Brix

BUILD TOGETHER – CREATE TOGETHER!

CDS 3 – Merlin Mößle (266601)

PROTOTYPE

The BRIX modular system originated in the UX Project module of the IMUK program, following a Design Thinking framework. Early stages focused on rapid prototyping techniques, utilizing paper, cardboard, schematics, LEGO bricks, wood, and a first small 3D-printed prototype. This laid the foundation for a continuous iterative design process that has since evolved significantly.

Prototyping phases

- LEGO prototypes: The initial LEGO-based prototypes have been refined through multiple iterations. Now there are seven LEGO prototype versions, each measuring 13 cm^3 and weighing approximately 500g. The cost of constructing each cube stands at €50, excluding modular extensions.
- 3D Prototypes: Transitioning to advanced methods, prototypes were redesigned in Blender, resulting in:
    - Small-scale models: Six 3D-printed prototypes (5 cm^3).
    - Modular models: Three modular 10 cm^3 prototypes, capable of complete disassembly. Each unit requires approximately 14 hours to print.

Despite plans to utilize HNU's 3D printing resources, personal constraints during the holiday season necessitated using my home 3D printer. This added a hands-on dimension to the process, as modifications and improvements had to be managed in real-time during printing.

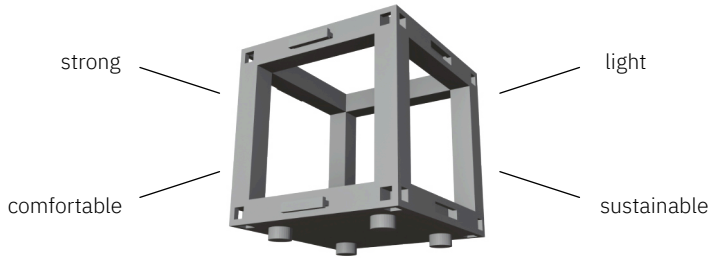
Material exploration

Efforts to ensure sustainable material use included:

- Polygood samples: Recycled plastic materials were tested but deemed too heavy and limited to flat panels.
- Alternative materials: Exploration extended to soft yet durable materials, including XXL LEGO bricks and Zebrix building blocks. Supply chain delays (delivery issues with UPS), however, have impacted the final material selection process. I am planning to donate the XXL blocks to the local children's hospital (Kinderklinik am Michelsberg).

Material criteria

- sustainable (recycled or recyclable)
- lightweight and stable
- fire-resistant and non-toxic for compliance with safety regulations
- durable yet cushioned to minimize injury risks
- high-quality



Functional innovation of BRIX

The BRIX system is designed to meet the dynamic needs of modern workspaces through its modular and customizable features. Each cube can connect horizontally and stack vertically, creating adaptable configurations such as seating, tables, shelves, benches, or walls.

Key features

- Interactive design: Secure magnetic systems and attachable modules ensure user engagement and flexibility
- Integrated Storage: Cubes include built-in compartments for efficient organization
- Adaptability: BRIX is equally effective in corporate, educational, and creative environments

Production techniques

Final manufacturing methods will depend on the selected materials. For example:

- Expanded Polypropylene (EPP), as used in Xbrick products, offers recyclability and durability
- Modular wooden solutions, similar to PIXEL by Bene, demonstrate the potential for integrating wood aesthetics and structural integrity

The BRIX modular system is a testament to the power of iterative design, sustainable innovation, and user-centric development. Through meticulous prototyping and material experimentation, BRIX has evolved into a versatile solution that reimagines modern workspaces. Its adaptability, functionality, and commitment to sustainability address the pressing challenges of static and competitive furniture, offering an innovative path toward dynamic, efficient, and eco-friendly environments.

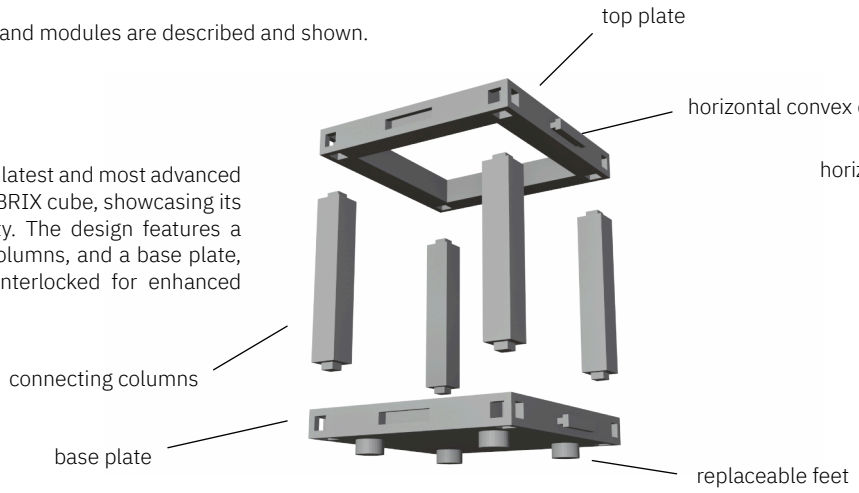
By integrating recycled materials, prioritizing circularity, and leveraging advanced production techniques, BRIX exemplifies a forward-thinking approach to product design. Its modularity not only enhances practicality but also fosters creativity and collaboration in diverse settings, from educational spaces to corporate offices. Furthermore, the focus on aesthetic appeal ensures that BRIX resonates emotionally with users, making it a compelling choice that merges practicality with design innovation.

Looking ahead, the success of BRIX will lie in its ability to balance sustainability with user needs, continually refining materials, production methods, and configurations. This project stands as a model for how design can harmonize environmental responsibility with modern functionality, contributing meaningfully to a more adaptable and sustainable future.

In the following, the system and modules are described and shown.

Modular assembly

On the right, you can see the latest and most advanced 3D prototype version of the BRIX cube, showcasing its modular assembly capability. The design features a top plate, four connecting columns, and a base plate, which can be seamlessly interlocked for enhanced stability and functionality.



The BRIX system offers an array of innovative features and modular components designed for maximum flexibility and customization:

Replaceable feet or rollers: These can be easily attached, detached, and adjusted in height to suit specific needs, offering versatility for various workspace configurations.

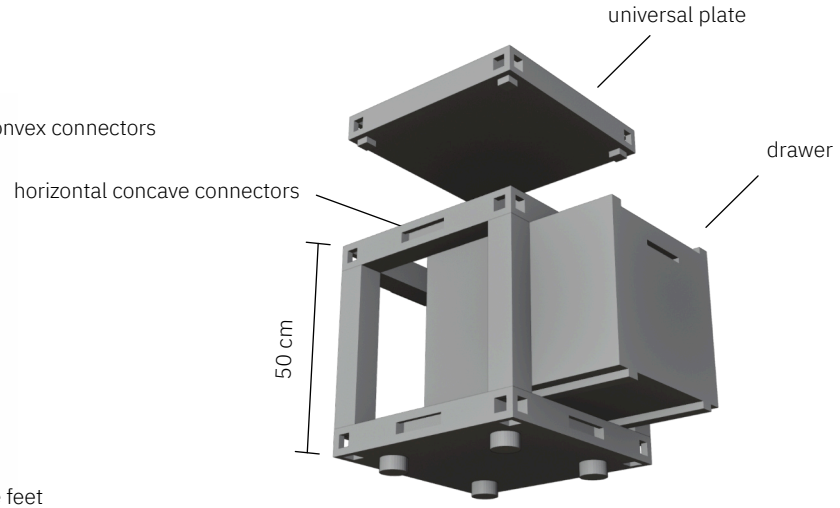
Universal plate: This multifunctional plate can be attached to the top of the cube as a seating or table surface. Additionally, it can be mounted on any of the four vertical sides of the cube to function as a whiteboard or when stacking cubes vertically.

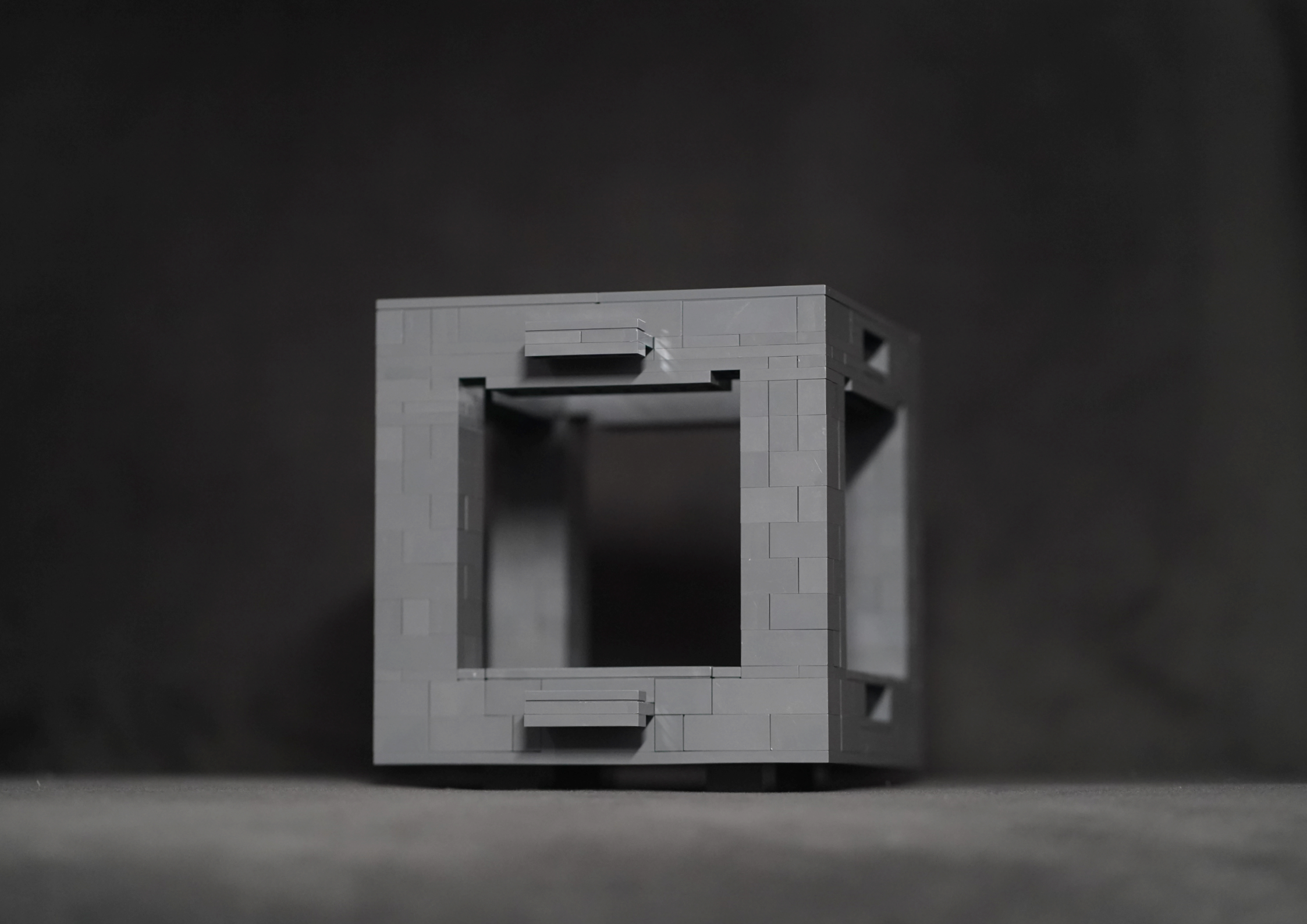
Drawer: The modular drawer can be inserted from any side of the cube, allowing access either from the top or from two opposing sides. This module can be stacked vertically. The drawer will also include customizable and adjustable dividers, offering enhanced organizational possibilities.

