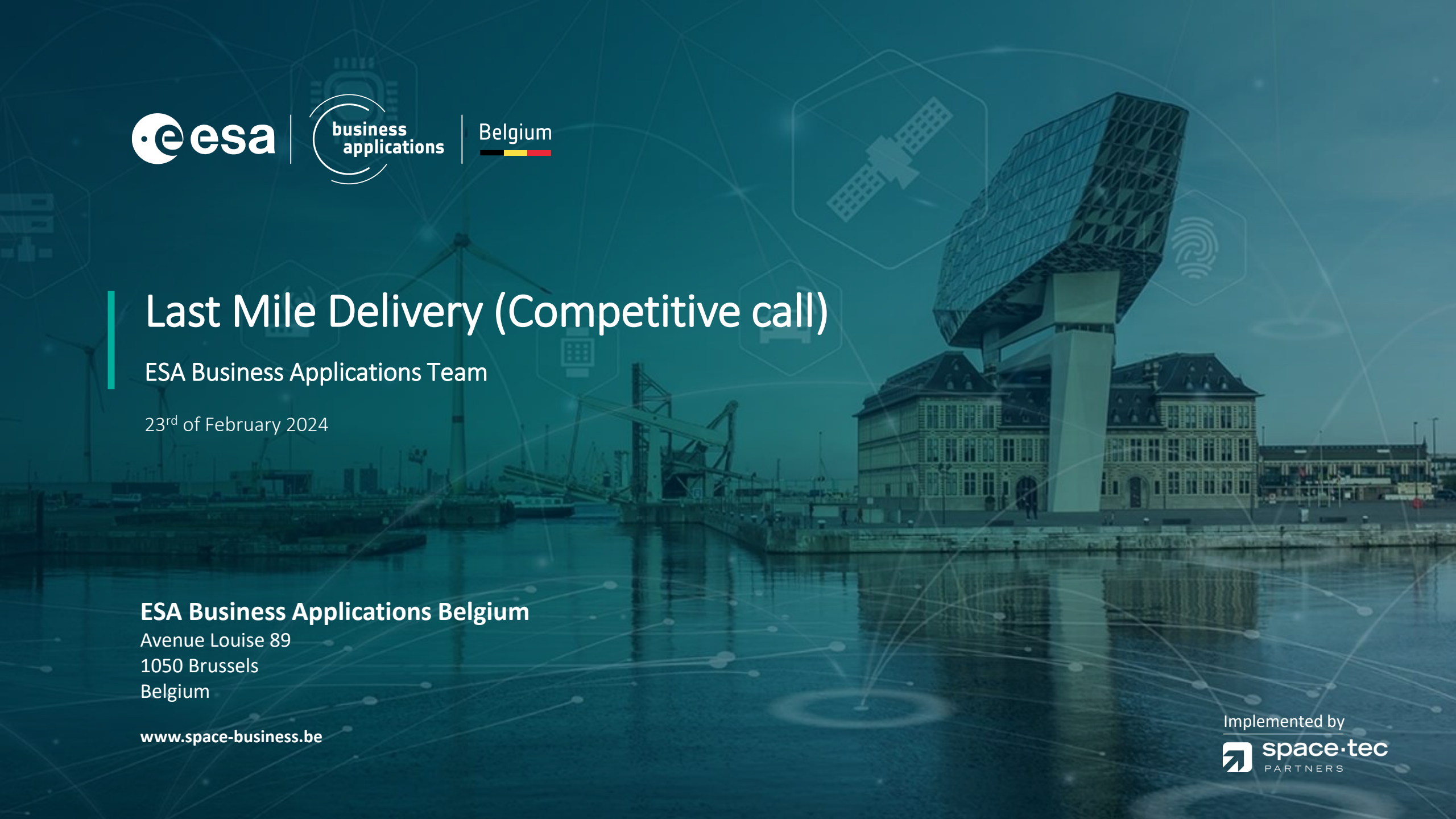

Last Mile Delivery (Competitive call)

ESA Business Applications Team

23rd of February 2024

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Avenue Louise 89
1050 Brussels
Belgium

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Implemented by
space·tec PARTNERS

