

WISDOME | STOCKHOLM

How parametric design stretches the boundaries

cafe dome

Key facts Wisdome Stockholm

A landmark object for sustainable and climate-smart construction in wood



storaenso

Developer and location

Sweden's National Museum of Science and Technology in Stockholm

Architect

Elding Oscarson

Main contractor

Oljibe AB

Timber specialist and installation company

Blumer Lehmann AG in collaboration with Création Holz Herman Blumer, SJB Kempter Fitze and Design-to-Production

Operation in the building

A scientific experience arena with a dome hosting a 3D cinema with a spherical screen with 100 seats

Size of the building

1,325 square meters

Material supplier Stora Enso

- approx. 650 m³ CLT (Cross Laminated Timber) from Gruvön Sweden
- approx. 750 m³ LVL (Laminated Veneer Lumber) from Varkaus Finland

Estimated opening

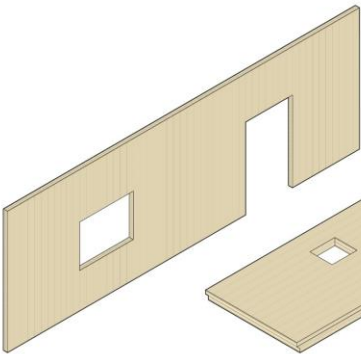
Q3 2023



The Sylva kit

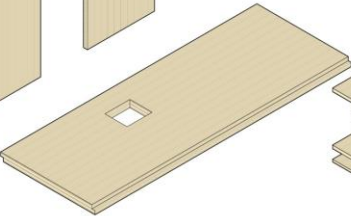


Walls

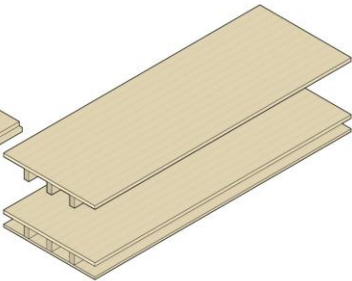


Sylva CLT
Walls

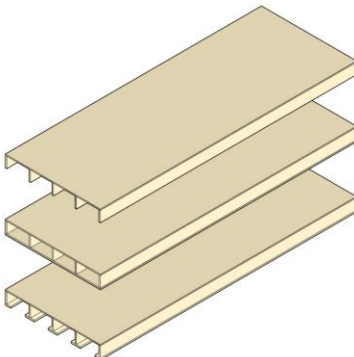
Floors and Roofs



Sylva CLT
Floors and Roofs

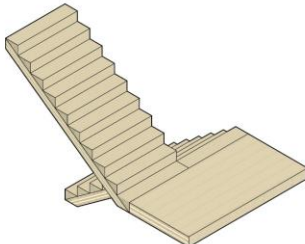


Sylva CLT RIB
Floors and Roofs



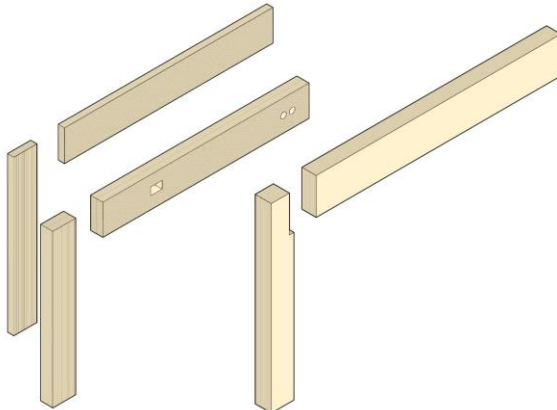
Sylva LVL RIB
Floors and Roofs

Stairs



Sylva CLT
Stairs

Beams and Columns



Sylva GLT
Beams and Columns

Sylva LVL
Beams and Columns

The Dome



- Produced and CNC milled at Gruvön mill, Sweden
- Spherical dome of 12.2 m in height, with a diameter of 21.6 m
- Dome is made of 277 CLT triangles



The roof, edge beams, columns

- Produced as raw panels at Varkaus mill, Finland
- 24 pieces of pre-tension solid LVL G columns in the dimensions of 60 cm x 60-80 cm
- Extremely long spans of 26 x 48 m – entirely without any internal supporting columns

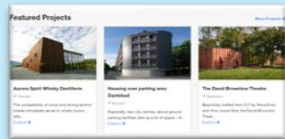


Services and digital tools by Stora Enso

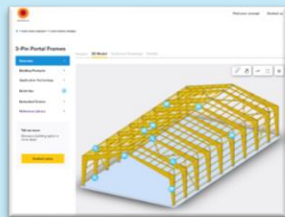
Support for better experience across the lifecycle



