



Dave Pigram
ERA

PORTFOLIO

Morning Walk
Richard Glover

IMAGE

Original Creative Work
Architectural Project

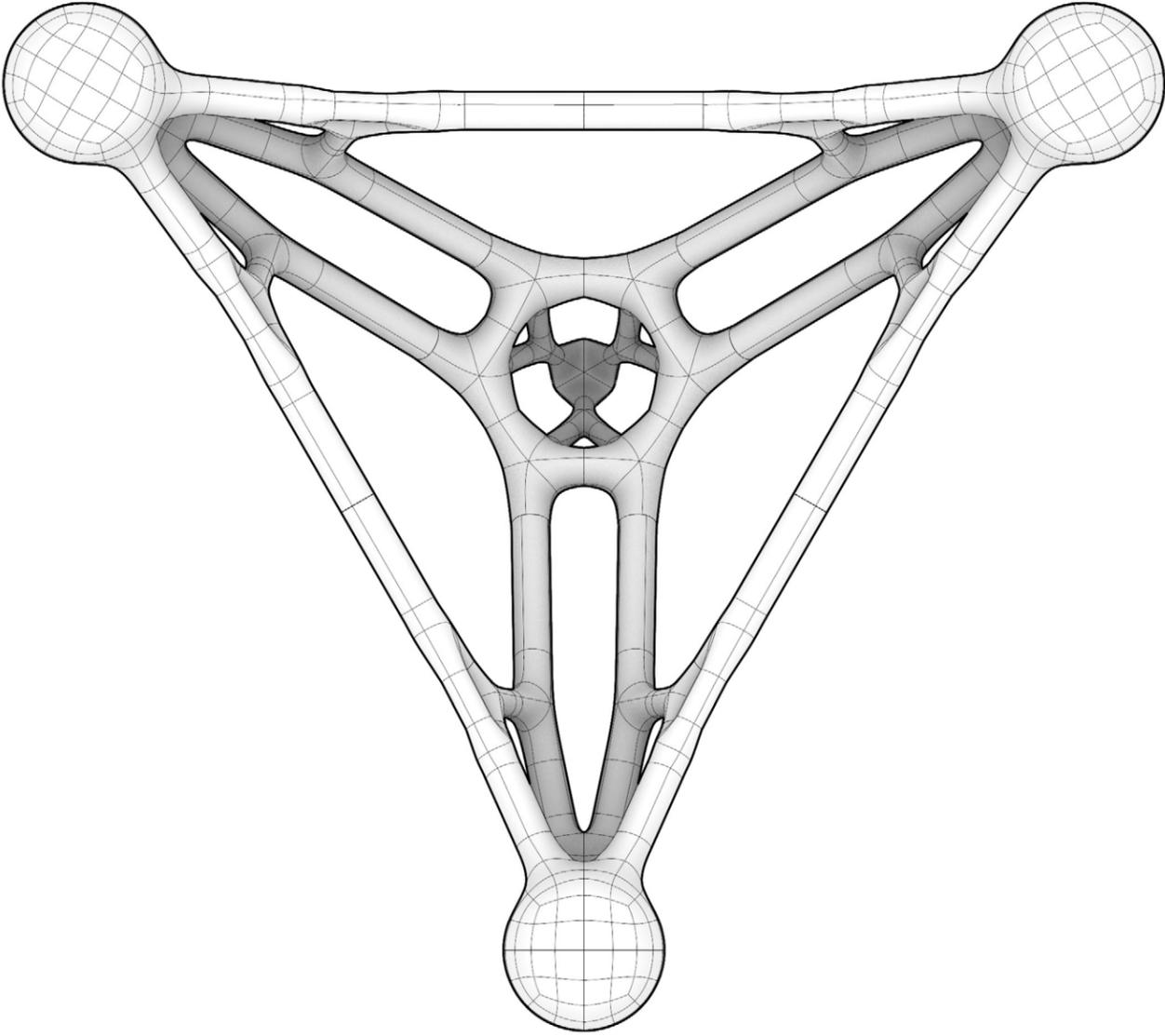
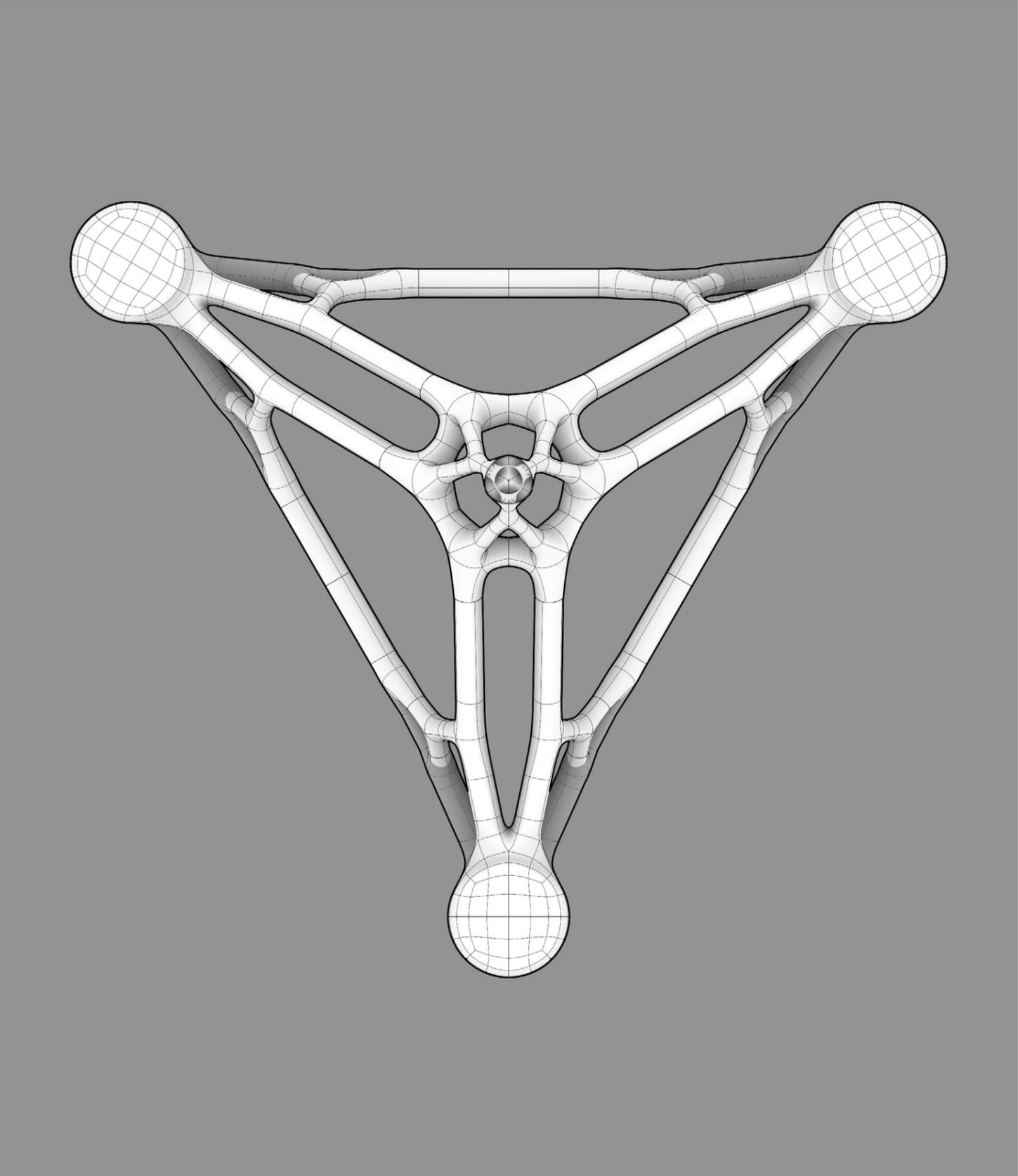
TYPE

