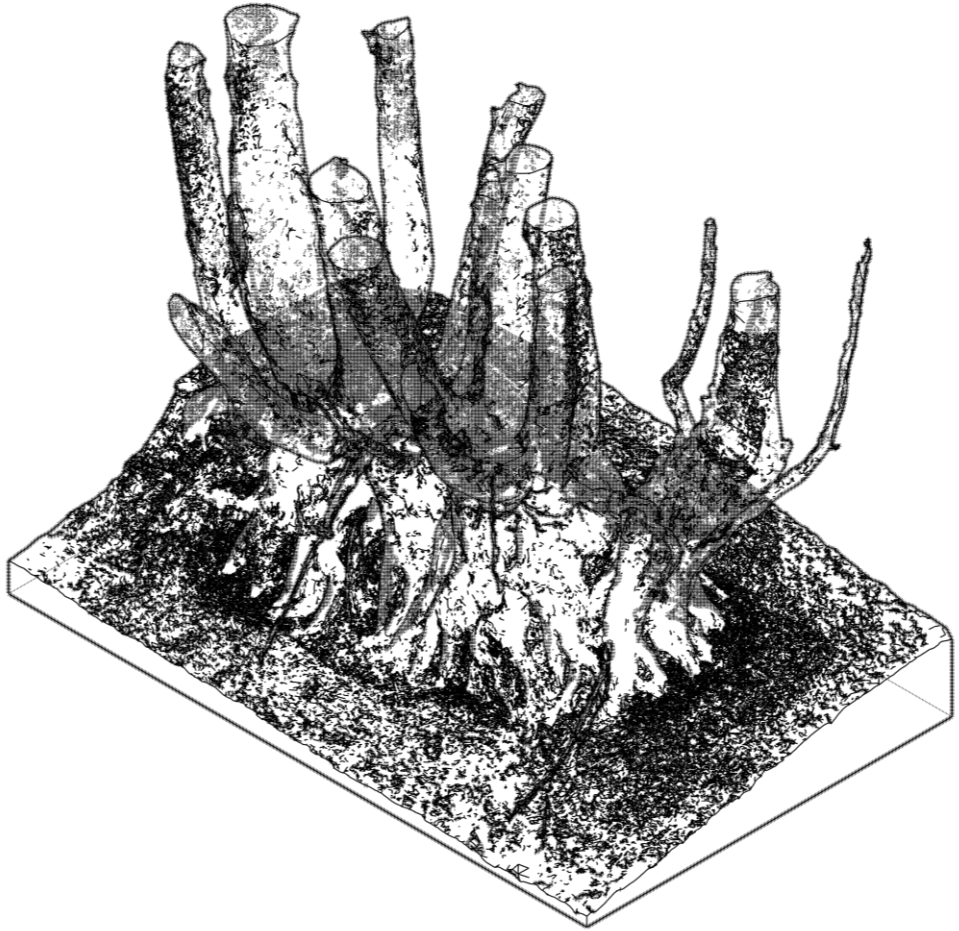
EPFL
IBOIS

Studio Weinand S-2025
Wood as a resource,
A Micro Rural Wood Industry
ep. IV : Chestnut & Apple Cottage



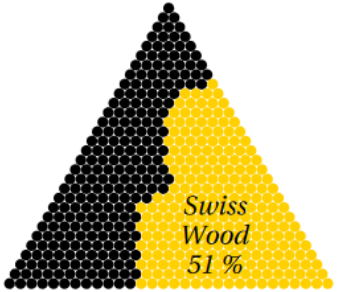
École
polytechnique
fédérale
de Lausanne

Is wood necessarily synonymous with sustainability ?

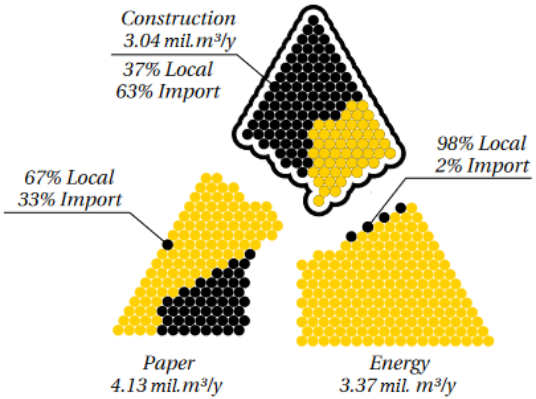
Is it possible to question the environmental value of timber construction?

Studio trip. Oscar Lallier, IBOIS 2024.

Resource sourcing : Origin of materials ?

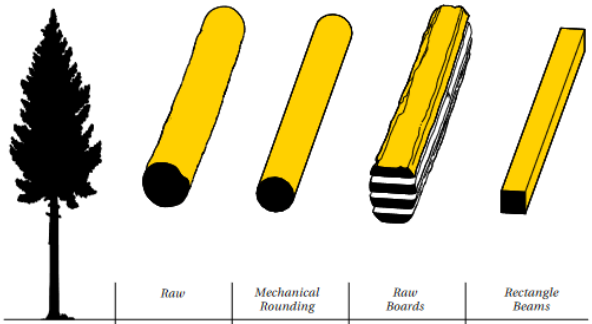


Swiss Timber Use
10.54 million m³ / year



Studio trip. Oscar Lallier, IBOIS 2024.

Resource processing : Material efficiency ?



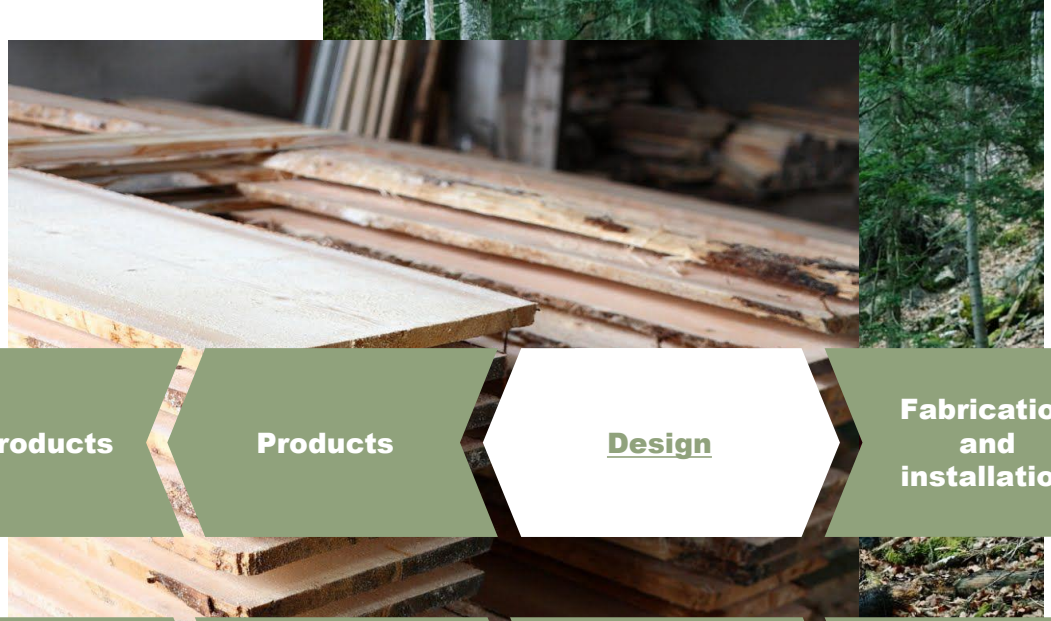
	Raw	Mechanical Rounding	Raw Boards	Rectangle Beams
Beam Strength 1 = Mechanically Rounded Timber	1 - 1.3	1	0.75	0.5
Wood needed to produce 1 m³ of Timber	1	1.20	1.6	2.40

Studio trip. Oscar Lallier, IBOIS 2024.

how to
reduce the
displacement
and
increase the yield
of wood in
construction?

Tree cutting in Rossinière. Petras Vestartas, IBOIS 2011.

