Circular Wood for the Neighbourhood

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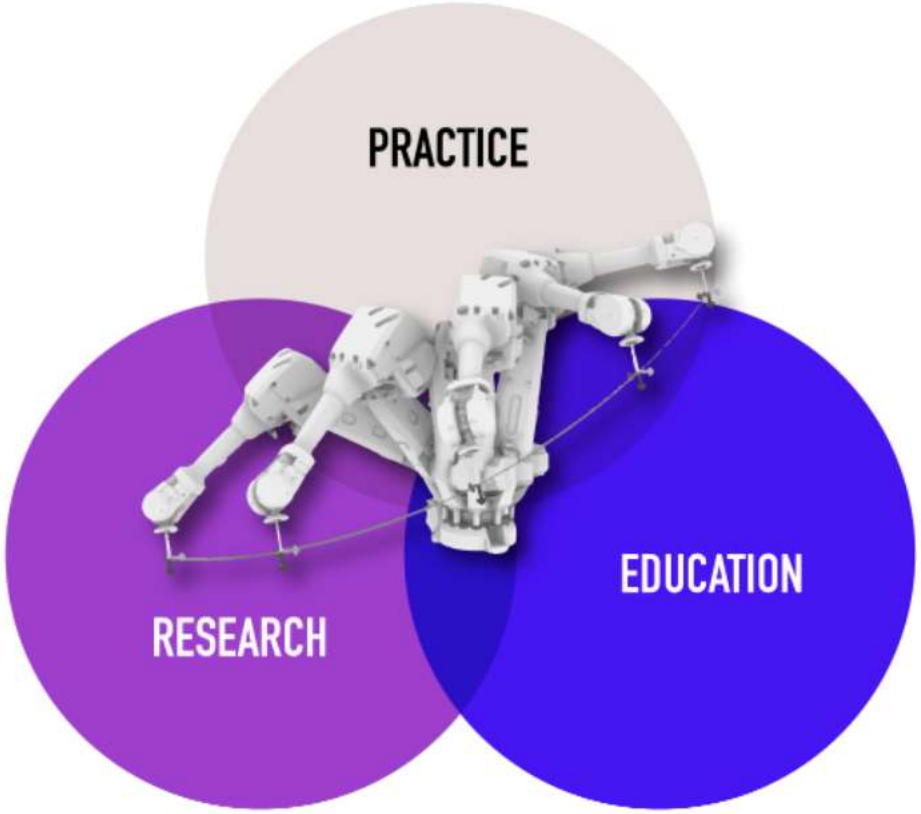
RENOVATIE

What is the Robot Lab ?

RL = Integration

Education
Research
Practice



The DPRG is connected to the Center of Expertise Urban Technology and operates within the Robot Studio of the AUAS. The DPRG explores the impact of digital design and production technologies (industry 4.0) to help address urgent societal challenges. This work is carried out by integrating research to education and practical activities, in alignment with 3 profiling themes of the Faculty of Technology: Smart Industry, Circular Transition and Designing Future Cities.

Who we are_a multi-disciplinary community

ROBOTLAB | Amsterdam University of Applied Sciences

Team Robot Studio 2019

Interns 2019

How we work_empowering students

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How we work_learning by doing

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How we work_active collaboration

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How we work_peer-to-peer learning

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How we work_making things!

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Project:
Circular Wood for the Neighbourhood

