

IMAI LAB.

[Self Built House Prototype with 3D Printed Joints]

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PENTA

The New house prototype (scale=1/2)

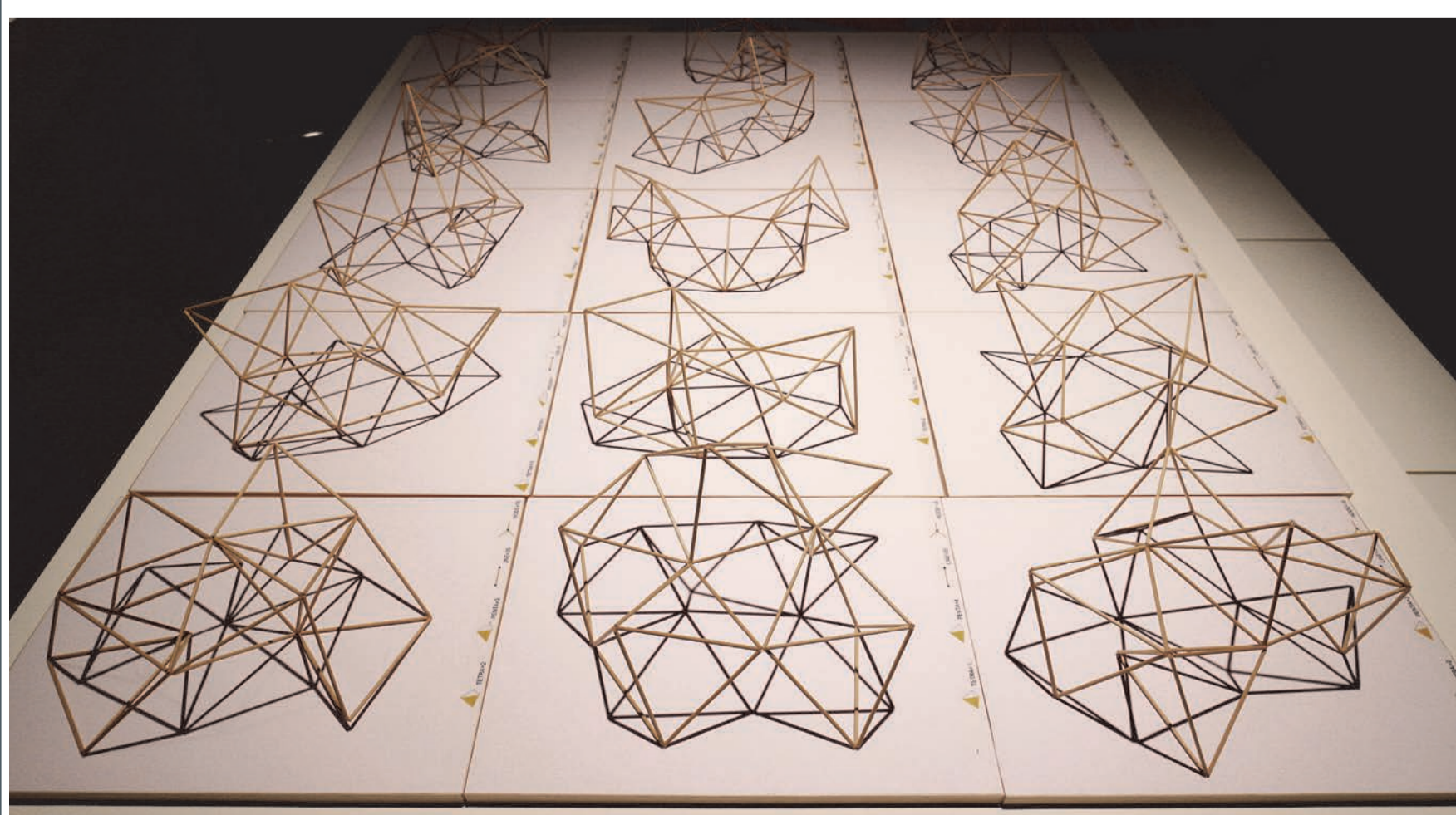
This future house prototype is assembled with several 3D printed metal joints and standardized parts in order to allow this user to build this house by oneself in low cost. The structure is composed of a light weight aluminum pipes and the joints they are just plugged into, which is so easy and flexible construction.