Concept :
new value chain for wood products

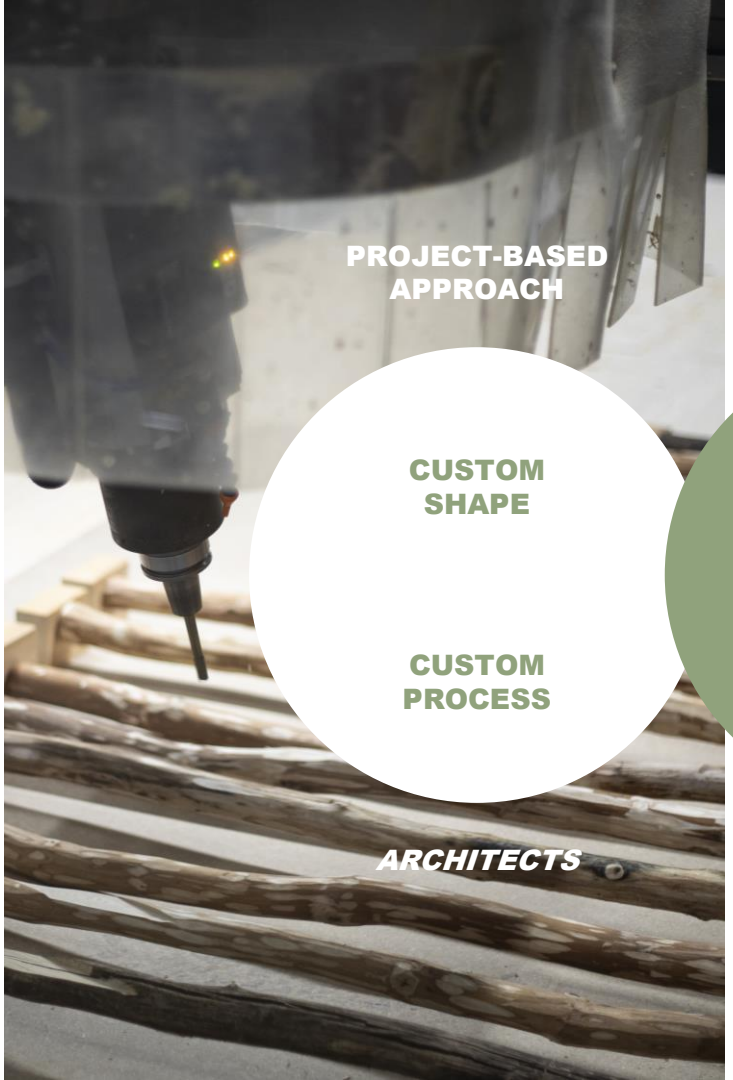


Growth and cultivation | Harvesting | Half-products | Products | Design | Fabrication and installation

Growth and cultivation | Harvesting | Half-products | Products | Design | Fabrication and installation

Sawmill in Rossinière. Petras Vestartas, IBOIS 2011.

Concept :
system-based approach



PROJECT-BASED APPROACH

CUSTOM SHAPE

CUSTOM PROCESS

ARCHITECTS

SYSTEM-BASED APPROACH

CUSTOM SHAPE

REPEATED PROCESS

IBOIS

MODULAR APPROACH

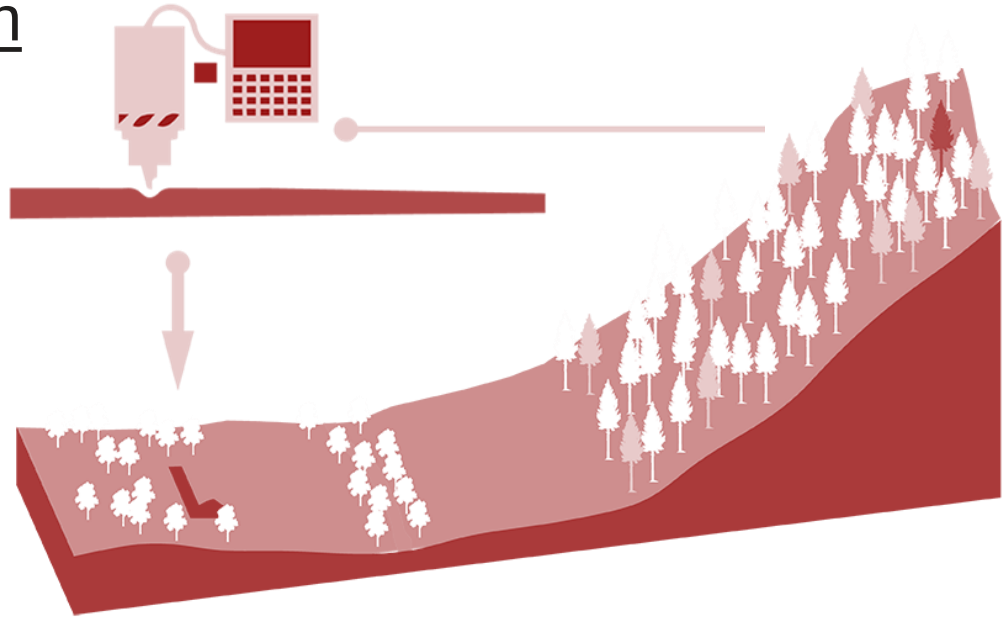
REPEATED SHAPE

REPEATED PROCESS

CONTRACTORS

Mock-Up, semester project. Arthur Billotte, Oskar Forsblom, 2023.

Linking the resource directly to architectural design



Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver

(completed thesis, 2017-21)

PhD student: Petras Vestartas

How to minimize wood transformation by using scanned raw logs?

How to cut timber joints in round wood with a robot ?

Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
Dr Petras Vestartas (2017-21)

Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
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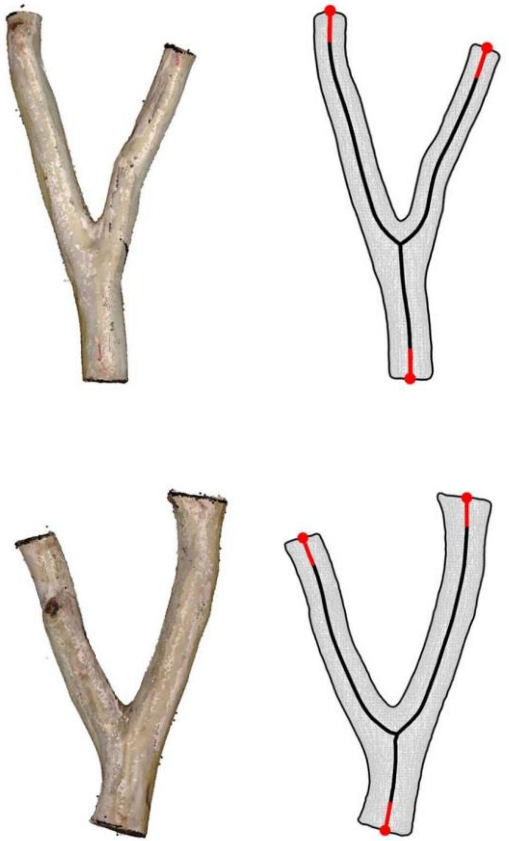
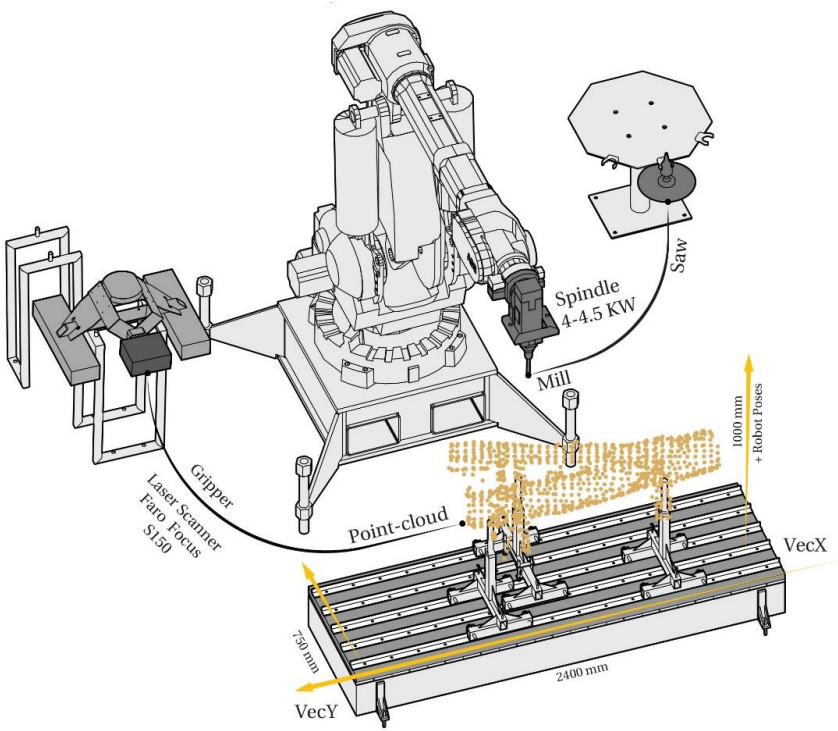
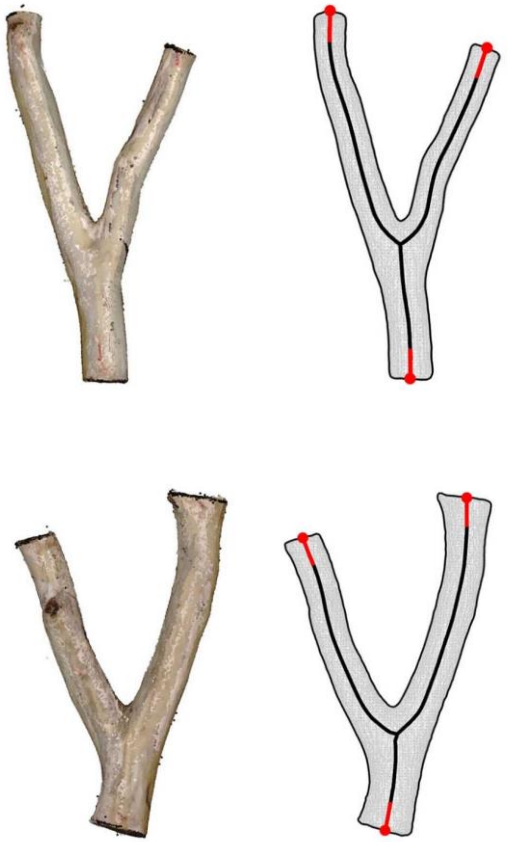
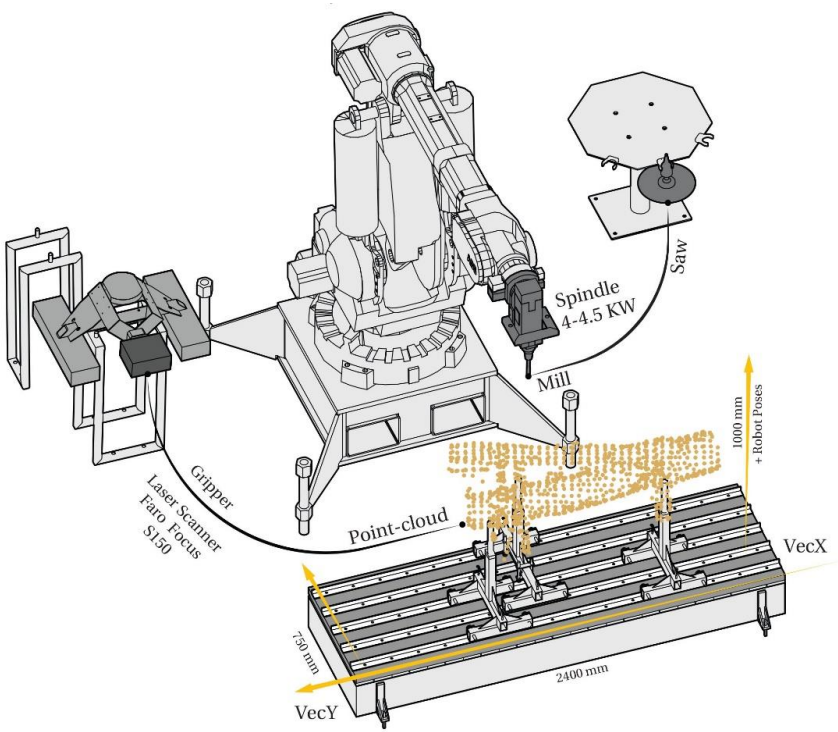