Circular Wood for the Neighborhood

Hogeschool van Amsterdam

TU Delft

TNO innovation for life

Ymere

METABOLIC

Gemeente Amsterdam

ROCHDALE

Ter Steege

PLATFORM31
kennis van stad en regio

Lenferink

rutges
vernieuwt onderhoud & renovatie

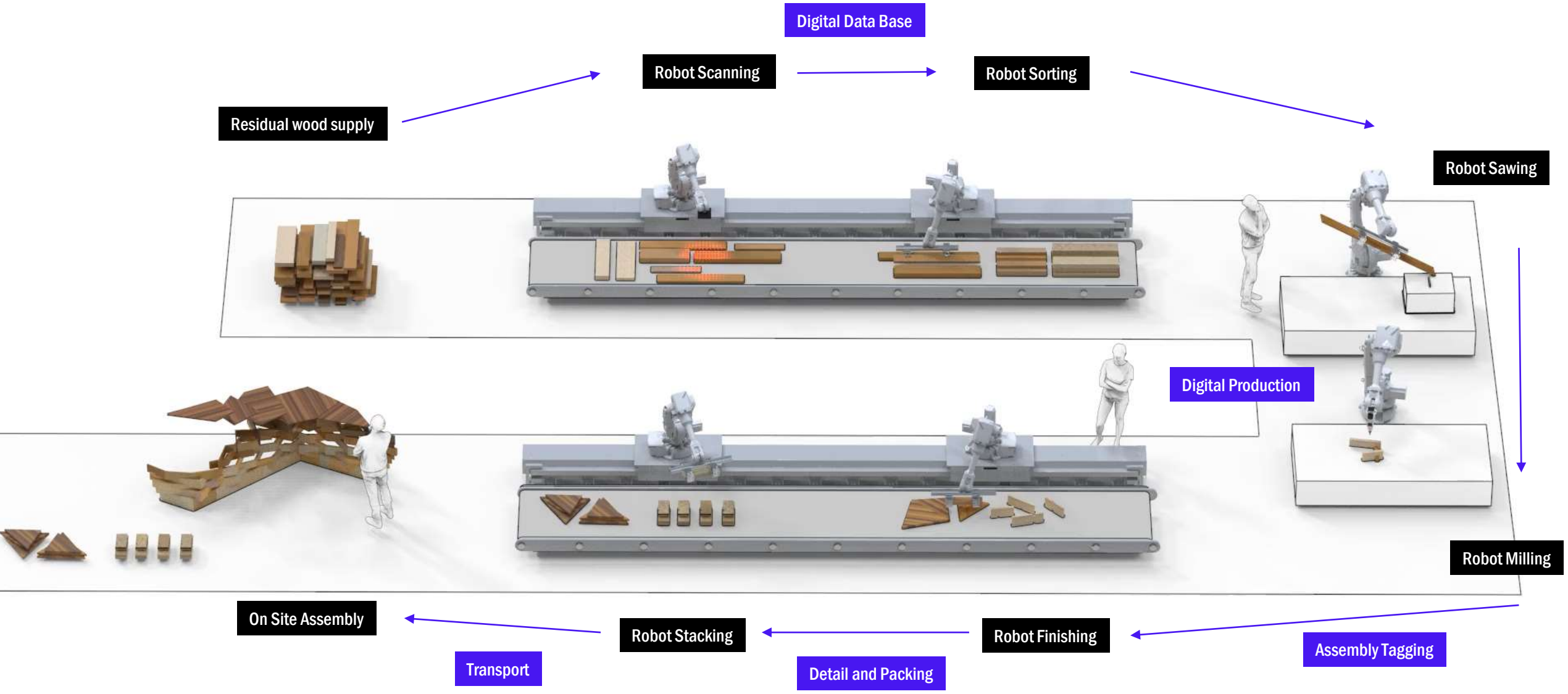
gp groot

