ARMY SCIENCE BOARD

Report of the Fiscal Year 2019 Study

Reforming Talent Management in the Army

The Army Science Board (ASB), organized under the Federal Advisory Committee Act (FACA) in 1977, provides the Army with independent advice and recommendations on matters relating to the Army's scientific, technological, manufacturing, acquisition, logistics and business management functions, as well as other matters the Secretary of the Army deems important to the Department of the Army.

ASB members and consultants are eminent authorities in the disciplines of science, technology, engineering, math, social science, business and governance. The Board also draws upon the expertise of senior retired military officers from all branches of service. All are dedicated experts who volunteer their time to provide independent assessments to Army civilian and military leadership.

The following report is a product of the ASB. The statements, opinions, conclusions, and recommendations contained in this report are those of the ASB study members and do not necessarily reflect the official position of the United States Army or the Department of Defense. This document is available in electronic format from the Defense Technical Information Center (DTIC) at http://www.dtic.mil.

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EXECUTIVE SUMMARY

Shortly after Dr. Mark Esper became Secretary of the Army (SECARMY), he directed the Army Science Board (ASB) to conduct an independent study on talent management (TM) of the Army's active-duty officer corps. The study was tasked to: a) define what "talent" means and determine its attributes; b) identify a software system to help manage talent, assess if the system is scalable, and determine whether the Integrated Personnel and Pay System–Army (IPPS-A) is a viable option; and c) determine whether generational groups in the Army should be managed differently.

We have a great Army that has successfully fought and won our Nation's wars. However, winning on the battlefield cannot be achieved by technology alone and our adversaries are eroding our technological edge. Winning requires a combination of technology and talented people. In fact, the Army's real competitive advantage is the talent of its people; and if we want to maintain our competitive advantage, we need to manage our officers' talents differently.

The Army has a legacy of producing great leaders and enjoys the ability to replace one officer with another of similar branch and grade, as though its officers were interchangeable. However, the reality is that every officer has a unique set of strengths and weaknesses. If we used that knowledge of the strengths and weaknesses of each individual to assign, combine, and develop officers, the Army could be far better. The Army requires a diverse array of officer competencies, a.k.a. "talents," that align with today's demands and tomorrow's anticipated needs. Our traditional Army TM practices don't effectively leverage the talents of our people.

It is also important to recognize that the Army has two distinct parts: The Operating Force (OF) and the Generating Force (GF). The OF is perceived to be more prestigious; it is that part of the Army that fights and wins the Nation's wars, with corps, divisions, brigades, and battalions. However, it is the GF which enables the OF to be effective. The GF obtains and trains recruits, conducts research, buys and maintains equipment, and provides facilities. Almost all lieutenants, but few generals, are in the OF, while very few lieutenants, but most of the Army's generals, are in the GF. Despite this change in leadership composition, development of GF competencies for officers isn't viewed as a top priority.

America's largest corporations have been developing and using sophisticated TM tools for leadership selection and development and they're achieving remarkable successes. One recent study has shown that corporations using modern TM practices were able to triple the retention rate of their highest ranked executive officers. In short, industries are taking advantage of this TM revolution, and the Army cannot afford to ignore it.

STUDY SUMMARY

The ASB study team interacted with over 40 government and commercial organizations involved in conducting and providing TM to employees. In reference to our first requirement, the team found that the Army identified talent as a combination of knowledge, skills, behavior and preferences. The study team approached the TM question using six pillars: (1) ***acquire***: recruit ROTC and West Point cadets for commissioning; (2) ***employ***: assign officers to positions; (3) ***develop***: develop the officer corps to be significantly better five years from now than it is today; (4) ***promote and select***: improve promotion and selection boards; and (5) ***retention***: keep outstanding officers. The sixth pillar, separation, was not addressed in this study.

In 2014, the ASB studied TM and produced four major recommendations. To date, none of the recommendations have been implemented by the Army, however, many positive changes have been made regarding TM:

(1) In FY 12, a process called Talent-Based Branching (TBB) was implemented to better align cadets and branches.

(2) In FY 16, the Army G1 established a TM task force.

(3) In FY 16, Human Resources Command (HRC) introduced a software system, Assignment Interactive Module (AIM), allowing officers and organizations to exchange information to facilitate "matching."

(4) In FY 18, the Army's retirement system changed from no retirement pay until serving 20 years to investing into a 401-type program that allows withdraws upon separation.

(5) FY 19's Congressional National Defense Authorization Act (NDAA) gave the SECARMY nine new TM authorities.

(6) In FY 19, the Army ran a major workshop and TM conference at the National Defense University.

(7) A TM strategy has been drafted.

Nevertheless, as Secretary Esper suggested, there is a significant number of opportunities to further enhance the TM of the officer corps. The study group identified several specific areas deserving attention:

(1) Establish unity of command to administer TM.

(2) Improve "talents" definitions and how to measure and use talents.

(3) Leverage advances made in industry to develop TM practices (e.g. assessment instruments) to more effectively manage talent within the officer corps.

(4) Increase awareness of differences in the OF and GF for cadets and junior officers and educate them on diverse career path opportunities above and beyond the traditional combat arms roles.

(5) Fully exploit the nine new NDAA TM authorities to counter previous impediments.

(6) Understand and take advantage of the four generational differences and expectations.

Recommendations:

- Assign Officer TM responsibility to the Vice Chief of Staff of the Army (VCSA) to achieve unity of command.

- Acquire:

  – Determine the undergraduate educational mix needed by the Army and use it for United States Military Academy (USMA) and Reserve Officer Training Corp (ROTC) scholarship selection.

  – Identify analytic assessments that can be used to determine ROTC and USMA candidates who are motivated to serve beyond their active duty service obligation (ADSO) (e.g., the Rational Biodata Inventory (RBI) portion of the Cadet Background Experience Form (CBEF)) and use as a factor in awarding a scholarship.

  – Provide additional instruction to cadets on the branches, functional areas (FA), GF elements, and opportunities in the Army, and significantly increase the ROTC cadet's knowledge of branches beyond that currently provided during Advanced Camp.

  – Review the current 21 Army talents; assess the most critical to the Army and correlate them with industry-accepted lexicon and make them measurable.

  – Assess talents throughout an officer's career and identify opportunities for continued career growth and development.

  – Talent-based Branching: Continue the TBB process but validate the effectiveness of this process; stress to cadets the importance of the Talent Assessment battery (TAB) and provide ROTC cadets a second TAB opportunity.

- Employ:
  - Continue the marketplace-based assignment process (e.g., AIM 2.0), add talent data, and develop metrics to assess its effectiveness.
  - HRC should guide organizations to develop assignment descriptions using talent definitions.
  - Authorize officer's self-professed resume data to be added to official Army records and use it for development, promotion/selection, and retention, in addition to assignment.
  - Train an adequate number of TM coaches at HRC through certification (through International Coach Federation or other accredited organization) prior to re-designating assignment officers as career coaches.
  - Teach the role, emphasize the benefit, and facilitate the selection of mentors.
- Development:
  - Establish a requirement for GF experience as a prerequisite for promotion to BG.
  - Describe and promulgate to the officer corps the importance and role of the GF.
  - Develop and institute procedures to facilitate officer broadening for GF expertise and the means to transition from the OF to the GF.
  - Create a Campaign of Learning that increases officers' knowledge of TM systems regarding branches, FAs, broadening, and transitions, and examines how officers can influence their career choices within the system.
  - Significantly increase the number of officers receiving advanced civil schooling (ACS) to develop the strategic competencies necessary to run the GF and the major commands in the OF.
  - Develop a policy for FA officers to periodically serve in OF units as a means of retaining branch relevance.
  - Develop a policy to routinely extend the mandatory retirement date of senior general officers to increase tenure and enhance development to industry standards.
  - As a pilot, authorize a limited number of officers to develop two career paths (a branch and a functional area).

- Board Guidance:
  - Develop and provide board guidance that requires the promotion of officers based upon the talents required for Army professional needs.
  - Develop and provide Board guidance that equates GF to OF positions.
  - Add talent-based assessments and self-professed data to the officer's Board File used by promotion and selection boards.
  - Increase below-the-zone (BZ) selection up to the 10% Congressional limit, consistent with their quality.
- Congressional TM Authorizations:
  - Request additional Congressional authority to re-commission officers who have resigned their commission.
  - Use new Congressional authority #507 to allow officers who are ACS graduates to be considered for promotion with an earlier year group and #506 to extend their mandatory retirement date for a similar period.
  - Establish a policy to integrate selected BZ officers into the Order of Merit List (OML) according to competency in according with Congressional authority #504.
- Retention:
  - Assign lieutenant retention goals to battalion commanders.
  - Determine a means to keep officers on active duty beyond their ADSO and inspire cadets and junior officers to keep the best lieutenants in the Army.
  - Require all officers leaving the Army to complete a survey describing the reason(s) they are leaving; use this data to make changes to increase retention.
  - Identify a cohort among newly commissioned officers after two years who are considered "must retain" and assign a qualified mentor to motivate each of them as they approach their ADSO halfway point.
- TM Software System:

- Evaluate the TM system to improve Army operational performance.

- Run a pilot test in a selected small Army branch or FA of commercial, off-the-shelf (COTS) TM systems (one or two) applicable across all pillars.

- Structure TM data to make it accessible, comprehensive, and object-oriented for use in TM systems with advanced data analytics and artificial intelligence (AI).

- Provide a dedicated team of experts (e.g. data scientists) to adapt an industry-developed TM system to the needs of the Army.

SUMMARY

The study team has found and outlined several recommendations for the Army's consideration to significantly improve TM. If the Army implements these recommendations and truly takes advantage of the talent differentials it has within its ranks, it can enhance its competitive advantage and be significantly better than it is today.

1. STUDY OBJECTIVES, SCOPE, AND APPROACH

1.1. TERMS OF REFERENCE (TOR)

The study was directly guided by Terms of Reference (TOR), signed by then SECARMY, Dr. Mark Esper, on 4 Jan 2019 (Appendix A). The purpose of the study was to improve the Army's ability to recruit, retain, and advance its talent, and to plan for the anticipated demands of the future force. The Secretary observed that the Army personnel system needed a dynamic information management (IM) system aligning force requirements with Soldiers' talents, interests, and career desires. Recognizing the scale of an Army-wide TM effort, the ASB was asked to describe a system, its tools, and procedures to better manage and plan for the active Army's officer corps, which would present a smaller test bed.