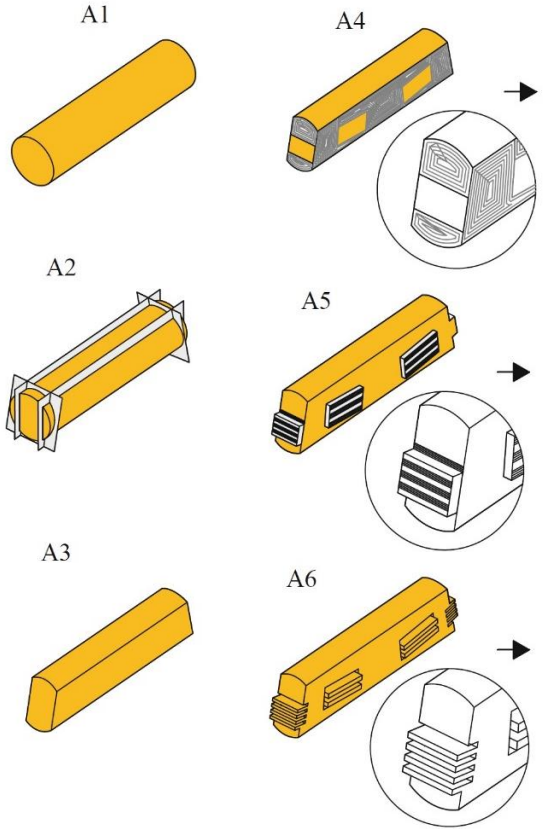
Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
Dr Petras Vestartas (2017-21)



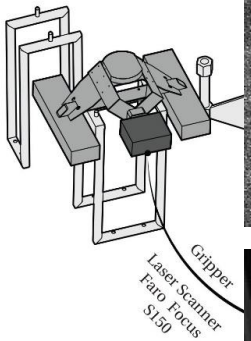


Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
Dr Petras Vestartas (2017-21)





Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
Dr Petras Vestartas (2017-21)



Biotope-aware round wood architecture

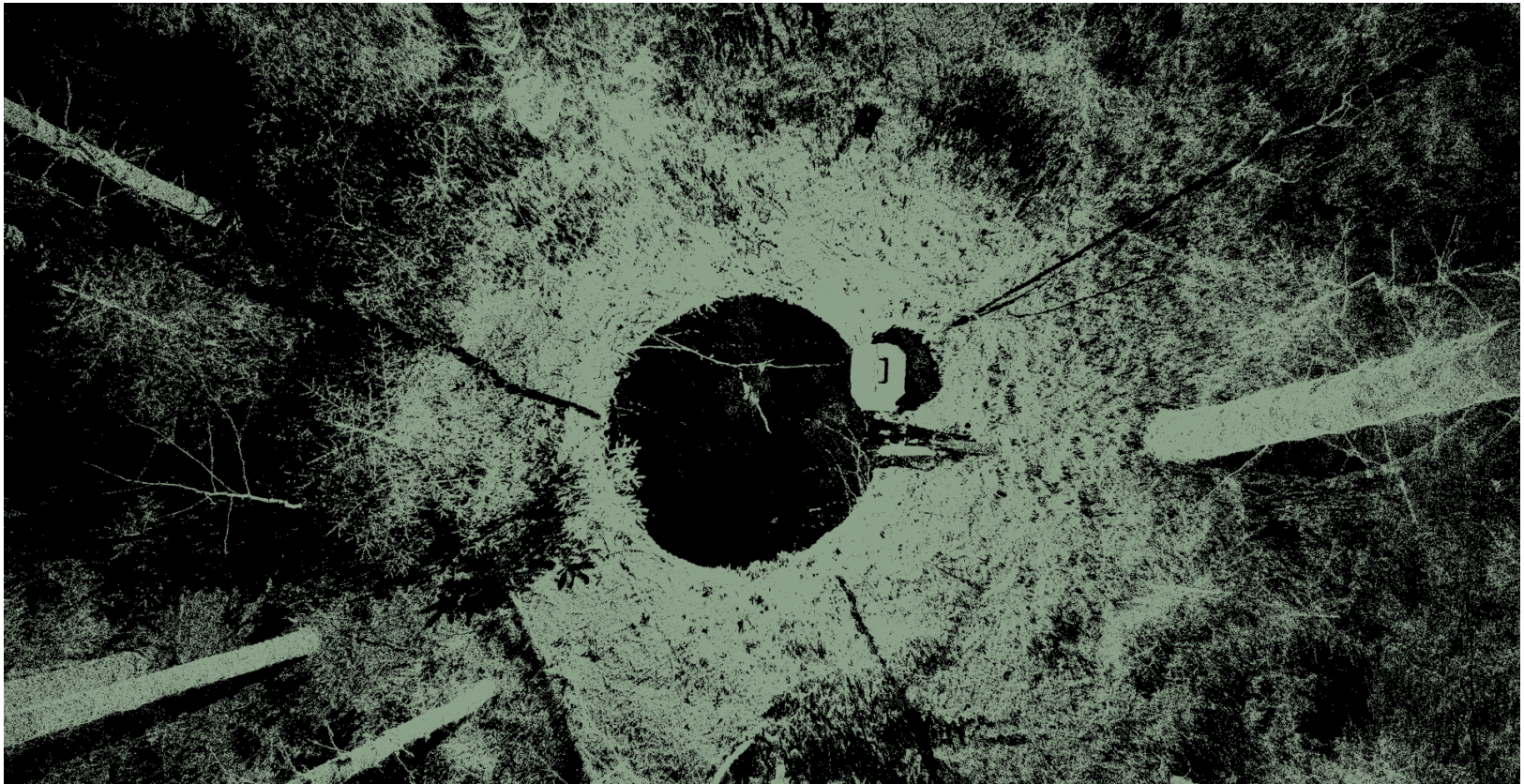
(current thesis, 2023-)

PhD student: Damien Gilliard

How to inform forestry practices to anticipate climate change?

How to integrate the variable production of selective harvesting in sawmills?