He/She can control the layout of structure according to the condition of the site where this is constructed and also his/her lifestyle.

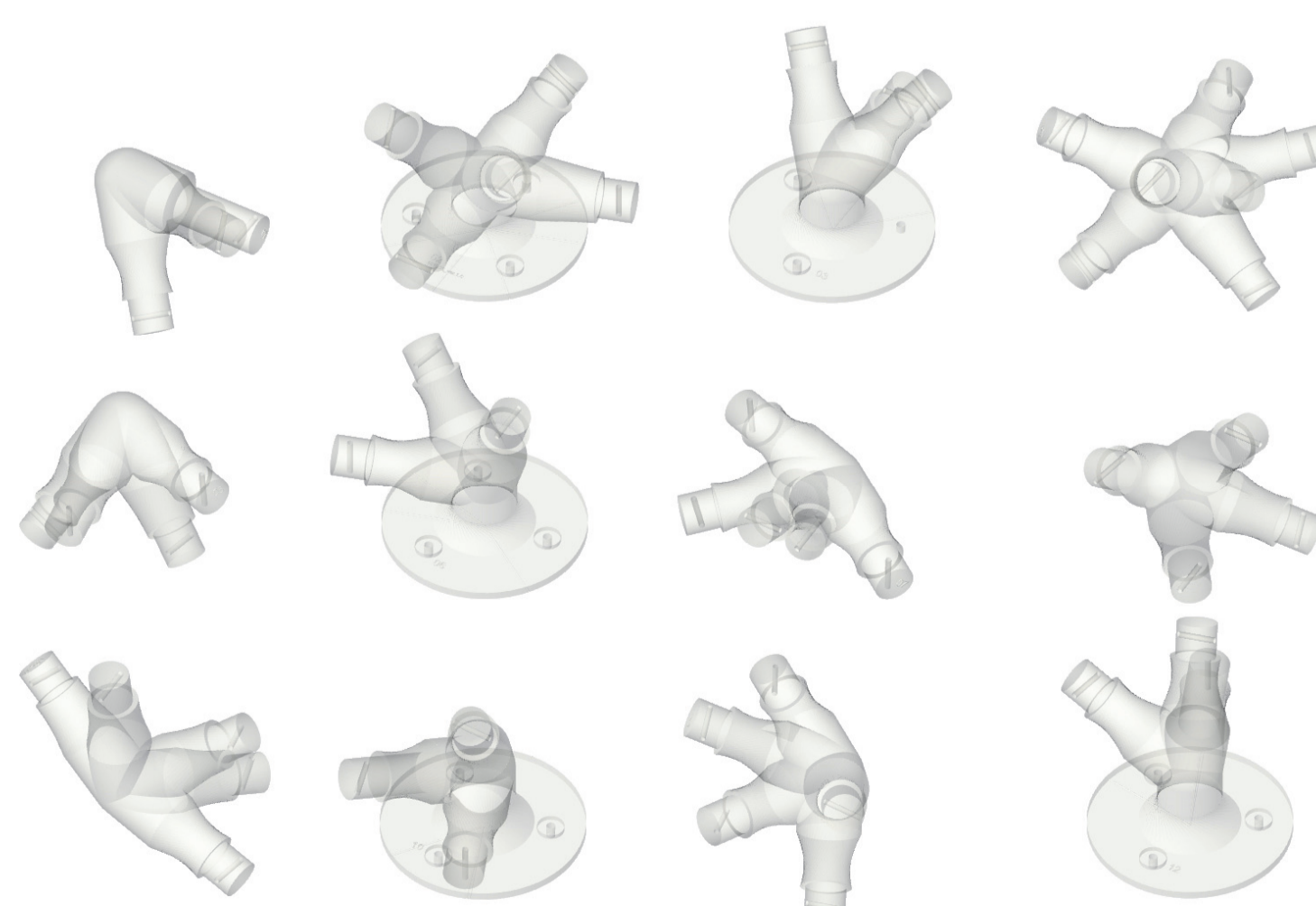
The geometry is the combination of pentahedrons and hexahedrons their shape are not fixed, and tetrahedrons that are fixed, which can allow to make various kind of soft architectural forms with the same length pipes.

With just changing joints set and reconstructing the house with using them, you can change freely entire architectural form according to the change of the site or family condition when you move or renovate it. All parts except for the joints, that are the insulation panels of triangle shape, same length aluminum pipe and so on, are standardized and reusable when you transform the house.

