

# newsletter

VOLUME 3,  
THIRD SEMESTER



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101082078



## "Welcome, Readers!"

We are excited to present the third issue of the ORU-BOAS Newsletter. Join us on an exciting journey into the our project, where we are revolutionizing space systems with our innovative Orbital Replacement Unit, based on **Building Blocks for Advanced Assembly of Space Systems**.

Our committed researchers are focused on an ambitious objective: facilitating the assembly, repair, and deployment of space infrastructures directly in orbit.

This versatile plug-in module will be compatible with a wide range of payloads and will feature standard interfaces to seamlessly **interact with other ORUs, satellite platforms, robotics elements, and the elements** outlined in the "Plan European Roadmap and Activities for Space Exploitation of Robotics and Autonomy" (PERASPERA) roadmap.

Our vision encompasses a multitude of services, from life extension and refueling to repairs and station-keeping missions, all working towards bolstering European strategic autonomy and enhancing robotic missions.

Marking one year and a half since the beginning of the ORU-BOAS the WP2 WP3 and WP4 have been accomplished. Wrapping up our final semester, our researchers are focused on concluding at the end of the year with the **hardware ready and tested**.

We'd like to invite you to delve into this newsletter's articles, insights, and discoveries. Please stay connected with us through our website and join our lively social media community to stay updated on the latest developments of the ORU-BOAS project.

Enjoy your reading, and may the unfolding future of space systems bring excitement!

# *A Recap of Key Achievements and Milestones*

## **Achieving Critical Design Review Milestone and Expanding Market Opportunities**

In our previous newsletter, we presented the progress made during the project's first year. At that time, the technologies review and the system's preliminary design had both been successfully finalized.

With a **clear preliminary design** established, the project then focused on finalizing the detailed design under WP4. This culminated in our most significant milestone to date, the **Critical Design Review** (CDR) held in Brussels in April, where most Consortium representatives were present and our work was assessed by external experts.



Figure 1: Artistic representation of an ORU in orbit

The first step involved updating the **Market and Economic Study** initially performed in WP2. This led to a revised exploitation plan, recognizing non-GEO markets as an additional opportunity for the ORU-BOAS platform alongside the already anticipated GEO market.

The detailed design of ORU-BOAS followed this direction. The entire system was defined with particular attention to the platform itself and its subsystems, including the **Data Handling System (MIA)**, the **power system (IMEPS3)**, the **standard interface (SIROM)**, and the **payload (EPS)**. Structural analyses and preliminary thermal considerations were conducted to ensure the design can withstand launch and the operational environment.

# *A Recap of Key Achievements and Milestones*

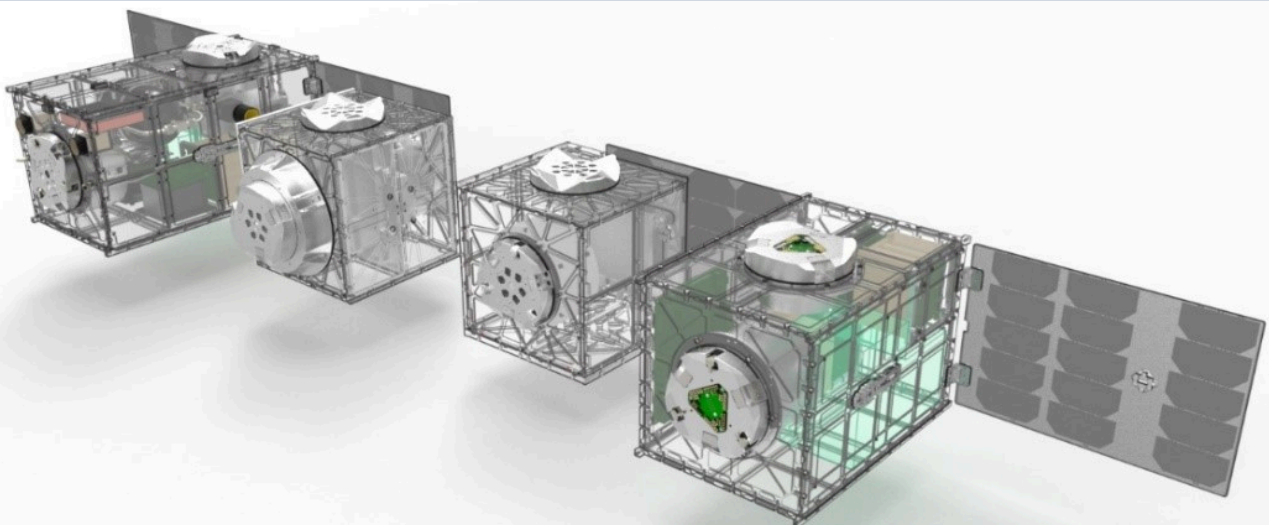
## **Streamlining Success: The ORU BOAS Test Plan and Manufacturing Readiness Review**

A pivotal milestone in our journey was also the **consolidation of the ORU BOAS Test Plan**. This crucial phase involved meticulously defining all the platform interfaces, setting the stage for the Manufacturing Readiness Review (MRR). Thanks to this thorough preparation, we can seamlessly manufacture all the necessary hardware for testing, ensuring a smooth and efficient process.

## **Charting the Future: Next Steps for ORU-BOAS**

Currently the consortium is focused on WP5 activities preparing for the TRR (Test Readiness Review) scheduled for after summer. Following this, the ORUs will undergo all the planned tests. Initially, the functionality of all subsystems (IMEPS3, HPS, SIROM, MIA, etc.) will be verified separately to ensure proper operation. Subsequently, all subsystems will be sent to Sener for full system integration. After verifying the system's functionality, with particular attention to the MIA's communication and command interactions with IMEPS3, HPS, and SIROM, one of the ORUs will be sent to DLR for berthing tests under simulated zero-gravity conditions. The remaining ORUs will be used in an on-ground demonstrations as part of another project.

**Figure 2: Artistic representation of the four ORU designs. From left to right: ORU-AUT (ORU-BOAS with autonomous capabilities, ORU-IOD1 and ORU-IOD2 (simplified ORU-BOAS designs) and ORU-BOAS**





## *Our Team*



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