BUILDOFFSITE
COLLABORATING FOR IMPACT

IS CO-HOSTING THE
OFFSITE SUMMIT
AT
OFFSITE EXPO
17-18 SEP 2024

17.09.2024

International best practice

Join in the conversation

@buildoffsite | @CIRIAupdates | @ExploreOffsite
#OffsiteSummit | #CollaboratingForImpact

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17.09.2024 10:30 – 11:50 | Session 1

Digital delivery for tomorrow

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17.09.2024 10:30 – 11:50

Ken Davie

Industry Advisor

BUILDOFFSITE

Digital delivery for tomorrow

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#ExploreOffsite | #OffsiteExpo | #OffsiteSummit
#Digital | #Innovation

Celebrating 20 years of BUILDOFFSITE

Set up in 2004 as the voice of the industry, BUILDOFFSITE has sought to promote, support and increase the adoption of offsite and pre-manufactured solutions for the built environment.

“To be the trusted independent voice of the construction industry with respect to offsite and pre-manufacturing, and to provide all relevant support to our members and other stakeholders.”

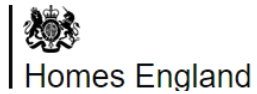
Join BUILDOFFSITE

SCAN ME

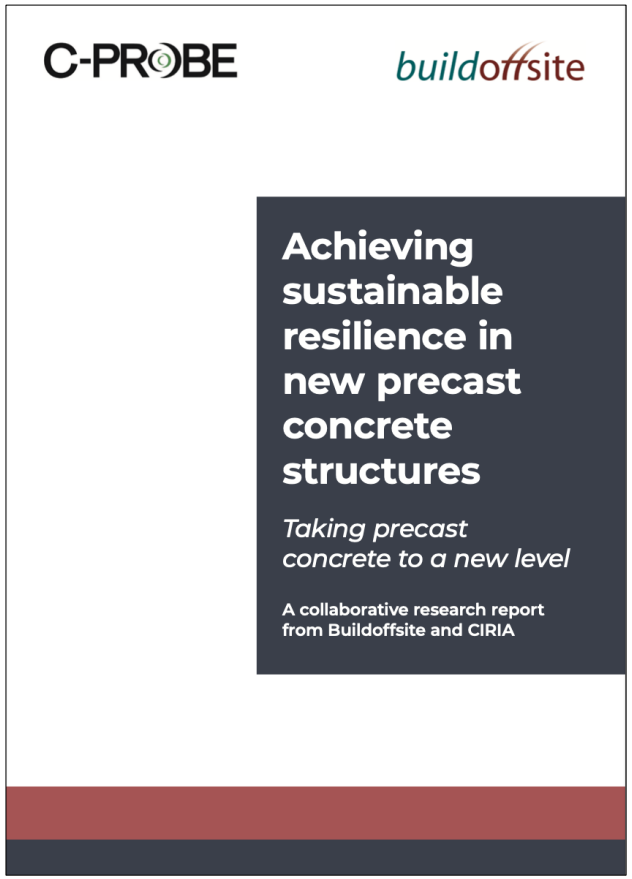
BUILDOFFSITE
COLLABORATING FOR IMPACT

Networking | Events
Exhibition Seminars
Site visits | Advice & Guidance
Knowledge Sharing | Publications
Marketing & Promoting Members
Influencing

BUILDOFFSITE members



BUILDOFFSITE guidance 2022 – 2024



Client Group proposal approved for 2023 – 2024

Performance specifications guidance

Upcoming BUILDOFFSITE events

2-4 October

Structural Timber Awards 2024

13 November

DfMA for net zero carbon

20-21 November

London Build Expo

28 November

BOPAS Forum

4 December*

BOS Christmas members' meeting

Spring 2025*

Using performance specifications to facilitate the adoption of MMC – new BOS/CIRIA guidance

*Provisional date

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Digital delivery for tomorrow

Damien Crough
prefabAUS

Alex Lubbock
Digital Twin Skills Academy CIC

Paul Wilkinson
nima

Az Jasat
Autodesk

Monika Wandzik
Stelling Properties

David Emery
Supply Chain Sustainability School

Franco Piva
Ergodomus

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Paul Wilkinson
Vice Chair
nima

Digital delivery for tomorrow

Introduction

Paul Wilkinson
BA PhD FCIPR
paul.wilkinson@pwcom.co.uk
tel: 07788 445920
@EEPaul

- **Paul Wilkinson**
- Independent technology consultant, PR consultant, writer, journalist and blogger
- Vice-chair and chair of technology group, nima (formerly the UK BIM Alliance)
- Consultant, GIIG (formerly the Government & Industry Interoperability Group)

nima

- Formerly the UK BIM Alliance
- Vision: “a thriving and sustainable built and natural environment transformed by exploiting purpose-driven data.”
- With trusted, quality data, great things happen.
- nima …
  - … is a volunteer-led virtual organisation
  - … incorporates the UK chapter of buildingSMART
  - … with BSI, delivers the UK BIM Framework
  - … with the CLC, is developing the … **Information Management Initiative (IMI)**

Information Management Initiative (IMI)

Construction Leadership Council working with nima to refresh the ‘Information Management Mandate’ (2021)

1. Through a **Directive**, industry will lead the way in building momentum to support a Government approach enacted through procurement, regulation and legislation
2. The intention of the overall approach is that it will be supported through an **evolving ecosystem of standards, guidance, tools, case studies and training**
3. **Principles and rules, tailored to groups across industry**, will provide clear guard rails to fulfil the outcomes and obligations

- Ultimately … “The sector can derive significant improvements in cost, value, safety, sustainability and performance through better management of information through the whole life cycle of the built and managed environment”

Construction Leadership Council

nima

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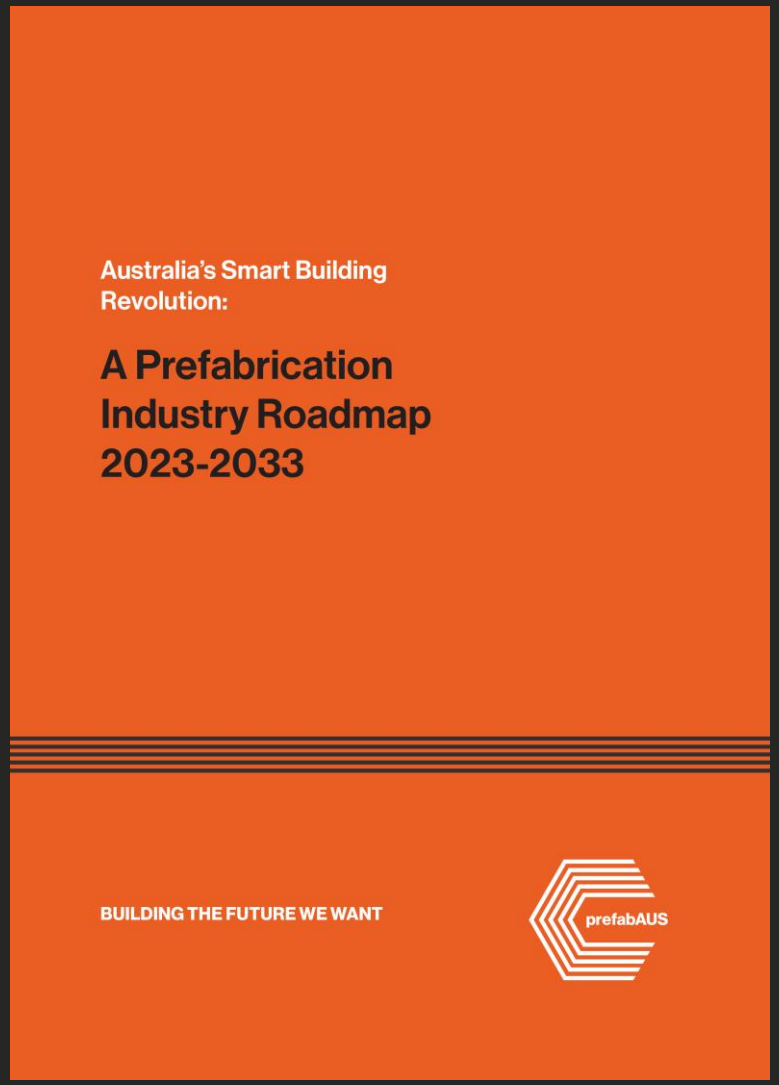
Damien Crough

Executive Chairman

prefabAUS

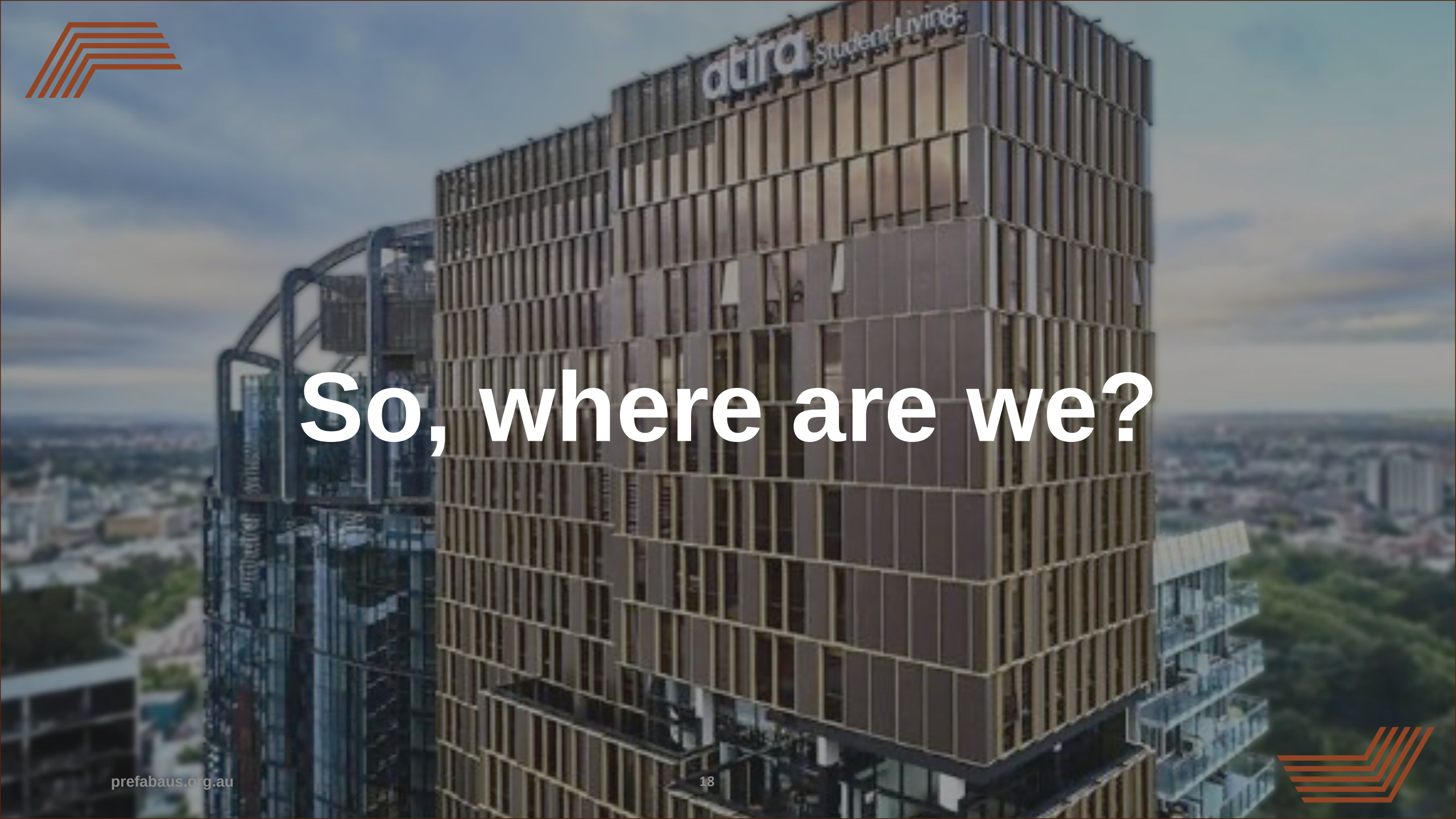
Digital delivery for tomorrow



Where we are,
Where we want to be,
How to get there

The Context

- Australian deindustrialisation: the smallest manufacturing sector in the OECD (except…Luxembourg!)
- Reindustrialise to decarbonise - A virtuous cycle:
  - Using our carbon-free energy to make equipment for green energy production and a low carbon economy
  - Onshore secondary processing of critical minerals: green steel and aluminium, lithium-ion, silicon, vanadium, cobalt, nickel, graphene, copper, titanium, rare earths
- Poised for prefabrication uplift – but major gaps in industry capacity and capability
- Smart Building benefits: productivity, affordability, quality, lower embodied carbon, resource efficiency, through-life energy efficiency, inclusive ageing-friendly communities, higher climate resilience



So, where are we?

