

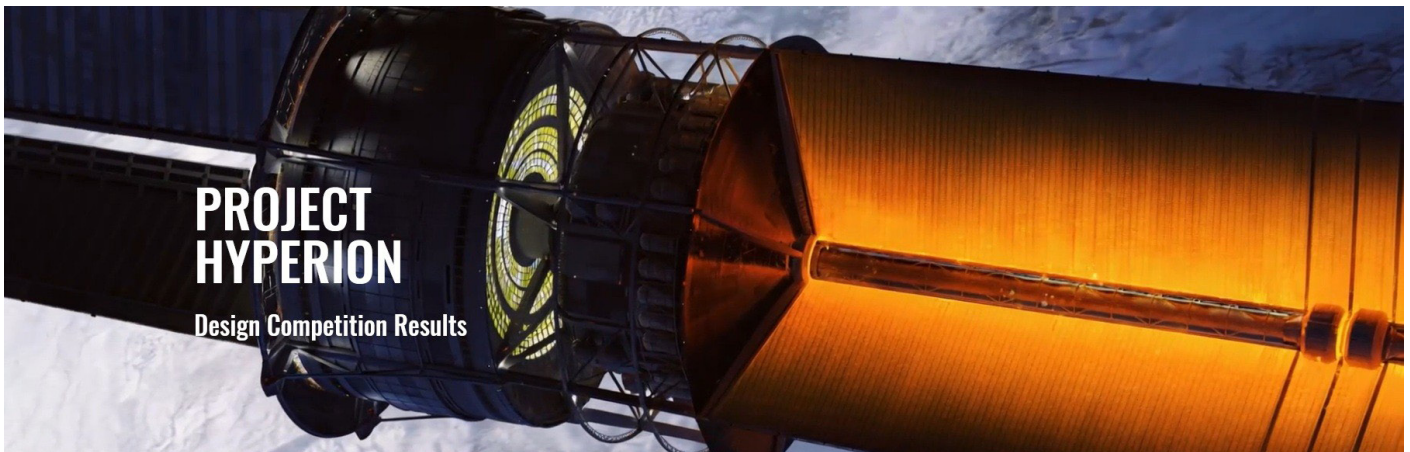
# Project Hyperion Competition Results

Global teams reimagined sustainable generation ship habitats for humanity's interstellar future

**John I Davies**

The results of the i4is Project Hyperion Competition were announced in a Press Release (see **Press Kit** on [www.projecthyperion.org/](http://www.projecthyperion.org/)) on 23 July 2025. This News Feature is adapted from that release with additional material from the winning participants and a final section about some of the public attention the Project has attracted.

For more about all participants, the i4is Project Hyperion team and the jury which selected the winners see the Project Hyperion website [www.projecthyperion.org/](http://www.projecthyperion.org/).



## Introduction

The Project Hyperion Design Competition challenged interdisciplinary teams to envision a generation ship – a crewed interstellar spacecraft designed for a 250-year journey to a habitable planet. The teams designed habitats of such a spacecraft that would allow a society to sustain itself and flourish in a highly resource-constrained environment. The focus was on the ship and its inhabitants rather than on propulsion and external factors and in most extant worldship studies.

The Competition called on architectural designers, engineers, and social scientists to collaborate and address critical mission aspects that enable a spacecraft to function as a closed society over centuries. The teams were challenged to provide habitability for 500-15,000 people over centuries, artificial gravity via rotation, a society that ensures good living conditions, including essential provisions such as shelter, clothing, and other basic needs, robust life support systems for food, water, waste, and the atmosphere and of course knowledge transfer mechanisms to retain culture and technologies [1].

