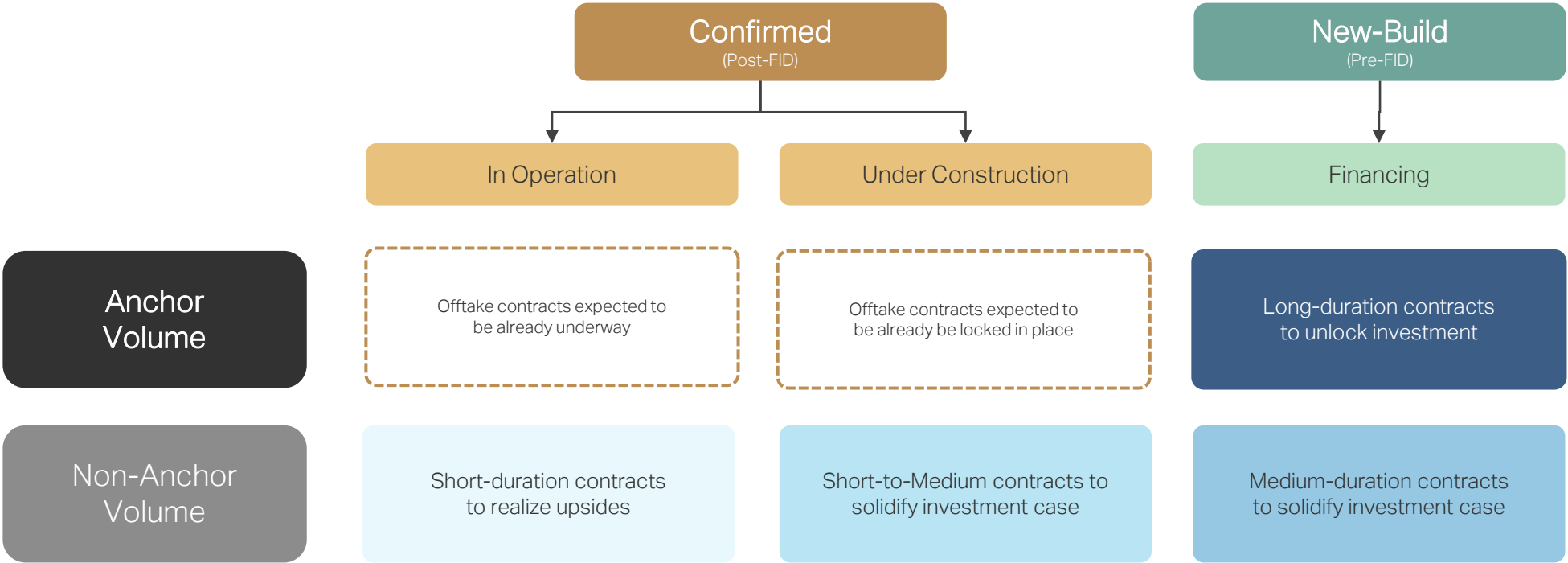


# The existing FDA design is flexible and can adapt to both existing and new-build volumes

How can these different types of production be categorised?

The FDA can tap into different 'categories' of volumes when seeking to secure fuel supply on behalf of the cluster:

Possible to distinguish anchor and non-anchor volume based on the fraction of the plants output that is used to underpin the investment decision



## What makes a contract bankable?

Typical requirements for an offtake contract to be used to unlock investment

In general, there are 5 key factors that make a contract bankable as part of an investment decision :

**Credit standing of the offtaker**, assessed through a combination of public rating (if available) and/or lenders own due-diligence

**Tenor of the contract**, which much match or exceed the tenor of the debt

**Volume certainty**, with clearly defined amount, quality and delivery specifications

**Price certainty**, either a fixed price, or clearly linked to a reputable index

**Limited termination clauses**, with robust take-or-pay terms and no option for unilateral termination

Credit standing can either be assessed via an established 3<sup>rd</sup>-party agency rating, or through a project-specific assessment