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The Last Mile Delivery Kick-start Activity

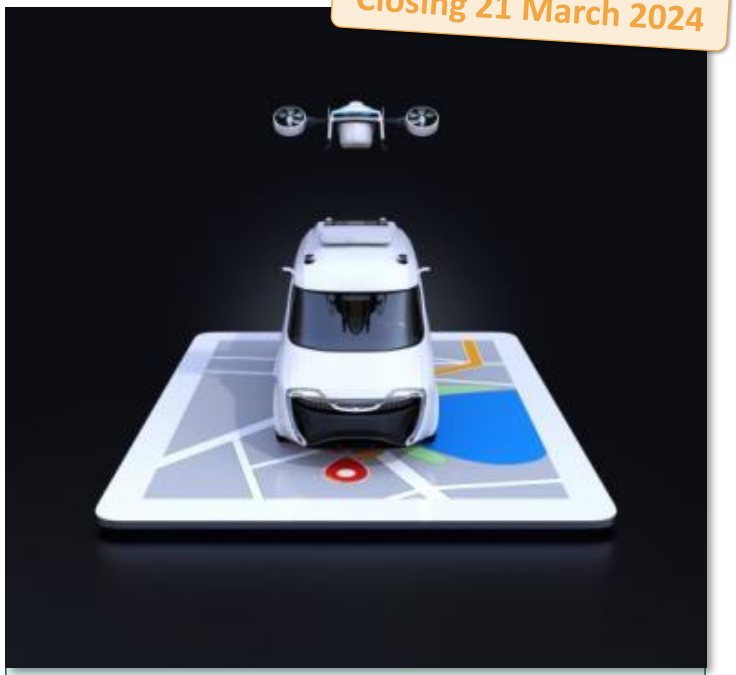
What is the call about?

- Develop services related to last mile delivery applications using space-enable data
- Feasibility study on technical feasibility of the service idea and its system architecture
- Understand the economic viability of the service and the development of its business plan

Who is it for?

The call is for **SMEs in Belgium** and ESA Member states participating in the programme with great ideas for last mile delivery services using space-enabled data

Closing 21 March 2024



Find more information about the call on the
ESA website – Last Mile Delivery

Last mile delivery is a crucial phase of the shipping process with several aspects to consider

Costs

- Last-mile delivery accounts for **over half of the total costs of shipping**
- Mistakes in last-mile delivery can have **significant economic consequences**

Technology

- **New technologies can give consumers greater visibility and control**
- Market push to increase transparency

Volume

- **Increasing volume of orders hinders delivery times and flexibility,** increasing costs
- Last-mile delivery needs to be **scaled to support the demand**

Efficiency

- Last-mile delivery systems must be efficient, or they **become a bottleneck**
- The most efficient delivery systems will be the most attractive to consumers

Given the ever-growing reliance on delivery services, the handling of last-mile delivery can solidify or undermine the viability of a system

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The space industry benefits the entire last-mile delivery value chain

Improve logistics facilities

- Use satellite technology to **monitor and manage inventory levels**
- **Monitor waste and emissions** from the facilities, relevant for European climate initiatives
- **Connect facilities with delivery vehicles** via SatCom

Enhance delivery methods

- Use GNSS and IoT technologies to **develop a fleet of self-driving vehicles**
- **Provide connectivity to drivers in remote areas** via SatCom
- Incorporate **satellite-guided drone delivery** into established delivery systems

Optimise delivery routes

- Use satellite data to **monitor congestion** to d**etermine fuel- and time-efficient** delivery routes
- Incorporate **environmental impact assessment and** minimise the carbon footprint of delivery
- **Increase safety of drone** take-off and landing phases

Space technology can streamline operations in and around delivery facilities

- **Monitor weather patterns** and the state of nearby infrastructure (e.g., roads, construction sites) that could affect operations
- **Evaluate environmental factors** (e.g., air quality, pollution, vegetation health) around the facilities to determine the climate impact of operations

- **Set up geofences** using GNSS data, triggering alerts when vehicles / shipments enter or leave the facility or specific areas
- **Use GNSS-tracked autonomous robots** to automate and improve logistical processes
- **Track assets** throughout the logistics process, inside and outside of the facility, or across multiple ones