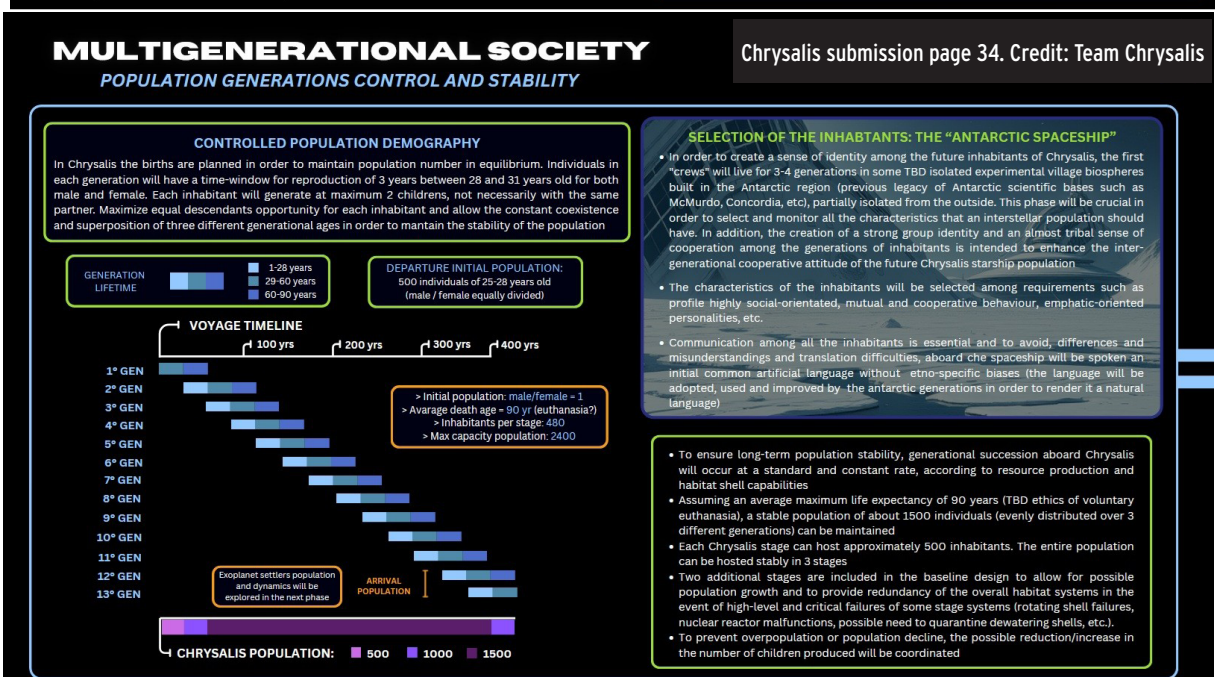
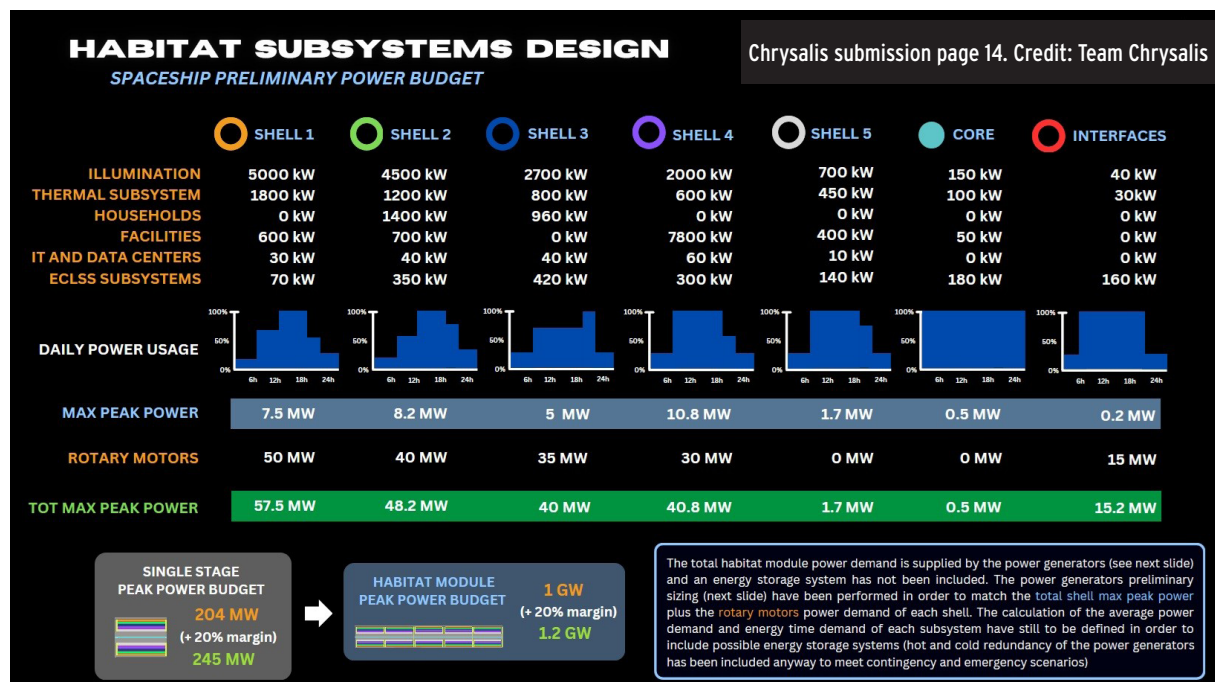
The winners were selected if they were able to integrate the various design aspects (architecture, engineering, social sciences) coherently and their general depth of detail, among other criteria.

