DMI

ENABLING A DATA-CENTRIC ARMY

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INTRODUCTION

The Army, like most other large organizations, is inundated with sources of data. Making that data understandable, actionable, and pertinent to the end user is a significant challenge. Today, humans handle the challenge of triaging, collating, analyzing, and then distributing this data. With the maturity of Cloud and Artificial Intelligence technologies, these human-centric tasks can now be augmented to drive greater efficiency and to serve as a force multiplier for the next generation of data workers.

DMI AT WORK

One example of how DMI has embraced the Army's ongoing transformation to a data-centric organization is through the modernization of the US Army's human resources records management system. The records management system provides the US Army, Army Reserves, National Guard, and the US Coast Guard with the capabilities to handle:

The critical documents for
Over 1 million active users

Historical records for
Over 4 million Veterans

A total of
Over 9 million records
in the system

THE PROBLEM?

Within the records management system, the documents live as scanned images and PDFs that users must manually curate and analyze to extract any intelligence from them. This is a manual and expensive process that ends up generating spreadsheets and personal databases that are used and then recreated by each user for each scenario the information is needed to solve. There has been no standard way to make the data interactive and to centralize the analysis capabilities for the users.

As the steward for this system, DMI has helped to drive the adoption of new technologies that will allow for a true digital conversion of information. Our new business intelligence workflow extracts the legacy images from within the records management system and converts them into valuable data that can be analyzed, mined, visualized and delivered to the end user in a common and repeatable method

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HOW DID DMI SOLVE THIS PROBLEM?

- DMI used agile development techniques to build application programming interfaces (API) into the system that allow modern information sharing with other systems, including our new platform for digital transformation.

- The APIs are secured using a cloud-based Zero Trust architecture that governs the flow of information between systems, ensures the information is appropriately encrypted and filtered based on the level of privilege established through the authentication of both the source and the destination systems (including the business intelligence workflow in our digital transformation platform).

- Supervised Machine Learning (ML) is a technology that learns from looking at a library of samples, in our case the different forms that make up a soldier's career (Army 201 – promotions, mobilizations, service schools, MOS, awards, transcripts, and so much more). It then provides an agent that is able to detect the right form template from the hundreds of forms that can describe a soldier. Our use of AI is consistent with the Army's Ethical Principles and ensures responsibility, traceability and has built in reliability.

- Optical Character Recognition (OCR) technology is used to read the text of the original forms as a human would and then generate a digital version of the data and all the details about how the analysis was carried out (metadata) to create a new digital record.

- We ensure the fidelity of the digital record to the original by using an Artificial Intelligence rules engine to verify that the digital data is in the right format (such as date of birth, social security numbers, EDIPI, telephone numbers, etc.), that the text captured matches the intent of the question, and that the data has traceability back to the exact location on the original form it was collected from. Ensuring that the captured PII is correct ensures the ability for our process to correlate the information together later in the analysis process. It also minimizes the risk of lost or unassociated records for the end user to manually resolve.

- With a verified digital version of the original record, we utilized a data warehouse to save the newly structured information in an accessible format. A data warehouse allows for structured data to be brought together from multiple sources and processed together.

- With our data warehouse populated with digital records, we can use the data warehouse to run advanced searches against the records defined by the users and data mining techniques to create relationships between the data -- and then to save it along with the originals. Searches into the data that one user defines can be expanded upon by another user with slightly different needs to create more detailed results.

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- Finally, we placed a visualization engine on top of the data warehouse so that we can create views into different sets of data. This could be statistics on discharge rates by type, soldiers categorized by MOS updated in real-time, or a merge of multiple data sets, such as time for promotion organized by MOS. These are just a few examples; each user of the system can have views into the data customized for their job function.

The work done by DMI to turn analog images of military forms into fully digital records is one example of the power of applying modern cloud computing technologies to solve problems that help improve the quality of life for millions of users. Through this modernization effort, we also give the Army data workers the leading-edge tools for preparing the data they need to perform their job.

WHAT DOES THIS ENABLE?

- Trends in information can now easily be visualized and customized based on the role that a user is performing within the system.

- Technology can search for records based on established rules and pushed out to knowledge workers.

- Intentional guidance can be developed through the identification of trends and relationships in the data. This can be brought to an appropriate users' attention when a traditional search might not have detected.

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ENABLING THE WARFIGHTER

The technology behind the modernization of the records management system is only one example that brings together the latest technologies to convert analog information that people must read and understand into digital information that is analyzed and presented to the right person and the right time. In the process, we enabled:

- Moving from a historical review of records to being able to process data at the moment it is provided to the system and enable the performance of analysis in real-time based on defined queries or with an engine to identify trends in the details provided.

- Analyzing it immediately to understand how it applies to an expressed Commander's intent.

- Pushing the relevant information to end users who have an identified need.

- Updating visualizations automatically to inform the right user.

WHAT ARE SOME OTHER PLACES WHERE THIS TECHNOLOGY CAN HELP IN HUMAN RESOURCES?

- Understanding Force Readiness for the Next Pandemic – **searching** through medical records automatically to understand vaccination status and risk areas. Or searching for **experience** in a hot region to be able to locate the right soldiers to serve as part of a force readiness campaign.

- Trend Analysis for Targeting Recruits that Turn into Successful Soldiers – using **historical trends** on discharges to identify characteristics for the next generation of soldiers.

- Recruitment Areas for the Next Army – using **patterns** in skill sets identified by the current information to identify gaps that need to be filled.

- Responding to the Changing Battlefield – **automatically reviewing** the experience and education of soldiers to identify candidates for use in demands outside their Military Occupational Specialty, like fighting climate change, cyber warfare, and other emerging threats.

- Preparing for Promotions or Awards – using the correlation abilities of the digital data ensures that all **relevant information** can be brought together about a soldier so that promotions and awards are processed quickly and accurately.

Through each of these examples in human resources we look to answer questions on broader themes for the Army:

- How do I respond to my current task?

- How do I prepare for the next mission?

- How do I ensure I take care of my people?

Finally, as we look at the impact of the digital transformations we perform, we ensure that we enable the current generation of data soldiers to use tools they are familiar with from their everyday life for use within the Army. This enables better opportunities for managing their advancement, focusing on their career field, ensuring they are relevant once they depart the military, and able to bring forward the next generation of advanced approaches to problem solving to the private sector.

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LOOKING TO THE FUTURE

The work with the Army's human resources records management environment is just one example of how a digital transformation can enable the data-centric needs of the Army. The techniques and technologies apply to many other areas of the Army and enabling readiness across all domains. In doing a self-assessment, you might ask yourself the following questions:

- Do I manually process lots of different types of information?

- Do I receive information in a variety of formats?

- Do I need to gain insight from merging information together from different sources?

- Do I have different user communities that need targeted information?

- Do I create a lot of spreadsheets instead of using repeatable reporting?

- Do I need to speed up my time to respond to the information I have received?

If you can identify with these types of questions, then the technologies we used to enable the human resource environment can be applied to your mission. Creating accessibility to your information enables a range of new analytical capabilities. Through data mining you leverage technology to do the heavy lifting in getting the data brought forward to answer your questions. Technology leads to repeatable processes that can be defined in reports, visualizations, and frameworks for inquiry. And finally, a digital transformation process allows you to gain velocity in executing your mission.

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