



How orange juice routing and rush hour at Grand Central Station can transform manufacturing.

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Let's start in the early 1900s.

Prior to that time, science was a very deterministic field. Simply put, every event had a cause which invariably led to one possible outcome. Using available information, you could theoretically determine precisely what that outcome would be.

Then along came a man named Werner Heisenberg and his Heisenberg Uncertainty Principle. He stated that there is actually a lot of inherent probability in events, and you could never have all the information necessary to predict an outcome with 100% certainty. You could only come up with various probable outcomes.

All of the different theories of science that have unfolded since are based on the uncertainty principle. Determinism faded into the past.

That's where the orange juice comes in.

Probabilism Meets Capitalism

Some years ago, I met a mathematician named Dr. Ken Henderson. Dr. Henderson had a very strong background in probabilistic work – namely, the Nelder-Mead or simplex method, a nonlinear optimization algorithm. In the 1970s, Dr. Henderson developed formulas for the state of Florida which allowed producers to decide where orange juice should be delivered for sale. The producers knew how many oranges there were and how much juice they were going to get. Henderson's algorithms showed how much they should charge for it and where it should be shipped to derive maximum income.

It was an excellent solution to a very complex topological problem, using a high degree of probabilism. When we met, I had already begun grappling with ways to improve the manufacturing process at my company, Sun Hydraulics Corporation, and we began working together.

Which takes us to Grand Central Station.

Rush Hour and Distributed Intelligence

One day, I was on a balcony overlooking the main hall of Grand Central Station in New York City. It was five o'clock on a Friday afternoon. There was a sea of people on the floor going every which way. Some were going for coffee before boarding their train, others were getting a newspaper and then a ticket before going to their track, and so on. Their various agendas obviously had a variety of individual goals and sub-goals.

Taken all together, it presented an extremely difficult routing problem. If you tried to write a computer program that would get everyone where they needed to go, it would be gigantic. Even then, it wouldn't be able to keep up with real-time changes as they happened.

Yet, in reality, each of those people was succeeding in their agenda. The reason? Each person was intelligent. They knew precisely what they needed to do, could respond to changing conditions, and therefore, were able to achieve their goals.

That built-in intelligence makes a master program unnecessary. Each person carries their own small "program" that lets them get their particular tasks done. And that brings us directly back to manufacturing.

The Birth of the Smart Job™

Dr. Henderson and I combined the tenets of probabilism with the idea of distributed intelligence I had witnessed at Grand Central to develop a new kind of software for the factory floor.

While most ERP, MRP and other systems clung to an unwieldy, deterministic and centralized approach to the factory, we went in the opposite direction. Our software broke down customer orders into a number of Smart Jobs™, powered by software objects – small programs with specific tasks. Smart Jobs find and book the resources necessary to complete

themselves, including materials, equipment, tools and labor. They understand the relationship between resources and order routing. They know when each operation has to be completed to stay on schedule. And they're aware of their priority relative to other jobs.

In short, Smart Jobs supervise and route themselves. And by doing so, they bring business process automation to the factory floor.

When we deployed our software, the results were very encouraging. Both quality and worker productivity went up. Lead times went down. We became more reliable, experienced double-digit growth, and were even able to expand more intelligently.

And that was just the beginning.

Real-Time and Future Event Visibility

Ten years later, that software has evolved into today's nMetric® solution. nMetric not only delivers factory floor business process automation – which is a breakthrough in itself – it also gives you unprecedented visibility to the plant floor. All of those Smart Jobs constantly share and collect real-time information, which the nMetric system compiles into something manufacturers have never had before: an accurate, multi-dimensional representation of factory operations in real time.

With nMetric, you can graphically see all workplaces and timeframes and jobs, and what labor, material and tool resources are actually available. You know precisely what you can and can't do. You can also see ahead with unprecedented precision, able to foresee the effects of practically anything that is happening or could happen, so you can prepare for nearly any situation.

If all of this is sounding too good to be true, this next section may be a bit much for you. But here goes.

An Honest Proposition

There is no other technology I know that can do what nMetric can do. Instead of forcing you to conform to a rigid, preconceived series of steps like centralized solutions, nMetric knows how your manufacturing operation actually works and optimizes its performance. Your factory will be transformed into the highly efficient, modifiable, reliable, demand-driven operation you want and need it to be. You'll respond to customers in record time, keep your promises to deliver, and avoid late penalties. And with nMetric's Web architecture, you'll be able to put your entire supply chain on the same, real-time page, to greatly reduce costly supply errors.

Best of all, nMetric will help you improve your cash flow. And I'm not talking about inventory that's equated to cash according to accounting rules. I mean cold, hard cash.

We've spent over ten years developing and improving our software. I didn't want to publicize it until I knew it could deliver what I'm saying it can deliver. As a veteran manufacturer, I put a lot of stock in being able to do what I say I can do.

But now, I think it's ready. If you're ready for it, call us at 714.424.4400 and we can talk. Maybe over a glass of orange juice.



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