SHELL MYCELIUM
[degradation movement manifesto]

Location:

Kochi Muziris Biennale 2016 Collateral

Kochi, Kerala
India

Lead architects: Giombattista Areddia, Asif Rahman, Mohamad Yassin

Collaborators: Nikhil Ommen Mani, Beetles 3.3 architecture

Construction: Baboy
Carpenters: Ansen and Viju
Construction support: Rohit Thomas

Materials

-Plywood
-Steel
-Coir Pith (Coconut husk)
-Mushroom Mycelium Spores
-Local Lumber

Content: BEETLES3.3 Architecture and Yassin Areddia Design LTD
Photo Credit: Krishna & Govind Raja

Abstract

A critique of the use of heavy materials in temporary structures for events such as the Olympics or expos around the world.

"In most of the cases the structures constructed are permanent, making use of heavy construction material," explained the team.

"This approach leads to many practical difficulties in demolition and disposal," they continued. "At the end of the event, after the entire world has danced and celebrated, the city remains a scarred body, devoid of life."

"We criticize these unconscious political choices, with living buildings that arise from nature and return to nature, as though they never existed."

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Photo Credit: Krishna & Govind Raja

Design Intent/Sustainability

-Addresses the misallocation of permanent materials whose lifespan exceed the intended life of the structure

-Contrasts degradability and sustainability against liability as design constraints

-Mycelium designed to assist rapid biodegrading of the structure

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Mushroom Mycelium Spores

-Mycelium: Effectively the thread-like nutrient gathering system (equivalent of root structure) for fungi

-Spores placed in organic panels primarily made of coir pith (coconut husk)

-As biennale progressed so did the deterioration of the structure.

-Creates a structure that only remains structurally sound for the duration of it's intended life before beginning to break down.

