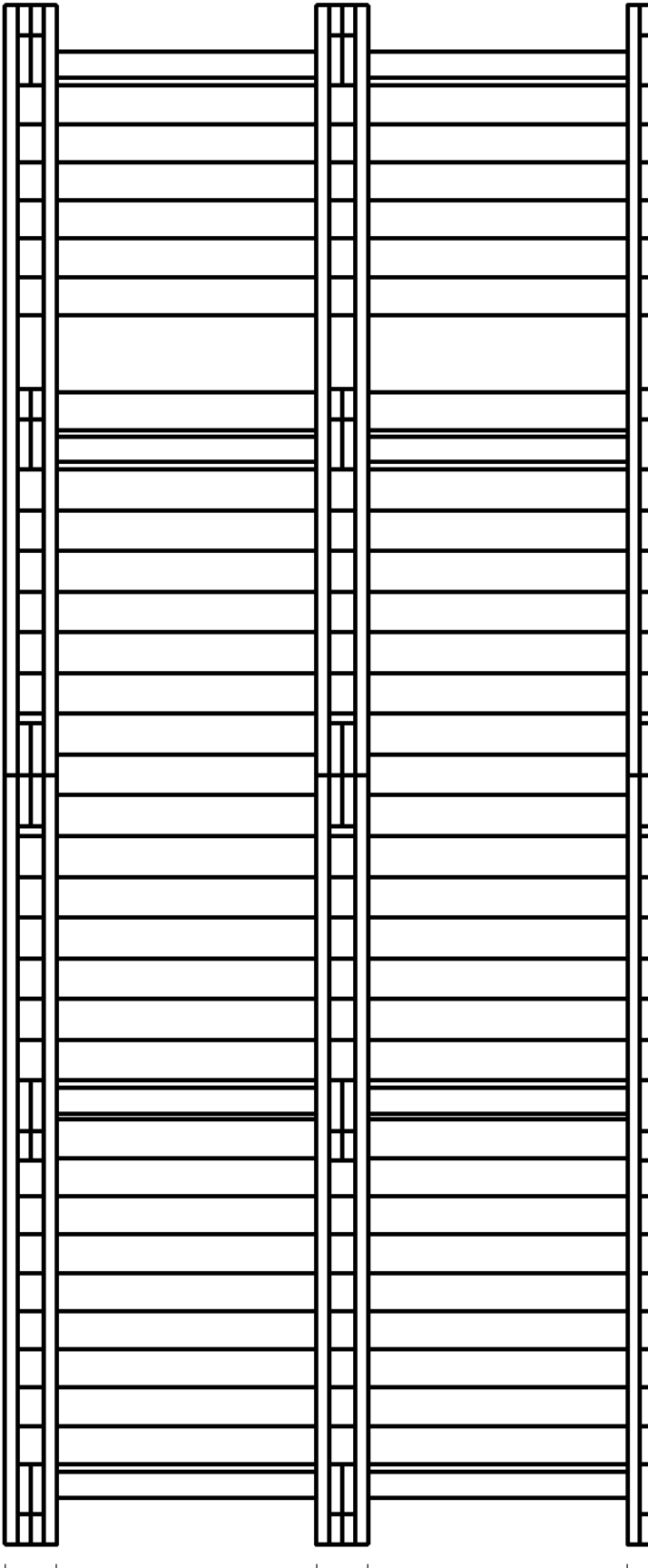
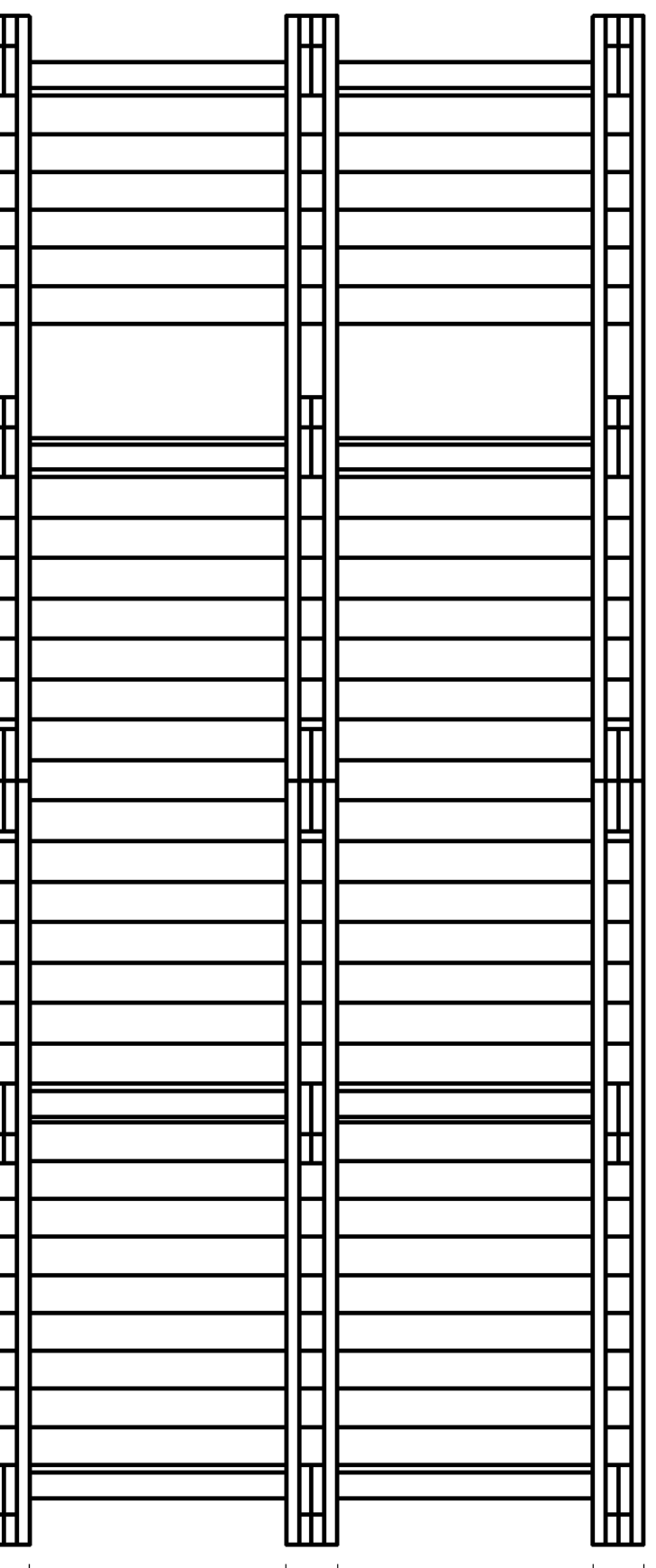
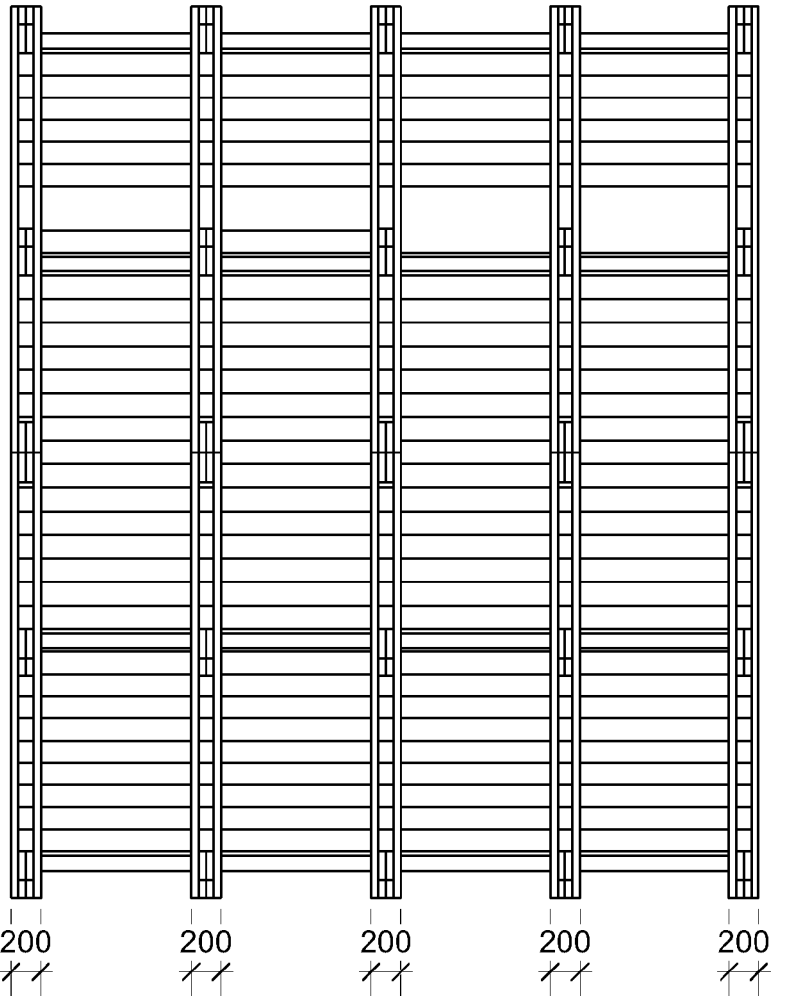
A-Frame