Specific tasks outlined in the TOR included:

a. Describe how to determine the desired attributes (education, experience, personality, etc.) associated with various Army career paths and positions, and how to use this data to develop officers to become qualified for these positions, with particular attention to positions in the Generating Force (GF).

b. Review current and planned Army personnel management systems (e.g., Integrated Personnel and Pay System–Army (IPPS-A)),[1] outside talent marketplace portals, and the best human resource management practices being exploited in industry, other agencies, and academia to assess their applicability in recruitment, development, position assignment, retention, and planning for the Army.

c. Determine how best to scale the use of this personnel information management system to meet all the Army needs.

d. Examine the strengths, weaknesses, and generational differences of personnel (e.g., baby-boomers, Millennials, and Generations X and Z) to: (i) assess the potential impact of changes in attributes of personnel in different generations, and (ii) maintain this awareness as it affects how to lead, train, motivate, and retain Soldiers, as well as plan for future force needs.

Regarding the final task, there are four generally defined generations within the Army officer corps, and each generation has discernible attributes that, if allowed to inform the TM process, may help in optimizing the officer corps.

[1] IPPS-A is a financial software system used by the Army that includes personnel transaction data with plans to add talent management functionality.

1.2. STUDY TEAM

The study team consisted of ASB members with academic backgrounds in the fields of Civil, Electrical, and Industrial Engineering; Linguistics; Management; Medicine; Operational Research; Organic Chemistry; Physics; and Psychology (Appendix B). Team members brought subject matter expertise in human resource management, instructional design, neuroscience, public health, strategic planning, systems engineering, leadership development and coaching, team facilitation, and technology transitions. The team also included former Army and Sister Service leaders among its members, bringing experience in a variety of military operations, policies, and technologies.

1.3. STUDY METHODOLOGY AND SOURCES

The study team gathered data during more than 40 visits and interviews conducted over seven months with representatives from government, academia, commercial industry, and HR consulting firms (Appendix C). From the data, the study team identified the need to reconcile key definitions of terms (e.g., talents, traits, etc.), established a baseline for the Army's current TM process, and identified best practices in government and commercial industry. The team canvassed the latter to get a sense of which TM tools might best fit the Army in terms of scale and operational requirements.

2. RESEARCH AND ANALYSIS

Per the SECARMY's TOR, the study team was tasked to consider TM systems and practices pertaining to Army active duty officers. To establish a baseline for its analysis, the study team gathered data on active duty officers' ranks and career fields (Fig. 2.1).

Category	TOTAL	GO	O6	O5	O4	O3	O2	O1
Operations	30,493	-	1,288	2,574	4,081	10,547	7,434	4,569
Operations Support	13,062	-	925	2,086	3,282	4,626	1,490	653
Force Sustainment	13,678	-	656	1,560	2,412	5,125	2,546	1,379
Information Dominance	1,009	-	42	160	263	316	110	118
Special	18,621	303	1,200	2,336	4,926	7,681	1,259	916
	76,863	303	4,111	8,716	14,964	28,295	12,839	7,635

Summary: 28 Branches, 14 Functional Areas (FA), grouped in 5 competitive categories.

- **Operations:** Infantry, Armor, Field Artillery, Air Defense Artillery, Aviation, Engineers, Special Forces
- **Operations Support:** Military Intel, Military Police, Strat Intel, Foreign Area Officer, Signal, Strategist
- **Force Sustainment:** Adjutant General, Quartermaster, Transportation, Medical Service Support, Finance, Force Management
- **Info Dominance:** Cyber, Public Affairs, Military Info Support Ops, Electronic warfare
- **Special**: Medical, Dental, Veterinary, Nursing, Legal, Chaplains

Source: Keith Olson, G1, PRS

Figure 2.1 Active Army Officers Grade and Competitive Category

2.1 WHY DO WE NEED TM NOW?

The Army produces some of the greatest leaders in the world and its TM process has contributed to the successful generation of these outstanding leaders. However, as good as the system has been, new commercial, TM tools and processes could allow the Army to exploit individual officers' competencies and become even more effective in the development and utilization of their talents.

Should the Army not take advantage of the wealth of new TM tools and capabilities, it risks losing the "war on talent." Commercial industry, academic institutions, and other entities are recruiting many of the same key candidates, and they're competing with Army recruiting and retention. By deploying their new TM capabilities, competing organizations can identify individuals and effectively recruit (officer) candidates away from the Army. To counter, the Army should begin to adapt similar capabilities to better identify and target high potential recruits.

In addition, if the Army doesn't move forward with more advanced competency assessments and management techniques, potential adversaries will likely adapt these tools and develop a significant advantage in their human capital.

2.1.1 WHAT IS TM AND WHY NOW?

A sea change has occurred in the way that corporations recruit, develop, promote and retain employees, driven in large part by the ability to better utilize employee talents. A variety of available data—biometrics, cognitive profiles, and knowledge, skills, and abilities (KSA) assessments—can now be used to increase a corporation's productivity in TM decisions. Corporations now measure a range of individuals' traits and attributes and use these data to better inform the corporation's TM processes, while at the same time increasing employee's job satisfaction and productivity. In a nutshell, this is the basic essence of TM, and it's driven by substantial advances in computer science and assessment strategies.

Over the past twenty-five years, there's been a revolution in computer software engineering applied to TM, driven by advances in database management, algorithmic analyses and artificial intelligence (AI). The use of AI has led to the establishment of companies providing TM software to help increase a client's corporate health and productivity by better characterizing options for potential matches. Today, hundreds of thousands of American employees are recruited, selected for positions, and promoted, based in part on the application of these TM tools. The results are noteworthy. Corporations have reported significant success in retaining top performing executives. The Army could greatly benefit by leveraging these capabilities that has become more commonplace in the commercial sector.

2.1.2 SUMMARY OF ASB FY14 STUDY

At the request of SECARMY, the ASB conducted a study in FY 14 entitled, "Talent Management and the Next Training Revolution." The terms of reference (TOR) tasked ASB to:

- Develop a concept of talent the Army should use to recruit, train, and retain individuals and deliberately match them to positions that support Army's ability to operate optimally.

- Examine and evaluate current technologies used to recruit, train, and retain individuals.

- Develop an Army-specific TM roadmap that incorporates the best TM systems and technologies through 2030.

Specific lines of inquiry were developed around those tasks and to answer those questions, the study team interviewed over 250 individuals from the military, industry, and academics, and

reviewed over 280 articles and reports on the subject matter. Based on the information collected, answers to the lines of inquiry were developed as follows:

1. What is the Army currently doing to select and advance talented individuals and teams?

Although the Army was deliberate and effective in developing leaders in the OF, U.S. Army Training and Doctrine Command (TRADOC) acknowledged the need for advanced training, improved individual and team performance, and the development of agile, adaptive leaders capable of exercising mission command.

Brigades deployed to Iraq and Afghanistan had collected data on their Soldiers' unique capabilities, but it wasn't readily available to decision-makers. In addition, ad hoc personnel management systems used by senior officers and were often modeled after promotion practices that led to that leader's advancement (i.e., GEN Smith did x, y, and z in his career, so his Captains and Majors should do the same). These makeshift programs were intended to augment or fill gaps in the Army's personnel system, but they fell short of selecting the best qualified candidates for the assignment. As periods of declining budgets became more regular and the Army saw its recruiting pool shrink (concomitant with increasing competition for talent and task complexity), it lost the luxury of making do by not having the right individuals in place.

2. Is it possible to transfer best practices in recruitment, training, and retention to the Army?

Large corporations such as General Electric, Microsoft, Google, Proctor & Gamble, etc. and government organizations like NASA recognized that talent was a "strategic asset" that was valuable, differentiating, and difficult to imitate. A survey of over 600 companies uncovered three top TM practices: (1) leadership's ability to be inspirational while being involved in the acquisition, assessment, and development of talent; (2) recognizing potential leaders and cultivating their development; and (3) using TM programs. Successful organizations also focused on learning cycles that allowed them to compete and dominate in the future.

The study team posited the Army could likewise implement an integrated TM enterprise (ITME) (Fig. 2.2) under a unitary authority. The TM lifecycle depicted below was used in some form, partially or completely, by most corporations.

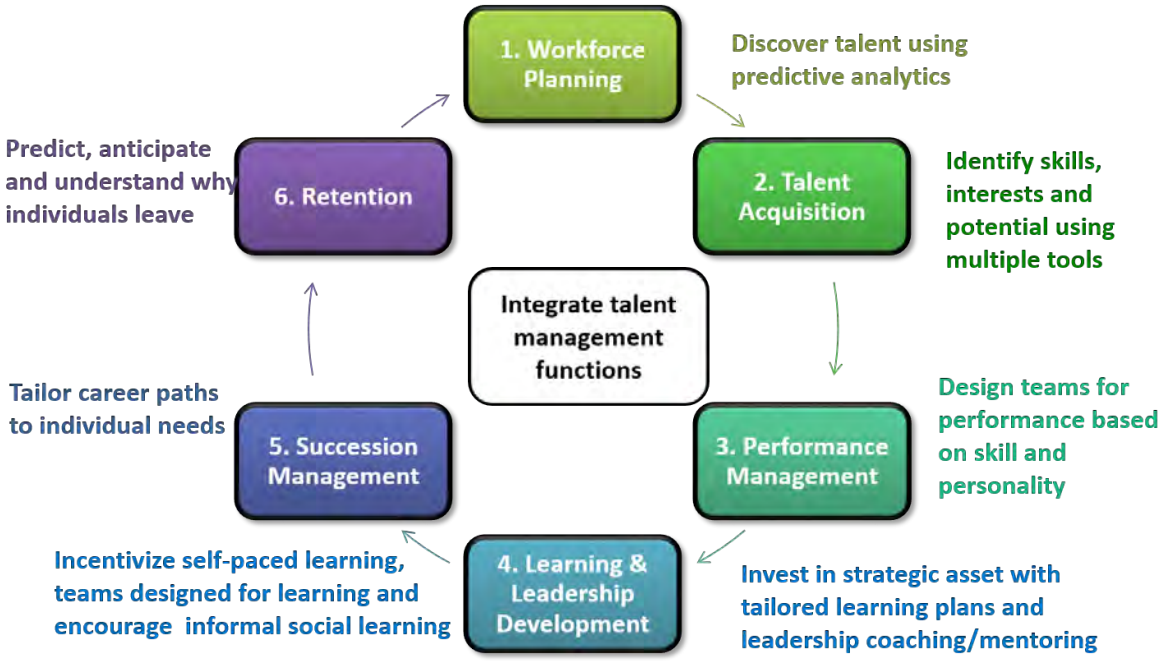

Figure 2.2 Integrated Talent Management Enterprise (ITME)

Tools existed in varying stages of maturity to assist with each stage of the cycle, and each of the elements of the nominal ITME were assessed to provide the Army with best practices.

