



FREIGHT INNOVATION FUND CHALLENGES YEAR 2

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INTRODUCTION & BACKGROUND

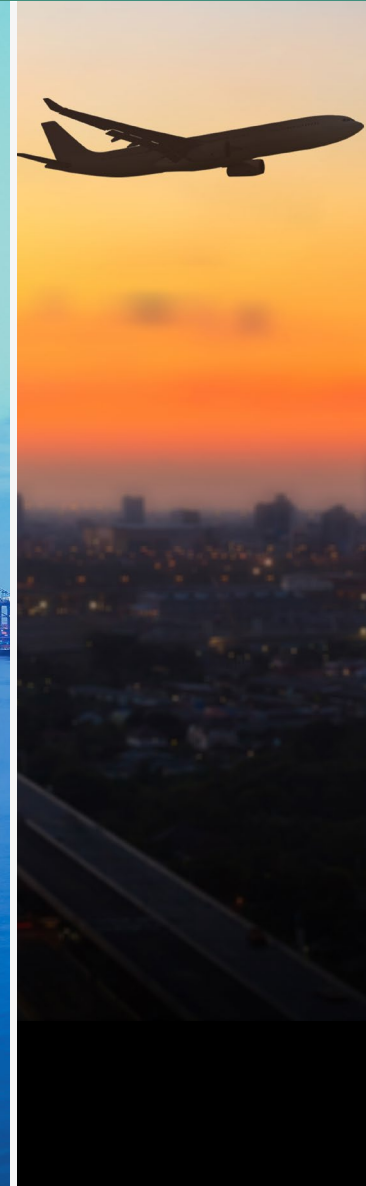
THE BACKGROUND

Project briefing

The £7m Freight Innovation Fund will develop a future pipeline of solutions to meet the freight sector's emerging needs. It will take a cross-modal view of the end-to-end freight journey, deploying solutions in real world environments.




Delivered by Connected Places Catapult, the UK's innovation accelerator for cities, transport and place leadership, the Freight Innovation Fund will identify and trial new products and services coming to market in the freight sector.

It will convene and support innovating organisations across the sector and ultimately support the whole market to grow to match the ambitions of both DfT and the whole UK economy.



THE STRATEGIC DIRECTION: PROJECT GUIDELINES

FIF Year 2 Briefing





-  **Inter-modality** must be at the core of all proposed challenges for year 2
-  **Hardware technology** is the focus and there must be innovation in this regard
-  **Scalable** offerings at TRL level 5+, potentially applicable across the nation

