

MAKING A FLIGHT

One-click retail inspires the licensing of lifesaving Air Force software
to benefit the warfighter

Sitting in class at Arizona State University's master's program for human systems engineering, Rick Stone had an epiphany. Online retailers were implementing one-click ordering, saving customers time and reducing errors. Maybe the same approach could offer a solution to an entirely different and much more crucial challenge.

Deployed to Iraq in 2008 with a Special Forces team, Stone, an Air Force Technical Sergeant, was a trained Joint Terminal Attack Controller (JTAC),

meaning he called in airstrikes for support, communicating with aircraft regarding the location of enemy combatants and friendly troops, as well as vulnerabilities such as hospitals, schools, and individual civilians. This data is essential in commanding airstrikes that support friendly forces and engage enemy troops while minimizing civilian casualties.

Stone felt that the current JTAC Windows-based system was clunky and time-consuming, risking error and potentially creating dangerous situations for troops



on the ground. JTACs had to enter information manually and complete several separate steps to send the initial request to the aircraft. The average time from the first contact between a JTAC and an aircraft to the completion of an airstrike was 15 to 20 minutes. Many JTACs wouldn't use the available system because the software was too cumbersome.

During his time at ASU, Stone was an intern at Black Diamond Advanced Technology, a veteran-owned company based in Chandler, Arizona, focused on wearable, tactical technology, including digitally aided close air support (DACAS). With the objective of developing a better, faster software solution for JTACs, Stone proposed to company leadership that they in-license the Air Force Research Laboratory's (AFRL) patented Android Tactical Assault Kit (ATAK) technology. Black Diamond entered into a license agreement with AFRL to obtain the rights for commercializing AFRL's intellectual property and develop simple and combat focused software designed for dismounted operators.

Stone explained his motivation behind the effort: "For me, it's about giving back to my friends, developing the next generation of DACAS systems to improve both safety and efficiency. Even after training, a new JTAC without combat experience might be overwhelmed in an ambush. They might have to call in help while being compromised by an attack, dealing with a concussion, hearing loss, or another limiting injury. Putting a device into their hands to quickly and safely share their position and call in air support is of the highest importance."

The resulting Modular Tactical System (MTS) and Forward Air

Control – Utility Suite (FAC-US) received a fielding authorization from the US Special Operations Command (USSOCOM). MTS/FAC-US successfully cleared vigorous laboratory and field-testing by the Air National Guard Air Force Reserve Test Center (AATC) and received rave reviews during operator testing by Air National Guard JTACS and Combat Controllers. The new Windows-based system translated much better to

small hand-held electronics like tablets for more comfortable handling in battlefield scenarios.

Master Sergeant Benjamin Santiago, Black Diamond's Field Application Engineer and former Battlefield Airmen Program Manager at the AATC, was highly impressed with Black Diamond's approach toward creating a faster and safer software interface. Having been in the same Air National Guard

unit with Stone, their friendship translated to a productive professional collaboration; Santiago provided near real-time feedback and requests for new features that Stone was able to implement in a matter of days. Stone designed the software himself, and had a dedicated team of software developers: Zac Kruger, Brian Parma, and Judd Richardson. The team was small enough to

be highly responsive and agile in developing the program, designing the interface, and addressing safety concerns.

Santiago explained: "Black Diamond was a young and hungry company with passionate people sharing information freely to innovate at high speed. The small team allowed us to work together rapidly because there were fewer people in the middle, and everyone involved wanted to listen, be responsive to the needs of the warfighter, and provide real solutions."

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A Forward Air Control – Utility Suite (FAC-US) from Black Diamond, utilizing the Air Force Research Laboratory’s Android Tactical Assault Kit technology.

number of steps from 10 to only three. The first step is to choose the target, either via laser range finder or by clicking on a map, the second step is to pinpoint the location of the closest friendly forces and potential collateral, and the third step is to digitally send the message to the aircraft. MTS/FAC-US decreased the average time between the first request and completion of an airstrike from 15 to five minutes. During testing, the system worked so fast that the response speed was often only limited by the required maneuvers from the attacking aircraft.

Unlike one-click online ordering, commanding an airstrike has life and death consequences, and Stone took the security of the software seriously. While the system automatically populates information about the JTAC’s position via GPS coordinates, the nearest location of a friendly troop must be manually confirmed before executing

an order. With some systems, the JTAC can access real-time data of the plane approaching and provide course corrections to minimize collateral damage. The request can also be adapted or aborted and resubmitted.

While Black Diamond was the first to commercialize the licensed technology with successful implementation in Department of Defense components, other companies have since followed suit. Stone said Black Diamond is moving on to address new challenges and keep adding value and capabilities for warfighters: “The direction we see innovation going at Black Diamond is in signal vs. noise applications, especially in augmented reality contexts. For example, I don’t want to track every aircraft around me, but specifically hone in on the one that is supporting my ground force. We’re committed to developing applications that decisively cut through the noise and deliver actionable information to our warfighters.” 🌟