Workforce Planning – Though limited to the defense budget's Program Objective Memorandum (POM) five-year cycle, the Army's requirements for future skills extend beyond the POM. Changing demographics were driving the Army to use a different approach for attracting talent.

Talent Acquisition – Practices related to attracting the right person at the right time were (and still are) applicable to Soldier recruitment. By using TM tools to target recruiting, the Army could make data-driven decisions to prevent talent-timing mismatches (i.e., Soldiers with out-of-cycle skill sets). This would mitigate the high cost of replacing talent.

Performance Management – while the Army has always had guidelines for advancing individuals in rank, commercial industry developed transparent processes to measure their talent using both qualitative and quantitative assessments. These, in turn, facilitated the development of measurable leadership criteria and the creation of leadership models. Industry also developed evaluations geared toward creating better, more productive teams, a critical function for success in the Army. For example, optimal teaming requires attributes such as trust, effective collaboration, and positive reaction to stress.

Learning and Leadership Development – research in neuroscience on learning acceleration wasn't mature enough for validation, but studies in psychology showed proportional correlations between self-perception and deep learning to individual performance. This was promising, as it indicated the Army could use master coaching to assess Soldiers and help them perform optimally. Beyond building skills, that level of development was posited as likely to have a positive influence on retention, succession, and overall talent without additional cost to the Army. As a corollary, the research indicated that the Army should allow officers to attend graduate school, which would help the Army to develop strategic thinkers in higher ranks.

Succession Management – applying TM principles to succession generally entailed having senior leaders serve 2-4 years prior to rotating to another position. Commercial industries developed succession strategies that usually included broadening assignments to enhance a potential leader's talent. The assignments and career paths were made in consult with the individual (e.g., self-nominating for a developmental assignment), a critical piece for retention.

Retention – studies had shown that the top two reasons individuals left an organization was because they felt disrespected and/or there was limited opportunity for advancement. Individuals were also interested in having a work-life balance, suggesting the Army may have to be more flexible in considering factors such as a spouse's career, a child's education, etc. Negotiating and compromising with high performing Soldiers may be unavoidable in the future as the Army increasingly competes for talent.

The assessment of industry practices indicated the Army's development of an ITME would decrease the risk of losing junior officers, especially valuable, strategic thinkers. Perhaps most importantly, there were strong indications that the Army should appoint a senior TM leader to ensure the entire cycle functioned optimally and decisions made about talent were data-driven at every step of the cycle. The leader would also ensure the ITME aligned with organizational needs.

3. Does the Army have pockets of innovative TM practices that it should bolster?

Beyond the ad hoc programs used by senior leaders throughout the Army, the Office of Economic and Manpower Analysis (OEMA) had worked on TM-related issues, most notably its talent-matching project, Green Pages, which sought to match individuals to job requests/ descriptions based on their unique talents and the needs of the Army. Lessons learned from Green Pages, coupled with the use of TM analytics, were intended to enable the Army to have "the right person for the right job at the right time."

The study team also found that West Point/U.S. Military Academy (USMA), Reserve Officer Training Command (ROTC), and Officer Candidate School (OCS) each had processes for

selecting officer candidates, but they didn't share data to find a best fit for candidates or try to determine if best practices were followed.

U.S. Army Cyber Command (ARCYBER) developed efficient recruitment practices and a TM program allowing for flexible career timelines, a build-assess-build strategy, career paths/plans that fostered advancement, and individual career management for officers. Although there were monetary incentives, ARCYBER also used special/challenging duty assignments, educational opportunities, conference attendance, recognition, and a positive work climate as motivators.

4. What tools (big data, predictive analytics, etc.) and techniques (customized training) are other organizations using to manage talent?

Tools existed to address all elements of the talent cycle and commercial industry was conducting continuous validation to determine reliability. Rapid advances in technology lead to reliable methods for harvesting data to make decisions and in turn, to use predictive analytics to develop effective leaders.

Based on its data collection and answers associated with the lines of inquiry, the study team made findings and recommendations in four major areas:

1. Enhance and Integrate TM

Findings:

- Current Army personnel management is distributed, siloed and lacks unified senior leadership
- Workforce planning does not occur beyond the POM cycle
- Talent acquisition does not use common talent assessment protocol across the enterprise system e.g. West Point, ROTC, OCS
- Performance management is not standardized across the enterprise system e.g. 360 evaluation/counseling not widely adopted
- ITME is essential for Army to create a *quality* force capable of meeting global challenges with fewer Soldiers

Recommendation:
SEC Army through CSA task TRADOC to design and implement an ITME under a single leader

2. Enhance Army Learning and Leadership by Creating a Talent Proving Ground

Findings:

- Current Army training and education is not fully taking advantage of recent advances in neuroscience research, learning strategies, and educational technology

- Recent advances in sophisticated team design, customized learning, skill development (particularly in STEM) and leadership assessment are not being leveraged
- The Army lacks a TM proving ground.

Recommendation:
SEC Army through CSA task TRADOC to create a TM proving ground to test latest advances

3. Establish an Army ITME Systems Integration Lab (SIL)

Findings:
- Current Army TM System does not have a shared database for Officer management
- Technology infrastructure is not able to support enterprise data access and advanced analytics
- IPPS-A plans to integrate four HR / Financial databases
- Army Analytics Group (AAG) Person Data Environment (PDE) project provides unified / policy access to 250 Army databases

Recommendation:
ASA(MR&A) Sponsor an Army SIL with the following ITM Functions:
- Scalable data infrastructure using lightweight federated distributed database architecture
- Data management enabled by common data dictionaries and taxonomies
- Web-based portal for global ITM data, data analysis, and report access, controlled by Army roles and policies

4. Create Talent Pool Through Broadening Assignments

Findings:
- The broadening assignment process is inconsistent across the enterprise, particularly in the GF
- Formal process to identify leader pools for operational assignments
- Siloed process to identify leader pools to fill institutional assignments
- Building junior officer talent pool with potential to operate and to lead Generating Force organization is lacking

Recommendation:
SEC Army task CSA to sponsor a pilot project to build a talent pool for critical GF positions through broadening assignments.
- Focus on the GF
- Use predictive analytics, individual assessments and community of practice input to discover junior officers with strategic potential and to make assignments
- Develop and manage officers considering the following:

- Identify specific developmental assignments and training
- Create a team to manage the developmental assignments
- Officers self-nominate; pool does not limit operational assignment consideration

While the Army has taken significant steps to develop its TM program since FY 14, none of the ASB's recommendations have been adopted. The current study team found that the recommendation from the FY 14 study are still valid and worthy of further consideration by the Army.

2.1.3 WHAT'S HAPPENED SINCE?

Since the FY 14 ASB study team report was submitted to SECARMY, the Army has undertaken several activities to implement a TM system. Prior to the ASB's work, Talent-Based Branching (TBB) was implemented as a method to use a variety of metrics in determining how to better align the various branches and cadets. In 2016, the Assignment Interactive Management (AIM) was piloted and is currently scheduled for full-scale use by officers in 2019. Changes to the Blended Retirement System began in January 2018, offering earlier retirement benefits while reducing the retention benefit of the old system. In August of 2018, the NDAA required DoD to analyze the efficacy of various provisions within Defense Officer Personnel Management Act (DOPMA) and Reserve Officer Personnel Management Act (ROPMA), resulting in various DOPMA/ROPMA authorities being modified by April 2019. The Army also sponsored two TM conferences; a RAND Corporation workshop entitled "Identifying Opportunities for Furthering Talent Management in the Army" (December 2018), followed by a TM Planning Conference at National Defense University (January 2019). Input from the conferences resulted in a draft of the Army TM Strategy released in June 2019.

As of this writing, the Army is scheduled to implement its TM Implementation Plan as well as develop an Assistant Secretary of the Army, Manpower and Reserve Affairs (ASA(M&RA)) People Strategy, to include military and civilian personnel.

2.1.4 WHAT OPPORTUNITIES REMAIN?

From the FY 19 study team's data gathering, it's clear that considerable effort has been applied to Army TM, with caveats. For example, some TM tools are being used in the Army, though in many cases, with limited evidence of their validity or effectiveness. Several organizations exist within the Army to address TM, but the approaches have not yet achieved significant change in the way the Army manages its officers. While the Army has taken several positive steps toward developing and implementing a TM program for its officers, opportunities for improvement exist:

1. Improve the selection, definition, validation, and measurement of Army talents. This is a broad goal in terms of strengthening the underpinning and approach of Army TM. For example, the Army measures 21 talents, but it's unclear if these are the relevant set

of talents to measure, if these talents are uniformly understood, and/or whether the instruments used provide valid measurements.

2. Employ additional TM data in each of the TM pillars. There are different pillars in which TM is used: acquire, employ, develop, promote/select, retain, and separate (Fig. 2.3), defined as follows:

- Acquire: Identify and recruit the diverse talents required for the current and future force, develop that talent for initial entry into one of the Army's workforce segments (branches), and set conditions for the optimized employment of that talent.

- Employ: Optimize productivity of Army professionals: align their unique talents against organizational talent demands to the mutual benefit of both the individual and the Army. Provide each professional with the job opportunities to unleash his or her talents and thus optimize performance and productivity.

- Develop: Develop the talent for entry into the Army's branches and set conditions for its optimal employment. Increase rigorous training, educate and license professionals. Aligning certification more closely with demonstrated and measurable expertise rather than time in grade, service or position.

- Promote: Train and equip selection boards to fully leverage available information about the officer corps to ensure the selection of the best professionals.

- Retain: Reduce critical turnover and keep diverse, highly talented personnel to ensure that the Army meets current and future needs.

- Separate: Carefully identify substandard or marginal performers, then select them for separation.