Australia lags, but is primed for a prefab boost

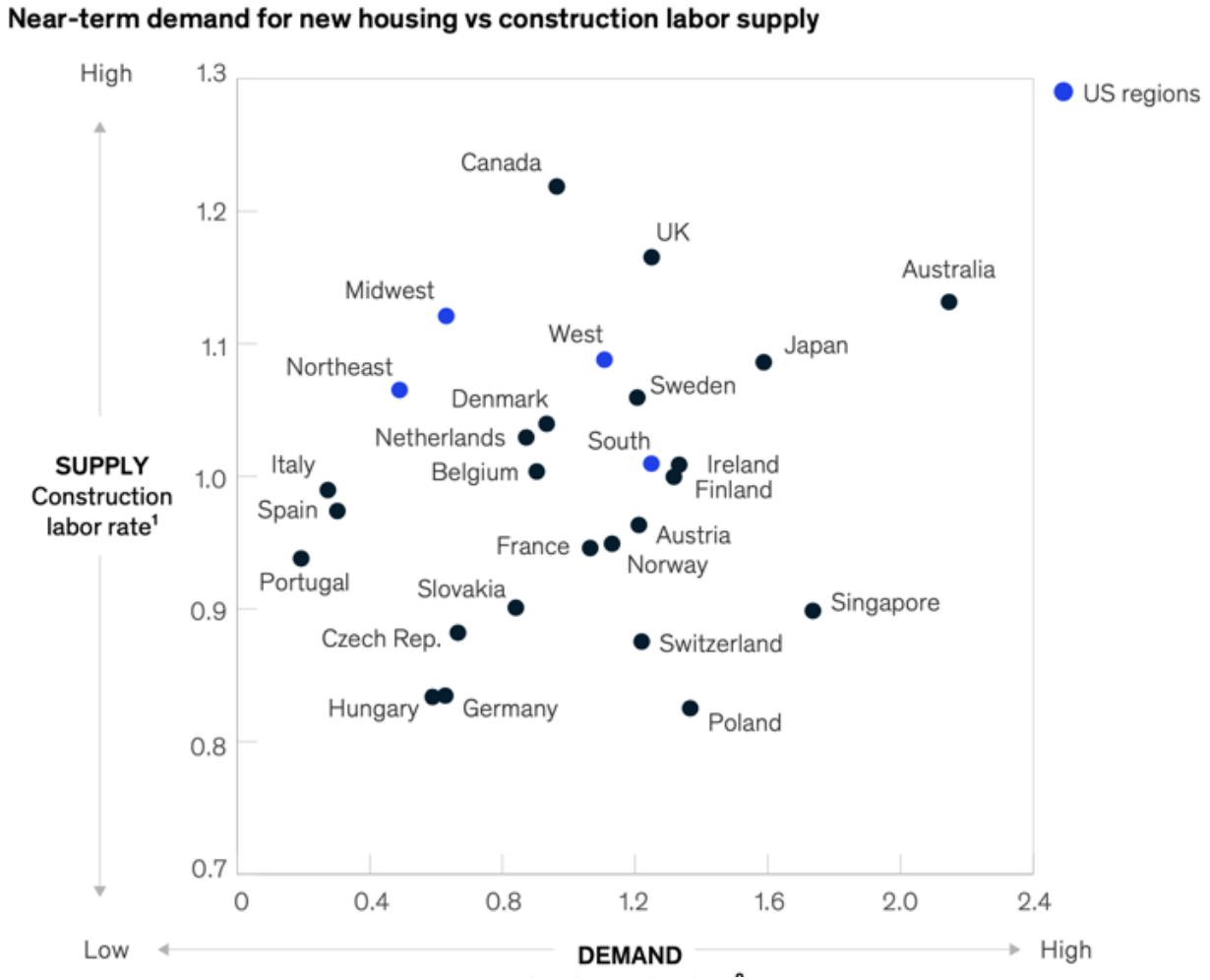
At less than 5 percent of total construction, the take up of prefab in Australia lags many other advanced economies

But Australia is an extreme case of both unmet housing demand alongside constrained supply of construction labour

Central drivers for prefab industrial offsite construction (source: McKinsey)

Productivity is front and centre of the case for prefab

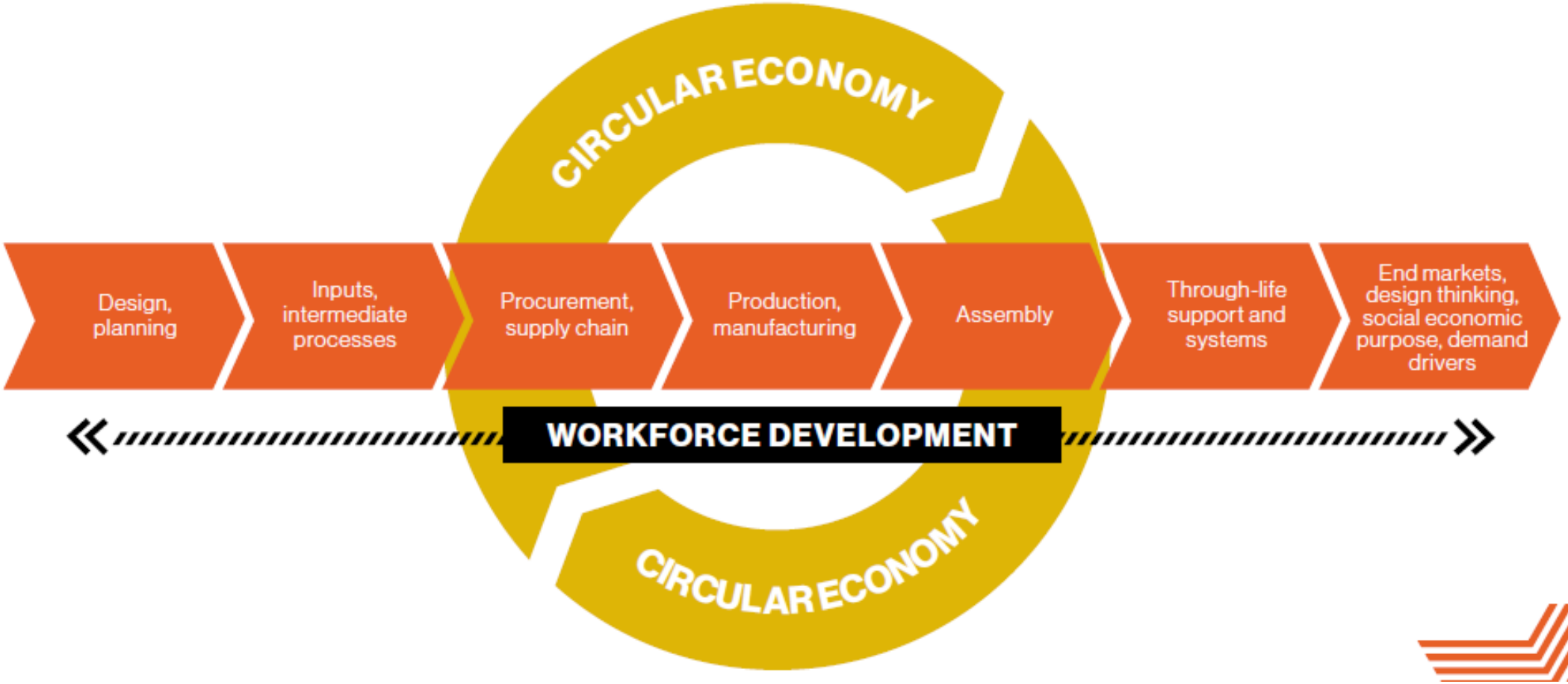
The productivity gains from prefab are bolstered by Industry 4.0



Australia is primed, but there is a lot to do

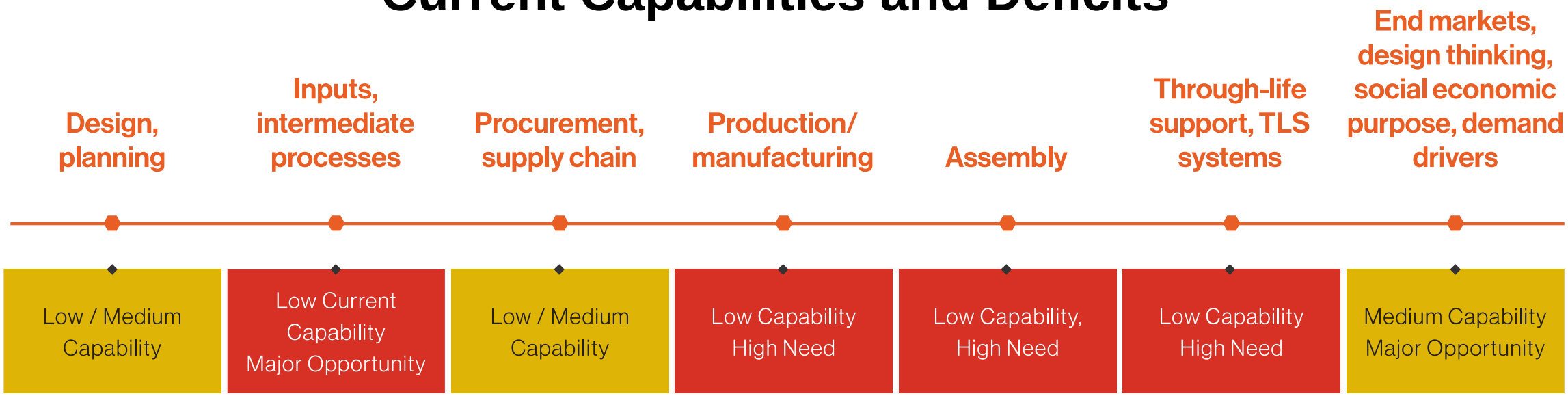
"Although modular construction is currently used for only about 5 percent of new homes in Australia, the right conditions appear to be in place, since the country has both high construction wages and great unmet demand for housing. Most of the offsite manufacturing that takes place today uses relatively basic manual production lines, but there is increasing interest and investment from leading players."