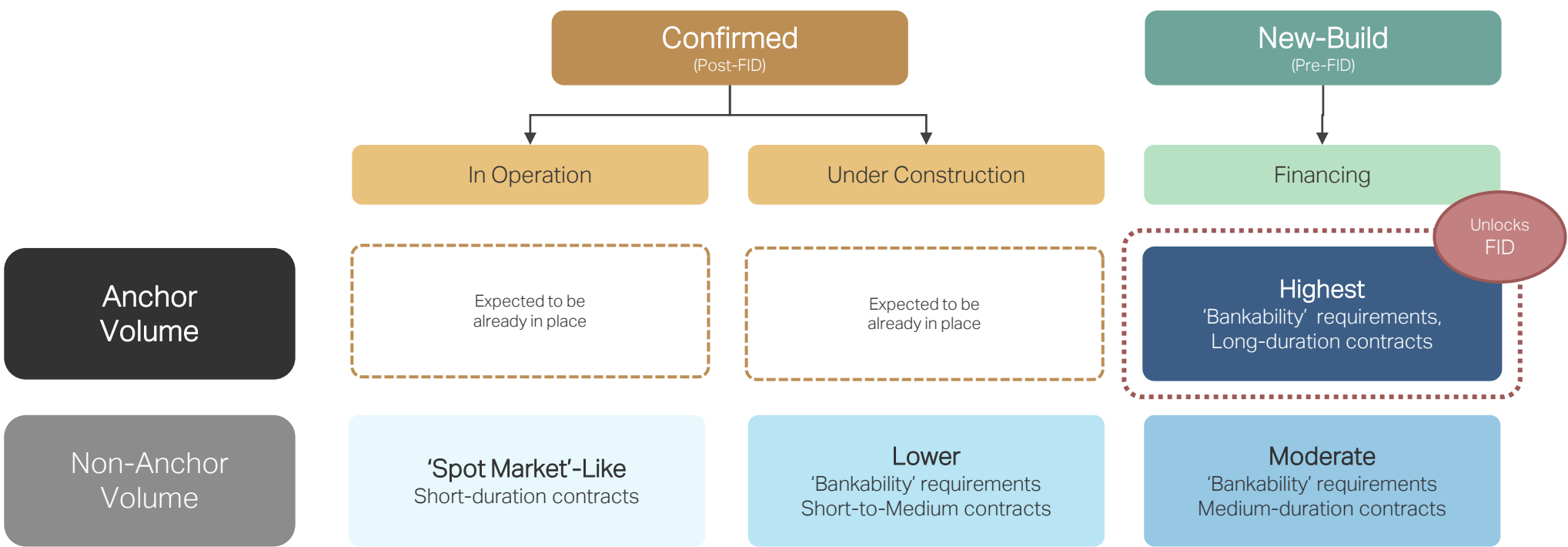
- Bespoke assessments will look at a combination of the offtaker's cash flow, assets and the diversity of their activities



# How do different categories of production differ?

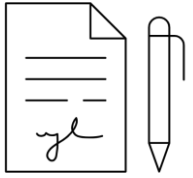
Level of bankability required is different for the various categories of production

Accessing different 'categories' of volume would impose different requirements on the resulting offtake contracts



## Ability of shipping to be an anchor offtaker for new-build

Can fuel demand aggregation be a pathway to unlock new-build production?



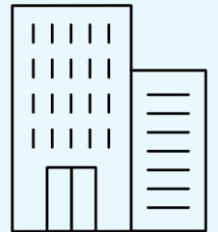
The original **capital-light bilateral design** has implications for unlocking new-build anchor volumes:

- As the contracts are bilateral, and the FDA is not a counterparty, the bankability requirements will sit directly with offtakers
- Simple 'packaging' of multiple offtakers through aggregation doesn't automatically confer bankability benefits (limited 'portfolio' effect)
- Overall 'bankable' portion of the clustered offtake may be limited to the portion siting with bankable counterparties

For many companies, long-term commitments would represent a significant **change in how fuel is purchased**

The accounting treatment of long-term offtake contracts may have an **impact on the balance sheet**

- The contracts may meet the definition of a derivative, requiring them to be listed on the balance sheet at fair-value
- Size of asset base relative to fuel costs will be a determining factor on the magnitude of the overall balance sheet impact
- Owner-operators will be in a stronger position than 'pure' operators due to the availability of fixed assets



