Smart Publications: How Movia's Living Intelligence provides the USAF the edge in organizational learning

A recent article by Lt. Col. Patrick Brady-Lee highlights the importance of tactics, techniques, and procedures (TTPs) and lessons learned (LLs) to the Air Force's mission: "We are the best Air Force in the world because of our training. That training is anchored by tactics, techniques, and procedures and lessons learned. So the next time you think about TTPs/LLs, remember their importance. They are the foundation of our ability to 'Fly, Fight, and Win!'" [1]. Unfortunately, warfighters are unable to rapidly locate, learn, and apply relevant integrated tactical information because TTPs are created, vetted, and disseminated in stove-piped, static formats and processes that are unresponsive to change.

Currently, when airmen need to prepare for a mission, they summarize the mission objectives – "I will need to perform a high-angle strafing run in a mountainous region in an A-10," and collect an armful of printed TTPs. TTPs are the backbone of USAF knowledge transfer. Each volume contains critical learning and knowledge gained by experience to help plan for the mission ahead. Once the Airman has received their assortment of relevant TTPs, they move to other locations to skim the stack of 300–400-page manuals for the critical wisdom they will need to complete their mission most effectively and safely. The books themselves might not contain the latest information since the production cycle is measured in years, not days—not really "up-to-date," and skimming pages in a book or even online is far from "easy-to-find."

When they return from the operation, the Airmen may have new information, advice or even critical learning that will help future Airmen succeed. Even though the Air Force has mature LL programs, many organizations complain that once a lesson is identified, it ends up in some database and is quickly forgotten. Several challenges block the rapid application of lessons learned. Often, an identified lesson lacks an obvious "owner," and there is rarely a system set up to resolve the issue and implement corrective actions" [2 p. 1]. This data stagnation also plagues the current TTP process, as updates provided by the Airmen can take two years or more to make it into the next TTP version, per the publishing update cycle—well past the time of need.
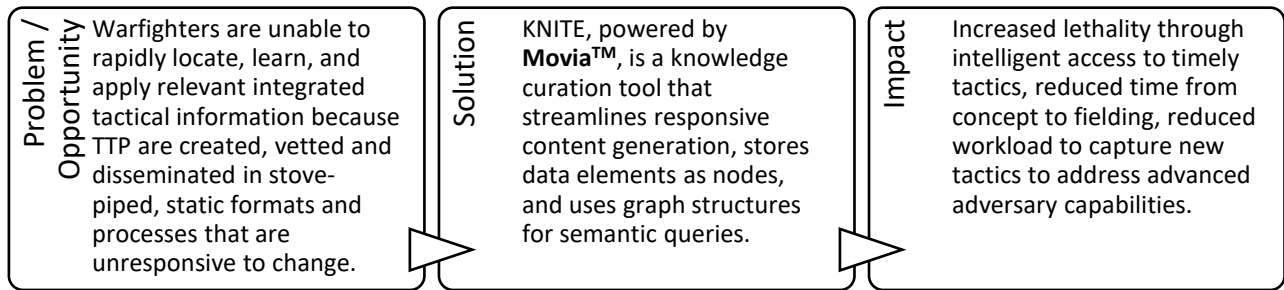
"The Air Force publishes tactics the exact same way I received tactics as a Lieutenant. A WO sends a Lieutenant to a vault; gives you a 500+ page manual and says, 'Read this'. It takes us two years to update the TTP because it's based on a rewrite schedule that was developed to conserve printing costs. We have no way to search the +42K pages of TTPs or link data from one TTP to another. We are past time to change."

– Lt. Col. Donald Mammano, Commander, 561st WPS, 2018

Seeing an opportunity for improvement, the USAF has changed the game. To address these concerns, the producers of Air Force TTPs knew they needed to improve the accessibility, usability, and the speed to create and edit TTPs, and to create a platform that enables direct warfighter feedback to continuously improve TTPs and capture critical learning to give our fighting forces the ability to quickly respond to emerging threats. The Knowledge Network for Integrated Tactical Employment (KNITE) program recently initiated by the USAF has done just that. KNITE streamlines the creation and maintenance of TTP publications using a web-based system that adheres to USAF standards, enables collaboration on TTP content creation and editing, and smooths the vetting and approval of new learning with an integrated workflow system. KNITE enables tactics capture and dissemination from/to every operator, enhancing operational feedback and ensuring TTPs are current and available to all operators. KNITE is improving overall USAF lethality through intelligent access to current tactics and reduced timeline and workload for operational feedback.