[1] Detailed competition requirements [www.projecthyperion.org/\\_files/ugd/91ab16\\_c3f7196fe5a348cdb0cd56904d02ae81.pdf](http://www.projecthyperion.org/_files/ugd/91ab16_c3f7196fe5a348cdb0cd56904d02ae81.pdf)

## First Place: Chrysalis

Chrysalis impressed the jury with its system-level coherence and innovative design of the modular habitat structure but also overall depth of detail, which included, for example, in-space manufacturing and the value of pre-mission crew preparation in Antarctica. Its modular shell design promotes flexibility and connectivity, supporting both functionality and scalability. The large Dome structure adds a dramatic, cinematic quality that evokes science fiction classics, while the overall system-level planning – covering not just architecture but also how to build the vessel – is notably strong. The radiation protection strategy is solid, and the practical structural approach is well-suited. While cultural systems could be further developed, the concept offers a compelling starting point. The presentation is rich and visually engaging, drawing comparisons to iconic works like Rama, and showcasing a clear passion for both design and storytelling. Its overall spacecraft design seems to take inspiration from the gigantic world ship concepts of the 1980s.

**Team:** Giacomo Infelise, Veronica Magli, Guido Sbrogio', Nevenka Martinello, Federica Chiara Serpe  
The project website contains the whole team submission [1] of 41 pages. Here are two examples showing the proposed habitat subsystem design and the envisaged multigenerational society.



[1] [www.canva.com/design/DAGmr3ubC8E/LHHAeeAIGGQe\\_TkZVs-PXA/view?utm\\_content=DAGmr3ubC8E&utm\\_campaign=designshare&utm\\_medium=link2&utm\\_source=uniquelinks&utm\\_id=hcfa85973cc](http://www.canva.com/design/DAGmr3ubC8E/LHHAeeAIGGQe_TkZVs-PXA/view?utm_content=DAGmr3ubC8E&utm_campaign=designshare&utm_medium=link2&utm_source=uniquelinks&utm_id=hcfa85973cc)

## Second Place: WFP Extreme

Commended for overall excellence, WFP Extreme has a particularly strong focus on cultural and societal dimensions, including concepts like clothing and spiritual spaces. It excels in its cultural and societal considerations, offering some of the most thoughtfully developed ideas in this area. The architectural design introduces advanced technologies such as radiation protection and demonstrates creative touches like the “taxi capsule” and personalized crew clothing. Though system-level coherence and interior design in artificial gravity could be further developed, the structural approach is well-suited to orbital applications. Overall, the project balances technical ambition with a unique and sensitive vision of future space living. This concept is clearly presented through a well-crafted booklet and poster, with strong attention to detail and a distinctive, human-centred aesthetic.