Regieorgaan SIA

CW4N is financially supported by Regieorgaan SiA

Research Factory_ upcycle wood

CW4N | ROBOTLAB | Amsterdam University of Applied Sciences



CW4N_Material stream research

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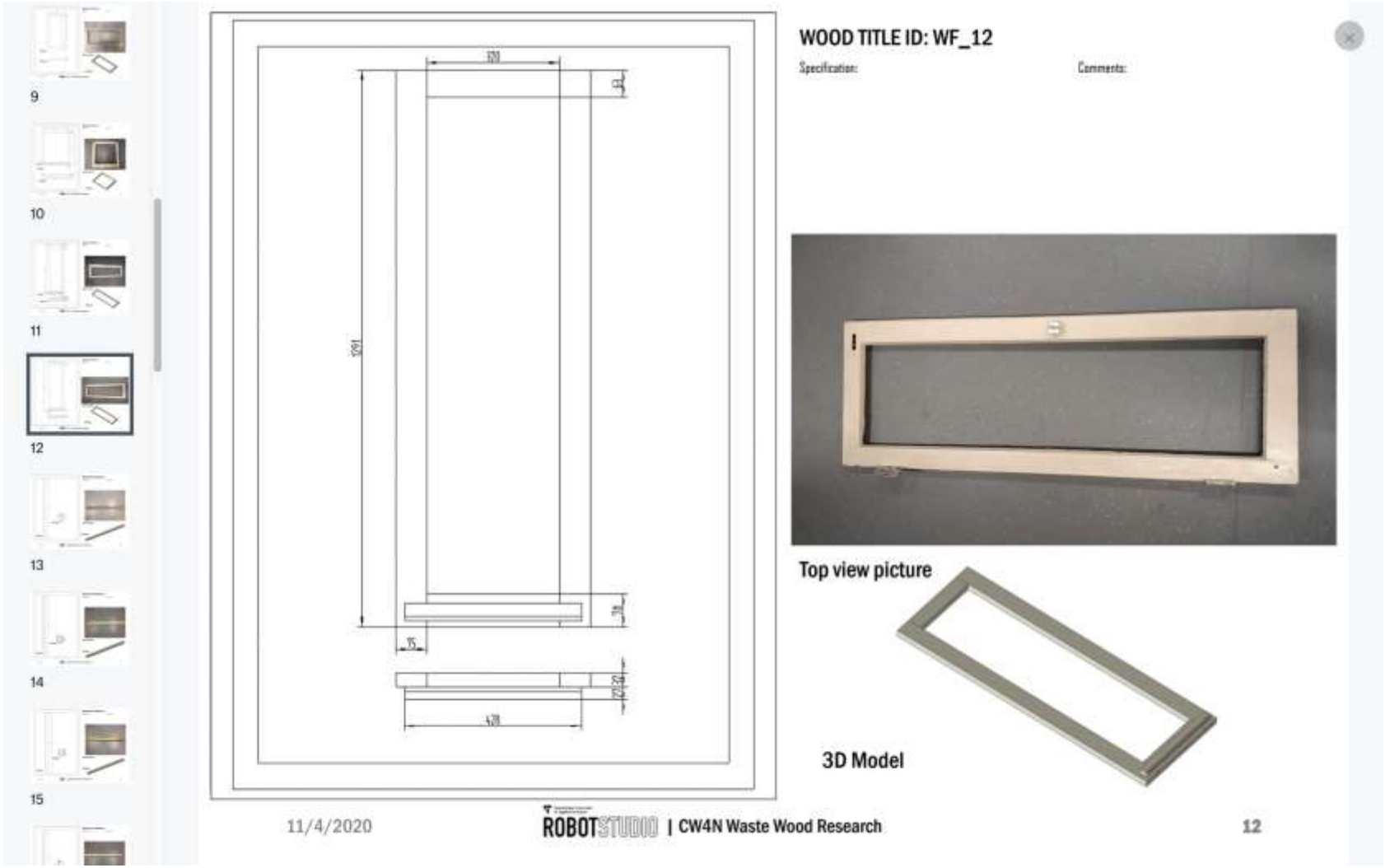
CW4N_Material database