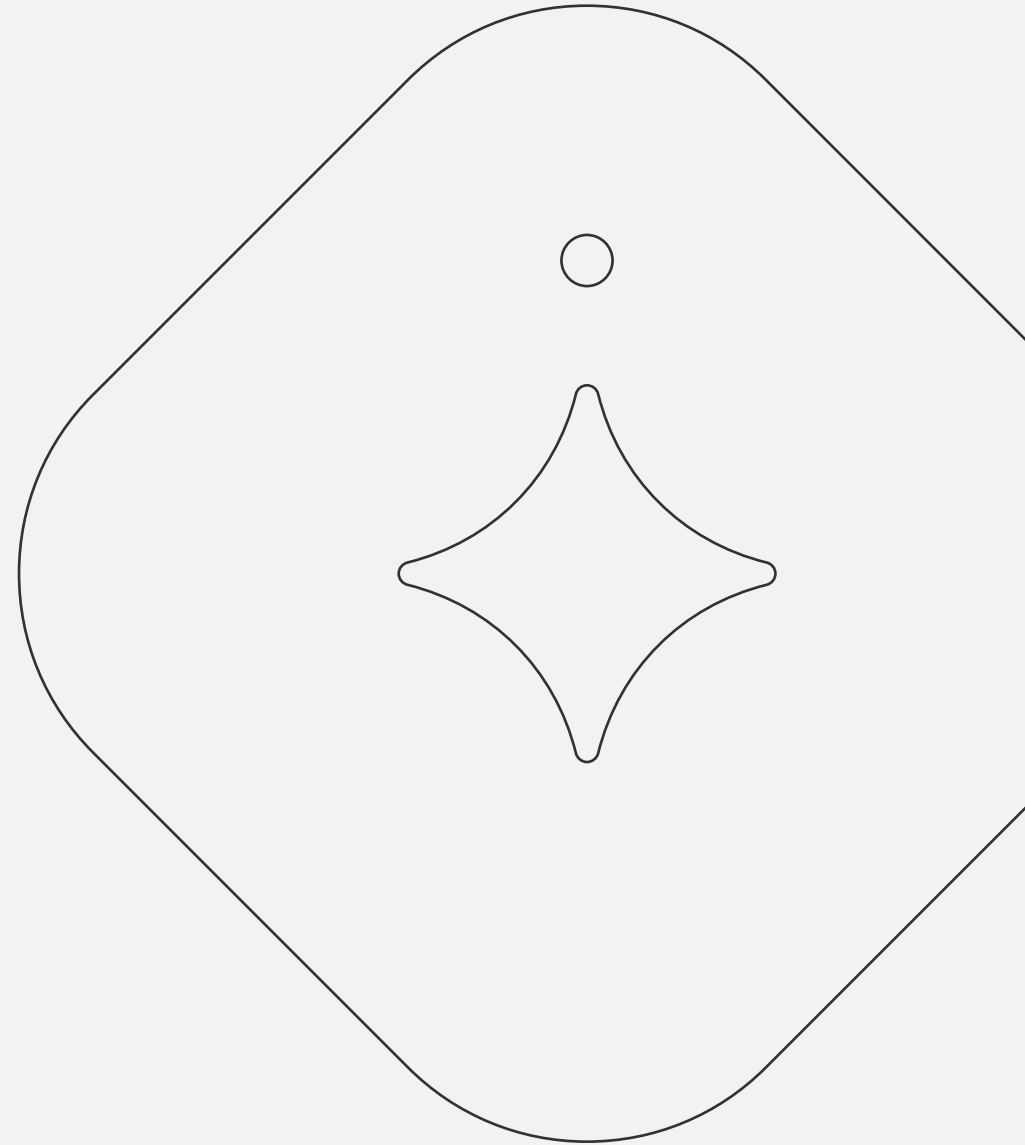
This may severely limit the number of participants that can be found for a cluster targeting long-term anchor contracts





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## 05 Enhancements to the **Aggregator Design**



# Addressing the limitations of the credit-light setup

Enabling maritime demand aggregation to facilitate the scaling of fuel supply

Capital-light aggregator with 'bilateral' clusters addresses many of the challenges around access to **existing volumes**

Facilitates achieving scale, matching of production and offtake, and providing clear demand signals to the industry

