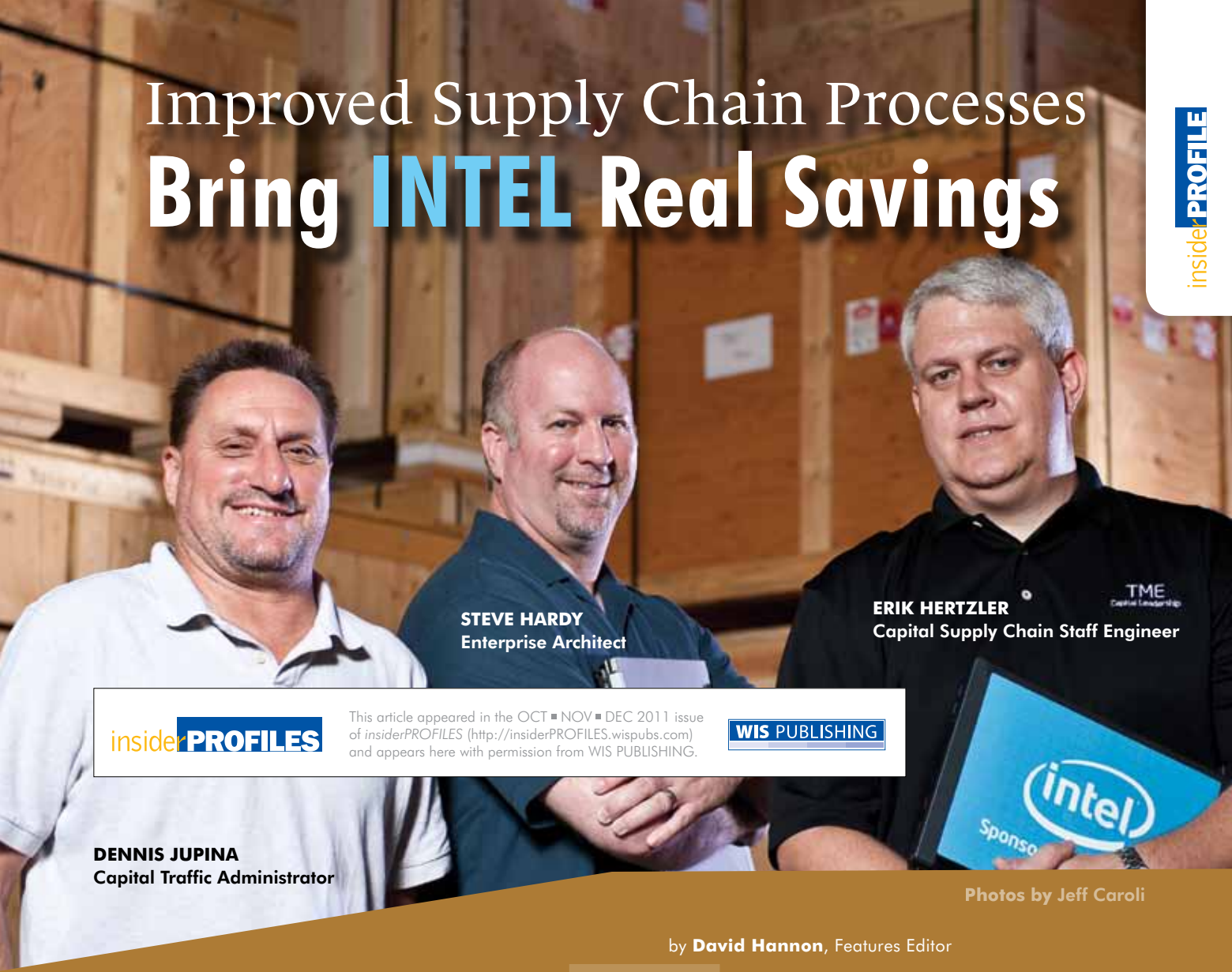
Improved Supply Chain Processes Bring INTEL Real Savings



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Use of Supply Chain Event Management Application Leads to More Supplier Discounts

by **David Hannon**, Features Editor

To produce its cutting-edge semiconductors and microprocessors, high-tech giant Intel needs the very latest manufacturing equipment — and those tools don't come cheap. In 2011 alone, the company plans to spend $10.5 billion in capital assets while it expands its 22 nanometer chipmaking capacity.[1] Intel's average annual capital expenditure is higher than the gross domestic product of several nations, in large part because businesses in the high-tech market are required to replace their chipmaking equipment more often than most manufacturers.

