Partner search

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Short Company presentation

(R & D guidelines, international activities, etc.)

Orbital Engenharia is a Brazilian aerospace and defense technology company dedicated to the development of advanced engineering solutions for space and strategic applications. The company conducts intensive research and development focused on high-reliability systems for space environments, contributing to the advancement of Brazil's technological capabilities in the aerospace sector.
Its R&D activities are guided by the development of innovative technologies for satellites, launch systems, and scientific experimentation platforms, combining engineering excellence with strong collaboration with research institutions, industry partners, and government organizations. Through participation in international programs and scientific initiatives, Orbital Engenharia contributes to global efforts in space technology development and microgravity research, positioning itself as a relevant partner in advanced aerospace engineering projects.

DESCRIPTION OF ITS TECHNOLOGY AND CAPABILITIES IN R & D

(Products, technologies, applications, services, etc.)

Orbital Engenharia develops technologies and products for space and defense applications, with strong capabilities in the design, development, integration, and testing of complex aerospace systems. Its R&D portfolio includes satellite subsystems, space power generation systems, propulsion and fluid management systems for launch vehicles, and platforms for microgravity experimentation.

The company also develops specialized equipment and infrastructure for the testing and qualification of aerospace components and scientific payloads. These technologies support a wide range of applications including satellite missions, scientific experiments in microgravity environments, and advanced aerospace engineering projects.

In addition to product development, Orbital Engenharia provides high-level engineering services such as system architecture design, prototyping, integration, testing, and technical support for complex R&D programs. Its capabilities enable the company to contribute to strategic projects in the space and defense sectors while generating technological impact and innovation in the aerospace industry.

PROPOSED COLLABORATIVE PROJECT IN R & D

(As much detail as possible, both in what it offers and what you want in a potential partner)

Proposed Collaborative Projects (R&D)

Unified Multi-Domain Command & Control Platform

Overview

This project delivers a unified Command and Control (C2) platform for orchestrating heterogeneous fleets of unmanned and autonomous systems, including USVs, UAVs, UGVs, and interceptors, across maritime, air, and land domains.

The platform enables tactical-level command through operational-level integration, connecting autonomous assets across allied C2 architectures, security domains, and echelons. It provides a real-time Common Operational Picture (COP) by fusing data from AIS, radar, and FLIR sensors into a single, operator-centric dashboard, with continuous AI-assisted target detection, tracking, and classification.

Project Vision

The objective is to establish a single, software-defined C2 platform capable of:

- Coordinating multi-domain operations from one control environment
- Managing mixed fleets of autonomous, semi-autonomous, and remotely operated systems
- Integrating third-party platforms via open APIs, without adding external or custom hardware

This platform is designed for scalability, coalition interoperability, and contested environments, ensuring operational effectiveness even under GPS denial and degraded communications.

Platform Capabilities

1. Multi-Asset Command & Control

- Task assignment to multiple UXVs from a single ground control station
- One operator controlling multiple autonomous assets
- Flexible mission execution with human-on-the-loop authority at all times

2. Real-Time Situational Awareness

- Unified COP combining AIS, radar, EO/IR, and FLIR feeds
- Live mission status, asset health, and threat visualization
- Intuitive single-pane dashboard for tactical and operational users

3. AI-Driven Autonomy & Decision Support

- Continuous target detection, tracking, and classification without operator intervention
- Real-time AI overlays on live video streams, displaying:
  - Target type
  - Kinematic parameters
  - Confidence scores
  - Autonomous behaviors trained on thousands of deployed missions and real-world combat engagements
  - Operators retain authority for engagement, escalation, and mission overrides.

4. GPS-Denied & Contested Environment Operations

- LSTM neural networks trained on proprietary combat mission data
- Automatic transition from assisted autonomy to full autonomous operation in the event of:
  - GPS jamming or spoofing
  - Navigation signal loss

5. Security & Trust Architecture

- AES-256 encryption for all command, control, and data links
- Payload-level VPN isolation
- Server-bound cryptographic activation, preventing unauthorized platform use
- Designed for multi-domain and coalition security boundaries

6. Open Integration & Interoperability

- API-first architecture enabling rapid integration of:
  - Third-party vehicles
  - Sensors
  - National or allied C2 systems
  - No custom or additional hardware required, reducing deployment cost and complexity

Key Differentiators

- Autonomous algorithms refined through real-world operational and combat data, not simulations alone
- Proven performance in maritime, air, and land environments
- Designed for scalable fleet control, not single-vehicle operations
- Built for coalition warfare, interoperability, and regulatory constraints
- Software-only approach eliminates integration friction and accelerates adoption

Outcome
The project establishes a next-generation, multi-domain C2 backbone that transforms how autonomous fleets are deployed, coordinated, and trusted in real operations—enabling faster decision-making, reduced operator burden, and enhanced mission success in contested environments.

General comments:

- By sending this information document authorizing its dissemination.
- A company profile must be attached or a link to the company's website must be provided: https://orbitalengenharia.com.br/