Biotope-aware round wood architecture
PhD candidate Damien Gilliard



Biotope-aware round wood architecture
PhD candidate Damien Gilliard

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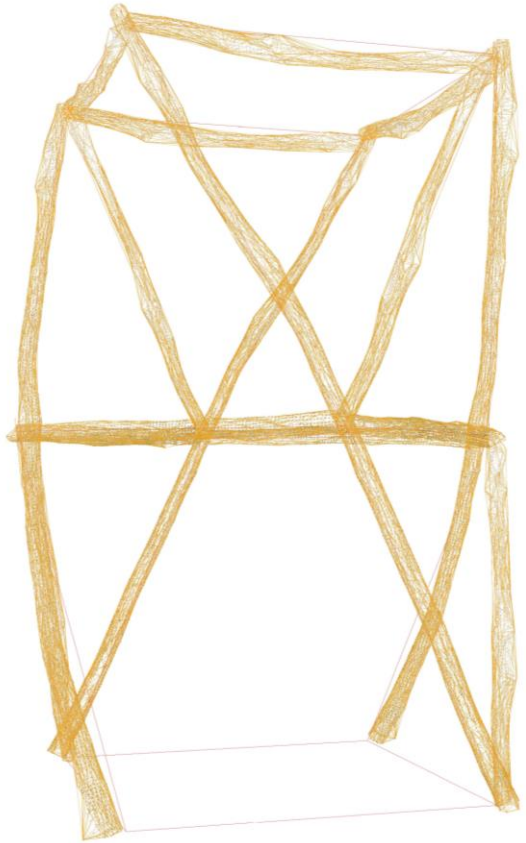
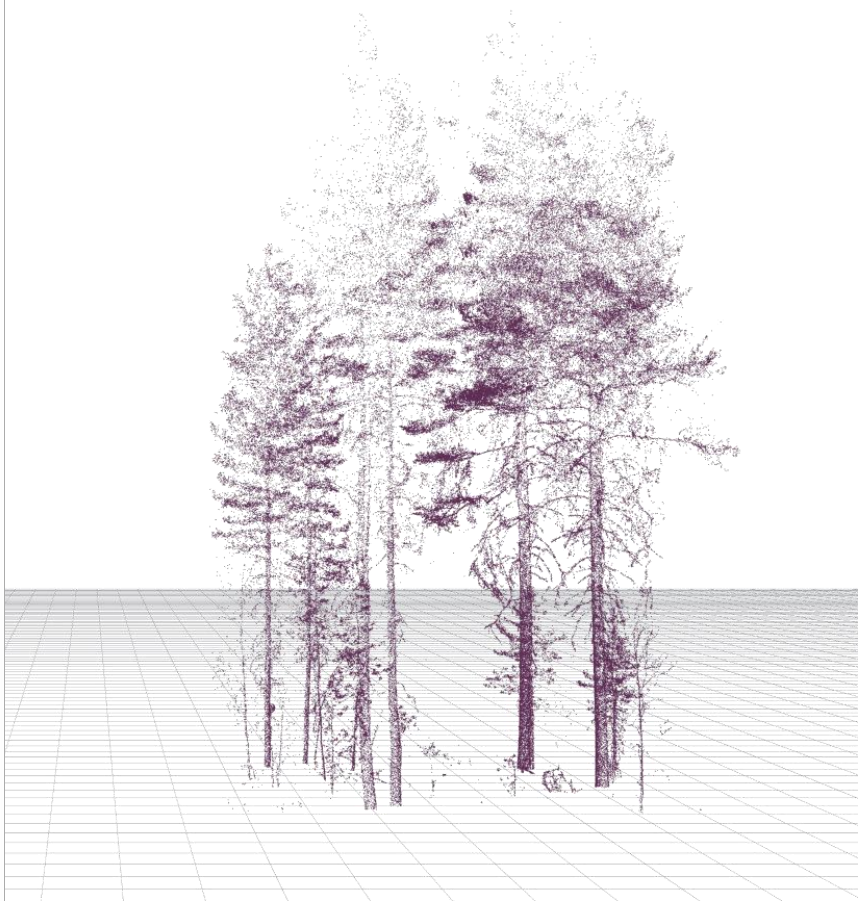
PhD candidate Damien Gilliard





introduction to
the Workflow

chestnut & apple
Cottage

bio-sourced building
Envelopes

studio Weinand 2025
Introduction to the workflow : from the forest acquisition to usable data

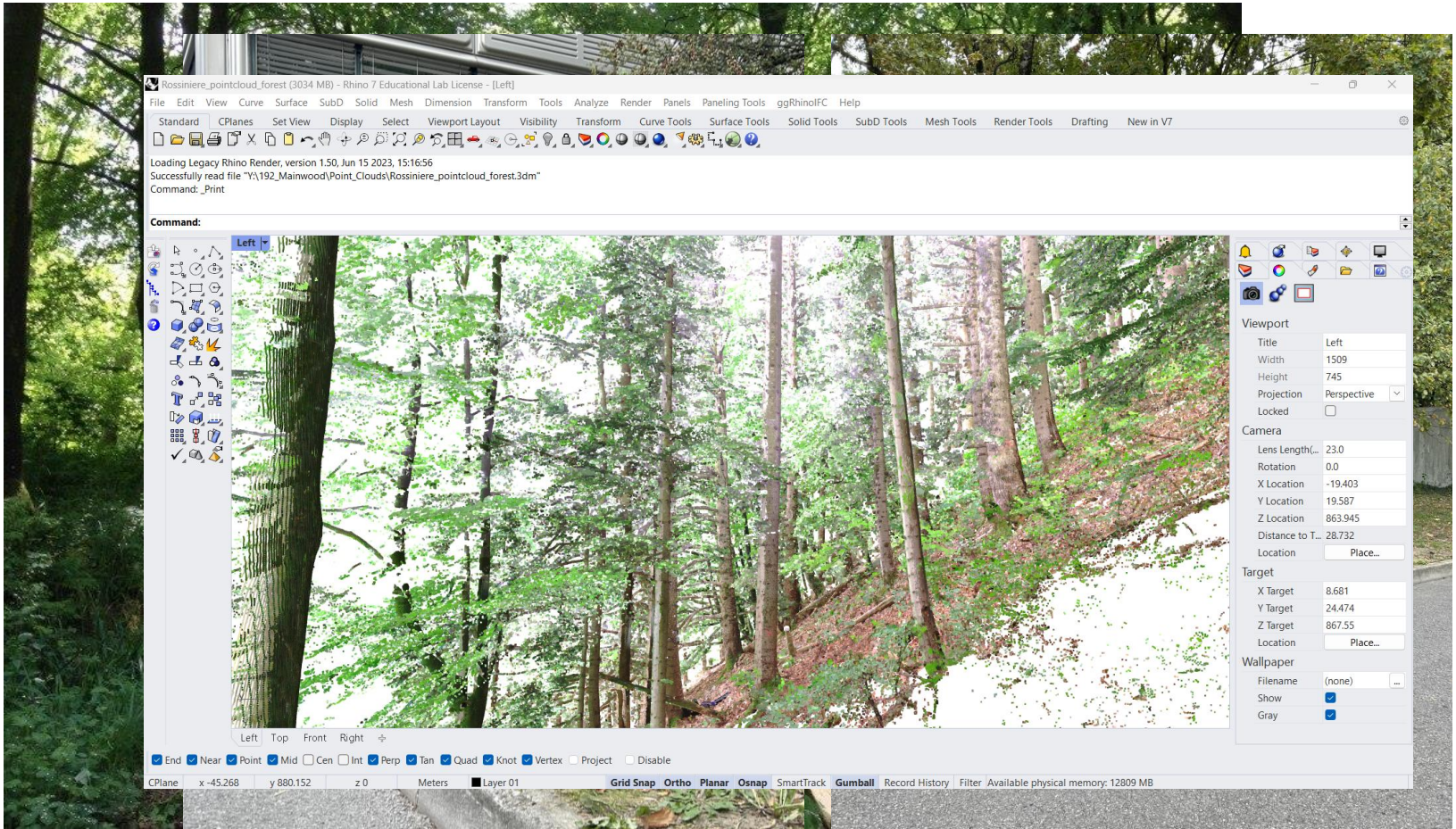
Wood Chip Bran, fork extraction.
Design+Make (AA) 2014-15.