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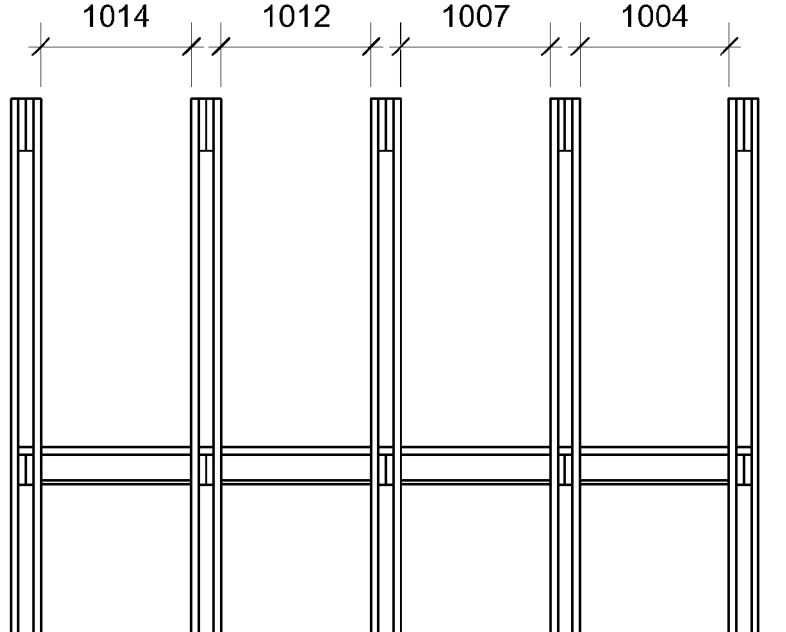
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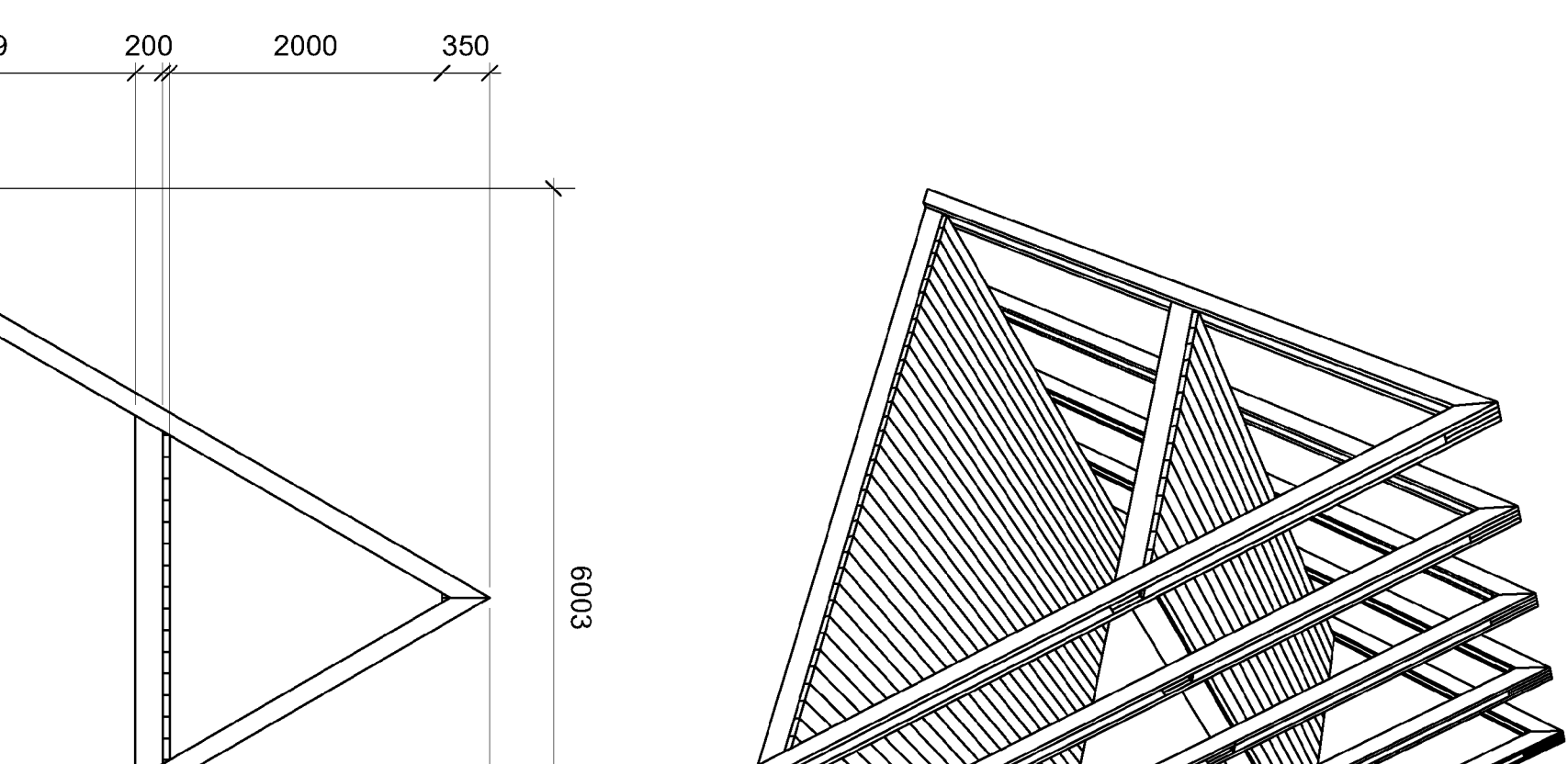
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FRAN

Introduction

FRAME

Joint collaboration

THE TEST SITE

asc
AALTO SUSTAINABILITY CLUB

With funding from

SUSTAINABILITY ACTION BOOOSTER

TTER

Creative *Sustainability*

A!
Aalto University

ACRE
Aalto University
Campus & Real Estate

Welcome to A-Frame

The A-Frame is an experimental project aimed at exploring self-building methods, utilizing recycled materials, and fostering hands-on learning experiences and teamwork. Situated within The Test Site — an area dedicated to sustainability-related projects — the A-Frame is located by Lake Ossinlampi on Aalto campus in Otaniemi, Espoo.

Originally known as "The Shelter", the project was initiated in 2019 by members of The Test Site but faced challenges due to the COVID-19 pandemic. However, in late 2022, a new group of students reignited the project, determined to see it through. The A-Frame project became a joint effort between The Test Site and Aalto Sustainability Club, with financial support from AYY's TTE Fund (TTER) and Sustainability Action Booster.

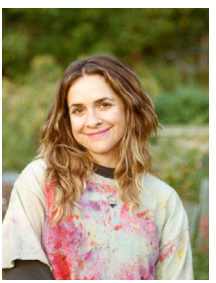
The goal of the project was to transform an open A-frame skeleton into an enclosed space, turning it into a welcoming community hub at The Test Site. By the end of 2023, we were able to add side facades to the structure to make it semi-enclosed. Our journey isn't over — we still hope to add front and back facades to fully enclose the space. This little book is a tribute to the A-Frame project, documenting the twists, turns, and lessons learned along the way.

People

As with any self-initiated community endeavor, the journey has been quite a rollercoaster ride. Life happens, commitments shift, and people come and go, but through it all, we are immensely thankful for the dynamic team that has jumped aboard. Initially led by students in the Creative Sustainability Master's Programme, the project has been enriched by an incredible group of contributors from other departments, including Interior Architecture, Contemporary Design, and Mechanical Engineering. A big shoutout to Mark Hughes for his guidance and help along the way, and to all the other amazing friends from beyond the Aalto community!

Thanks to our rockstar core team members who've been there through thick and thin, making this project possible.

