



## Creating Automotive Safety Systems That Act Prior to a Collision

by Paul Drysch, CEO and Founder | PreAct Technologies

Originally Published in Jefferies Mobility Technology - Weekly Newsletter January 20, 2018

Nearly 3,500 people die in automobile crashes each day. And tens of thousands more are seriously injured. It's staggering to think that even in modern vehicles equipped with airbags and other safety systems, that well over a million people worldwide are killed every year, and many millions more suffer serious injury. In America, 91% of the injuries are due to occupants striking hard surfaces inside the vehicle, surfaces that they were not protected from by restraints or airbags. In the vast majority of crashes, the passenger compartment remains intact with little intrusion. In such cases, there really is no reason for occupants to suffer serious trauma or death - other than for a lack of current technology to protect them. This technology gap is what PreAct Technologies is aiming to close.

Based in Portland, Oregon, our company's approach to vehicle safety systems differs from any current offerings. This isn't collision avoidance. Our system has a view of a very close area around a vehicle. Within this zone it identifies, classifies, and reacts to threats in milliseconds. In that very short amount of time, PreAct's algorithms will

determine if there is an imminent collision with a high degree of certainty. With this foresight, we can help prepare the vehicle and occupants for the collision, before it actually occurs. PreAct Technologies has been founded by myself, Paul Drysch, a veteran of multiple successful autotech startups; Kurt Brendley, previously with GM and Jaguar Land Rover and Keith Brendley, who developed the close-in active technologies upon which PreAct is based. The industry is aggressively working on ADAS (advanced driver-assistance systems), and collision avoidance is top of mind. However, we realized that there are still many situations where a collision will be unavoidable. It is these situations where PreAct needs to take over to save lives and reduce injuries.

The core technology that detects a collision was borne of an advanced DARPA program called "Slapshot" to protect vehicles. The most successful outcome of that program was developed by Artis, LLC. Founded by Keith Brendley, Artis spent more than 10 years and over \$100 million creating technology that detects, tracks and responds to extremely fast threats operating

in complex environments, tracking and defeating even bullets in a few milliseconds. With this as a basis and guided by our extensive knowledge of vehicle systems, plus a decade's worth of IP from Artis, we are well on our way to launching our groundbreaking technology.

With our unique ability to determine a collision, with certainty, up to 250 milliseconds prior to occurrence, PreAct envisions bold new moves to protect a vehicle's occupants better than ever possible before. In the quarter-second before a crash, the system can cinch seat belts, deploy newly-designed slower-inflating airbags, launch external airbags, and even notify emergency responders while all communications systems still work pre-crash. Even this only scratches the surface of what we are anticipating for a fundamentally new way of protecting people from crash injuries. PreAct's IP is significant and growing.

While a quarter of a second doesn't sound like much time, current safety systems don't engage until after a collision has already begun to occur. Thus, current airbags must be deployed with explosive force so as to be fully inflated in time to catch an occupant. In a slow-motion crash test film, one can clearly see that airbags do not unfold until the last few milliseconds before catching the occupant. That is, if the occupants are fortunate. In most crashes, the occupant may indeed hit the airbag first before sliding into the B pillar or other hard obstacle, thereby sustaining

serious injury. By simply extending the collision timeline, the airbag can deploy sooner, with far less force, and be far larger in size, thus isolating occupants from each other and hard points in the crew cab. This is but one type of many new and innovative safety devices could be designed and introduced to the market.

While the goal of saving lives and reducing injuries is paramount for us, dramatically safer vehicles will create significant market pull. While a skeptic may doubt the attraction to the general public of a vehicle that can decrease one's chances of being seriously injured within it tenfold, there is one industry that is sure to embrace such technology – insurance. The potential cost savings to the auto insurance industry could be transformational. We're estimating this to be billions of dollars annually in the US alone.

We've been meeting with automotive OEMs, Tier One suppliers, and insurance companies. The response, so far, has been phenomenal. Having only come out of stealth mode at the Consumer Electronics Show in early January 2019, our engineering team, leveraging off of Artis technology, is turning the vision into reality very quickly. We're continuing to recruit for key positions as we grow the team and further develop future systems