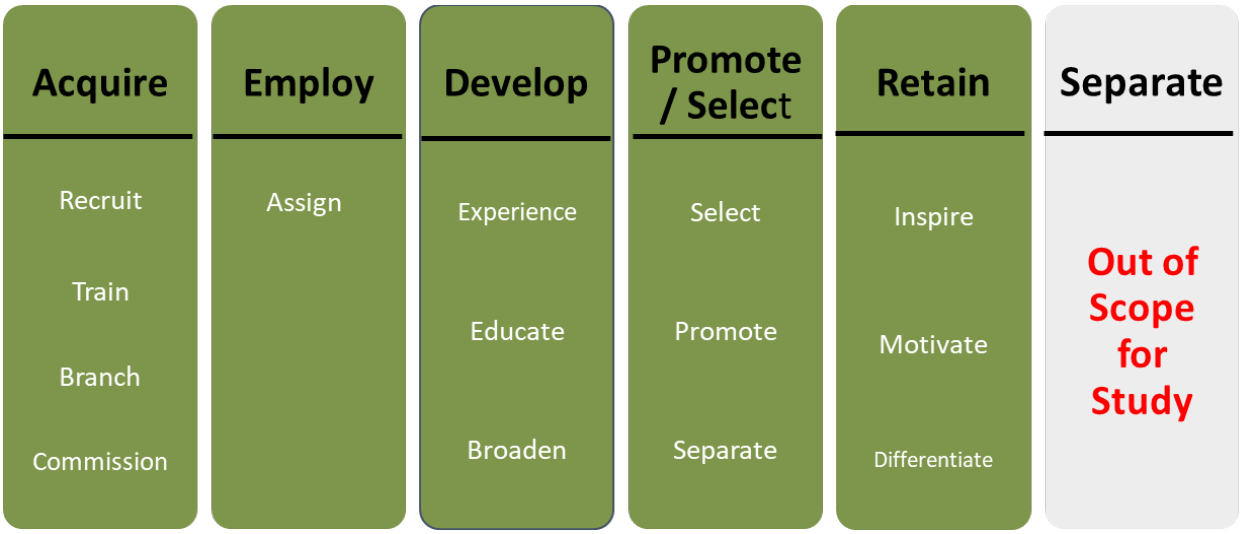

Figure 2.3 TM Pillars

Data should be meaningfully gathered and optimally used to advance TM across all pillars. Different data might be needed for different pillars, and the same data might be applied differently to different pillars.

3. Assess and propose commercially validated TM software systems to support the pillars. The Army currently utilizes various software tools for TM, but their effectiveness isn't well understood. There are several advanced and state-of-the-art software tools that are commercially available and used by corporations, often with great success.

4. Provide the officer corps a better understanding of the role and importance of the GF relative to the OF (Fig. 2.4). A larger fraction of officers migrates into the GF as they move up in grade; thus, it's important to properly educate the officer corps as to the value of their talents in the GF. Successful TM requires buy-in from decision makers, members of promotion boards, senior leaders, and mentors at all levels, as well as the individual officers making career decisions.

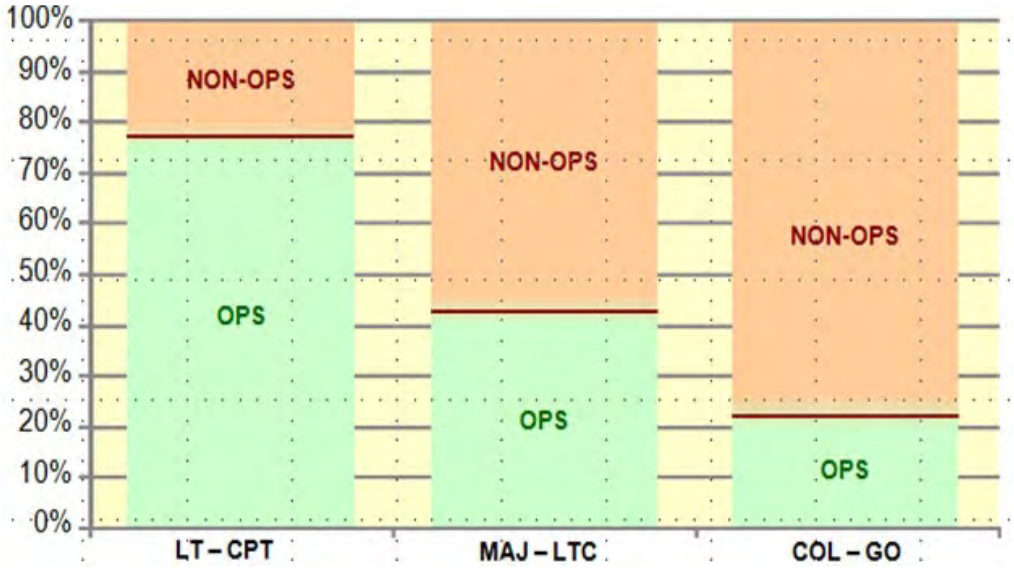

Figure 2.4 Share of ACC Commissioned Officer Billets Which Reside in MTOE Units (Source: OEMA)

5. Develop processes to exploit the differentiating expectations, strengths, and attributes of the Army's multiple generational groups. Generally, psychologists tend to use birth year to determine a person's generation (e.g., Baby Boomers, Generation X, Millennials, and Generation Z). Generational information can be helpful in determining if a person may demonstrate characteristics and attributes that are more prevalent in each group. There are currently four different generations serving in the Army officer ranks, and it may be possible to use their differentiating strengths and attributes more optimally.

6. Develop processes and procedures for transitioning officers from OF to GF career paths. There might often be officers who would be a good fit in the OF but may also have talents which are more valuable to the GF. The Army's up-or-out approach may make it difficult to optimally transition such officers from the OF to the GF.

7. Develop policies to fully exploit the FY 2019 NDAA authorities. NDAA included language for nine new authorities providing the Army with significant opportunities to improve TM:

- Sec. 501 - Repeal of requirement for ability to complete 20 years of service by age 62 as qualification for original appointment as a regular commissioned officer (10 USC 532)

- Sec. 502 - Enhancement of availability of constructive service credit for private sector training or experience upon original appointment as a commissioned officer (10 USC 533) (current policy applies to certain branches)

- Sec. 503 - Standardized temporary promotion authority across the military departments for officers in certain grades with critical skills (10 USC Ch 35, sec 605)

- Sec. 504 - Authority for promotion boards to recommend officers of particular merit be placed higher on a promotion list (10 USC 616, 624(a)(1))

- Sec. 505 - Authority for officers to opt out of promotion board consideration (10 USC 619, 611(a))

- Sec. 506 - Applicability to additional officer grades of authority for continuation on active duty of officers in certain military specialties and career tracks (10 USC 637(a))

- Sec. 507 - Alternative promotion authority for officers in designated competitive categories (10 USC 649)

- Sec. 513 - Authority to designate certain reserve officers as not to be considered for selection for promotion (10 USC 14301(j))

- Sec. 518 - Authority to adjust effective date of promotion in the event of undue delay in extending Federal recognition of promotion (10 USC 14308(f))

The Army has made some decisions made concerning Sections 501, 502, 503, 504, 505, and 518, whereas the authorities are still under development concerning Sections 506, 507, and 513.

8. Centralize the authorities and responsibilities for TM to achieve unity of command. Centralize the authorities and responsibilities for TM to achieve unity of command. More centralized command of TM may be warranted due to its importance to the Army as well as the need to establish uniform understanding and application within the Army.

2.2 CURRENT ARMY OFFICER TM SYSTEMS AND PROCESSES

Historically, the Army has focused its officer TM on developing combat and general leadership skills. When developing career paths, there was no recognition of individual competencies nor differentiation based on personal skill sets. All officers proceeded along the same general paths. The Army took it as a core strength that each officer position could be filled by any officer in a cohort of similar branch/FA and rank. This approach is very similar to how commercial industry used to develop corporate leaders through “General Manager” programs. The belief was, and is, if an individual was trained to be a general manager, s/he could run any organization.

Over the course of the last decade, industry and business educators have moved beyond this approach. There’s still the belief that corporate leaders need general management skills to run

organizations, but it's become accepted that certain individuals have better competencies—aptitudes, talents, or skills—which make them more qualified for positions. In turn, a good fit of competencies to position can lead directly to higher performance levels. Advances in technology can now help accurately identify, assess, and differentiate competency sets, which has helped solidify the TM approach.

Within the last few years, the Army has acknowledged the shift from personnel management to talent management, embracing the need to capitalize on individual characteristics, competencies, and preferences.

2.2.1 WHAT'S THE ARMY DOING WITH OFFICER TM?

The Army continues to evolve its TM approach to the recruitment, development, and retention of its officer corps. In 2014, OEMA Senior Research Analyst Mike Colarusso and Emeritus Director David Lyle published a paper titled, "Senior Officer Talent Management, Fostering Institutional Adaptability," which proposed fundamental improvements to officer personnel management practices. OEMA then initiated a novel program, TBB, whereby USMA cadets participate in taking the Talent Assessment Battery (TAB) of tests two times during their undergraduate years (Fig. 2.5).

Module	Description	Research Partners/Developers
1a. GRE-Analytical Test **1b**. Cognitive Reflection Test	• **Questions:** 30 (23-GRE; 7-CRT) • **Length**: 45 Minutes • **Type**: Cognitive • **Purpose:** GRE-A assesses an individual's ability to analyze and logically solve problems. The CRT measures individual ability to suppress an intuitive and spontaneous wrong answer in favor of a reflective and deliberative right answer..	**1a**: Educational Testing Service **1b**: Shane Frederick (Yale School of Management)
2. Rational Bio-data Inventory 1.1 (RBI 1.1)	• **Questions:** 130 • **Length**: 40 Minutes • **Type**: Non-Cognitive • **Purpose:** RBI 1.1 assesses factors (e.g., individual stress tolerance, impulsiveness, achievement orientation, and cultural tolerance) related to officer retention and continuation behavior.	USMA Army Research Institute
3. Rational Bio-data Inventory 2.0 (RBI 2.0)	• **Questions:** 134 • **Length**: 40 Minutes • **Type**: Non-cognitive • **Purpose:** RBI 2.0 specifically assesses factors related to 19 talent dimensions in the talent-based branching framework (e.g., mentally tough, inspirational leader; logical analytical; perceptive, etc.)	USMA
4. Test of Personal Intelligence Test (TOPI)	• **Questions:** 112 • **Length**: 40 Minutes • **Type**: Cognitive • **Purpose:** TOPI predicts performance in tasks that require knowledge of personalities, both self and others. Individuals with personal intelligence are leaders among their peers, effective communicators, and skilled at understanding others' feelings and motives.	John D. Mayer (U. of New Hampshire)
5. Spatial Ability Test	• **Questions:** 20 • **Length**: 8 Minutes • **Type**: Cognitive • **Purpose:** The spatial ability test measures an individual's potential to succeed in a job where drawing and/or plans are used. It measures an individual's ability to understand interactions between 3-dimensional components.	US Department of Labor
6a. Big 5 Personality Type Indicator Test (NEO-FFI) **6b**. Grit Test	• **Questions:** 85 (73-Big 5; 12-Grit) • **Length**: 30 Minutes • **Type**: Non-Cognitive • **Purpose:** The NEO-FFI assesses an individual's personality in terms of five specific traits: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The Grit Test assesses a person's ability to stick with things over long periods of time, reflective of an individual's ability to exhibit stamina.	**6a.** Paul T. Costa (Johns Hopkins) and Robert R. McRae (Gerontology Research Center) **6b**. Angela Duckworth (U. of Pennsylvania)

Figure 2.5 Talent Assessment Battery (TAB)

The TAB data are used by the branch staff and the cadets to better identify potential matches to a branch best suited to the cadets' talents and the branch's top five to seven talent needs. Three years ago, the Army expanded the TBB process to include ROTC cadets, but they only take the TAB once between their junior and senior years.