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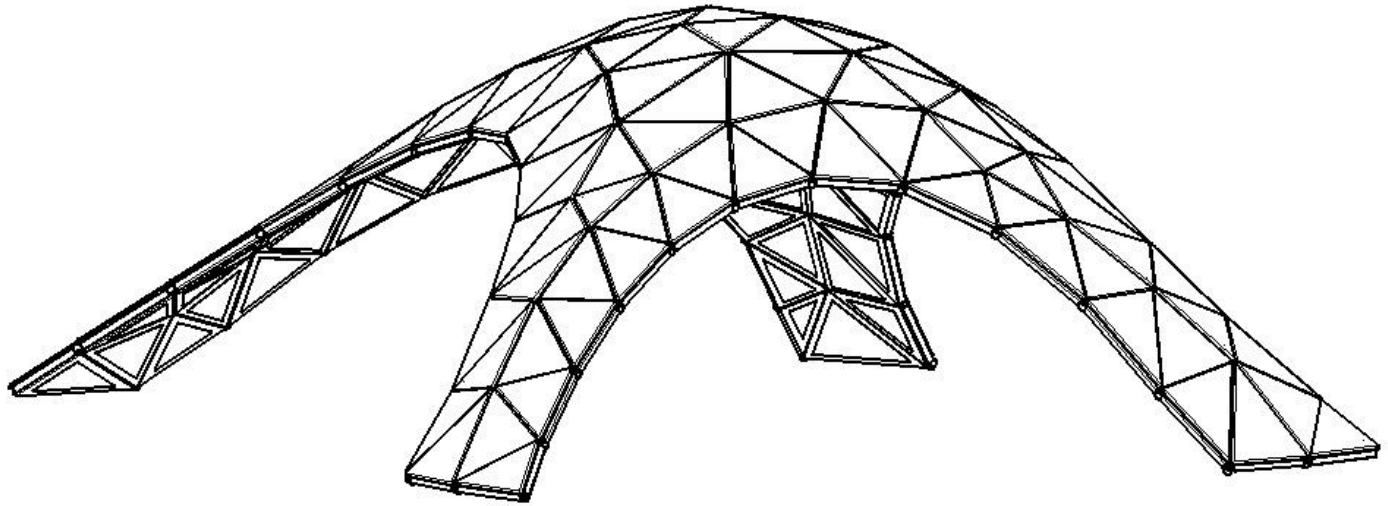
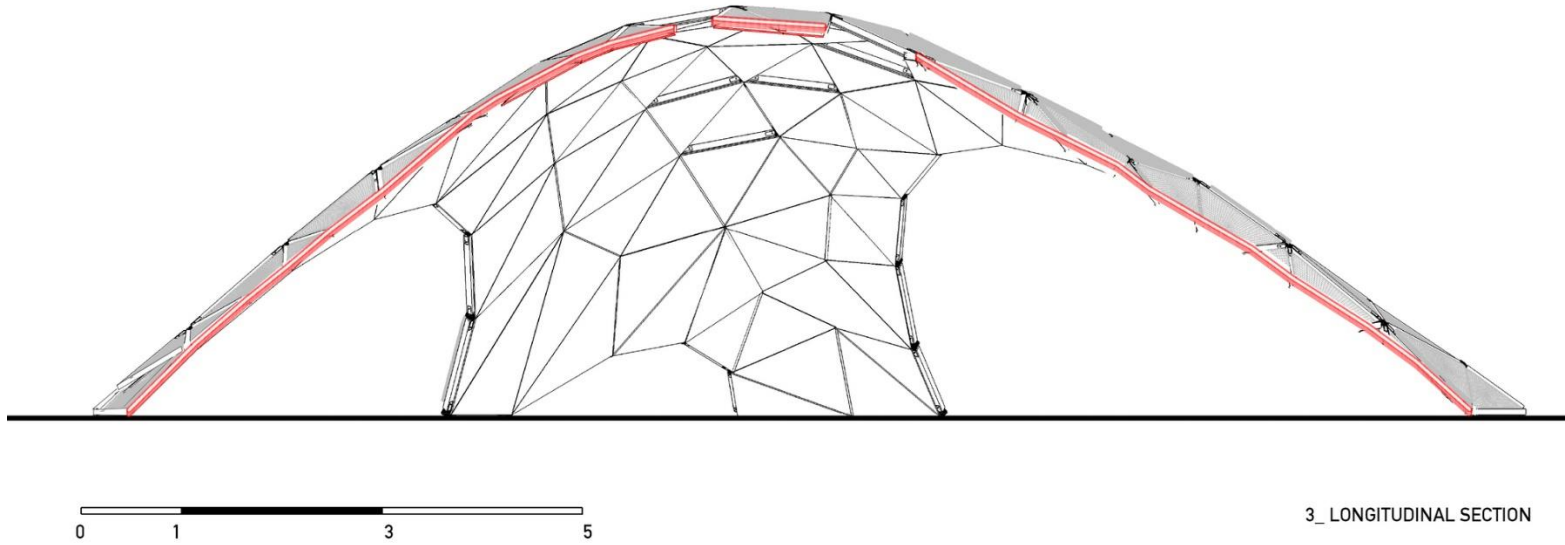
Structure