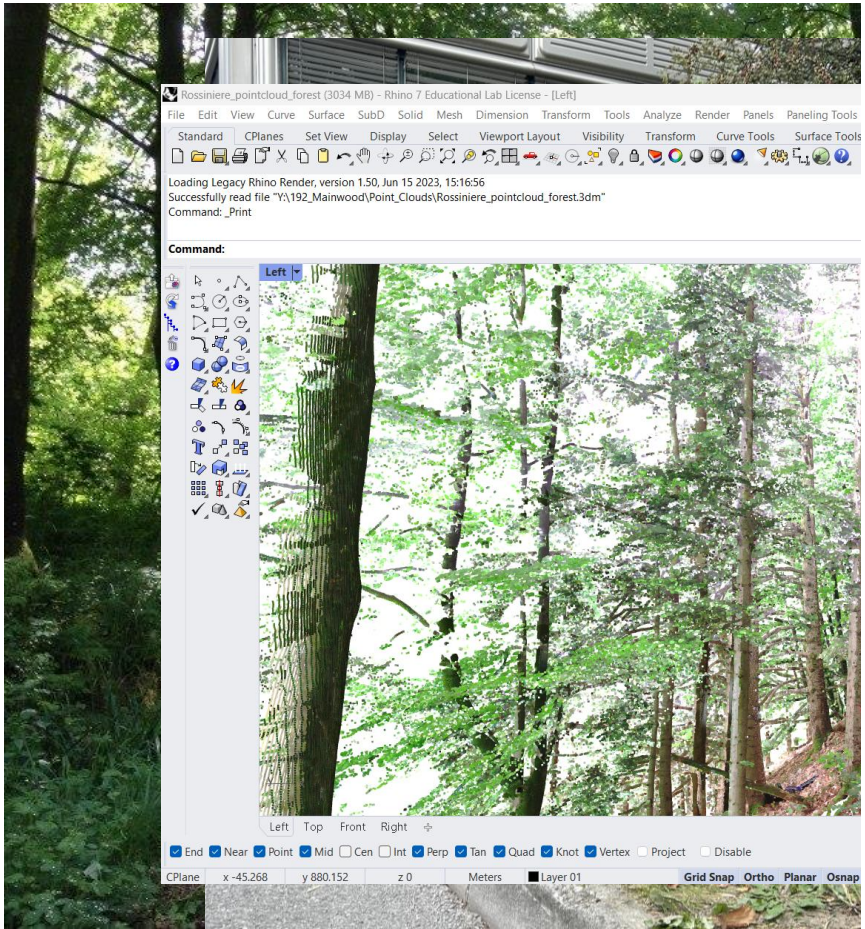
studio Weinand 2025
Introduction to the workflow : from the forest acquisition to usable data

Tree point clouds workshop.
Agathe Mignon, IBOIS 2023.

studio Weinand 2025
Introduction to the workflow : from the forest acquisition to usable data

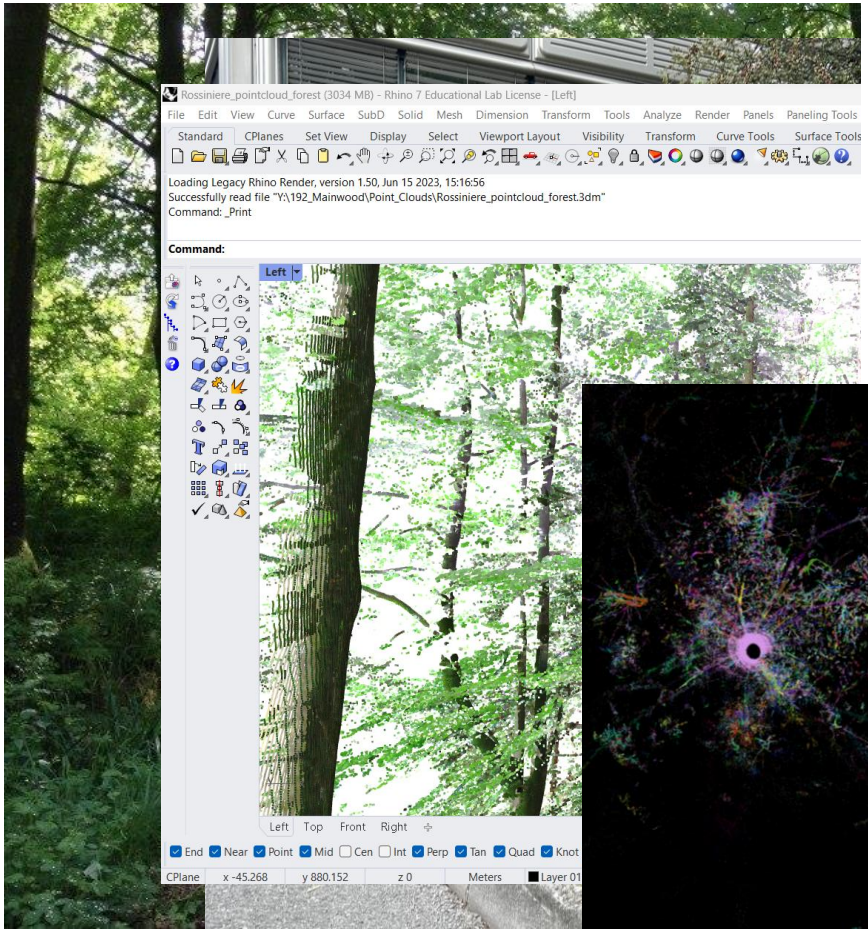
Rossinière forest point cloud.
Petras Vestartas, IBOIS 2018.

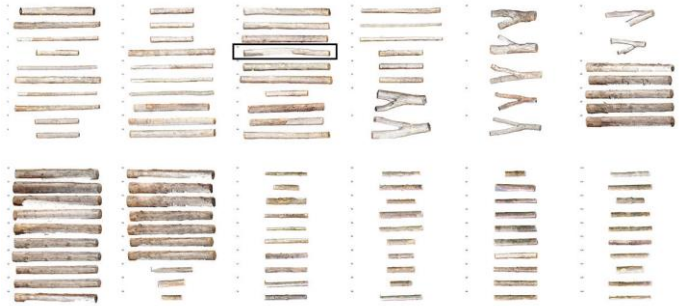


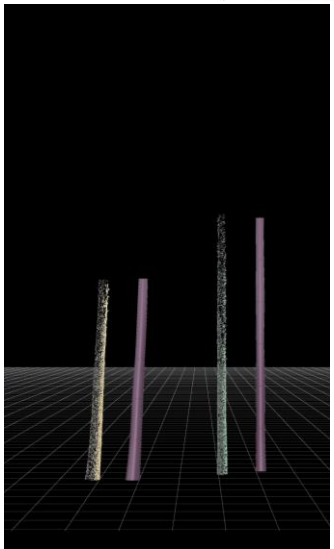


Log 3D scan.
Petras Vestartas, IBOIS 2020.

studio Weinand 2025
Introduction to the workflow : from the forest acquisition to usable data



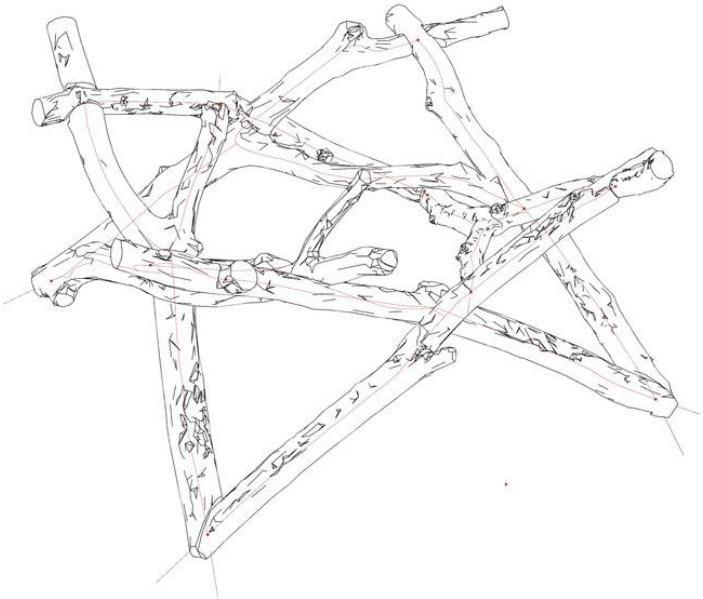




Workshop 1 & 2
17.01.25

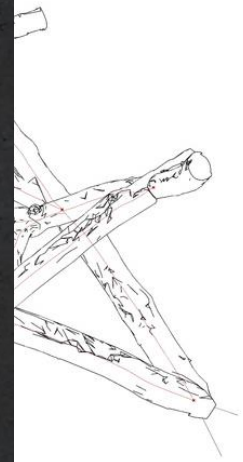
- *understand 3D scanning techniques and the differences between the main techniques*
- *learn how to handle 3D scanning equipment in real-life situations*
- *learn how to produce a point cloud from a 3D scan*
- *learn how to open/view/explore a point cloud with Rhinoceros 3D software*

studio Weinand 2025
Introduction to the workflow : data used in design ...



Woodland Cabin.
Design+Make (AA) 2020.

