Programs Manager Scott Uhlir watches as Debbie Braid, technical project manager for iForce, turns on the vehicle's lights and siren using the touchscreen computer.

Dispatching INTEGRATION

Rockwell Collins used avionics system engineering experience to improve public safety vehicle solutions.

Like a fighter pilot maneuvering through enemy airspace during a tactical engagement, a police officer in pursuit of a suspect doesn't have time for distractions.

Recognizing this parallel, Rockwell Collins employees applied their understanding of avionics system engineering when designing iForce™, an integrated public safety vehicle solution.

"Our experience with integrating flight decks allowed us to see the problem in a different way, and solve it," explained Scott Uhlir, programs manager for iForce. "With iForce, Rockwell Collins has once again proven our understanding of how to integrate electronics and communications to help our customers execute their missions successfully."

Harnessing avionics experience

Along with a multi-functional touchscreen display, Rockwell Collins included a hand control device and voice activation that minimize distractions and allow iForce users to keep their eyes on the road.

"Responders lose color perception in high-stress situations, so they depend on muscle memory to use their equipment intuitively," said Debbie Braid, technical project manager. "That's something we learned from our experience with pilots and applied to iForce."

Rockwell Collins initially developed iForce for the California Highway Patrol (CHP). Within a year, the Royal Canadian Mounted Police's (RCMP) K Division (Alberta Province) became the solution's second customer, and iForce grew from a single program into a business area for Rockwell Collins.

"Other Canadian law enforcement agencies look to the RCMP for new technology and equipment," explained Marie Darling, principal account manager for Rockwell Collins in Ottawa, Ontario, Canada. "Influential and satisfied customers like the RCMP help iForce gain credibility and recognition."

Preventing the "blue screen of death"

Before pursuing the CHP contract, Rockwell Collins had participated in a U.S. Defense Advanced Research

Projects Agency (DARPA) Grand Challenge to build an autonomous vehicle. During this challenge, Rockwell Collins employees saw the need for reliable computing based on open systems architecture in military ground vehicles. As they started to look at opportunities, the team found ways to expand beyond military ground vehicles.

"We realized what the California Highway Patrol wanted was similar to what we were already building for the military from a hardware and reliability standpoint," said Uhlir. "We pursued the contract to provide CHP a state-of-the-art solution and to gain a foothold in the public safety market."

For iForce customers, an open systems approach allows the integration of future technologies without expensive hardware replacements. In addition, high reliability is achieved through the use of multi-processor computing modules — providing protection from the so-called "blue screen of death" that indicates computer failure.

"This differentiates iForce from legacy systems, making it more reliable and robust than an off-the-shelf laptop computer," explained Scott Berry, manager of Public Safety business development. "We put mission-critical functions — lights, sirens and radios — on a dedicated Linux®-based computing module like we do in our military products and avionics. Then, we also provide a Windows®-based computing module in which officers can run applications they currently use on their laptops."

Driving demand with innovation

Although iForce is a Government Systems solution, the program is set up more like a commercial pursuit than a military contract.

"We've tailored our product to meet specific agency needs," said Braid. "Working with multiple customers, we've come up with a better solution."

For example, while riding with police officers, Rockwell Collins employees better understood the need for expanded radio communication functionality. When officers are away from their vehicle, they need a system to integrate their handheld radios with more powerful mobile radios. Today, iForce solves this problem with a vehicle repeater system, and enhances communication among various law enforcement entities by cross-patching different radio frequencies.

The iForce design also tackled clutter in the cabin of the patrol car, which can be a distraction and a safety hazard for officers. Legacy systems often included multiple radios, control heads and a laptop computer mounted in the passenger compartment. In contrast, iForce stows the equipment in the trunk and integrates control through the touchscreen display, hand controller and voice commands, creating a simpler and safer working environment.

The hand control device used with the iForce™ integrated public safety vehicle solution was inspired by controls found in avionics.

Safety, integration and interoperability

Moving forward, the Public Safety team is emphasizing safety, integration and interoperability as it introduces iForce to more law enforcement agencies. Additionally, as Rockwell Collins develops its supply chain and dealer network, our team is exploring ways to adapt iForce for other public safety applications.

"We are bringing a level of integration and reliability that this industry currently doesn't have," said Berry. "There's demand for that, and we think public safety is going to be a significant growth area for us." ▪

By Katie Shatzer