"In the semiconductor industry, Moore's Law essentially says that transistor dimensions scale to improve performance, reduce power, and reduce cost per transistor every 24 months," says Erik Hertzler, Capital Supply Chain Staff Engineer at Intel. Hertzler puts this principle into perspective by offering an analogy to the automotive industry. "That's like saying if your car goes 100 miles an hour today, in four years from now, you should be able to do 400," he says. "Some of the equipment that Intel buys costs several millions of dollars, and could be antiquated in less than four years. This is what keeps the capital equipment supply chain always moving."

So naturally, Intel wants to get its capital equipment up and running in its factories as soon as possible, as well as to take advantage of any and all supplier discounts that are offered.

"Many of our suppliers are willing to offer us standard 1% to 2% discount terms if we pay them within 10-15 days of the tool shipping from their dock,"[2] Hertzler says. "For an average business transaction, this discount might be a few hundred dollars — but on a tool that costs $3.5 million, that discount could mean up to $70,000 in savings per transaction."[3]

Until recently, Intel's capital supplier payment processes were hindering the business's ability to procure and pay for equipment quickly and to take advantage of the prompt payment discounts available — the business was only capturing about 50% of the available discounts.

"Intel has a goal of capturing at least 95% of prompt payment discounts that are offered," says Steve Hardy, Enterprise Architect at Intel.

"Unfortunately, the existing business process specified that Intel would not pay for the equipment until the shipment was physically received by our dock personnel," he adds.

Compounding the business process problems of quick turn payment is the general trend to move capital equipment shipping from expensive air freight to less expensive ocean shipping. The freight cost savings between air and ocean is in the tens of thousands of dollars because of the size and weight of the equipment. Yet ocean transportation adds 30 to 60 days between a supplier's dock and the Intel dock; effectively ruling out any prompt payment discounts.

Simply stated, the quandary for Intel was to either ship by air at significant expense and short durations to capture discounts, or ocean ship for cost savings and long duration while forgoing discounts. Both options yield offsetting results with negligible business value.

Fixing the Process First

Intel's supply chain team saw that paying for equipment sooner would solve both issues: it would qualify Intel for prompt payment discounts from many suppliers, while providing all suppliers with an incentive to ship equipment by ocean.

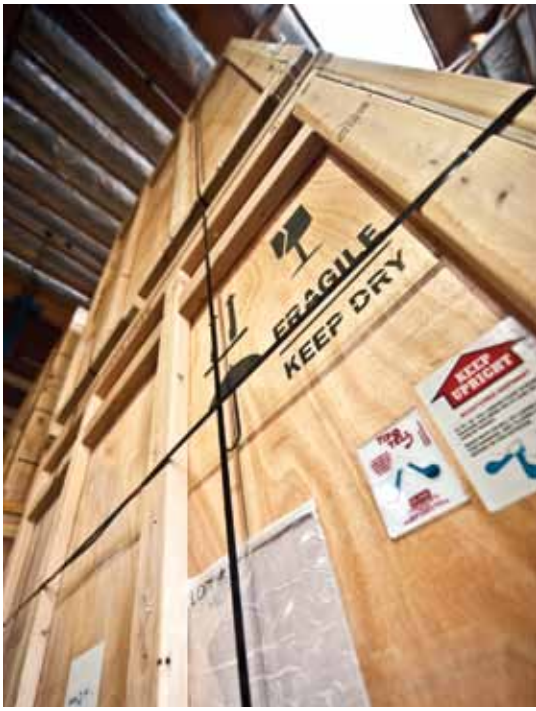
The next step was for the project team to design and implement an automated process that would ensure that suppliers were paid early enough to capture those discounts. After some investigation, the team concluded that coming up with a solution would not be easy.