CW4N_Wood Intake

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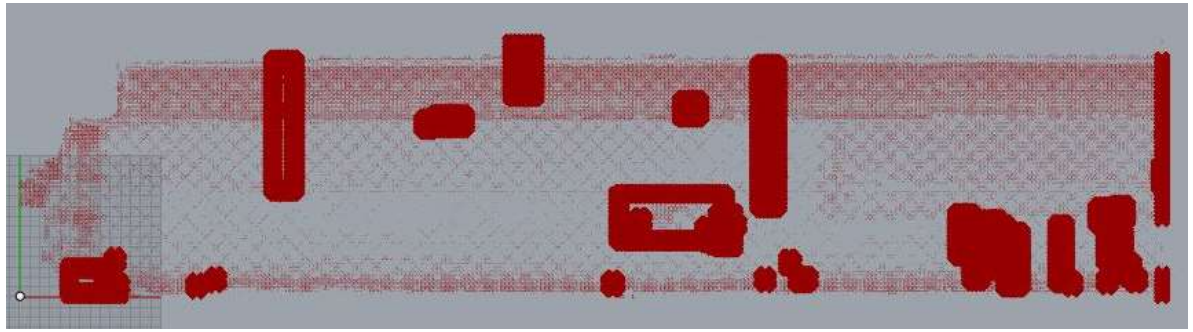
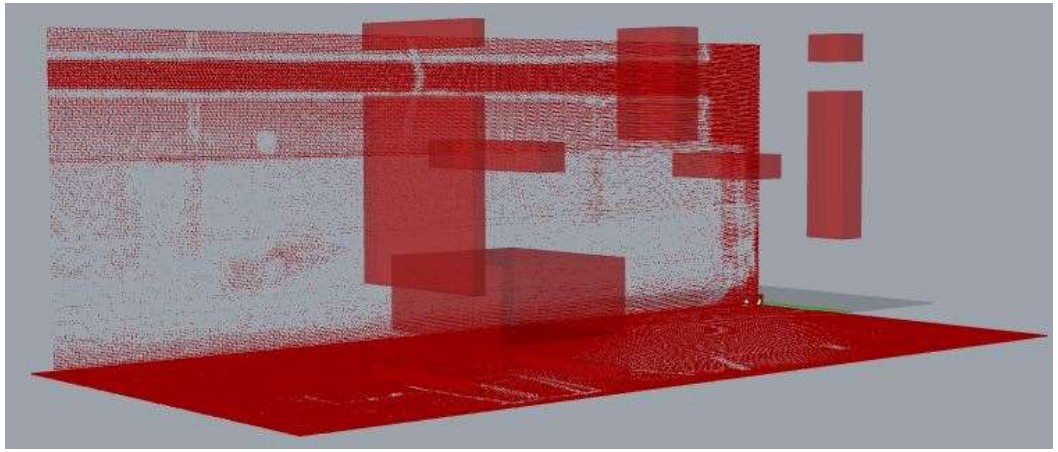
CW4N_Wood Scanning





CW4N_Wood Scanning

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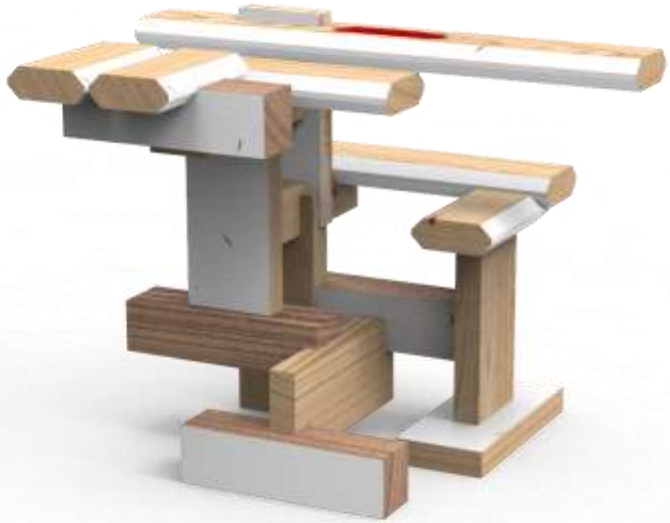
Three case studies

