

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Commercial Human Spaceflight Programmes (2)

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ORBITAL REEF: A GLOBAL DESTINATION FOR LEO APPLICATIONS

Abstract

Orbital Reef is a commercially developed, owned, and operated space station, planned for deployment later this decade, prior to ISS transition. As a next generation business park in low Earth orbit, Orbital Reef is designed with the ability to provide access to space for all. This business model—traditional on Earth but unprecedented in space—lowers barriers for all customers and promotes competitive development of space applications.

Whether the business is scientific research, exploration system development, invention and manufacturing of new and unique products, media and advertising, or adventure travel; customers can establish their address in orbit. Shared infrastructure supports the proprietary needs of diverse tenants and visitors. The Baseline Configuration has separate science and habitation zones and supports ten people in a volume almost as large as the International Space Station (ISS). Scalable by design, total volume, utilities, and vehicle ports expand as needed to support growing customers and needs. We are building on lessons learned from ISS operations by implementing new commercial processes, capacities, and product offerings, all aimed at lowering barriers to entry and expanding access to a global customer base.

Orbital Reef provides an end-to-end service with all the necessary services and amenities required by researchers, manufacturers, service providers, and visitors alike, including space transportation and logistics, space habitation, equipment accommodations, and operations by an onboard crew. State of the art technical accommodations, futuristic space architecture, and an open, scalable system architecture support any nation, agency, culture, or customer in achieving their space goals.

Orbital Reef is led by two principal partners, Blue Origin and Sierra Space. Development is supported by a uniquely experienced team of investors and space systems and service companies. The team includes Boeing, Redwire, Genesis Engineering Solutions, Arizona State University, and Amazon. Each teammate will bring essential expertise and technology, including unique experience from building and operating the International Space Station, conducting space research, and implementing world-class logistics systems.

This paper will discuss development status of Orbital Reef, including its architecture, concept of operations, and performance. It will outline the team's participation in NASA's Commercial Destination Free Flyer (CDFF) program, as well as opportunities for international and commercial engagement.