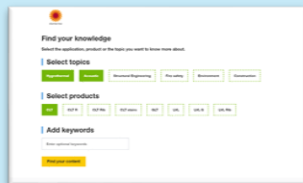
Plan



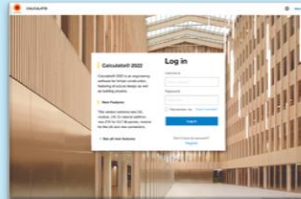
Reference Library
Stora Enso projects



Building Concepts
Get inspired



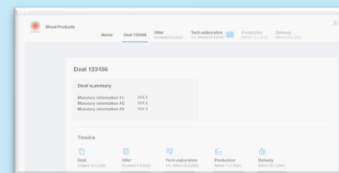
Knowledge Hub
Information sharing



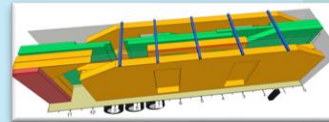
Calculatis
Timber design



BIM Library
For products



Customer portal
Collaboration and
information sharing



**Adv. load planning
and transportation**
Ease of Just-in-Time



Woodsense
Data platform for tracking
deliveries and its condition*



Track & Trace*
Tracking of delivery

Build



CLT360+
Installation
assistant

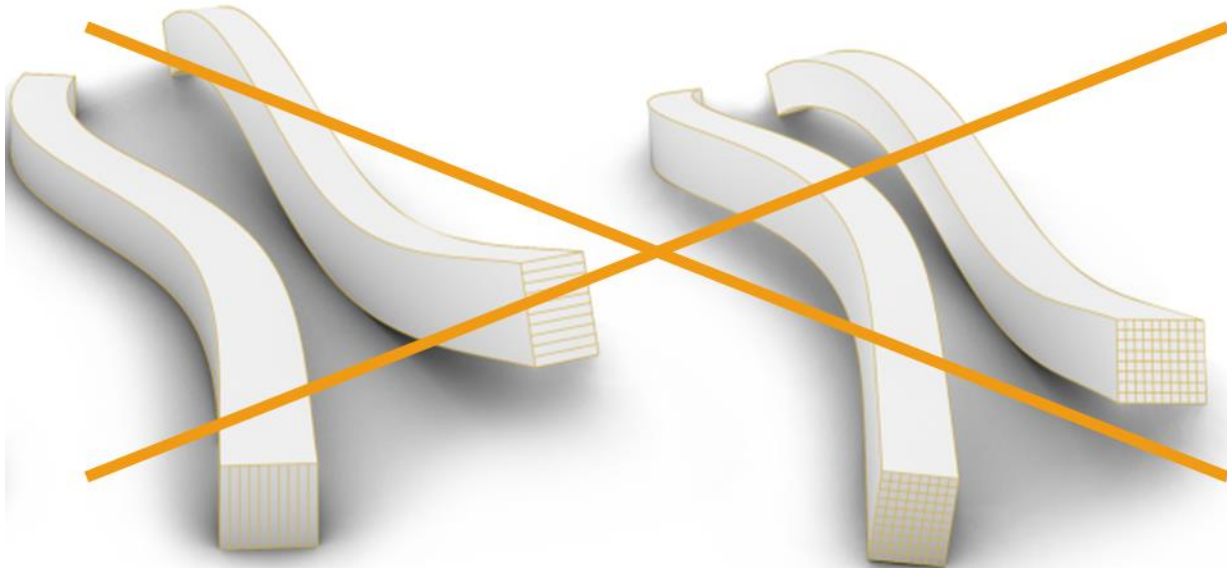
Live



Wiiste Sensors
Monitoring of conditions*

* Pilots

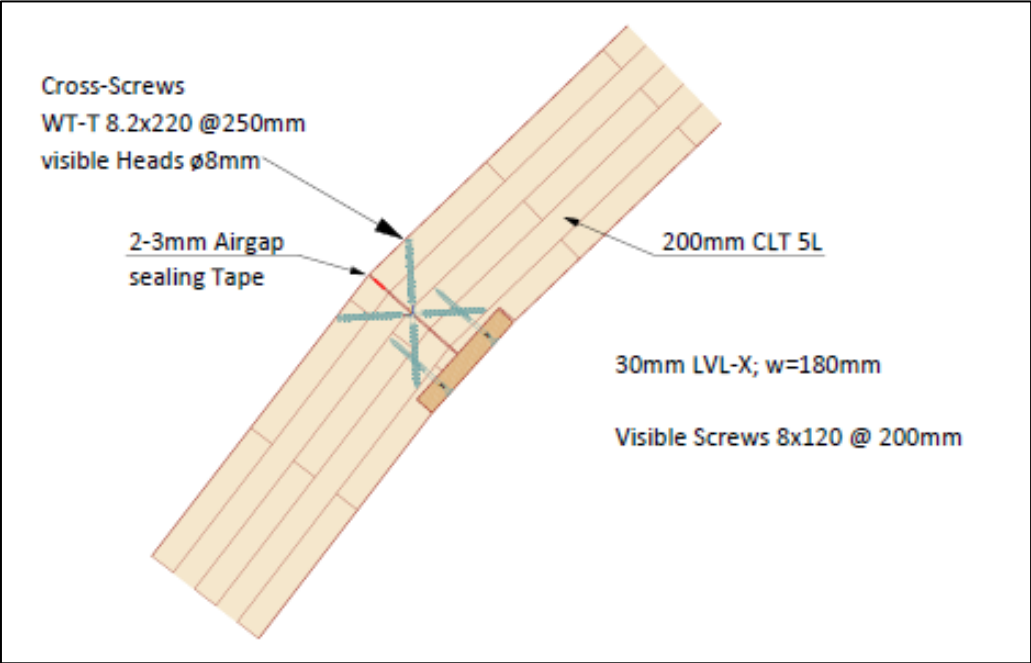
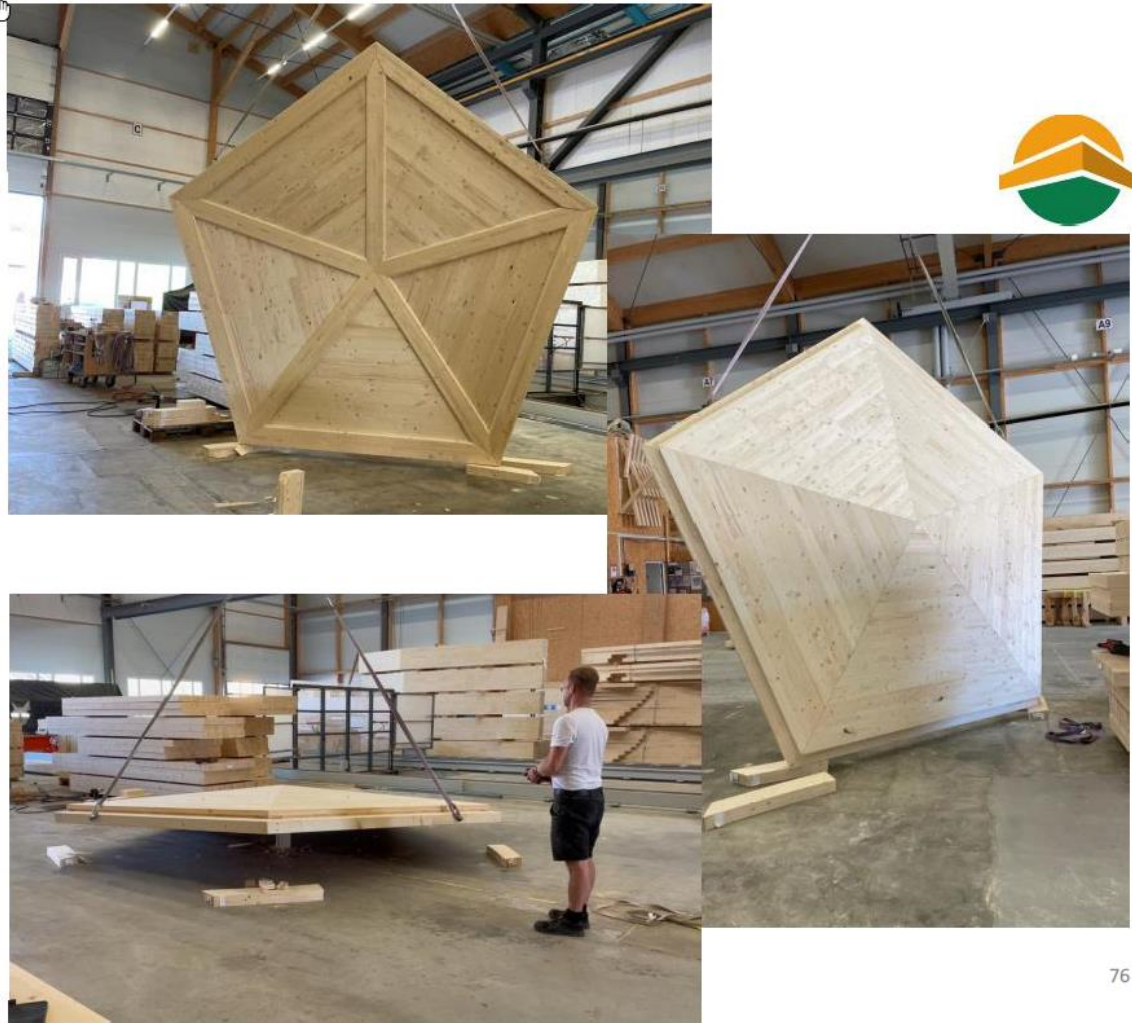
Building freeform-beams by using flat panels?



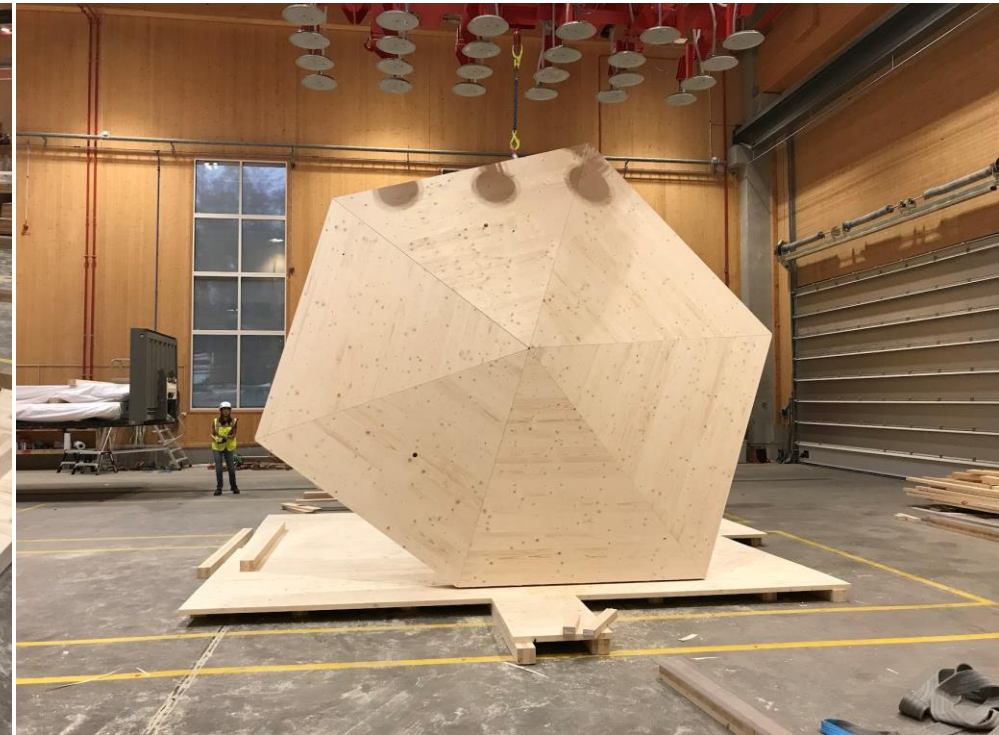
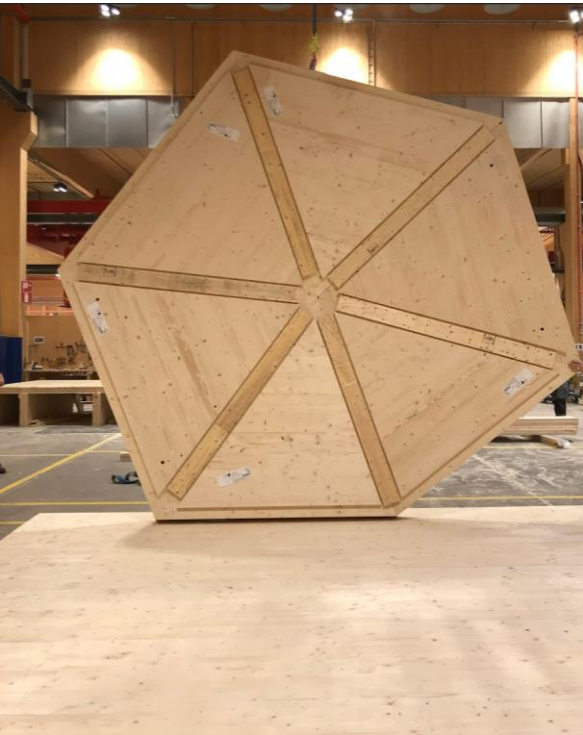
Team of specialists