The Smart Building Value Chain



Seven Links of the Smart Building Value Chain

Current Capabilities and Deficits



Link 1 of the Value Chain

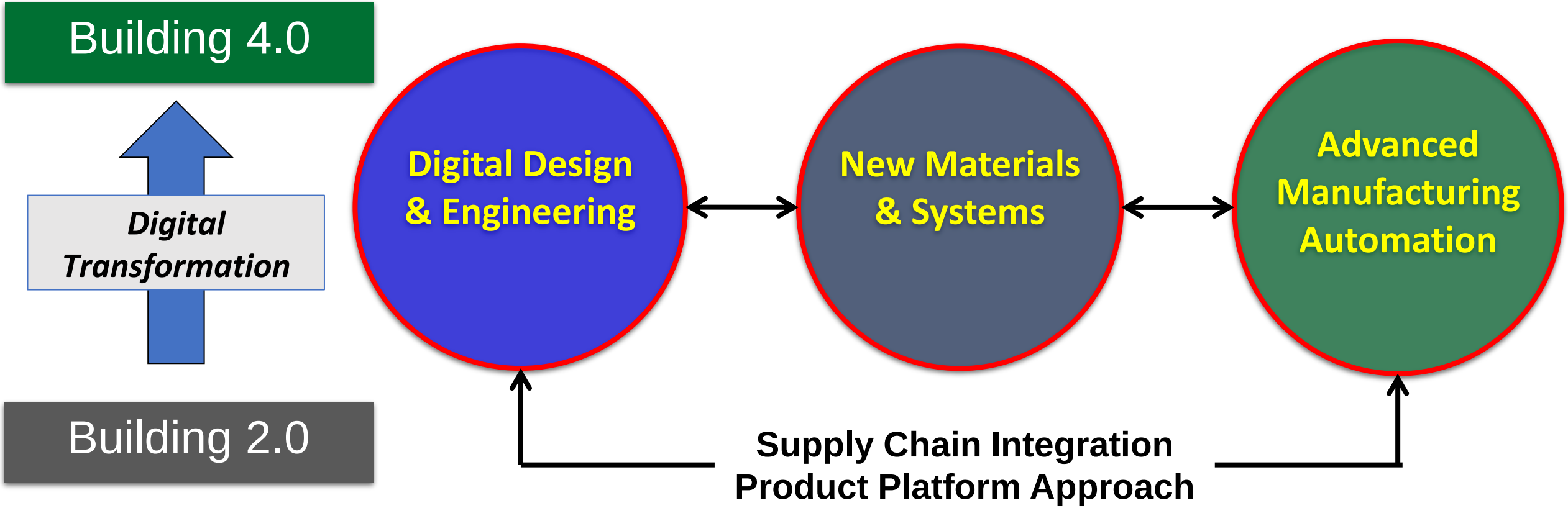
DESIGN, PLANNING

- DfMA;
- R&D;
- Problem solving/mgt.;
- Optimisation;
- Product testing/certification;
- Choice of Materials;
- Planning

BUILDING 4.0

- BIM, CAD
- Digital twin
- Simulation
- Product Lifecycle Mgt. (PLM)
- Virtual reality
- Cloud office apps

Building 4.0


Building 4.0
Digital Transformation
Building 2.0
Digital Design & Engineering
New Materials & Systems
Advanced Manufacturing Automation
Supply Chain Integration
Product Platform Approach