- **Leverage satellite communications** to communicate with drivers and other facilities anywhere around the world, including in rural areas or during emergencies
- **Transfer data** instantly between remote logistics facilities, to assess varying inventory levels and adapt delivery routes and times accordingly

Examples

Example of geofenced facility

Climate | Geolocation | Communications

Image credits: Nagarro.com

The development of novel delivery methods is facilitated by space technology and data

- **Assess weather conditions and terrain** to ensure the safety of the delivery vehicles and their drivers (if not autonomous)
- **Verify the delivery address** in rural areas

- **Ensure precise navigation** using GNSS data and combine with IoT to develop fleets of self-driving vehicles
- **Provide real-time updates** to the clients regarding the status of their order
- Use GNSS-tracked autonomous drones to facilitate delivery process

- **Leverage satellite communications** for reliable and uninterrupted communications between delivery vehicles, dispatch centres, and customers
- **Facilitating rerouting and rescheduling** by providing customers with regular, accurate updates

Examples

Example of self-driving fleet

- Partnership between Nuro and Uber
- Self-driving vehicles to deliver goods and meals to customers

Climate | Geolocation | Communications

Image credits: Uber / Nuro

Satellite data is key to obtain optimal delivery routes

- **Assess the terrain** (e.g., elevation, road conditions) with Earth Observation satellites to optimise fuel efficiency, carbon footprint reduction, and vehicle performance
- **Determine practicability of chosen routes** (e.g., in rural / less developed countries)
- **Use remote sensing** to determine optimal take-off and landing zones for delivery drones

- **Ensure precise navigation** using GNSS and IoT data to develop fleets of self-driving vehicles
- **Dynamically adjust** delivery routes based on real-time traffic updates
- **Set up dynamic geofencing** to avoid deviating from predefined paths and minimise detours

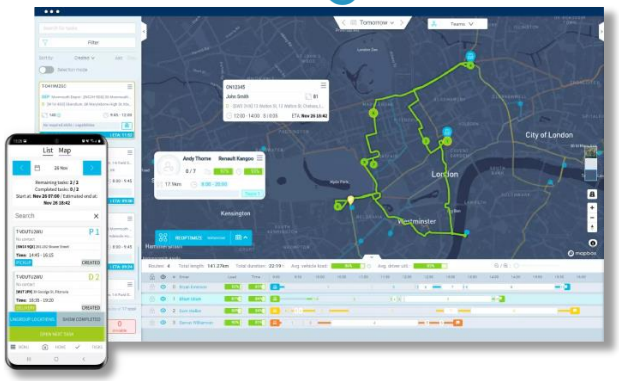
- **Update delivery drivers** on changing road conditions to make informed rerouting decisions
- **Obtain real-time sensitive status updates via IoT** for packages that require continuous monitoring (e.g., container temperature for vaccine transportation)
- **Communicate with customers** to provide them with real-time information on rerouting and number of stops before theirs, improving transparency and satisfaction

Examples

Example of route optimisation

- Elogii uses real-time traffic data for automated route optimisation
- Can also set up geofencing to assign specific rules to ad-hoc zones

elogii™



Climate | Geolocation | Communications

Image credits: Elogii

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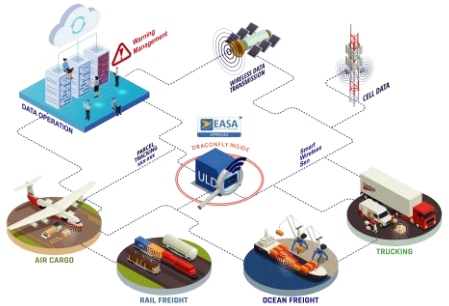
The successes of space applications in the transport & logistics sector

samplify

Samplify aims to streamline and facilitate the express and sustainable transportation of goods using drones

DRAGONFLY

DragonFly is a stand-alone certified solution for goods monitoring, tracking and geolocation by air, sea and land.