Nathan Pottier
Creative Sustainability (Design)
Project coordinator
and a lot of sanding
@rthan_



Gabriela Farias
Creative Sustainability (Design)
Project coordination,
logistics, sourcing, procure-
ment, building, and dinolift
driving (my baby!)
@gabrizzela

Paul Wong
Creative Sustainability (Business)
Project financial management and helping with material procurement when needed :)
@paulwongcp

Roosa Muukkonen
Contemporary Design
Construction, documentation and helping out where I can!
@roosamuukkonen

Tianyi Yu
Creative Sustainability (Design)
Building, communications, documentation. Also dabbled in wood finishing (tar is my new scent)
tianyiyu7@hotmail.com

Callisté Mastrandréas
Creative Sustainability (Design)
Sourcing materials, organizing building workshops, sketching for construction, and brainstorming with physical models (#OldSchool)
@mstrndrs

Michael Buchta
Creative Sustainability (Design)
Project kickstarting, planning, sourcing materials, and on-site building
@michaelbuchta

Pamela Ngui
Creative Sustainability (Business)
Project planning and building
@pamelangui

And a special nod to all the contributors who've pitched in their time and expertise!

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Martin Born

Jules Coffineau

Shweta Dash

Francis Albert Devasagayam

Anna Farrell

Timothé Dubéarnès

Joi Gao

Paul Geraeds

Gabriel Juul

Lõmaš Kama

Petri Kangassalo

Jasmin Järvinen

Mark Hughes

Samvidh Ramanathan

Ariana Marta

Lukas Shuck

Moritz Kremer

Lassi Mustonen

Andrzej Tarasiuk

Tuomas Auvinen

Alischa Thomas

Diego Marmi

Tiina Raasakka

Chris Heilakka

Aaron Wehner

Em Vining

Mikko Jalas

Kazuma Miyajima

Henrick Schumacher

Aapo Pihkala

Jason Selvarajan

Frame by Frame

10.05.23

07.08.23

29.04.23

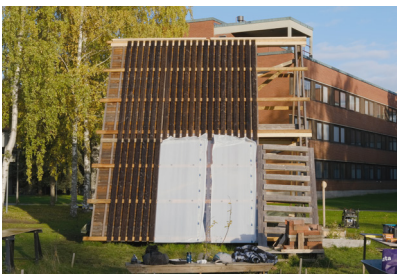
05.10.23

10.05.23

20.06.23

08.06.23

05.10.23



18.10.23

25.10.23

19.10.23

25.10.23

17.10.23

25.10.23

18.10.23

25.10.23

Exciting

Experimental

Community

LEARNING-PROCESS

Exploratory

Surprise

Togetherness

Evolving

Hub

Challenging

Shelter

Acrobatic

WOW!

Building

Transformative

Collaborative

Gathering

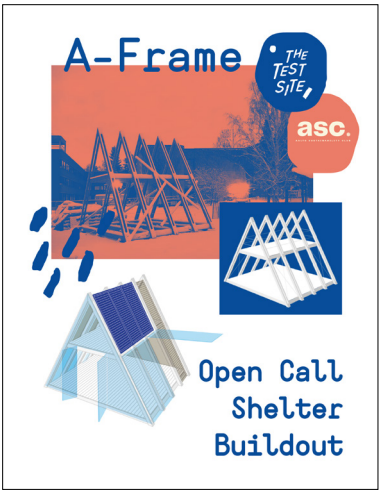

FRAN

Our Journey

In late November 2022, a small team of Creative Sustainability students gathered with hopes of reviving the A-Frame project and securing a grant. Progress was slow at first. After a winter holiday break, we reconvened in January 2023 amidst the snow-covered Test Site to delve into the history of the A-Frame, brainstorm ideas, and submit the application for the TTE Fund.

Nathan, a.k.a.
the human
measuring tape
09.01.2023

We successfully got the grant from the TTE Fund, totaling around 9500 €! We also sent out an open call inviting folks to join the project.



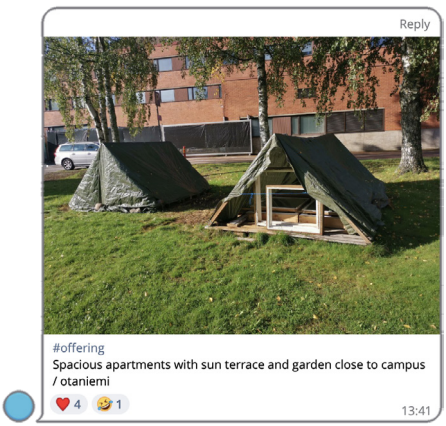
Our first open call poster inviting people to be part of the A-Frame project (Graphic design by Sanne van der Linden)

March started with the first A-Frame meeting, attended by over 20 people, including the core team and others interested in joining. We also scored our first batch of second-hand materials — snagging some wooden pallets from the construction site on Aalto. These pallets came in handy for building small platforms near the A-Frame to store all the materials.

The first A-Frame workshop
10.03.2023

First score! Salvaging wooden pallets
from a construction site on Aalto campus.
17.03.2023

Mini A-Frames for maximum
storage! Building tiny structures to
house second-hand materials like
waste wood. #NotForRent
24.03.2023



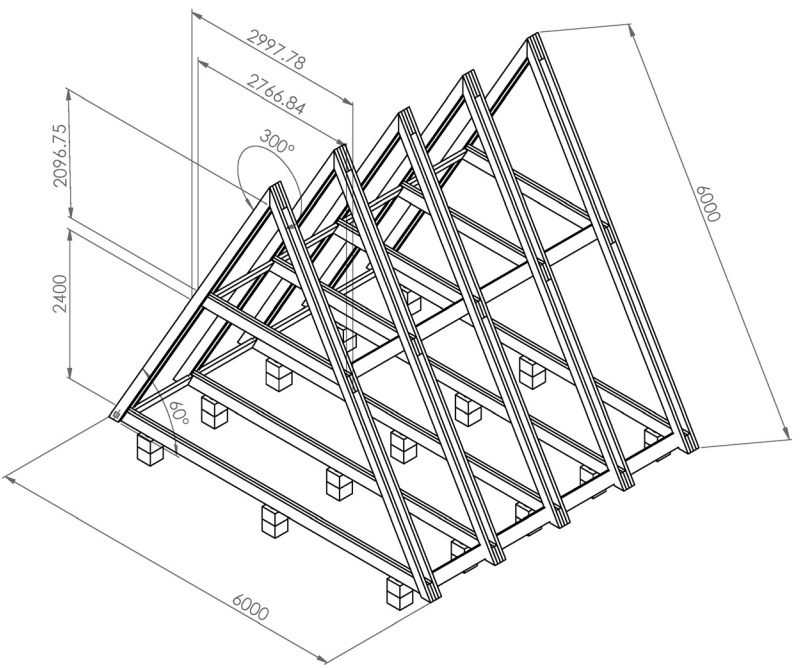
Now that more people have jumped on board for the project, things have started moving forward. In the beginning of April, Alischa and Joi helped design and facilitate an action plan workshop to align our visions for what the A-Frame could be and come up with concrete steps.

With the A-Frame's existing structure as our canvas, the design efforts primarily focused on adding facades and layering materials. From digital drawings to rough hand-drawn sketches, we used various ways to flesh out ideas.

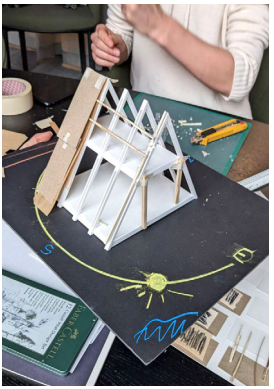
We also assessed the condition of the A-Frame for structural integrity before we started building on top of it. Callisté and Michael did some prodding and poking to check the wood.