PROJECT
The Nicholson

ADDRESS
14-20 Nicholson St, East Coburg

MODULES
341

APARTMENTS
199

VALUE
$50m

PROJECT
Centvm

ADDRESS
100 Plenty Rd, Preston

MODULES
219

APARTMENTS
109

VALUE
$21m

PROJECT
3:East

ADDRESS
37-39 Bosisto St, Richmond

MODULES
63

APARTMENTS
57

VALUE
$13m

PROJECT
One9

ADDRESS
19 Hall St,
Moonee Ponds Vic

MODULES
36

APARTMENTS
34

VALUE
$4.5m

PROJECT
Stella Apartments

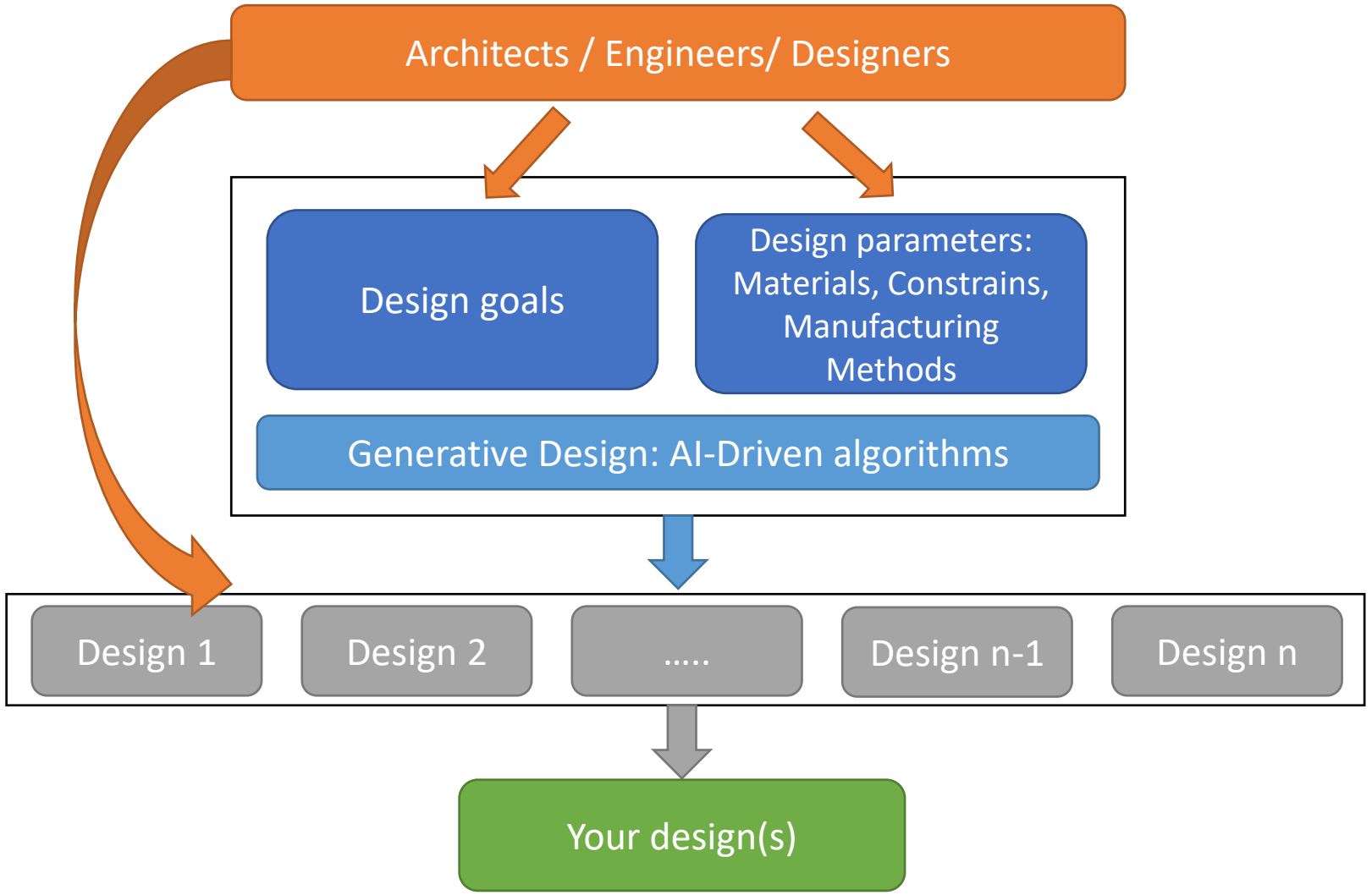
ADDRESS
17 Malata Cres, Success WA

MODULES
96

APARTMENTS
77

VALUE
$12.7m

Future of Design
Generative design + AI/ML



Challenges of AI in Construction Industry

Cultural issues in Construction

Talent Shortage

Computing Power and Internet Connectivity

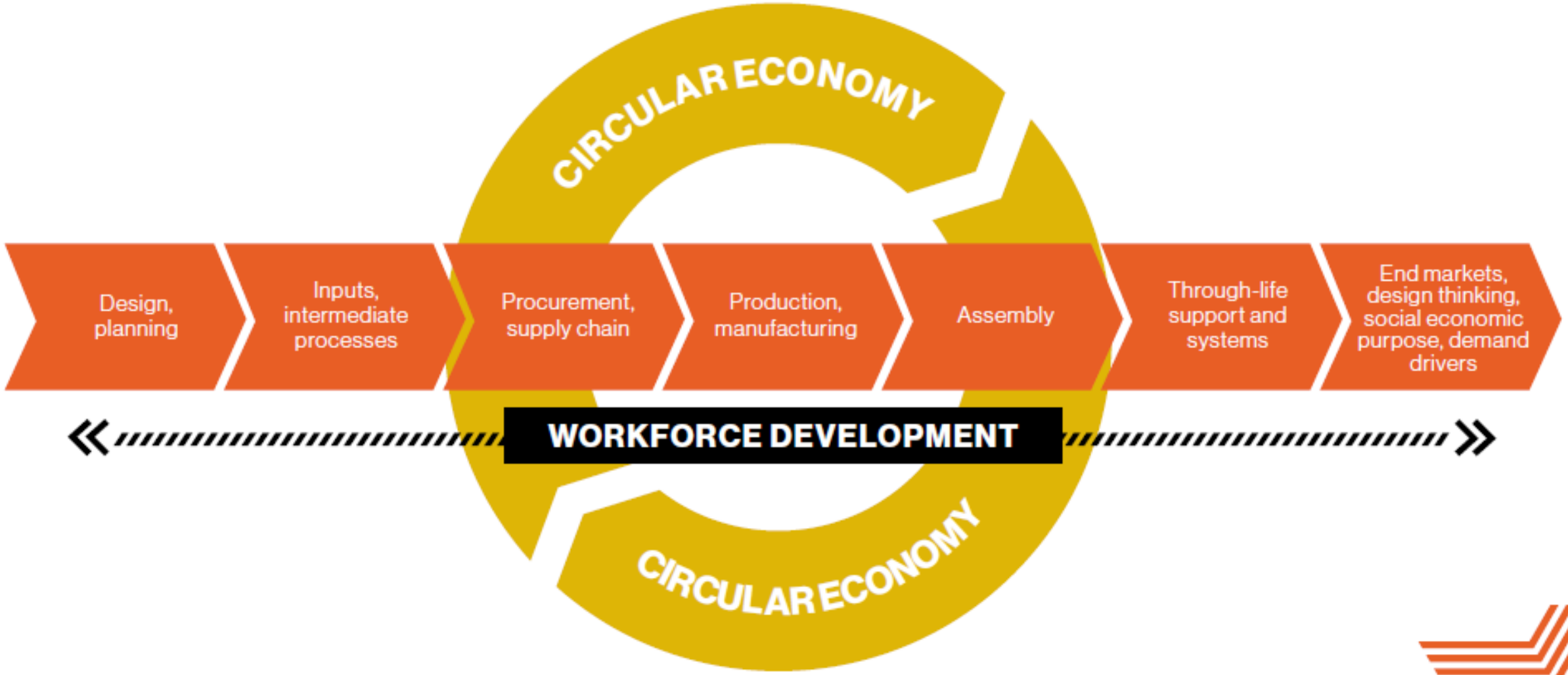
Poor data quality

High Initial costs

Ethics and Governance

Security

The Smart Building Value Chain



Thank you

www.prefabaus.org.au

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Franco Piva

Founder & Technical Director
Ergodomus

Digital delivery for tomorrow

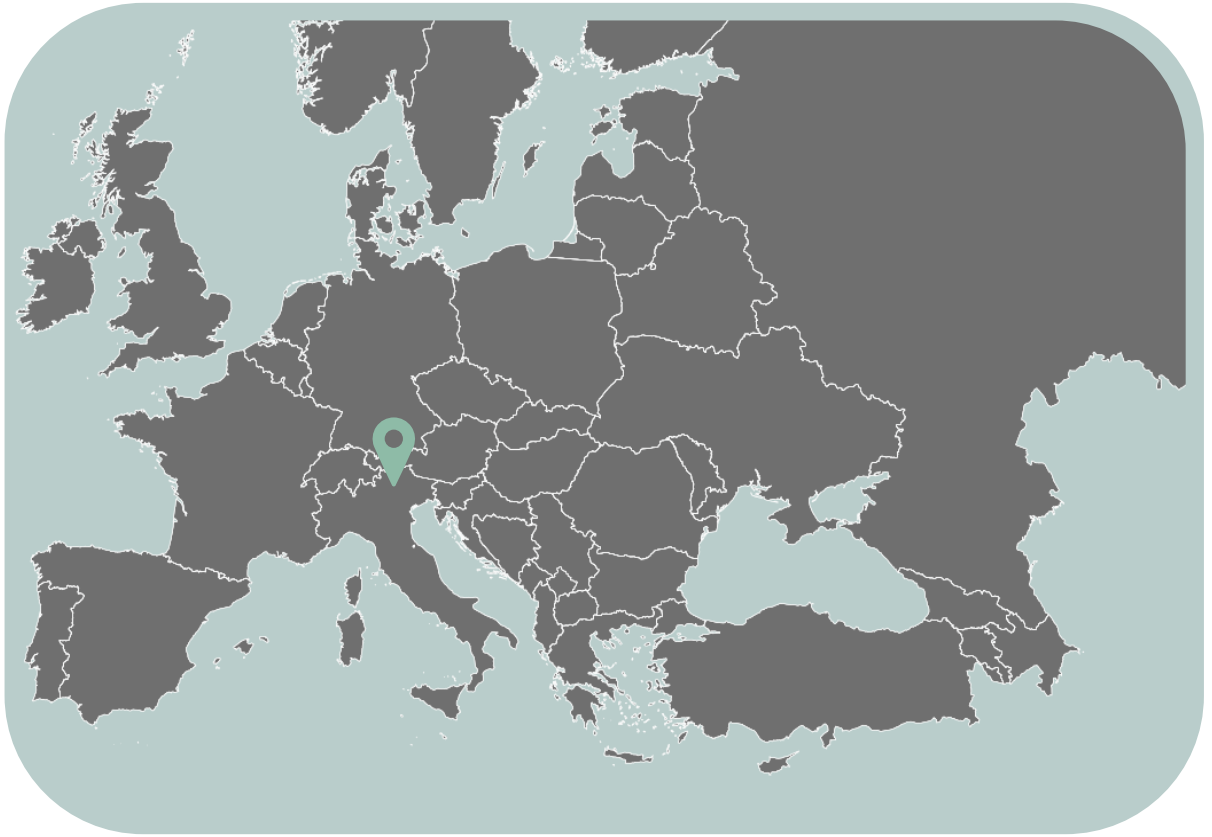
About Us

Established in 2007

In 17+ years we worked in 18+ countries

We engineered more than 300 Mass Timber buildings

Timber engineers for passion



Mass Timber is not a religion!

Craig Applegath

Dialog (CA)

Digitization of the process

- BIM (coordination, file sharing, 3d informative model)
- Robotic prefabrication
- Cad/Cam technologies
- Precise cost estimation
- Off-site vs On-site
- DfMA: the new value engineering tool

- Disruptive effective

Building
Information
Modelling

Vs

Building
(dis)Information
Modelling

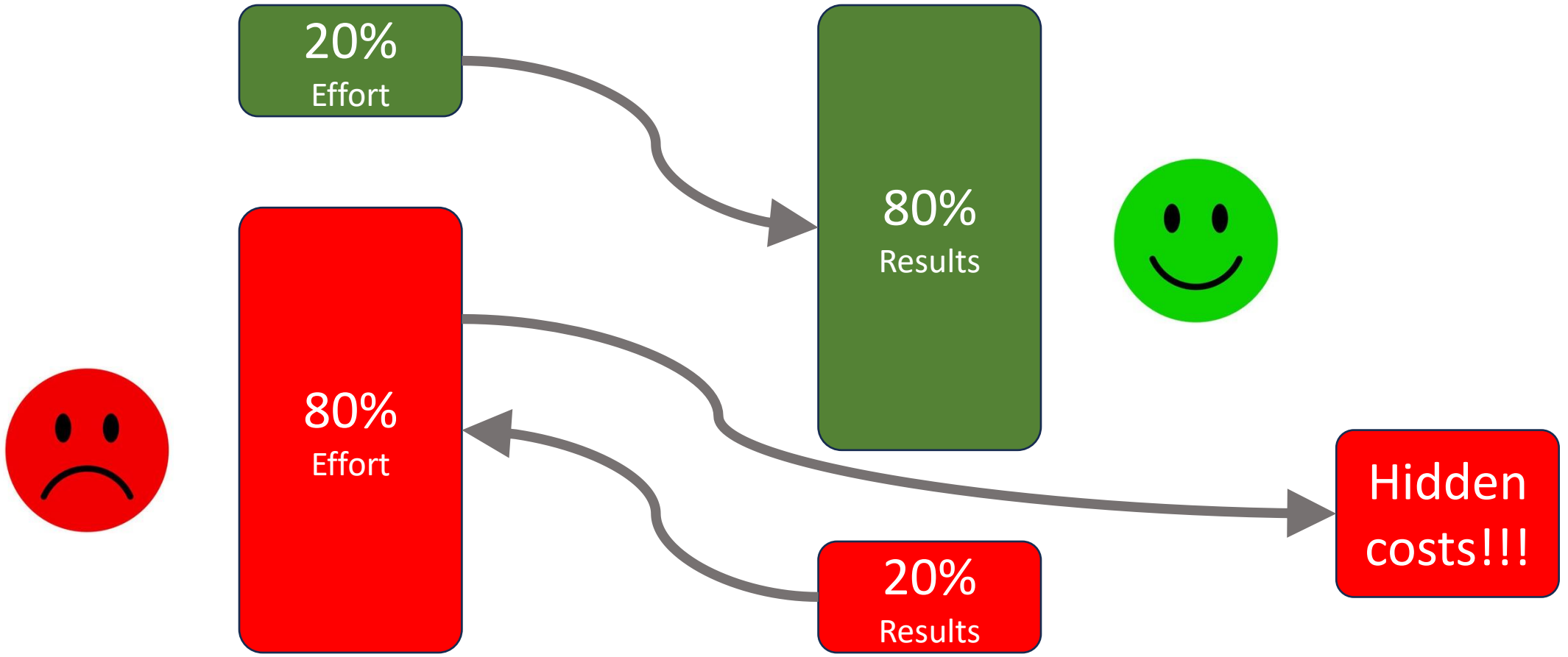
BOS

Design for Manufacturing Assembly

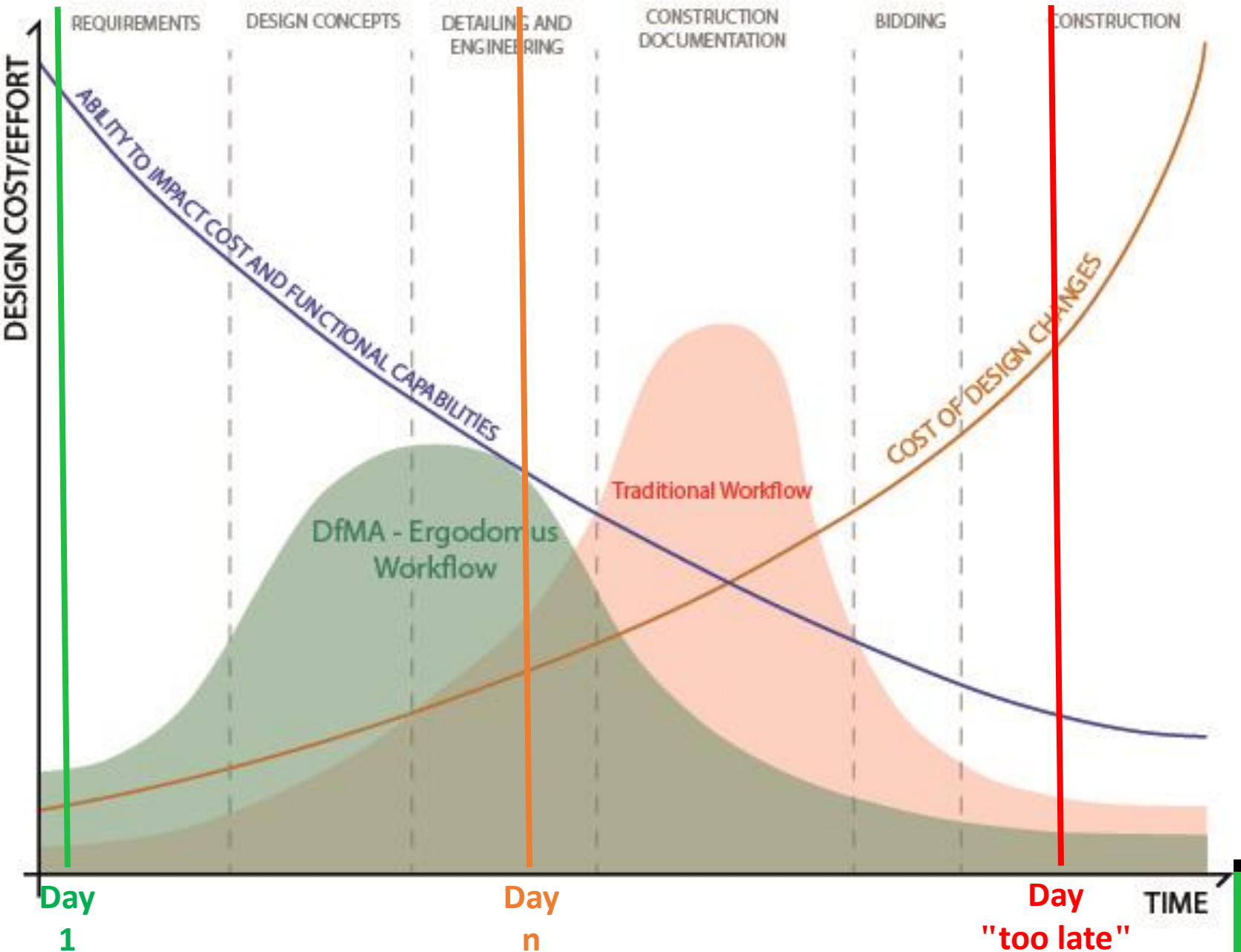
The 3d digital model must be 100% correct

99% and the machine does not work

Pareto’s principle (engineering)