'Enhancements' to the design may be needed for shipping to underpin offtake for **new-build** projects

Without a balance sheet of its own, a capital-light aggregator contributes little to bankability of offtake

Where the offtakers are not sufficiently bankable, additional entities may need to be integrated

A range of entities could be brought in alongside the original FDA design to address bankability challenges:



**Balance sheet fix:** entities with significant assets on the books to underpin the offtake contracts

**Creditworthiness fix:** entities that enhance the credit rating of the offtake or providing credit underwriting

**Cross-sectoral participation:** partnering with entities from other sectors to boost bankability



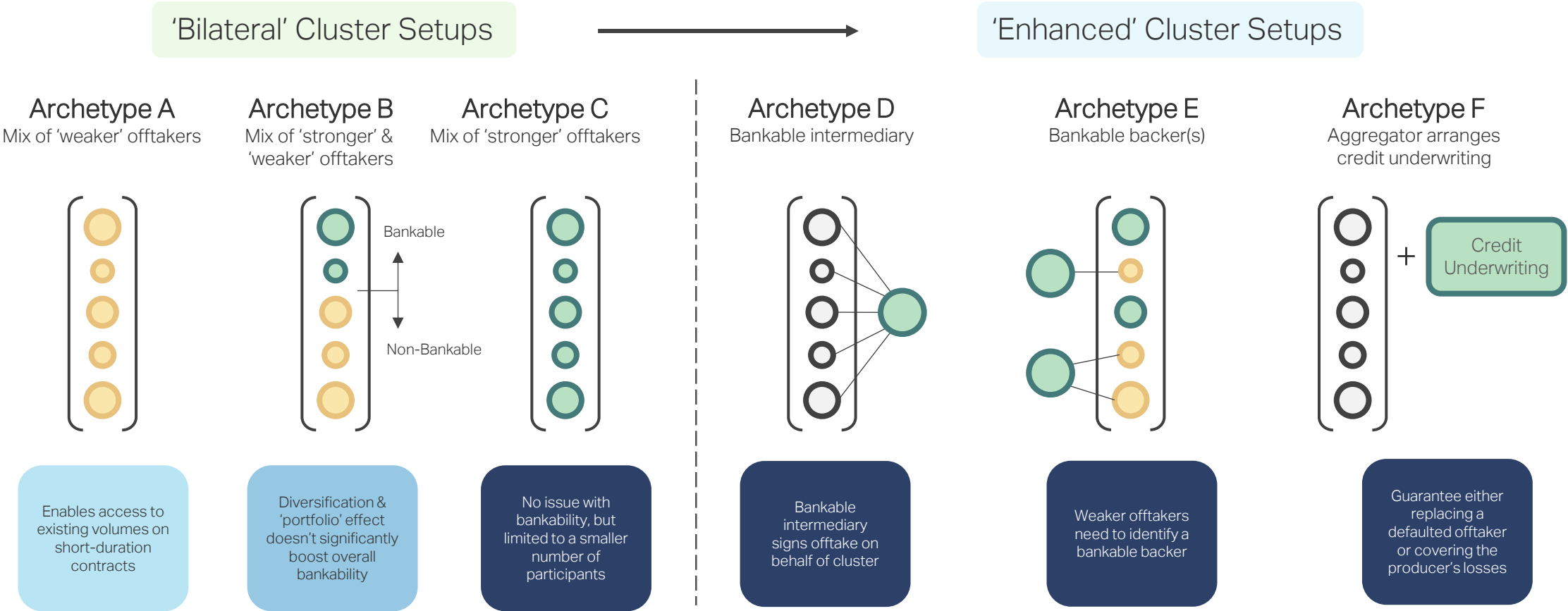
# Different 'archetypes' of cluster can be considered

Aggregator can be enhanced by the inclusion of additional entities

Stronger

Weaker

Enhancement of the credit-light 'bilateral' cluster setups likely to be required when targeting new-build production assets