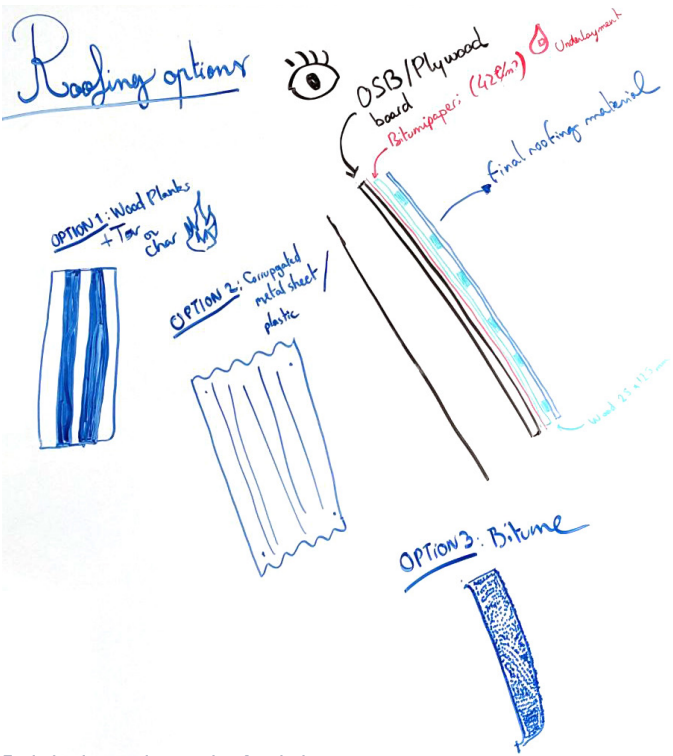
Later in the month, we took a field trip to Dodo's greenhouse in Pasila, a structure with a similar A-shape that served as the original inspiration for the A-Frame. There, we examined the structure, materials, and how they fared after years of use. Our choice of materials was similar to those of Dodo's greenhouse — wood and polycarbonates. On one side of the A-Frame, we planned to install additional wood paneling to accommodate future solar panel additions. Transparent polycarbonate sheets were selected to allow natural light to filter through, ensuring the enclosed space remained bright. Although we initially designed openable side panels, time and resource constraints led us to pivot from this idea later on.

Michael and Paul enjoying a shopping spree for tools and equipment
12.04.2023

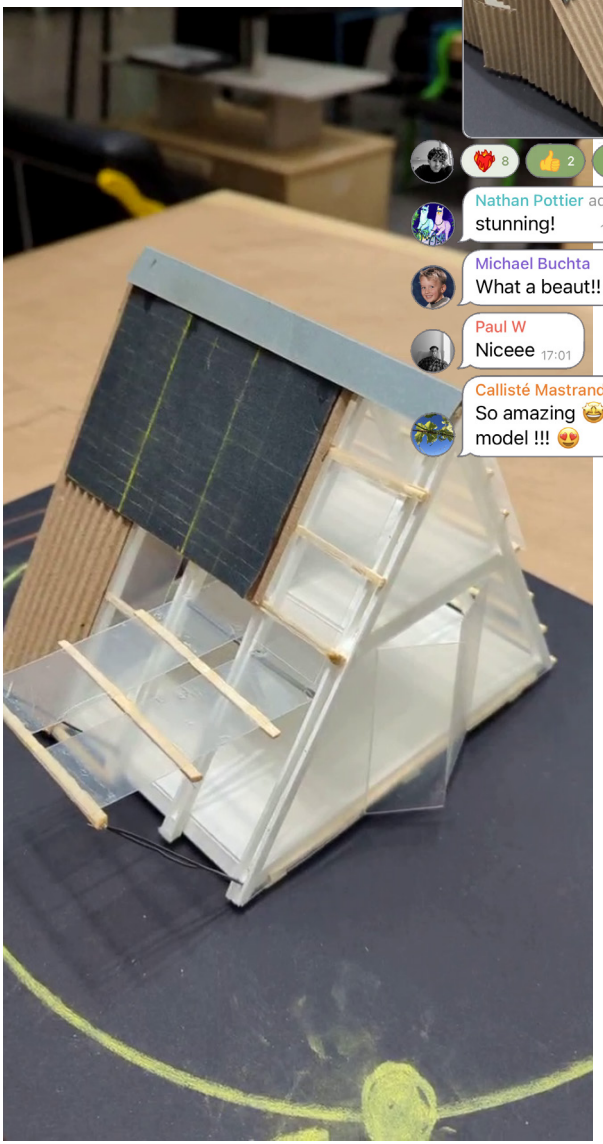


Dimension measurements of the original
A-Frame structure (drawing by Martin)





Early brainstorming session for design and materials, with Callisté getting hands-on with a 3D printed model of the A-Frame and some scrap materials
13.04.2023



Model of the initial A-Frame design, with three solar panels on the roof. (Made by Cian, Ágnes, Karolin, Martin, and Valentí)

