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How technology used in cryptocurrency could rescue SC's at risk forestry industry

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Brosnan Forest is a sweeping preserve north of Charleston that includes endangered red-cockaded woodpeckers and longleaf pine trees.

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CLEMSON — One day soon you might know exactly where all the wood in your life is from — the furniture and the flooring, the paper and the pencils.

You could learn about the people who grew the wood, how it was harvested and where it was milled, what roads it traveled to get there. Maybe you could even see the birds that lived in the forest, and listen to a recording of their songs.

“Those are way out there, big, long-term picture,” said Patricia Layton, the director of the Wood Utilization + Design Institute at Clemson University. “But we're starting with baby steps.”

Clemson and its partners are midway through a project testing new blockchain technology that could gather immense amounts of data about wood products as they travel through the supply chain — everything from the species of animals that lived in the trees to how much gas was used to transport them.


It's an attempt to harness the abundant information in today's world and use it to promote South Carolina's **struggling timber industry**.

The industry is one of the state's biggest. It contributes \$23 billion to the economy, employs 100,000 people, produces more labor income than almost any other sector and controls about two-thirds of the state's land, according to a study from the University of South Carolina.

Yet the S.C. Forestry Commission estimates the state is growing roughly 40 percent more wood than it harvests each year. That means supply is quickly outstripping demand. As a result, prices have plummeted, endangering the communities that rely on timber.

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If people knew more about where their wood came from, would they think differently about the wood products in their home? Would they pay more attention to the forests they drive past on their way to work? Would they be willing to pay a higher price for a plank marked “Grown in South Carolina?”

“Bottom line, we have a problem: We have way too much wood,” Layton said. “I want everybody to want South Carolina wood.”

Clemson's \$700,000 pilot project is part of Climate-Smart Grown in SC, a federally funded program designed to increase the acreage and number of farms using climate-smart practices.

The project tracks a batch of timber from the time it's harvested to the time it's used in a new building on Clemson's campus.

The wood's journey began in the **Brosnan Forest**, a sweeping preserve north of Charleston. There, the biggest U.S. population of endangered red-cockaded woodpeckers on private land flits between the branches of one of the country's largest remaining stands of longleaf pine.



Crews loaded timber harvested from Brosnan Forest into trucks which transported the wood to a mill in Allendale.

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Once harvested, the wood traveled 60 miles west to Allendale, where it was milled at **Collum's Lumber Products**. Collum's is a fourth-generation family-owned lumber company that says it's dedicated to sustainable timber and land management.

Then, the wood traveled 300 more miles to Dothan, Ala., where **SmartLam North America** is located. SmartLam is a leader in processing wood into so-called "mass timber" used for large-scale architectural projects.

Finally, the wood returned to South Carolina, finding a home on Clemson's campus. It will be used in the construction of a new 85,000-square foot Department of Forestry and Environmental Conservation building.

All of that information is easily accessible thanks to the [blockchain](#) Clemson is using to collect data about the wood's journey through the supply chain.

Blockchain has emerged as a promising new technology for everything from intellectual property protections to cryptocurrency.

In essence, it acts as a highly secure digital ledger, said Teal Edelen, director of forests for the U.S. Endowment for Forestry and Communities. The Endowment is working on the project with Clemson.

Imagine a notebook where every detail of a load of timber is recorded, where nothing can be erased and only certain people can open it. At each step, the notebook is updated with new information.

That's blockchain — except without all that hassle and all those pages of paper.

There are numerous uses for a tool like that in agriculture and forestry, Edelen said. One of the biggest is telling the story of a product.

What type of wood was it? Where was it harvested? When? By whom? Who drove the truck from the forest to the sawmill? How much gas did they use?

“That provides, all throughout the supply chain, a really transparent, high quality map or matrix of what's going on within your supply chain,” Edelen said.

