Policy Brief

Building the Tech Coalition

How Project Maven and the U.S. 18th Airborne Corps Operationalized Software and Artificial Intelligence for the Department of Defense

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Introduction

There are frequent discussions about how the U.S. military should draw from the country's commercial innovation base to gain an advantage, especially when it comes to the application of artificial intelligence (AI). Too often, conversations lament missed opportunities, valleys of death, painful contracting, or other U.S. Department of Defense (DOD) processes. While these hurdles are real, there are also positive stories of instances when commercial tech companies, military leadership, and warfighters came together to create a meaningful advantage on the battlefield. One of these is the story of how the 18th Airborne Corps used the Scarlet Dragon Exercise series to develop the Maven Smart System (MSS), an instance where frontline army users and a coalition of technology companies—enabled by DOD leadership and policies—pursued and developed a new technology that is having a meaningful impact on operations.

This paper is about how MSS was developed. We examine leadership actions, commercial partnerships, and contractual approaches that enabled success, as well as the organizational and cultural hurdles that had to be overcome. The details of MSS and its application are not our focus, nor are they appropriate to publish here—this is still an operational system for the U.S. military. Rather, this examination seeks to answer the question: What did it take to build MSS for Scarlet Dragon? The goal is to collect the lessons learned that might enable future DOD innovations with software and AI.

The example of how the 18th Airborne used Scarlet Dragon as a means of developing MSS is useful to study for several reasons. As will be discussed in this report, it is a user/warfighter-driven innovation that bridges intelligence and operations functions to the benefit of joint fires.[*] It is also uniquely interesting because of how its development was managed with flexibility and speed, as well as the participation of numerous software and AI service providers in a development-security-operations (DevSecOps) cycle that relied first on commercial service providers. Moreover, the 18th Airborne case study is interesting because it is not a postmortem analysis: the DevSecOps development of the Maven Smart System (MSS) though the Scarlet Dragon exercise series continues today, though its long-term prospects are unclear. The questions that this prompts for the Pentagon are: How can the 18th Airborne's successful process for

[*] "Joint fires" is the official term encompassing the employment of all types of fires, including artillery, missiles, and weapons dropped from aircraft.

developing MSS be institutionalized, and how can this sort of innovation be established as a norm for innovation within the DOD?

For all its uniqueness, however, the story of Scarlet Dragon and MSS is also familiar. Previous studies of Project Maven and other successful quick-reaction units in the U.S. military highlight similar themes about senior leaders being willing to champion a program; flexible contracting, funding, and risk management approaches; visionary front-line leaders; direct access to the operational environment; and the implementation of mature technology.[1] The nuances of these lessons for this particular case highlight how the application of software and AI may be different from past rapid technology adoption efforts.

Background and Methodology

The military has a long history of gathering lessons learned using case studies, and these include the successes and failures of innovation during the wars in Iraq and Afghanistan. These studies range from general examinations of organizational adaptation, to studies of the role of senior leaders in innovation, to detailed looks at the successes and failures of quick-reaction units, and even specifically at lessons from army rapid acquisition efforts for command and control systems.[2] Prior lessons have identified success factors that are echoed in the development of MSS for the army's Scarlet Dragon exercises, namely: senior military and/or civilian leaders willing to champion the program; the need for flexibility in contracting, funding, and risk management; visionary front-line leaders; direct access to the operational environment with ongoing feedback; and generally relying on the implementation of mature (rather than developmental) technology.

To gather lessons learned from the 18th Airborne's experience, our research team conducted extensive interviews with current and former members of the 18th Airborne, the Office of the Under Secretary of Defense for Intelligence and Security (OUSD(I&S)), and various contractors involved with the development of MSS and Scarlet Dragon between June 2023 and February 2024. We also attended an interim development exercise held in June 2023 to observe the operators and developers working together to create the next iteration of the system. Our report includes our observations from this event and interviews, however, it does not attribute quotations to protect the privacy of our interviewees. Beyond our in-person meetings, we gathered information from media reports about Scarlet Dragon and MSS, as well as