Woodland Cabin, extracting centerline curves.
Design+Make (AA) 2020.



studio Weinand 2025
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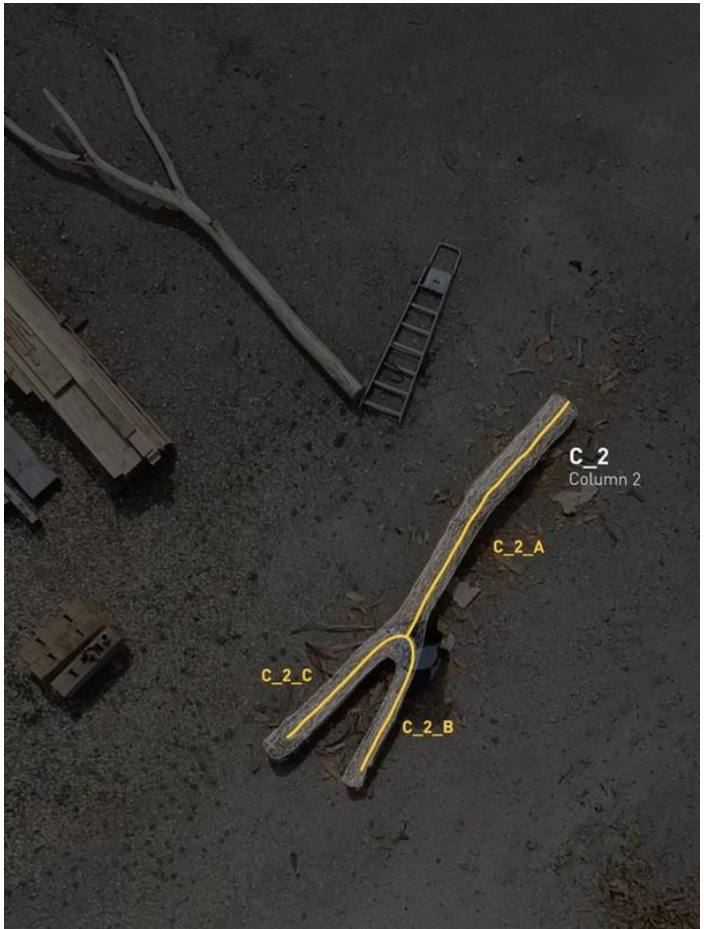

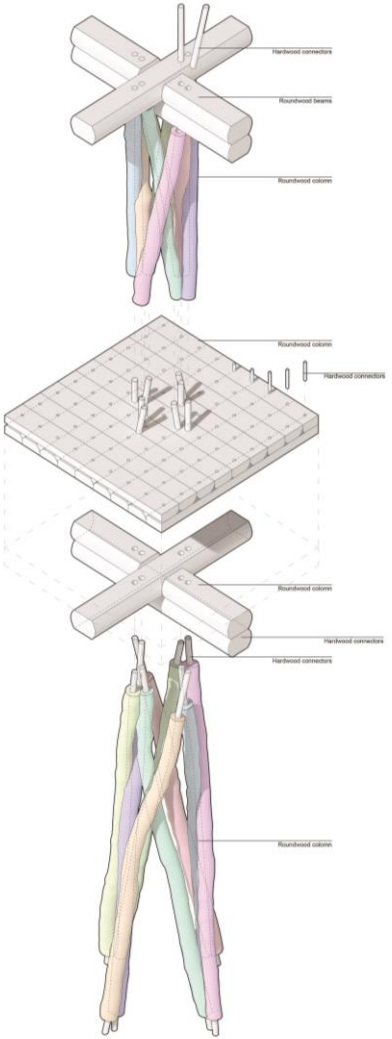

Mock-Up, semester project. Arthur Billotte, Oskar Forsblom, 2023.

studio Weinand 2025
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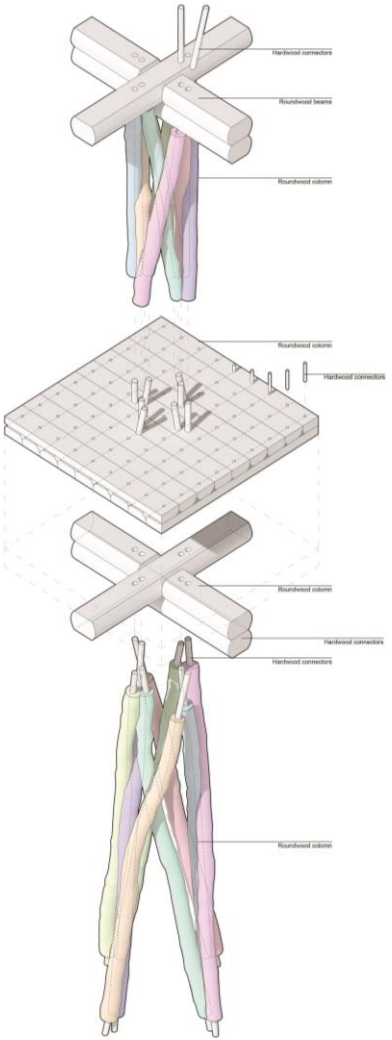
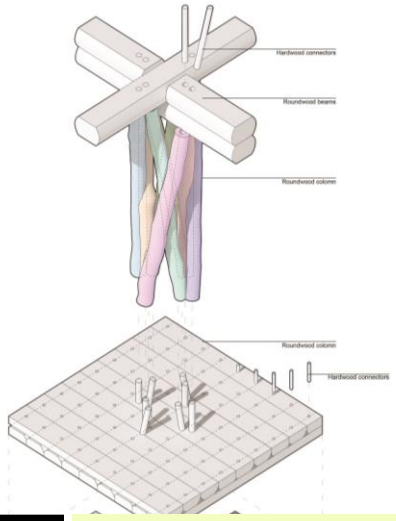
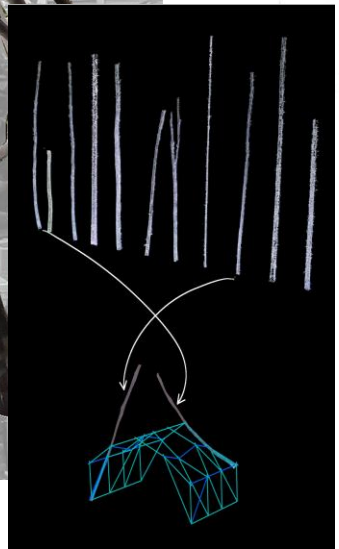


MR assembly process, in Wild Wood Gridshells: Mixed-Reality Construction of Nonstandart Wood, Tim Cousin et al., 2023.

studio Weinand 2025
Introduction to the workflow : data used in design ...





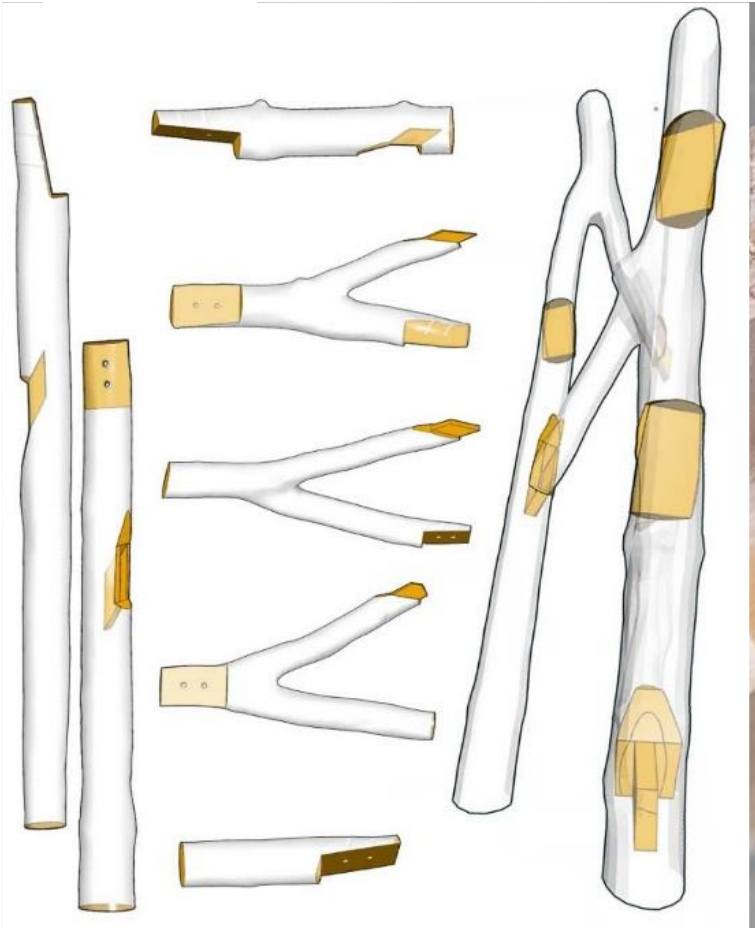
Workshop 3
18.01.25

- understand how two types of supporting figures are composed/their geometric characteristics
- learn to associate any geometric figure with objects from a 3D scan
- understand which parameters need to be modified to adapt the figure to the particular aspects of the objects obtained from the 3D scan