Dockflow

Collie AI is a smart algorithm applying machine learning, to look for the most efficient way to transport goods

Climate | Geolocation | Communications | Space exploration

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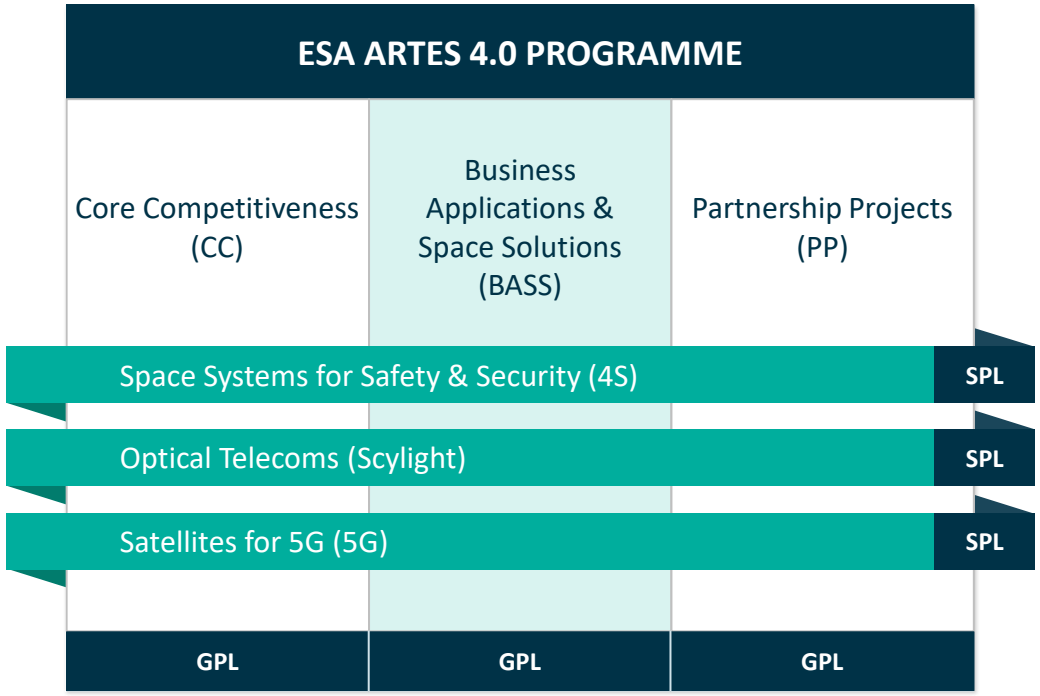
The ESA Business Application Programme, where innovation meets opportunity



Business Applications' Objectives

- **Promotion of space applications**, esp. towards users unaware of the benefits that space can bring
- Development of **new operational services** for these users
- **Utilisation of existing space assets** (such as Satellite Communications, Earth Observation, Satellite Navigation, and Human Spaceflight technologies)
- **Cross-fertilisation across disciplines**, together with the development of a consistent approach across ESA BASS initiatives, to maximise their efficient and cost-effective implementation.

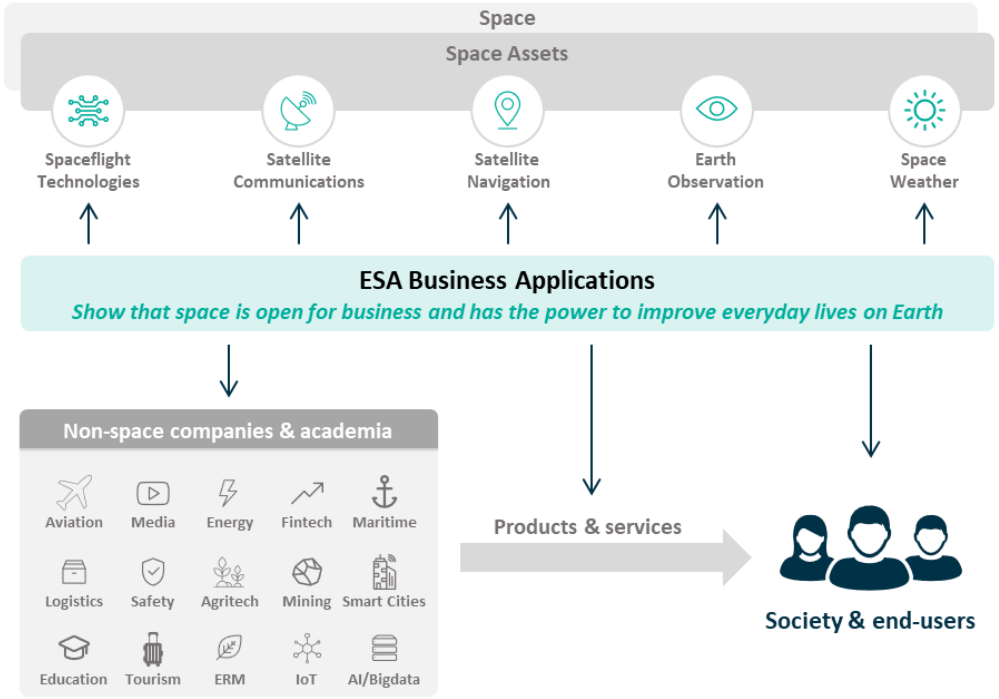
The European Space Agency has established a funding mechanism for space-based applications, focused on non-space sectors