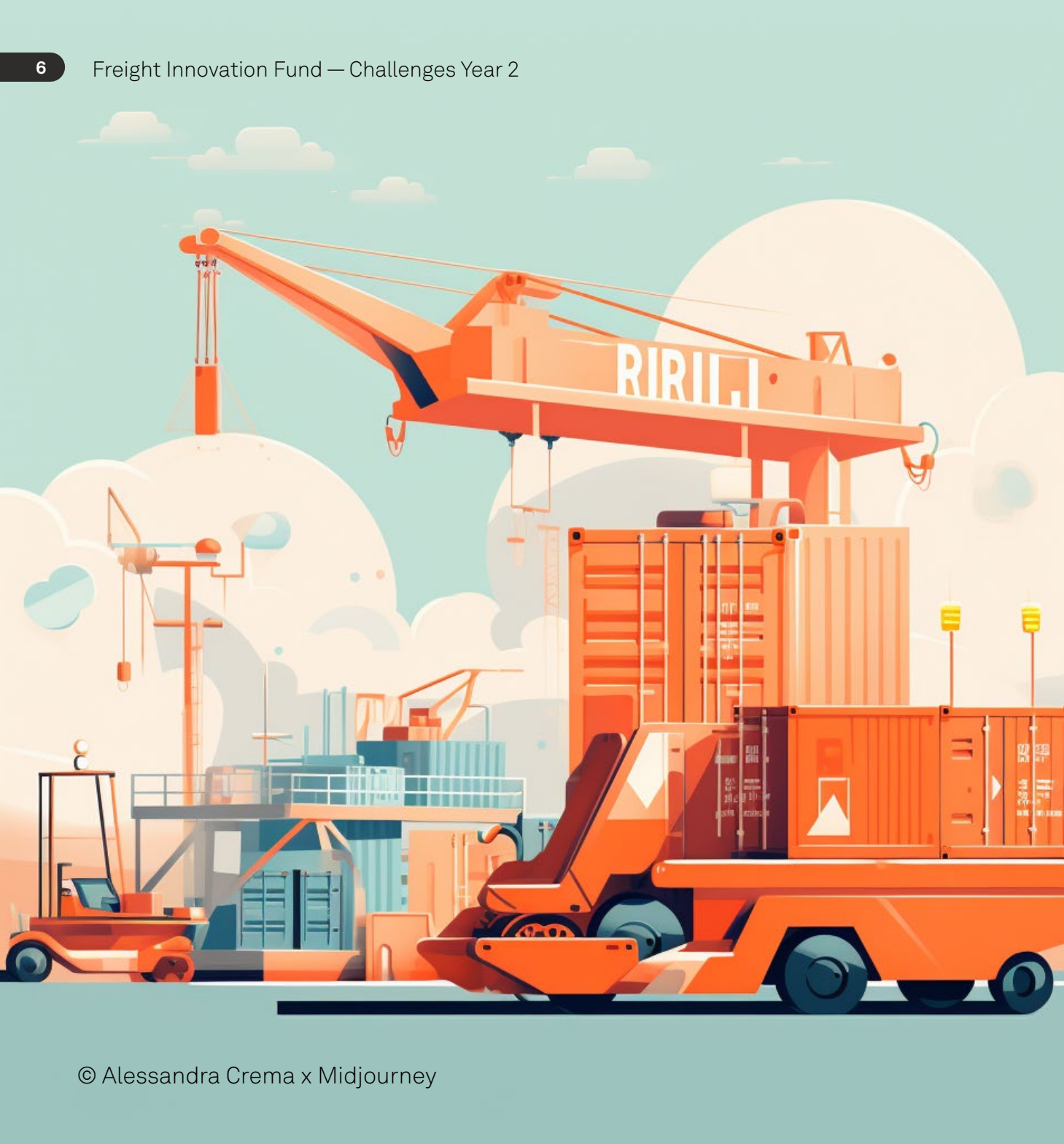
Future of Freight Plan

5 Vision Statements

-  **Cost efficient**
-  **Reliable**
-  **Resilient**
-  **Environmentally sustainable**
-  **Valued by society**

4 National Objectives

-  **Levelling up**
-  **Strengthening the Union**
-  **Supply chain resilience**
-  **Increasing our global impact**



YEAR 2 BRIEFING

Focusing on Hardware Technologies

In the second year of the Freight Innovation Fund, the focus of the open call is not only in finding scalable offerings supporting inter-modal challenges, but it is also required to implement innovative hardware technologies.

The hardware sector, although challenging, is essential to support software technologies and to successfully deliver innovation in the freight industry.

The Fund is looking for SMEs in the hardware space with physical and tangible assets. It is also fundamental for them to have a clear understanding of enabling technologies and complimentary technologies that are necessary to deliver their projects successfully, as well as what assets they are feeding into and supporting with their innovations.



RESEARCH & METHODOLOGY

OUR APPROACH: RESEARCH & ENGAGEMENT

The four challenges in Year 2 were identified through various design research methods.

We kicked off this year's challenge scoping phase with an analysis of the feedback on the Year 1 challenges as well as our previous research and methodology.

Through desk research and various internal and external experts interviews with our stakeholders, we were able to identify key areas of opportunity.

The Industry Workshop with members of the Cluster was essential to validate those areas as well as gathering a better understanding of their environmental, social and economical impact.

Through a series of co-design sessions with our partners, we then framed the final four challenges of Year 2.

Steps & Activities

- 01.**  **Year 1** research and methodology review as well as analysis of findings, learnings and insights.
- 02.**  **Desk research** to find relevant data and statistics to support findings and challenge areas.
- 03.**  **Internal interviews** with our Ecosystem Directors and freight experts who led on other relevant projects.
- 04.**  **External interviews** with industry experts and stakeholders from maritime, air, road and rail freight and the logistics sector.
- 05.**  **Industry Workshop with 16 members of the Cluster** to validate and share challenge areas, and to understand their environmental, social as well as economical impact.
- 06.**  **Co-Design Sessions** with our potential partners to make sure the challenges also suit their needs and goals.

CHALLENGES FOR YEAR 2

- 1: Frequent Use Heavy Machinery
- 2: Containment Solutions & Related Light Technologies
- 3: Temporary Inter-modal Interchanges & Depots
4. Micromobility & E-Mobility

FREQUENT USE HEAVY MACHINERY

1 “Improvements and adaptations to plant, vehicles, and large equipment that is currently used for loading, unloading and movement around a depot or interchange”



1 FREQUENT USE HEAVY MACHINERY

Description:

Heavy machinery directly impacts efficiency, the environment, and health and safety. Therefore, innovations and new adaptations are welcome in many areas.