The TAB process assumes that each of the cadets' talents can be measured relative to other cadets in the same cohort by using an array of assessment tools and a multi-variant weighted approach. Results provide a cadet's scores for 20 of the 21 defined Army talents. Essentially, the TAB provides a basis for determining how the Army might leverage each cadets' individual talents. Early analyses reveal that the TBB process has had a significant effect on how cadets make branch selections. Each cadet's assessed talents are provided to each branch and the branches then assess the officer applications using a thumbs up (preferred candidate), neutral, or thumbs down (will not select) indicator. As a result, most USMA cadets change their selections for first branch choice once they become aware of how their TAB-assessed talents correspond to the talents desired by each branch. It's too early to evaluate the full impact of the TBB Program on officer retention or on its effects on officer corps performance within branches. Moreover, despite the promising potential of the TBB, the TAB data are neither kept nor used by the Army once the cadets are commissioned.

The Army began using the AIM software platform in 2016 to help officers and organizations determine more desirable and better-suited assignments and assess candidates for the upcoming officer corps positions. Officers provide resume-type input of self-professed data to augment their talents in applying for position vacancies (Fig 2.6).

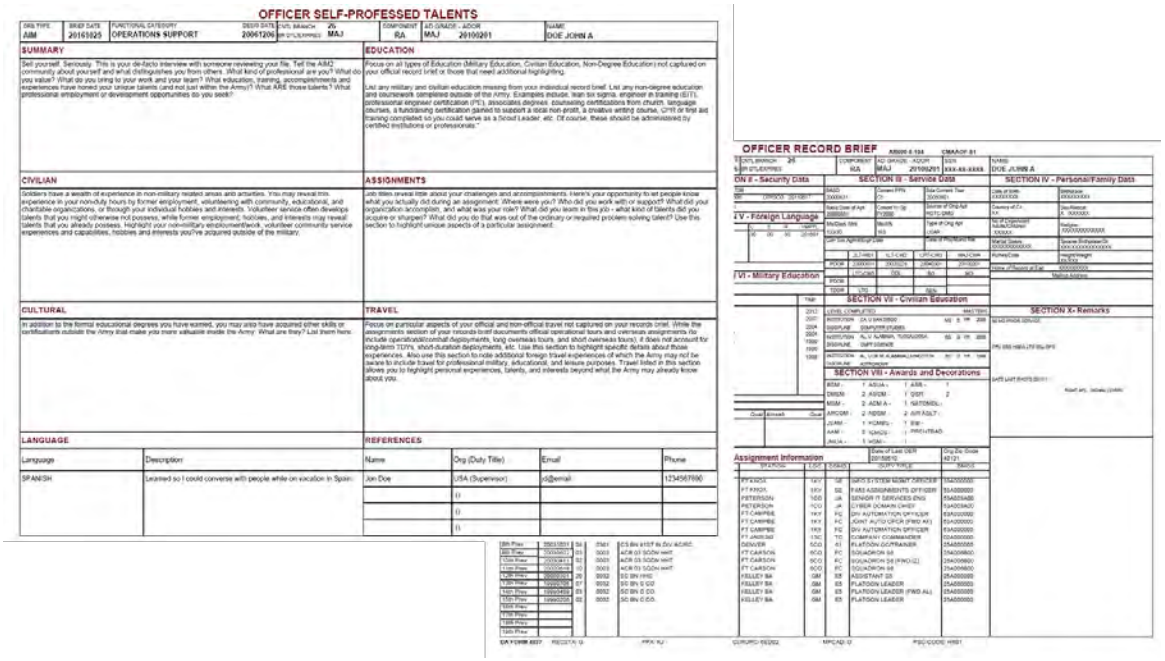

Figure 2.6 Officer Resume

Although an officer is unaware of an organization's assessment of their application, an officer can see the number of applicants that have applied for a position. The process is intended to better place officers in positions that best leverage the officer's unique talents, experience, and career desires. Like TBB, it's too early to effectively judge how well AIM is improving the caliber and performance of the Army's officer corps.

Currently, the Army plans to expand the IPPS-A software program to use as its TM tool. By its very nature, IPPS-A was designed to facilitate better handling of financial and personnel transactions, e.g., change of station, promotion, and pay. The data and processes required to manage TM effectively are very different. Thus, adopting IPPS-A to perform TM functions would require making major adjustments. For instance, IPPS-A utilizes a relational database system, which is a software architecture ill-suited for doing the data analytics needed to evaluate and manage the TM data for tens of thousands of individuals. In the commercial sector, the TM industry is using object-oriented data management structures in their TM software.

2.2.2 ARMY CULTURE

The Army exists "to fight and win our Nation's wars, by providing prompt, sustained, land dominance, across the full range of military operations and the spectrum of conflict, in support of combatant commanders." To accomplish its purpose, the Army has evolved into a complex administrative organization – its Generating Force (GF) – running hospitals, schools, repair centers, research and development laboratories, housing facilities, etc., all with the sole purpose of producing the world's best warfighters.[2]

The Army has developed a culture supporting the notion that, "if it ain't broke, don't fix it." based on a long history of fighting and winning wars. Consequently, the Army is risk-adverse to changing the way it does business, including how it manages its personnel.

Army leader development is typically focused on readiness, such as developing the best battalion and brigade commanders. There tends to be a prescribed and accepted path to achieving the rank of general officer through the successful performance in increasingly

[2] For those unfamiliar with the Army, the GF supports the ability of warfighters to sustain dominance. The GF is a vast infrastructure, otherwise known as the Department of the Army (DA), led by the SECARMY. SECARMY is subject to the authority, direction, and control of the Secretary of Defense, as well as the provisions of chapter 6 of U.S.C. Title 10, and is responsible for, and has the authority necessary to conduct, all affairs of DA, including the following functions: recruiting, organizing, supplying, equipping (including research and development, training, servicing, mobilizing, demobilizing, administering (including the morale and welfare of personnel), maintaining, construction, outfitting, and repair of military equipment, construction, maintenance, and repair of buildings, structures, and utilities, and the acquisition of real property and interests in real property necessary to carry out these responsibilities.

challenging positions in the OF. However, most of the available positions for the highest ranks in the Army aren't in the OF; they're in the GF. Regardless, the belief is prevalent that success in combat operations qualifies an officer for any and all positions regardless of the position's technical specialty requirements. In other words, a successful division commander is promotable to become the Army's Chief Information Officer (G-6), even though that individual may know little about information systems.

The notion of fairness is another important element of Army, i.e., everyone has the same opportunity, receives the same training, and is treated the same. Reality is different. The Army objective is to be egalitarian, yet the system is constantly circumvented by personal connections and inherent biases (e.g., black books and classmate referrals) to select potential leaders. For example, current leaders tend to select up and coming future leaders that followed a similar path as they did, the bias being, "the system developed me, I'm pretty good, so no need to change."

Therefore, the current Army culture presents some challenges in developing a larger and deeper bench of strategic-thinking senior leaders. Acknowledging that the pre-eminence of the warfighter will continue, there must be a new standard for success. The warfighter must also be broadened to take on appropriate GF leadership roles for which he or she is qualified. The Army will need to develop processes to accommodate people taking new paths to success, which allow the Soldiers to take initiative and have broadening experiences to develop their expertise.

2.2.3 OFFICER COMPETENCIES AND TALENTS

The TAB consists of 8 different assessments that are used to provide scores for 20 of the 21 Army-defined talents (domain specific education being the exception). As of this writing, the TAB has been in use at USMA for 6 years and with ROTC cadets for 3 years. OEMA uses a multi-variant weighted approach with the TAB results to provide scores for each of the 20 defined Army talents. USMA cadets are assessed relative to their respective class cohorts. The TAB results are used to help inform the cadets as well as the branches of potential best fits for branch selection in the TBB process. The branches provide feedback on their candidate selections, binned across three different categories of preferences ('select,' 'neutral,' or 'do not select'). Interestingly, recent USMA results show that approximately 79% of the cadets changed their top branch choice in their senior year based on their TAB results, which demonstrates that the assessment process is impacting the cadet's perception and selection of branch choices.

The 21 active Army Officer competencies, referred to as talents (Fig. 2.7), were derived through a series of workshops in which OEMA and ARI hosted and facilitated Army branch representatives. During the sessions, a broader set of potentially desired talents for the Army was narrowed to the current set of 21 via collaborative reviews. Thus, the 21 talents are believed to describe those traits having the greatest bearing on officer performance.