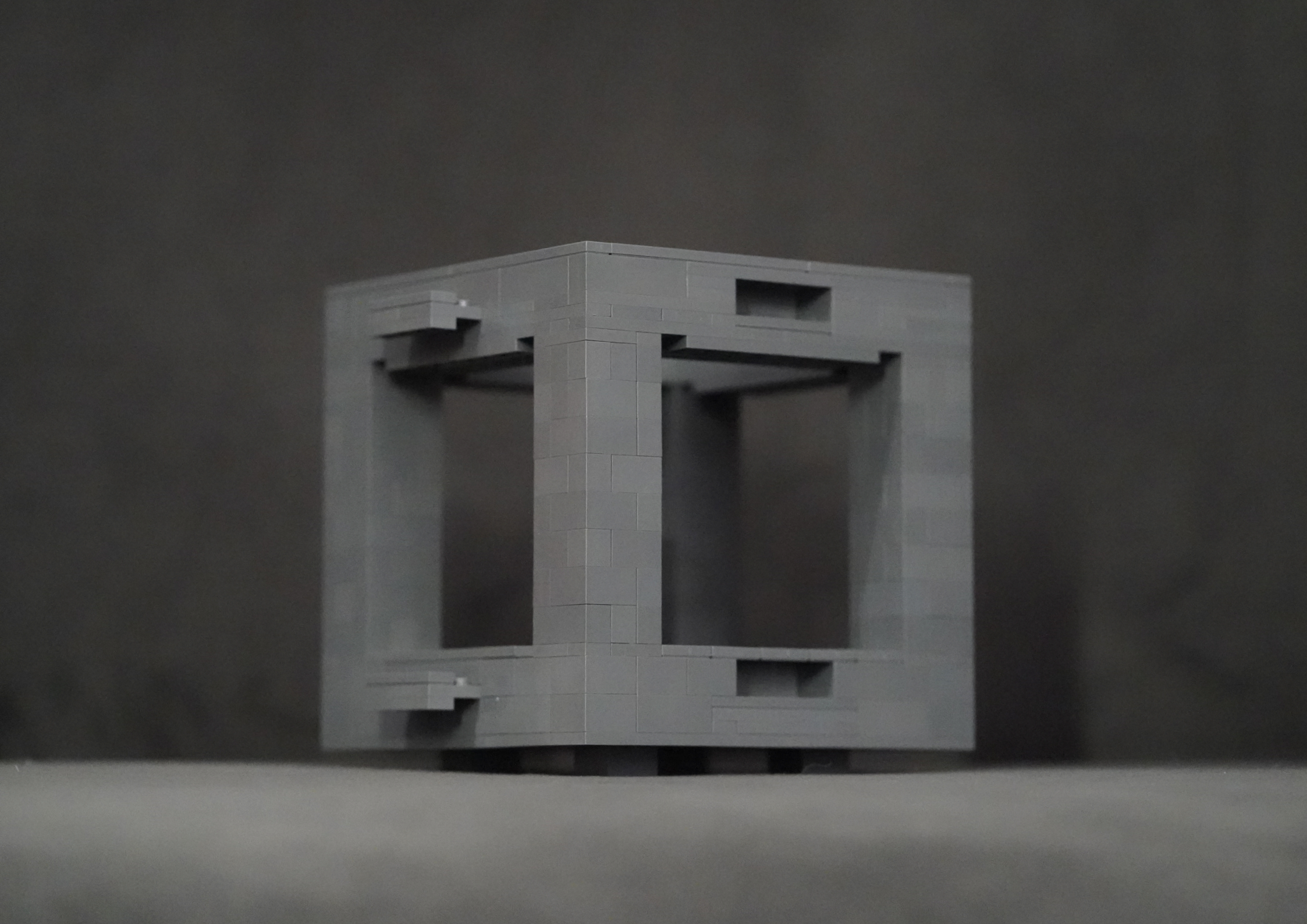
Sandwitch design: All plate modules are planned to be designed in split configurations – like a sandwitch. This will allow for more modularity, as the **horizontal convex connectors** of the cube can be replaced or entirely removed, depending on user preference. For example, a cube could be configured without horizontal convex connectors if they are not required.

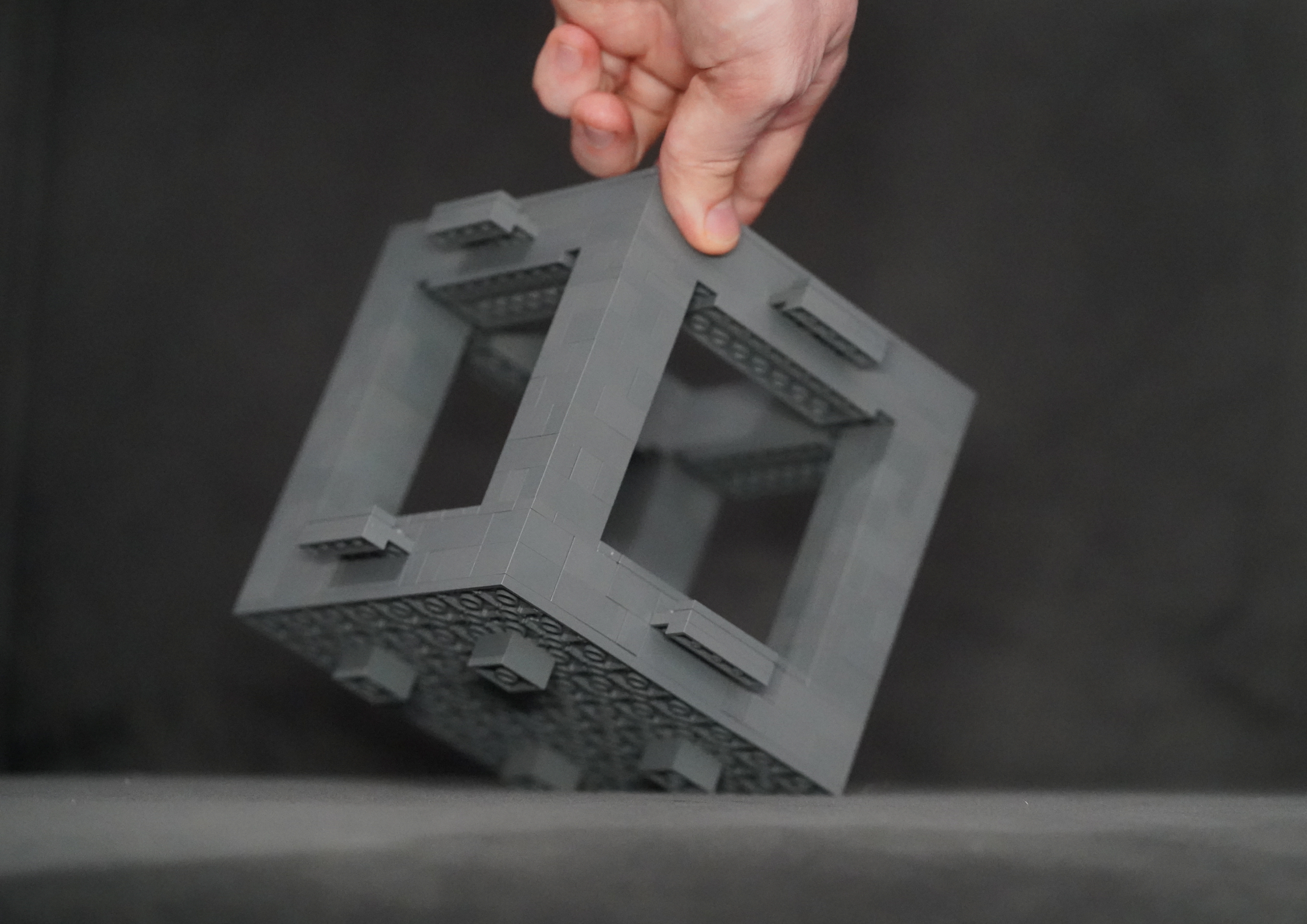
Larger plates: A larger plate, spanning the length of three cubes and matching the thickness of the base, top, or universal plate, is also in development. This addition will enable configurations such as extended tables or benches, requiring fewer cubes for support.

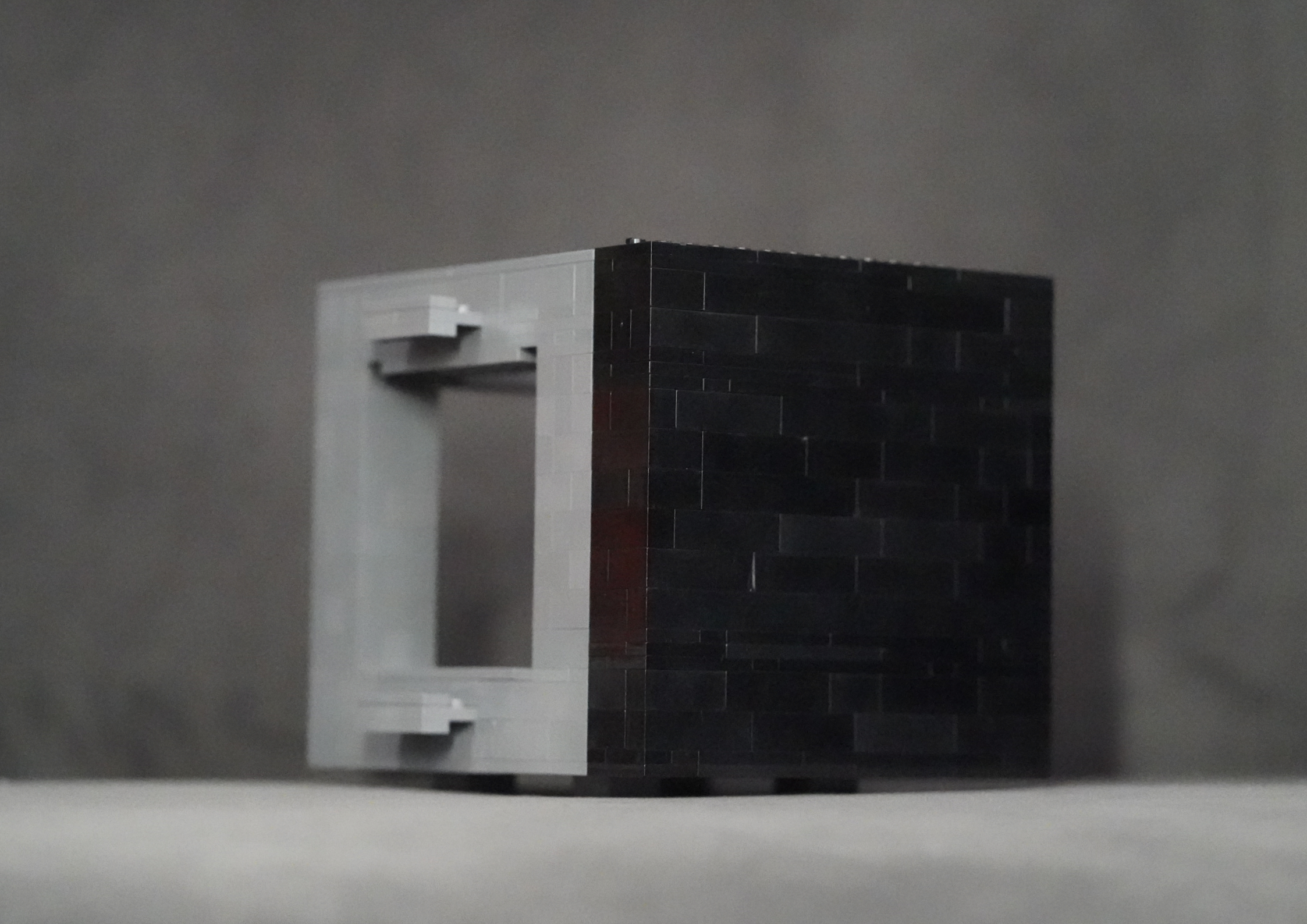
These advanced modular features ensure that BRIX is not only versatile and user-friendly but also adaptable to a wide range of creative and functional applications in any workspace.