Team: Julia Biernacik, Jakub Kot, Aleksandra Wróbel, Jacek Janas, Michał Kucharski, Wiktoria Kuchta, Natalia Łakoma, Katarzyna Śliwa

The project website contains the whole team submission [1] of 40 pages. Here are two examples showing the wide scope of the thinking, a magnetic field to protect the inheritance between generations and attention to the moral and spiritual needs of the travellers.

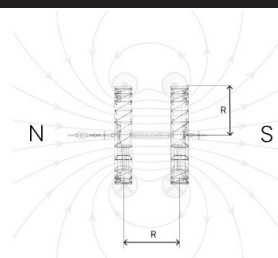


### LIFE IS UNSUSTAINABLE WITHOUT A MAGNETIC FIELD, BECAUSE SAFE PREGNANCIES BECOME IMPOSSIBLE

The chance of a successful pregnancy in deep space without a geomagnetic field is essentially zero. During mitosis and meiosis, microtubules depend on a stable magnetic field to orient the mitotic spindle and ensure accurate chromosome segregation — processes critical for embryonic growth. A spacecraft lacking any magnetic field would halt human reproduction, dooming both the mission and the survival of the colony.

To prevent this, our vessel was engineered with twin toroidal habitat rings whose radius  $R$  equals their separation distance — precisely matching the ideal Helmholtz-coil geometry. By wrapping each ring with  $N$  turns of conductor and driving a current  $I$  through them, we generate a uniform  $\sim 50 \mu\text{T}$  field — equivalent to Earth's geomagnetism — throughout the living modules.

WFP Extreme page 8. Credit: WFP Extreme team



Helmholtz-coil formula used to calculate the required turns and current:

$$B = \frac{\mu_0 N I}{R} \left( \frac{4}{5} \right)^{3/2}$$

Where:

- $B$  - the magnetic field at the midpoint =  $50 \mu\text{T}$
- $\mu_0$  - the vacuum permeability =  $4\pi \times 10^{-7} \text{ H/m}$
- $N$  - number of turns per coil = 700
- $I$  - current through each turn = 20 A
- $R$  - coil radius = 250 m

more info in *Biology*

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### MORALITY, ETHICS, RELIGION, MYTHOS



#### Religion

People will follow different religions in a **Common Chapel** will be established for spiritual growth.

Our priority is developing a sense of purpose and mission success. Moral and ethical principles will build from this foundation, under administrative oversight.

During the mission Earth knowledge about religions will be stored in databases, with options for spiritual growth available.

After the journey, some religions may survive, entirely new ones might emerge, or a religion based on mission success may develop.

#### Death & funeral

The human body provides valuable resources that can be recovered through freezing or lyophilization, carried out in a respectful, ceremonial manner. This process will take place with full dignity, honoring the deceased, and commemorated on a Memorial Wall aboard the ship.

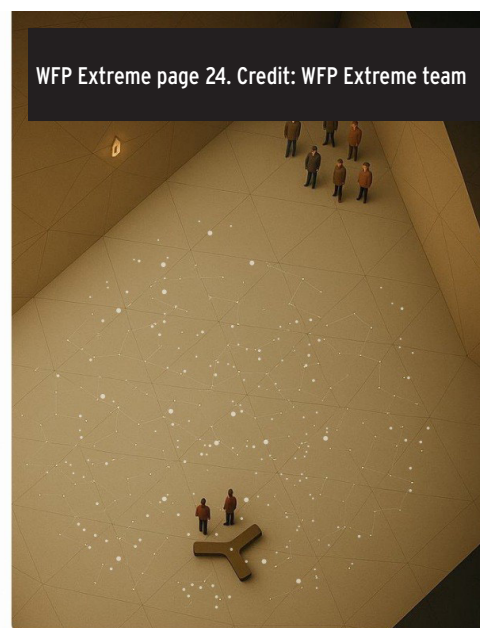
#### Tiles

The decorative floors of the ship's temple served not only as ornamentation but were also meant to encourage reflection and prayer. The tiles on the floor form a minimalist galaxy map — inviting contemplation of the passengers' journey as **cosmic pilgrims / wanderers** toward a new home.