Scrap wood and paper

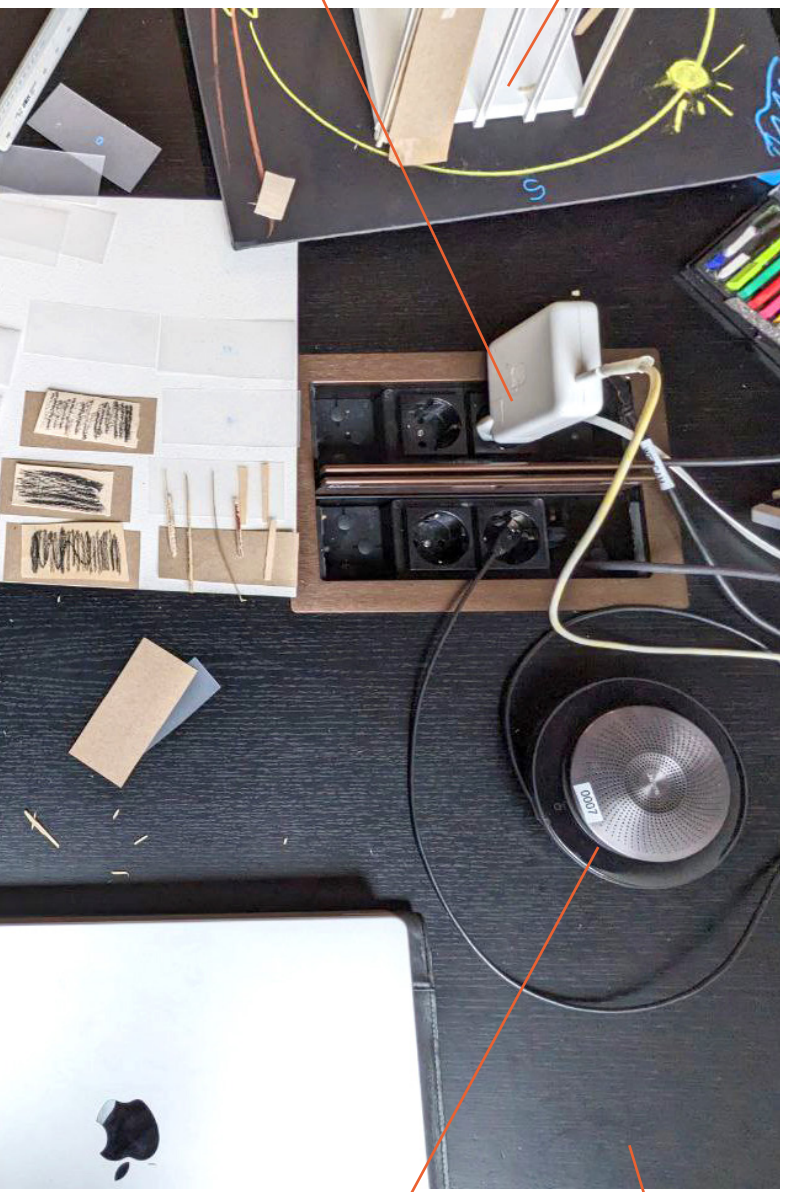
Wood paneling mock-ups

Design essential 1: Coffee

Design essential 2: A trusty laptop

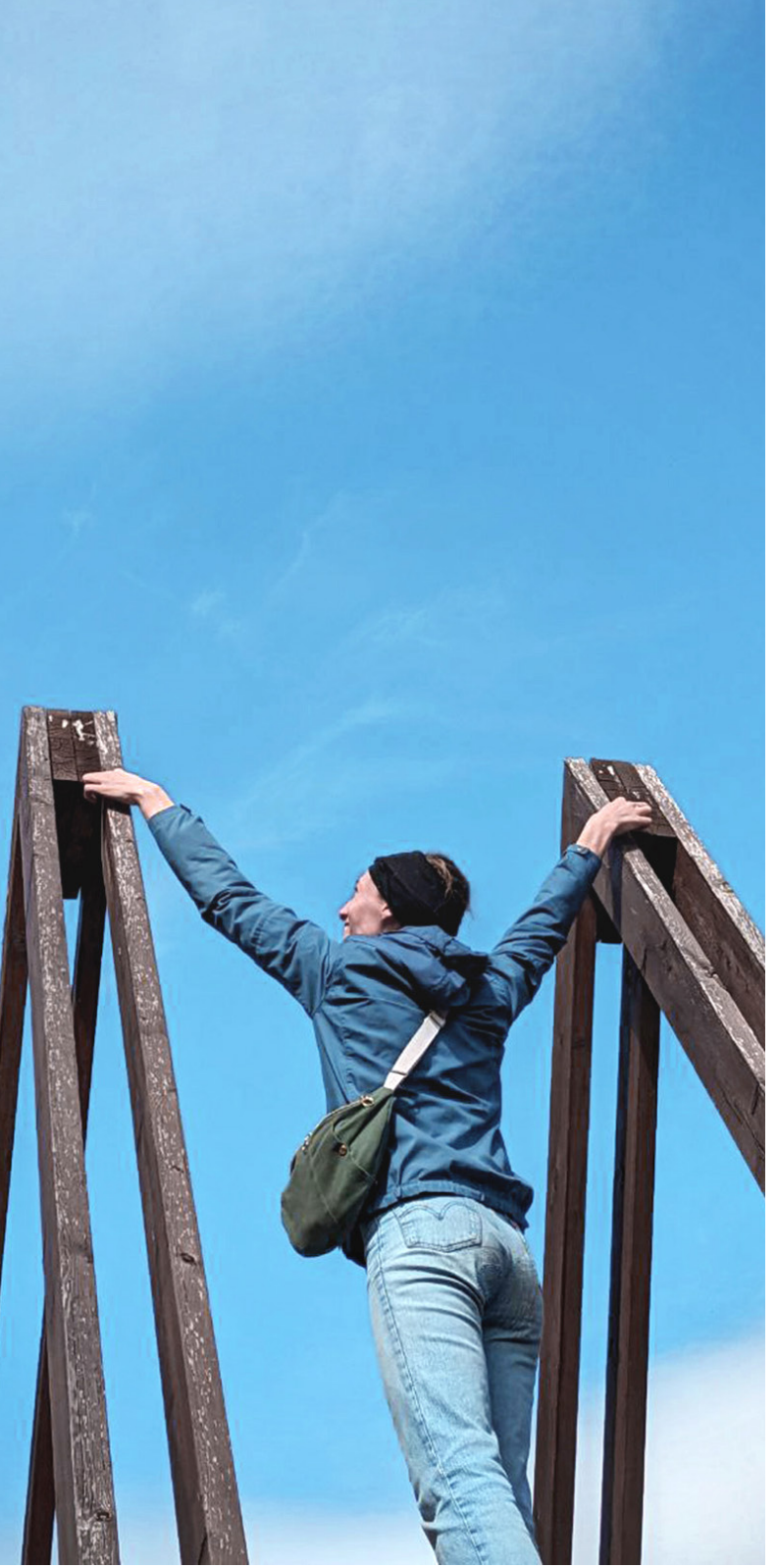
Power to keep our tech (and us) going

3D printed A-Frame model with sun orientation



A hybrid setup for folks joining in online

The meeting was held in Väre building



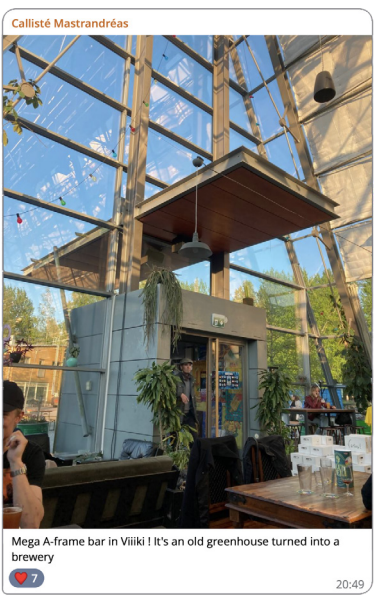
Structural inspection time! Callisté and Michael did some prodding and poking to check the integrity of the original A-Frame before we began building on top of it
20.04.2023

Visit to Turntable (Kääntöpöytä) at Dodo, the urban garden that sparked the original A-Frame concept! Dodo is an environmental NGO with a community space in in Helsinki's historic Pasila railyard
29.04.2023

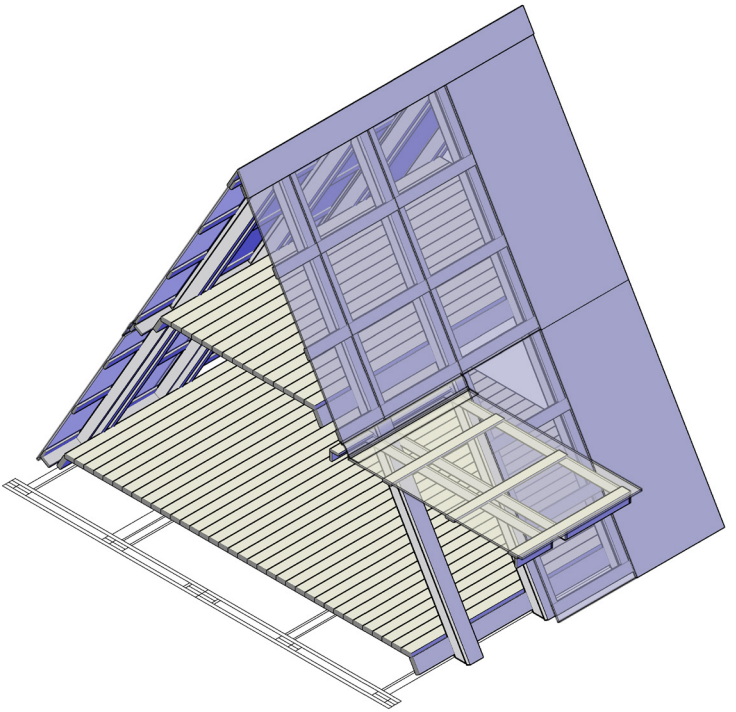

TRASH!

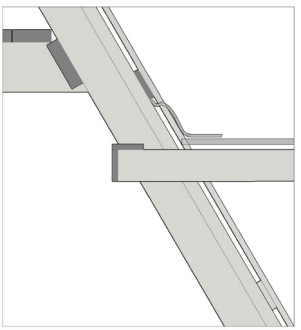
A lot was happening simultaneously in May! To prepare for the build, we began sanding down the old A-Frame and applying a fresh coat of varnish. The design team continued refining the detailed design and worked their 3D modeling magic.

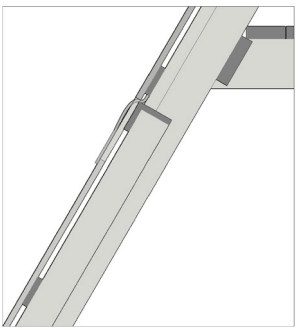
Meanwhile, the materials gatherers embarked on a few excursions to get second-hand materials and wood from a waste center. Also, Michael had a chance to connect with Hiil, a start-up specializing in charred wood, at the World Circular Economy Forum happening in Helsinki. Charred wood is a traditional and sustainable technique that gives the timber a unique texture, weather resistance and durability without the need for chemicals. We loved this idea and decided to use Hiil's charred wood for the final layers of the A-Frame.



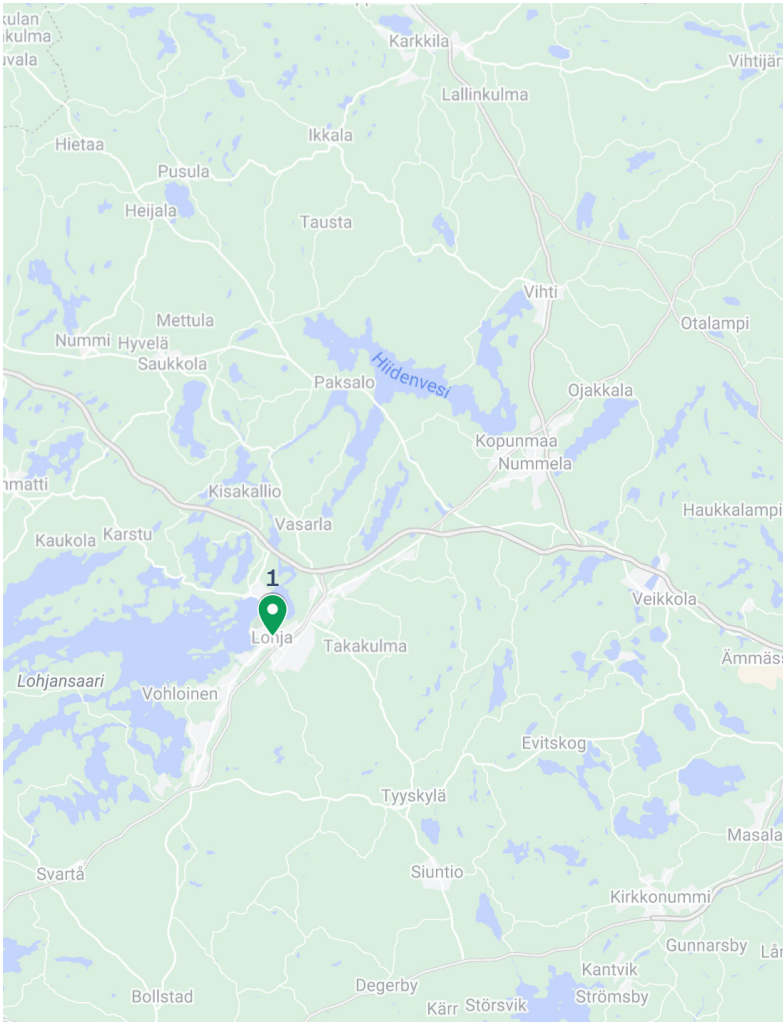
When you can't help but spot A-Frame inspiration everywhere you go! ;)