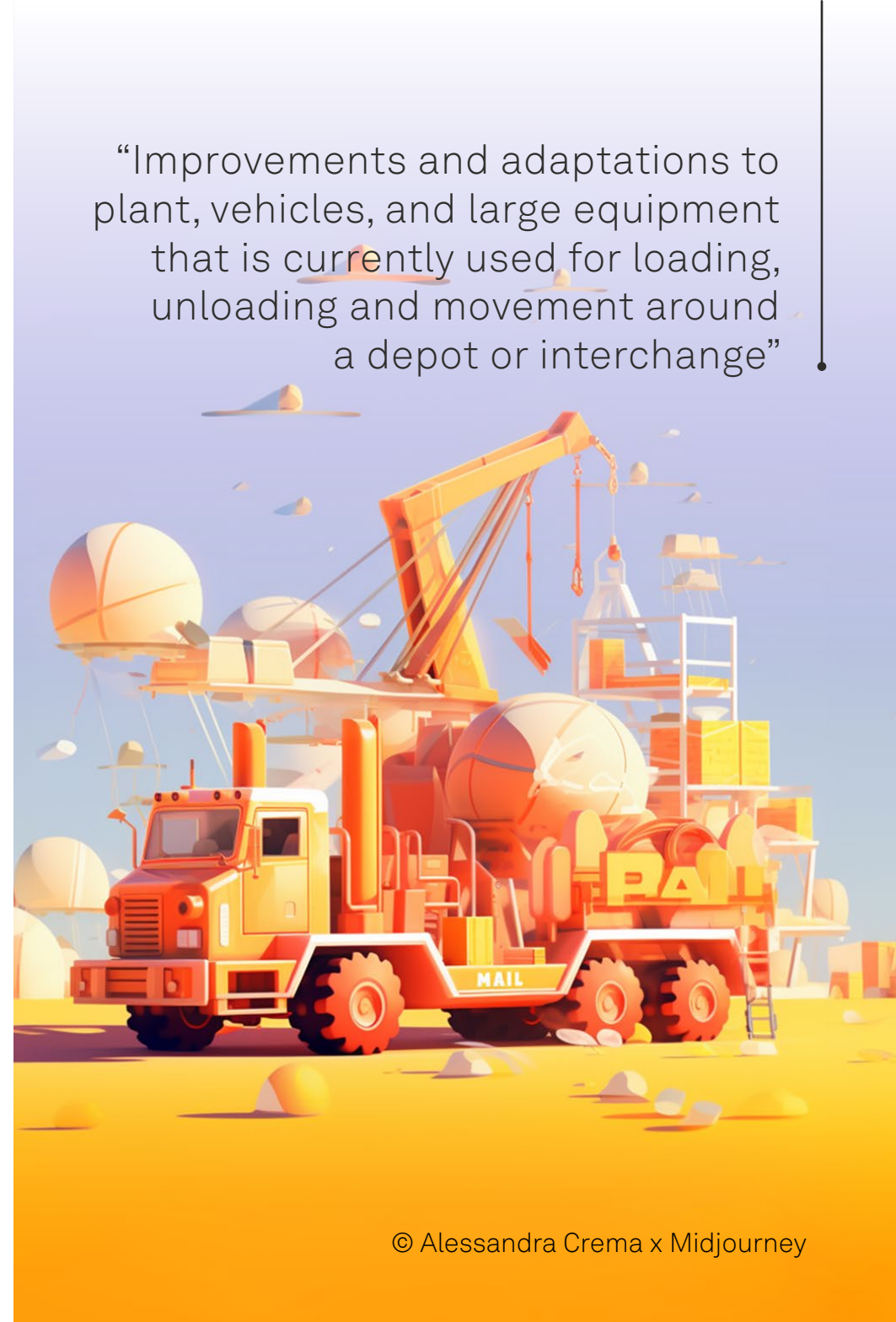
Minimising fuel consumption and emissions. Time and cost efficiency for all movements within modal interchanges and depot spaces. Or increased accuracy via automation and computer-assistance.

Priority will be given to innovations that affect the most commonly used machinery, or machinery that is essential in enabling a particular freight transport mode.

