

# Finding the Yellow Brick Road: Part 5, Through the Crystal Ball

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Sometimes, there is more truth in fiction than in publicly available accounts. This story by Warren B. Powell, a leading researcher of real-time routing and scheduling models and frequent consultant to the motor carrier industry, and Donald E. Mayoras, a senior transportation executive and president of a trucking company, provides a view into the discussions many carriers undertake prior to adopting an optimization model. The account is too long to appear as a single article and instead is being published in serial form. This is the fifth installment.

**T**he cast: Dan Manning, President; Tom Gorman, Chief financial officer; and Matt Peterson, Vice-president of operations.

*Following a discussion of optimization models by Professor Walter McCormick, the management team spent a long time discussing the issues surrounding not only the use of optimization but the challenges facing the company. The challenge was managing the balancing act of getting the right traffic in the right lanes, maintaining service, keeping the drivers busy, and making money, all at the same time. The biggest problem seemed to be coordinating the different parts of the network. But the more they talked about it, the more complicated it seemed to get. Without question, one of their challenges was coordinating the entire com-*

*pany. When they were small, one person basically had a picture of the entire system in his head. Now, it was just too complicated, and it was hard for a bunch of different people to create the same level of coordination. It was time to make a decision regarding the specific course of action to take. Should they invest in satellite communication? Should Dan continue with his TQM initiatives? Should they buy an optimization model, and if so, what kind, and from whom? Dan has reconvened at a local watering hole to decide how to move forward.*

The Allentown Bar was a popular meeting place for local businesspeople. Converted 20 years earlier from a home, it had seating areas spread throughout the first floor, with the spacious former living room

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serving as the main bar and sitting area. Dan, Tom, and Matt had agreed to meet there to see if they could come to a decision. The three men ordered drinks and moved off to one of the quieter corners of the house. For a few minutes, they sat quietly, sipping their drinks and lost in the events of the day. Dan put his drink down and pulled out a pad on which he had been jotting notes during the afternoon.

"Here's the way I see the issues we have raised. The problem we face is declining profitability, reduced customer service, and increased driver turnover. We're doing OK now, but if we sit on our hands, we could be out of a company inside of five years. The first question is, Why is this happening? The problem seems to boil down to one of control. We've grown a lot, which makes our operation more complicated. On top of this, the market has become more demanding, and the labor environment has changed. We are growth oriented, but we're having a harder time managing what we have. And this is happening despite the fact that we have been modernizing the company over the last five years. We've centralized our dispatch, created a customer service group to work with the shippers, and organized our dispatchers to work closely with the drivers. We've got regional driver domiciles in the field and local sales teams. We've instituted the blue ribbon service program to handle special requests from shippers, and we've set a target of getting drivers home every two weeks, whether they like it or not."

Tom and Matt grinned briefly at the reference to the vagaries of keeping drivers happy.

"Despite all this, we are still backsliding.

What is going wrong?" Dan paused and looked at his two friends.

"Sales," Matt offered. "We may not be pricing the freight right, and we may be chasing volume and revenue instead of profits. How much we earn on an account depends on our lane balance, and this is getting more complicated as we get bigger."

Dan made a note. "Good point. What about capacity management?"

"What do you mean?" Tom asked.

"Handling balance, moving empties, repositioning capacity," Dan explained. "The problem may not be sales; maybe we simply have to be better at working the freight we have. Sales is getting market rates—we are working with the same freight as the other carriers. We need to learn how to work as a network and coordinate our flows. We can't always insist that the market meet our needs, we have to learn how to handle what the market wants efficiently."

Tom nodded, but Matt felt the emphasis was wrong. "True, but our toughest problem is on a much smaller scale. We have to assign drivers to loads, and we've got to balance customer service with keeping the driver happy and somehow pay attention to equipment productivity and empty miles."

"We could think of it as balancing service to the customer, service to the driver, and service to the shareholder," suggested Tom.

"That's right," Matt continued. "We've got dispatchers and other systems to work for the driver. We've got customer service reps and salespeople to keep the shippers happy. But we don't really have someone

who's primary responsibility is maximizing company profits by minimizing empties and improving equipment productivity. The sales people might also use some help in pricing."