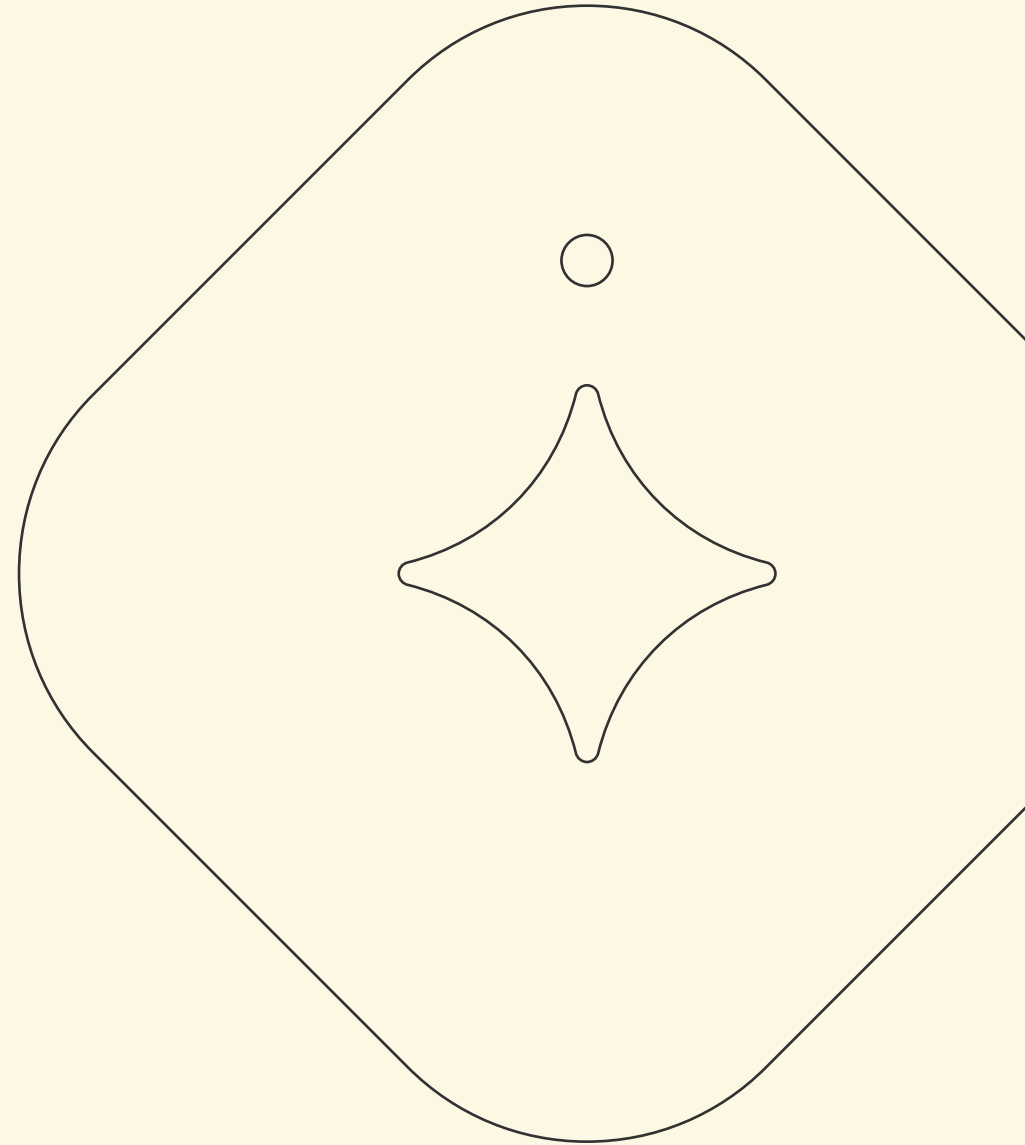






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## 06 Way forward & next steps



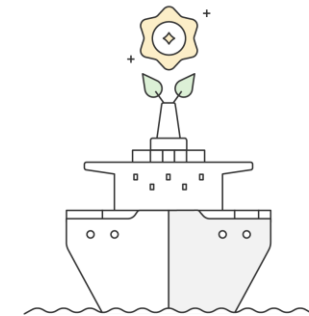
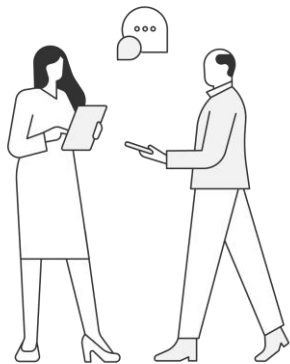
## Detailed overview of the operational setup has been produced