MacLeamy's curve

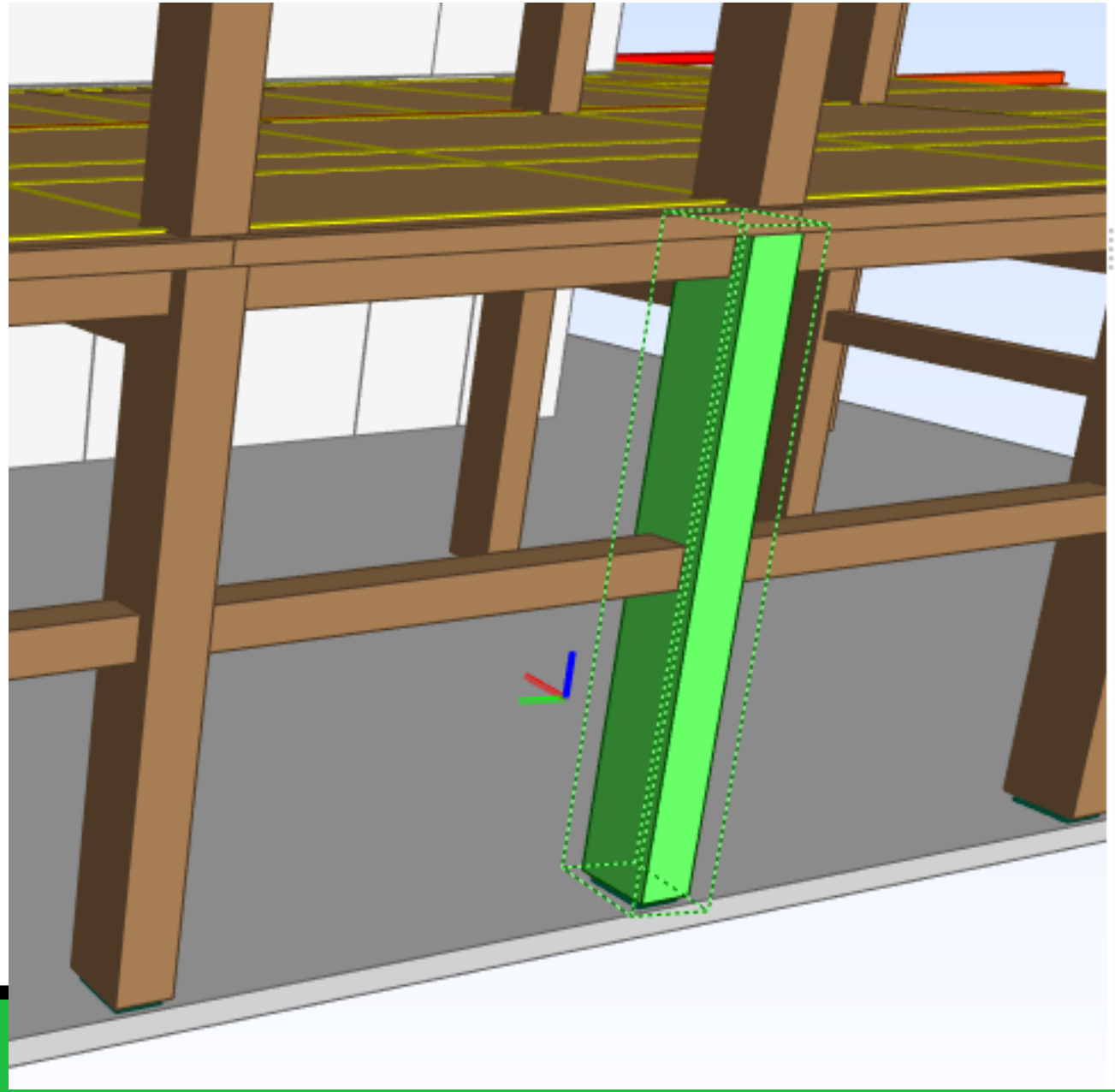


Day *1*: low cost -> high impact

Day *n*: mid cost -> mid impact

Day *"too late "* : …

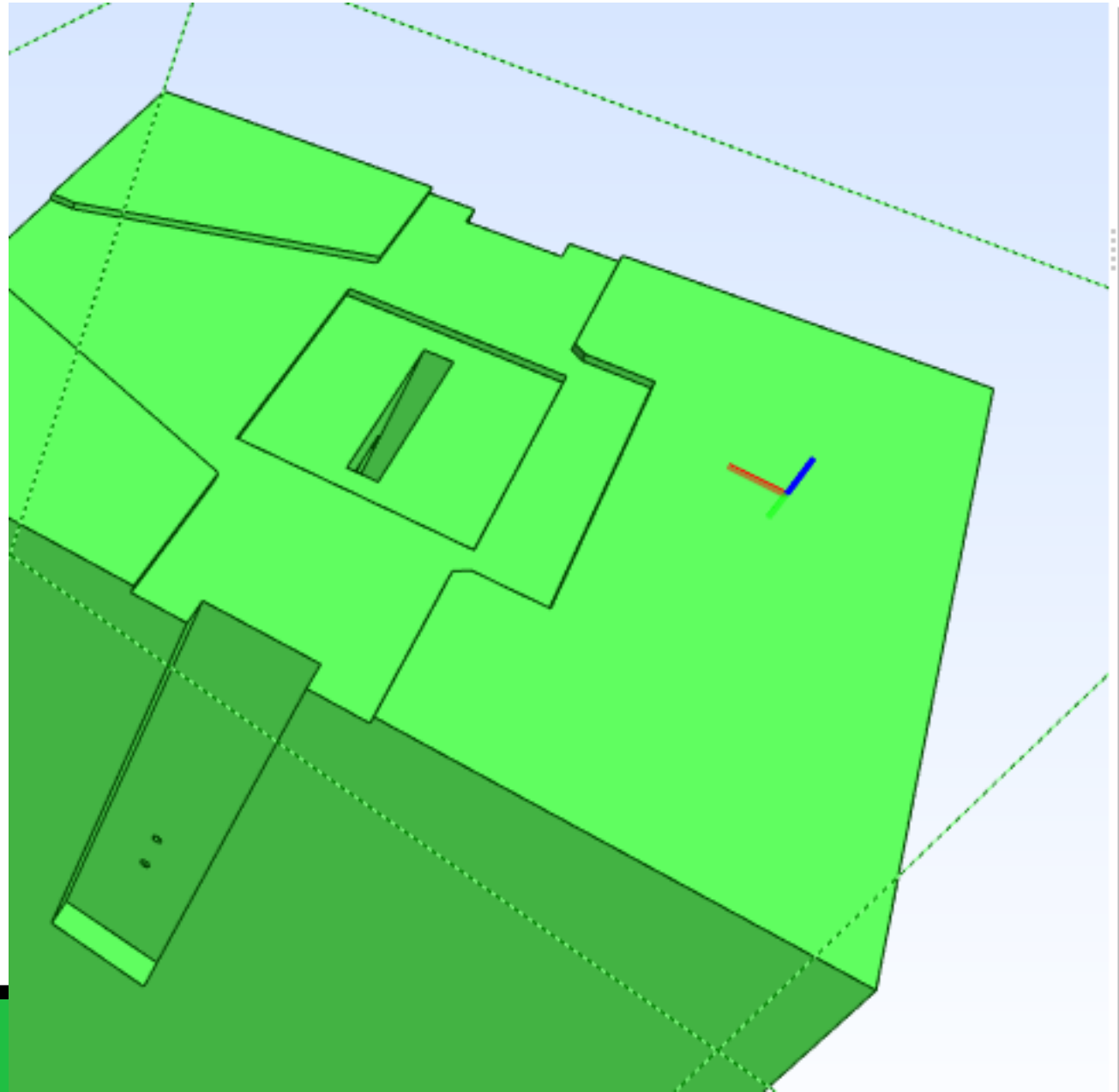
Digital model



Properties | Location | Classification | Relations

Name	Value
Element Specific	
Description	MM
Guid	1RyFwekc52Ie2X0H3kKLp
IfcEntity	IfcColumn
Name	Column
Data	
Beam code	Truck_1
Beam type	Beam
Grade	28h
hsb ID	
hsbcad Material	GL
Information	MM
Label	A1
Name	Column
Position number	11113
Sublabel	M1
Sublabel2	C265
Zone	0
Geometry	
Height	600
Length	6 682,000034
Width	600

Digital model



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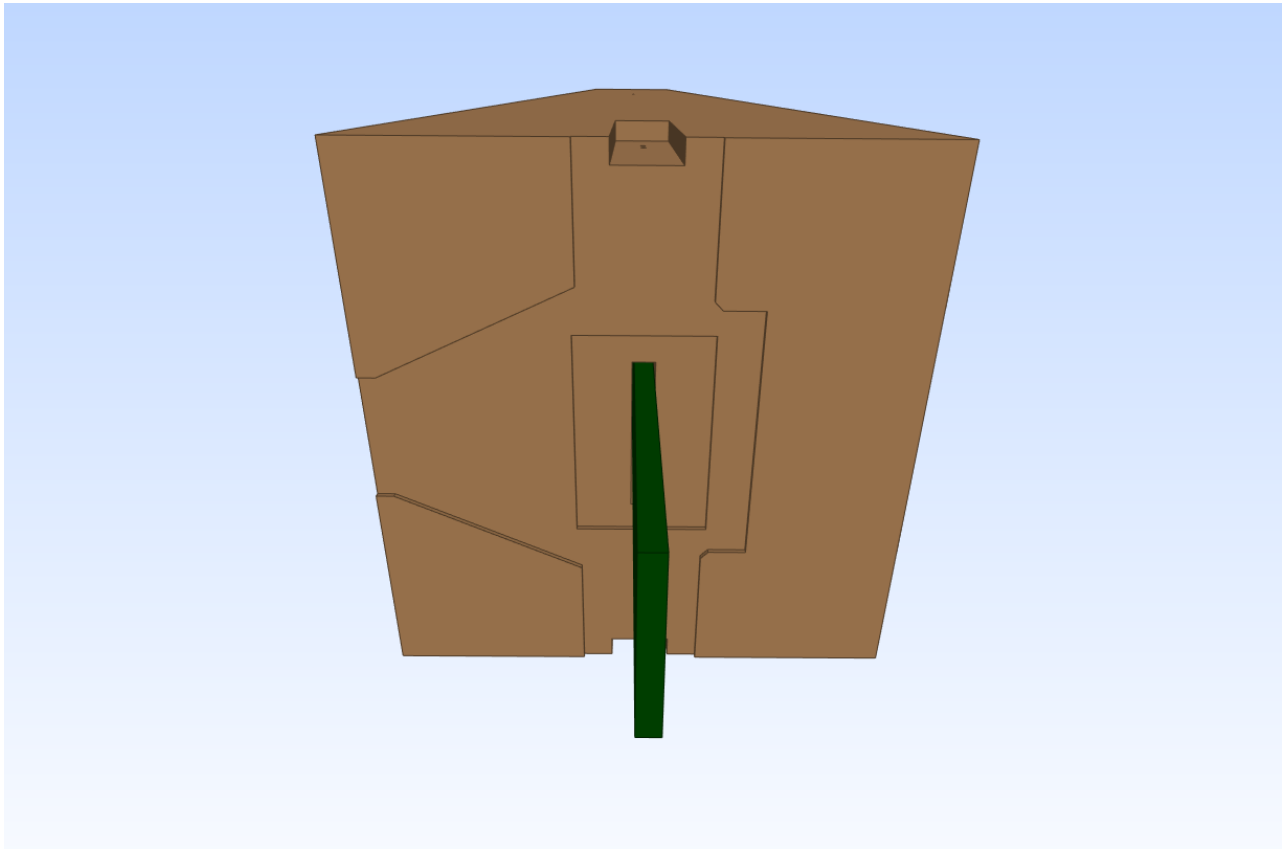

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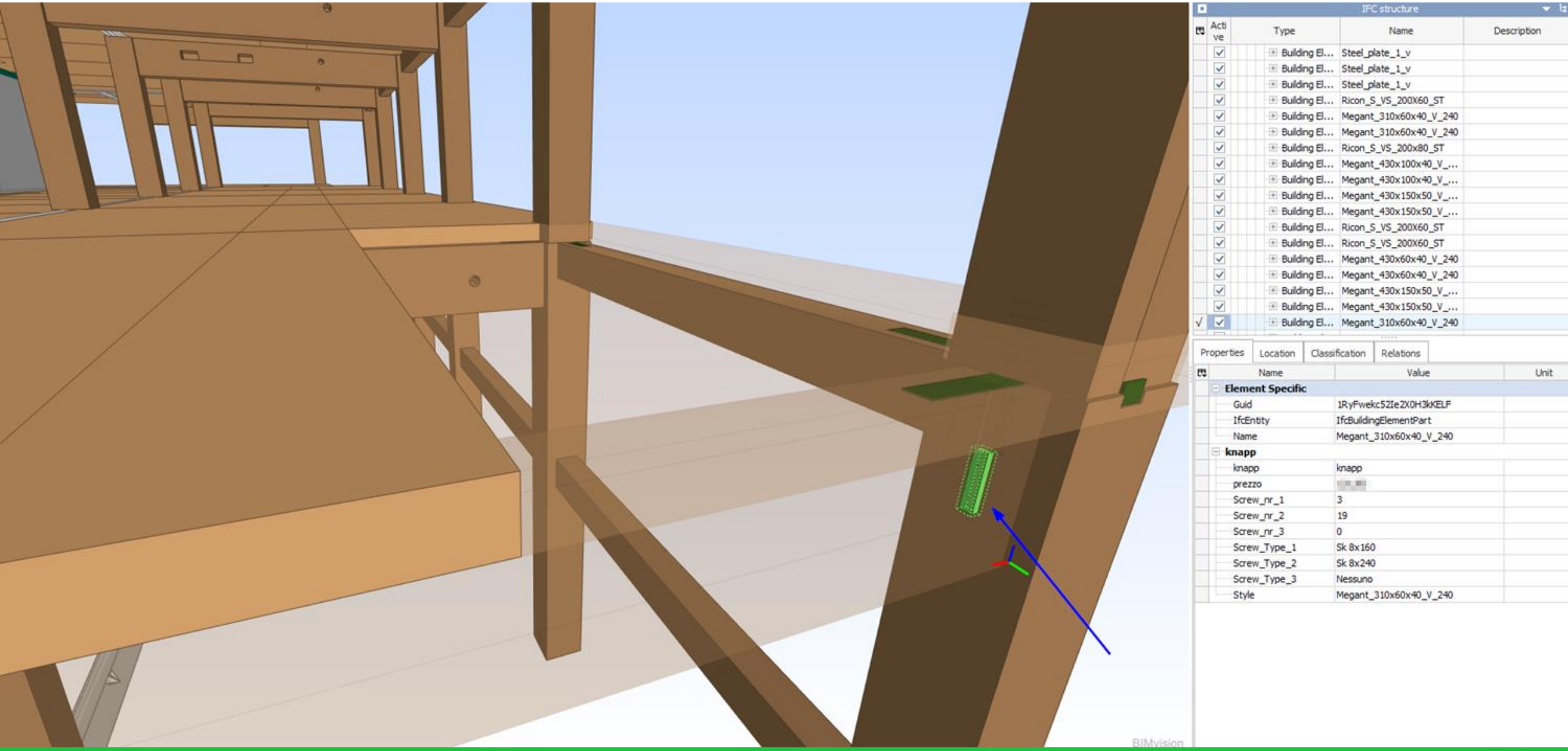