- Small item; personal
- Large item; building project scale
- Variable item

CW4N_Case Study_1_explorations

Prototype 1.0

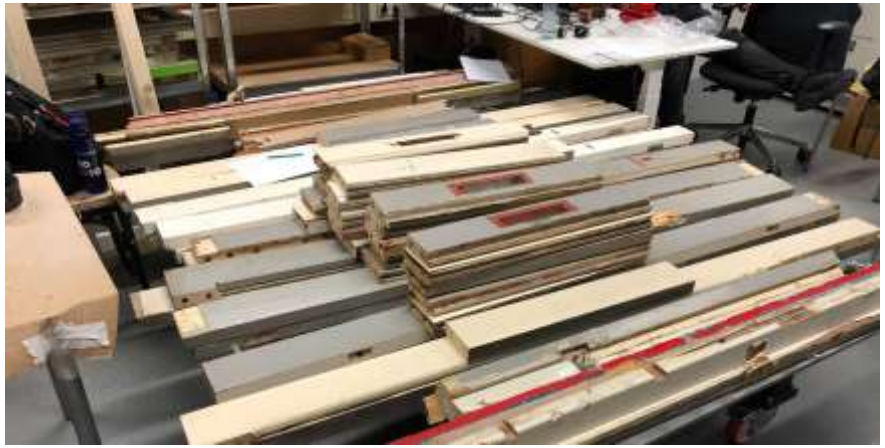
Prototype 2.0



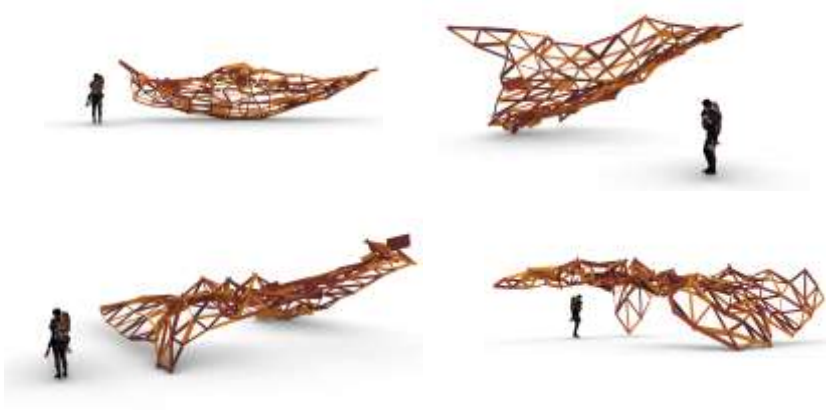
Prototype 3.0

'Once my door, now my coffee table'