-Lumber Gridshell: Gravity load path

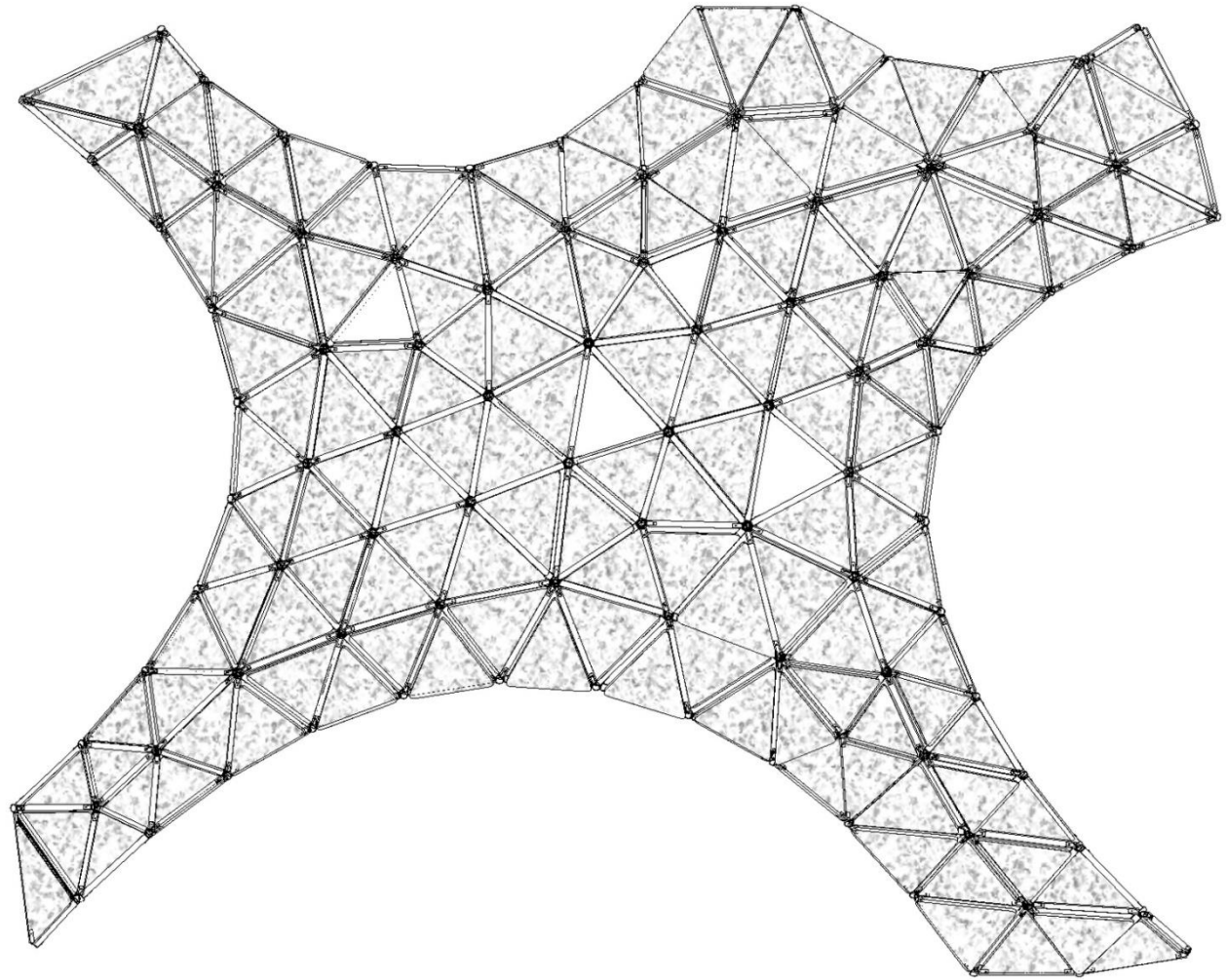
-Plywood Interior Panels: Lateral stiffness for structure and organic panel support

-Steel Connections: Semi-rigid and can be treated as pinned within a certain range of displacement