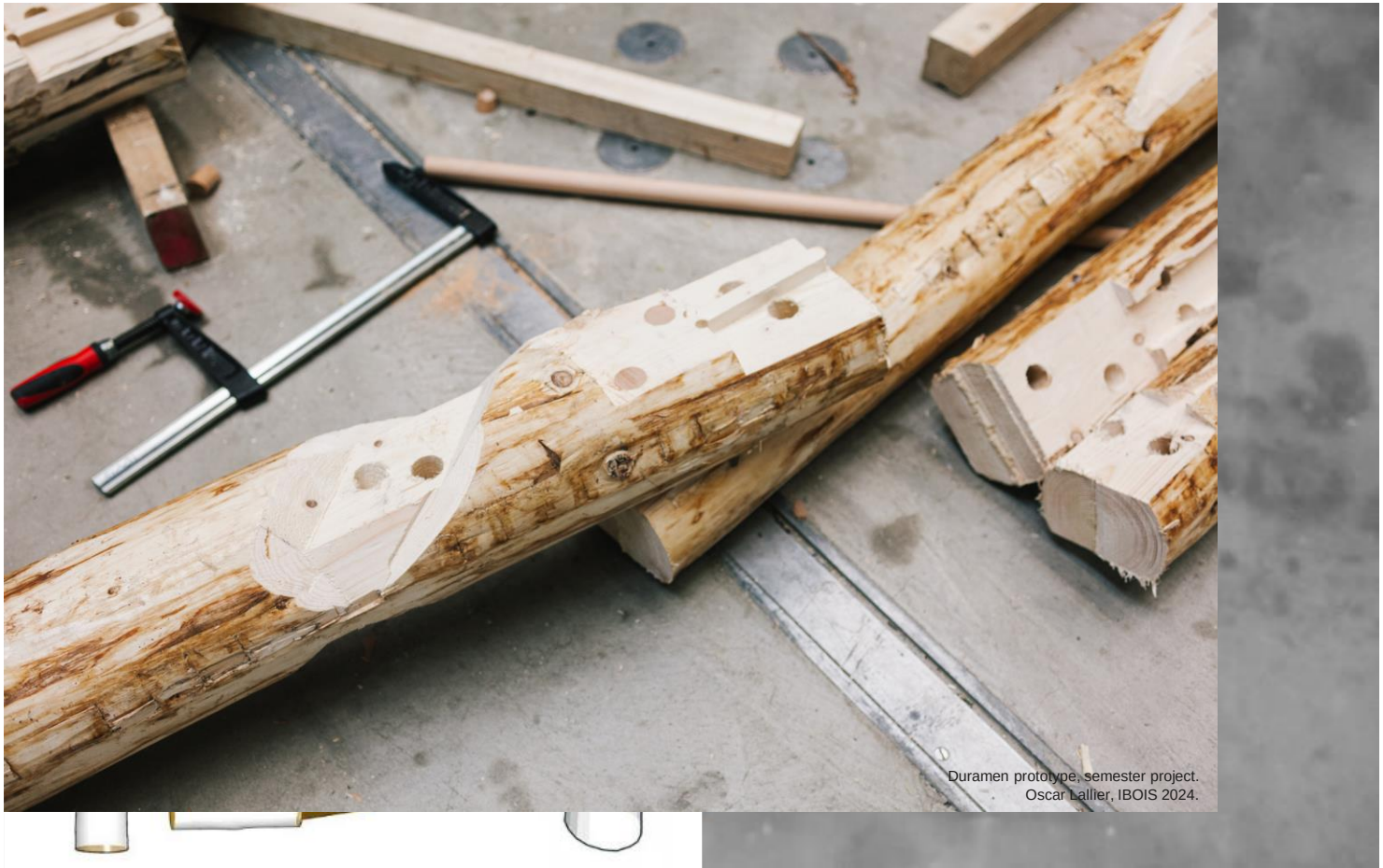
studio Weinand 2025
Introduction to the workflow : ... thanks to dfab

Master project, Maxim Andrist.
Petras Vestartas, IBOIS 2021.

studio Weinand 2025
Introduction to the workflow : ... thanks to dfab



Fork prototype.
Petras Vestartas, IBOIS 2020.



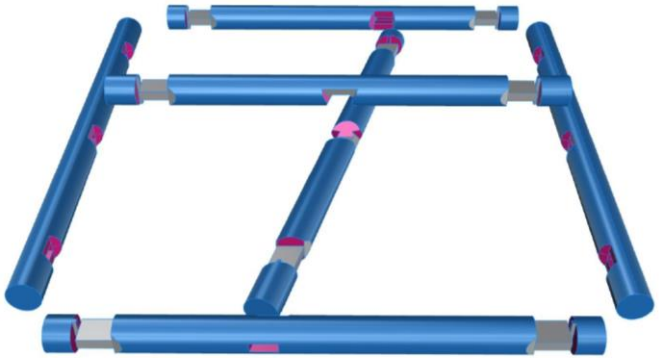
Duramen prototype, semester project.
Oscar Lallier, IBOIS 2024.

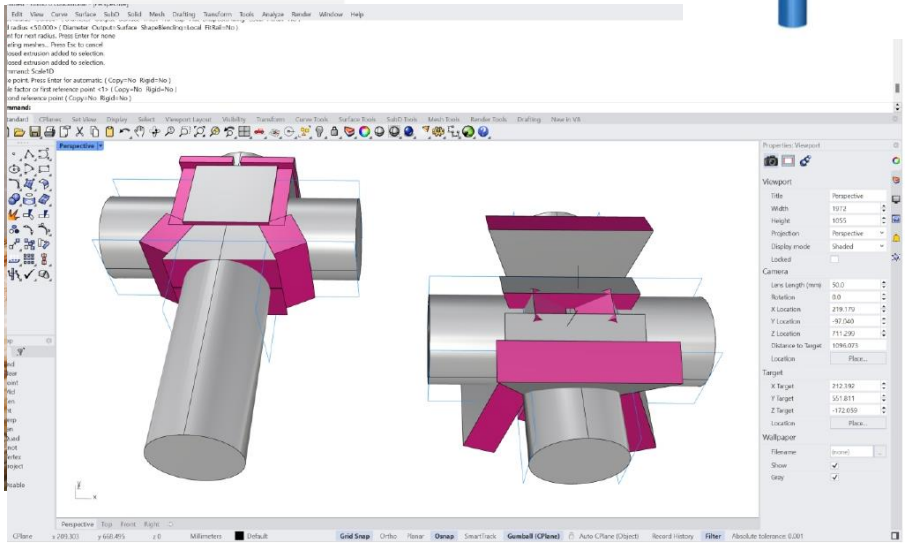
studio Weinand 2025
Introduction to the workflow : ... thanks to dfab

Mock-Up, semester project. Arthur Billotte, Oskar Forsblom, 2023.

compas
wood

Petras Vestartas
15/10/2024 compas_wood 2.2



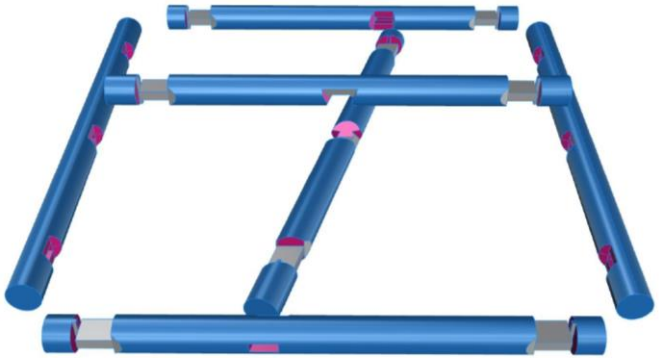


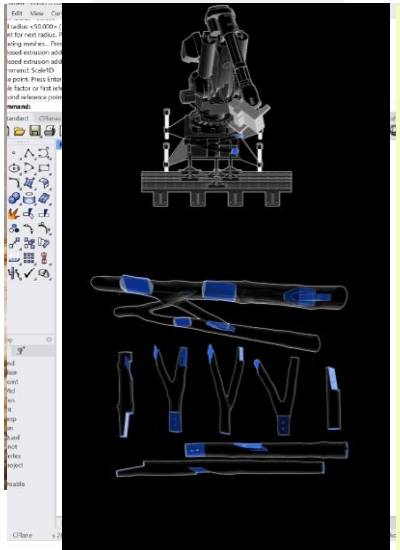
Mock-Up, semester project. Arthur Billotte, Oskar Forsblom, 2023.

compas wood

Petras Vestartas

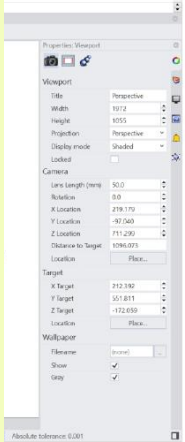
15/10/2024 compas_wood 2.2





Workshop 4
24/25.02.25
03/04.03.25

- understand the different types of possible assemblies, their resistance characteristics, and the techniques to produce them using COMPAS plugin
- learn to identify the different types of connections
- understand the geometrical operations required to produce these connections