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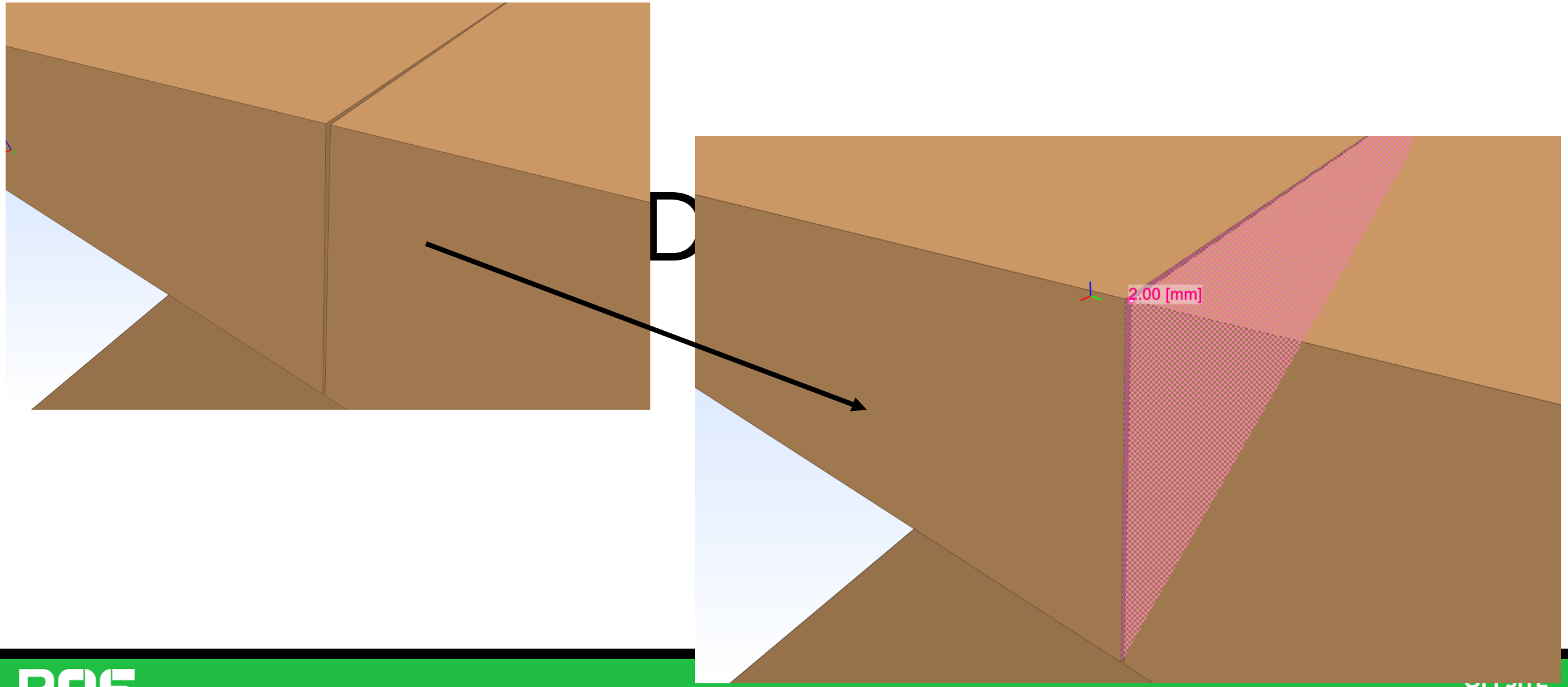

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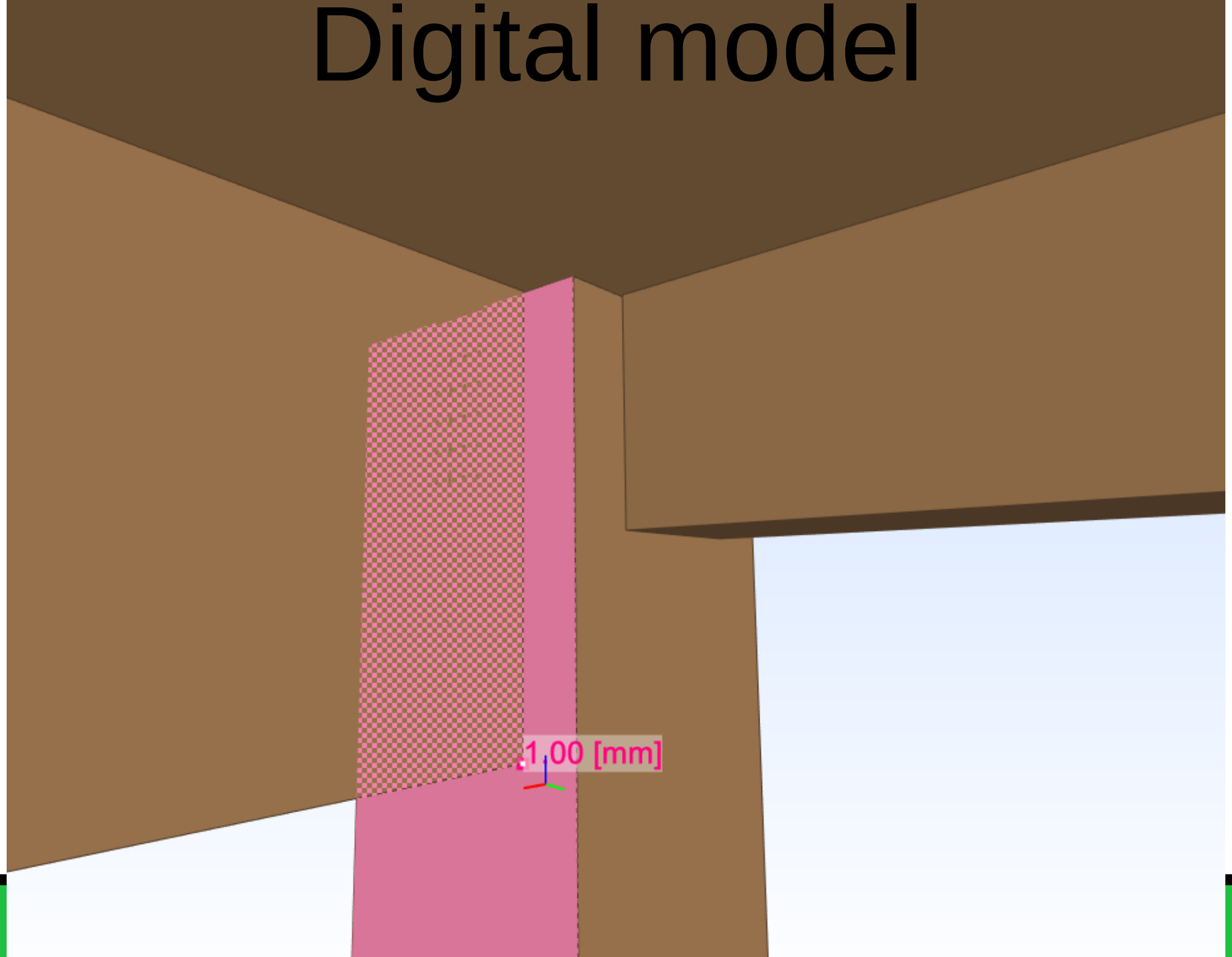

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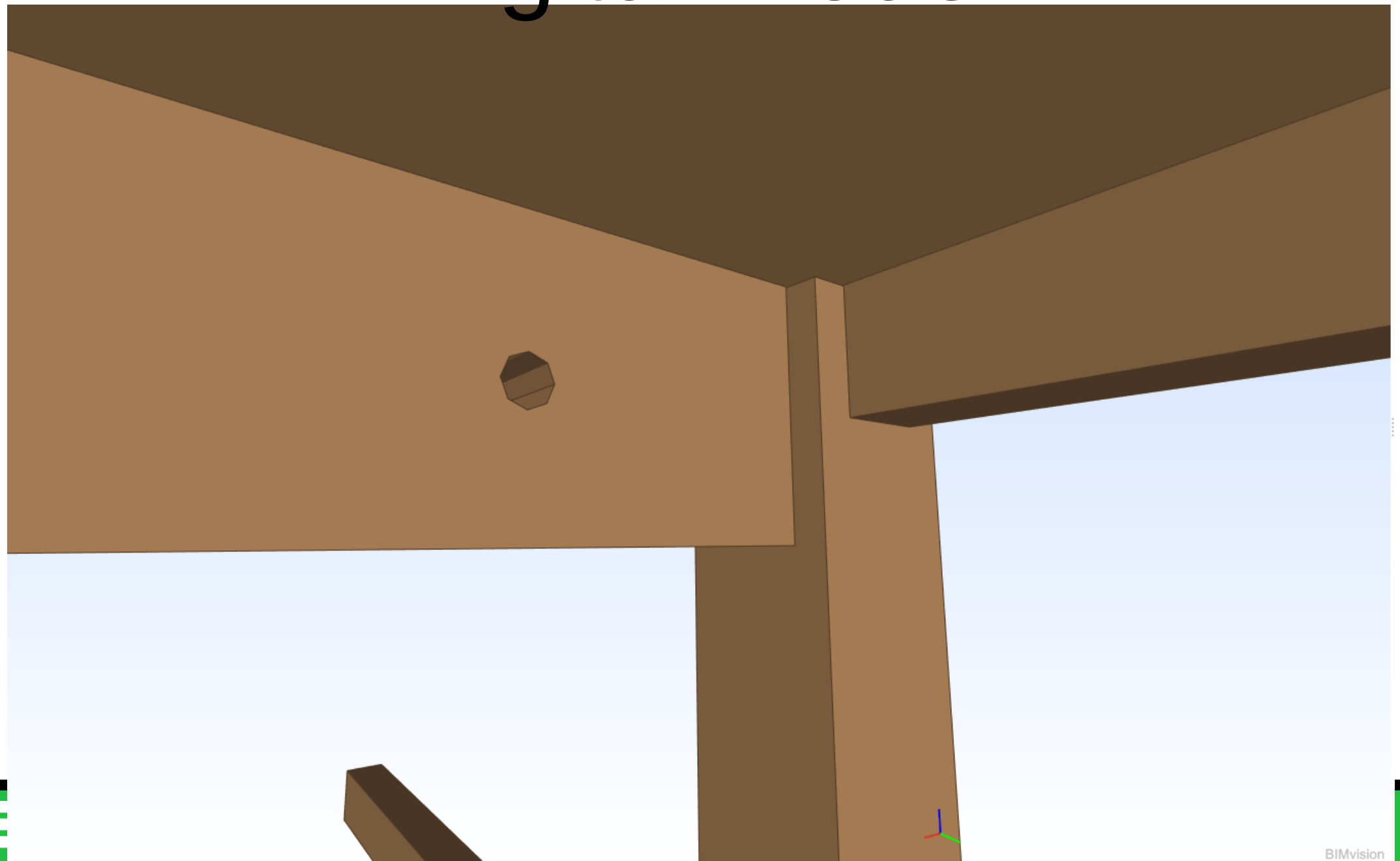

