

## CRITICAL LINK CUSTOMER STORY: BRISTOL INSTRUMENTS, INC.

*"We were searching for a company with expertise in DSP programming. Critical Link had a great deal of expertise related to not only the general functioning of the instruments we were building, but also tremendous capability with the software. We were very comfortable putting our eggs in Critical Link's basket. [Today] we're known for the outstanding product life and accuracy of our technology. Critical Link has played an important role in our delivery of these things."*

*--Dr. Michael Houk, Vice President of Technology, Bristol Instruments*

### Long-Lasting Products Create Long-Lasting Partnerships

In 2005, when Bristol Instruments, Inc. was a start-up, they began working with Critical Link to develop their first product: a Michelson interferometer-based wavelength meter. Roughly 10 years later, Bristol is a world leader in optical interferometer-based instrumentation – and they're still working with Critical Link to create new products.

"The industries and fields we serve need long-lasting instruments that are perfectly reliable. We're known for the outstanding product life and accuracy of our technology. Critical Link has played an important role in our delivery of these things," explained Dr. Michael Houk, Vice President of Technology for Bristol Instruments.

One of the key reasons Critical Link has achieved such a high level of customer satisfaction and repeat business is their product longevity. "Our clients can expect our products to be available for 10-15 years or more – significantly longer than many of our competitors," said Omar Rahim, Critical Link Vice President. "We understand that our customers' products are going to be in production for a long time. We support them throughout their product lifecycle, and won't force unwanted hardware revisions or software updates on them. Bristol is a great example of this. They've been able to transition over multiple products with us and have had consistently good experiences."

Dr. Houk agreed. "Critical Link has provided us with very good customer service along the way. And they certainly have supported the work they originally did."

Around 2005, the two companies began working together to develop the 621 Laser Wavelength Meter, a family of instruments designed to provide an unprecedented level of precision, versatility, and convenience. Bristol Instruments developed the optical and mechanical portion of the product and Critical Link created the electronics and software.

The project was a smashing success. The 621A model, which was created for use in demanding experiments, is able to measure absolute wavelength to the highest accuracy of  $\pm 0.2$  parts per million. The 621B model is a lower-priced alternative that delivers an accuracy of  $\pm 0.75$  parts per million. Different versions of the instrument operate over the wavelength range of 375 nm to 12  $\mu$ m, and several



**Challenge:** Shortage of hardware and software engineers during start-up phase.

**Solution:** Critical Link Engineering Support & System on Modules (MityDSP-6711F & MityDSP-L138F)

**Impact:** Bristol Instruments launched its initial product – and many others since – faster than they otherwise could have, while delivering the unparalleled accuracy and longevity that has become the company's benchmark.

**The Critical Difference:**

- Software & hardware engineering expertise
- Elastic resources compliment in-house design teams
- Proactive design approach
- Partnership mindset
- Product longevity & consistent lifecycle support

product features allow for convenient integration into an experiment to provide real-time wavelength data.

Since that first interferometer, Bristol Instruments has gone on to produce many renowned devices. “We’ve worked with Bristol Instruments since day one and it’s been an absolute privilege,” said Rahim. “We’re proud to be able to say that every single one of their exceptionally high-quality products includes one of our System on Modules (SOMs).”

### **Critical Link SOMS Bring New Products to Market Quickly**

Whether you’re a long-established company or just starting out, if you’re developing cutting-edge technology, you need to launch products as quickly as possible. The number one reason companies like Bristol Instruments choose to work with Critical Link is to make sure this happens.

“To put it simply, our SOMs help companies develop their products faster and save money,” said Rahim. “Developing the boards from the ground up is often too expensive and time-consuming for companies. Few in the start-up phase can afford it. We’ve been able to help companies get to market more quickly and cost-effectively than they would’ve otherwise.”

Critical Link SOMs provide industrial, scientific, medical, and defense companies with off-the-shelf solutions that minimize technical risk and eliminate non-recurring costs with board layout, component integration, software porting, testing, and pre-production tasks. Development teams are able to focus on their core expertise, and build company IP.

In 2005, Bristol Instruments was a self-funded start-up with all the specialized knowledge and talent needed to produce a knockout product. They lacked just one essential element: hardware and software engineers. They began to look into options for outsourcing this portion of the project.

“We were searching for a company with expertise in DSP programming because we knew we would get to market much more quickly,” recounted Dr. Houk. “Critical Link had a great deal of expertise related to not only the general functioning of the instruments we were building but also tremendous capability with the software. We were very comfortable putting our eggs in Critical Link’s basket.”

According to Dr. Houk, the value Critical Link provides extends beyond the basic services rendered: “Critical Link has consistently brought expertise to the table that results in a better instrument. We come to them with specs, and they don’t just build it. They also say, ‘Here are some areas where you might do things differently.’ There has been a lot of good interplay with ideas. Critical Link is often able to suggest improvements. That is very valuable.”

The team at Critical Link says that feeling is mutual. “Over the years we’ve forged a strong partnership with Bristol Instruments,” explained Rahim. “We appreciate the folks at Bristol for their intense talent and professionalism. We look forward to many more years of helping them develop world-class products. Working with such outstanding individuals certainly makes our job more rewarding.”

### **About Critical Link**

Syracuse, NY-based Critical Link ([www.criticallink.com](http://www.criticallink.com)) is an embedded systems engineering firm, offering a broad range of highly customizable, small-form factor SOMs and development kits for highly integrated, embedded systems for medical, scientific, and industrial applications. Critical Link’s end-to-end product engineering offerings include design, development, and production services. Critical Link is a member of the Altera Design Services Network, a Platinum Partner of the TI Design Network, and a certified member of the Arrow Consulting Engineering Services (ACES) network.