#	Army Talent	Army Definition
1	Bodily Kinesthetic	Coordinated, dexterous, hands-on person. Keen sense of body and sensory awareness. Learns through physical ability.
2	Communicator	Precise, efficient and compelling in both written and spoken word.
3	Cross Culturally Fluent	Aware of and able to operate across different cultural settings (e.g., organizational, demographics, ethnographic, and generational).
4	Detail-Focused	Thorough, perceptive, and precise in all matters. Possesses a keen eye - notices everything.
5	Domain Specific Education	Possess relevant academic disciplines
6	Innovative	Creative, inquisitive, and insightful. Easily identifies new solutions and catalyzes change.
7	Inspirational Leader	Motivates teams to work harmoniously and productively towards a common goal.
8	Interdisciplinary	Integrates and applies expert knowledge from multiple disciplines into a coherent overarching perspective.
9	Interpersonal	Skilled in developing appropriate relationships. Able to connect with others to effect positive results.
10	Introspective	Contemplative by nature-self aware
11	Logical/Analytical	Uses reason and thinks in terms of cause and effect. Able to decompose and solve complex problems.
12	Mentally Tough	Stress tolerant and emotionally mature. Performs well even under extreme psychological stress.
13	Multi-Tasker	Rapidly processes and prioritizes multiple demands simultaneously. Takes appropriate action.
14	Perceptive	Effectively discerns the deeper meaning or significance of one's observations (e.g., events, people, and communication).
15	Physically Fit	Physically tough, gritty, & tenacious. Performs well even under extreme psychological duress. Committed to a lifestyle of physical fitness.
16	Problem Solver	Able to choose between best practices and unorthodox approaches to reach a solution. Accomplishes the task.
17	Process Disciplined	Diligently abides by procedures designed to ensure accuracy, effectiveness, and safety.
18	Project Manager	Able to determine requirements, develop work processes, delegate responsibilities, and lead teams to desired outcomes.
19	Prudent Risk Taker	Acts boldly, yet maintains appropriate focus upon personal, Soldier, and unit safety.
20	Spatially Intelligent	Easily perceives, understands, and operates within the multi-dimensional world.
21	Technologically Adept	Understands and comfortably uses the latest technologies.

Fig. 2.7 Army Talents and Definitions

Various assessment instruments used in the TAB are purported to identify different aspects of the Army-defined talents in officer candidates (Fig. 2.8).

Army Talent	RBI 1.0	RBI 2.0	CRT	NEO-FFI	TOPI	Grit	Spatial Ability	GRE-A
Bodily Kinesthetic		*						
Communicator	*	*		*	*			
Cross Culturally Fluent	*	*						
Detail-Focused	*	*		*				
Domain Specific Education								
Innovative	*	*		*				
Inspirational Leader		*		*	*			
Interdisciplinary	*	*		*				
Interpersonal	*	*		*				
Introspective		*			*			
Logical/Analytical		*	*					*
Mentally Tough	*	*		*		*		
Multi-Tasker		*						
Perceptive	*	*		*	*			
Physically Fit		*						
Problem Solver	*	*		*	*			
Process Disciplined	*	*	*	*				
Project Manager		*		*				
Prudent Risk Taker	*	*		*	*			
Spatially Intelligent		*					*	
Technologically Adept	*	*						

Fig. 2.8 Crosswalk of the TAB Assessments with the 21 Defined Army Talents

OEMA and ARI also defined a set of 63 skills deemed relevant to officer assignments across five of the Occupational Information Network (O*NET) database domains, such as physical, cognitive, social and communication, leadership and management, and personal competence and expertise. From 2018 to 2019, OEMA and ARI requested active Army officers from 18 branches participate in a survey of the 21 talents and the 63 skills to assess low, moderate, high, and mixed criticality of each.

2.2.4 ASSESSMENT AND TM INSTRUMENTS

Developing and maintaining a TM program involves identifying and measuring the organization's pre-identified set of most relevant knowledge, skills, behaviors, and preferences of the employees. There's value, or capital, in an individual's ability to contribute toward the overall success of the organization.[3] Talent managers seek to understand, characterize, and measure these attributes to inform an organization's decisions in recruiting, selecting, assigning, promoting, and developing the workforce.

[3] Kaplan, R. & Norton, D. (2004). *Measuring the Strategic Readiness of Intangible Assets*. Harvard Business Review, Boston: MA, Harvard Business School Press. p. 52-60.

The field of human resources, and now TM, have either used existing clinical tests and measures or developed their own to characterize and quantify individual's abilities and attributes. It's imperative that the tools being used have been empirically validated for their intended use and shown to have demonstrated reliability. Otherwise, test results may yield spurious findings, potentially corrupting any TM decisions made based on those findings.

Beyond validity, proper assessment requires tests to be administered through established standard protocols by personnel trained to administer, score, and interpret the data, i.e., practitioners. Test subjects need to be educated on what the tests measure and how the data will be used, and encouraged to give his or her best effort. Consideration also needs to be given to practice effects (retesting the same test format within a short time) which may yield inaccurate results. Alternate test forms are typically used to minimize some practice effects. Assessment developers and practitioners also highly recommend that tests be scored and interpreted using norms established for different cohorts, e.g. different age groups, genders, ethnicities, cultures, specialties and /or experiences. Given the multigenerational nature of the Army, it will be important to consider potential age differences.

ARI has been developing and validating tools for recruitment and selection. However, it's too early in the process to determine just how effective the approach has been, and whether the Army can effectively demonstrate the ability to predict outcomes related to TM. Industry leaders are also using psychometric and proprietary tests to make data-informed decisions related to TM. Surprisingly, there's little consistency regarding common TM terminology and metrics across industries or within the Army.[4] Lacking a common lexicon, it's essential that the Army define the end state of a future ready force (e.g., a force that integrates human and machine teaming as the character of warfare continues to evolve). Pre-defining the endpoint drives the decisions regarding what assessments and tools are and will be needed, allowing for changes as needed. Because TM practitioners generally agree more than one test is usually needed to make a reliable assessment of an attribute, it's essential to select assessments with strong correlation factors. Accurate assessments minimize the number of tests, reducing the burden on service members and practitioners, and maximize process efficiency and cost effectiveness.

IPPS-A relies on tabulating data, dispersed and held by different organizations, into a relational database (Fig. 2.9). There's no centralized plan to share data. The program was acquired using traditional requirement development and procurement processes. To-date, its roll out has been limited in terms of the population size of the demo chosen and the initial program capabilities. The study team was concerned the tool is based on an aging Oracle system being replaced in the commercial sector. So, while the study team supports the ambition of IPPS-A, i.e., centralized access to the personnel records of all Army Soldiers, it's not clear that limited scope pilots on aged technology is the right way to approach the Army's TM needs and challenges.[5]

[4] See Appendix F for a nominal TM vocabulary collected by the study team during its data gathering.
[5] For example, the Gartner TM Buyers Guide no longer includes PeopleSoft.

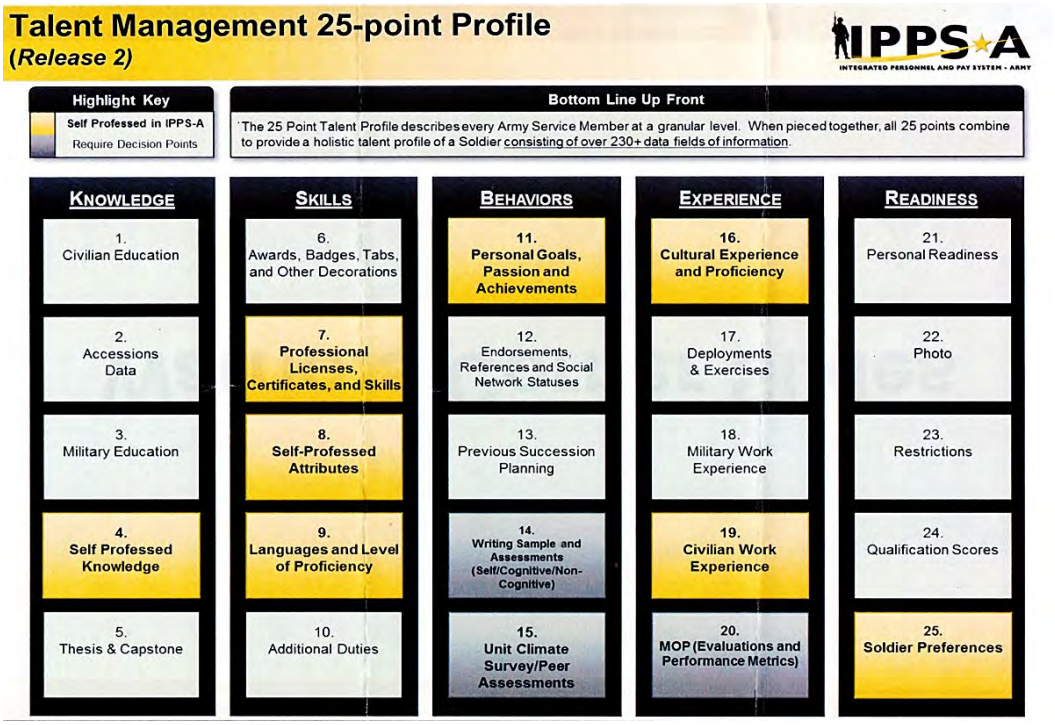

Fig. 2.9 IPPS-A Talent Profile

An alternative to IPPS-A could be found in existing commercial, off-the-shelf (COTS) tools that meet the Army's need to share data across the entire TM cycle. Ideally, the Army TM system should provide easy access to data, allow Soldiers to provide input and correct any data errors, and allow for better assignment planning and succession planning. To provide a stable TM platform, the Army would need to ensure that the technology remains viable into the future by working with vendors to develop plans for reliable, timely, and cost effective sustainment and support (service issue response, software upgrades, training, implementation, data safeguarding, etc.). Long-term stability is important for data gathering and longitudinal analyses.

AIM 2.0 is the Army's job marketplace software platform to identify better matches for officer assignments given the current list of personnel and available vacancies. It allows the officer to provide data with self-proclaimed input and to determine which assignments to apply for. The intent is to improve officer engagement, productivity, and success in a new assignment by allowing for self-directed and selected input into the assignment process. While AIM 2.0 represents a good start, there's still work to be done to develop consistency in job descriptions. The study team advises that a program of this ilk should be a module in future Army TM systems.

The science of characterizing and quantifying cognitive and personality traits has surpassed traditional tests. By leveraging advancements in neuroscience, functional neuroimaging,

neuroergonomics, neuroplasticity, and behavioral genetics to inform its TM practices, the Army would significantly improve the sophistication of its ability to compete for talent. Moreover, it would provide innovative options to inform the current and future needs related to Army missions. Integrating predictive analytics and computational neuroscience with existing datasets and assessment instruments would also enhance the Army's TM efforts and strategic decision-making related to acquiring, employing, developing, promoting/selecting, and retraining a multigenerational force. As U.S. forces are Joint in nature, it will be important for the Army to collaborate with the other services regarding TM assessment and practices. Results of assessments and tools yielded in the TM process can be used for workforce planning and POM development.