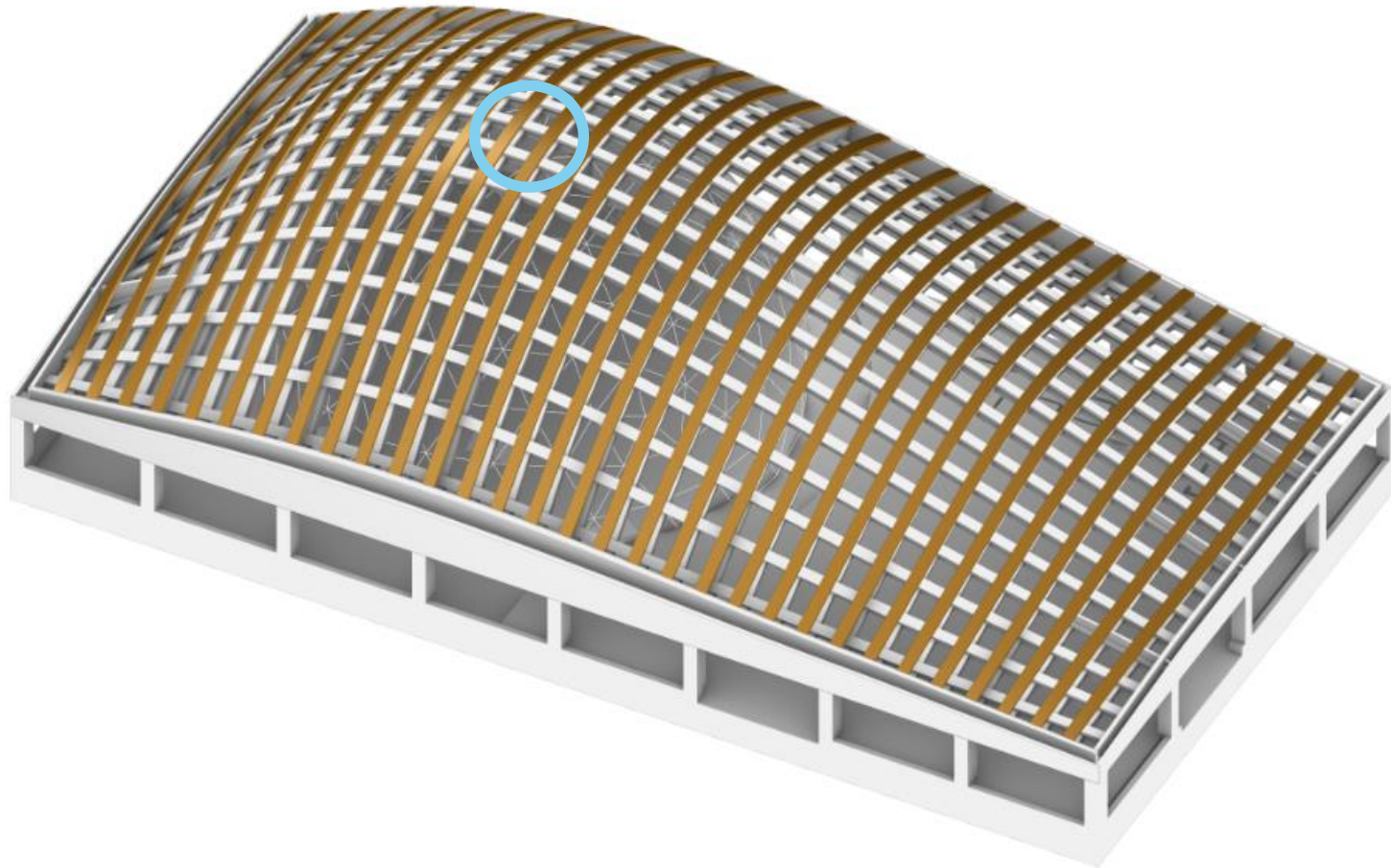
Photos from mock-up nr 1 – Blumer Lehmann



Photos from mock-up nr 2 – Stora Enso



Experimental mock-up Roof nr 1





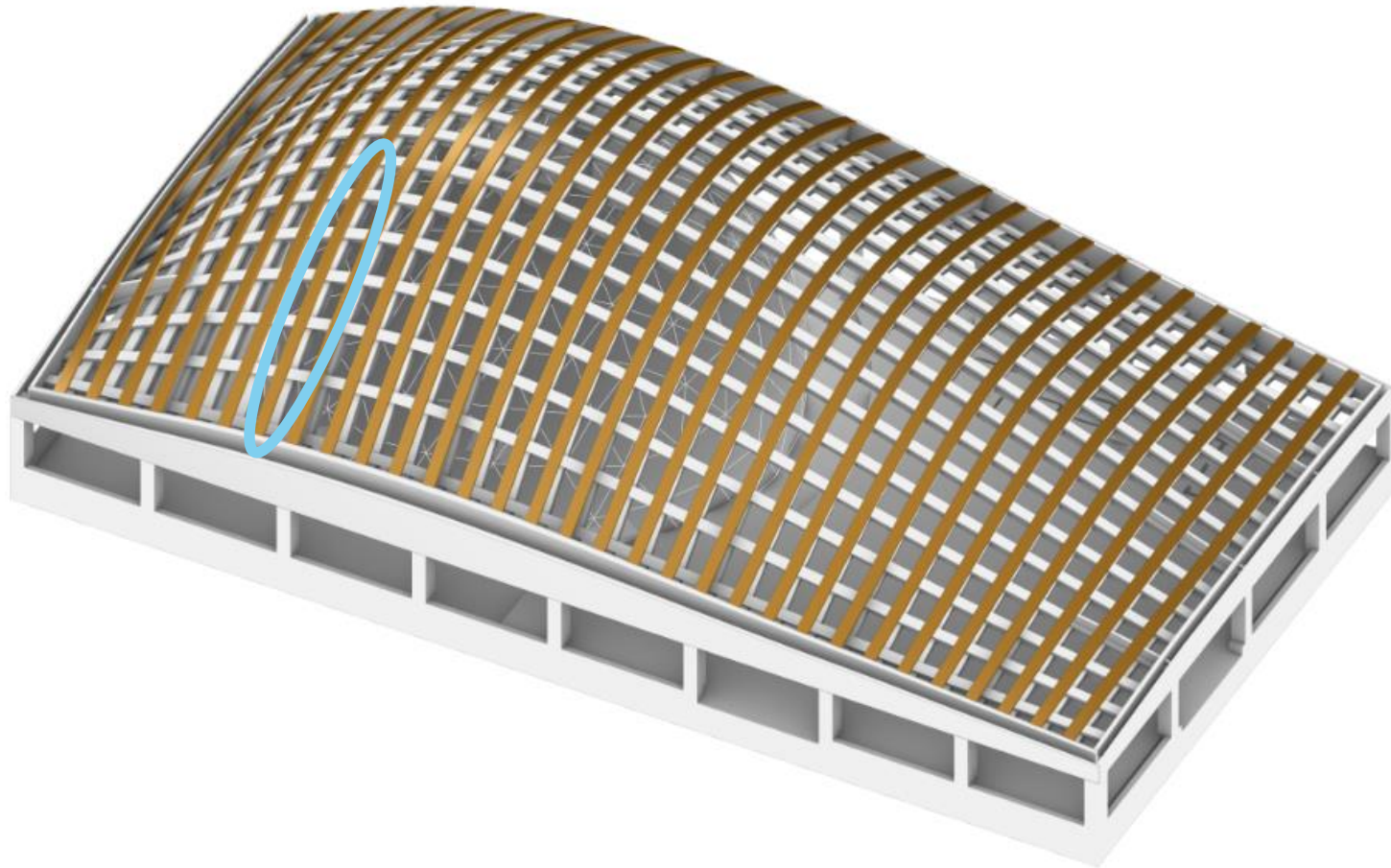
Jessika Szyber, Business Development Manager





