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TECHNICAL REPORT

The Future of Air Force Motion Imagery Exploitation

Lessons from the Commercial World

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Prepared for the United States Air Force

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Summary

Motion imagery has become an increasingly important Air Force intelligence, surveillance, and reconnaissance (ISR) capability in recent years. When the operations in Afghanistan and Iraq began, only a handful of Air Force assets capable of delivering motion imagery were deployed in theater; now they number in the hundreds. The Air Force has also begun to deploy wide-area motion imagery sensors with the potential to collect far more motion imagery.

The dramatic increase in motion imagery collections presents a challenge to the Air Force Distributed Common Ground System (DCGS), the global federated enterprise—and formal weapon system—charged with conducting the vast majority of the processing, exploitation, and dissemination (PED) processes required to convert raw motion imagery into intelligence useful to the warfighter. Yet, if properly managed, this new capability also offers the opportunity to achieve more-coordinated, more-agile Air Force ISR operations than ever before.

Because the collection and analysis of motion imagery on such a large scale are relatively new capabilities for the Air Force, we sought insights from two established commercial industries that routinely conduct video surveillance: closed-circuit television and reality television production. In this report, we examine the parallels between these industries' practices and those of the Air Force, and, from this analysis, we arrive at four recommendations.

First, Air Force motion imagery exploitation crews should adopt the television production “control room” format. The part of the operations floor dedicated to motion imagery PED should be organized to face a common operational picture display that allows the analysts to see all relevant motion imagery. Any other geolocated intelligence that is available and can provide context should also be displayed.

Second, the Air Force should build and maintain a unified multimedia database to store motion imagery, as well as still imagery. Such a database would facilitate subsequent analysis and correlation of data by the Air Force and others. The Air Force should consider the feasibility of adapting existing commercial products to this task.

Third, the Air Force should streamline communications practices within the Air Force DCGS and between the Air Force DCGS and other partners. A common lexicon for text-based communications would be a valuable addition to Air Force doctrine. Providing imagery analysts the option of using headsets with speech-to-text capabilities could also facilitate their participation in chat rooms. Motion imagery PED crews should also move toward a policy of maintaining a single point of contact for each unit they support.

Fourth, looking to the future, the Air Force should move to adopt a new “area-centric” organizational construct for motion imagery PED. This proposed organizational construct reframes the Air Force PED mission, shifting the focus from conducting PED separately for each platform to coordinating PED for all platforms in an area of operations. The area-centric

construct is designed to capitalize on cross-cueing opportunities and to assist PED crews in supporting multiple units. It also provides for a “PED triage” mechanism to allow the Air Force to apply its resources selectively as the need arises.

These recommendations stand independently of one another. The first three are intended primarily to address the needs of current and near-term operations, and, as such, we recommend implementation as soon as possible. They should also facilitate the ongoing shift toward operation in multiple intelligence domains. The final recommendation is meant to meet the longer-term needs of the Air Force DCGS and entails a larger change in operations. As prevailing conditions in the ISR enterprise shift inexorably from scarcity to plenty, area-centric organization offers a better way for the Air Force DCGS to prepare to meet that future.