MITRE STATEMENT TO THE DEFENSE INNOVATION BOARD'S PROJECT ON AI PRINCIPLES

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First, we'd like to thank the Defense Innovation Board for the opportunity to briefly touch on the ethical considerations for military application of artificial intelligence. The MITRE Corporation is deeply committed both to ethical approaches to modern warfare and to enabling our Service men and women to have at hand the best technology available to protect them and to help them achieve their mission. Artificial intelligence clearly impacts both of those commitments. AI is a key emerging technology that will enable the Joint Force to fight and win future wars. Yet for several reasons, the Department has struggled to field relevant capabilities leveraging this technology. Some of these reasons revolve around AI's being developed largely in the commercial sector for consumer applications. Some revolve around technical challenges with dirty data and complex system dynamics. Some however revolve around ethical concerns related to AI weapons and military decision making. Clearly, the Department's integration of AI into military operations must be done in a manner consistent both with our country's ethics and the laws of warfare. We believe however that from an ethical perspective, AI is similar to a host of technologies that have preceded it and that have been fielded and used in ethical ways. In fact, we believe integrating AI into military systems and operations can help to reduce civilian casualties while providing our troops a critical military advantage.

For example, take Claymore mines, a remotely triggered anti-personnel device not banned by the Ottawa convention. Yet, they can be detonated by tripwire or other ways that don't require actually seeing the target. What if instead they came equipped with a sensor that only allowed detonation if the targets were determined to be adult-sized humans carrying weapons? Or take the tragic 1988 downing of an Iranian airliner by the USS Vincennes. The crew of the Vincennes was forced to make a split-second decision about the threat posed by an unknown aircraft before they fired the missile.
What if instead the missile had an AI-based seeker which could distinguish between a civilian airliner or enemy aircraft and shut off its fuze, or even guided itself away from the aircraft? In both cases, as well as in many others, AI could enable both enhanced capabilities for our warfighters and reductions in the likelihood of non-combatant casualties. These examples highlight two of the three points we'd like to bring to your attention about AI's use in DoD system.

> *AI is not a fundamental change in the way we employ advanced weapons.*

The first point is that AI is not a fundamental change in the way we employ advanced weapons. Many of the weapons in our inventory today select their own aimpoints or home in on a target within a set of constraints. The Tomahawk cruise missile, for example, uses seekers and guidance algorithms which correlate the surrounding terrain to onboard digital maps to guide itself to its target. Many air-to-air missiles "lock on" after launch, meaning that the weapon finds its own aimpoint when its seeker is turned on during flight. Torpedoes search out specific acoustic signatures, matching those signatures against onboard libraries. All of these weapons already make autonomous "decisions" about where they go and what they do once a human makes the decision to launch them. With AI technologies, we may have less real-time visibility into how the weapon makes a decision in a specific scenario, we may have more difficulty testing the weapon because of the complexity of the AI, but at a fundamental level the human has given up control and decision making with many existing weapons once they are launched. That launch decision, with or without AI inside the weapon, must be an ethical one that balances risk to others with risk to the warfighter. That was true in WWII, that is true today, and that will still be true in the future.

A second point these examples highlight is that the human is not an ideal decision-maker, let alone a perfect decision-maker. Take the example of the USS Vincennes mentioned above. According to some reports, the Aegis Weapon System on the cruiser recorded that the Iranian aircraft was squawking a civilian transponder code and climbing away from the Vincennes at the time the weapon was fired. Under threat, forced to make a decision in a very short time, it is understandable that the crew of the Vincennes was not able to fully process all available information. In his book "The Fighters", C.J. Chivers describes a young US Navy pilot early in the war with Afghanistan launching a precision guided weapon, knowing at the time that something felt wrong about the weapon's target but not sure enough to hold off on the weapon's release. That pilot was haunted by that decision, never knowing whether it was right or not but wishing he could change it, for the rest of his career. Used properly, AI technology can lead to better decision making and should lead to reductions in errors that result in collateral damage and unnecessary civilian casualties.

The last point we would like to make today is that AI technology is not primarily focused on the "pointy end of the spear," directly making decisions to launch and point weapons. Far from it. Most of the applications envisioned for AI in the Department of Defense today revolve around other parts of operations, around better maintenance for aircraft, around fusing data from different sources, around finding "signals" in high volumes of data, and around making better strategic decisions.

These applications not only do not directly put lives at risk, but could actually serve to better protect civilian populations, as well as our warfighters – even while dramatically improving our warfighting capabilities.

In closing, it is important to remember that there are three ethical commitments we must balance in any set of principles to be developed. We have an ethical responsibility to minimize harm to civilians in any military operation. We also have an ethical responsibility to our fellow citizens to find ways to use AI to enhance their security, whether that's in helping deter or defeat a North Korean nuclear weapon launch, finding a terrorist cell before they develop a dirty bomb, or preventing nation state cyber attacks on our power grid. And above all, we have an ethical commitment to our Soldiers, Sailors, Airmen and Marines, who put their lives at risk for all of us, to find ways to protect them and to provide them with the absolute best capabilities our nation can produce. AI can be a positive enabler for all of these commitments.

Thank you for your time.