2.3 INDUSTRY TM PRACTICES AND INSTRUMENTS

2.3.1 TM VOCABULARY AND COMPETENCY MODELS

Understandably, various branches of the Army and even specific units desire a customized framework that delineates and measures the critical talents required for their mission. However, it's also critical for the Army as an enterprise to have a set of measurable talents that can be used for acquisition, promotion, selection, and development if the force is to act in an agile manner over the next decade and beyond. The corporate world labels these talents as competencies. They're typically managed under a single enterprise function and are applied at all levels throughout the organization.

For the Army to understand more about its officers and Soldiers than it currently does (i.e., the type of talents/competencies individuals possess) it must determine which talents/ competencies can be most effectively measured through psychometric assessment. Reviews by an individual's supervisor and skip-level supervisor are important but highly anecdotal, without scientific basis, and fraught with unconscious bias. For example, without the benefit of scientific assessments, we will not be able to readily evaluate to what degree an individual may be sufficiently learning agile or able to deal with ambiguity.

Psychometric assessment is most valuable when it can evaluate and measure the talent/ competency that an organization has determined to be important for making decisions around the acquisition and development of individuals. Beyond that, as demonstrated with the Navy 2025 initiative,[6] the ability to draw from a database of both anecdotal and scientifically-based information about an individual's talents better enable an organization to build optimal teams for specific situations based on targeted, mission-critical KSAs, rather than on gut feelings about what the optimal mix should be.

[6] Sailor 2025 is the Navy's program to improve and modernize personnel management and training systems to more effectively recruit, develop, manage, reward, and retain the force of tomorrow (www.navy.mil/navydata/people/cnp/Burke/Resource/Sailor%202025%20Glossy%20(06%20Dec%2017).pdf).

The study team believes it's essential for the Army to adopt a single TM model that maps to scientifically assessed competencies, readily accessible in a database that can be used for various TM decisions. Fragmentation will occur and make it virtually impossible for the Army as an enterprise to fully understand and manage its talent effectively without a single database. A unified effort will also require a common vocabulary of terms (see Appendix F for a nominal list).

Commercial consulting companies possess scientific data on a wide range of employees from various companies and regions. It would be prudent for the Army to utilize one of these organizations to facilitate the Army's creation and adoption of an enterprise TM model. For example, if the Army adopted one of the commercial TM models with thousands of leaders' data resident in the database, it could norm its officers against leaders from various regions and specialty areas and assesses the quality of Army talent as it is measured against a larger population and data set of individuals.

2.3.2 ASSESSMENT INSTRUMENTS – PSYCHOMETRIC EVALUATION OF ARMY TALENTS

The Army currently uses several different assessment instruments for a variety of purposes at selected points in an officer's career. However, the Army isn't consistently using a pre-defined set of assessments with each officer for each pillar in the overall TM process. The appropriate selection and use of psychometric tools became a significant line of inquiry for the study team during its data gathering. To clarify the matter, a brief summary of the assessment instruments used by the Army is provided in Appendix D.

Determining the talent needs of the current and future Army is a challenging and critical task. Accurately measuring the characteristics desired to inform and direct acquiring, employing, developing, promoting and selecting, and retention decisions requires use of the proper instruments, but only after the appropriate talents or characteristics have been properly identified. Aligning the right tools to measure desired traits will allow the Army to "critically (select) those officers who have the most promising potential to lead our future, rapidly changing Army."[7] Decisions of that import should be informed by data drawn from empirically validated metrics.

Psychometrics, the theory, science, and technique of assessing internal human processes such as cognition and personality, is routinely used by industry throughout the TM process in the form of empirically validated assessment tools (tests and /or instruments) and measurements. Psychometrics recognizes that cognitive and personality characteristics are not unitary entities or functions. Therefore, no one test can measure all components or aspects of a function, attribute, or trait. Conversely, many psychometric tests are designed to measure more than one characteristic.

[7] Russell, Paullin, Legree, Kilcullen and Young (2017), p. iii.

Best practice would involve psychometrics assessments being administered at the recruitment phase of an officer's TM cycle, and again at various stages of that officer's career to optimize his or her selection, assignment, and development, as well as the Army's utilization of that officer's talents. Psychometric tools could also contribute to the assessment process by providing feedback on an individual's strengths and areas for potential development. Results should inform the officers, their respective units, promotion boards, branch officers, etc.

The selection of psychometric tools must be based on empirical data to measure the specific function or trait. Tests need to demonstrate:[8]

1. Reliability, or consistent results

2. Construct validity, that they measure the attribute(s) intended to be measured

3. Norming against equivalent populations

Some other considerations include how the assessment instruments are administered (e.g. paper and pencil or online), how results are scored, the time to complete, the time of day and place of administration, frequency of administration, whether practice effects are possible, etc.

Most psychometric tools weren't originally developed or tested with HR or TM functions in mind. Rather, they were developed, tested, and used for clinical purposes. Assessing a person's cognitive and personality functioning can be considered invasive, hence, the appropriate use, handling, and storage of the assessment data and an individual's privacy rights need to be considered in advance. Ethical principles govern the administration, scoring, interpretation, and use of psychometric tools.[9] The Army will need to establish its own transparent policies and procedures to include the ethical use of psychometric instruments, as well as how the data obtained from these instruments is stored and used.

2.3.3 COMMERCIAL-OFF-THE SHELF (COTS) HR AND TM SYSTEMS

Firms hired to advise commercial industry with implementing TM processes appear to use a somewhat standard approach. They develop a set of distinguishing characteristics, sometimes referred to as competencies and usually proprietary, that serve as signifiers of a successful individual. The characteristics can be quantitatively measured, and the collected statistics applied to advanced data analytics. This approach is the culmination of decades of research on properly gathering and processing individual data with the aim to benefit both employers and employees.

[8] Passmore, 2012

[9] See the American Psychological Association's section 9 of the Ethical Principles of Psychologists and Code of Conduct, available online at https://www.apa.org/ethics/code/ethics-code-2017.pdf.

The human traits or attributes being used by TM firms are similar to those identified by the Army and what it calls talents, but the traits used commercially are more exact, better defined, and validated. Commercial firms start with successful performers and do extensive analysis on the underlying factors/traits/competencies that lead to success. They then develop methods to assess and quantify these competencies. The study team reviewed several such examples for which the analyses were used to identify high-potential candidates, led to successful employee/assignment matches, and served as a basis for promoting employees.

One commonality among the TM firms observed was the adoption and employment of the latest advances in data analytics. For example, firms used object-oriented databases to conduct their analyses which, as opposed to relational databases, answer queries faster and can manipulate extraordinarily large data sets. It should be noted, the firms also maintained their own teams of software engineers with expertise in the databases, analytics, and application. In other words, it's not realistic to simply purchase a software product and expect that the tool will meet the Army's desired specifications and performance.

2.3.4 INDUSTRY VS. ARMY SENIOR LEADER TENURE

Senior leaders are key to any organization's overall performance. Responsible for developing and aligning the organization's various strategic plans, leaders ensure the organization has the capabilities to execute its plans and the talent to perform those capabilities. In turn, talent at the senior leader level is critical to an organization, and the experience, KSAs, behaviors, and preferences required for success are gained in large part by tenure.

Tenure should be considered as an organizational investment in an individual. On average, senior leader tenure in commercial industry is approximately 5.3 years, while in the Army, it's 2.5 years. The shorter tenure for Army leaders results in less time to gain a sound technical understanding of roles and responsibilities and less ability to create, align, and integrate corporate strategies. For an organization to succeed in a time of rapid change, it's critical to appoint leaders who share the organization's culture and have sufficient development experience and opportunity to make a difference. Likewise, updating and modernizing the Army's TM will play an integral role in more effectively developing the Army's future leaders.

Senior leaders' roles and responsibilities in both the Army and industry are rapidly evolving due to dynamic changes in technology outpacing organizational capabilities and expertise. In the past, being an effective senior leader meant developing strong leadership skills and possessing a sound understanding of the organizational construct and specialties. Today, leaders must be adept at managing and deploying complex new systems (e.g., IT, data analytics, social media, automated training, AI, etc.) as well as changes in associated laws and regulations.

Those same technological advances have impacted and revolutionized TM, allowing organizations to make better-informed decisions about developing and retaining top-notch

talent. The Army could easily leverage best practices from industry to help inform its promotion and assignment processes to ensure senior leader tenure benefits the organization.

2.4 ARMY TM ORGANIZATION

The Army TM effort is widely distributed among several organizations that don't share a common command structure (Fig 2.10). The organizations include:

- Assistant Secretary of the Army for Manpower & Reserve Affairs (ASA(M&RA)).
- Army G-1.
- General Officer Management Office (GOMO): assists Army leadership with developing, assigning, and managing Army general officers.
- USMA/West Point: the four-year federal service academy whose mission is to educate, train and commission officers.
- Colonels Management Office (COMO): assists Army leadership with developing, assigning, and managing Army colonels.
- U.S. Army Cadet Command (USACC): Selects, educates, trains, and commissions civilian college students to be Army officers.
- U.S. Army Recruiting Command (USAREC): recruits candidates for service in the Army and Army Reserve. The process includes medical and psychological examination, induction, and administrative processing of potential service personnel.
- Officer Candidate School (OCS): the U.S. Army's main training academy for prospective Army Officers. The school is generally open to qualified enlisted Noncommissioned Officers, along with civilians who hold at least a four-year college degree.
- Human Resources Command (HRC): conducts distribution, strategic TM, IT, Soldier programs, and personnel services Army wide.
- Army TM Task Force (ATMTF): integrates and synchronizes Army efforts to acquire, develop, employ, and retain a high-quality force and launches numerous initiatives to assist in the development of a new TM system.
- ARI: focuses on developing innovative measures and methods to improve and enhance the Soldier lifecycle, conducting scientific assessments and providing

behavioral and social science advice to inform human resource policies, and developing fundamental theories and investigating new domain areas in behavioral and social sciences with high potential impact on Army issues.

- OEMA: an analytic organization that assists the Army through research and policy analysis. The office investigates topics including human resources policy, education and training, compensation and benefits, and other labor and public economics fields.

- U.S. Army Acquisition Support Center (USAASC): supports the program executive offices in the areas of HR, resource management (manpower and budget), program structure, and acquisition information management.