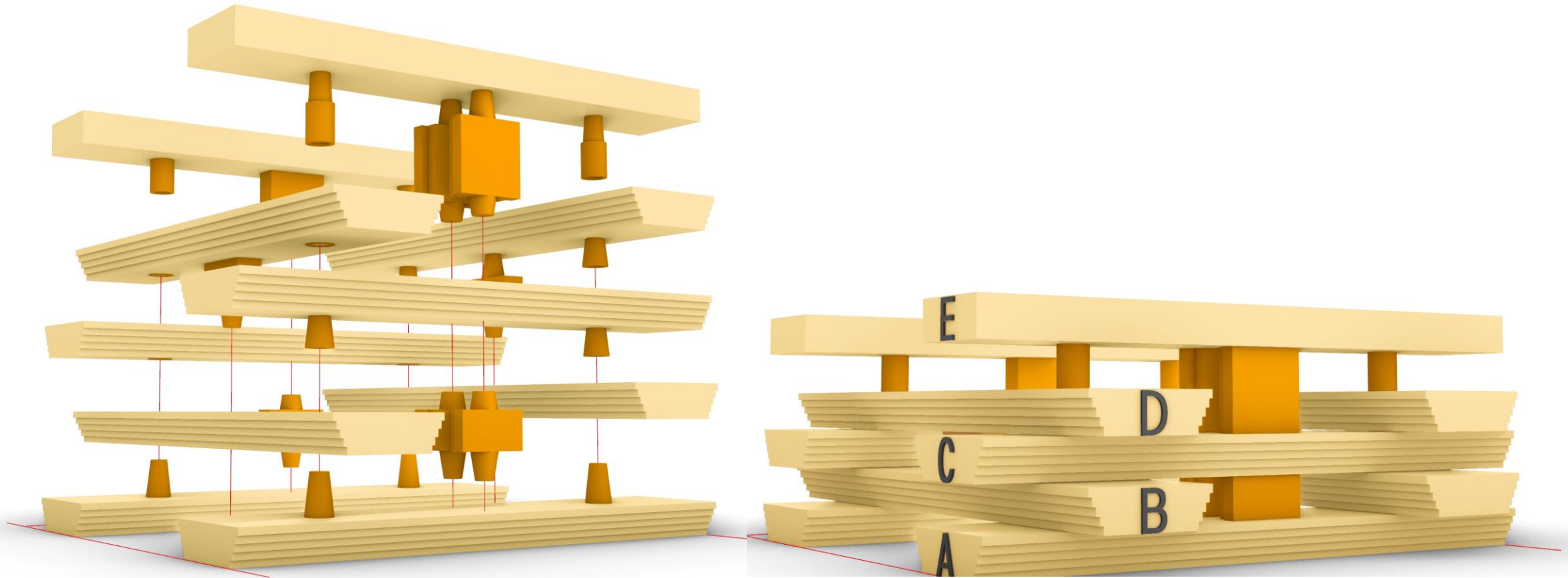
Jessika Szyber, Business Development Manager

Experimental mock-up Roof nr 2

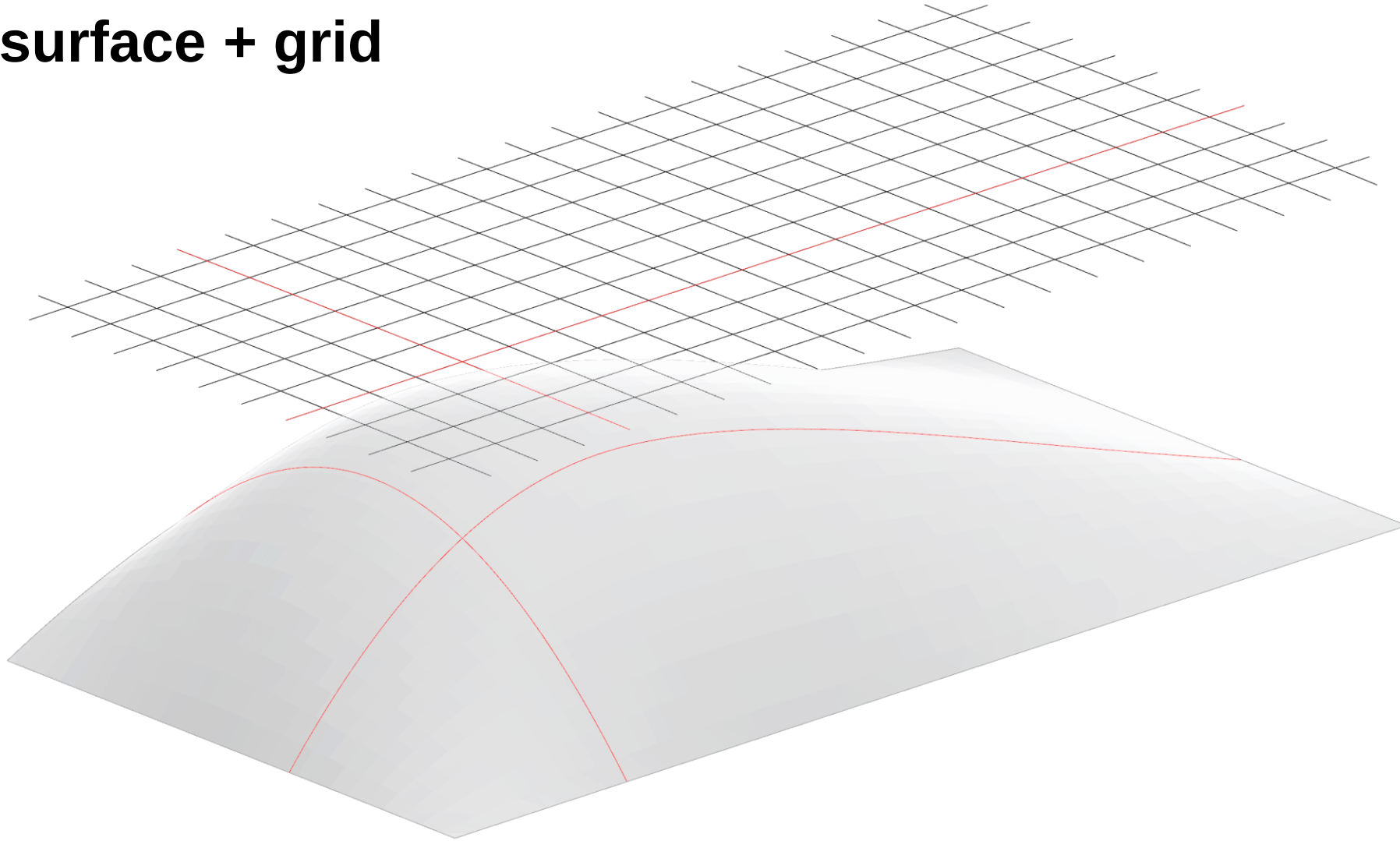




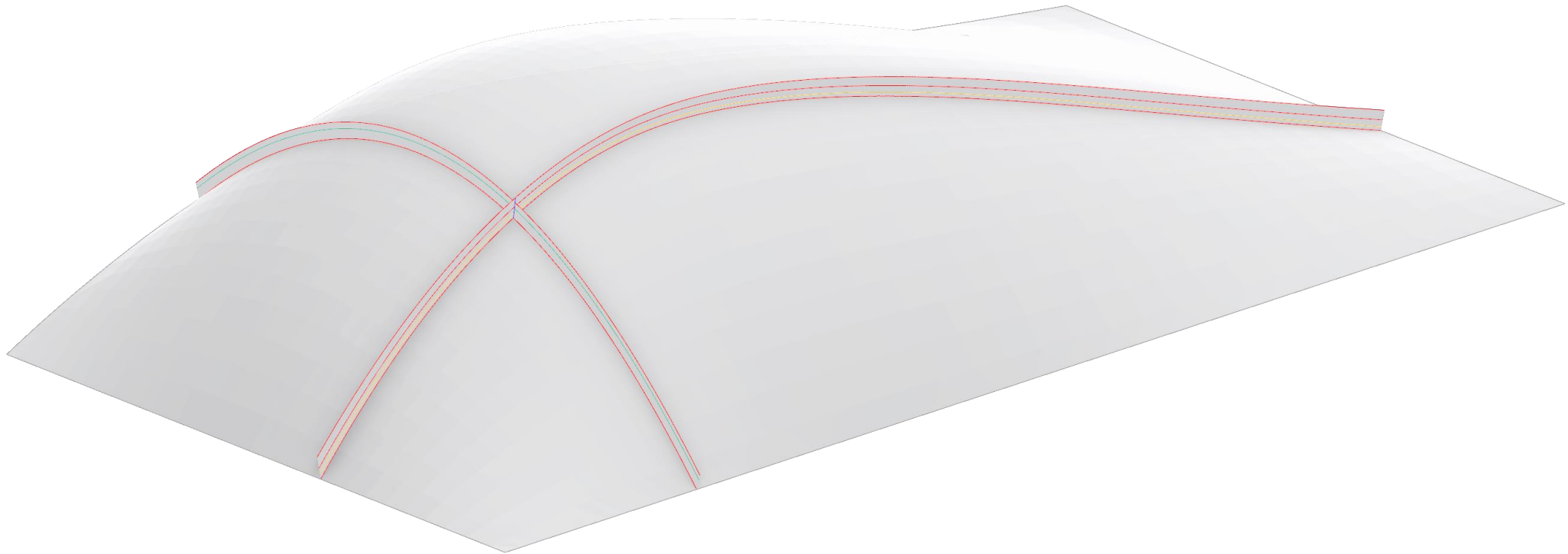
Jessika Szyber, Business Development Manager