"But we don't seem to be doing that good a job with the drivers and the shippers," interjected Tom. "Turnover is up, and we have lost some accounts."

"We may not be doing that badly, considering the size of the company, the level of competition, and the nature of the marketplace," Dan noted. "We've lost some accounts because of the way shippers are consolidating their use of carriers. Sometimes we just weren't the major carrier to begin with, and we got caught up in a changing logistics strategy. Our real problem is that we have to juggle all this and still make money."

Matt started thinking out loud. "Aside from sales, which determines price, volume and direction, the company is run primarily by customer service, since they book the loads and assign them to the drivers, and also by dispatch, although they don't generally make the hard decisions. Although the dispatchers need to keep the drivers happy, a lot of the load assignment decisions are done by customer service, and they don't know the drivers as well. They mostly watch service and empty miles."

Dan nodded. He had been the one to institute the daily measurement of pickup and delivery performance, as well as percent empty miles. "It seems like we are measuring the right statistics. We set standards and try to take steps when our on-time performance or empty miles gets outside of what we allow."

"Maybe we need to change the stand-

ards," suggested Tom. "What was OK three years ago needs to be better. We think we're doing OK, but the market is doing better, so we are really going backwards."

"That's true," agreed Matt, "but you can't just make them happen. If you want better performance, you have to do something different. It's OK to have higher expectations of your people, but you have to give them the tools."

"So let's think of what we could do," said Dan, turning back to his notes. "We've talked about several options. First, we have satellite communications. From what I see, the benefits are improved driver productivity, since the driver doesn't have to get off the road to make a call. We probably get some reduced out-of-route miles from better driver monitoring. From everything we've seen, these systems pay for themselves."

"Also, it helps with tracking and tracing, which we can use in sales," added Matt. "There might be some extra revenue."

"Communications cost a lot of money," reminded Tom. "I have heard people claim savings, but the quality of the analysis is really weak. I personally think that people just like the idea behind the technology. We also have to realize that satellites are an expensive investment, and we have limited resources. The banks won't lend us enough to outfit the entire fleet all at once, and it will limit our ability to invest in equipment, computers, and marketing."

Dan nodded and continued. "The second option we've heard is optimization models. Not that many companies are using them, but it looks as if they might help. I called one of the carriers that Walter mentioned, and they said they got about a 10 percent

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reduction in empty miles. But to get them to work, we will have to change how we work with our systems—driver ETA's have to be good, the service requirements have to be right, and we can't keep writing little notes or shouting instructions to the person at the next desk."

Matt seemed doubtful. "I'm not sure we're ready for all this."

Tom smiled. "We better be ready, because the market is expecting it. Even if optimization doesn't work, if it enforces a discipline on how we handle our dispatch process, it will be worth it. We will not be able to grow, and we might not even be able to hold on to what we have, if we keep doing things sloppy like in the old days. And as Michelle and Larry pointed out, we have got to give the customer service reps the tools to do their job."

"My main concern with optimization," mused Dan, "is that I am trying to figure out how we handle accountability. If the optimization model is assigning drivers to loads, what do the customer service reps do? Do we blame the model if we screw up? What happens to quality control?"

"I don't think you could implement it that way," observed Matt. "Remember Walter's explanation of the output of the model? It gives these driver values that tell you the best load to give a driver, and the second best, and so on. You can assign a guy to the third best load, and we can even find out what driver the model has already planned for that load. The customer service rep or the dispatcher or the planner would still have to decide, if we go to that system. The optimization model just helps you figure out how your decision affects the other drivers. It doesn't run the company; it's just

another report."

"You might say that optimization is giving you a system perspective, instead of system control," added Tom.

Dan clicked his fingers and pointed at Tom. "That's right! And since the optimization model can handle some of the driver issues, if a customer service rep wants to assign a different driver, the system can show that the decision is affecting a driver or another load. But it is still the rep's decision!" Dan liked this, because it fit within his TQM perspective.

It was getting late, and everyone had to get home for dinner. Dan paid the bill, and they walked out to the parking lot. Matt drove off, and Dan and Tom stood for a moment by Dan's car.

