# Protecting the rainforest with upcycled phones and cloud computing

Rainforest Connection uses simple devices created from discarded cellphones to listen out for illegal logging activities and provide rangers with real-time alerts. The organization was founded in 2012 by Topher White, who gave a talk about his work at TEDxCERN last month. White's system has already helped stop illegal logging in Indonesia and further pilot projects are set to be launched soon in both Brazil and Cameroon.

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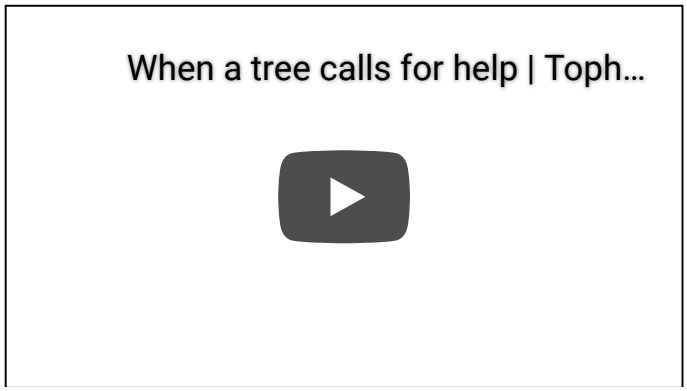
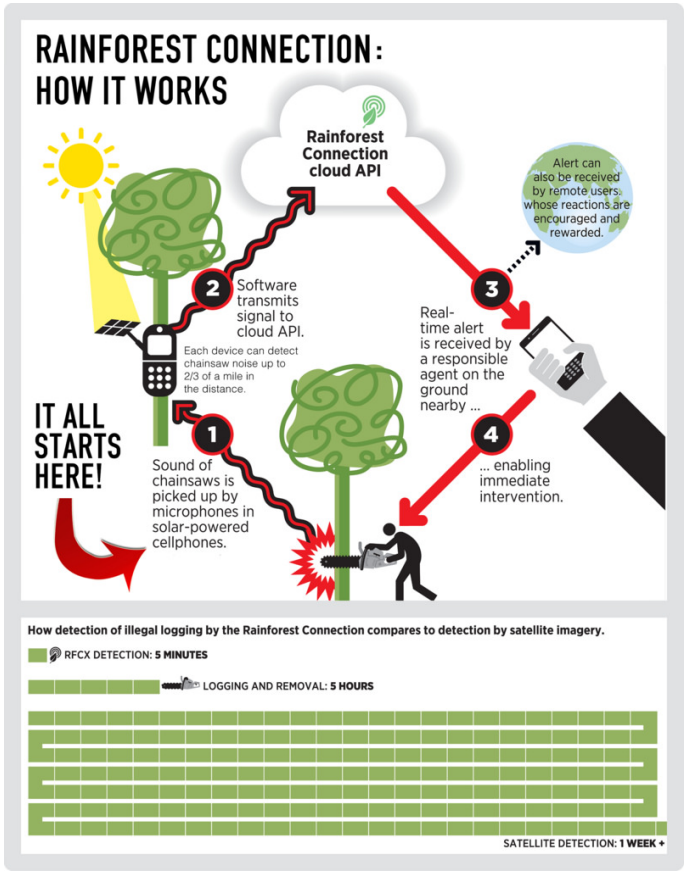
*and*




*White, who has a background in physics and software engineering, is also CEO of the non-profit organization. Watch his recent TEDxCERN talk above. Video courtesy TedxCERN.*

*Front page image courtesy Rainforest Connection (CC BY 2.0).*




*Click for large version. Image courtesy Rainforest Connection (CC BY 2.0).*

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*The physical placement of the listening device shown here is for illustrative purposes only; the devices are normally installed much higher in the tree canopy. Image courtesy Rainforest Connection (CC BY 2.0).*


*CERN's Paola Catapano interviews White behind the scenes at TEDxCERN. Video courtesy CERN.*

TedxCERN

Topher White

trees

upcycling

*further pilot projects are set to be launched soon in both Brazil and Cameroon.* iSGTW *speaks to White to find out more…*

## What was your inspiration for this project?

A few years ago I traveled to Indonesia, where I volunteered with an organization dedicated to protecting gibbons. While I was there, I noticed

that there was a big problem with illegal logging in the area. Three rangers were hired to protect the forest, but there was really no way for them to know when and where the trees were going to be cut down. One day, some of the other volunteers and I set out from the ranger station on a walk into the forest. After just five minutes, we stumbled upon some people sawing down a tree. Despite the fact that we were still fairly close to the ranger station, it had been impossible to hear anything from back there - the cacophony of noise in the rainforest is just too loud.

**So, how did you come up with the idea to use old cellphones?**

I had noticed that there was surprisingly good cellphone network coverage in the forest. Out there, in the middle of nowhere, there is no electricity, there are no roads for hundreds of miles, and there isn't really a water supply, but everyone has cellphones and uses them all day long. This gave me the idea to set up these phone-based listening devices in the trees and to use them to detect the signature sound-profiles of chainsaws.

**What role does cloud computing play in the system?**

Previously we had the phones doing the calculations, but we've now moved to doing this in the cloud. The devices record all the sound of the forest and send it up to the cloud, which is where the actual detection takes place. The advantage of this approach is that we can build up a huge data

store - a sort of 'audio ark' of the biodiversity in the forest. Although we're currently just listening for chainsaws, we do hope to expand to detecting a few other sounds in the future, including gunshots and vehicle movements. Doing the calculations in the cloud also enables us to run the phone-based devices at a lower clock speed, thus reducing power consumption - this has been a major challenge for us.

**So, it seems like using the cloud gives you plenty of flexibility then ...**

The cloud is becoming increasingly central to what we're doing. My long-term hope is that people will be able to build their own devices, install them in the trees themselves and then use our system and our cloud API to build modules to detect different types of things which may be of interest to them. We want to open up our system to others who can do even more cool things with it!

**Finally, what do you plan to do with all the data generated by your devices?**

What we do with the data will really define the future of the organization. I hope we're able to do lots of compelling things with it, like creating apps to stream the sound of the forest, for instance. We want to reach out to the scientific community and say 'we have all of this amazing biodiversity data, it's up to you to unlock its value'. It's all about engaging both the public and those who can help us to do more with the data. We want to build tools

that will enable others to use the data to make a real difference.

*- Andrew Purcell*

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