Sacred Tree, in the Chapel's other part.  
3d model → render

WFP Extreme page 24. Credit: WFP Extreme team



Common chapel; simplified illustration, tiled floor with galaxy map  
3D model → chat GPT → postproduction

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[1] [www.projecthyperion.org/files/ugd/1dff9e\\_6d90df6fdfe14faab644745571b7f63f.pdf](http://www.projecthyperion.org/files/ugd/1dff9e_6d90df6fdfe14faab644745571b7f63f.pdf)

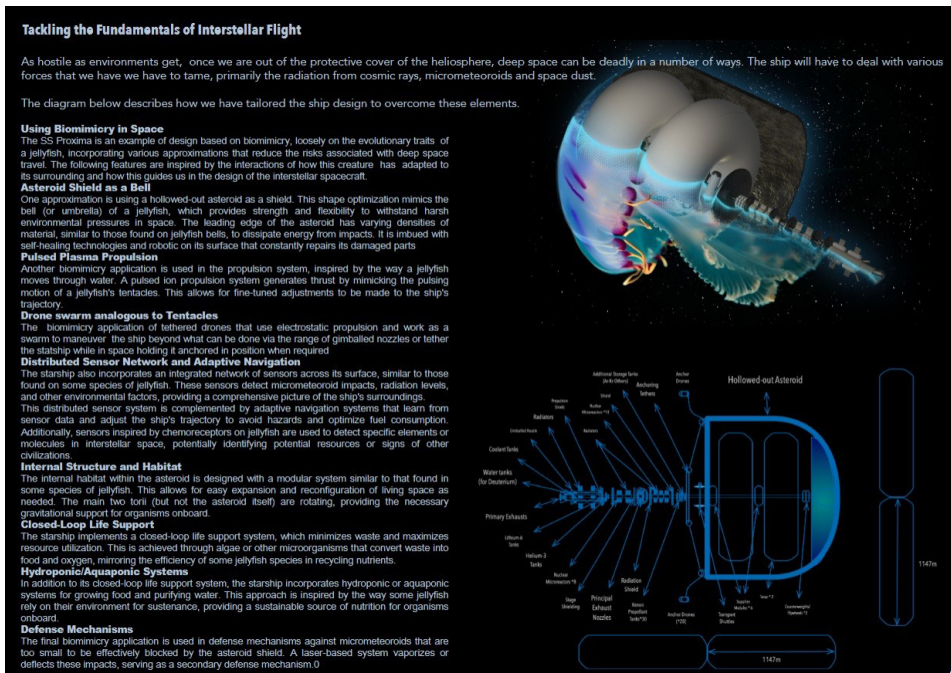


## Third Place: Systema Stellare Proximum

Systema Stellare Proximum distinguishes itself by its immersive storytelling, seamlessly tying together technical, social, and cultural aspects. This concept delivers a rich and imaginative narrative that thoughtfully weaves together social, technical, and cultural aspects of long-term space habitation. Its storytelling is engaging, with creative scenarios that explore community dynamics and even spirituality—emphasizing the role of shared values in building resilient, intergenerational societies. The use of an asteroid as a radiation shield is a bold and compelling strategy, paired with a visually striking structure inspired by the form of a jellyfish. While the physical feasibility of the thin-shelled asteroid could be further refined, the concept shows a solid understanding of cosmic radiation challenges. System-level planning is well-considered, and the presentation is detailed and visually dynamic, enhanced by artistic illustrations. This entry leaves a strong impression through its holistic vision and poetic approach to deep space living.