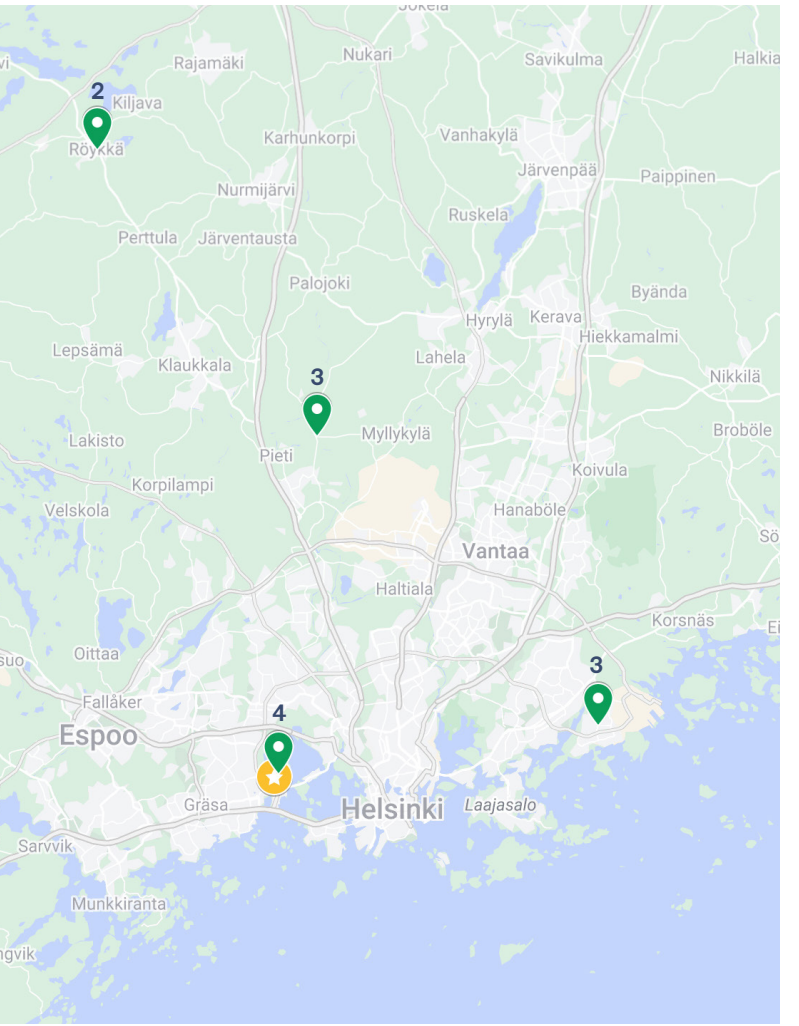


More detailed drawings of the design, including wood paneling and an openable side door, which we later decided to scrap due to complexity and time constraints. Thanks to Cian and Valentí for the drawings!

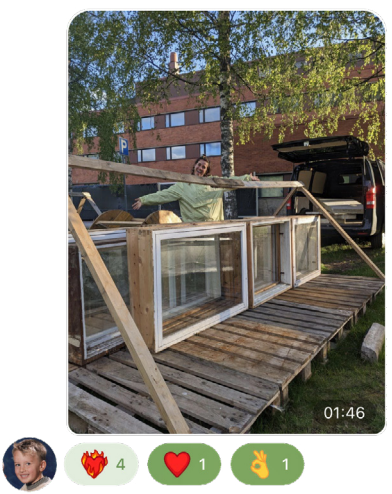


Treasure Map: Second-Hand Material Scavenger Hunt

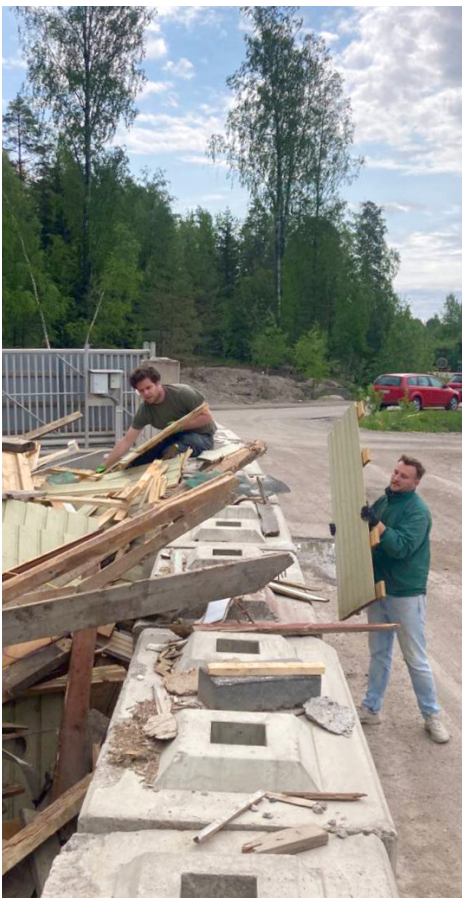
1 Metal sheet for the roof
2 Windows, wooden frames
3 Wooden doors
4 Plywood sheets


2
Kiljava
Röykkä
Rajamäki
Nukari
Savikulma
Halkia
Karhunkorpi
Vanhakylä
Järvenpää
Paippinen
Nurmijärvi
Ruskela
Perttula
Järventausta
Palojoki
Byända
Hyrylä
Kerava
Hiekkamalmi
Lepsämä
Klaukkala
Lahela
3
Nikkilä
Lakisto
Myllykylä
Broböle
Pieti
Koivula
Korpilampi
Velskola
Hanaböle
Vantaa
Haltiala
Korsnäs
Oittaa
3
Fallåker
4
Espoo
Gräsa
Helsinki
Laajasalo
Sarvvik
Munkkiranta

Spotted: Callisté stealthily eyeing some materials left out in the wild. A little sneakiness goes a long way when you're on a mission to salvage and repurpose
10.05.2023



First materials run! We scored these second-hand windows from an online seller, which will be great for the front facade
18.05.2023

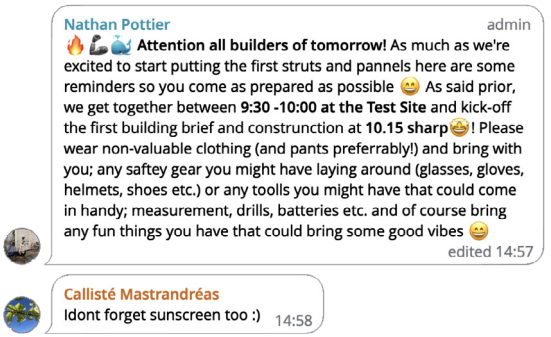


Another successful materials run!
This time, we hit up Purkupiha,
a demolition company, and managed
to salvage a bunch of wood pieces
at their waste facility
25.05.2023

The sanding squad in action
12.05.2023

In June, we kicked off with our first intense build week — it was a major stress week because we had to scramble to redesign the A-Frame at the last minute based on what we could find at the local hardware stores. During that week, we continued to finish sanding and apply lacquer, replaced as many of the tops of the “A”s as we could, and beefed up the original structure by adding hooks and cables on the backside. We also got started on tongue and groove wood paneling and began applying varnish to the panelings. Oh, and let’s not forget the major spill accident that unfortunately ruined two tool batteries!

