



## CASE STUDY

### **G-P uses modeling tool to optimize fiber sourcing and procurement**

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Georgia-Pacific Corp. produces and purchases vast amounts of fiber each year. The company consumes over 60 million of tons of fiber per year in six geographic regions that cover virtually all of the wood producing areas within the nation.



G-P was looking for an automated system to help optimize wood procurement by providing information on what wood to buy and who to buy it from, while providing detailed information about chip mills and transportation issues

The system would also have to react to changes in the supply environment. Mike McCollum, president of wood and fiber procurement for G-P, headed the team that selected the new system.

G-P selected Optware Solutions LLC, Beaverton, Oregon, [www.optware.com](http://www.optware.com) to provide a state-of-the-art optimization modeling tool to facilitate procurement planning and fiber allocation at G-P's paper mills and conversion facilities. The Optware FSA (fiber sourcing and allocation) business modeling software is specifically designed for this task.

The scope of the system includes pulp wood, chip purchase options, pulp purchase options, recycled fiber options, transportation costs, chipmill conversion processes, by-product yields, chip loading and transportation constraints, inventory management, energy production from wood waste, and pulping processes. The system is designed to maximize financial return subject to the business constraints, process flows, revenues and costs. The central technology that drives the system is a powerful linear-programming-based optimizer.

People familiar with the industry are aware that “all chips are not created equal”. Chip geometry and fraction (size distribution) varies significantly by species and chipper. Moisture content can also vary substantially between chip sources depending on how the fiber is treated after harvest as well as storage conditions, and handling practices.

Pulping processes are different at each mill. G-P produces a number of paper products ranging from tissue to containerboard. Pulping processes can vary substantially even within a product line in terms of the chemicals and machinery used. Some pulping processes can more efficiently handle smaller chip fractions including pins and fines.

In Mississippi, Hugh Lewing manages procurement for a region that includes the world’s largest tissue paper machine at Port Hudson as well as a large containerboard operation at Monticello. Fiber is obtained from hundreds of suppliers. Lewing’s task can be fairly simply defined; “Purchase an adequate volume of fiber at the lowest cost”. However, this task is much easier to describe than it is to successfully implement. There are literally thousands of variables in this decision environment.

Until the installation of the Optware System (internally referred to as the basin management system) it was very difficult to manage the “fine points” of fiber sourcing such as chip quality and moisture content not to mention interactions with energy production and pulping. A fractional percentage improvement in yield translates into millions of dollars in cost savings. The Optware System allows G-P to coordinate the activities of multiple procurement personnel. “I can’t imagine going back to the spreadsheet approach”, says Lewing.

To some, the practice of optimization modeling is somewhat unfamiliar. Many people have a general understanding of the concept but underestimate the value of such a tool. G-P’s Mike McCollum has worked with optimization for many years. Following is a Q&A session with Mike that sheds light on optimization modeling and how it can be successfully deployed to facilitate the business planning process.

**Q: Mike, How long have you worked with Optimization Modeling?**

A: I have worked with linear programming since graduate school at Texas A&M back in the late 70’s.

**Q: What changes with this technology have you seen over the years?**

A: The personal computer has greatly increased accessibility to modeling technology. The size and sophistication of models have also increased over time. Systems are now a lot easier to use and the data management and integration capabilities are excellent. Systems are also less expensive to develop and maintain than they were a few years ago.

**Q: How long did it take you to implement the Optware System last year?**

A: It took about six months to incorporate all of the features that we desired and to generate the necessary data. We were aided by the fact that we were replacing an aging software system that performed some similar functions.

**Q: How often do you run the system and for what purpose?**

A: As a rule we run the system in each of our regions to facilitate annual budgeting process and to develop quarterly procurement plans. The system tells us what wood to buy and from whom. It also gives us information about chipmills and transportation issues. We also run the system during upset conditions to react to changes in the supply environment. This is one of the best applications of the system. It brings a sense of calm to the procurement foresters when they can systematically look at all of the options during periods of stress.

**Q: G-P recently acquired the assets of the Fort James Corporation. How has the Optware System helped facilitate the integration of these operations?**

A: It is always a challenge to integrate that many additional mills into the procurement environment. We literally increased our fiber needs by some 50% in some basins in just a few months. Optimization modeling allows the users to ask many “what if?” questions. It is a great tool for helping you rethink the business enterprise.

**Q: What are some of the intangible benefits that optimization provides?**

A: Optimization has allowed us to challenge traditional boundaries. Often in a large company there are policies and politics that must be addressed. It is much easier to challenge traditions with the objective decision-making framework that Optware provides. We can quickly determine “what’s best” and the cost of policies that limit our operations.

**Q: Could you share a few of your management philosophies that compliment optimization technology?**

A: The Optware System is focused on value rather than simply cost. Too often we use measures to monitor business performance that are somewhat out of context. Profitability must always be our focus! Also, the real world complexities in major operating basins is just too much to manage with intuition and experience alone.

**Q: Mike, you have worked with optimization directly and indirectly for many years. From your perspective what are some of the keys to making the technology work in a large company?**

A: Optimization can be a great catalyst for team building and rallying around a common objective. People are inspired when they understand how their individual role contributes to the overall result. It is also important to establish accountability for all information used in the system. The way to insure use of optimization models is to make it a part of your everyday business process.

**Q: How much value will you capture on an annual basis by means of the Optware System?**

A: That is difficult to say because to some degree optimization is a way of thinking. We have used optimization technology for a number of years. I would expect that our profit improvement opportunity is less than some businesses because of this fact. However, a lot of the value is derived from the inherent complexity of the business system. Business environments are dynamic and the “best” solution changes over time. My experience has been that you can save 1.5-2% of total fiber cost in transportation cost savings alone given a basin with three or more mills.

**Q: What would you say to someone who has an interest in optimization technology?**

A: It is important technology for this industry. It offers a huge return on a relatively modest investment. I can't imagine why anyone would not explore the opportunity to utilize this tool.

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