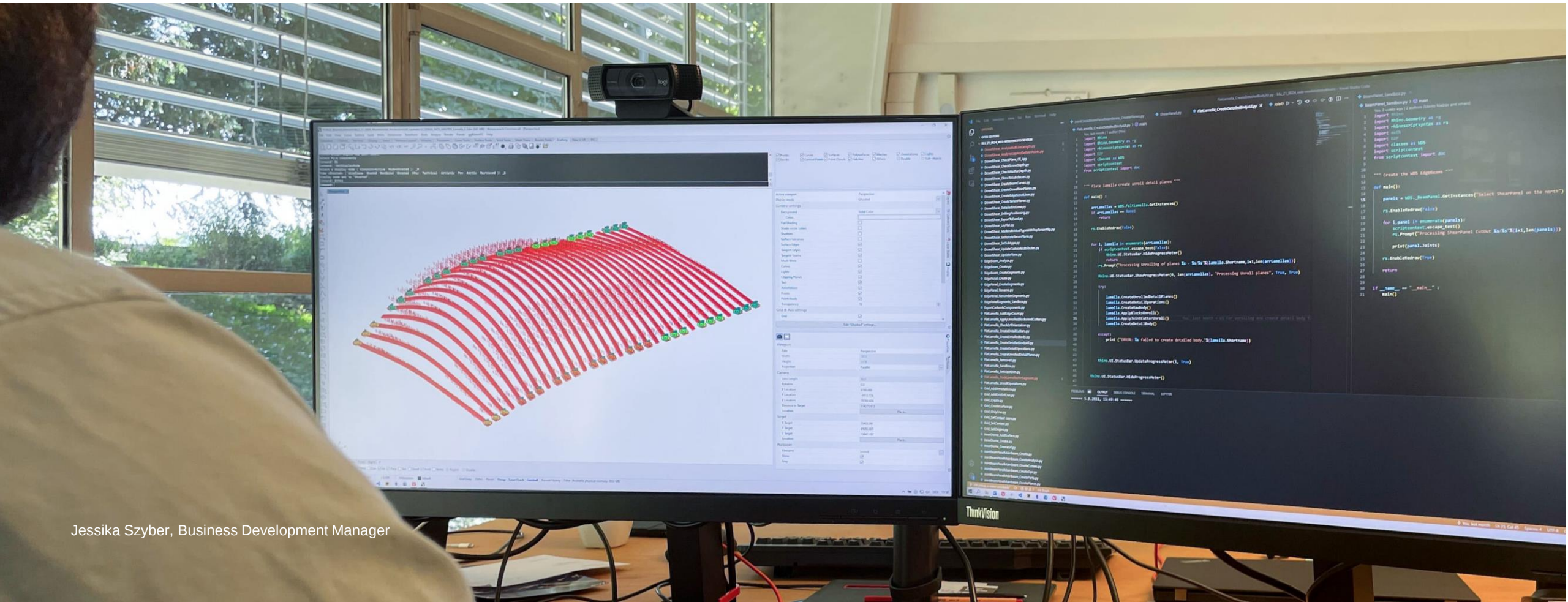
Parametric model – mastersurface + grid



Parametric model – extruded gridlines

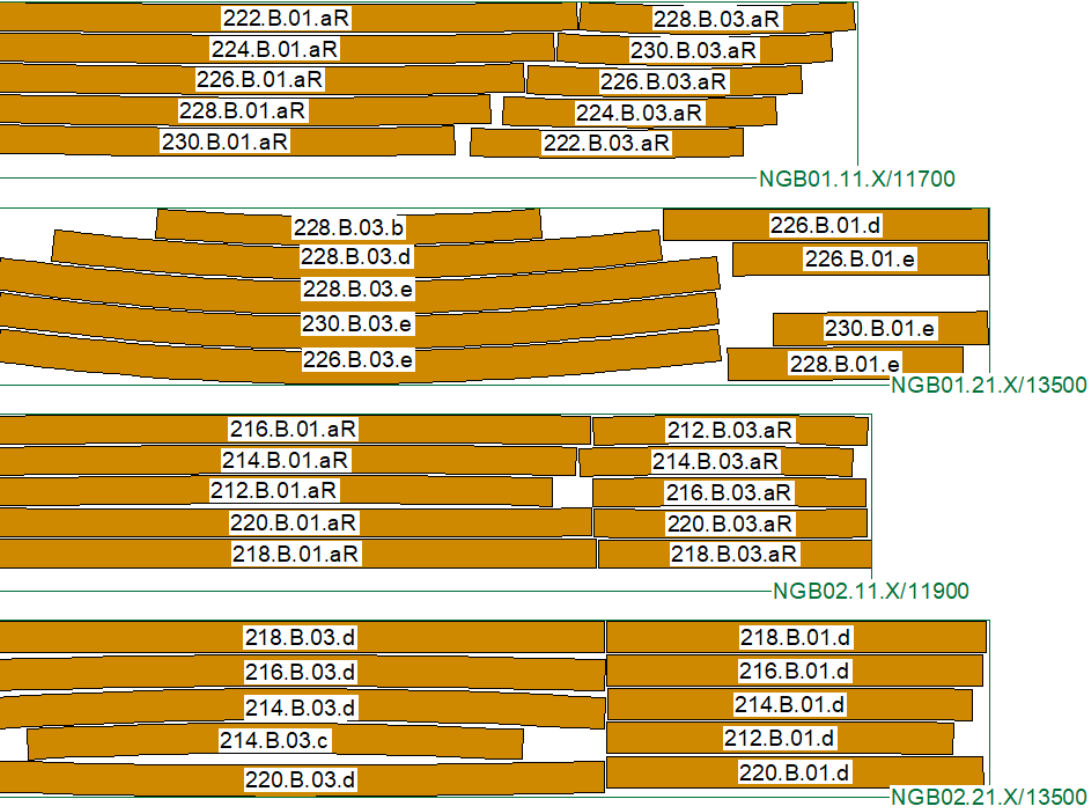


Digital craftsmanship

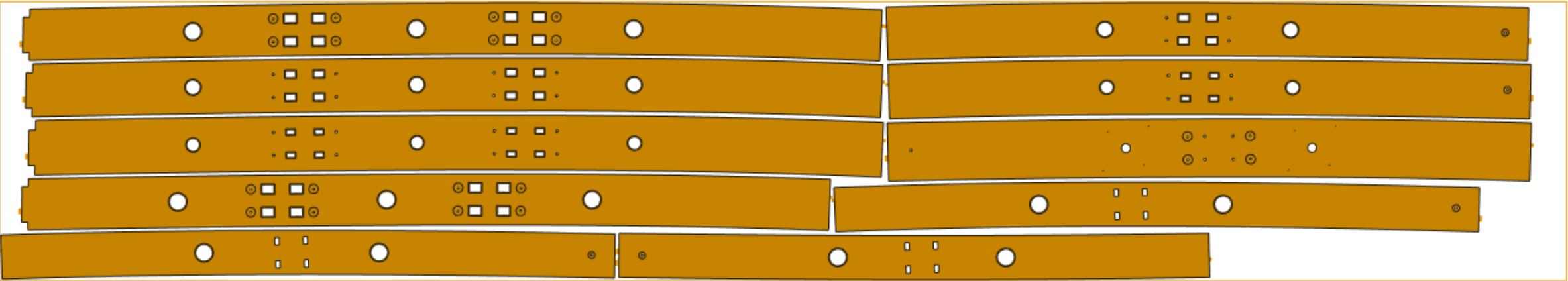
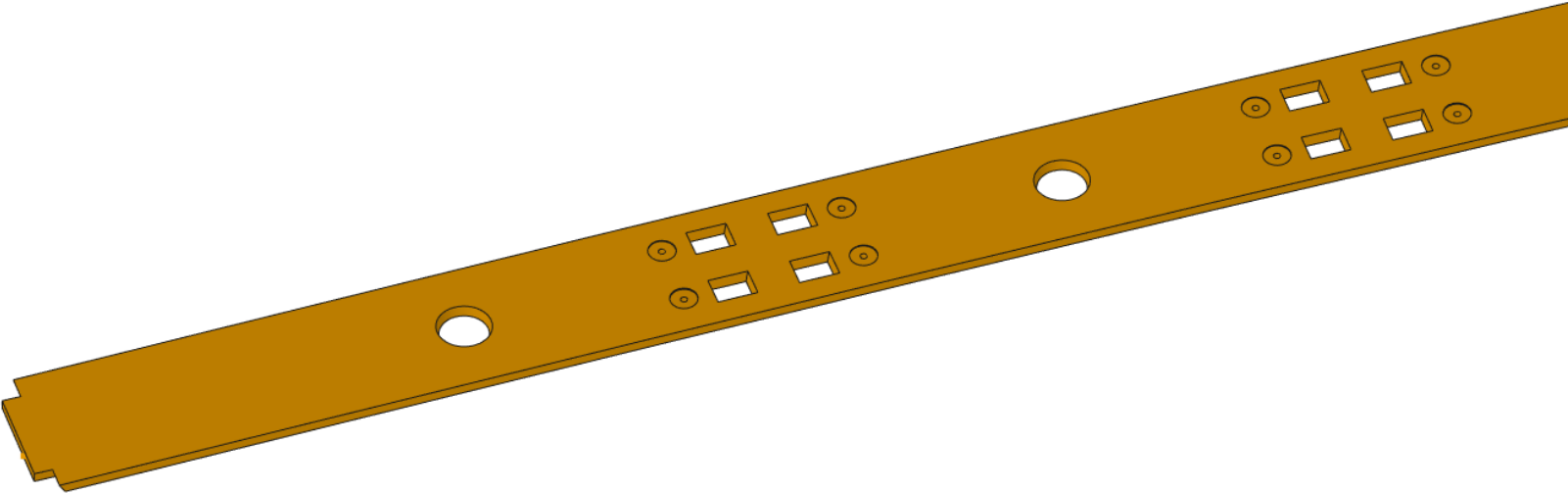