Happy lunch break
09.06.2023



Kicking off our first intense build day bright and early at 9:30. Started with breakfast and tool prep, thanks to Elise's door-knocking for the tall ladders!
09.06.2023

Nathan applying varnish to the freshly sanded wood

Callisté and Cian pedaling between the A-Frame and the wood workshop, getting the lumber cut to the right dimensions
09.06.2023

Michael and Pamela teaming up to swap out the "A"s on top of the A-Frame before we started adding on new facades

Adding cable bracing to make the structure sturdier, but ran into some issues with the screws bending
11.06.2023

The first layer of tongue and groove wood paneling is done!
11.06.2023

Callisté Mastrandréas

Just a quick explanation of how we cut the planks to length yesterday.
(Cuz it took us while to figure out an easy and fast production line)

Need : 3 ppl, circular saw
1 person passes the plank
1 person saws
1 person places the plank between the guide that is nailed on the floor of the Aframe and the MagicJig

Step 1 : cut the tong out of the plank using the circular saw and the metallic square

Step 2 : place the plank in between the guide and MagicJig. Secure into place

Step3: cut with the circular saw. The Magic Jig gives you the length. Use the metallic square to keep a straight line

You should be able to get 3 pieces per plank!

Good luck 🍀

07:59

As a team of many novice builders, we learned by doing! From setting up jigs for cutting wood to figuring out efficient workflows, it took time and collective effort

Lina, our resident blackbird, decided to turn our tool shed into a maternity ward, giving birth to her little ones in the middle of our project

painting

Roosa, Callisté and Tianyi in the process
of varnishing the wood paneling
14.06.2023

You know that moment when you are done with the work and clean everything and the bucket of Tar accidentally opens and soaks all the tools 💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩💩🫠😭😭😭😭

😭 6 😨 2

00:54 AM

Cleaning in progress... but we might have lost 2 batteries 🪫😫😫😫

😱

01:39 AM

Elise Piquemal
Amazing job!! 21:23

TY Tianyi Yu
Okay the cleaning is done. Will get another bottle of white spirit and go through the tools again tomorrow.
21:42

And the day just got worse. Found one of Lina's babies dead inside the shed.😞😞

😭 5

21:44

Nathan Htr admin
This day is cursed 21:44

What a day! Started strong with varnishing wood panelings, but ended in chaos with a wheelbarrow oil spill, damaging two power tool batteries!
14.06.2023

Summer break! With everyone out of Helsinki and enjoying the sun, we only squeezed in one build day. Luckily, Martin, who brought a lot of building experience and know-how, joined us. Together, we finished adding the vertical struts and trimming off the eave overhangs for a neater look.

After installing the first layer of wood paneling and giving it a nice varnish finish, we added vertical struts on top to prep for the final layer of charred wood

Before and after the addition of vertical struts

Martin trimming the eave overhang so the A-Frame's edge is straight and tidy
10.07.2023

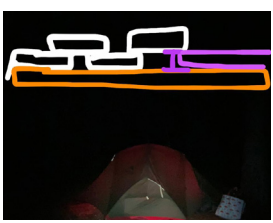
August was a bit of a snoozer. We had a wrestling match with suppliers, trying to get polycarbonate sheets ordered (shoutout to Roosa for swooping in and finally securing the materials). Meanwhile, it seemed that the A-Frame had become a hot spot for the locals, with spider webs and wasp nests popping up. Still, we managed to put some varnish on the horizontal beams, getting ready for the next round of action in September when school started.

Wasps setting up home in our second-hand window

We realized we only had 6 weeks left to get the A-Frame covered and got SERIOUS about planning and sourcing. Also good news: we got a 2000€ grant from Sustainability Action Booster for the charred wood. Although we originally wanted to char the wood ourselves, it didn't happen because of fire and safety restrictions on campus. Instead, we ended up purchasing charred wood from Hiil.

On September 10th, we had our first build day of the new school year — great weather, great vibes! We installed the horizontal struts, which would be the foundation for attaching all exterior elements including the charred wood and polycarbonate sheets.

Dynamic duos — Gab and Gabe, Callisté → and Lassi installing horizontal struts 10.09.2023



Out in nature, but A-Frame is on your mind (Callisté's campsite sketches)

I

Inventory

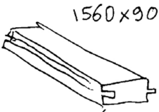
Categories; ! ○ Panneling (bought)]
! ○ Beams] USEFUL
○ Panneling with nails
○ Large planks
! ○ Thin planks

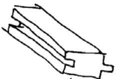
[MEASUREMENTS] Length × Width × Depth

[Panelling Bought] =

(13) 1560×90×25

(3) 1405×90×25





II [Beams]

2×3 inches (~~...~~?)

700×470 mm

n° Units

⚠ A lot of the beams have similar dimensions but different lengths

Lengths;

- (1) 1190
- ~~(3) 1255~~ 1255 (4)
- (1) 1310
- (1) 1830
- (1) 2010
- (1) 2415
- (1) 2430
- (1) 2455
- (2) 2555
- (1) 2650
- (1) 2745
- (1) 1800 (bit damaged)
- (1) 1980 (chipped 75mm at the top)
- (1) 2060
- (1) 2360
- (1) 2535

IVI

790×50 ×10 (1)

2420×50 ×10 (1)

~~1280 ×~~

2595×70×48 (1)

(3)  Vertical beams → [Thin Planks]

~~IV Beams~~

(5)  Horizontal beams (mostly)

All are 100mm ~~deep~~ wide most 20mm deep

(5) 1050 mm length

(1) 960 " "

(1) 2565

(1) 2444

(1) 4215

(1) 890×100×30

↑↑ Making an inventory of our salvaged wood pieces
10.09.2023

↑ A furry visitor on the job site!
10.09.2023

At the end of the first period of the school year, we geared up for the final intense build week just before the temperatures dropped below freezing. Despite the cold, rainy weather and gloomy skies, we pulled through. It was all hands on deck as we raced to add the last layer of charred wood panelings, apply wood varnish, install polycarbonate sheets, and improvise a temporary roof right on the spot. We also had fun learning how to use a dinolift! On the last day, we worked until it got dark, ending the night around a fire — the perfect way to wrap up this phase of the A-Frame project!

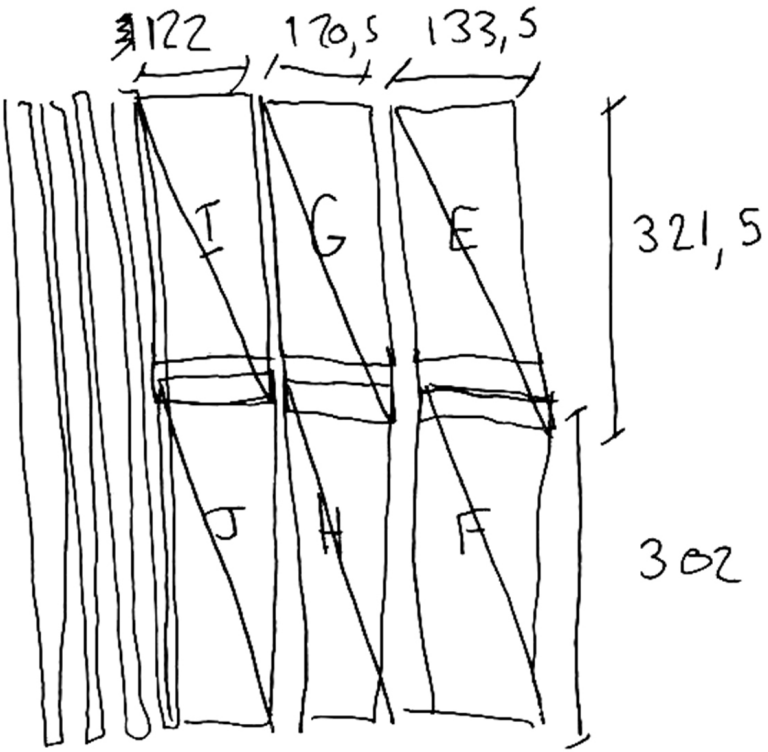
It was freezing! But nothing beats finally receiving all the materials — charred wood panelings and polycarbonate sheets. (Well... until we realized none of them came in the right dimensions as ordered. Darn it!)
13.10.2023

