

# Innovation Continuum in the Forest Products Industry

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# What is innovation?

Innovation is the process of bringing about new ideas, methods, products, services, or solutions that have a significant positive impact and value.

## **Necessity is the mother of invention (or innovation)**

A need or problem encourages creative efforts to meet the need or solve the problem. This saying appears in the dialogue *Republic*, by the ancient Greek philosopher Plato.



# What is the Innovation Continuum?

The innovation continuum describes **the spectrum from incremental to truly transformative innovations.**

At one end is **incremental improvement**—small innovations that simply take an existing process, product, or service and increase its effectiveness, quality, or value. Incremental improvement occurs when you take something that you're already doing and do it a little better.

At the other end of the continuum is **total transformation**—radical, overarching change that impacts the whole system.



Today we are talking about the continuum of innovation  
in the forest products industry.

Many innovations over time have changed our industry.

# Examples of Innovation in the Forest Products Industry

## Tree Cutting



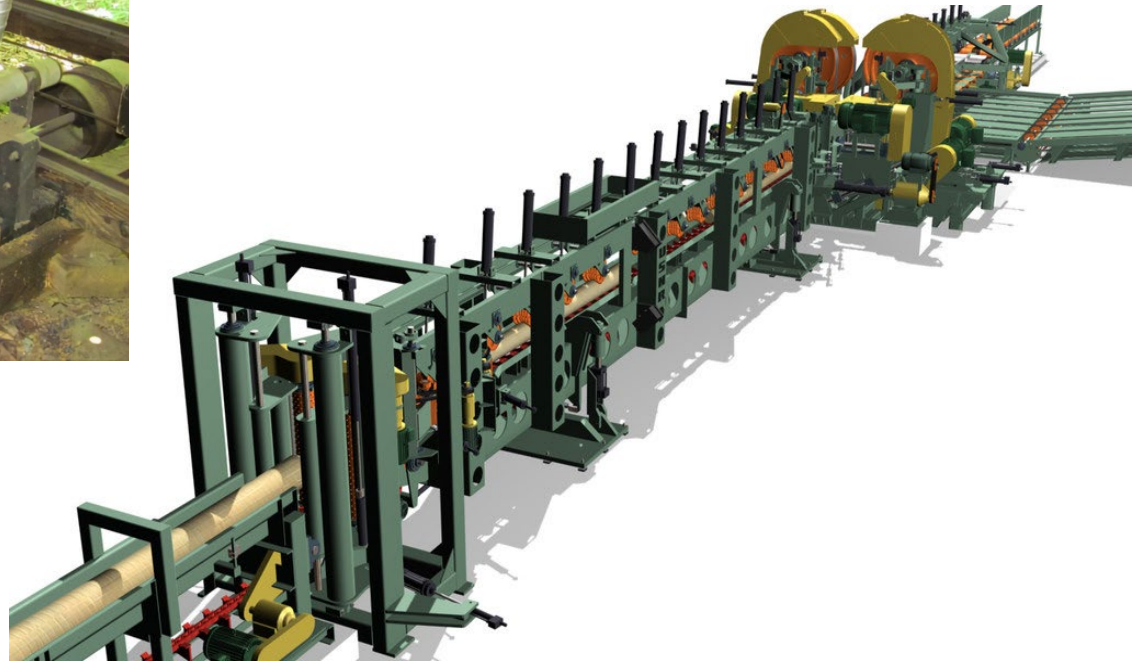
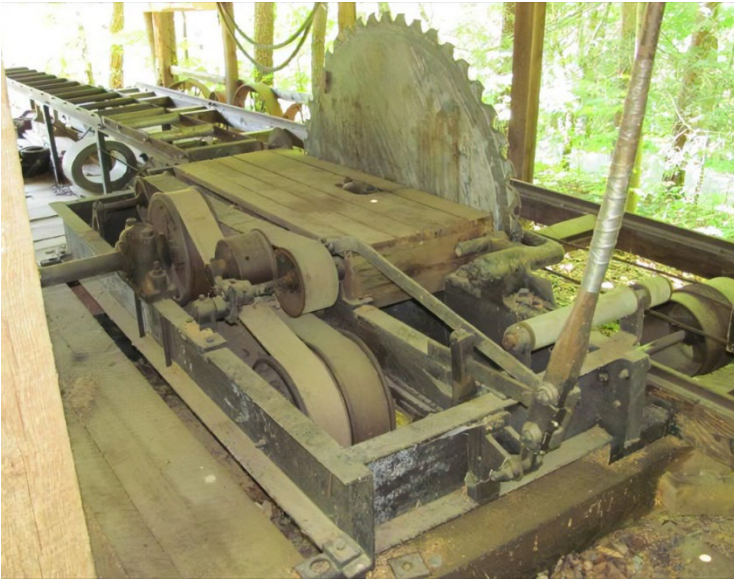
# Examples of Innovation in the Forest Products Industry

Yarding



# Examples of Innovation in the Forest Products Industry

Mills



# Examples of Innovation in the Forest Products Industry

Reforestation

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# What Drives Innovation?