Mock-Up, semester project. Arthur Billotte, Oskar Forsblom, 2023.

studio Weinand 2025
architectural application: Chestnut & Apple Cottage

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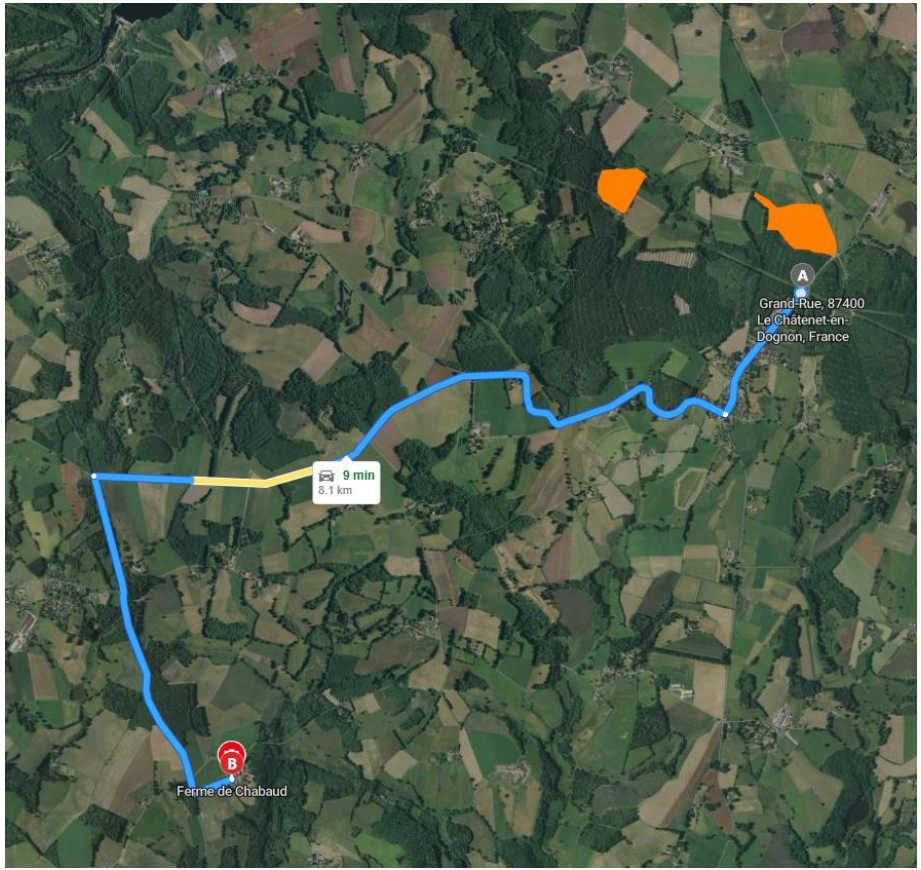
architectural application: Chestnut & Apple Cottage

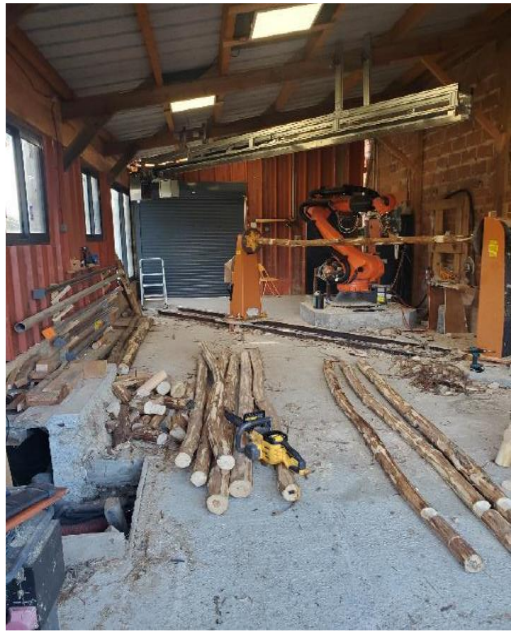


Usage of local wood from close forests

studio Weinand 2025
architectural application: Chestnut & Apple Cottage

Usage of local wood from close forests

studio Weinand 2025
architectural application: Chestnut & Apple Cottage



Digital Tools on Site

studio Weinand 2025
architectural application: Chestnut & Apple Cottage

Plot of the project

studio Weinand 2025
architectural application: Chestnut & Apple Cottage

Existing Buildings
Consideration

studio Weinand 2025
architectural application: Chestnut & Apple Cottage

Context and Inspiration

Chestnuts and apples are deeply rooted in the cultural and agricultural heritage of Limousin. The goal of this project is to design shared cottage dedicated to the processing of two iconic fruits.

These Cottages will serve as community hubs, open to both local residents and professionals from the region.

Design Challenge

Your task is to create a sustainable, functional, and inspiring architectural solution that meets the following criteria:

- **Functionality**: Provide spaces equipped for processing apples and chestnuts, suitable for use by small-scale producers, professionals, and hobbyists.
- **Contextual Integration**: Design spaces consider the existing buildings, making them attractive to locals and fostering community engagement.
- **Sustainability**: Use local materials with a focus on chestnut wood to reflect local resources and traditions.

Cypress-bark roof

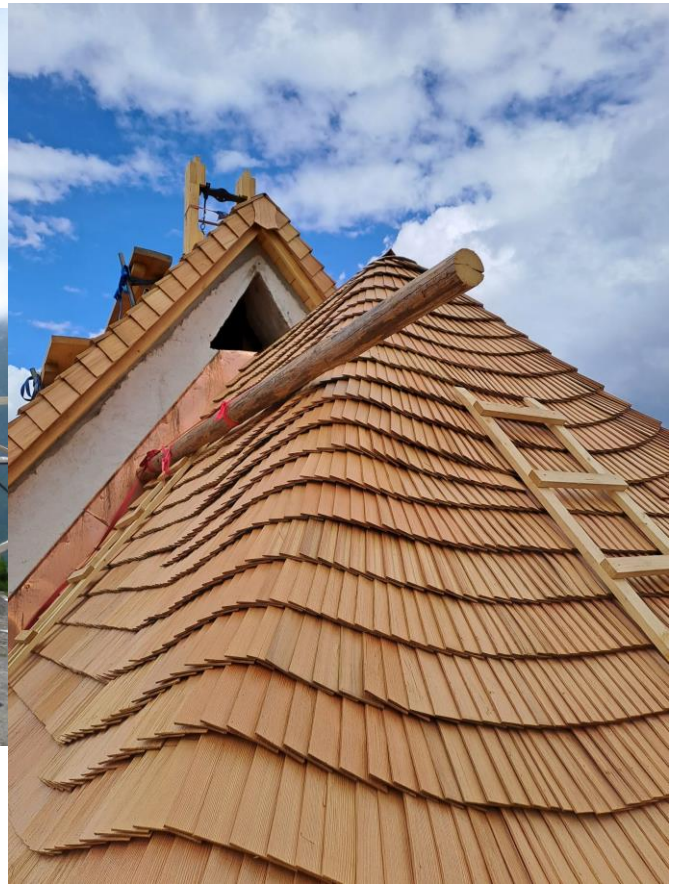
Cypress-bark roof

Thatched roof

Thatched roof

Thatched roof

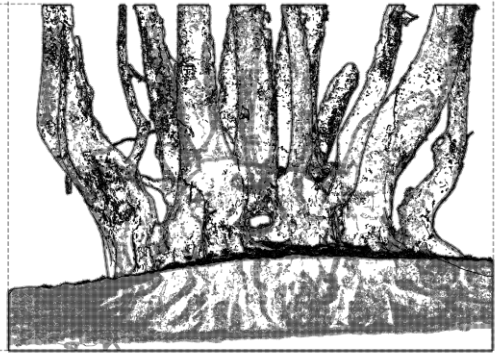
Wood Shingles



Wood Shingles

Wood as a resource, A Micro Rural Wood Industry
ep. IV : Chestnut & Apple Cottage

> P1		**digital research: roundwood, from 3D scanning to assembly resolution**
17.02 18.02	(1)	presentation: IBOIS lab / F24 semester /P1 **course: scan & timber construction** **workshop 1, 2 & 3**
24.02 25.02	(2)	**course: Wood assemblies** **workshop 4**
03.03 04.03	(3)	**course: COMPAS tools** **workshop 4**
> P2		**architectural application: Chestnut & Apple Cottage**
10.03 11.03	(4)	Site Visit
17.03 18.03	(5)	studio
24.03 25.03	(6)	**intermediate critic** **studio**
31.03 01.04	(7)	studio
07.04 08.04	(8)	studio
14.11 15.11	(9)	**intermediate critic** **studio**
28.11 29.11	(10)	studio
05.11 06.11	(11)	studio
12.11 13.11	(12)	**intermediate critic** **studio**
19-23 .05	(13)	**prototyping**
26.05	(14)	**final critic** exhibition



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yves.weinand@epfl.ch