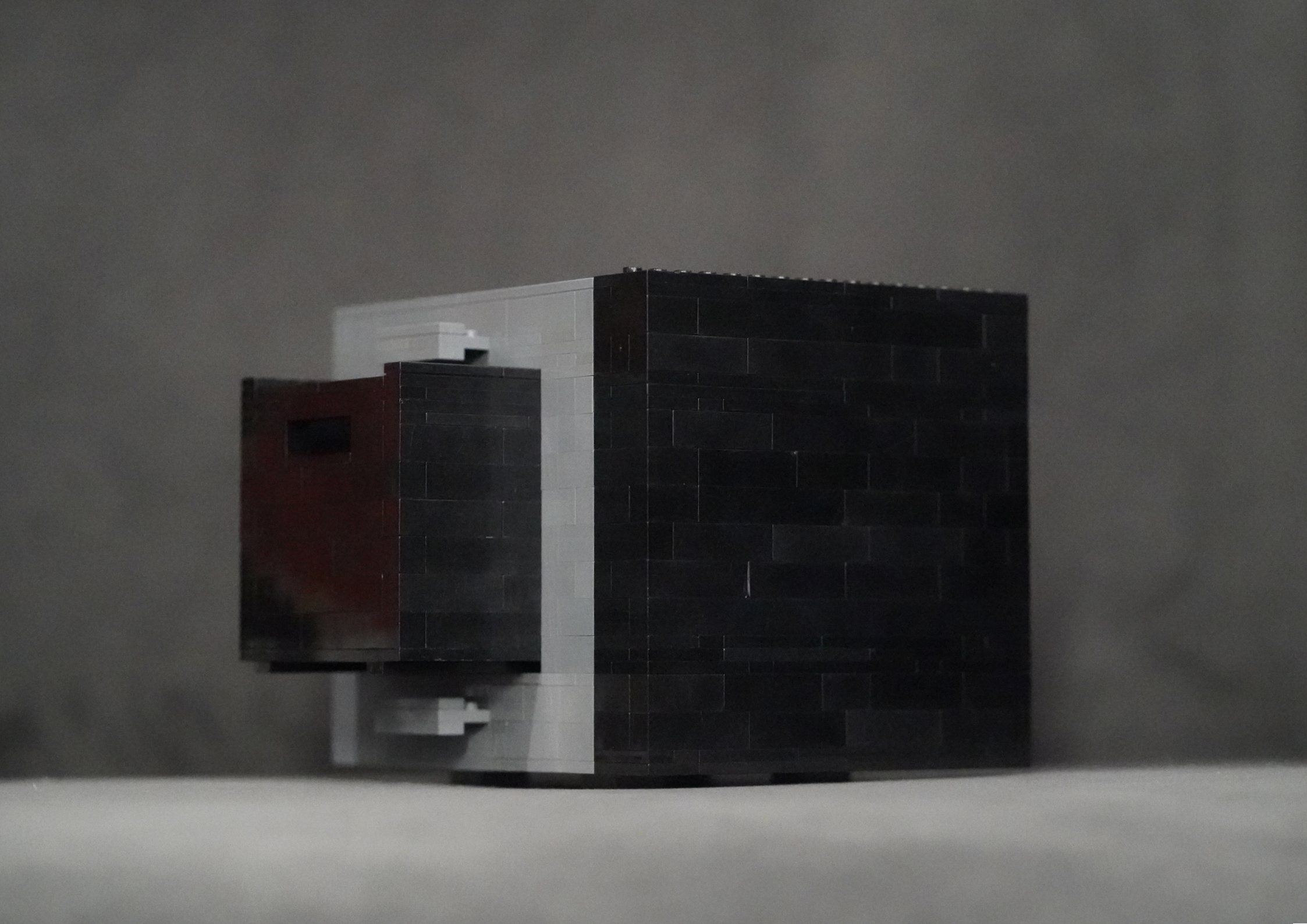


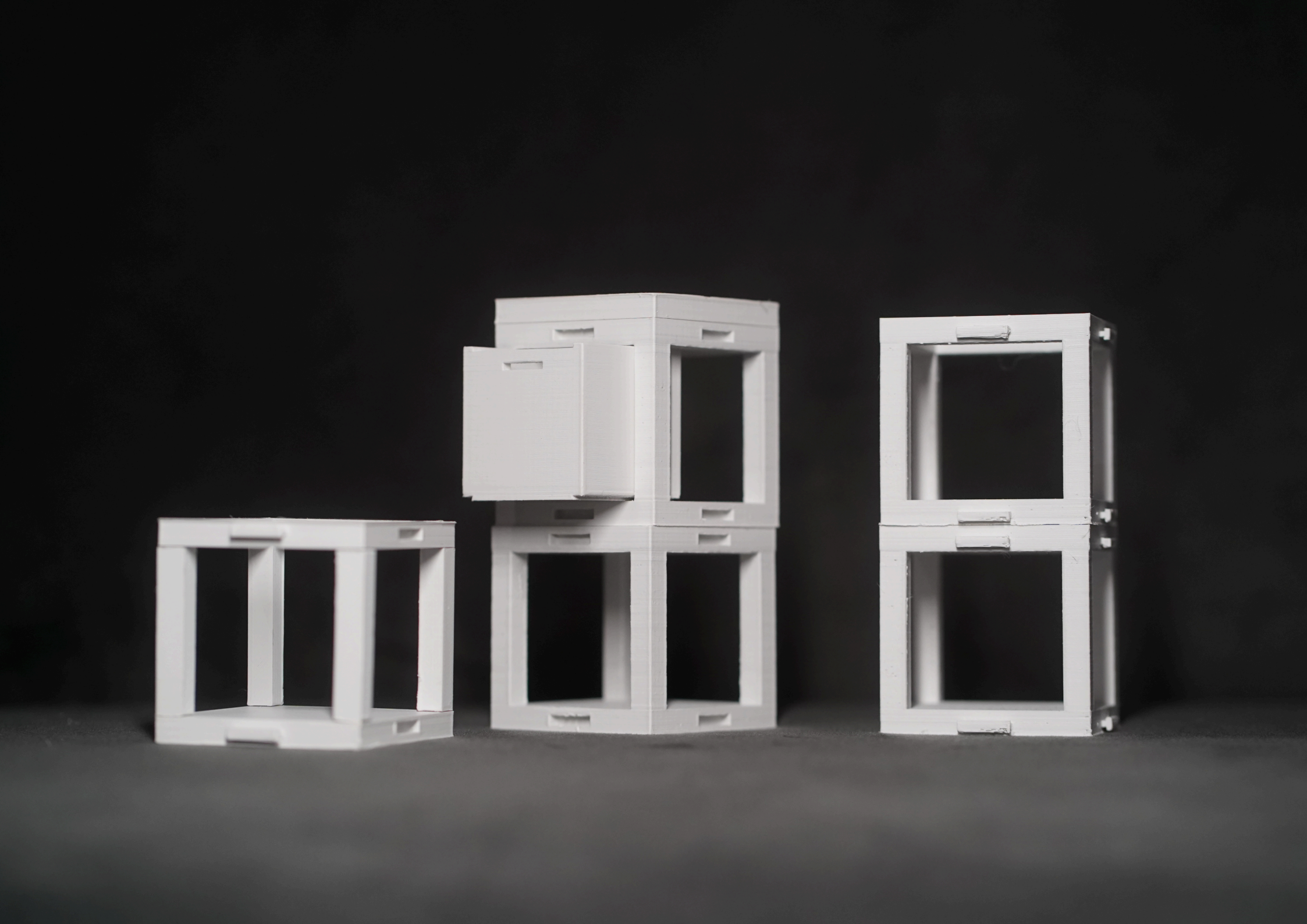


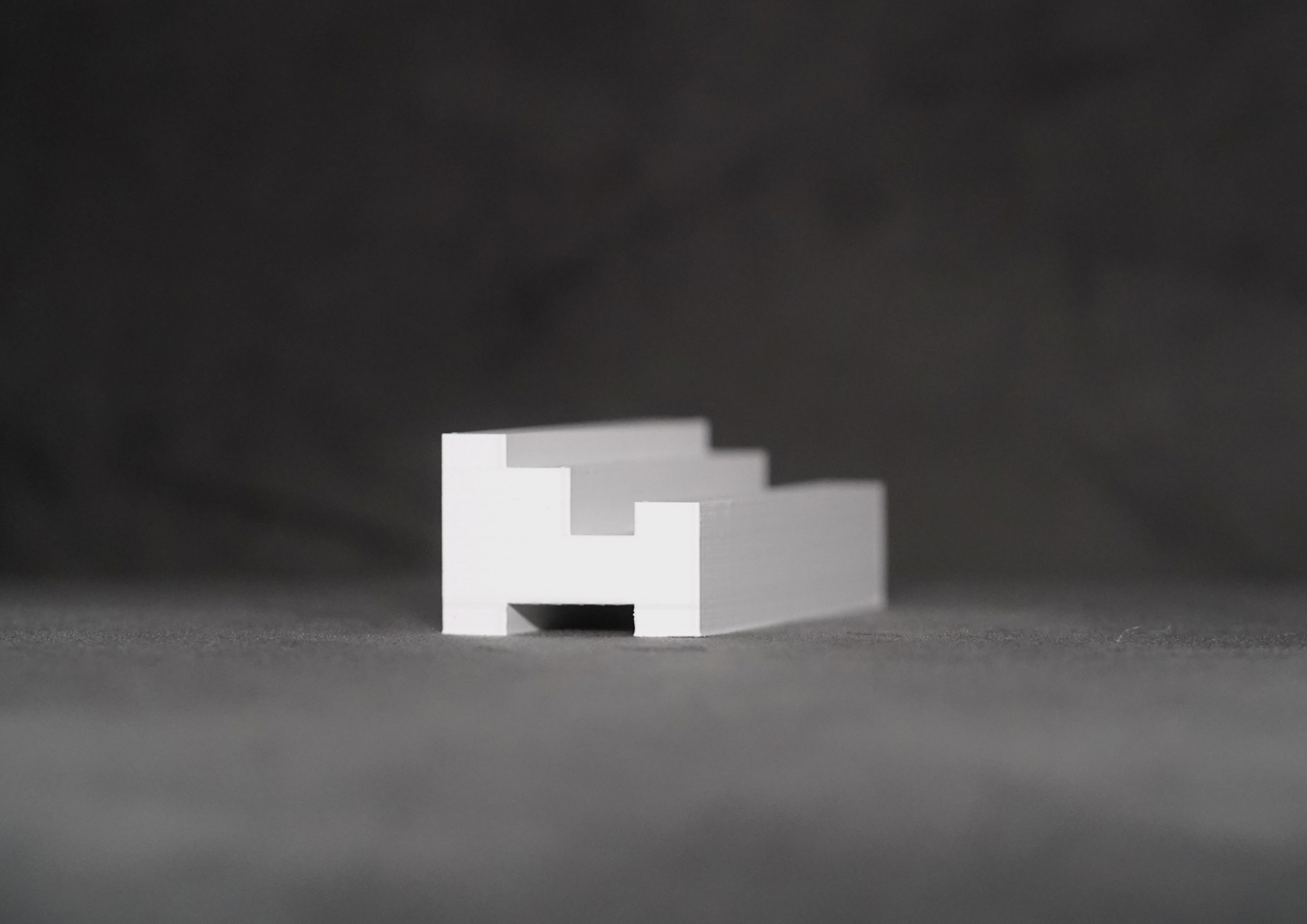


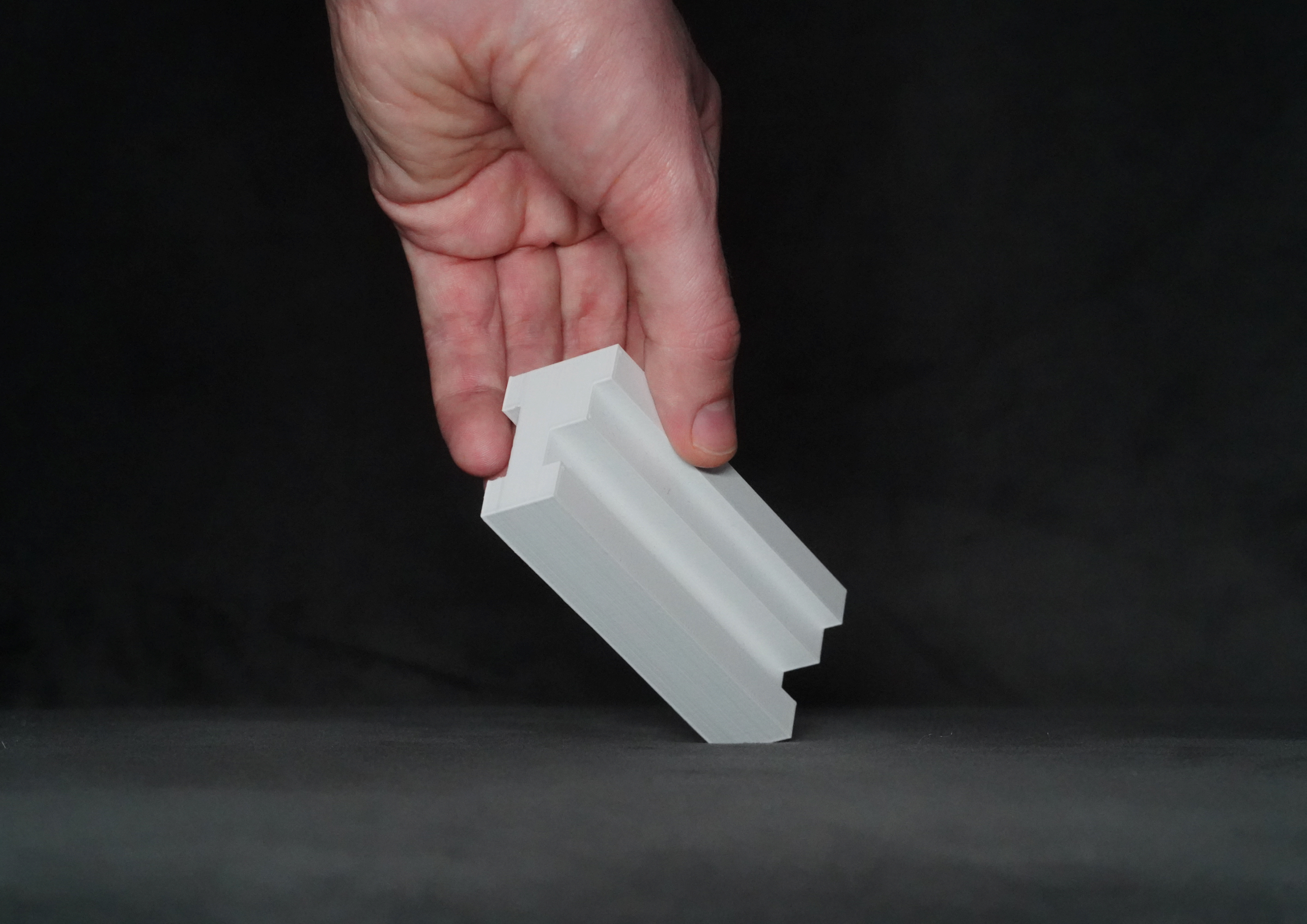