Dave Pigram, University of Technology, Sydney
Iain Maxwell, University of Canberra
John Buttles, Texas Wind Towers
Altair
AUTHORS

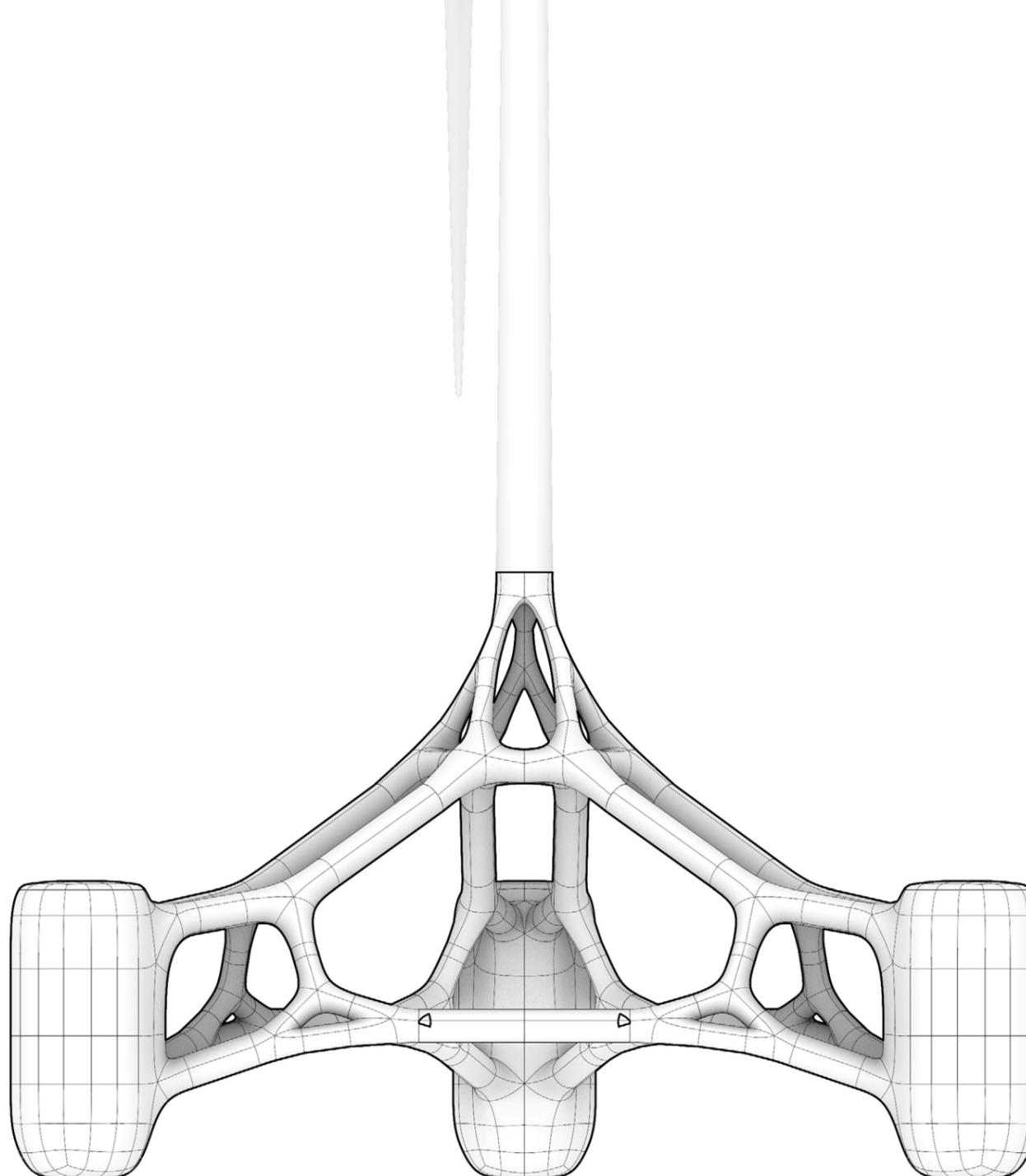
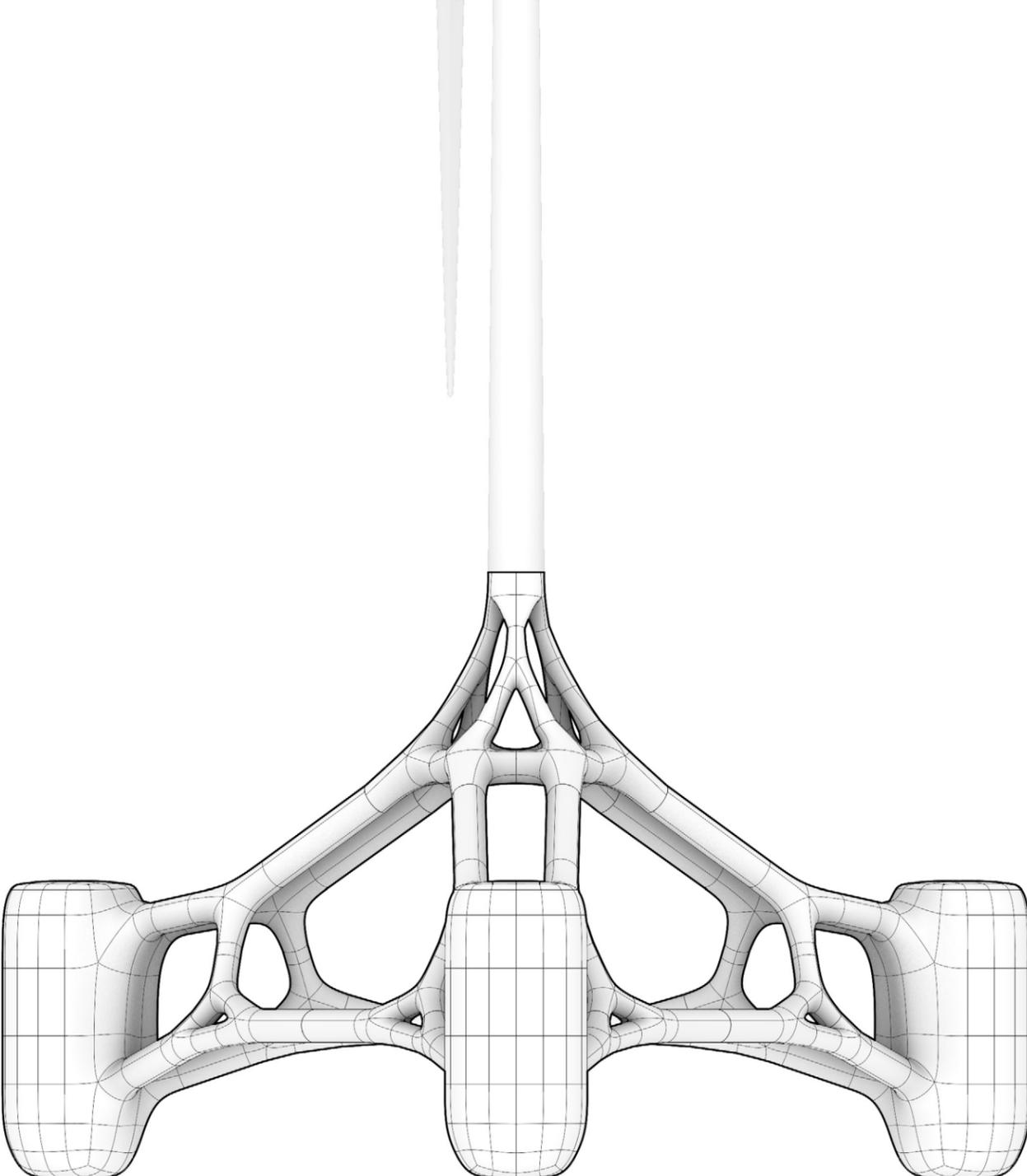
Super Floater
Offshore Floating Wind Turbine Platform