The Center has a 'manual' setting out how a fuel demand aggregator could operate

The MMMCZCS team has converted this design overview into a detailed operational plan for how the FDA could be operated:

- Operational stages, processes and approach to identifying, formalising and operating an aggregation cluster
- Roles & responsibilities of the various participants, and how the different activities are integrated

Intended for use as a written reference document for the practical implementation of fuel demand aggregation

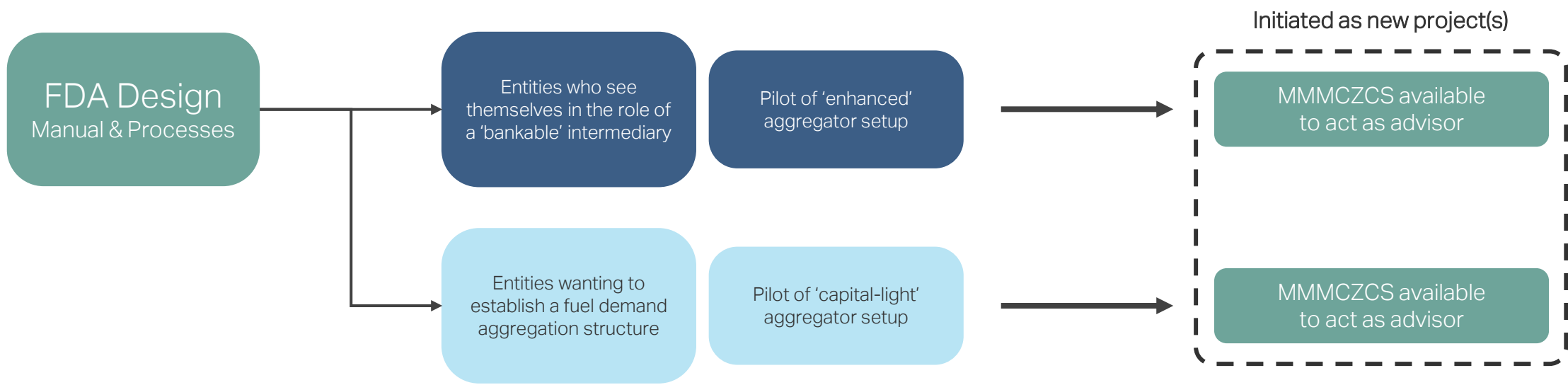


# The Center is ready to support the industry in implementing fuel demand aggregation

## Pathways forward for implementation of a fuel demand aggregator

The Center is actively seeking industry players who see themselves as taking on key roles within an aggregation setup

- Piloting of the aggregation concept, either in 'capital-light' or enhanced forms will be vital to demonstrating its utility
- The Center is ready and able to support these pilot projects through its role as an advisor



With increasing demand for low-carbon fuels in the wake of MEPC83, there is expected to be a key market role for aggregation entities



## Practical next steps

### How to engage with the Center on fuel demand aggregation

#### In practical terms, the Center is :

1. Seeking entities interested in taking on the role of anchor entity in an enhanced aggregator setup
2. Seeking entities interested in establishing their own aggregator setup

The Center would support these entities in conducting a **pilot phase project** to test fuel demand aggregation in practice and share the key learnings with the wider industry.

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# Conclusions & Summary

- 01 Fuel demand aggregation can provide **solutions to the challenges** maritime players are facing in securing access to low carbon fuels
- 02 The Center has identified a **viable capital-light design** which addresses competition law concerns, as well as many of the challenges identified by upstream, midstream and downstream players
- 03 Different **categories of offtake volume** exist – aggregation can be applied to all of them, but accessing new-build volumes (particularly anchor volumes) requires additional actors to be brought in to ‘enhance’ the original capital-light design
- 04 Aggregation alone **doesn’t solve willingness-to-pay**; this depends upon legislation or customer-pull. With the expected arrival of new regulation at a global level post-MEPC83 this may soon be in place – leading to a compelling case for aggregation.







Thank you