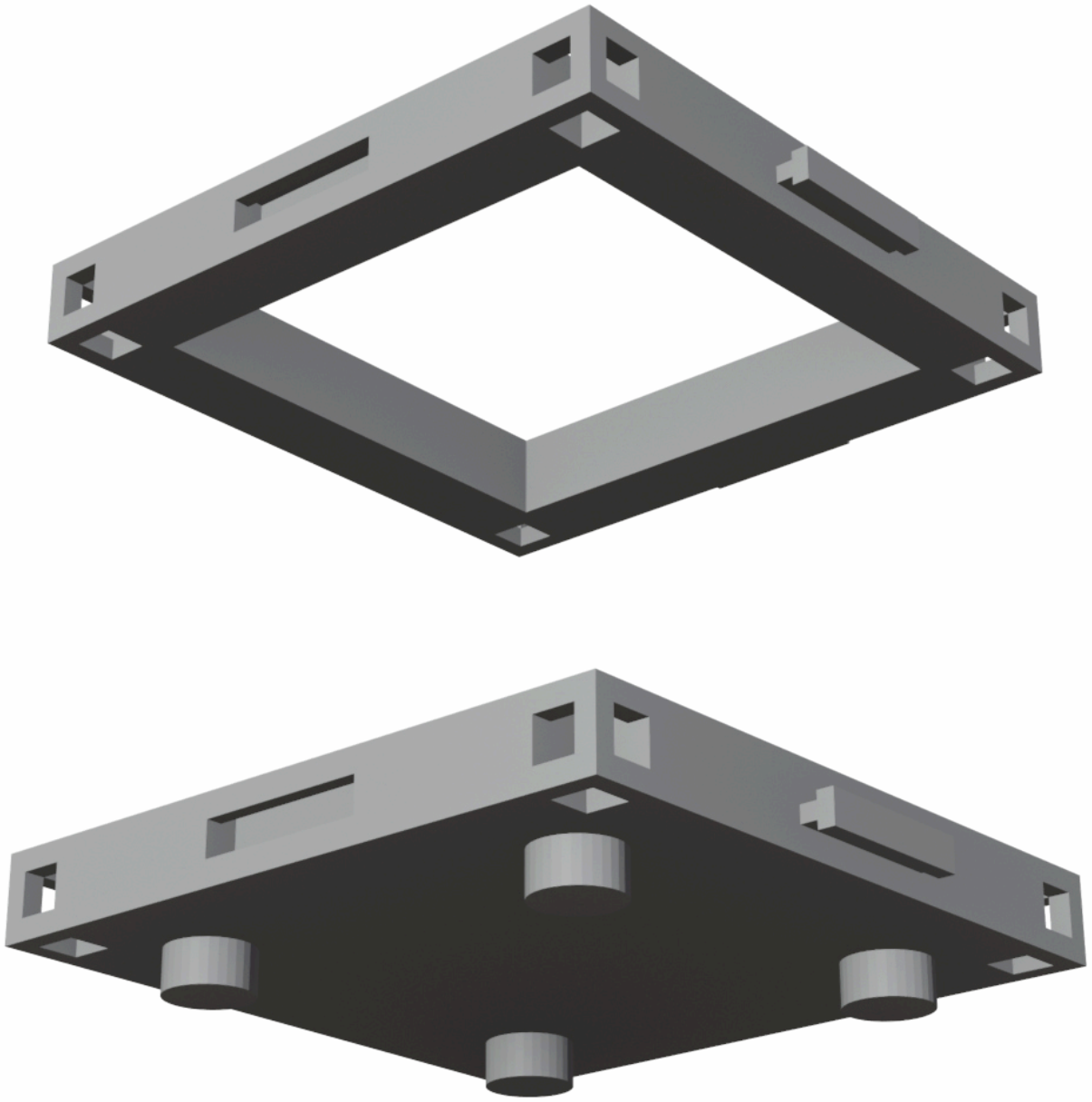


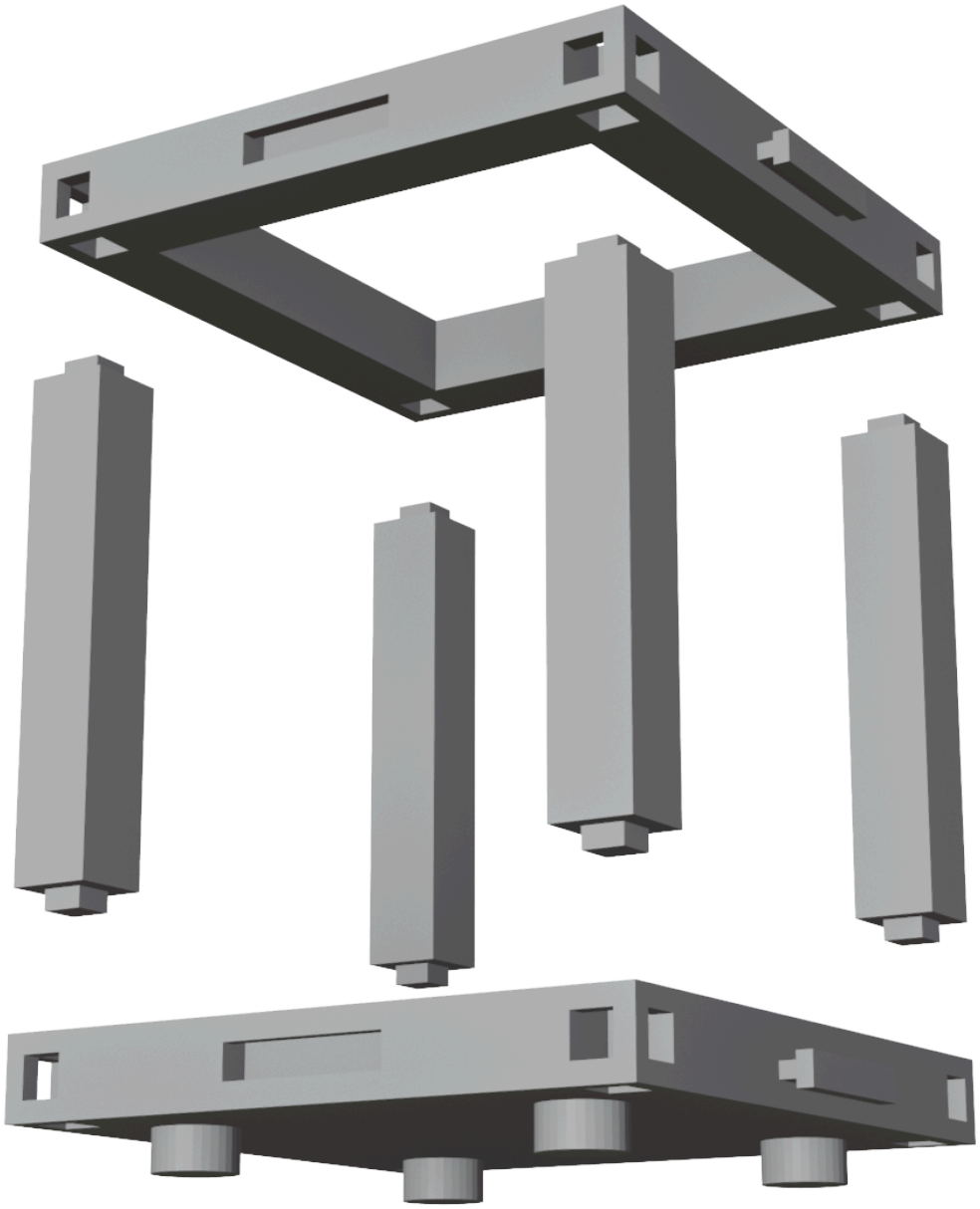


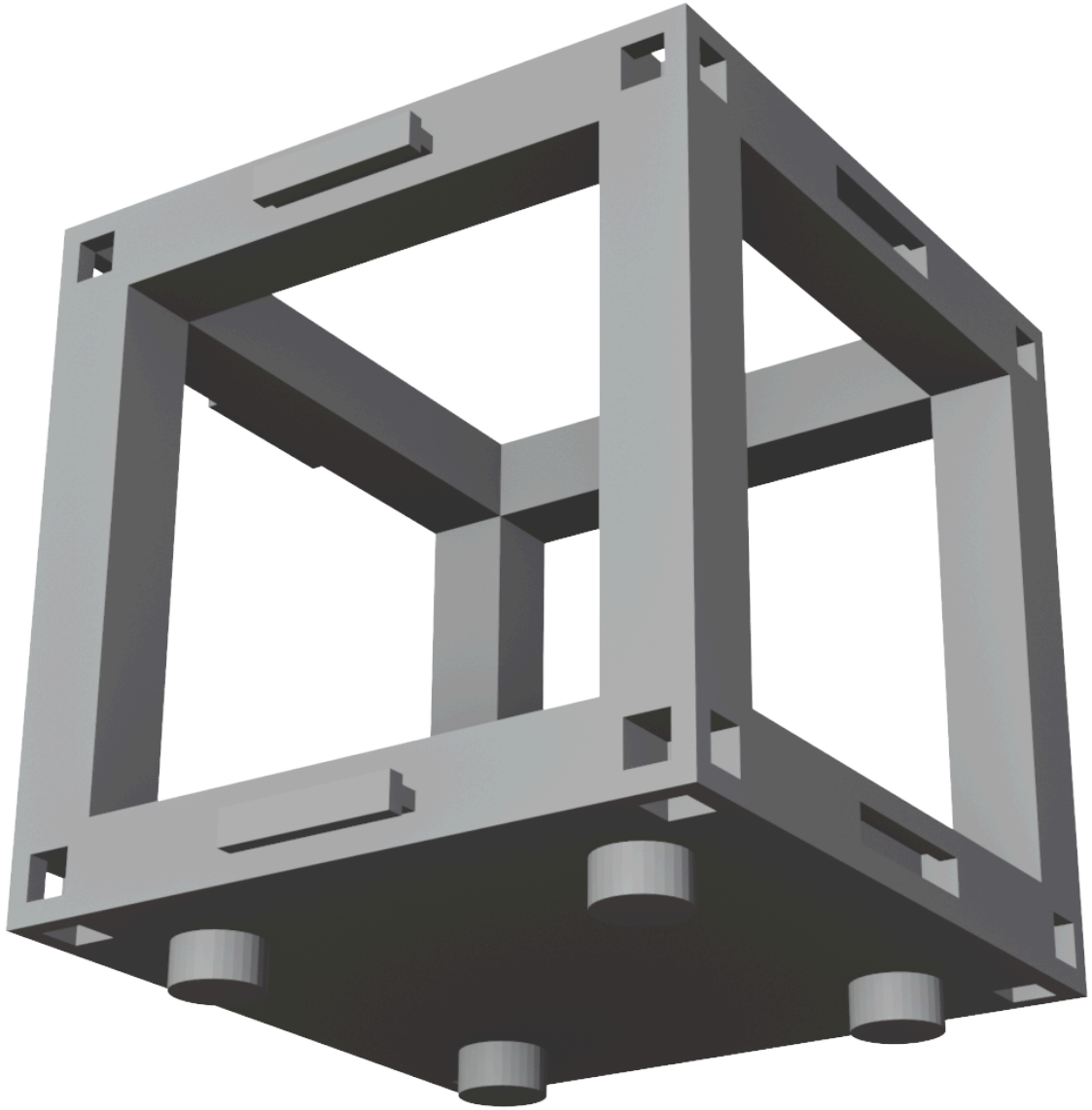