Jessika Szyber, Business Development Manager

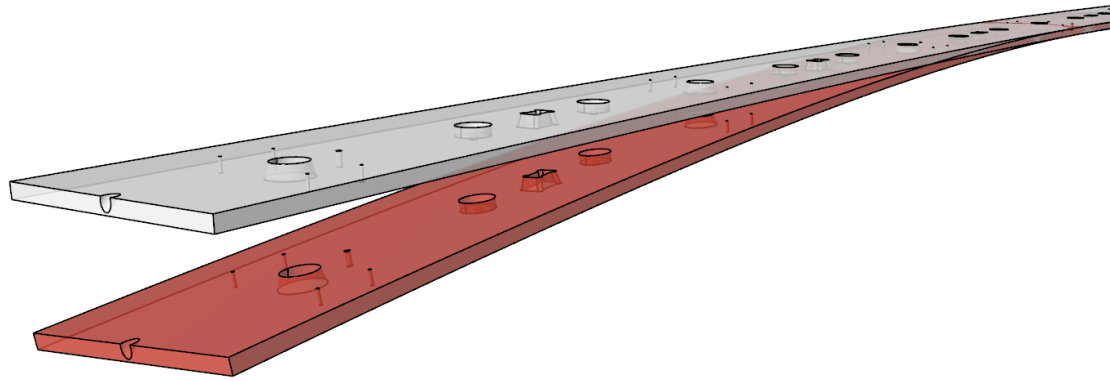
Nesting



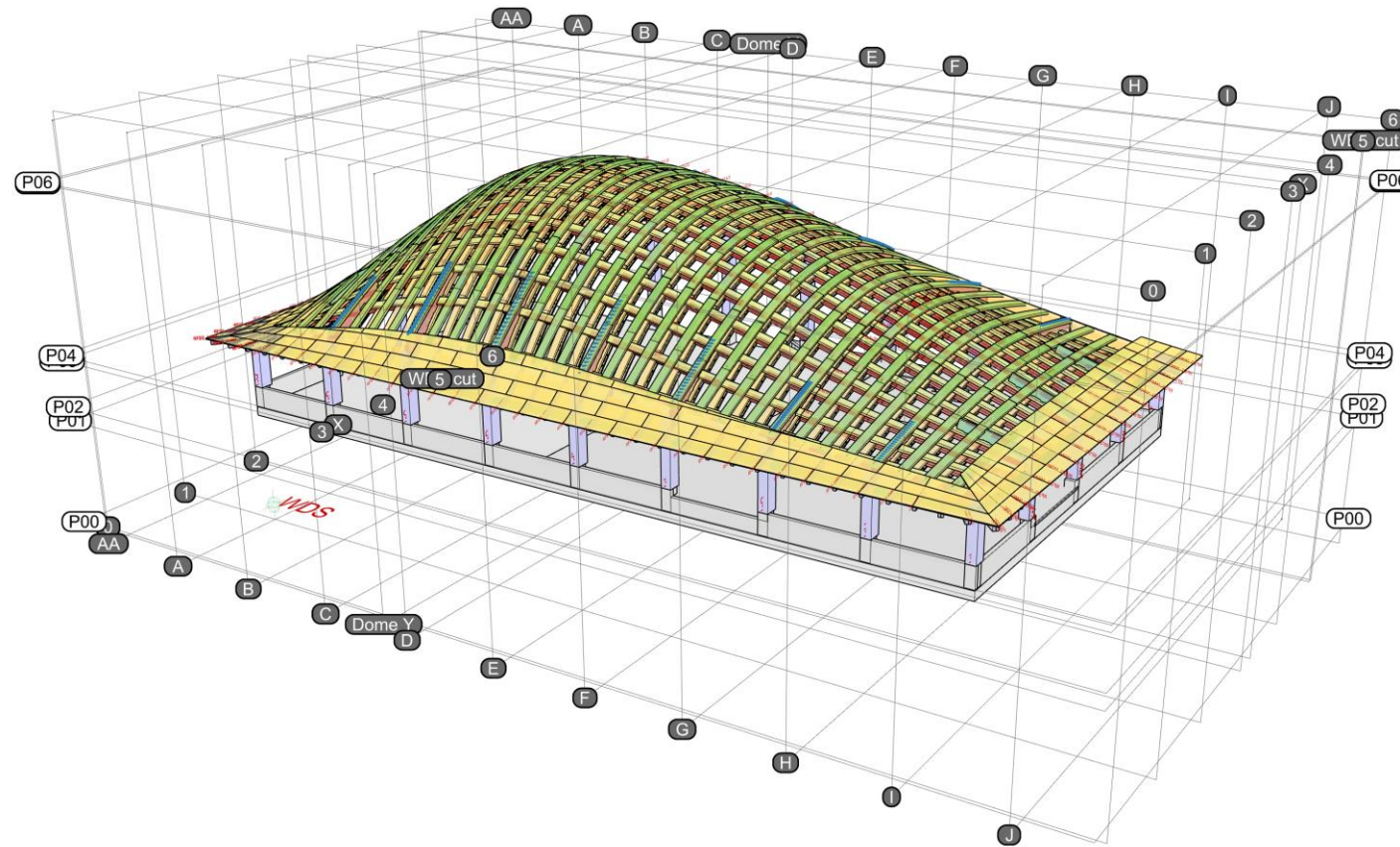
Fabrication data



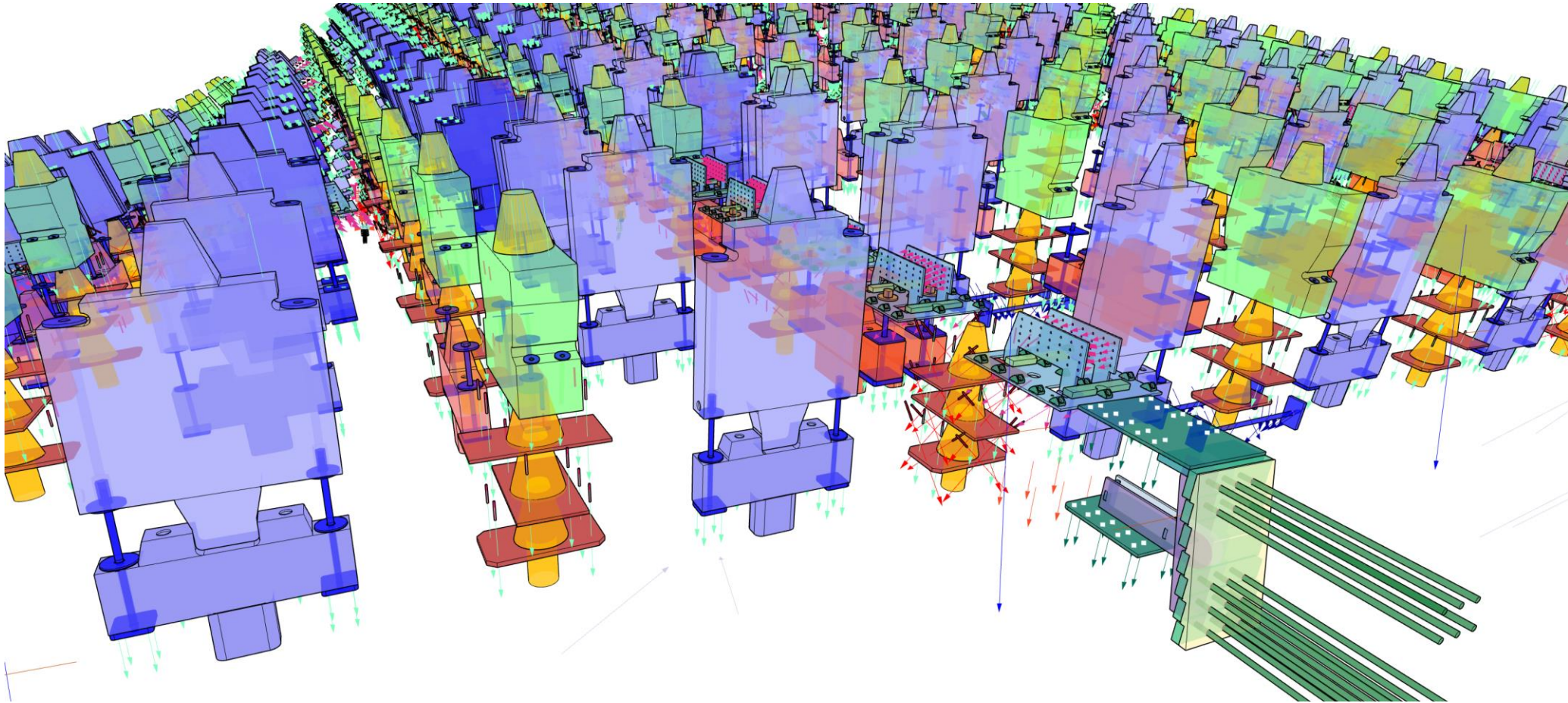
2655 Curved LVL-Lamellas unrolled with oriented details