Examples:

- Large reductions in machinery fuel consumption, or technologies that support immediate adoption of alternative power sources
- Flexible MHE (Material Handling Equipment)/plant that can be used with multiple types of difficult to handle goods – especially construction freight
- Improvements to depot movement and rail freight loading vehicles speed and efficiency
- Improvements to cranes, straddle carriers, and reach-stackers speed, accuracy and consistency of output
- Reduction or elimination of accidents and damages through new technologies or automation

“Improvements and adaptations to plant, vehicles, and large equipment that is currently used for loading, unloading and movement around a depot or interchange”



2

CONTAINMENT SOLUTIONS & RELATED LIGHT TECHNOLOGIES

“New and improved types of containment solutions, container adaptations, and associated equipment to optimise loads and brokerage, as well as improve site management.”

2 CONTAINMENT SOLUTIONS & RELATED LIGHT TECHNOLOGIES

Description:

Improvements to containers, tote boxes, roll cages, boxes, pallets, trailers, and other similar forms or systems in which freight consignments are grouped and processed.

Ability to be used effectively for a variety of freight types, and across modes and interchanges. Improved loading and unloading. Optimising capacity utilisation and brokerage.

Supporting technologies are also encouraged. Such as better depot handling and tracking systems. Or reductions in cost, risk of fire, damage, waste, and accidents.

Examples:

- Containment solutions that significantly improve loading and unloading times
- Equipment that supports optimal use of loading capacity, and/or more efficient brokerage of capacity
- Containers with quicker, safer access points for use on rail and other modes
- Containers or adaptations especially suited for construction freight
- Containers which are suitable for road and rail that improve capacity of other solutions such as pallets and tote boxes
- Containment ID recording and tracking solutions, especially systems/arrays that are extremely accurate and reliable within outdoor depot spaces
- Spatial monitoring and movement or storage optimisation hardware
- Safety and monitoring systems that prevent fire, hazards, and damage

“Sustainable and responsive solutions to lack of inter-modal interchanges, demand for short-term interchanges, and need to extend existing depots”



3

TEMPORARY INTER-MODAL INTERCHANGES & DEPOTS

“Sustainable and responsive solutions to lack of inter-modal interchanges, demand for short-term interchanges, and need to extend existing depots”

3 TEMPORARY INTER-MODAL INTERCHANGES & DEPOTS

Description:

Innovations that can support the creation of temporary and/or moveable interchange depots, while making meeting relevant planning regulations easier.

Equipment or adaptations that can bridge the gap between permanent depots, and current ineffective short-term solutions like use of generic heavy plant. Innovations must be cost-benefit effective for shorter duration sites through: efficiency gains, the ability to spread the cost via repeat usage at subsequent sites, or the ability to unlock previously unfeasible locations.

Alternatively, via rapid movement between and deployment at sites — in order to create new ways of meeting short notice, on demand needs via pop-up depots.

Examples:

- Improved short-term temporary depot innovations for small and large projects, including loading/unloading technologies that are less capital intensive than permanent facilities, but more efficient and effective than current short-term yellow machinery approaches
- Innovations that can support big peaks and troughs in depot demand
- Responding to vehicles in waiting by creating on-demand depots or flexible expansions to depots
- Expanding capacity via increased depot possibilities on existing routes, including road-rail interchanges on spurs and sidings
- Adaptations that support noiseless terminal operations, or significant reductions in dust

“Sustainable and responsive solutions to lack of inter-modal interchanges, demand for short-term interchanges, and need to extend existing depots”



4

MICROMOBILITY AND E-MOBILITY

“Unlocking the potential of new and/or existing micromobility and e-mobility modes or interchanges”



4 MICROMOBILITY & E-MOBILITY

Description:

We are on the brink of significant advances to electric batteries, electric powertrains, and electric engines.

These will unlock the ability to carry greater loads, travel further and up steeper gradients, on fewer charges, with more reliability.

This creates a great opportunity to adapt or improve existing e-mobility and micro-mobility vehicles. As well as design new ways of transporting freight that can significantly lower carbon emissions, traffic on roads and in cities, and optimise last mile logistics.

As well as open the possibility of new inter-modal connections which require less capital investment.

Examples:

- New vehicle types that can rely on existing infrastructure
- Expanding freight carrying abilities to existing e-mobility and micro-mobility vehicles
- Improvements to existing freight carrying e-mobility and micro-mobility vehicles
- New light-touch interchanges that unlock the potential of micro-mobility to connect to existing major modes without extensive machinery
- New freight vehicles or adaptations that are suitable for urban and rural areas
- Better food and drink courier vehicles, and new, sustainable, and electric modes

“Unlocking the potential of new and/or existing micromobility and e-mobility modes or interchanges”



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