Team: Philip Koshy, Jan Johan Ipe, Amaris Ishana Mathen

The project website contains the whole team submission [1] of 40 pages. . Here are two examples showing the ship concept - rotating torus inside a hollowed asteroid and profound ideological fragmentation at end of mission.



Systema Stellare Proximum page 4.  
Credit: Systema Stellare Proximum team



Systema Stellare Proximum page 38  
Credit: Systema Stellare Proximum team

[1] [www.projecthyperion.org/files/uqgd/1df9e\\_07324118b6d9407ab51d4aef3817bfd3.pdf](http://www.projecthyperion.org/files/uqgd/1df9e_07324118b6d9407ab51d4aef3817bfd3.pdf)



## ◀ Honourable Mentions

Ten teams received honourable Mentions for excelling in specific, thought-provoking aspects of their submissions that will advance the state of the art - in alphabetical order:

**Arkkana** - Excellence in considering the temporal dimension and evolving roles of the population over time.

**EBS: Endless Beyond the Stars** - Innovative "negotiopolis" concept that bridges architecture and social organization.

**FAOC first asteroid O'Neill colony** - Original architectural vision of integrating the habitat into an asteroid.

**HELIOS ARK** - A holistic approach and strong system-level coherence.

**Orion** - A thoughtful, low-tech design emphasizing knowledge and technology transfer.

**Principium Hereditatis** - A compelling narrative structure and a symbolically rich modular habitat.

**STASS Associazione Professionale** - Standout in knowledge transfer, immersive storytelling, and humanistic depth.

**The Belgian Space Hikers** - A highly creative take on the social dimension of space living.

**undagila** - A deeply poetic, culturally immersive vision with emphasis on intergenerational continuity, ritual, and symbolic heritage.

**WeSpace** - A cleanly presented, holistic design that balanced aesthetics with conceptual depth, including bio-inspiration and human-centric design.

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## Purpose, background and conclusion

Project Hyperion, founded in 2011, has built a track record of generation ship research. Notable work includes generation ship designs, population size, and knowledge transfer. Results were presented at ESA's Interstellar Workshop and in peer-reviewed scientific journals such as *Acta Astronautica* and *Acta Futura*. The i4is core team boasts multidisciplinary expertise – architecture, aerospace, anthropology, urban planning – and includes Andreas Hein, Yazgi Demirbaş Pech, Dan Fries, Cameron Smith, Michel Lamontagne, and Claas Olthoff, who have experience working at institutions such as NASA, ESA, and MIT, reinforcing its credibility and global vision.

A jury of internationally renowned experts, covering architecture, engineering, and social sciences was invited to evaluate the submissions, including A Scott Howe (NASA-JPL), Olga Bannova (University of Houston), Madhu Thangavelu (University of Southern California), Elena Rochi (Arizona State University). In conclusion the organizers issued a statement -

“Project Hyperion wasn’t just a design contest – it is part of a larger exercise to explore if humanity can travel to the stars one day. It envisions how a civilization might live, learn, and evolve in a highly resource-constrained environment, and may also provide valuable insights into our future on Earth.” said Dr Andreas Hein, i4is Executive Director.

“We asked participants to integrate architecture, technology, and social systems to conceptualize a functional society spanning centuries – and the outcome was beyond expectations.”

Winning entries will be published and showcased at future i4is and academic events. A closing ceremony is planned in 2025/2026 whereby winners will present their work. In parallel, we will draw inspiration from the various designs and start working on a detailed design of a generation ship to make further progress towards demonstrating the feasibility of the concept.

Principium will invite competition participants to write for the magazine reflecting on their work, discussing their future plans or commenting on this important potential direction for our species.