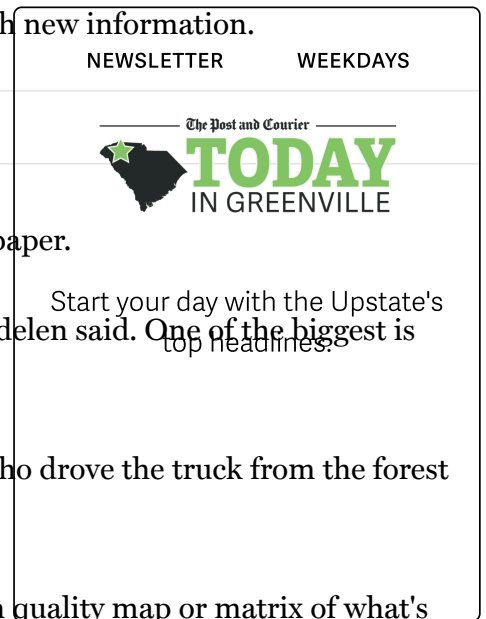
That kind of complete picture will take much more work to produce, though. Clemson's project collects just a few data points on geography. But this offers the technology a chance to prove itself, Layton said.

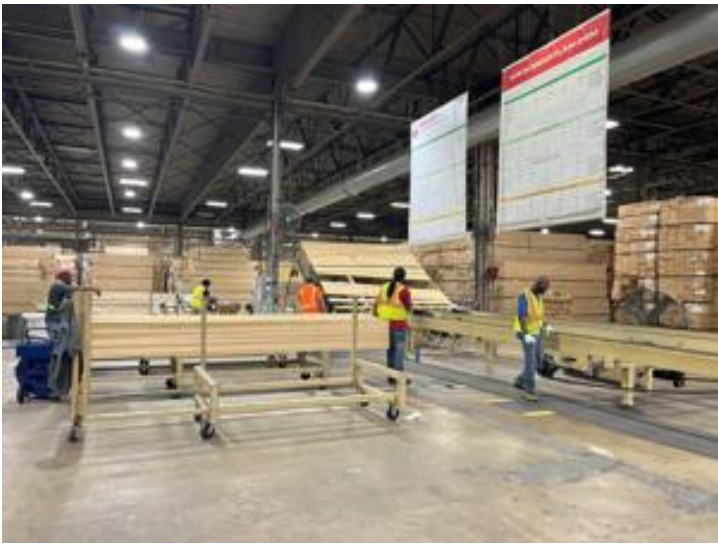
The technology could help monitor the supply chain as well, Edelen said. It reduces the chance of fraud, allows for easier audits and increases transparency, potentially encouraging the use of best practices.

“It's a really compelling way to show how blockchain can provide that radical transparency and traceability for wood products,” Edelen said.

It also helps landowners, said Lisa Lord, conservation programs director at the Longleaf Alliance, another partner on the project.

The data can help landowners plan, and it might encourage them to pursue more-sustainable management techniques.





SmartLam North America, in Dothan, Alabama, processed the wood into "mass timber," which is used in large-scale architectural projects.

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That's why Payton, Edelen and Lord hope the technology can drive demand for local wood products and give South Carolina's timber industry a boost.

Take longleaf pine, a species that once dominated the forests of the Southeast, fell out of favor and is now beginning to reemerge as environmentalists trumpet its benefits.

Longleaf pine protects certain endangered species and can improve water quality. It's also more difficult to manage, Lord said.

But if consumers had evidence of the trees' benefits at their fingertips, if they could know that the trees' growth helped clean the water in a South Carolina stream, would they pay more? Would that mean landowners are more likely to plant it?

"I think people do want the story, especially architects when they're building these one-of-a-kind buildings and these high-end things," Layton said. "I want them to tell the story everywhere. I want them to feel connected to their building."

When Clemson's new building is complete, it will be embedded with the story of the wood used to build it.

It's also just nice to have.

Landowners — who often invest decades of their life growing forests on their land — want to know how their wood is used, Lord said. Likewise, customers want to know the wood they're buying was sustainably managed and harvested.

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Students who walk the halls will know not just what it was made from, but where it was harvested. They'll know about the red cockaded woodpeckers that called the trees home, about the 700-mile journey the wood took to get to Clemson and the people who processed it along the way.

“I can touch it, I can see it, I can smell it,” Layton said. “I can tell the story.”


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