Like most major manufacturers, Intel has contracts with preferred logistics providers for its capital equipment transportation. According to Hertzler, these trusted carriers are authorized to function as agents for Intel within the supply chain, so when they receive a capital tool shipment, it's as if Intel is taking possession of the equipment.

"It sounds simple enough to modify the process so we pay the supplier as soon as we receive an advance shipping notice from them," Hardy says. "The issue is that the process spans multiple systems and trading partners and involves transactions of large amounts of money. These deals are big — so from a risk and controls perspective, it's not good enough for the supplier to just tell us the equipment was shipped. We also need confirmation from our carriers that they've taken possession of it."

Clearly, the procurement and payment of capital equipment suppliers is more complex than most commercial transactions. Beyond the fact that the honor system is not a sound business policy, there are guidelines under the Sarbanes-Oxley Act that define transaction accounting. Specifically, a three-way match between the purchase order, receipt, and invoice is required for a transaction to be considered complete. Intel was already processing two of these steps electronically — invoicing and issuing purchase orders — within its ERP environment.

The remaining piece was to automate the "receipt" portion. Modifying the process so the receipt could occur when a carrier received the equipment — rather than when the shipment arrived at Intel's dock — would create the required three-way match and allow the business to issue the supplier payment sooner.



Making the Technology Work

With an improved process mapped out, the IT challenge was then figuring out how to confirm that three-way match electronically. Automating that process would require coordinating systems data from Intel, its suppliers, and even its carriers.

"One of our biggest challenges was how to match the purchase order with confirmation of the carrier's tender at the line-item level, given carriers have historically not dealt with this type of detail. In the past, Intel would send a forecast of the tools that we expected the carrier to tender and transport to Intel, along with the dates and the suppliers," Hertzler says. "The carriers would then send back a weekly communication with shipping details filled in, including the date when a tool was shipped."

This method of communication was not efficient enough to confirm the three-way match at an acceptable level of accounting compliance and automate the payment process. "We had a real-time business problem with a need to have real-time transaction processing and we needed a solution," says Hertzler.

Fortunately, Hardy had been exploring sense-and-respond capabilities within Intel for several years. "The key functionality is the ability to have a single point of reference for end-to-end visibility across systems, organizations, and companies," says Hardy. "It was a match made in IT heaven — the perfect system capability met the perfect high-value business case."

That capability was a supply chain event management application, which tracks and monitors milestones (events) within a business process, providing real-time visibility to process status as well as alerting capabilities to relevant stakeholders. For this scenario, the system takes shipment and invoicing data from the suppliers and transportation events from the carriers, and matches them up with the relevant purchase orders, providing a "one-stop shop" for the entire inbound business process and satisfying the three-way match requirement. To safeguard the process, the invoice management system is set up so a capital equipment supplier cannot submit an invoice to Intel before first submitting an industry standard advance shipping notice (ASN). The ASN must come first.

"If everything matches up between our invoice management system and the supply chain event management system, the payment process moves forward, with no human intervention required," says Hardy. "This system basically turned 'manage-by-exception' from a buzzword into a reality for this process." For example, if a supplier has committed to shipping a piece of equipment by a certain date, the system monitors that expected event and knows when it becomes overdue. It automatically sends an email to the supplier contact prompting an action. An Intel buyer is only notified if that event has not been completed by the next day.

Hardy adds, "Oftentimes, the exception is resolved without ever having to bother one of our buyers. These are busy people so the benefits are obvious. They can now focus on more value-added activities such as supplier relationships and negotiations."

Another benefit is what Hardy calls the "process performance analytics" that the supply chain event management application provides. "This capability enables us to know how the process was actually performed against how it should be performed. It gives us metrics based on true operational data, and it shows what the problem areas are and where we need to focus to improve."

Intel rolled out the new solution in two phases. In January, the core functionality was rolled out to a few hundred capital equipment suppliers to begin capturing prompt payment discounts as soon as possible. Then, about two months later, Intel went live with the solution's extended functionality, which included capabilities such as the sending of automated alerts. The business immediately put the application's flexibility to use when the devastating earthquake of March 2011 struck Japan, where Intel has a number of key suppliers that would undoubtedly be missing their ship dates. Rather than bother them with a flurry of automated messages, IT was able to quickly turn off those alerts.

