



## PROJECT OLYMPUS: HUMANITY'S FUTURE IN SPACE

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**Categories:** [BIG-BJARKE INGELS GROUP](#), [Essay](#), [expanding design practices](#), [ICON](#), [Low Density](#), [Technology and fabrication](#)

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"Building humanity's first home on another world will be the most ambitious construction project in human history and will push science, engineering, technology, and architecture to literal new heights," said Jason Ballard, Co-founder and CEO of ICON. "NASA's investment in space-age technologies like this can not only help to advance humanity's future in space, but also to solve very real, vexing problems we face on Earth. We are honored to begin our research and development on ICON's "Project Olympus" and the "Olympus Construction System."



NASA has signaled that, through the Artemis program, the Moon will be the first off-Earth site for sustainable surface exploration. Building a sustainable presence on the Moon requires more than rockets. For a permanent lunar presence to exist, robust structures will need to be built on the Moon that provide better thermal, radiation, and micrometeorite protection than metal or inflatable habitats can provide. From landing pads to habitats, these collective efforts are driven by the need to make humanity a spacefaring civilization.

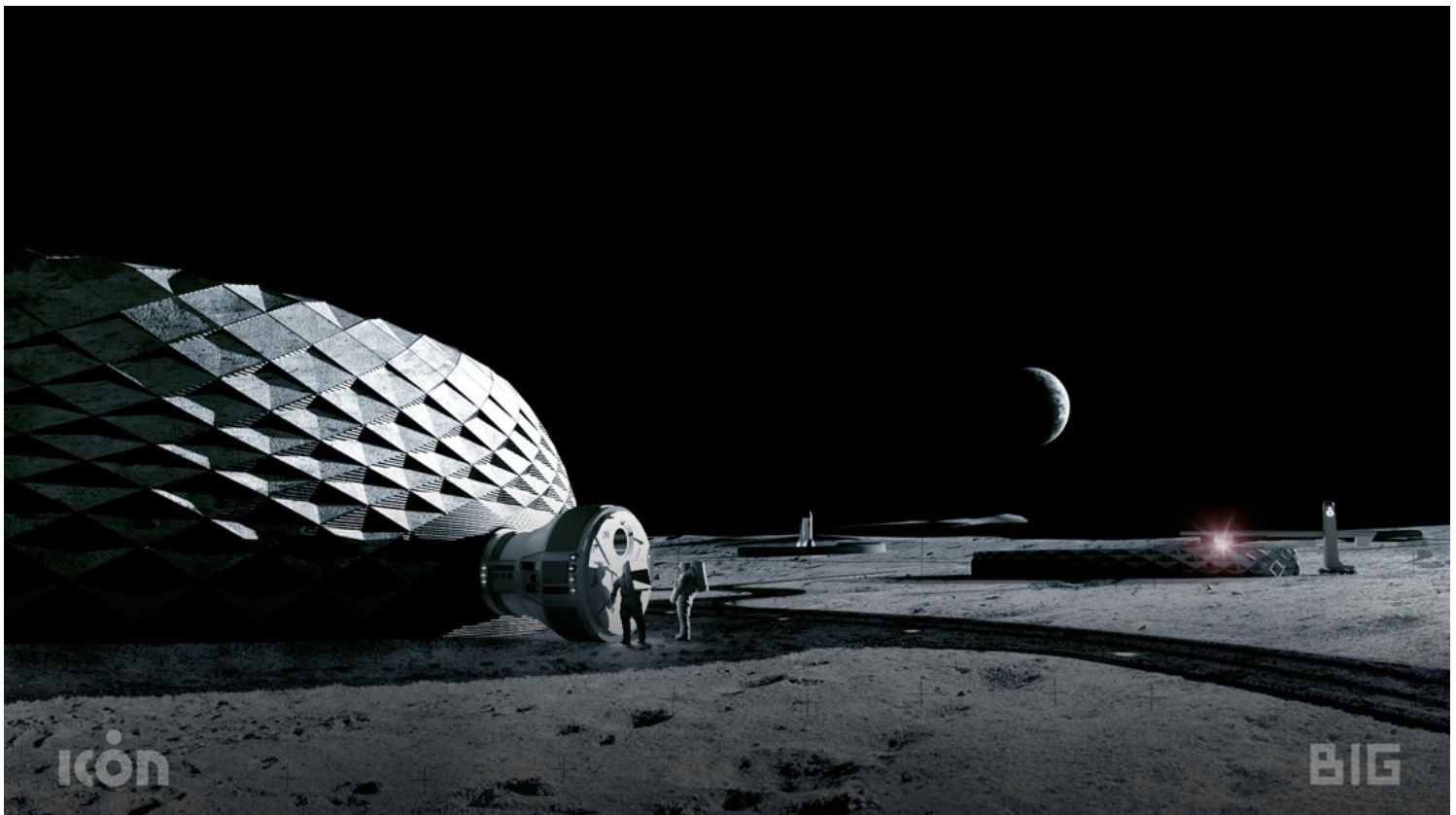
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Known for its advanced 3D printing technology for homebuilding on Earth, ICON has been awarded a SBIR Strategic Fund Increase (STRATFI) contract through the AFVentures managed "Open Topic" process to advance the development of its 3D printing technology, advanced materials, and software. The SBIR is a competitive program that encourages domestic small businesses to engage in Federal Research / Research and Development (R/R&D) that has the potential for commercialization. Through the support from NASA under the Air Force SBIR, ICON will continue to mature off-Earth applications for potential use for sustainable lunar missions and develop technology with shared agency benefits for Earth and space.

