

JABIL'S SPEED AND INNOVATION HELP L-3 DEVELOP NEXT-GENERATION IR FIRE-FIGHTING CAMERA IN RECORD TIME



Equipping firefighters to save lives is a high priority for L-3 Communications Infrared Products. So when the opportunity arose to develop a breakthrough in thermal-imaging technology, L-3 engineers' only hesitation was a grueling six-week development schedule. The solution? Jabil Circuit. Even though Jabil's role quickly expanded from simple PCB layout to include software development, manufacturing and assembly, Jabil met the deadline with time to spare. L-3's staff was so delighted that they named Jabil their 2004 Supplier of the Year.



When an OEM's customers expect high quality, fast turnaround, and low pricing in one convenient package, that OEM's most valuable resource may well be a trusted Electronics Manufacturing Services (EMS) provider —especially if that provider is willing to do whatever it takes to meet a difficult deadline.

A case in point: L3Communications Infrared Products (L-3 IP) of Dallas and its EMS solutions provider Jabil Circuit, Inc., of St. Petersburg. Together, this team took a significant firefighting innovation from concept through completion in six short weeks.

COMMITTED TO SAFETY AND SECURITY

L-3 IP is a premier global developer of uncooled thermal-imaging detectors and imaging systems for such applications as law enforcement, search and rescue, natural-resource protection, continual surveillance and infrastructure protection. It was these credentials, along with a customer list that included such organizations as the U.S. Air Force and the FBI, that motivated its 2004 acquisition by L-3 Communications — a \$5-billion provider of an array of high-technology products and a company well aware of the potential market for lower cost, uncooled thermal-imaging technology within the military, homeland security and commercial marketplaces.

THE CHALLENGE

As these high-level plans evolved, however, many within L-3 IP were focused on developing a critical new tool for the world's local heroes — the firefighters who daily risk their lives to save our own.

These L-3 IP employees understood the dilemma faced by many fire departments today: on the one hand, firefighters desperately need tools to help them work quickly and accurately. On the other hand, their budgets are getting tighter every year.

Helping to resolve issues such as these has historically been a pressing objective for L-3 IP. And in the summer of 2004,

they took a giant step towards meeting that objective when a customer came to them in search of major advances in thermal-imaging technology. "The challenge was to provide firefighters with a potentially life-saving new tool at a reasonable cost," says Teresa Covitz of L-3 IP's Supply Chain Management group. "If we were successful, they would have far better images to assess and navigate smoke-filled rooms — plus color coded display of temperature differences to help them instantly identify potentially deadly hot spots."

L-3 IP's engineers felt that the only problem was a grueling deadline — an August industry conference where the customer planned to introduce the new technology. With that deadline just six weeks out, the engineers asked Covitz for help.

Turning down the opportunity was never an option, she says. "The customer was offering to co-fund this technology's development in exchange for a nine-month exclusive on it. If we were successful, this venture would greatly enhance our own product arsenal at significantly reduced financial risk."

The proposal was therefore appealing, she says. "We just didn't know quite how we were going to meet the deadline."

THE SOLUTION

Covitz ruled out internal development immediately. "We simply didn't have the in-house capacity to support this project within the allotted time frame. Our engineers wouldn't have had time to troubleshoot problems, so we couldn't have been sure of getting a high-performance product in the end — and anything less is absolutely unacceptable at L-3 IP."

She immediately thought of Jabil, one of L-3 IP's leading providers for new-product development and production of circuit-card assemblies. "Jabil was already producing the camera board for us, and so had a good understanding of how to communicate with the daughter board. What's more, Jabil's staff had consistently differentiated itself in all the areas that were especially crucial to getting this job done — design and responsiveness, as well as delivering expertise to reduce the risk in an inherently risky endeavor."

Meeting the customer's goals was not simply a matter of updating an existing design, Covitz points out. Because it would involve developing a new technology, a great deal of on-the-fly

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problem-solving would be necessary. And there would be no time for wheel spinning. "We needed everyone's full commitment to making it happen. And that's exactly what we got, from our customer, from Jabil, and from our own in-house engineers."

PUTTING THE PIECES IN PLACE

L-3 IP and Jabil quickly put together teams to tackle the project, and L-3 IP's customer sent in an engineer to oversee the process.

Jabil created one of its trademark Work Cell groups for its part, according to Fred McCoy, Jabil Business Unit Director. "Our Work Cell model is a unique Jabil advantage. It's very customer-centric, with each Work Cell reporting to our customer rather than to supervisors within our organization.

It's an approach that empowers our employees to execute on a customer's behalf, speeds decision-making, and supports both cross-functional collaboration and peer-to-peer exchanges.

"In short, it was just what was needed for a challenge like this."

CHANGES IN SCOPE

As the process unfolded, the responsibilities started shifting more heavily in Jabil's direction, McCoy says.

"At first, we were brought in to do the circuit-card layout and write software. But the scope of our work soon grew to include software development, manufacturing and assembly work."

Covitz concurs. "It wasn't entirely a straightforward process, because we were venturing into new technological territory. That made it difficult for our customer and for us to define clearly what we expected."