KNITE revolutionizes the way Airmen receive training and reference information through the power of Movia's knowledge management architecture. Current document management systems require a user to search for a word or phrase, only to receive a list of PDF documents that may contain the search subject, forcing the user to endlessly click through the documents to find the pages that mention the search phrase. With Movia, the Airman in the example above enters the same query and receives a *customized TTP*, in the

Air Force's TTP format, containing the updated, actual knowledge they are looking for, extracted from the library of various TTPs across the USAF library[1].

Problem / Opportunity	Solution	Impact
Warfighters are unable to rapidly locate, learn, and apply relevant integrated tactical information because TTP are created, vetted and disseminated in stove-piped, static formats and processes that are unresponsive to change.	KNITE, powered by **Movia™**, is a knowledge curation tool that streamlines responsive content generation, stores data elements as nodes, and uses graph structures for semantic queries.	Increased lethality through intelligent access to timely tactics, reduced time from concept to fielding, reduced workload to capture new tactics to address advanced adversary capabilities.

Movia is unique in the way it breaks down the document "blob" into information elements with context—meaning that Movia turns paragraphs into knowledge objects, applying metadata to include structural elements and provenance—who, when and where it has been used—and then weaves these knowledge objects into a graph database, giving them a contextual awareness of their relationships to other objects, structural hierarchy (sections and headings), referenced objects within those objects (this paragraph is talking about facility "X"), and links to define other sources that contributed to the material. This provides context to the information, allowing for smarter query, but also provides significantly more context to AI/ML algorithms for better automation results. With this context, queries generated by a user can dynamically assemble a result that reaches across TTPs so that the user receives a custom generated TTP that contains relevant information for the mission they queried about, as well as relevant support information that the user may find helpful for further clarification. In essence, the TTP content writes itself to address the information needs of the user. The knowledge is presented in an approved format, offering different ways to visualize the same information based on the output desired. Instead of a written report, users can choose to see geographic or other visualizations that illustrate the relationships between the subjects of their search.

Movia helps retain tribal knowledge and encourages subject matter experts to provide it. As the famous quote by philosopher George Santayana goes, "Those who cannot remember the past are condemned to repeat it." In order for a lesson to be a lesson learned it must lead to a measurable change in behavior [2]. The key to a successful LL program is that warfighters need to see improvement to feel motivated to participate in a LL program. If they feel ownership, see transparency, and can understand how their lessons learned are captured and result in change, they are more likely to participate. In short, if they see organizational learning and improvement, they will participate.

KNITE helps accomplish this through a built-in collaborative, real-time feedback system. When an Airman returns with new information that would be helpful to others, he can comment directly within a TTP (even a dynamically generated TTP – the comments will be linked to the actual TTPs from which the content was generated) so that the note itself is in context of the information in the TTP that they would like to discuss. Movia's automation routes to the responsible producer for that information who can then review it and determine if it warrants further exploration. The responsible producer can then route it to other experts for vetting and then through the official approval chain for inclusion in the TTPs. For Air Force TTPs, this has cut version update times from years to days, and when Airmen see their knowledge contribution approved and appearing in such short time, they are motivated to contribute more.

Through KNITE's knowledge enablement, Airmen access the very latest knowledge when they prepare, giving them increased lethality in their missions and bringing them inside the adversary's OODA loop. www.modusoperandi.com

Bibliography

1. **Brady-Lee, P.** TTPs and Lessons Learned—Why They Matter. [Online] U.S. Air Force Expeditionary Center, April 7, 2017. [Cited: March 3, 2021.] https://www.expeditionarycenter.af.mil/News/Article-Display/Article/1145040/ttps-and-lessons-learnedwhy-they-matter/.
2. **Center for Army Lessons Learned.** *Establishing a lessons learned program (11-33).* Fort Leavenworth, KS : United States Army Combined Arms Center, 2011.