10903 Parametric Components of 38 types and 58 subtypes

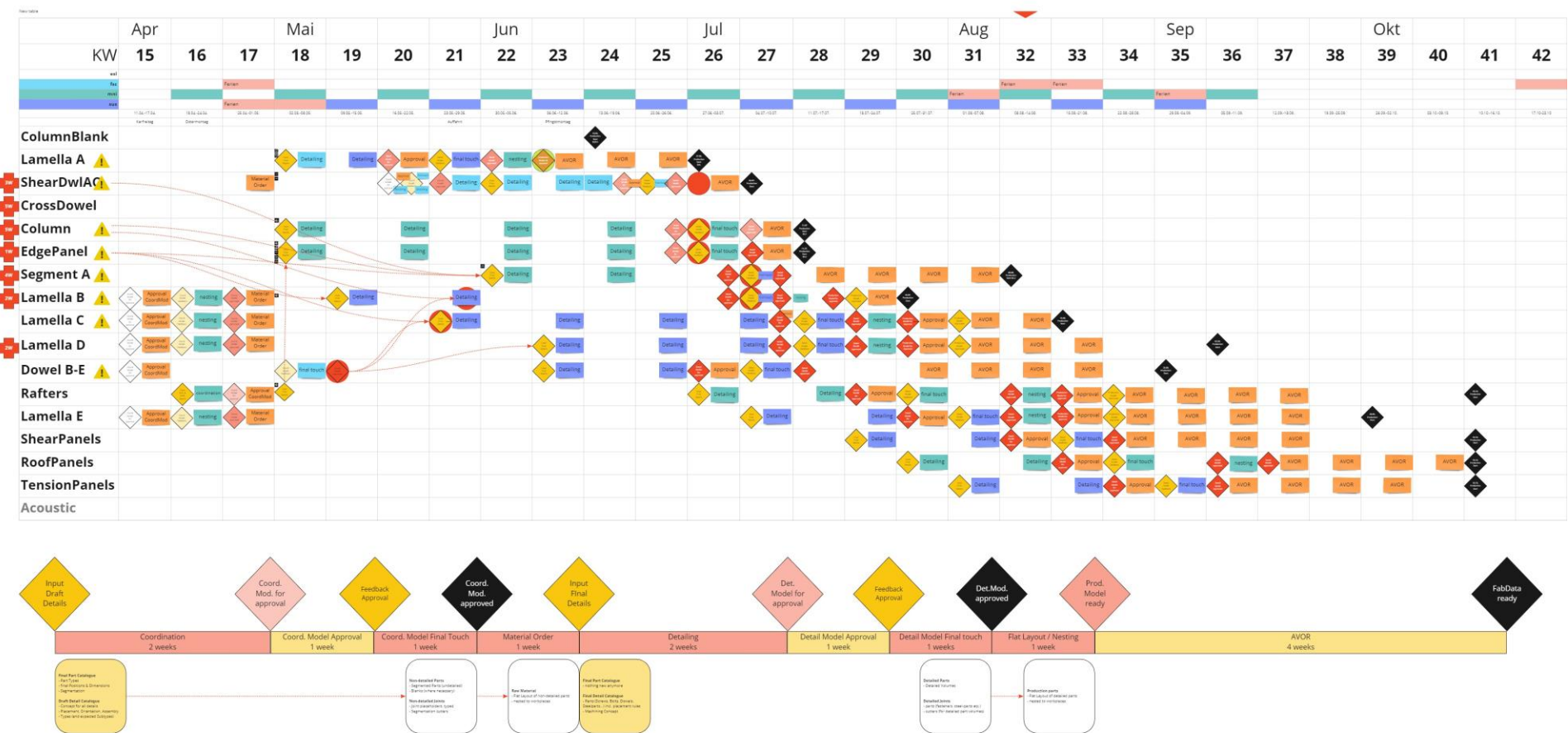


2507 Parametric Joints detailed down to the screw hole

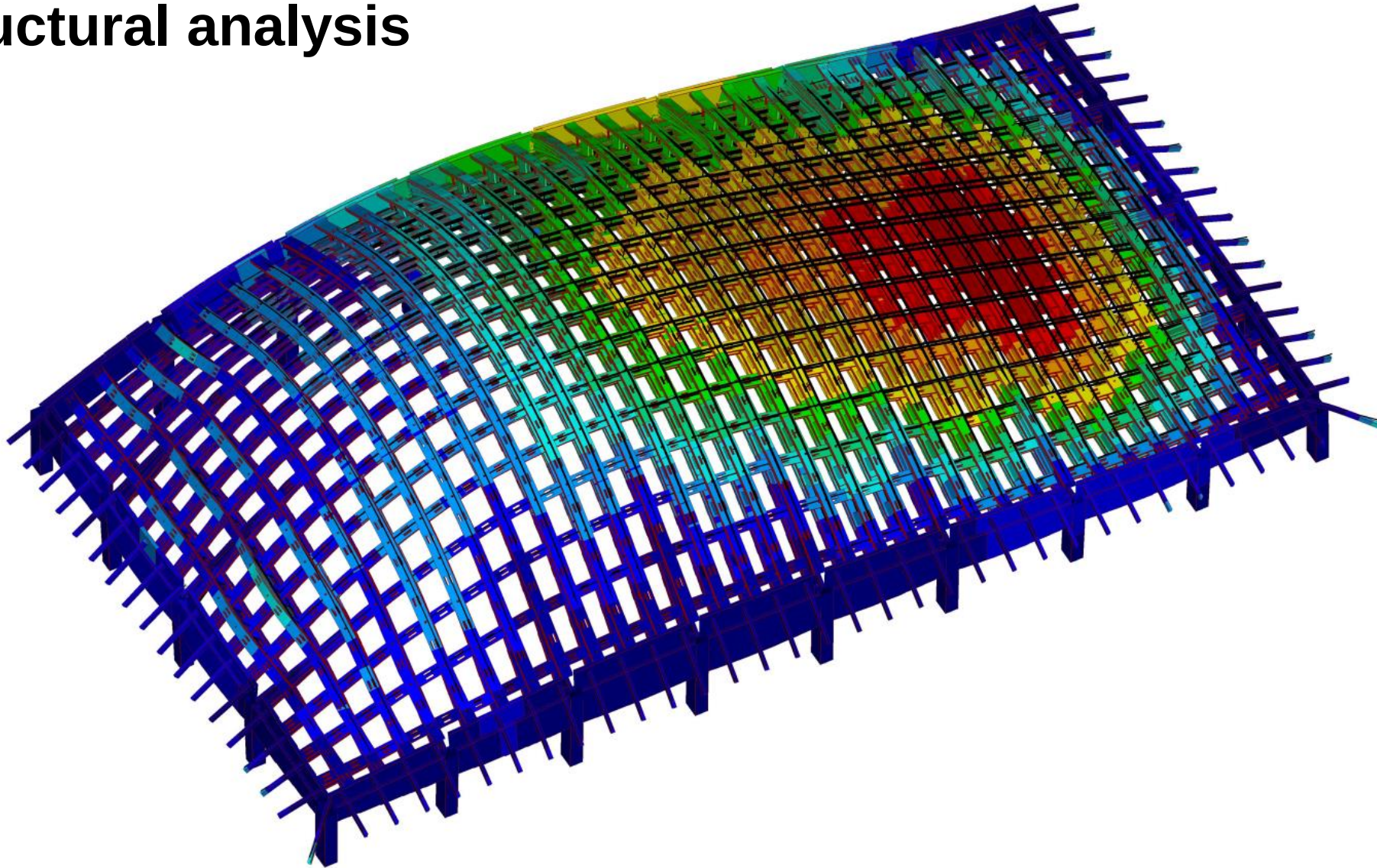


Pull-Planning Schedule

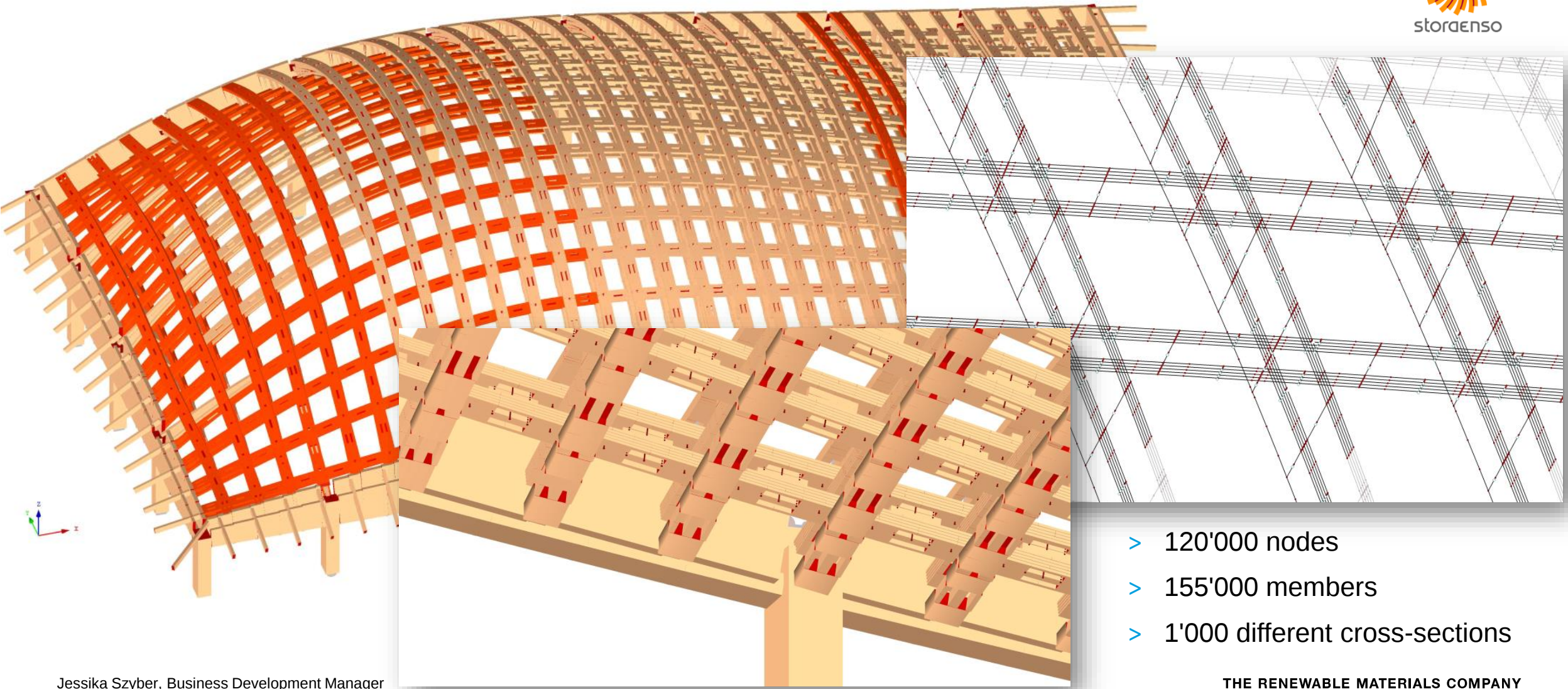
10 milestones per component type



Structural analysis



The final structural model



- > 120'000 nodes
- > 155'000 members
- > 1'000 different cross-sections

