"Using a Critical Link SOM saved us time, but it also allowed us to think about our own added value. We were able to save our engineering talent for the bits we are really good at and let the module take care of the electrical engineering."

-- Dr. David Barnett, Guidance Automation Chief Technical Officer

When Experience, Expertise, and Embedded Systems Collide

With 24 years of navigation experience under their belt, the team at Guidance Automation of Leicester, England set out to fill a gap in the marketplace and develop a product badly needed by warehousing and internet sales companies: a low price-point autonomous guided vehicle. Their goal was to create a simple auto-picking vehicle that worked as efficiently as or better than its more expensive counterparts, while omitting the vehicle bulk that drives up the cost.

Thanks to their hard work and a great deal of innovation, the Guidance Automation team is unveiling their latest product, called BriNgBot, and excited to offer an effective new option that will increase warehouse efficiency and improve bottom lines.

According to Dr. David Barnett, Chief Technical Officer at Guidance Automation, one important example of the team's innovation was the decision to use a Critical Link System on Module (SOM). By incorporating the SOM, Guidance Automation was not only able to achieve their product goals, but to exceed their development expectations and finalize their product more quickly and cost-effectively than they originally anticipated.

"The SOM is just right," said Simon Edwards, Embedded Hardware and Software Engineer. "Just the perfect fit and works exactly as we'd hoped. It will never jump out of its connector, like some others would. I am 100% confident we made the best choice."

Guidance Automation used Critical Link's MitySOM-L138F, which is offered as part of a development kit designed to allow teams to work on crucial project phases earlier than they would otherwise.

"The development boards were everything we needed," Barnett said. "All of the vehicles currently have dev boards. We are just now moving over to our custom boards designed in house – so they played a significant role in accelerating our development process."

Barnett also feels the SOM helped Guidance Automation improve the quality of the product and make the most of limited human resources, a common objective in engineering environments.

"Using a Critical Link SOM saved us time, but it also allowed us to

Challenge: Guidance Automation was developing numerous products with a limited number of engineers. They hoped to incorporate a SOM that would work for all products and allow the team to focus on their core competencies.

Solution: Critical Link System on Modules: MitySOM-L138F and its accompanying development kit.

Impact: Guidance Automation was able to develop a highly efficient autonomous guided vehicle that is more cost-effective than those currently available. By using a SOM, they were able to focus on their company's unique value and develop the product more quickly than they would have otherwise.

The Critical Difference:
- Architecture allows tremendous flexibility
- SOMs designed for long term production: 10-15 years availability from initial release
- Accelerated development schedule and time to market
- Consistent lifecycle support
- 100% US-based development & assembly

think about our own added value," explained Barnett. "We could save our engineering talent for the bits we are really good at and let the module take care of the electrical engineering."

The team's specialized engineering talent is obvious when observing BriNgBot in action. When orders come in to a company, the WiFi-connected vehicle receives a message to retrieve an item. Powered by a motor and connected to an advanced camera system that allows it to read bar codes on warehouse floors, BriNgBot is able to navigate to the correct products completely on its own.

"Guidance Automation managed to develop a fantastic product for which any company with a warehouse will be grateful," remarked Tom Catalino, Critical Link Vice President. "This vehicle performs the necessary communication, reading, navigation, and operating functions at a cutting-edge level. BriNgBot truly is a great value and a smart choice."

Guidance Automation insiders say the vehicles could be available for order as early as this summer. "Our team is hard-working and their expertise is second to none. We are thrilled to be able to bring this outstanding product to market so quickly," said Tina Shaw, Director of Marketing. "We hope to be able to show this technology off to the outside world at three exhibitions this summer and begin selling them before fall."

Why Guidance Automation Chose Critical Link

When Guidance Automation began planning the development of this product, they set out to find the perfect SOM. "Critical Link has been a name kicking around in my mind for as long as I can remember," explained Barnett. "So their products were among the first we looked into."

The team was looking for a SOM with an L-138 processor that met numerous other important specifications for the autonomous guided vehicle as well as other products.

"We had a number of products in development over the last two years," said Edwards. "We wanted to ensure the module had capabilities for all the products we were working on. Critical Link's SOM had everything we were looking for in an easy development environment. Because of that, we were up and running very quickly."

The OMAP-L138 family of SOMs gives system designers the flexibility to address a wide range of requirements. They include the most advanced technology from Texas Instruments' OMAP, Sitara, and C6000 families of single and multi-core processors tightly integrated with the new Spartan-6 FPGA from Xilinx. All of the modules in this family are pin-for-pin compatible and available either with or without the on-board FPGA. This allows developers tremendous control throughout a product's life and is useful for teams developing product families that need various levels of processing abilities.

This flexibility and control will allow Guidance Automation to meet customer needs, grow their product line, and incorporate the SOMs into other development projects in the near future. For now, Guidance Automation is focused on taking BriNgBot across the finish line and into warehouses across the globe.

"Our goal was to produce a low-cost vehicle, a less-expensive but highly effective version of those already on the market," explained Shaw. "We most certainly achieved that and are looking forward to sharing the outcome with the world. Critical Link played an important role in our success."

In addition to the technical benefits offered by the SOM, Edwards said Critical Link's support also helped the development process to go smoothly. "I sent an e-mail with questions to a Critical Link engineer just yesterday and received a response right away, even though it was the middle of the night in the United States," remarked Edwards. "Critical Link has been tremendously responsive and we are thankful or that."

The Critical Link team agrees that this respect and gratitude are mutual. "Guidance Automation has an extremely talented, experienced team and they've created an exceptional product that customers are really going to appreciate," said Catalino. "It's been a pleasure working with this company and we are honored to play a role in bringing this product to market more quickly."

About Critical Link

Syracuse, NY-based Critical Link (www.criticallink.com) is an embedded systems engineering firm, offering a broad range of highly customizable, small-form factor SOMs and development kits for embedded medical, scientific, and industrial applications. Critical Link's end-to-end product engineering offerings include design, development, and production services. Critical Link is a Platinum Member of the Texas Instruments Design Network and a certified member of the Arrow Consulting Engineering Services (ACES) network. Critical Link is ISO 9001:2008 and ISO 14001 Registered by SRI Quality System Registrar.