In partnership with NASA's Marshall Space Flight Center in Huntsville, Alabama, ICON will test lunar soil simulant with various processing and printing technologies. The tests will help design, develop, and demonstrate prototype elements for a possible future full-scale additive construction system that could print infrastructure on the Moon. The new partnership builds upon technology ICON demonstrated during NASA's 3D Printed Habitat Challenge in 2018.



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ICON has engaged two award-winning architecture firms as partners for the audacious project: BIG-Bjarke Ingels Group, renowned for their iconic international architecture and SEArch+ (Space Exploration Architecture), a company recognized on a global scale for their innovative 'human-centered' designs for space exploration. SEArch+ has over a decade-long association with NASA's Johnson Space Center Human Habitability Division, Langley Research Center, Ames Research Center and leading aerospace corporations, and BIG has worked on multiple concepts for the Moon and Mars in the past several years.

"To explain the power of architecture, 'formgiving' is the Danish word for design, which literally means to give form to that which has not yet been given form. This becomes fundamentally clear when we venture beyond Earth and begin to imagine how we are going to build and live on entirely new worlds," said Bjarke Ingels, Founder and Creative Director, BIG-Bjarke Ingels Group. "With ICON we are pioneering new frontiers – both materially, technologically and environmentally. The answers to our challenges on Earth very well might be found on the Moon."

"Ensuring the safety of astronauts is primary to our work at SEArch+. As architects and designers, we strive to create aspirational spaces that enrich and celebrate human life. We are thrilled to support 'Project Olympus' and come one step closer towards becoming an interplanetary species. 3D printing with indigenous materials is a sustainable and versatile solution to off-world construction that will prove to be vital to our future here on Earth and in Outer Space," said SEArch+ Co-founders.



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For ICON, the journey to transform construction began with their delivery of the first, permitted 3D-printed home in the US in 2018. Since then, the team has broken ground on the world's first 3D-printed community of homes in Mexico, in partnership with the housing nonprofit New Story (as seen on the Apple TV+ docuseries, "HOME"), completed a series of homes serving the chronically homeless in Austin, TX with nonprofit Mobile Loaves & Fishes at Community First! Village, and forged a partnership with the Defense Innovation Unit and United States Marine Corps to train Marines to operate its technology and complete a field demonstration print at Camp Pendleton.

ICON recently completed a \$35M series A round of financing led by Moderne Ventures that also included architecture partner BIG in the round. Nearly doubling in size in the past year, the ICON team has made preparations to enter mainstream American housing, created a dedicated space program, expanded its offices to include a materials science laboratory, and welcomed new team members in the fields of engineering, material science, operations, and marketing. In 2020, the Austin-based technology company will break ground on additional projects including a multi-unit

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mainstream housing project in Texas while continuing to deliver dignified, resilient homes for those in need.

Ballard, who is completing a Master's degree in space resources at the Colorado School of Mines, continued, "From the very founding of ICON, we've been thinking about off-world construction. It's a surprisingly natural progression if you are asking about the ways additive construction and 3D printing can create a better future for humanity. I am confident that learning to build on other worlds will also provide the necessary breakthroughs to solve housing challenges we face on this world. These are mutually reinforcing endeavors. Sometimes, for the biggest problems, it becomes necessary to look up at the sky and not only down at our feet. It would be hard to overstate how difficult this will be, but the ICON team is up for the journey and delighted to undertake this monumental task with NASA, BIG, and SEArch+."

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