Business Applications Programme

Unlock the potential of the powerful insights from space-related data and assets to benefit everyday life and society

Companies and Institutions

The development of products and services is where companies play an essential and creative role. The Business Applications programme just gives a little push for the last mile



*Belgium **co-funds** promising feasibility studies or demonstrator projects **up to € 1Mn***

The ESA BA programme supports 2 types of calls in either kick-start-, feasibility study-, or demonstrator project stages

1 Competitive

Competitive calls are focused on **thematic problems/opportunities** identified by ESA. These calls are **not permanently open**. Instead, all proposals are received during a given period and are all assessed at the same time against one another

2 Open / Direct negotiations

Open calls are **open all year long** and generally do **not have a specific thematic**. Companies can propose services/ applications in any sector. Proposals are assessed on their own merit on a case-by-case basis

Last Mile Delivery

Kick-start

Focused on start-ups and SMEs, Kick-start calls have as objective to facilitate and accelerate the application process for a feasibility study

6 months

€ **75%** of activity cost
(max ESA funding of € 60k)*

Feasibility Study

Feasibility studies provide the preparatory framework to identify, analyse and define new potentially sustainable applications and services

6 – 9 months

€ **50-75%** of activity cost
(max ESA funding of € 375k)*

Demonstrator Project

A demonstration project is expected to have a pilot activity, where the service/product is trialed with the customer in a pre-operational environment

12 – 24 months

€ **50-75%** of activity cost
(max ESA funding of € 750k)*

** Funding provided by ESA*

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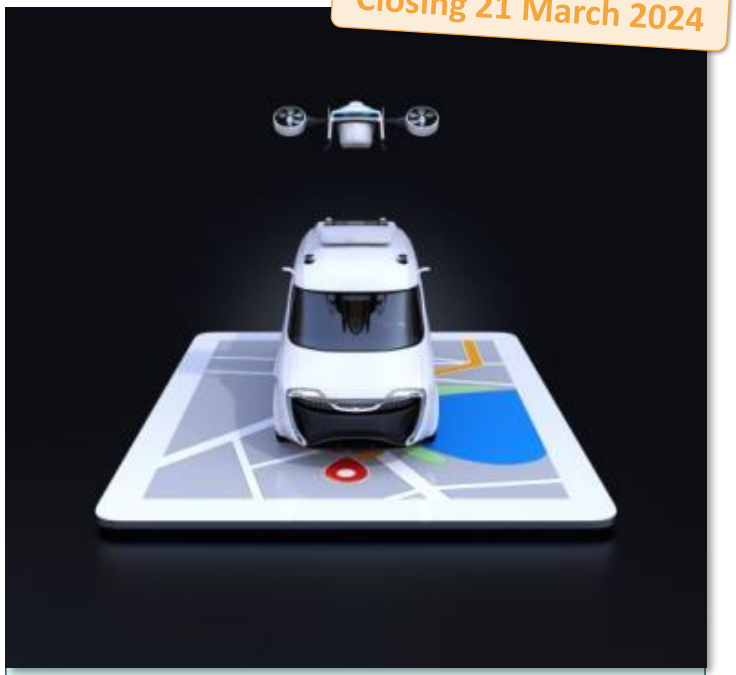


Find more information about the call on the
ESA website – Last Mile Delivery

What is the application process for the Last Mile Delivery call in general?