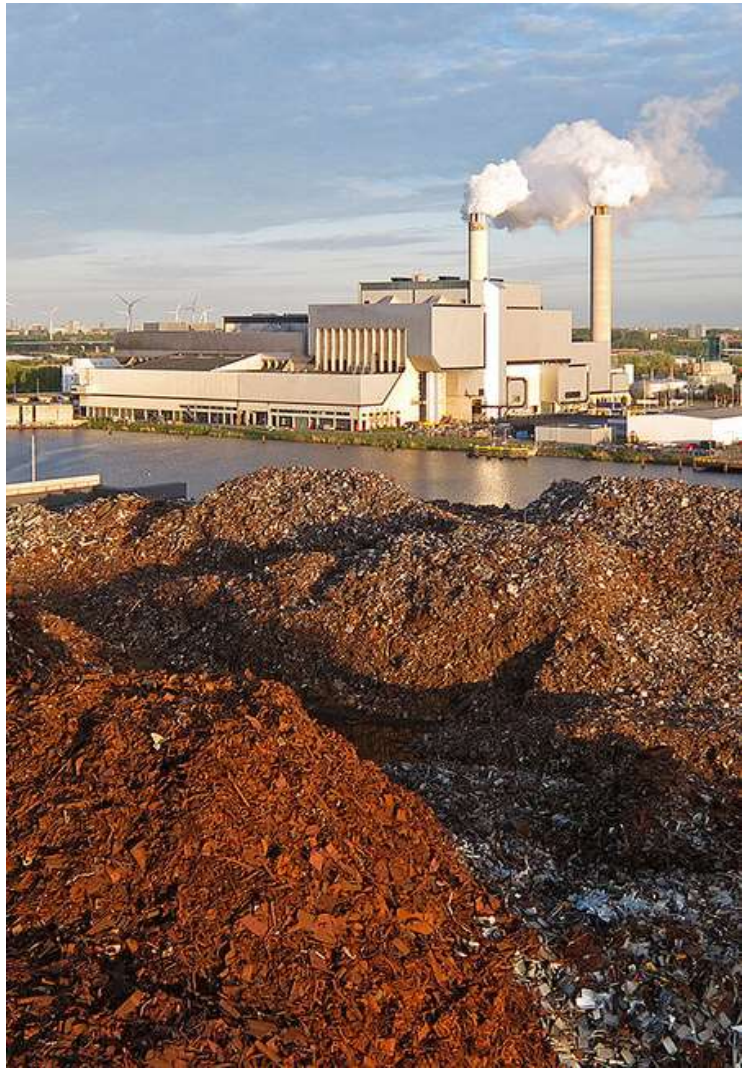
CW4N_Case Study_2_explorations

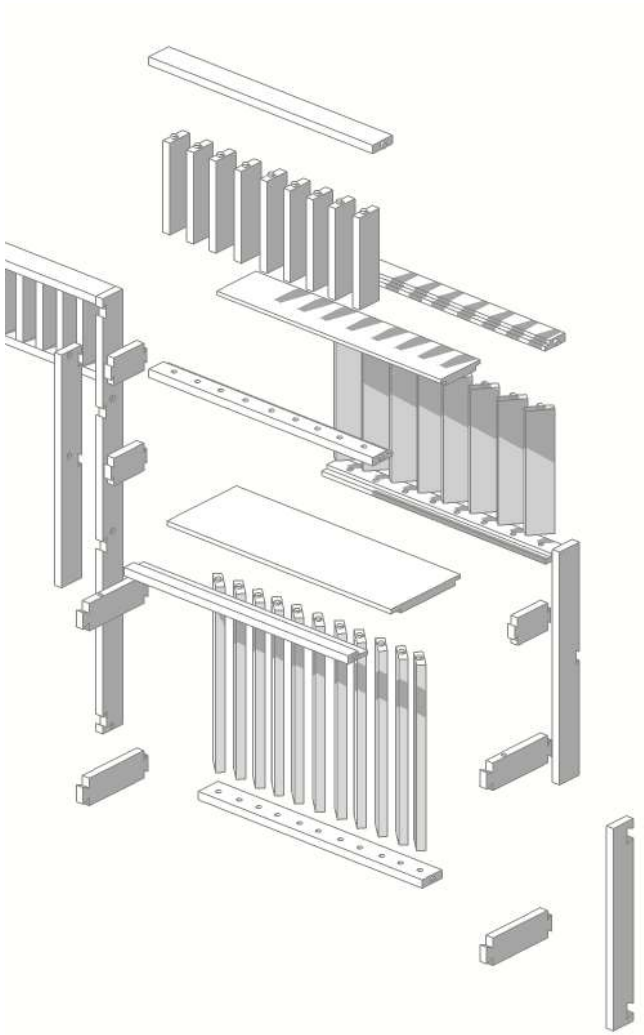


'Once their windows, now our playground'



CW4N_Case Study_3_explorations





'Once burned wood, now shared value'

Conclusions

1. Create awareness

Create awareness about the amount of circular wood coming from housing corporation assets: how much is available? and where does it end up now?

2. Build a database

Start by building a good database of materials that housing corporations have stored in their buildings. It is money for the future.

3. Survey your buildings

Explore advanced digital technologies for surveying buildings before renovation or demolition. This inspection will facilitate the implementation of more sustainable approaches (i.e. window frame repair), or else provide knowledge on the wood which can come available from a renovation or demolition.

4. Organize collaboration

Organize collaboration between corporations, their co-makers and other parties in the value chain , so that there is sufficient waste wood for applications, and the costs for processing it can be collectively supported.

5. Create pilot projects

Create pilot projects. Make them big: test a shared material bank and an application with sufficient scale for digital production to be a game changer.

6. Inform and engage citizens

Use pilots to step into the front-runner role of informing and engaging citizens about circularity and sustainability in their direct environment.

7. Explore alternative business models

Explore alternative business models, based on circular values and new financial opportunities coming from circular wood. A shift is necessary, from “paying for the wood to be removed” to “monetizing the wood that is available”.

8. Automate wood processing

Invest in automation for wood processing and explore circular applications in combination with advanced digital design and production processes, including robotics. It will pay out on the long term, given that virgin wood is rapidly increasing in costs and that there is an increasing shortage of skilled workers.

9. Use parametric design systems

Focus on parametric design systems that can be adjusted according to the available wood, and/or easily be adapted to a wide range of building and apartment typologies. While available wood may change -and the created product thus be slightly different- the costs of design and production can remain almost unaffected.

10. Certification schemes

Explore the gaps and limitations of current certification schemes for “new” building components vs. “circular” components. Which requirements -related to material quality, safety and durability- can be met by circular wood?