- Improve Processes
- Safety
- Ergonomics
- Meeting Needs

"Some people say, 'Give the customers what they want.' But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, 'If I'd asked customers what they wanted, they would have told me, "A faster horse!"' People don't know what they want until you show it to them. That's why I never rely on market research. Our task is to read things that are not yet on the page."

- Steve Jobs, co-founder of Apple Inc.



# Innovations in Wood Products

2x4 from 1920 - 2019





# Innovations in Wood Products

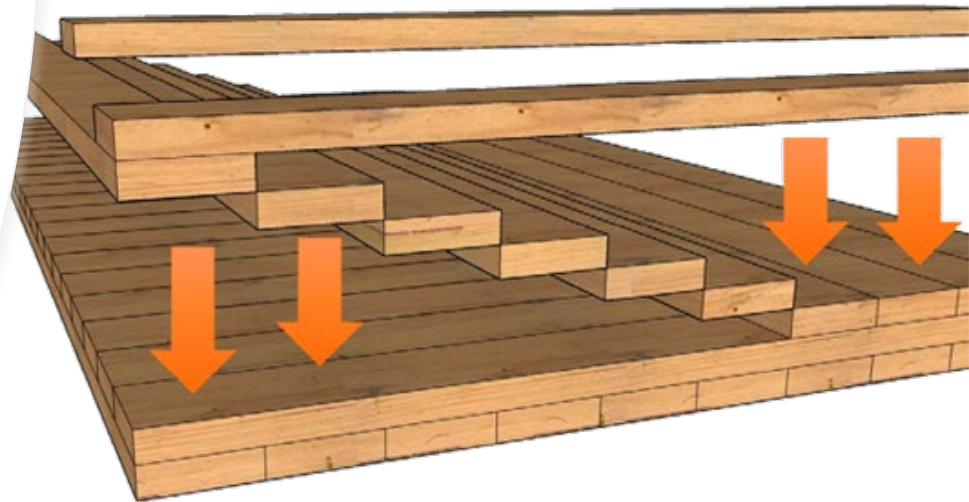
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Solid wood to glulam  
beams



# Innovations in Wood Products

**Cross Laminated Timber  
& Mass Plywood Panels**



# Other Wood Innovations

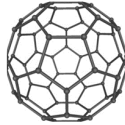


## Biomaterials

Adhesives

Wood plastic  
composites

Petroleum  
alternatives



## Nanomaterials

Waterproof and  
tear-resistant  
fabrics.

Air filters and solar  
cells.

Nanocrystals and  
nanofibers. This  
material is being  
developed to  
produce clear  
reinforced glass.



## Bioenergy



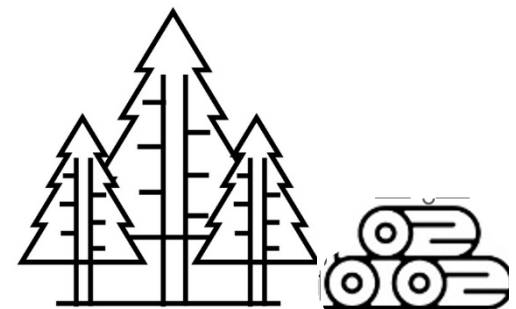
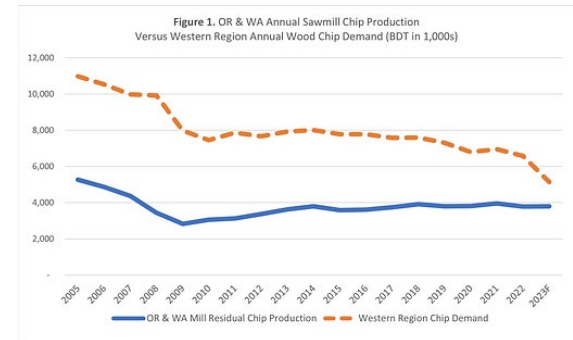
## Biofuels

# Issues Needing Innovation

- Labor
- Lack of Markets

*Wood Chip Demand Fell Off a Cliff: What Now?*

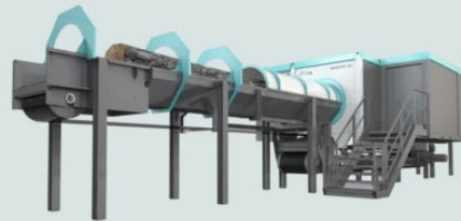
- Uses for small logs, particularly pine, throughout the West.



