Mill operators can manage their assets more efficiently and save costs by harnessing geospatial data analytics to optimize production activities.

Forest industries have experienced unprecedented change in recent decades. Globalization, economic volatility, the growing importance of sustainable practices and rapid technological advancement mean that information is key to maintaining a competitive edge.

Mill operations are no exception. Scheduling, coordination and efficient transportation are crucial. Knowing, for example, how long and how costly haulage from the forest to the mill or from the mill to the secondary processing facility is essential, given haulage accounts for up to 50% of the ‘cut and haul’ costs. Reducing haulage costs is a priority for operators keen to optimise logistics and thereby maximise profit margins.

Another key factor in competitiveness is ensuring mills process the right mix of species and log sizes. For example, some species have a higher moisture content and so require longer drying times in energy-hungry processors. Mill operators need to know the expected impact of processing the logs they collect on their operations and what profit to expect from each log of a given species, dimensions and quality. Without this knowledge, logs are often processed at severe losses. Therefore, understanding the profit potential of a mill’s varied supply is crucial to optimizing their production schedule, and more generally, mill survival.

Digital and print maps already provide a picture of available logging roads, and software exists to automatically plot shortest routes. But these methods only give a minimum ‘stump to mill’ distance, incapable of accounting for delays on low speed roads, start and stop traffic and other factors that can affect total trip time, and therefore haulage cost. Moreover, these existing solutions are only available in some locations, and miss detail of the forest network and other information, such as log sizes and species, that operators require to accurately delineate the mills supply area in order to service the processing facility cost effectively. This is where the analysis of Earth Observation data and imagery provides a competitive advantage.
Satellite imagery combined with existing information on forest roads can be used rapidly to delineate each mill’s supply area for resource planning. Mill owners can define an upper limit on haulage time and add other preferences, such as what types of species they intend to process. After estimating truck speeds by road type and typical truck weights, analytics can be used to define a resource area that meets selected criteria. This is particularly useful for owners of multiple mills within a region, who can segment the forest according to the closest mill, preventing overestimations of resources and duplicated operational activities at each mill. Satellite imagery and road network data compiled from public and commercial sources can also be put to work to calculate preferred routes to and from the mill, and definitive haulage time estimates. Ultimately, these optimal routes can be exported to GPS mobile devices or printed on demand for drivers.

With such a wealth of data generated by satellite imagery, analytics can also assist with making supply scheduling more efficient. Traditionally, calculating the stand haulage cost in a given forest has been a resource intensive task, assisted only by basic Excel programs and requiring the estimation of multiple parameters. Satellite analytics can allow mill operators to automatically calculate haulage and harvesting costs per stand as well as the timber volume by species – identified via satellite imagery – which yields a given stand’s value, providing greater haulage cost accuracy, and saving staff time in logistics and optimal operating schedule planning.

When combined with the ability to pre-calculate trucking time on optimal routes for all mills against all stands, satellite analytics offers operators an instant stand haulage cost review in order to make informed harvesting and logistics decisions. The data can even be leveraged to inform decisions on truck purchases or plan the location of new logging roads or mills.
Satellite data technology delivers huge quantities of geospatial information for forest intelligence. Consequently, there are many additional ways Earth observation data can benefit the forest products sector. One of the most useful is the ability to gather fresh data on a weekly or even daily basis. From this, mill operators have near real time insights on inventory, health and disturbance events – key data to assess potential profitability for a broad range of operating conditions. As an example, via satellite insights fire and storm damage or even trees blocking logging routes can be identified, allowing mill operators to react swiftly and minimise disruption to their operations. Tree health can also be assessed through satellite analytics to alert operators to disease or insect infestation early, giving them time to plan salvage operations or move harvesting efforts, as well as providing support for decision making when planning for operational spending such as road building.

Integrating satellite-derived mill logistics insights into existing GIS forest and land management business solutions would be the perfect match. The important additional insights geospatial analytics provides, complement and enhance existing software tools which are already being used to manage mill assets by bringing new levels of understanding from planning, planting and growing, to harvesting, transportation and processing.

With profit margins likely to be squeezed by market and environmental demands, accurate forest intelligence will become an even more prized commodity by mill operators in future. Tools such as geospatial analytics and GIS forest management solutions show that the brightest future for the forestry sector is a technological one.

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For more information on our unique satellite-derived data analytics products, please contact us on +44 (0)1865 817 500 or visit www.rezatec.com/mill