PROJECT TITLE

DESIGN ARTEFACTS
PLAN, REFLECTED PLAN

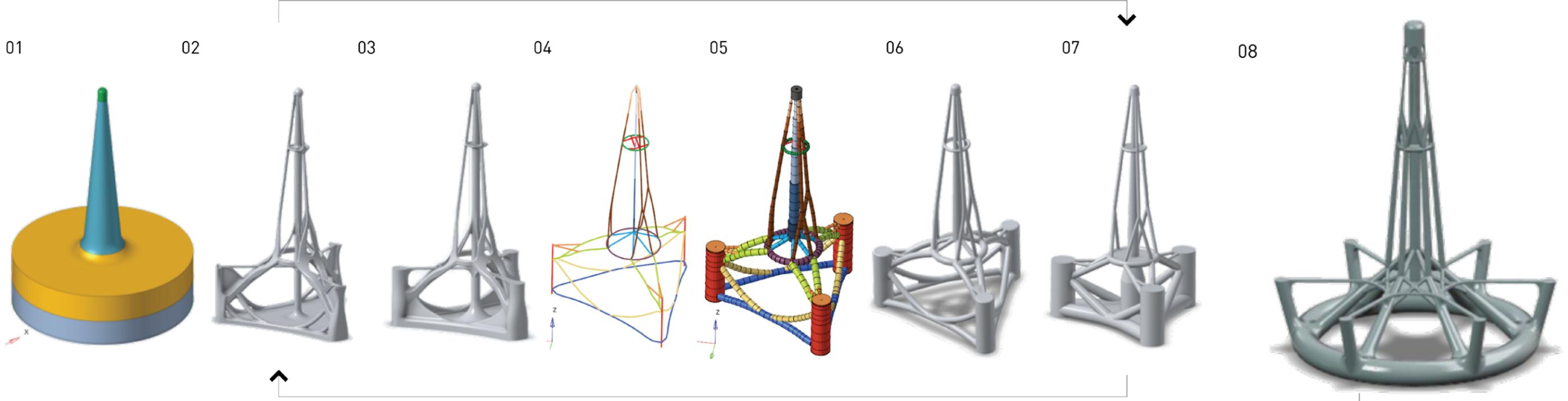


DESIGN ARTEFACTS
ELEVATIONS

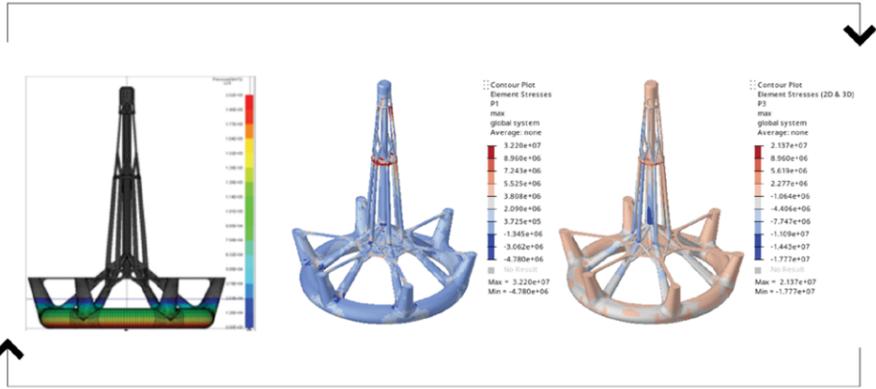


DESIGN ARTEFACTS

MULTI-STAGE DIGITALLY-AUGMENTED DESIGN PROCESS



GEOMETRIC CONSTRAINTS + BOUNDARY CONDITIONS



PERFORMANCE ANALYSIS - STRUCTURAL, MARITIME ETC.