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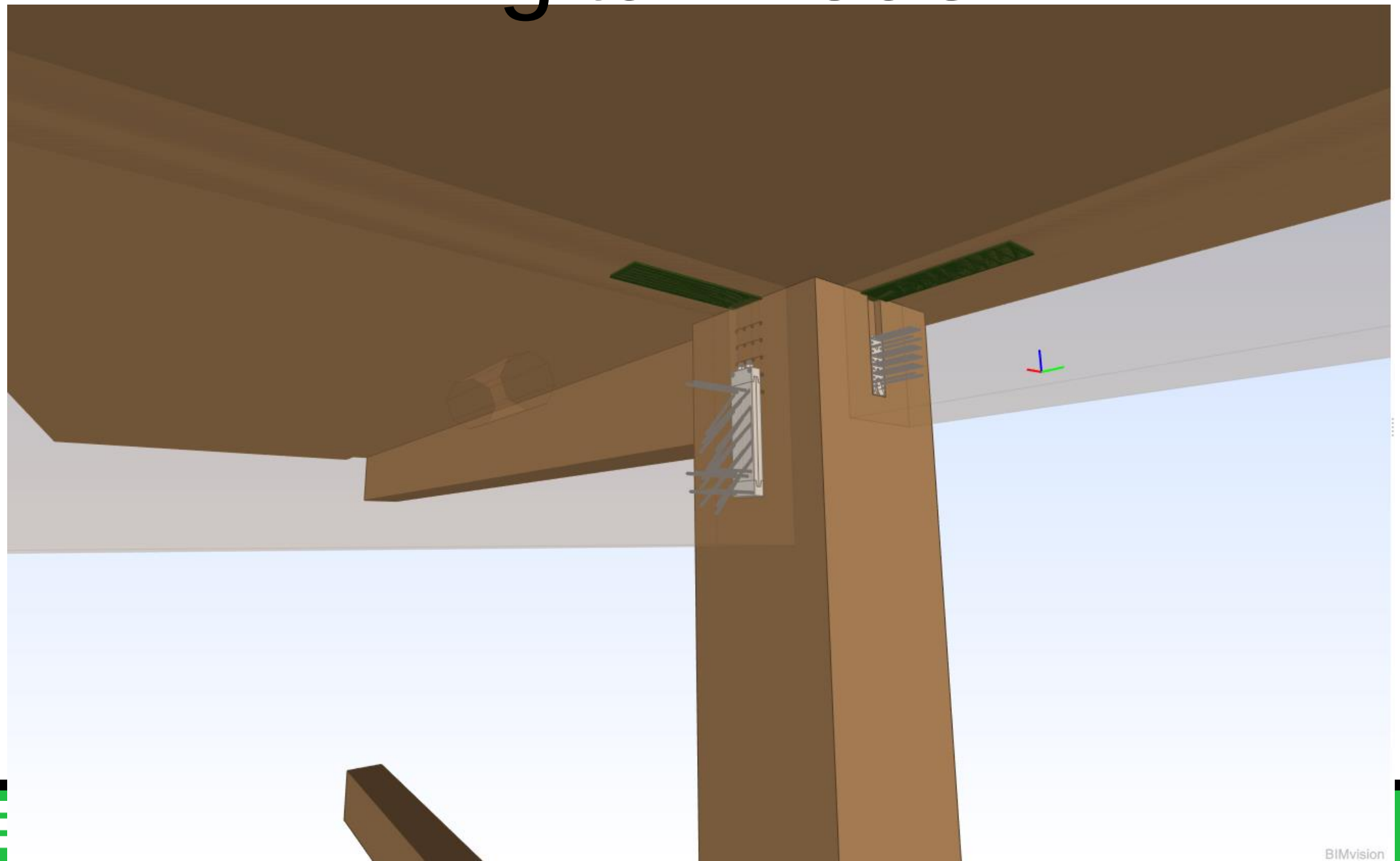

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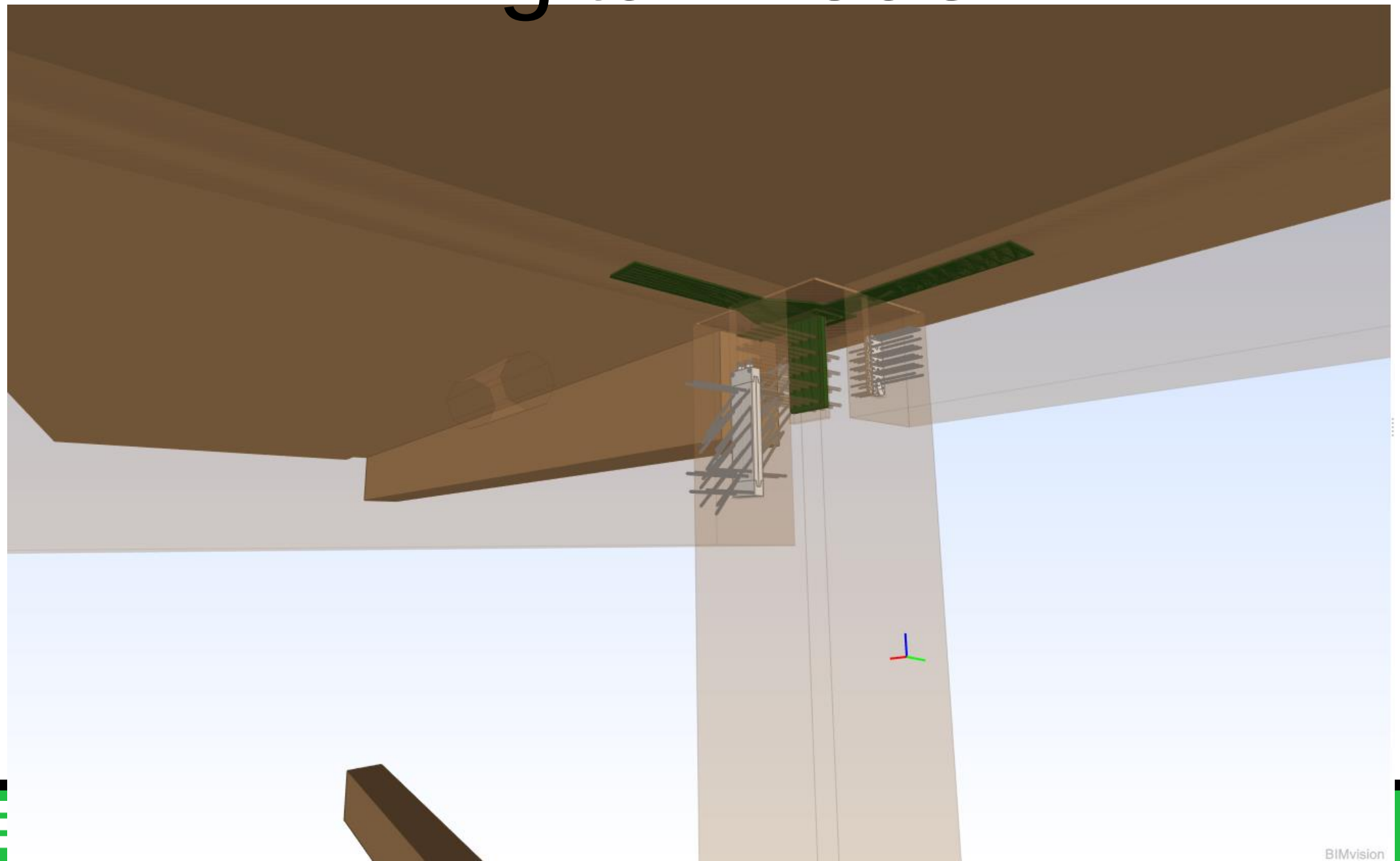

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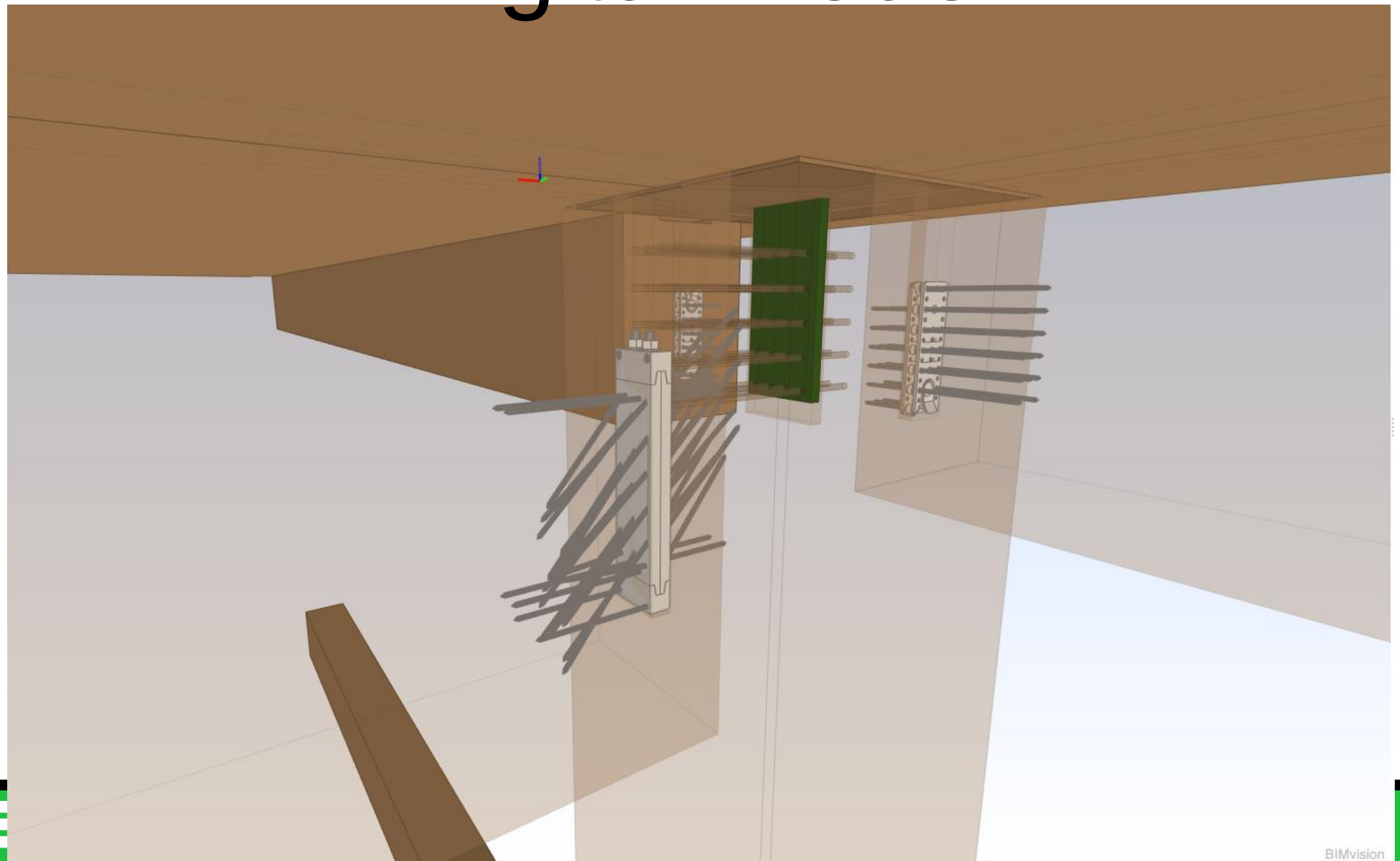