Fortunately, Jabil was both flexible and willing to do what was necessary. "Jabil provided us with a great deal of help in shaping our final product," she says. "It remained a work-in-progress the entire time — but we were always confident about the direction in which we were headed."

TRIAL BY FIRE

Most of those assigned to the project worked evening and weekends throughout the six-week period, McCoy says. It became especially intense during the testing process, when they all worked

practically around the clock.

"Like all our firefighting equipment, this new camera had to undergo testing in an actual fire situation that would fry most products," Covitz says. "Fred arranged for us to use their local fire department's training facility, and our customer sent two trained firefighters in to conduct the testing."

The new camera passed with flying colors, McCoy says, and he personally walked away with new respect for firefighters. "These guys came out with their fire suits smoking. One actually suffered second-degree burns during the testing. Apparently that's not unusual, even with specialized gear. These firefighters are so committed that they think it's worth any risk to help develop tools that could ultimately save lives."

The firefighters made some suggestions that required software enhancements, and the L-3, Jabil and customer teams worked long into the night to finalize the improvements.

BEATING THE CLOCK ...

It took a little bit of creative scheduling, but Jabil ultimately brought the project in two days before deadline — definitely an L-3 IP record, Covitz says. But there was a catch. "We usually do our initial prototyping and testing, modify the design and then build a second prototype for re-testing," she says. "In this case, we didn't have time to do it all up front."

That meant the team found itself in the unusual position of turning on a brand new camera two days before its official unveiling, without any of the normal fine-tuning. Fortunately, it worked beautifully, and was a big hit at the conference.

... WITHOUT BLOWING THE BUDGET

Covitz says that as the scope of Jabil's involvement grew, so did her fear that the unknown would end up costing more than they'd budgeted for the project.

She needn't have worried. "Jabil kept the charges for scope changes very minimal. My fears turned out to be unfounded."

Other suppliers might have taken advantage of the situation, she says. "I've been in a position where we've had to pay whatever a



supplier wanted to get a job done. Jabil did not do that to us — which to me says a great deal about the quality of our partnership with them.”

Covitz is convinced that using Jabil was not simply the only way to meet this deadline; it was also the most cost-effective solution. “When I compared what Jabil charged us to what it would’ve cost us at our own internal labor rates, Jabil was extremely fair. We could not have completed the project less expensively in-house.”

AN OUTSTANDING NEW TOOL

The result is L-3 IP’s Thermal-Eye 3500AS thermal-imaging camera, which makes it possible for firefighters to see more clearly than ever even in smoke filled environments.

The 3500AS features a 30-micron detector, which combines sensitivity of less than 50 mK with the ability to capture greater detail, in a very small, lightweight package. To this it adds the ability to highlight areas of high heat with color, while displaying cooler areas in shades of gray...and an expanded dynamic range with a saturation temperature of more than 1100° F, for high performance even in high heat stress conditions.

Capabilities such as these are allowing firefighters to quickly pinpoint the hottest areas in the context of surrounding scene details, to gauge the approximate temperatures of walls, floors, ceilings and objects within a burning structure, and to quickly make better decisions while executing critical tasks.

A HAPPY ENDING

Covitz says this was L-3 IP’s first foray into outsourcing a complete circuit-card assembly from design through finished production. In the end, it was worth six weeks of pressure-cooker working conditions. “Because of Jabil’s performance on our behalf, we have both critical new business and a terrific new product for our own catalog — a product that we believe will make firefighting safer than ever.”

As a result, in 2005, L-3 presented Jabil with its 2004 Supplier of the Year award. “They earned it with performance that has surpassed that of any other supplier I’ve worked with,” Covitz says. “They gave us great design, great quality, and great responsiveness. And they have been a true partner to us, willing

to go to great lengths to make us look good to our customers.”

McCoy says this was just one of many L-3 IP projects Jabil handled in 2004. “We worked on 10 or 15 product lines, meeting all their delivery requirements and achieving a 99.9% ‘stick rate’ — an important measure of quality.”

Still, the 3500AS project was a highlight of 2004 for both L-3 and Jabil — and, Covitz predicts, will turn out to represent a major safety milestone for those who actually use the cameras. “This represents a huge step for firefighting technology,” she says. “We expect that it will help firefighters around the world save more lives — and that, in the process, it will help protect these brave men and women as they risk their lives to save our own.”

CUSTOMER PROFILE:

L-3 Communications Infrared Products (L-3 IP), Dallas, a leading manufacturer of uncooled thermal-imaging technologies for applications ranging from law enforcement to infrastructure protection.

INDUSTRIES:

Fire and rescue, public safety, security, transportation and industrial markets.

BUSINESS CHALLENGES:

- Develop a critical new thermal imaging camera for firefighting
- Go to fully functional prototype in six weeks
- Minimize charges for change orders

JABIL SOLUTION:

- PCB layout
- Software development
- Prototyping
- Manufacturing and final assembly

CUSTOMER BENEFIT:

- Took the product from concept through completion in just six weeks
- Delivered a working prototype for the key industry conference
- Provided L-3 IP’s customer with first mover advantage