3_ LONGITUDINAL SECTION



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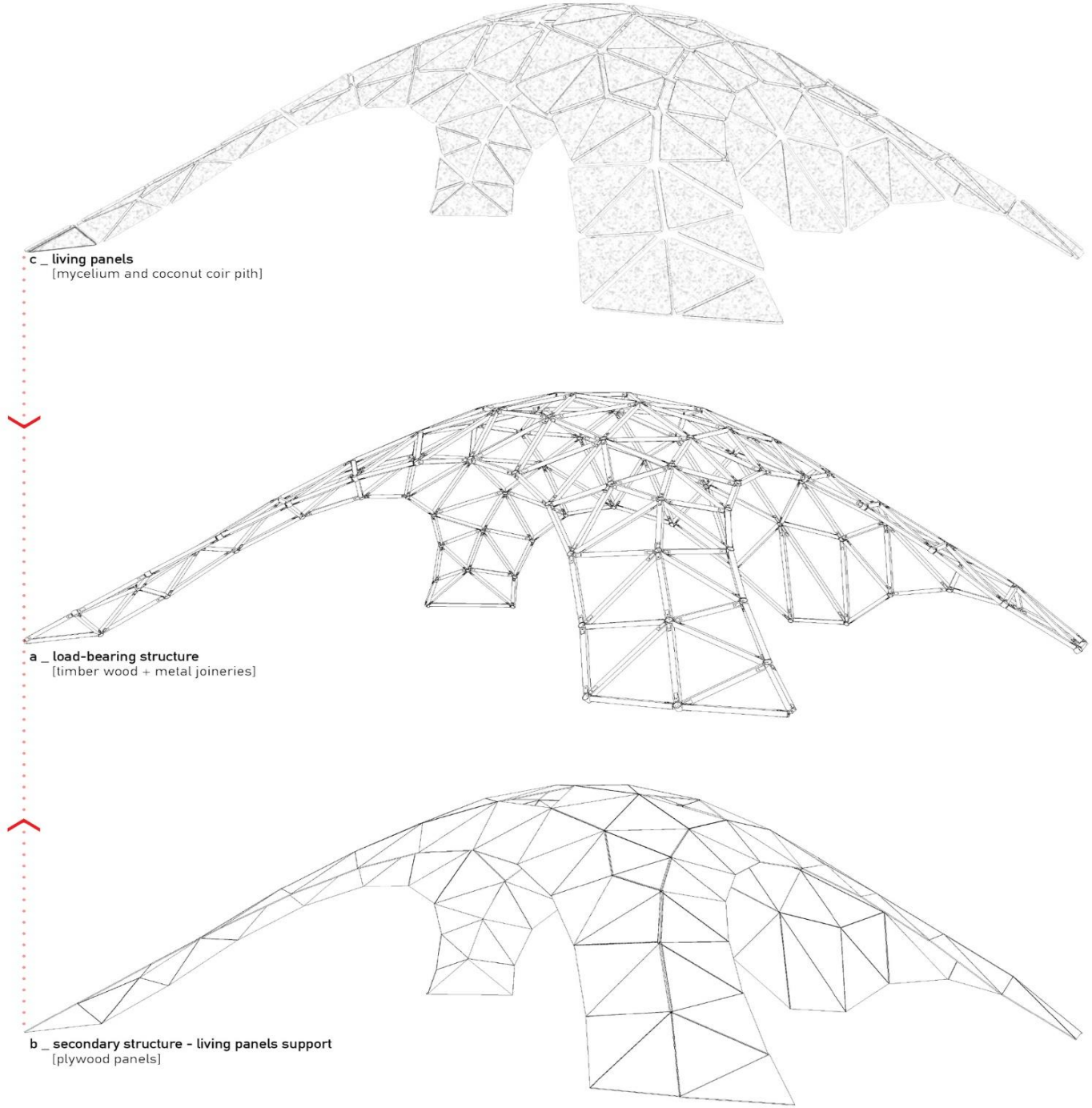
1_ PLAN

