



SPACE FOR THE SPORTS CAR SECTOR – EFFICIENCY, SAFETY AND SUSTAINABILITY

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1. INTRODUCTION

This document lists the use cases to be used as part of the ‘SPACE FOR THE SPORTS CAR SECTOR – EFFICIENCY, SAFETY AND SUSTAINABILITY’ thematic call for proposals.

The use cases presented result from the cooperation between the European Space Agency (ESA) and Ferrari. It aims at developing sustainable services leveraging space assets and digital technologies in consort to address key challenges and opportunities.

When writing the initial proposal (APQ/APQ+/Outline proposal), the applicant shall make clear which use case(s) their solution will address, if chosen from those listed here.

2. ANNEX A: USE CASES

2.1. Ferrari

Ferrari carries out the planning, design, realisation and production of motor vehicles, and in particular, luxury and racing vehicles, and in addition, participates in sporting competitions and all related initiatives.

ESA and Ferrari are collaborating on the development and implementation of space technologies & services to advance sustainable innovation in the mobility sector. The aim is to investigate and support various solutions which utilise space technologies to drive innovation, enhance performance and promote sustainability.

2.1.1. *Route Optimisation*

Route optimization is essential for enhancing the driving experience by ensuring efficient and safe journeys. It plays a crucial role in maximizing convenience for drivers, whether it's locating charging stations for electric vehicles, navigating through adverse weather conditions, or selecting smoother routes to maintain vehicle comfort. By leveraging space technologies and data-driven insights, route optimization not only improves safety but contributes to the overall driving satisfaction and vehicle longevity.

1. **Charging points:** With Ferrari introducing electric models into its line-up, there is a need for a service that provides customers with real-time information on the nearest charging stations. This service should include expected waiting times, energy availability, and optimal route suggestions to streamline the charging process.
2. **Weather:** Driving in adverse weather conditions poses a risk to drivers. There's a need for innovative solutions which can suggest alternative driving routes by incorporating real-time weather forecasts. This technology should alert drivers of impending adverse weather conditions such as hail, snow, or rain, enabling the driver to make proactive adjustments to the vehicle's settings for enhanced safety and performance. The solution should also propose alternative routes to avoid areas of severe weather, taking into consideration the overall trip.
3. **Road quality:** Smooth driving experiences are important for drivers, with road quality being a critical factor. This use case aims to optimize driving routes by leveraging a combination of space and terrestrial data on road conditions. By integrating space data, such as satellite imagery, with information from terrestrial sensors, the system can provide comprehensive insights into road quality. This can be used to suggest alternative routes which not only enhance driving comfort but also contribute to the longevity of the vehicle.

2.1.2. Logistics

Innovation in logistics plays a crucial role in optimizing supply chain operations. By integrating advanced digital solutions, including space technologies such as GNSS, the aim is to increase efficiency, reduce delays, and optimize resource utilization, ultimately contributing to smoother and more cost-effective supply chain operations.

1. **Tracking of re-usable containers used to transport components and assemblies from suppliers:** Ferrari is currently utilising returnable containers of various sizes for

receiving goods from suppliers. These containers are the property of Ferrari and knowing their precise whereabouts is important for an efficient supply chain management. These containers currently travel mostly by land and within Europe, but ideally a solution which would work for any travel method or geography is preferred. The objective is to implement a digital tracing solution which provides real-time tracking for these containers, ensuring their efficient management and utilization throughout their journeys.

2. **Booking/tracking system for inbound delivery trucks, to ensure smooth goods acceptance and to monitor delays:** At Ferrari's facilities, the absence of a digital tracking system for inbound delivery trucks can lead to operational inefficiencies and potential delays in goods acceptance. To address this challenge, a comprehensive digital solution is needed for booking and tracking inbound delivery trucks. This solution should empower Ferrari to efficiently manage delivery slots, provide live updates on truck locations and expected arrival times, offer confirmation of arrivals, and enable drivers to designate deliveries as urgent or high priority. By implementing such a system, Ferrari aims to streamline its logistics operations, minimize queueing during peak hours, and optimize resource utilization for enhanced efficiency.

2.1.3. Security

1. **Security at work:** This use case focuses on innovative applications for enhancing workplace safety through the integration of wearable technology, focusing on fatigue monitoring and employee wellness. This includes leveraging innovative applications of robotics and wearables to monitor fatigue levels and promote employee well-being.
2. **Car theft:** Car theft remains a prevalent challenge in the automotive industry, posing financial losses and security risks for manufacturers and owners. Addressing this issue requires innovative solutions to locate stolen vehicles promptly and precisely. Space

technologies such as GNSS and Earth observation can play a key role in innovative solutions to retrieve stolen vehicles. By integrating these advanced technologies, the aim is to enhance capability to efficiently recover stolen vehicles.

- 3. Signalling of important situations in low connectivity areas:** In remote or low-connectivity areas, prompt communication of critical situations such as SOS alerts, breakdowns, accidents, break-ins, and car theft is paramount for ensuring the safety and security of drivers and vehicles. This use case explores innovative solutions to address these challenges by leveraging space-based communication technologies to establish reliable communication in remote or low-connectivity regions, ensuring prompt response and assistance during emergencies.

2.1.4. Sustainability

Ensuring sustainable practices throughout the supply chain is crucial for organizations committed to environmental responsibility and social accountability. As part of its sustainability initiatives, Ferrari is looking at innovative ways of auditing supplier sustainability practices to mitigate environmental impacts and promote ethical sourcing.

- 1. Supplier Sustainability Auditing:** This use case aims to address environmental concerns and social responsibility within the supply chain. Leveraging space technologies such as satellite imagery to audit supplier operations, including factors like land use, deforestation, and environmental impact. Integrating space-based data and analytics into auditing processes enables the identification of areas for improvement and the implementation of strategic measures to advance responsible sourcing and environmental stewardship across diverse supply chains.
- 2. Assessment of pollutants:** Manufacturing processes are significant contributors to emissions, necessitating accurate assessment for effective environmental management. Leveraging space data alongside terrestrial data and sensors presents a



promising approach to achieving more accurate estimates of pollutants for manufacturing sites. By combining insights from space-based sources such as satellite imagery and remote sensing with data collected from on-the-ground sensors, organizations can enhance the precision and reliability of emission assessments.