Multi-Stage Digitally-Augmented Design Process

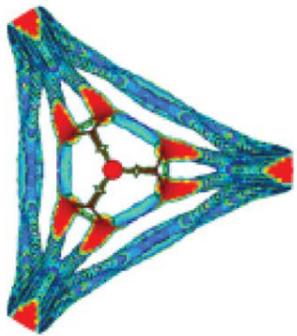
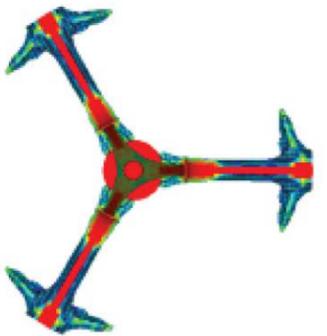
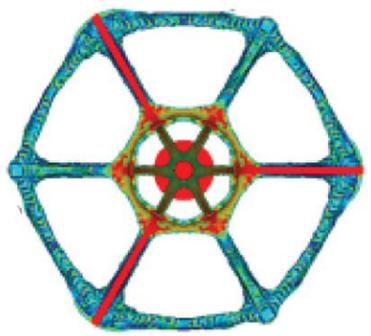
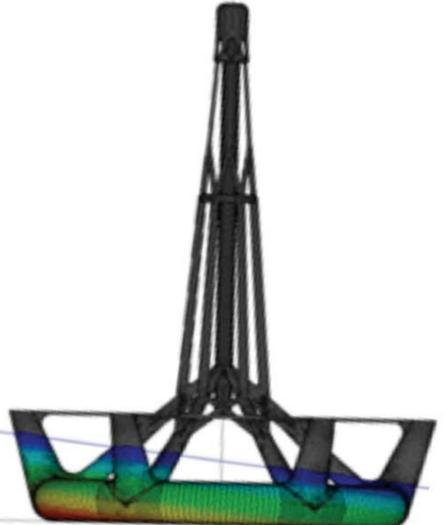
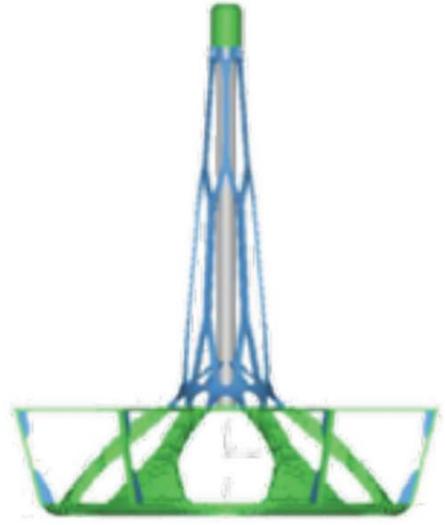
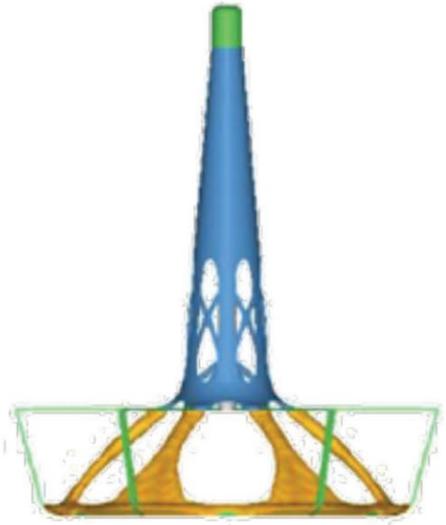
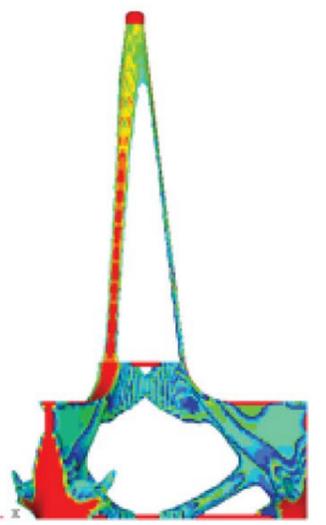
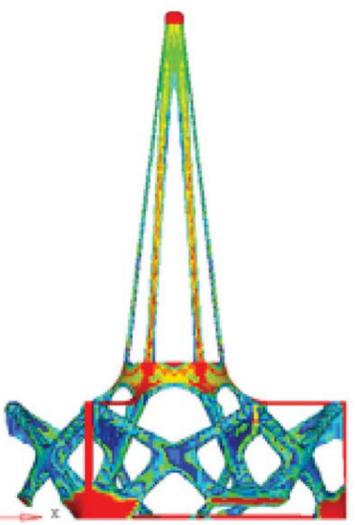
The process of generating floating platform designs involves multiple steps, and tight feedback loops combining structural and maritime performance simulations with fabrication-aware formfinding processes.

- 01 Input permitted design envelope, load cases, boundary conditions and non-design regions.
- 02 Structural topological optimization resolves constraints into a minimal material distribution; the process is enacted in Altair OptiStruct.
- 03 Add buoyancy components and adjust for stability.

- 04 Extract medial-axes as centerlines.
- 05 Interpret results from P3 into a manufacturable structure reflecting conditions of the proposed fabrication approach.
- 06 Determine Centre of Gravity [COG] and desired waterline. Use naval analysis MAESTRO to recheck COG and waterline – adjust size, thickness and ballast to achieve stability.

- 07 Extract hydrostatic loading from MAESTRO to isolate non-design within new boundary condition and repeat as P1.
- 08 Conclude with an optimized FOWP design resulting from the completed computationally augmented process.

DESIGN ARTEFACTS
 TOPOLOGICAL OPTIMISATION — DESIGN VARIATIONS



DESIGN ARTEFACTS
ULTRA-HIGH-PERFORMANCE CONCRETE [UHPC] NODE FABRICATION PROCESS