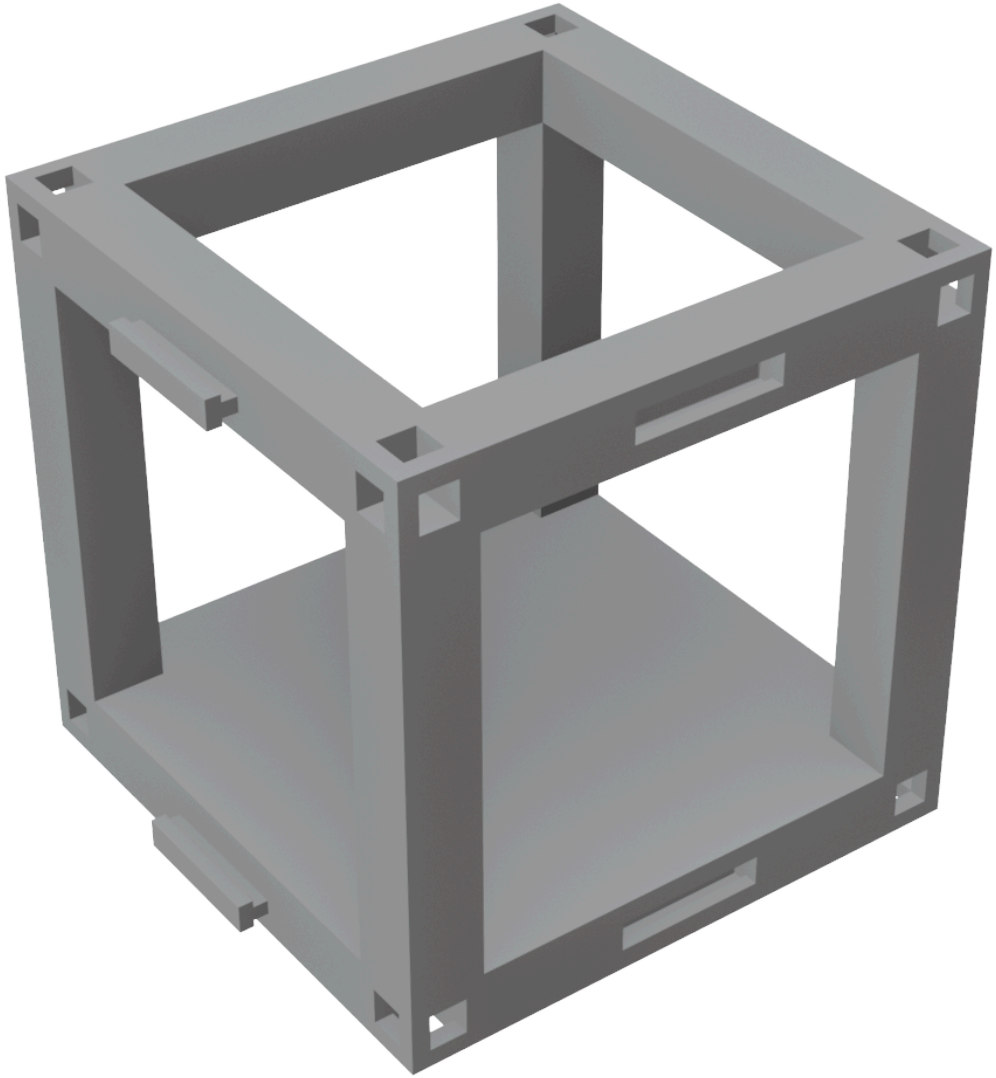


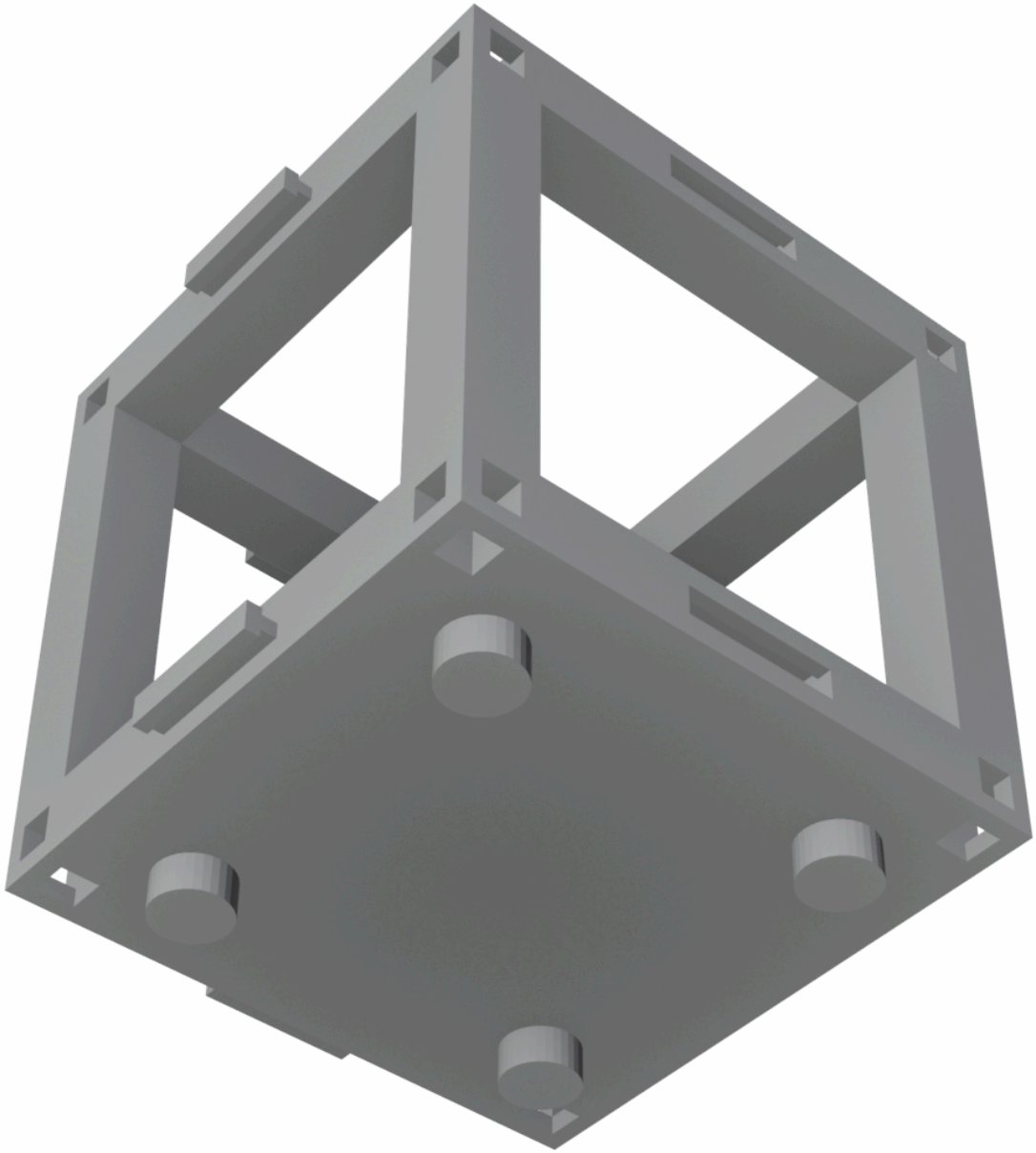


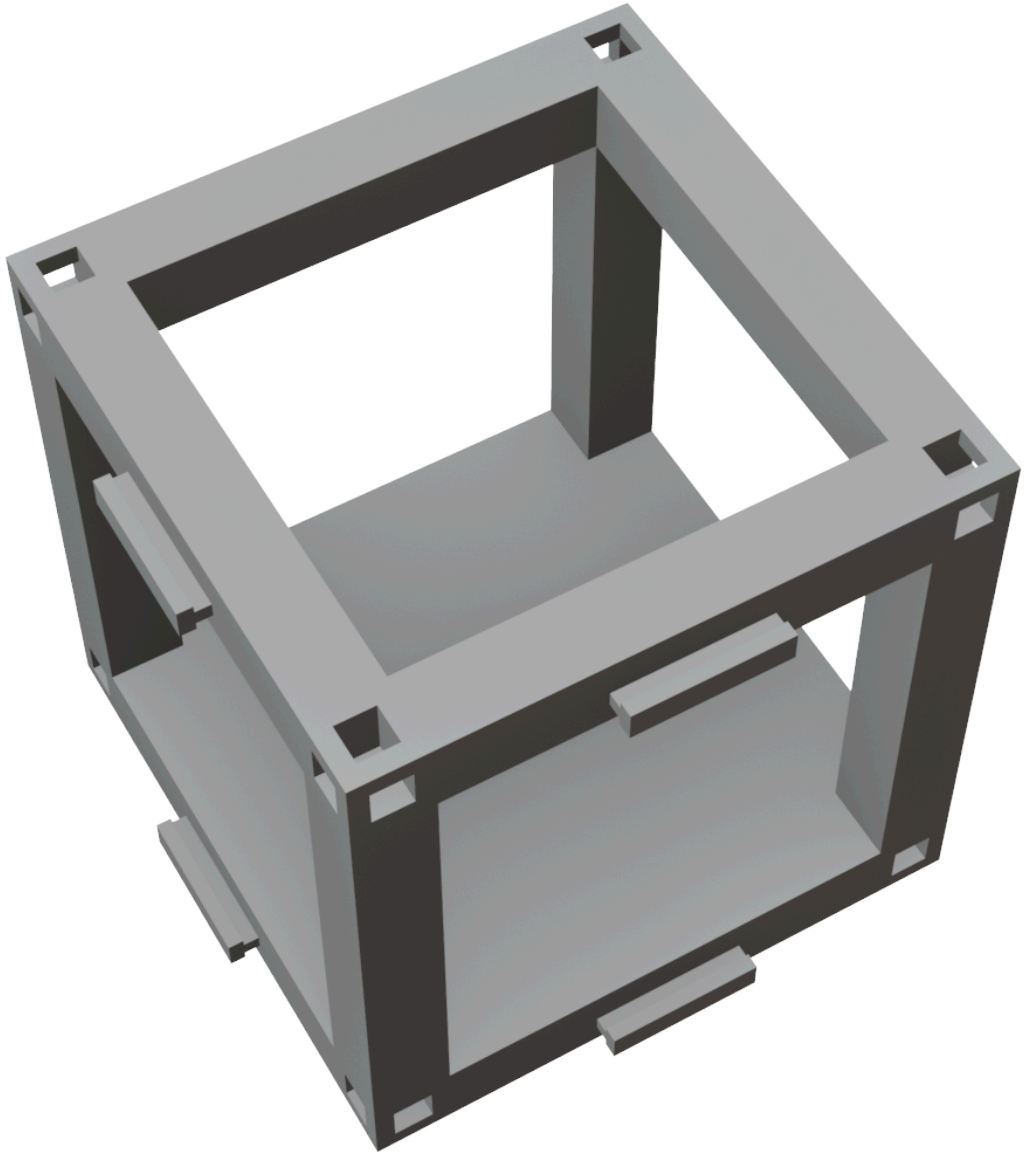


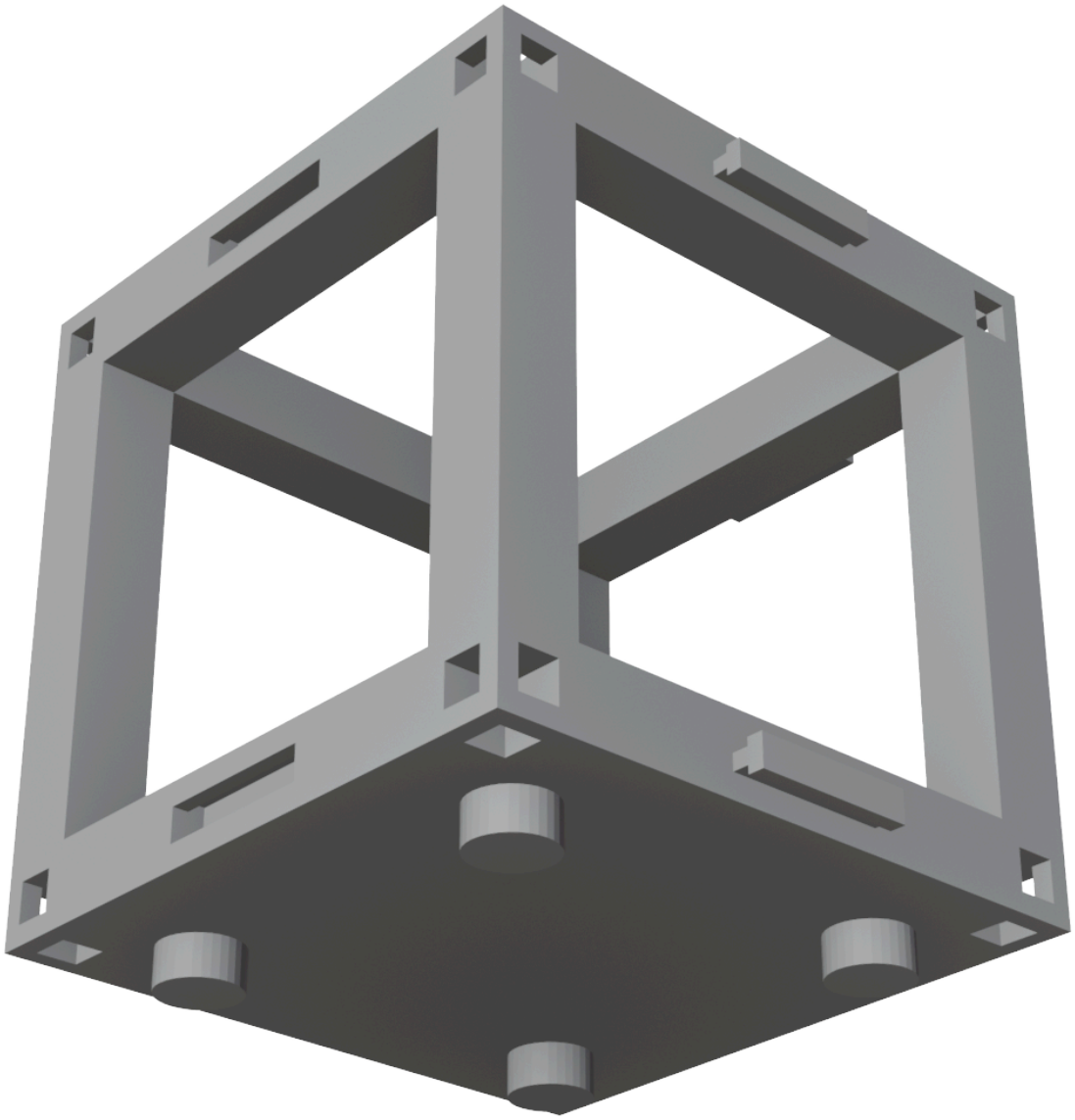