"That reduced the burden on our suppliers who were clearly in a crisis mode dealing with something much bigger than shipping tools," says Hertzler.

Most impressive was the fact that, before the second phase even rolled out, the solution had paid for itself through prompt payment discounts from suppliers.

"Intel believes paying our suppliers sooner is a mutually beneficial activity because it encourages the supply chain to go faster."

— Erik Hertzler, Capital Supply Chain Staff Engineer, Intel

Be Alert to Alerts

One of the core functions of the supply chain event management application is its ability to provide alerts. While that automated notification is extremely useful, the frequency with which those alerts go out can affect the buy-in a solution gets from its potential users.

Hardy's benchmarking indicated that many organizations assume their processes are performed better than they actually are. For example, "Someone may think that a specific activity is done within plus or minus one day of when it's supposed to be, so he or she sets an alert based on that timing," he says. "Then, when the system is turned on, users get overwhelmed with alerts because the reality is that their performance is not nearly that good."

Hardy recommends that companies implement the supply chain event management application with alerts initially turned off and use reports to identify a realistic baseline before configuring the alerts. "If users' inboxes had been flooded the minute the system went live, we would have lost everyone's buy-in right there," Hertzler adds. "To focus on the biggest opportunities, the team spent quite a bit of time determining the acceptable tolerance window for when something would get flagged — and we targeted the alerts only to those empowered to act."

At a Glance

Intel

Headquarters: Santa Clara, California
Industry: Electronics
Revenue: $43.6 billion
Employees: 8,000+
Company details:

- Founded in 1968
- World's largest semiconductor manufacturer
- 150 offices in 61 countries
- Offers 450+ products and services to customers
- Plans to spend $10.5 billion on capital equipment in 2011

Benefits Flow Through the Supply Chain

Certainly, the prompt payment discounts that Intel is now able to regularly capture are one of the primary benefits of the new automated payment process. Prior to installing the supply chain event management application, Intel was leaving about half of the supplier discounts on the table.

Following the new system, Intel has moved its discount capture rate for capital purchases from ~50% to over 95%, exceeding the corporate goal, and resulting in tens of millions in cost savings each year. Given that Intel purchases billions of dollars of capital equipment per year and there is no expected change to this pattern on the horizon, the perpetuity value of the project moves into the hundreds of millions.

Also, since Intel is required under Sarbanes-Oxley and Generally Accepted Accounting Principles to be consistent in its payment processes, the company had to apply the process changes equally across all of its capital equipment suppliers, including those that do not offer prompt payment discounts. This led to an additional benefit; besides reducing shipping costs, on-time payments also improved. In the prior model, where suppliers were only paid when Intel saw the items on its dock, suppliers were reluctant to ocean qualify equipment because the long transit times would often exceed the payment term days, resulting in delayed payment.

Since moving to the new payment process, where capital equipment suppliers receive payment based on when they ship the equipment and not when Intel receives it, the resistance to ocean shipping has subsided. And when one considers that the weight of these tools is often several tons, switching from air to ocean saves several thousands in logistics cost.

But the increase in ocean freight has not slowed down the company's supply chain. In fact, supplier shipments are getting to Intel's plants faster than ever. With money in the bank sooner, Intel's suppliers can pay their own suppliers quicker and avoid interest and late fees. While it is not "more" money, payment based on supplier ship date vs. Intel receipt date provides the incentive for suppliers to prioritize their production to ship Intel tools as soon as possible. Several suppliers are consistently demonstrating the ability to ship equipment sooner than the contracted lead time, which makes the whole supply chain faster while costing less.

"Since we implemented this system, some suppliers are selectively shipping the Intel tools first off the line, because they know they will get paid sooner than if they were to ship to another customer," says Hertzler. "Intel believes paying our suppliers sooner is a mutually beneficial activity because it encourages the supply chain to go faster." ■

1 Comments taken from Intel's Q2 earnings conference call

2 http://en.wikipedia.org/wiki/Discounts_and_allowances

3 IC Knowledge LLC, IC Cost Model 2009 revision 0903