Exploded View



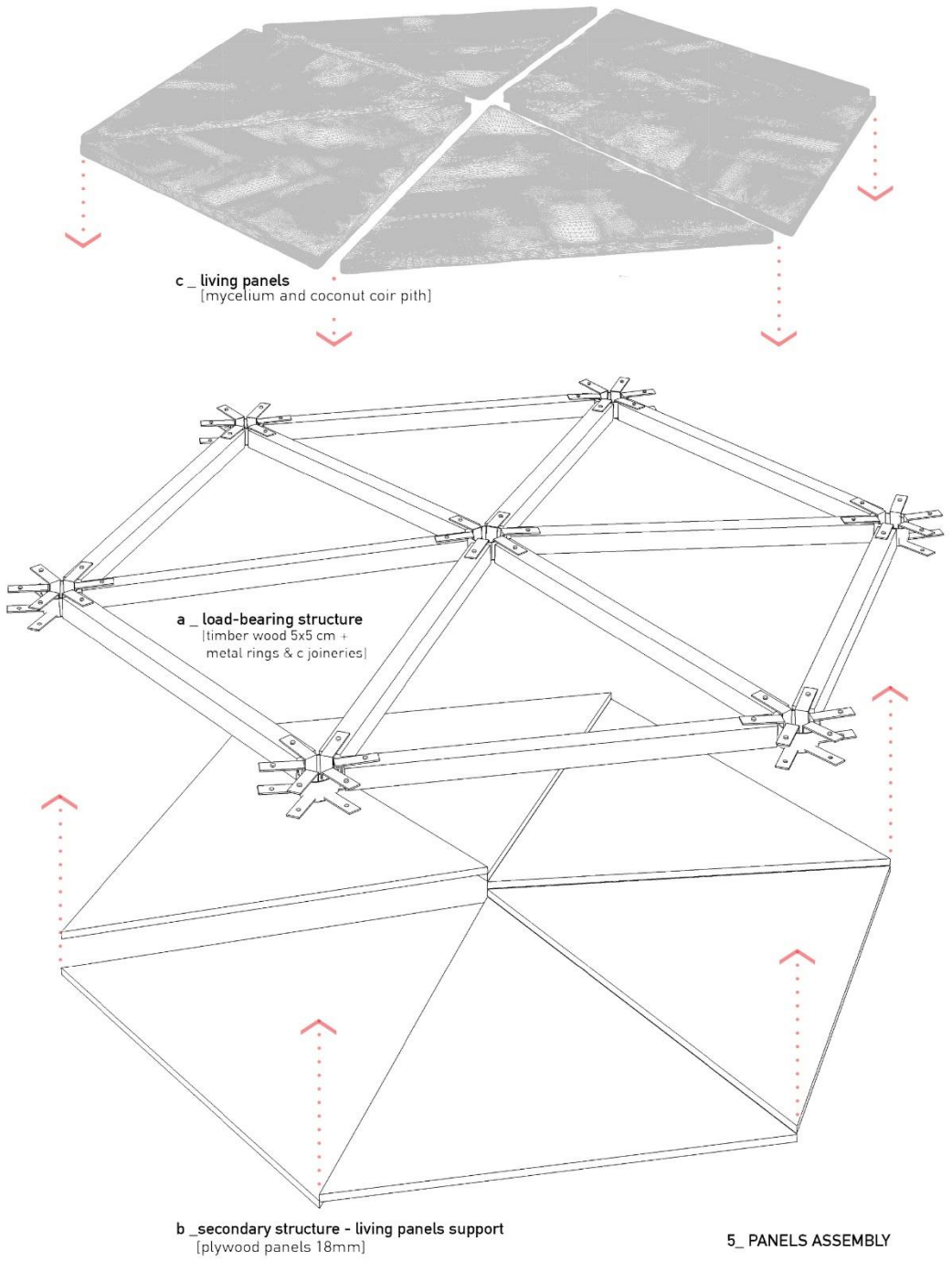
3_ EXPLODED DIAGRAM

Modular Panel and Connection Design

-Ease of Assembly: Only screws required

-Ease of Design: Repetitive connections and member sizes

-Rapid Assembly: Ideal for temporary presentation structure