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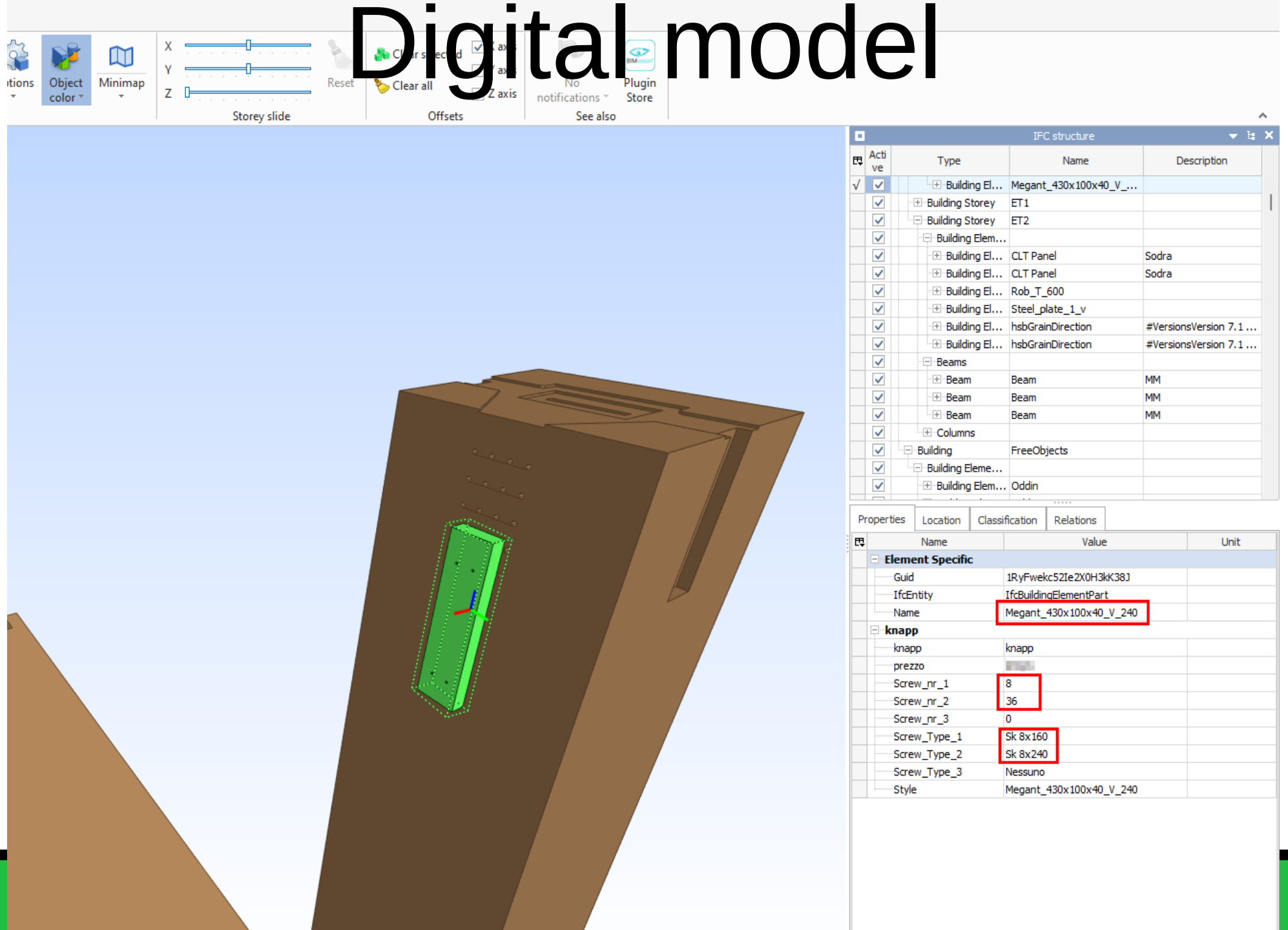

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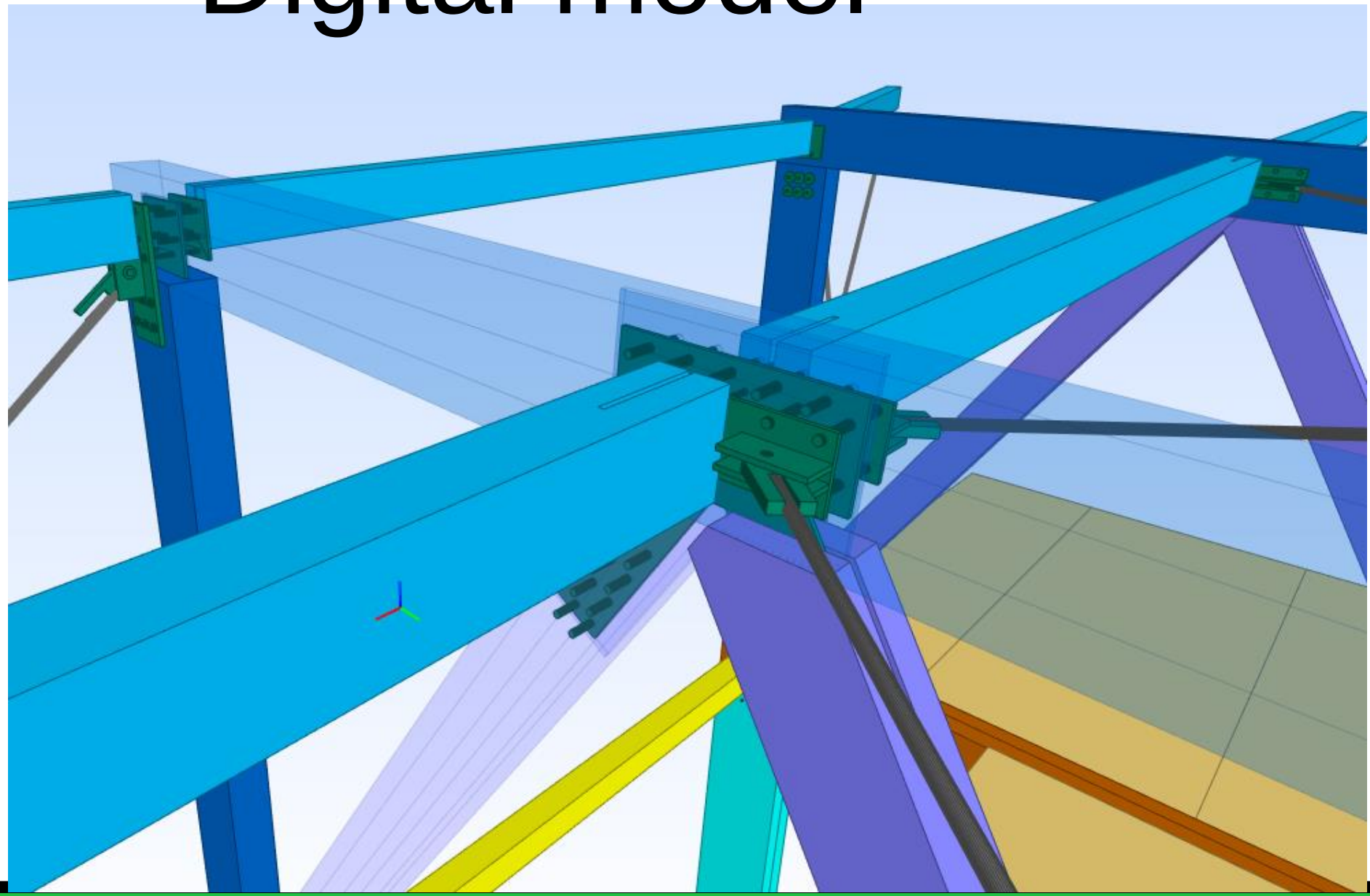

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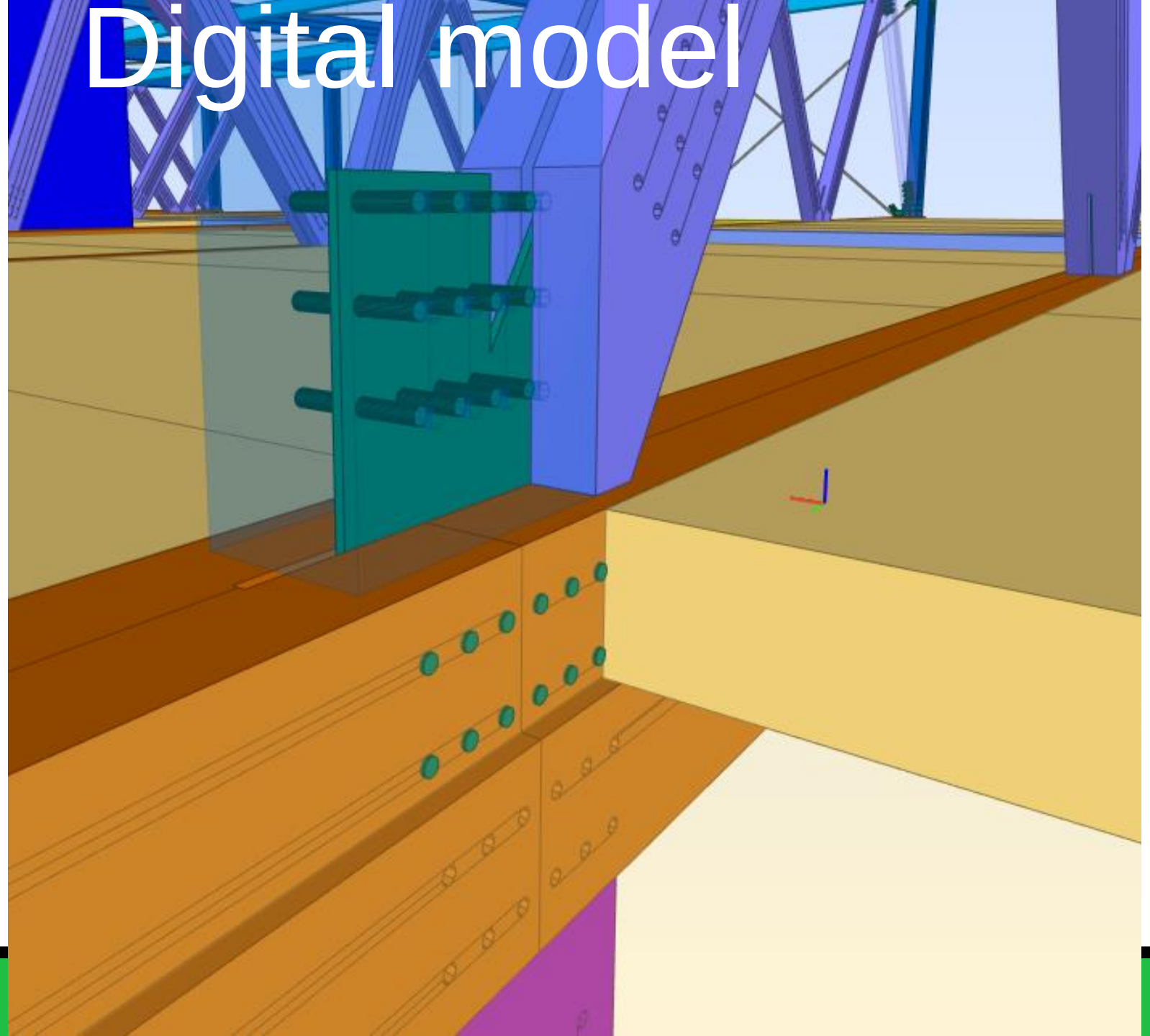

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