"How do you justify this stuff?" he asked Tom.

"What do you mean?"

"Well, we can buy into satellites, or optimization, or both, or neither. You want to do the one with the highest payoff?"

Tom leaned back against the car. "Well, you start with the benefits. Satellite tracking and mobile communication have some pretty well-defined paybacks—better truck utilization, reduced out-of-route miles, plus some intangibles like load tracing and better communication with drivers. The vendors say we can cut costs one or two cents a mile. But I have never seen that documented, and the cash outlay is going to restrict us in other areas. We don't have much cash, and the banks aren't lending a lot of money right now, at least not to trucking companies. Optimization, on the other hand, should allow you to cut empty miles, plus there are a lot of intangibles, such as better customer service and better

driver management. Like most decisions, there are hard dollars and soft dollars."

"That assumes that we can get those benefits," countered Dan. "Optimization seems like a lot of soft dollars. What if our systems are not up to it? We're not going to get anything if the data isn't right. And I'm not sure the customer service reps are going to understand how the model works. I am also worried about loss of control and accountability. You have to admit, we are not going to have anyone at the company who even understands the model!"

"There are risks in everything," Tom countered. "But think about something else. Right now, you don't have any control over how loads are booked or drivers are assigned. Let's say that tomorrow, because of a driver shortage, you really want to make driver management and retention a priority. Customer service isn't as important, because if you can't keep your drivers, you're going to be turning down the loads anyway. How would you make that change?"

Dan shrugged.

Tom continued. "People get used to making certain trade-offs, and it's hard to change that. They are used to being measured in a particular way, and over time, they learn how to operate so that they look good. Situations repeat themselves, and people learn to handle these situations the same way. When you change priorities, it's hard to change these patterns of behavior. With an optimization model, it's easy—you just turn a knob. There's no memory. Freight is down? Focus on service. Trouble finding drivers? Keep them happy. You're back in control."

Dan nodded, thanked Tom, and stepped

into his car. As he drove off, Tom's words rang in his ears. While he didn't think you could change a company by just turning a knob, it was clear that the process of adopting an optimization model could be as valuable, if not more so, than the optimization model itself. Satellites sounded attractive, but he wasn't sure he was going to get the benefits from the investment without changing his own business practices. Optimization seemed as if it would challenge his people and force them to focus more on what they did and how they did it.

"We would have to start quantifying what we do . . ." he mused out loud, realizing that in the past, planners made trade-offs between cost and service with only vague input. "It's like changing operations from an art into a science!" This thought appealed to him, and he turned up the radio and headed home.

The next morning, Dan called Tom, Matt, and Bill into his office and repeated his thoughts from the previous evening.

"I think we have heard about two important technologies that clearly complement each other. Satellites offer some real cost benefits from better driver utilization, but they are expensive. I am not sure that we have established the quality practices inside the company to really get a return from the investment. Optimization will challenge us to reexamine what we do and modernize our work habits. I think this makes sense as a first step. Besides . . ." he looked around the group, "it might actually work!"

Everyone nodded, without response. Hearing no objections, he turned to Bill. "Bill, this falls in your basket now. Since this thing has to go on the computer, I want you to take the lead and get the proj-

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ect rolling. When you get it up and running, Matt, I want you to take over the process of making it work in operations. Tom, I want you to work with both these guys to monitor benefits, and if there are any hard dollar savings, I want to know about it."

"The first step is picking a software vendor," offered Bill.

"That's right. Start collecting information. Let's see if we can make a decision within the month."

*Over the next two weeks, Bill collected brochures from five separate vendors, three offering "off the shelf" products, and two others suggesting custom systems. He invited two companies to make presentations. At the end of the month, he invited Tom, Matt, Bill, and Ken Richards from sales to meet again to discuss the pros and cons of the different offerings. He also invited Walter McCormick back to comment on the proceedings.*

Bill starting the meeting, putting up a single slide comparing the services of the five companies. Beside the name of each company, he put the price of the product, the number of installations, and columns on his assessment of product quality, flexibility, and ease of use. As the others poured over his results, Bill began his summary.