Charred wood from Hiil

hiil

Polycarbonate sheets
from Keraplast

KERAPLAST



Figuring out polycarbonate dimensions

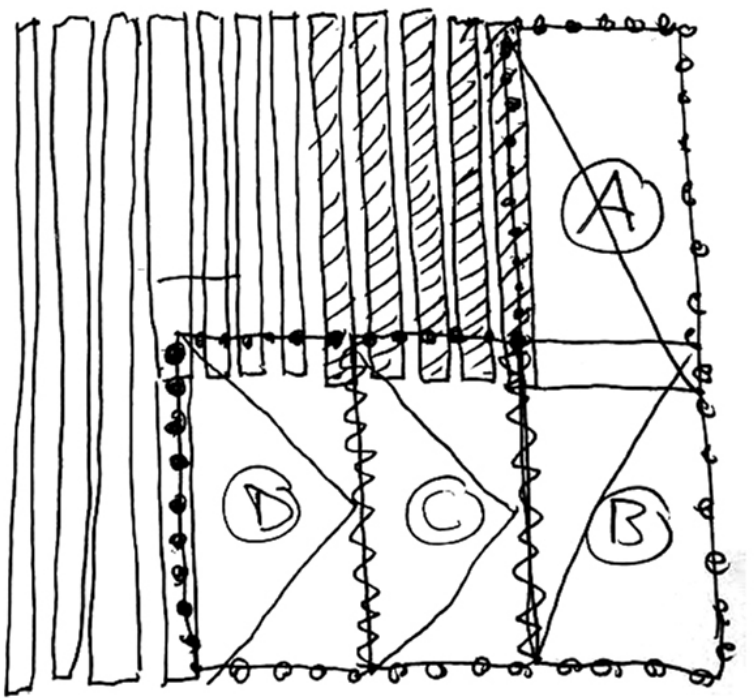
(A) 133,5
x
321,5

(B) 133,5
x
302

calculating

with
recovering
part of
15 cm

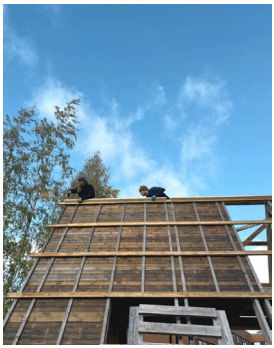
We need >10 mm thick
2455 mm long
to attach Kelaplast



Mission 1: Installing the final layer of charred wood

Mission 2: Installing polycarbonate sheets (and discovering new tools: credit cards for slotting the sheets together)

#DinoliftView



Mission 3: Adding a roof

The roof was made of leftover charred wood (featuring Em, the on-site queen)


JT-TRAILER

Huge thanks to Professor Mark Hughes and Timmo from Wood Workshop PUU1 for providing us with storage space in the Chemical Engineering department. It's where we stashed the second-hand windows and extra materials for the future phases of A-Frame building

That's a wrap! This phase of the A-Frame project ended with a good old-fashioned campfire and some vegan sausages!

What's Next

Now what…? As of February 2024, it's still snowing outside, and we are nearing the end of our funding from the TTE Fund and Sustainability Action Booster. The OG crew has either graduated or is knee-deep in thesis projects, while a fresh bunch of faces takes over at The Test Site. Here's a list of ideas for YOU, the one ready to take on new challenges:

- Complete the front and back facades using the remaining materials, including the second-hand windows
- Design and make a plaque with A-Frame information for visitors
- Create a second volume of the A-Frame book, providing a detailed record of materials used, suppliers, and practical maintenance information
- Explore the possibility of installing solar panels for electricity
- Design the interior space


FRA

Reflections

We are Friends

The A-Frame project was fundamentally a voluntary group endeavor, requiring community building, intentional commitment, and personal motivation. Although there was considerable interest in the project, in the end, it was propelled forward by only a dedicated few. The core team shared a deeper level of commitment to one another. It was more than just the project — we are friends.

This experience showed just how difficult it could be to keep a community project on the rails, especially when everyone is juggling their own lives and contributing in their spare time. Everyone tried their best, but steering the team, fostering trust, and keeping people motivated? That wasn't always a smooth ride. At the end of the day, the project was as much about learning to build caring relationships as it was about constructing the A-Frame itself.

The Invisible and Mundane Work

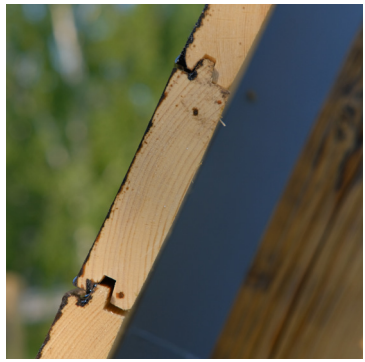
The challenge was not just in the hands-on, fun building stuff; a lot of the heavy lifting came from the behind-the-scenes, "boring" parts. Much of the project's effort remained unseen, with countless meetings, emails, problem-solving sessions, and extensive research undertaken to source materials and plan the next steps.

It involved unexpected minute tasks too, like cycling to the nearest hardware store for the right-sized bolts. These instances highlighted the amount of invisible work and the significant effort invested into small but essential details that kept the project moving.

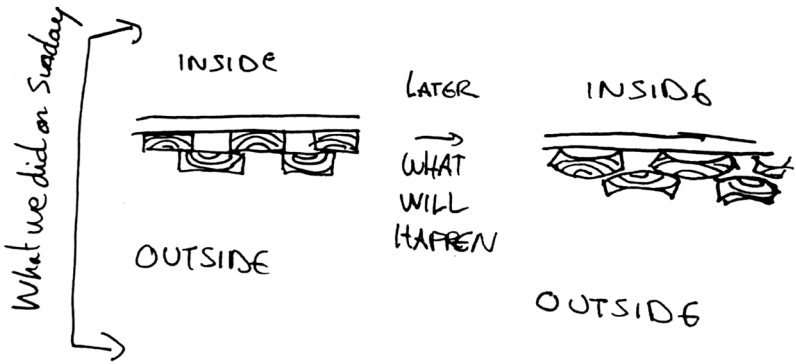
Learning along the Way

Each participant brought their own unique knowledge, skills, and experiences to the table. We learned to use new tools, operate equipment like the dinolift, and work with unfamiliar materials.

Of course, we made our fair share of mistakes, from wood rot due to improper storage to the occasional misstep in installation. We had to let go of perfectionism, realizing that flexibility and adaptability were key in a project of this nature. It was messy, it was unpredictable, but ultimately, these experiences were integral to our learning processes.



Oops! One of our mistakes: Wood paneling was installed with different sides up — notice the opposite wood grain direction



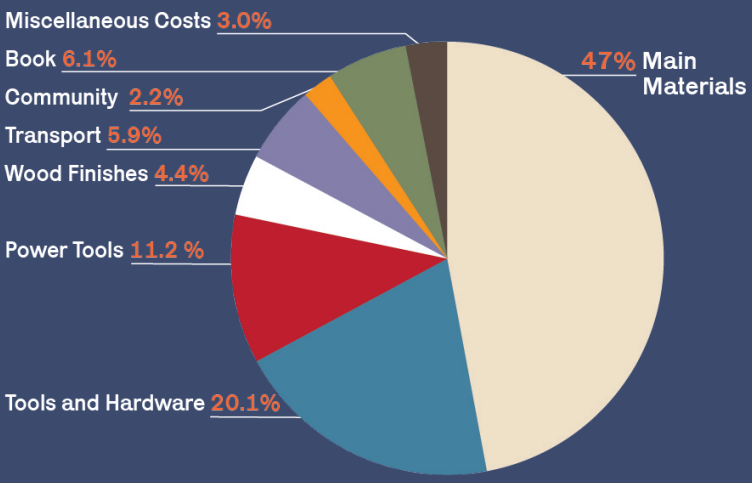
Money Talk

The project received funding from AYY's TTE Fund and Sustainability Action Booster, the latter primarily allocated for the charred wood. Initially, we aimed to use mostly reclaimed materials and borrowed tools for sustainability and cost savings. However, sourcing second-hand materials that were both accessible and suitable for the project turned out to be more challenging than expected. Although we acquired some materials from online platforms like Tori and salvaged items from the waste center, we had to purchase new materials from stores.

Additionally, while the campus workshops provided some resources, we also invested in new tools, which will benefit future projects at The Test Site. Below is a detailed rundown of our spending, which may slightly differ from the final amounts.

Total Spent: 11,482 €
TTE Fund: 9,517 €
Sustainability Action Booster: 1,965 €

Breakdown of Expenses
Main Materials (incl. shipping): 5,404 €
Tools and Hardware: 2,315 €
Power Tools: 1,286 €
Wood Finishes: 511 €
Transportation (incl. fuel): 684 €
Community (e.g. food, events): 257 €
A-Frame Book: 697 €
Miscellaneous Costs: 342 €


Miscellaneous Costs 3.0%
Book 6.1%
Community 2.2%
Transport 5.9%
Wood Finishes 4.4%
Power Tools 11.2 %
Tools and Hardware 20.1%
47% Main Materials

About This Book

The book you are holding captures a key phase of the A-Frame project at Aalto University's Test Site from late 2022 to October 2023. It details our progress in transforming an open A-frame skeleton to a semi-enclosed space. If you wish to get involved in the ongoing project, flip to pages 10–12 and connect with any of the team members.
We welcome fresh ideas and hands ready to build!

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