BATMAN Gear for the Real World

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The United States Air Force is taking a page from an iconic comic. As an intern in the Human Performance Wing at Wright Paterson Air Force Base in Dayton, Ohio, psychological scientist Andre Garcia, from George Mason University, worked on the BATMAN team. Though Garcia tends to think of team BATMAN (which stands for Battlefield Air Targeting Man-Aided kNowledge) as being more like Alfred, Batman's loyal butler who was always there to help the caped crusader with all of his high-tech gizmos.

The team is a multidisciplinary group comprised of human factors, computer science, computer engineering, physics, mechanical engineering, and electrical engineering specialists who create equipment to help Airmen do their job more safely and efficiently.

Human systems integration is a core part of the BATMAN team mission. Human factors scientists use their knowledge of the mechanical requirements for creating such cutting-edge technologies and — more importantly — their understanding of human behavior and limitations to design systems that are safer, more efficient, more effective, and more user friendly.

For example, the project Garcia worked on during his summer internship with research psychologist Victor Finomore dealt with the issue of presenting real-time navigational/situation awareness information to Airman who are on the ground when their auditory and visual channels are already overloaded due to the need to scan the environment for potential enemy threats or colleagues in distress. In response to this challenge, the BATMAN team created a GPS-equipped tactile belt that helps Airmen navigate through the sense of touch.

The vibrotactile belt has eight tactors that are equally spaced around the waist. These tactors vibrate, signaling to the Airman which direction they should go to reach their target point. The belt also allows someone to remotely guide the Airman to their destination from a position where it may be easier to spot obstacles or threats. The belt may sound like something out of a superhero comic book, but ultimately it's just evaluating human limitations and using technology to provide the right boost.

For more information on how psychological science is aiding the US Air Force, visit George Mason University's Center of Excellence in Neuroergonomics, Technology, and Cognition (CENTEC).