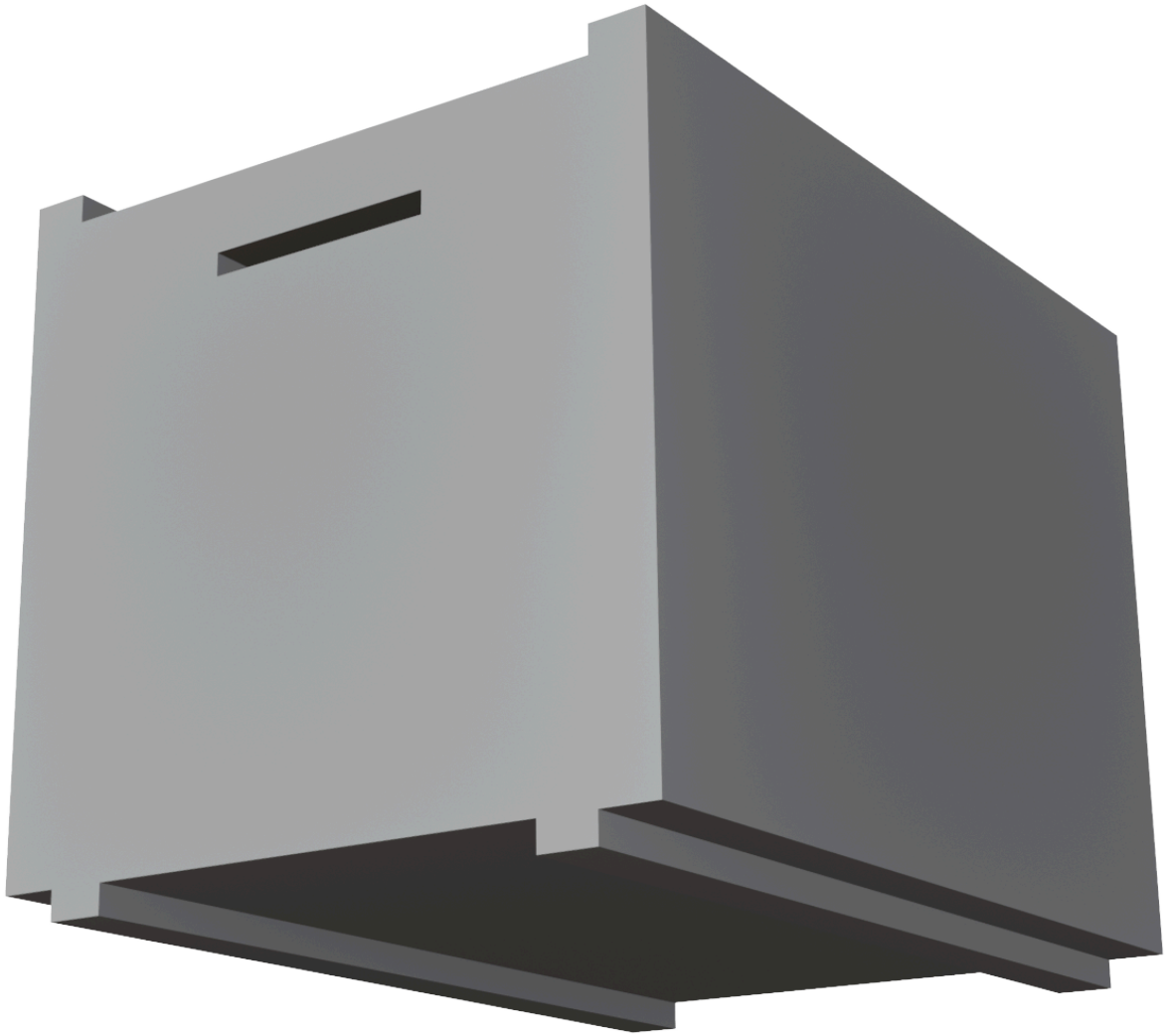


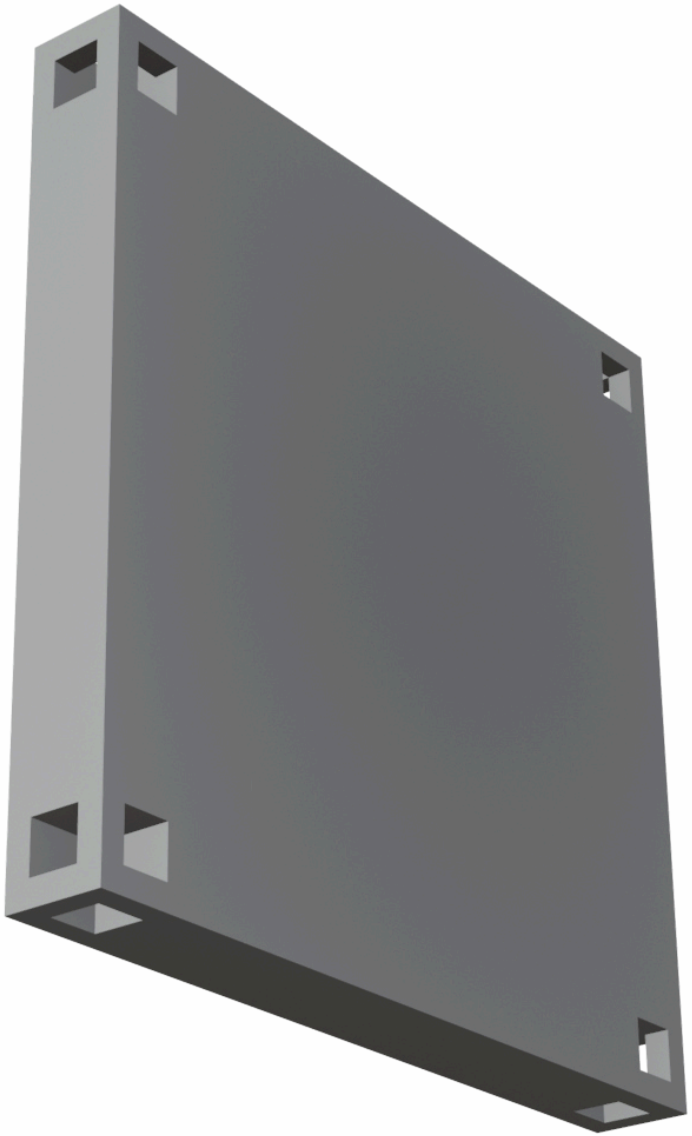


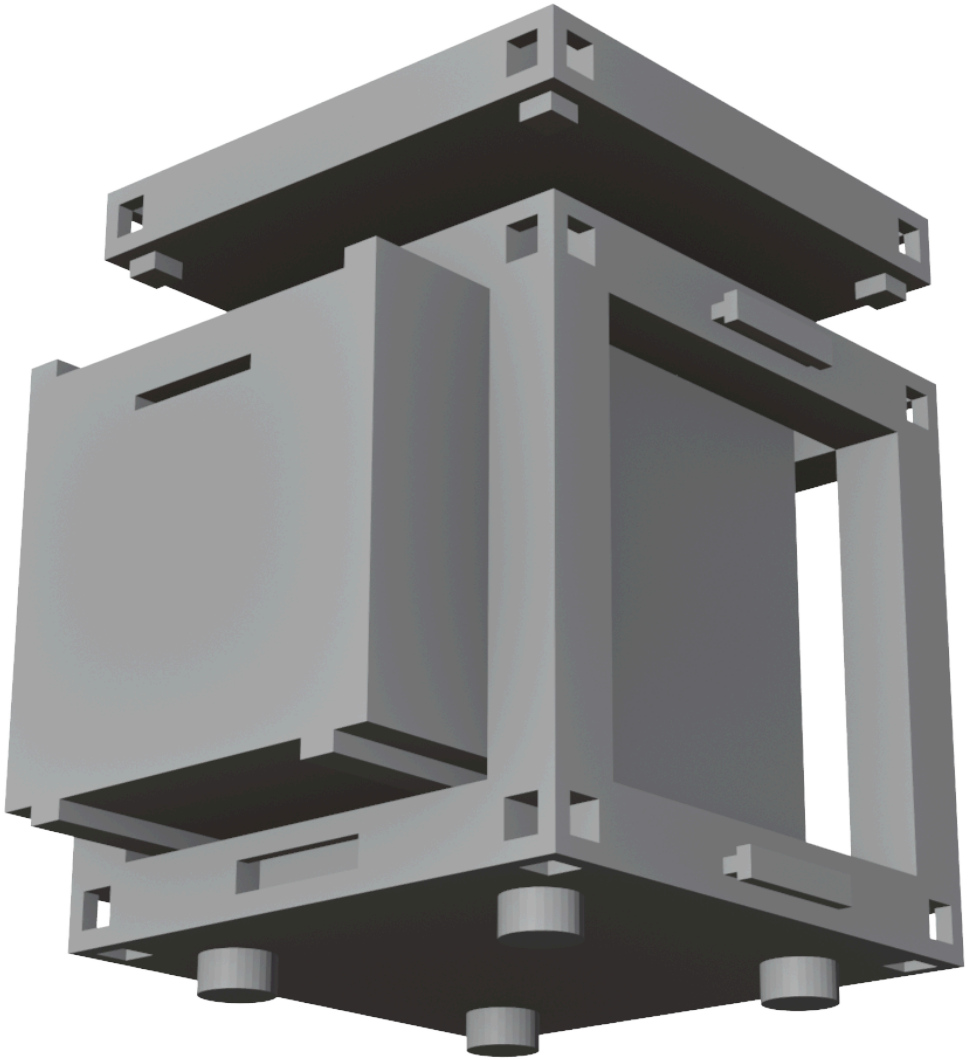


