GUEST FORESTRY FINDS THE SWEET SPOT FOR SILVICULTURE WITH SMART TRACKING

A LIM GEOMATICS AND SOUTHERN FORESTRY CONSULTANTS CASE STUDY

Southern Forestry Consultants (SFC) supports organizations with practical and advanced forestry specific technologies. As a forestry company, we service and sell technology engineered by Lim Geomatics of Canada which is technology and consulting firm with an international portfolio of innovative GIS solutions. The company specializes in building web and mobile applications powered by the ArcGIS mapping platform.

Guest Forestry is a family-run business that provides reforestation and silviculture services to a range of clients, from private landowners to forestry consultants, and timber and real-estate management companies, in the southeastern United States. They are also the first company from the southeastern United States to implement Op Tracker by Lim Geomatics.

Op Tracker consists of a web and a mobile application that work in tandem to provide operators, forest managers, and GIS analysts with up-to-date information about the progress of any operation. The mobile application runs on a tablet mounted in the cabs of field machines and tracks movement and performance. The tablet provides a large heads-up display that includes digital maps and other user-friendly tools to help operators make safe and informed decisions in the forest. The machine's track lines and productivity data are synced to the web application when the tablet is within cell service or connected to the internet.

Overview of business problem:
Guest Forestry is based out of Plains, Georgia and has two seasonal phases of operation. During the winter months, December to March, the company triples in size from about 10 to 30 employees for the more labor-intensive phase of tree-planting. The bulk of the company's business, however, is conducted during the spring, summer, and fall when they provide silviculture services for clients in Texas, Louisiana, Georgia, and the Florida Panhandle.

Callie Welch, GIS Coordinator with Guest Forestry, explained how the company's fleet of five skidders, which look like giant tractors, spray herbicide at two intervals during the lifespan of a pine forest to optimize tree growth. "We want to give the pine tree a good turn around rate and let it grow healthy and not have anything compete with it," said Welch.

The first spray is applied immediately after a harvest. The second is carried out halfway through the growth cycle of the trees. In fact, Guest Forestry recently passed a significant milestone. Burt Guest founded the business in 2001 and planted 1,300 acres by himself that year. Pine

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trees are cultivated for about 20 years so that inaugural generation of Guest Forestry saplings was just harvested. "The very first trees he planted, they just cut them this year," Welch said.

For the past several years, Guest Forestry has relied on GPS units in the skidders to provide data on what areas were sprayed. It was up to Welch to download these track lines from the USB drives that the operators had dropped off at the office and then try and match that data with the paper maps provided by clients. She would also have to reconcile the ground covered by the skidders with the amount of herbicide that was mixed and dispensed by the water truck. "It was just a lot of steps," said Welch.

Although onerous, it was an essential process. The maps that Welch produces from these data streams are considered legal documents and are referenced both when dealing with clients as well as with owners of adjacent properties in the event any issues with the herbicide arise. "We need to be able to produce those maps to prove where our skidders have been and what areas were sprayed," she said.

Welch was at the Florida Forestry Association's annual trade show in August of 2018 with Mikki Guest, the company's office manager, when they met Alexander Ryerson, the Forest Information Specialist with Lim Geomatics, and learned about Op Tracker for the first time. Guest Forestry put Op Tracker into each of the five skidders and sprayed 37,000 acres of pine forest in 2019 using the new smart tracking system.

Analysis and results:
Welch described how Op Tracker has delivered dramatic results both for her work as a GIS Coordinator, as well as for the operators in the field. "From our crews' point of view and from the office's point of view, it's been a tremendous benefit to Guest Forestry," she said.

Applying the right amount of herbicide in the right area is a challenging task. "It's an art being out there and not over-spraying. You have to know exactly where you're at and what you've already sprayed," said Welch. Before Op Tracker, the skidder operators were relying on paper maps to navigate the forest and recently harvested sites.

Op Tracker runs on a tablet mounted right inside the cab. The heads-up display provides a detailed digital map that includes the real-time position of the skidder, virtual block boundary alarms, and other useful tools for working in the field. The operators can sync their tracks to the cloud, for analysis in the web application, whenever they're within cell or internet service. Op Tracker has also improved the coordination between skidders because once they sync their tracks, they have a clear picture of what has been sprayed by the rest of the crew.

The ability to sync the track lines from the skidders directly to the cloud sidestepped the old and cumbersome file transfer system, but it also solved another issue involving gaps in the data provided by the GPS units. "When we get over into Louisiana or into areas that don't have a lot

of service, even just cellphone service, our GPS would lose service from that satellite," Welch said.

Op Tracker works offline by storing the tracking data in the mobile application until the operator returns anywhere within cell and internet service. "Our guys can be at the hotel at night and they hit a single button and the next morning I come in and I log in and there is my shape file and I download it and it tell me all kinds of information," Welch said.

In addition to generating maps for clients, Welch also reconciles the data of how much herbicide was mixed in the water truck and then dispensed to the skidders. Op Tracker solved the issue of data gaps caused by weak satellite signals, which has also meant that the track lines now match up better with the volume of herbicide sprayed. The crews also know that Welch has much faster access to the track lines with Op Tracker so instead of dropping off the spray sheets to the office, they snap a photo of the sheet and email it so she can get to work right away. "It would take me all day to do that stack full of sheets, whereas now it's a quick two hours and I have them all invoiced and ready to go to the client," said Welch.

<u>Conclusion:</u>

Summary of business benefits realized by Guest Forestry with Op Tracker:

- Improved accuracy and quality of documentation provided to clients and kept for Guest Forestry legal records
- Improved speed and efficiency of skidder operators navigating the forest
- Improved coordination between skidders and a reduction of overspray
- Reduction of instances of herbicide application beyond the site borders
- Offline capability of Op Tracker has improved accuracy of maps in areas with unreliable satellite service
- 75 per cent gain in administrative efficiency for producing maps and processing spray sheets based on data collected and synced with Op Tracker

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