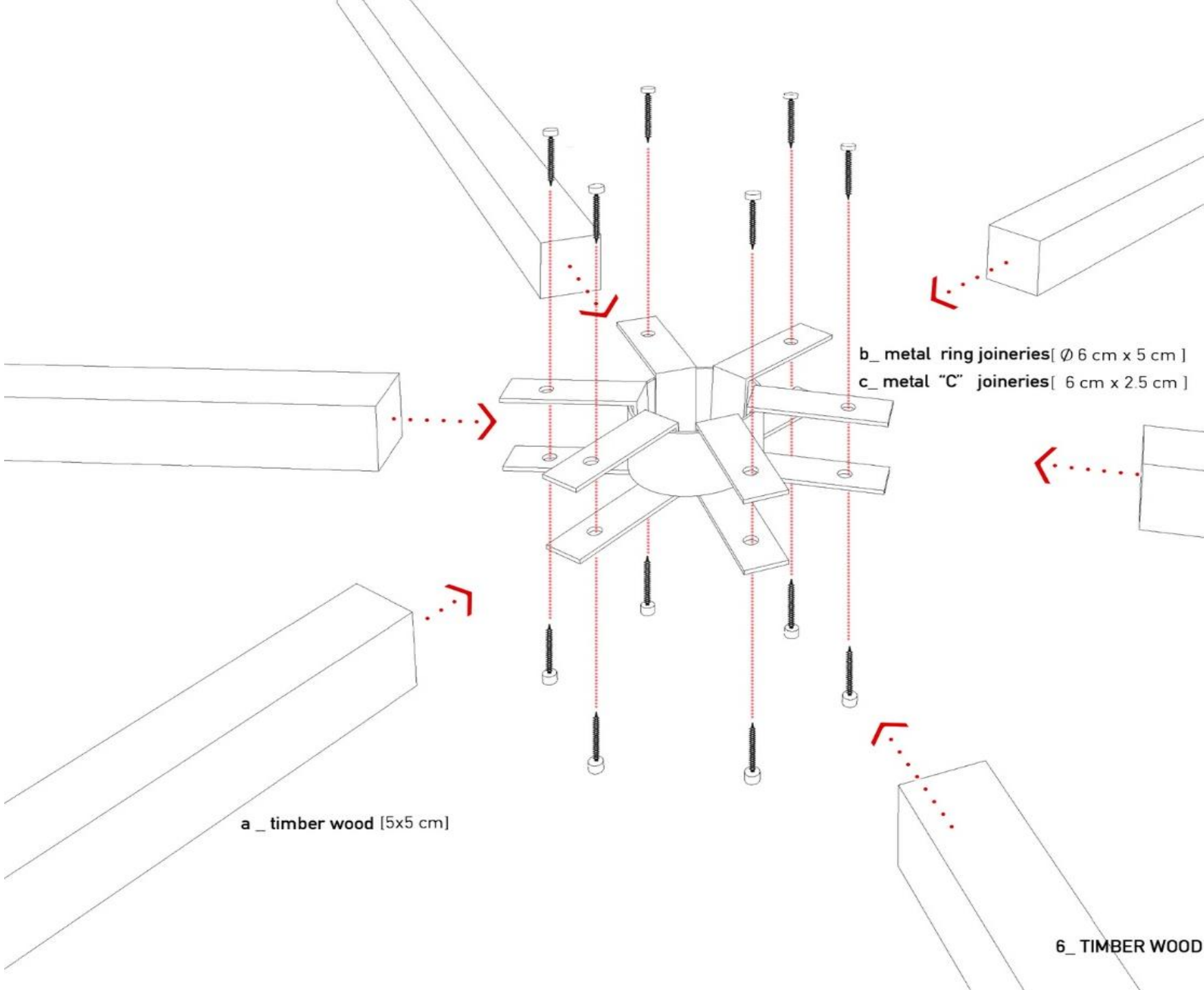


Connections

-Ease of Assembly

-Re-Use

-Pin-Connection (depending on deflection and whether joint is welded)



Sources

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