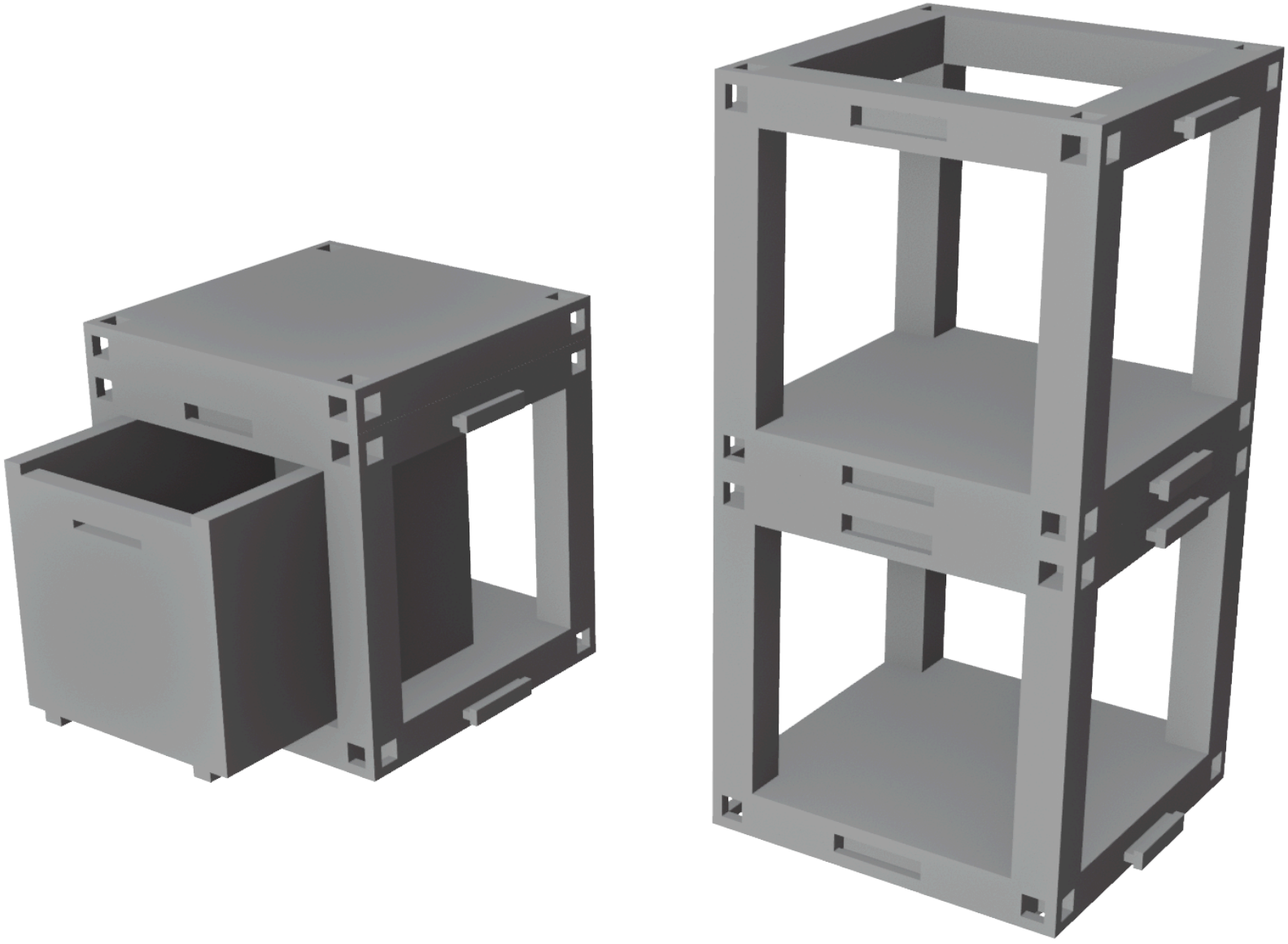


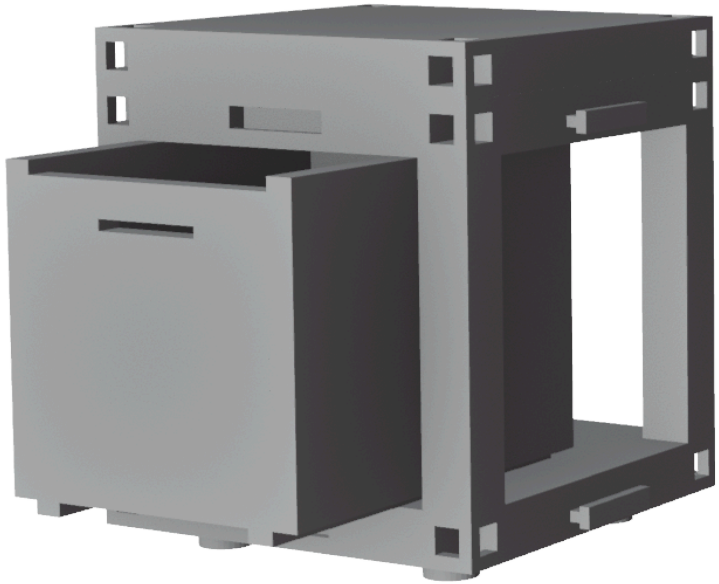


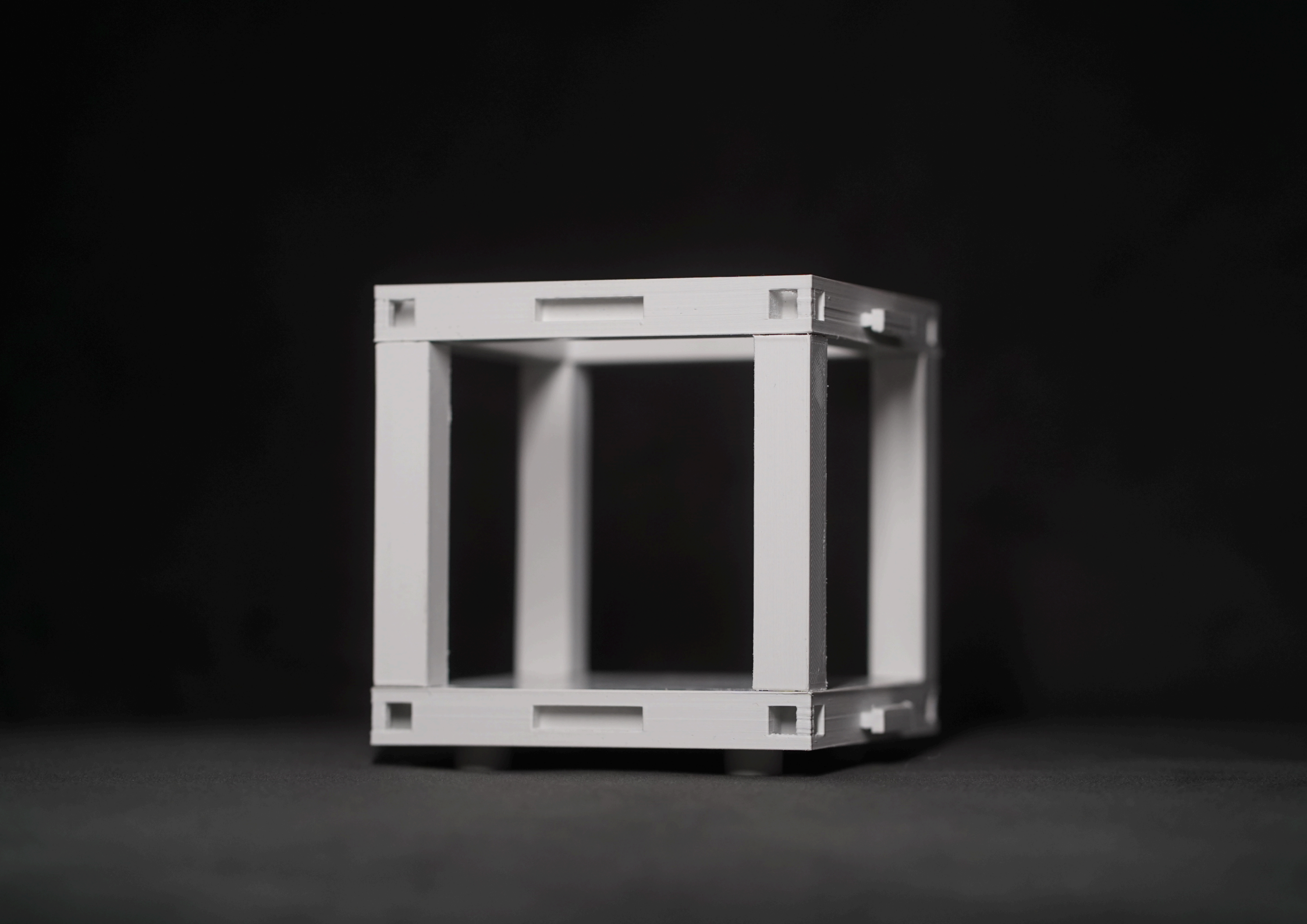


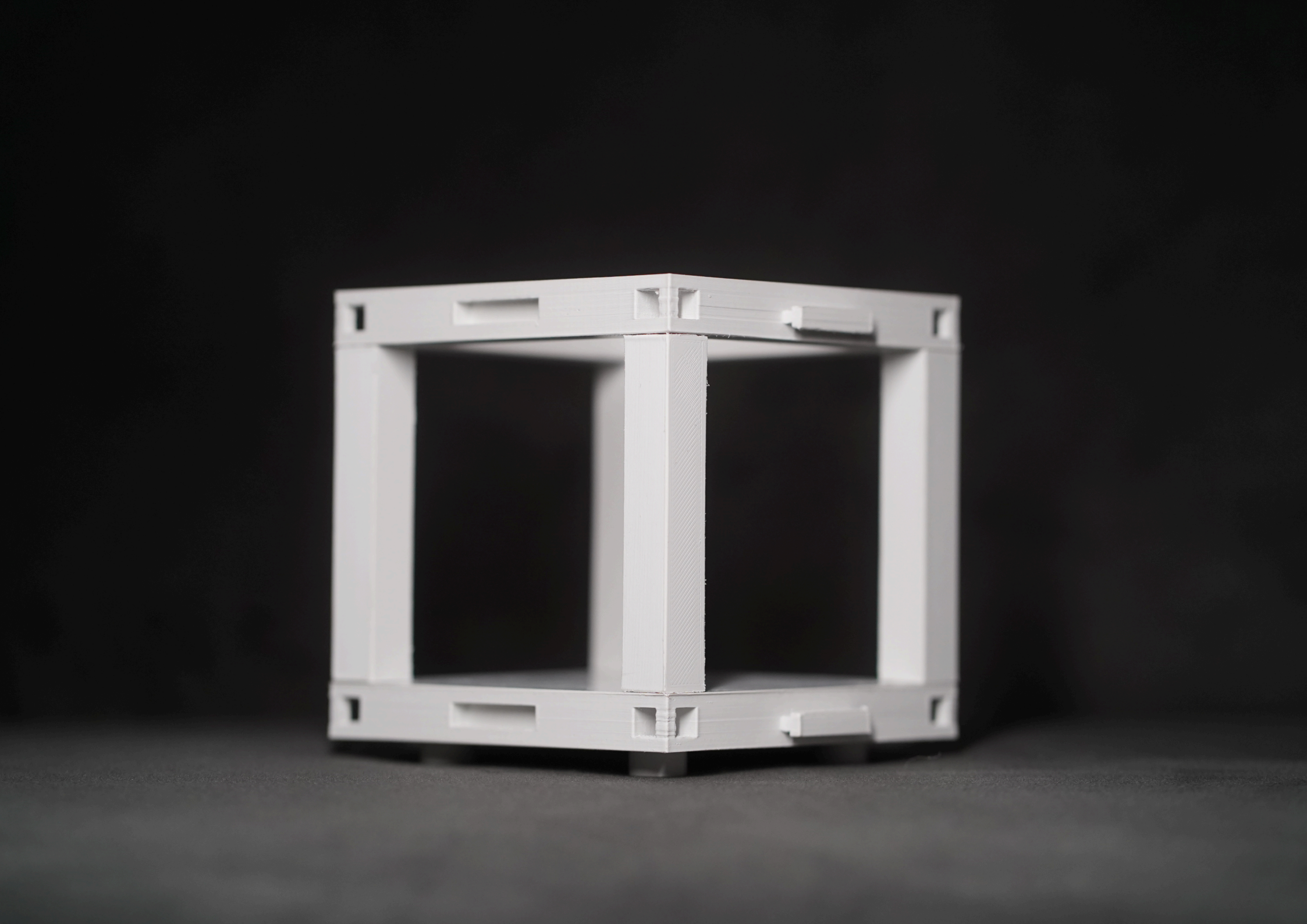