"I identified five groups who can do this work. As you can see, only two of these really have a product that is selling, a third has a product that isn't selling, and two would like to do custom systems for us. Of course, those are really expensive. At the moment, it seems that Optimization Technologies has the best system. The company had a really slick presentation, and they certainly seem to know what

they are talking about. At the same time, they also charge a lot more than the other vendors."

Dan looked over the results. "Nice work Bill. You have covered all the bases. From your slide, it seems that Optimization Technologies is the one to go with, although I have to admit I didn't expect that kind of price tag. How do they get that much money for a software package?"

"From what I can tell, there isn't much competition," Bill observed. "If we wait a couple of years, odds are that the prices will come down a lot. But there is no guarantee, and I don't think we can wait."

Matt squirmed uncomfortably. "I remember their presentation. They have a nice package, but I don't understand how it works. They seem to want us to buy the system because other companies are using it, but I don't know why those companies bought it. When I ask how the system works, they just give vague responses. They don't seem to want us to know how it works. Trade secrets and all that. It doesn't seem that their people understand how it works!"

Tom jumped in, a little impatiently. "Optimization Technologies has implemented their system at 10 other carriers. Why don't you think it will work for us?" Tom knew that Matt was going to resist this project, because it threatened his authority. Also, it might expose the weaknesses in his operations.

"How can we manage our company with a black box?" Matt threw back defensively. "I called a friend of mine at one of the firms they listed as references, and he had no clue how the system did what it did. But upper management supported the proj-

ect, and the dispatchers were basically told to use it."

"But that company also cut empty miles by 10 percent," interjected Tom. "Perhaps that is what it took to get the benefits."

"Look," explained Matt, "any idiot can cut empty miles. I can guarantee you that all I have to do is provide a load sort on distance, hang over their heads with a baseball bat, and my planners will cut empties by 10 percent too. There is more to trucking than empty miles!"

"I wonder if any of these companies have ever turned off an optimization package to see if the empties go back up," offered Dan, as a way of defusing a difficult conversation.

"I don't know," responded Bill. "Part of the problem is that after a company spends this kind of money they want to justify the investment. It's hard to find company managers who will go on record saying they spent a half million dollars on the wrong system."

Matt took another tack. "I think we have to worry about how the system will keep up with our changing business needs. What if we put in that new relay network we've been planning. And we want to start putting some of our loads up on rail, which means we have to plan those short-haul moves. And trailer pool management . . . The dispatch models don't seem to be able to handle some of the shuttle operations that we do every day. Do we have to call a vendor every time we make an operational change?"

Ken Richards had been sitting quietly at the end of the table. "I wonder how these vendors handle confidentiality. If they program our operations into their system, does

every other carrier get access to this information? I never thought of that."

Dan was a bit frustrated, hoping to come to a resolution. Walter had been sitting in a chair against the wall, taking notes. Dan turned to Walter. "Walt, what do you think we should do?"

"One idea is to call on a small group I know of," Walter suggested. "They have been developing some new ideas, and they are willing to work closely with you. I think you'll find they are a lot more flexible than the other vendors, and you won't face the risk of these half million dollar price tags. Also, I think the network algorithms the older systems use are dated."

"But if they don't have a proven technology, we might be just throwing money out the door!" objected Dan.

"I don't think there is much risk of that. Their system is in beta test now, and it seems to be working fine. More important, their implementation approach is brand new. I think you should give them a try. The lead there is named Rich Merrick. I've met him. His style is a lot more participative. I don't think these black box models are going to work in the long run. They can't possibly keep up with your business, and if you think their up-front fees are high, wait until you see what they charge once they know they own you. The biggest risk you face is getting stuck with an old technology that won't grow with your business."

Dan thought about it for a while, as the others watched patiently. "And what if it doesn't work?"

"Then you bring in one of the other vendors," responded Walter. "You don't run much of a risk. At the same time, you

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won't have lost much time, since most of the work is in the data preparation and changes in operations, which you have to do anyway."

A few nodded, and the rest stared at Dan. Looking around the room, he declared: "Let's do it!"  
(To be continued.)