# Issues Needing Innovation

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- Log Scaling?



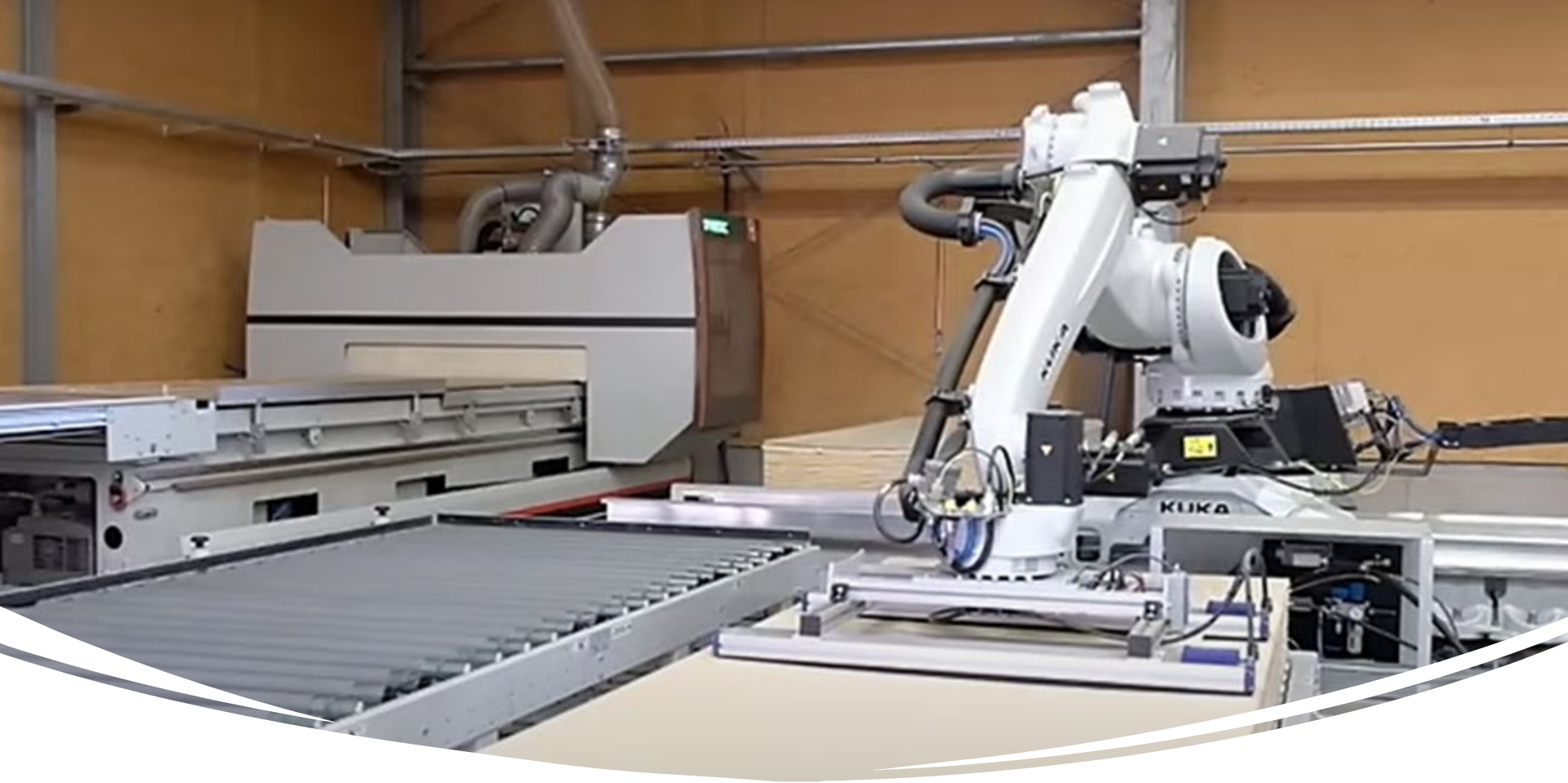
## CT Log

World's unique computed tomography scanner for logs



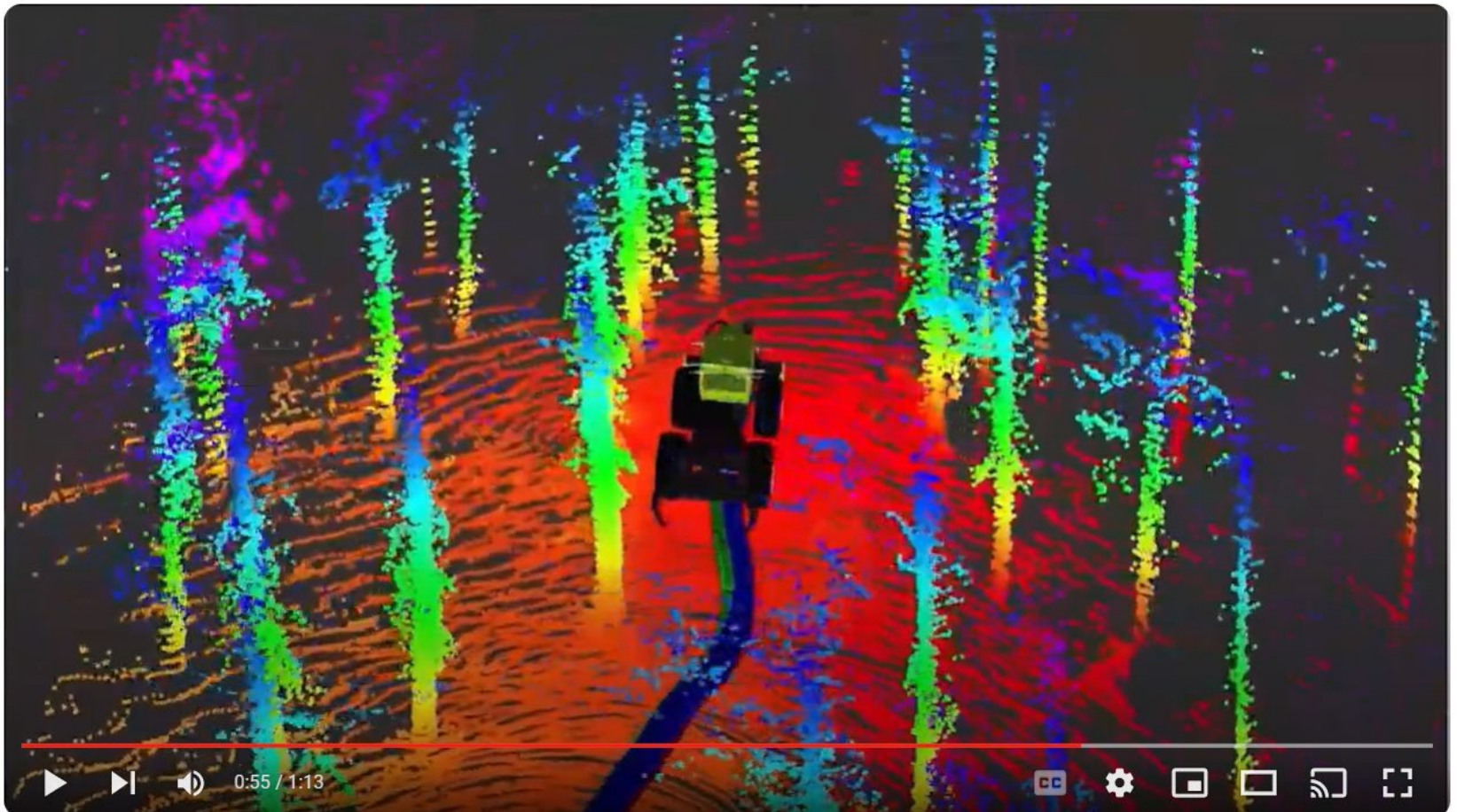
## Logeye

Multi-sensor real shape and quality scanner for logs



## **Emerging Innovation in the Forest Products Industry**

- Robotics and AI in manufacturing



## Emerging Innovation in the Forest Products Industry

- Kodama Teleoperation and Autonomy





## Emerging Innovation in the Forest Products Industry

- Autonomous trucks cutting a path in forestry sector. These are from Robotic Research Autonomous Industries (RRAI) which is now Forterra.

# Questions?

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