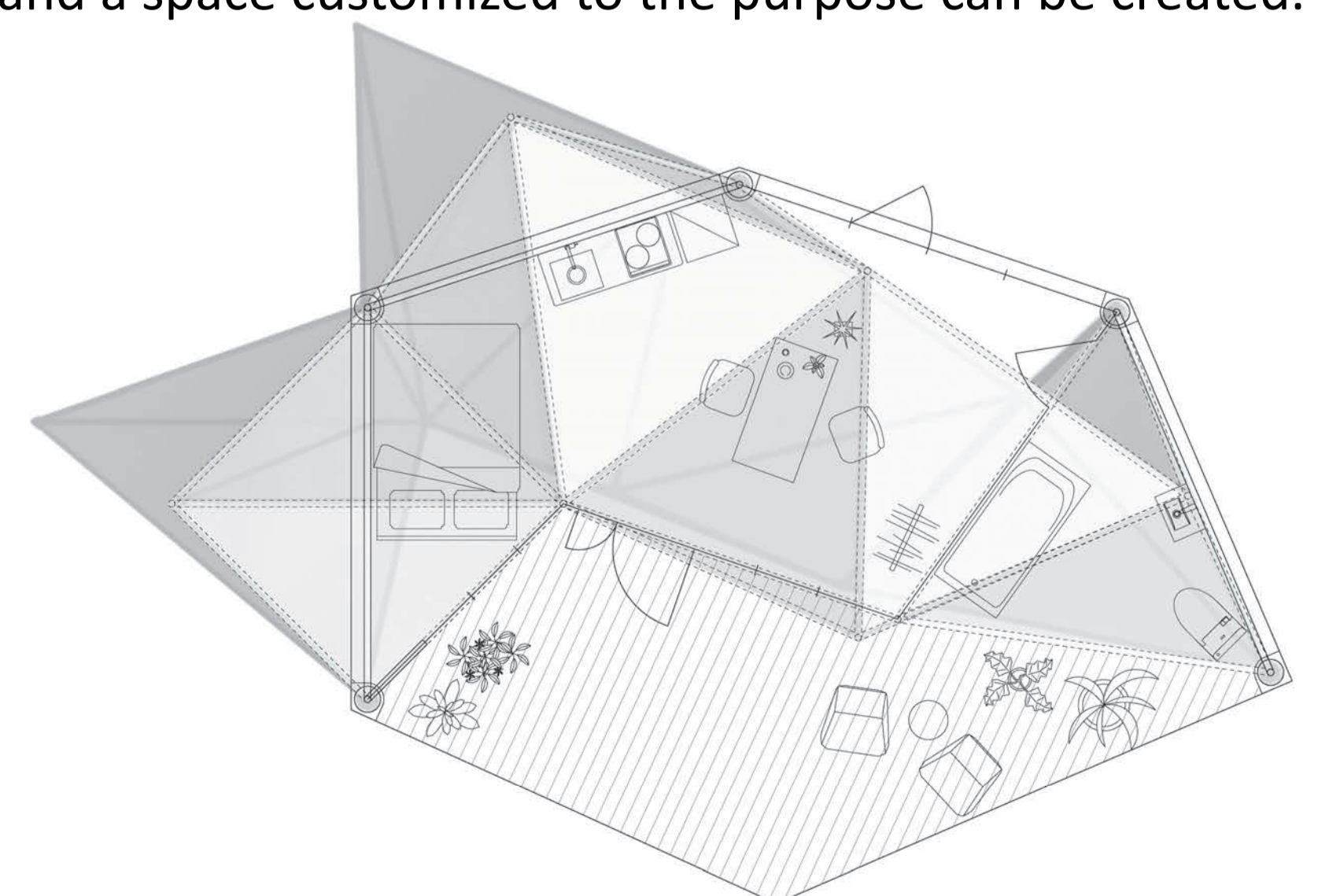
Traditional Japanese house tectonics is convergent at manufacturing the joints with craftsman's technology. Referring this concept and using new additive manufacturing technology that can easily output complex shapes, construction of a house can be simplified and a space customized to the purpose can be created.



Shape variation combining pentahedron, hexahedron and tetrahedron



Joints printed out individually according to the angles of pipes



Plan of the prototype