## Press and web interest

Project Hyperion has gathered much interest since the announcement of the results. Here are just a few of the items we have noticed. Please let us know if you spot anything else of interest - email [john.davies@i4is.org](mailto:john.davies@i4is.org).

### Universe Today

"The Winners of the Project Hyperion Generation Ship Competition have been Announced!" by Matthew Williams in Universe Today - August 2, 2025 [www.universetoday.com/articles/the-winners-of-the-project-hyperion-generation-ship-competition-have-been-announced](http://www.universetoday.com/articles/the-winners-of-the-project-hyperion-generation-ship-competition-have-been-announced).

This 2,300 word essay is the most extensive report we have seen so far. Our thanks to Matthew and to Universe Today.

The logo for Universe Today, featuring the text "Universe Today" in a bold, black, sans-serif font.

### The Economist

"How to build a ship for interstellar travel - Winners of a design competition include conjoined Ferris wheels and a 58km-long cylinder" in The Economist - 31 July, 2025 [www.economist.com/science-and-technology/2025/07/31/how-to-build-a-ship-for-interstellar-travel](http://www.economist.com/science-and-technology/2025/07/31/how-to-build-a-ship-for-interstellar-travel). This 830 word piece has an audio readout available in a voice which sounds remarkably like the Voice of the Book, played by Peter Jones, in the original Hitchhikers Guide to the Galaxy.

The Economist is, of course, a very serious newspaper and this article is mostly serious though it cannot resist a little mild jocularly describing the Project as "...what may be the world's first serious (or, at least, semi-serious) competition to design a ship to boldly go where no one has gone before, and settle a planet circling another star."

The logo for The Economist, featuring the text "The Economist" in a white, serif font on a red background.

### nextBIGfuture

"Winners of Interstellar Generation Ship Design Contest" [www.nextbigfuture.com/2025/08/winners-of-interstellar-generation-ship-design-contest.html](http://www.nextbigfuture.com/2025/08/winners-of-interstellar-generation-ship-design-contest.html) on nextBIGfuture August 3, 2025 by Brian Wang. A brief account of the competition results focusing on the first place winner.

The logo for nextBIG FUTURE, featuring a stylized graphic of three overlapping triangles in green and blue, followed by the text "nextBIG FUTURE" in a white, sans-serif font on a blue background.

### Interesting Engineering

"36-mile-long cigar-shaped starship could take humans on first interstellar trip" [interestingengineering.com/space/engineers-propose-multi-generational-spacecraft](http://interestingengineering.com/space/engineers-propose-multi-generational-spacecraft)

-reporting that - The ultimate goal would be to reach and settle on the potentially habitable exoplanet Proxima Centauri b. This is the Chrysalis Project, an award-winning design for a hypothetical starship that could carry up to 2,400 people to Alpha Centauri – our closest stellar neighbor.

The logo for Interesting Engineering, featuring the text "INTERESTING ENGINEERING" in a white, bold, sans-serif font on a blue background.

### The Guardian

"Beam me up, jellyfish: experts unveil spaceships to take us to the stars" [www.theguardian.com/science/2025/aug/06/spaceships-design-stars-craft-interstellar-travel-project-hyperion](http://www.theguardian.com/science/2025/aug/06/spaceships-design-stars-craft-interstellar-travel-project-hyperion)

The Guardian continues the rather tongue-in-cheek theme with subtitle "Winner of Project Hyperion design contest envisions polyamorous people thriving onboard cigar-shaped craft". Sadly reporter David Batty betrays his scientific illiteracy writing

"Hyperion, a spacecraft which resembles the space station from 2001: A Space Odyssey. The twin rings of this design are engineered to generate an Earth-like magnetic field, which would be essential for a successful pregnancy in deep space, without which the mission would be doomed." Michael Faraday might have put him straight or perhaps any random science sixth-former.

The logo for The Guardian, featuring the text "The Guardian" in a white, serif font on a dark blue background, with a small "UK" logo in the top right corner.