USE-CASES – SPACE FOR INTERMODAL TRANSPORT

Prepared by	ESA
Reference	ESA-CICA-SOW-2025-2838
Issue/Revision	1.0
Date of Issue	04/03/2025
Status	Final

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1. INTRODUCTION

This document outlines the use cases to be incorporated into the “Space for Intermodal Transport” thematic call for proposals.
The use cases presented have been developed through collaboration between the European Space Agency (ESA) and key stakeholders in the transport and logistics sector, including members of the “Smart Cities Task Force”.
The initiative aims to foster the development of sustainable services that leverage space assets and technology to address critical challenges and unlock opportunities for operational solutions.
When preparing the initial proposal (APQ/Outline proposal), applicants must clearly specify which use-case(s) their proposed solution intends to address.

2. USE CASES

The European Space Agency (ESA) and key stakeholders have identified several focus areas and use cases where space-enabled solutions can provide significant benefits. Potential bidders responding to this thematic call for proposals are encouraged to submit proposals that address the outlined use cases or propose alternative concepts based on their own research and expertise.

2.1 IVECO

Iveco Group N.V. is a prominent global leader in the automotive industry, specialising in Commercial & Specialty Vehicles, Powertrain, and related Financial Services. The Company's statutory seat is located in Amsterdam, the Netherlands, with its headquarters in Turin, Italy. Iveco Group has established four key priorities to promote sustainability. The first priority is achieving net zero carbon emissions by 2040. To this end, Iveco is actively working to reduce CO2 emissions throughout the manufacturing processes across the entire value chain and in the use of its products.

Another critical priority is enhancing safety to minimise the risk of workplace injuries and making roads safer for everyone. This strategy involves a meticulous consideration of all elements, including materials, technologies, and the potential for reuse, from the design stage to extend product lifecycles as much as possible.

Additionally, Iveco is committed to fostering an inclusive and engaging work environment and strengthening relationships with various partners. In line with this commitment, Iveco is collaborating with ESA in the transport and mobility sector.

2.1.1 Use-case#1: Public transport management

- **Demand Responsive Transport:** space data and AI can be used to communicate with vehicles operating in rural areas to respond to customers transport needs.
- **Traffic Congestion Management**: Applying space data and AI to manage traffic congestion, ensuring smooth traffic flow and preventing bottlenecks.

2.1.2 Use-case#2: Navigation Solutions

- **Route Optimisation:** space data and AI can be used to provide navigation solutions to vehicles to assess the flow of traffic through speed monitoring of the vehicles.
- **Guidance to point-of-interest**: Applying space data and AI to provide to passengers and user group position fix of locations of interest.

2.2 West of England

The West of England Combined Authority was set up in 2017 to make decisions and investments that benefit people living and working in Bath and North East Somerset, Bristol and South Gloucestershire. The aim of the Authority is to deliver economic growth for the region boosting a strong green economy by creating a better-connected region. To achieve this goal, the aim is to join up the public transport network to meet the growing needs of the region by linking up bus, rail, walking, and cycling to enable seamless trips and easy interchange between different travel options. The region needs a modern transport system to help people get around, access jobs, and reduce reliance on cars. Working with Government and other

partners, the Authority aims to deliver transport options that meet the needs of different communities across our diverse region, including through electrification and expansion of the growing local rail network, and systems like WESTlink that respond to the needs of rural communities. In addition, the aim is to deliver integrated ticketing and improved digital information to make it easier for residents to travel across the network on a single ticket.
They will also consider measures to reduce car use where alternative transport options are available, increasing the availability of Electric Vehicle (EV) charging. Where car use is necessary, the aim to minimise its environmental impact.

In summary, the Authority is committed to embrace new technology to provide people with diverse travel options, continuing testing new travel solutions to ensure that people across the region have options that meet their needs, understanding that these needs differ in urban and rural areas and working with communities to explore the technologies that are most suitable for each.

2.2.1 Use-case#1: Reliable live multi-modal journey planning enabling dynamic timetabling

- **Dynamic Timetabling:** Intermodal journey planners, particularly those outside of capital cities where investment is concentrated, often lack live data, rendering them unreliable due to their inability to accurately account for delayed services. This issue is further exacerbated by non-turn-up-and-go services, where missing a connection can lead to significantly extended intermodal journeys. An improvement over accurate live planning would be dynamic timetabling—for instance, a bus waiting a few minutes to connect with a delayed train—thereby ensuring smoother intermodal travel.

2.2.2 Use-case#2: Intermodal freight journey facilitation

- **Leveraging Public Transport for Sustainable Freight Solutions:** Optimising the use of spare capacity on public transport for freight ('parcels as passengers'), either at scale or for individual deliveries.
- **Zero-Emissions Last-Mile Delivery:** Ensuring zero-emissions last-mile delivery after the parcels are transported using public transport.

2.2.3 Use-case#3: Combining private and public transport

- **Integrating Private and Public Transport:** Leading journey planners (e.g., Citymapper, Google Maps) often fail to automatically suggest intermodal combinations of private (e.g., driving and cycling) and public transport. Consequently, driving is frequently shown as the fastest option, even when a mix of driving/cycling and train/bus could be quicker overall. This discourages the use of intermodal journeys

2.2.4 Use-case#4: Unifying journey payment

- **Unified Payment Solutions for Seamless Intermodal Travel:** Payment methods vary between operators and modes, which can create additional friction and sometimes result in higher costs compared to car ownership. Passengers often pay per mode rather than per journey, meaning using a train and then a bus can be more expensive than using just one mode. Exploration could explore the possibility of a payment service or option that covers multiple transport modes.