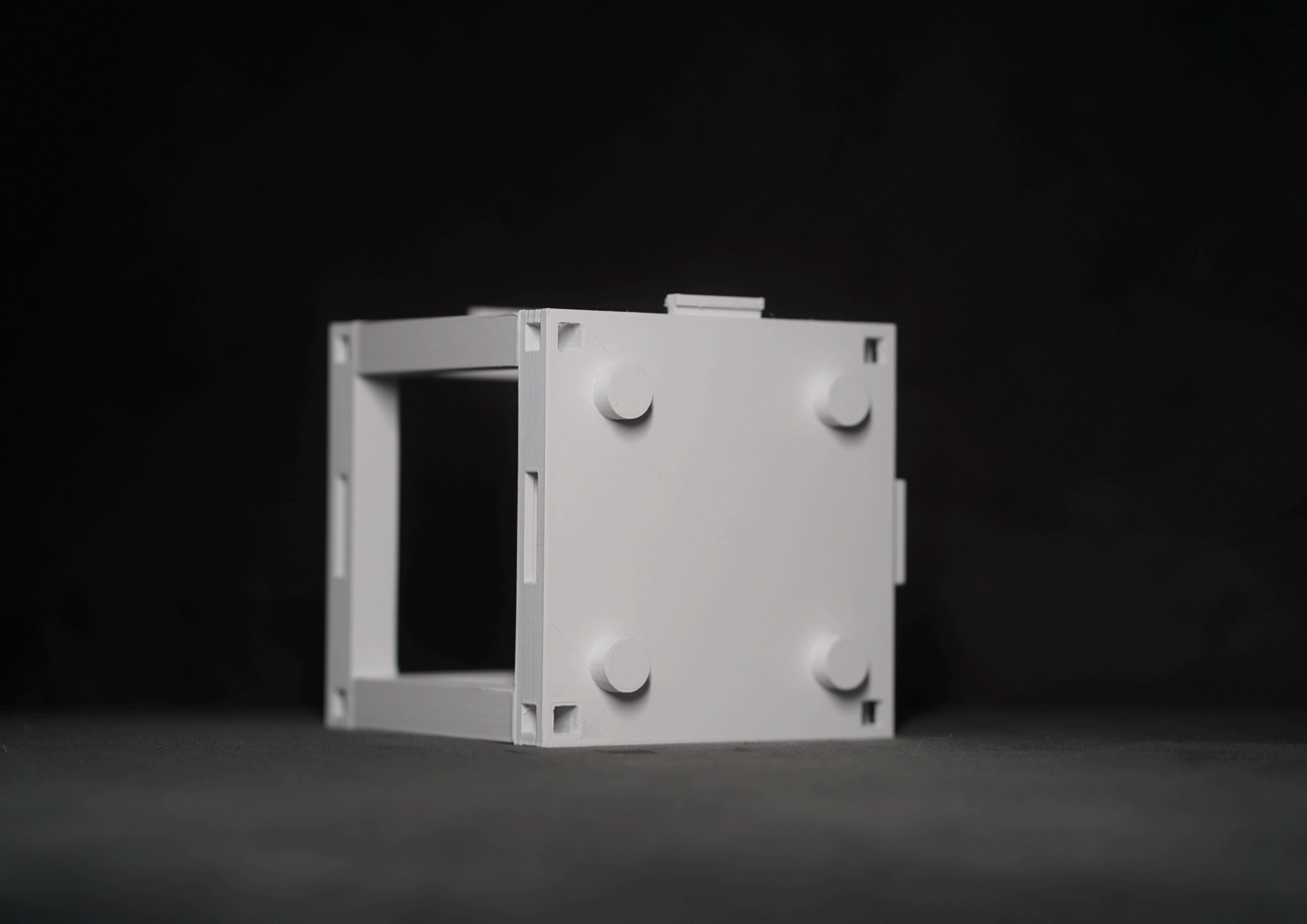












Brix

BUILD TOGETHER – CREATE TOGETHER!

CDS 3 – Prototype – Merlin Mößle (266601)