The Kick-start call for tender is specifically centered around a thematic proposed by ESA and has a deadline for the Full Proposal submission on the 21st of March 2024

1 Idea related to tender thematic

An idea for a demonstration project or feasibility study that is closely related to the thematic a published competitive call

2 Letter of Support

The Letter of Support (LoS) from the national delegate shows ESA that the delegate has seen and approved of the proposed project

3 Full Proposal

Document containing a detailed explanation of the proposed project containing project budget, partnerships, scope of work, planning, CVs, WBS[1], WPDs[2], and PSS forms

Review *6-9 weeks*

4 Implementation phase

Signature of contract with ESA for the co-funding agreement and collaboration

i Submission procedures for each step in the process can be requested

i **Note 1:** Additional steps may be required in the specific call for tenders (e.g., presentation video)

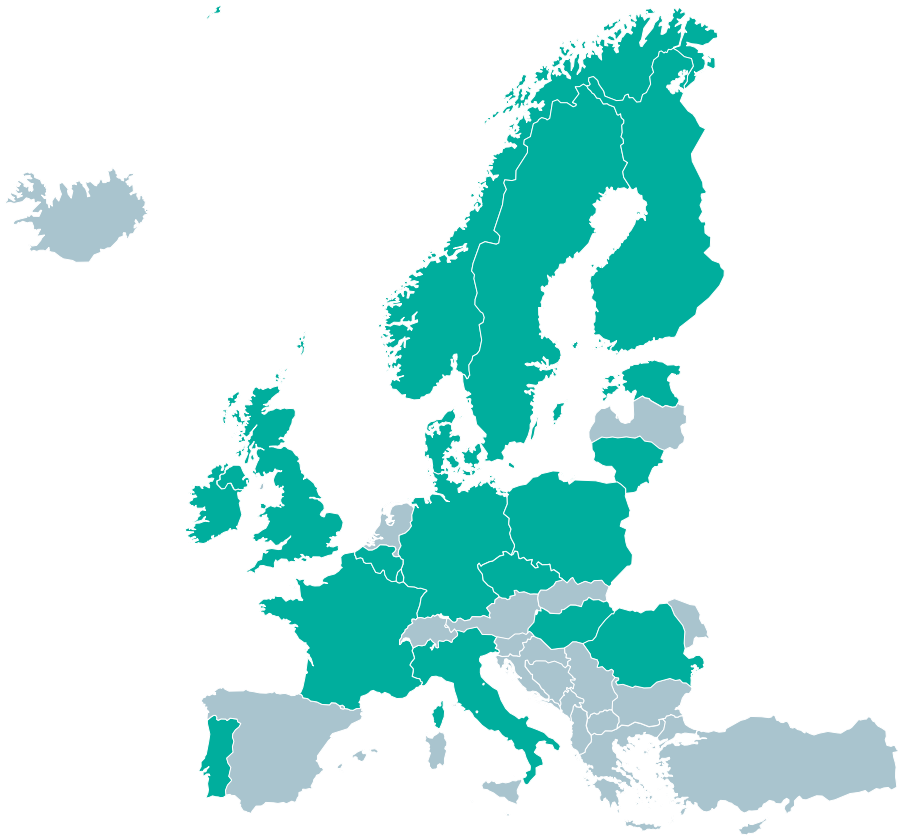
i **Note 2:** Review times are indicative. ESA will put everything in place to adhere to these review times.

1: WBS = Work Breakdown Structure; 2: WPD = Work Package Description

Companies in eligible Member States of the ESA BASS Programme can participate

Eligible Member States for the ESA BASS

- **Belgium**
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Hungary
- Ireland
- Italy
- Lithuania
- Luxembourg
- Norway
- Poland
- Portugal
- Romania
- Sweden
- United Kingdom



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Apply now & Reach out!

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Thank you

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