Facts and figures for the free form roof



2655 segments
of lamella

20'210 meters
of lamellas

1756 shear
dowels in
976 shear-
connections

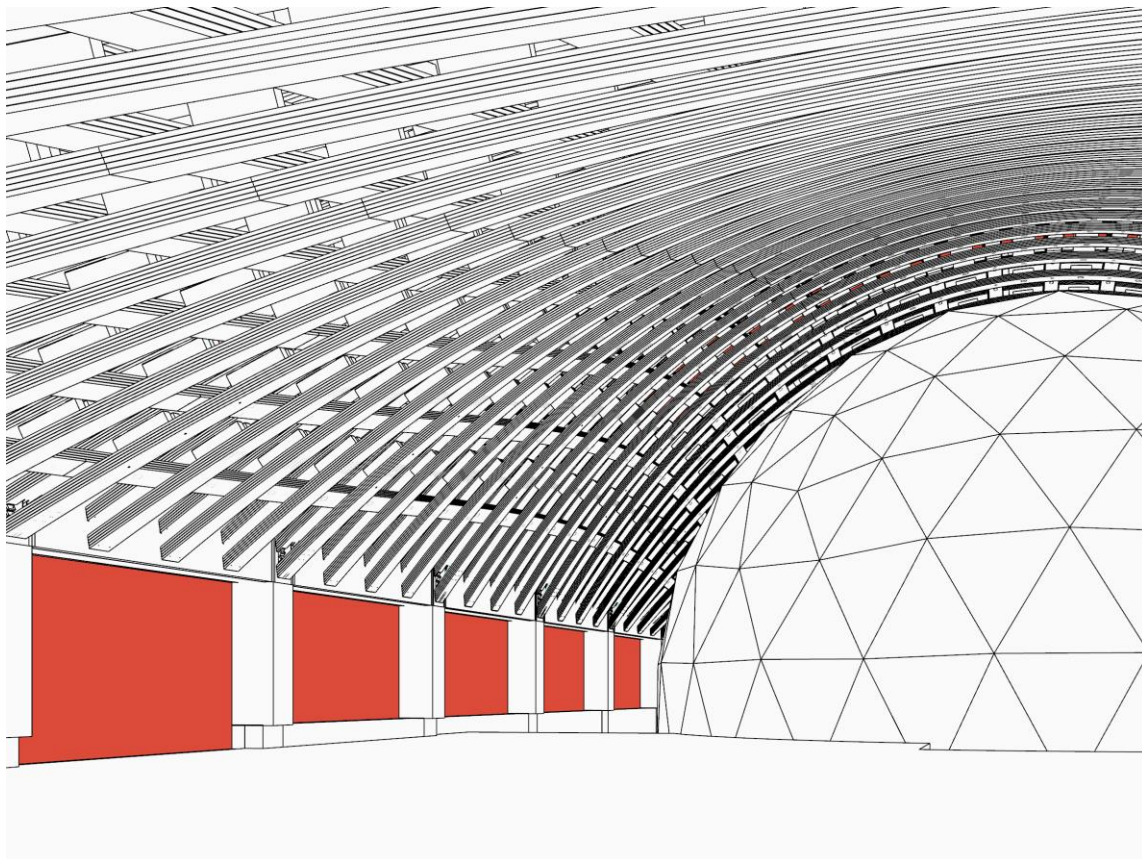
1820 conical
dowels in
465 cross-
connections

~520 m³ LVL
for grid-shell

~750 m³ LVL for
entire building

How parametric design stretches the boundaries

storaenso.com/woodproducts



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THE RENEWABLE MATERIALS COMPANY