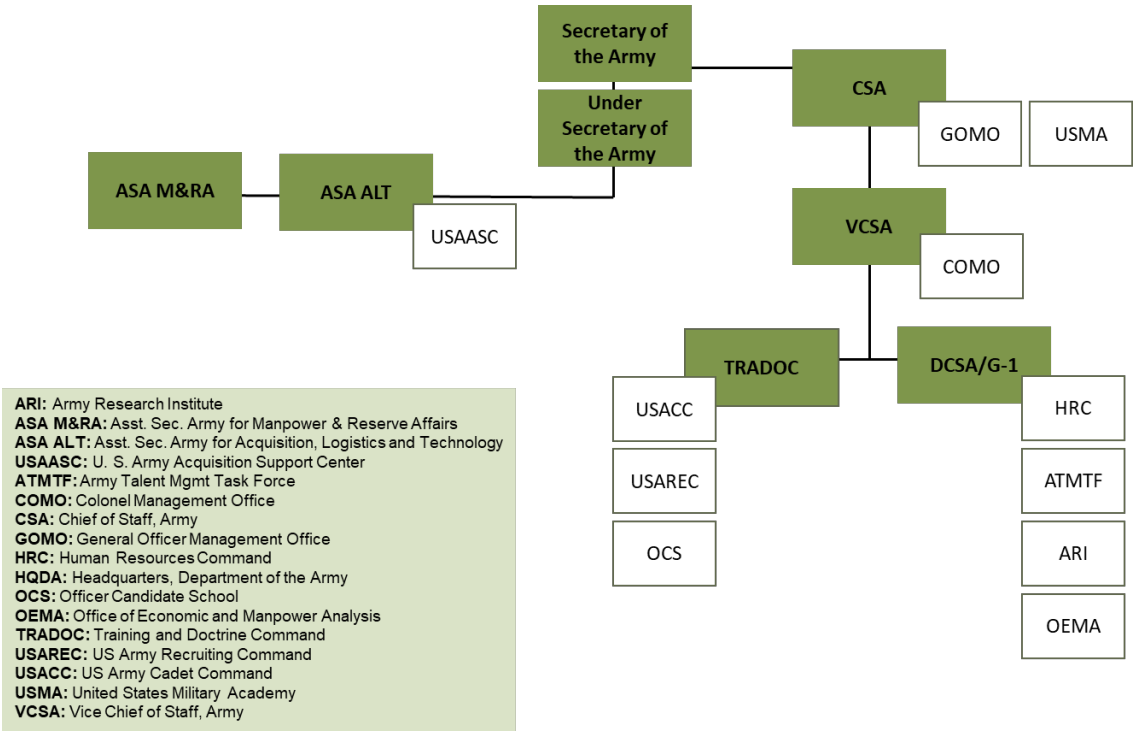

Fig. 2.10 Who's in Charge?

3. FINDINGS

The study team's findings cover the five major TM pillars investigated, as well as TM tools and instruments, generational differences in the Army, new congressional authorities, and organizational structure.

3.1 TOOLS AND INSTRUMENTS

Through its data gathering processes, the study team observed the Army has accelerated the piloting and use of multiple types of tools and instruments to enhance its TM process, including a range of psychometric assessments (see Appendix D). What wasn't clearly discernible was how the Army intends to develop an integrated approach for the selection and use of the tools and instruments for each pillar in an enhanced TM strategy.

As of this writing, the Army has initiated adoption of the IPPS-A system by running a test with four National Guard units. The Study Team found that the IPPS-A tool is based on an aging Oracle system that's already being replaced in the commercial marketplace with tools based on Object-Oriented Database Management Systems (OODMS). While the team supports the concept of the Army having centralized access to the personnel records of all Soldiers, it questions the appropriateness of the IPPS-A tool and technology for managing the Army's talents across all six TM pillars.

HRC is concluding pilot phase testing of AIM 2.0 with the goal of rolling out full-scale officer implementation by October 2019. HRC's intention for the AIM 2.0 tool is to improve assignment process transparency and cultivate officers' engagement, development, and performance by providing opportunities to not only see what assignments they may qualify for (position description, affiliated branch/FA, assignment location, etc.), but also to compete for positions by applying online with their self-designated resume information.[10] Early indications suggest that the active Army officer corps and organizations with vacancies find the AIM 2.0 tool useful, as engagement from both sides continues to increase. However, the study team found additional work is required to establish standards for consistency in talent-based job descriptions across organizations, and that the system isn't implementing the Army's previously defined talents used for TBB. HRC also articulated concern regarding the potential for an officer to submit false resume data. Should this be an issue, the team believes the Uniform Code of Military Justice would apply to cases of records falsification here as elsewhere in Army operations.

The study team also found the Army needs to take bold steps to implement a modern TM system by providing easy access to data, allowing Soldiers to provide input and correct data

[10] An officer can also see the number of others who have applied for each position, how popular the position is, and how many applications the branch and/or FA has reviewed resulting in a favorable, neutral, or unfavorable result.

errors, and facilitating better assignment and succession planning. The Army should ask any TM system vendors it may want to work with to identify their plans for reliable, cost-effective and timely tool sustainment and support, e.g. IT issue responses, software upgrades, training, implementation, and data protection to ensure that the technology remains viable into the future. The data generated must be shareable across the TM pillars—acquiring, employing, developing, promoting/selecting, retraining, and separating—to ensure the Army maximizes the synergies and efficiencies of a modernized TM enterprise.

3.2 ACQUIRE

Commissioned officer acquisition starts with successful recruitment to one of three different pathways (USMA, ROTC, or OCS). The Army's ability to attract and recruit candidates for USMA and ROTC has been incentivized, in part, by meeting the individual's opportunity cost needs for receiving three to four years of educational financial assistance, i.e., every West Point cadet and ~ 60% of ROTC cadets receive four-year scholarships, in exchange for committing to the Active Duty Service Obligation (ADSO).[11] Oddly, the Army hasn't set quotas for college majors, nor are ROTC scholarships limited by choice of major. In contrast, the Navy has established a quota of at least 65% STEM majors to address current and anticipated operational needs.

Recruitment is also influenced by several other potential factors. For example, having a parent serve in the military is seen as a positive factor, though this trend has been decreasing over time, approximately from 40% in 1995 to 8% in 2019. The Army also assesses a potential ROTC cadet's propensity for service using the Cadet Background Experience Form (CBEF), which more recently has focused on assessing the Cadet's propensity to quit via an assessment of propensity to commitment, but does not use this information as a factor in awarding ROTC scholarships.

Approximately 1,000 USMA and 5,500 ROTC cadets are commissioned each year to fulfill active component, National Guard, and Army Reserve branch needs. Any remaining shortfalls are filled with OCS commissioned officers. The ADSO varies for cadets depending on their source of commission: 5 years for USMA graduates; 4 years for ROTC graduates who received a 4-year scholarship (about 60%); and 3 years for OCS and the remaining (non-scholarship) ROTC graduates.

OEMA and ARI have developed the TAB consisting of 8 different assessments that are used to provide scores for 20 of 21 Army-defined talents (Fig. 2.7), excepting domain specific education, which isn't a talent *per se*. USMA cadets take the TAB twice during their undergraduate years, once as a freshman and once as a junior. The ROTC cadets take the TAB only after contracting with the Army, normally between their junior and senior years during summer advanced camp.

[11] OCS candidates are drawn from qualified civilians or enlisted Noncommissioned Officers (NCOs) who already possess at least a four-year college degree.

As of the summer of 2019, the TAB has been in use at USMA for 6 years, and with ROTC for 3 years. OEMA uses a multi-variant, weighted approach with the TAB results to provide scores for each of the 20 defined Army talents. The TAB results are used to help inform the cadets as well as the branches of potential best fits for branch selection (i.e., TBB). Branches provide feedback on their candidate selections, binned across three different categories (select, neutral, or do not select). Recent analyses conducted on USMA cadets show that approximately 79% of them changed their top branch choice in their senior year based on their TAB results, indicating the TAB process impacted cadets' perceptions and selections of branch choices.

Interviews with ROTC cadets indicated they, compared to their USMA counterparts, were afforded less exposure to, and therefore developed limited knowledge of, the full spectrum of Army branches and FAs. Notably, this resulted in a lack of understanding of the GF, and their possible career opportunities in the Army. ROTC cadets were provided five hours of time at Advanced Camp to learn about Army careers, but two hours of that time were reserved for Army Reserve and National Guard sessions, leaving three hours to visit with branch representatives. The study team finds this may be one of the contributing factors to the loss of talent when ROTC cadets complete their initial enlistment. A cadet's lack of awareness and understanding of the broad spectrum of opportunities the Army offers likely plays in the decision to leave service.

Regarding talent acquisition, the Army is competing with U.S. (and international) companies that are leveraging technology to harvest online data on potentially promising candidates, then enticing the best of them with generationally based benefits (e.g., student loan payoffs for Millennials; retirement plans for Generation X). These methods are smarter and more targeted than the traditional advertise job/receive applications/narrow list of interviewees/hire cycle used in the past.

Today's youngest recruits are more digitally savvy, independent thinkers, and desire more information, justification, and participation in their career decisions than ever before. The workforce they'll enter will value (i.e., hire, develop, and retain) STEM-savvy digital natives, and this accounts for the drastic loss of STEM qualified officers after meeting their ADSO. Commercial industry will afford less bench time to learn the ropes of the company. Alternately, employees will be less tolerant to wait for a turn to climb the career ladder. In place of the ladder, industry and its workers are shifting to a notion of a career trampoline that allows for relatively easy job hopping.

Younger generations value personal development and the opportunity to have a clear, near-term impact in an organization without being pigeonholed by previous career choices. To satisfy these desires, employers will have to provide challenges to help younger employees grow and routine mentoring and coaching to track their development.

Transparency is also an important attribute Millennials and Generation Z employees' value, as it allows them to both gauge their own impact and compare how they may fare elsewhere (within

that organization or at another). Some examples include providing up-front information on the compensation structure, including benefits (signing bonuses, relocation costs, educational assistance, etc.) and work environment (collaboration spaces, cross-disciplinary/functional interactions, etc.).

3.3 EMPLOY

The Army relies on very limited amount of data to align talent with assignments. Outside of TBB, there's no formal process to match officers with jobs based on talent-related data. Army officers have begun uploading their resumes consisting of 8 fields of information into AIM 2.0, but its success has yet to be determined. As of early 2019, approximately 70% of officers used AIM 2.0. The remaining 30% will begin using the system in October 2019. The data that's uploaded, comprised of eight fields of self-professed KSAs, hasn't been accepted as part of the officer's permanent record. Industry relies on employees' self-reported data about talents and capabilities and, in some cases, uses assessments to characterize key competences, traits, experiences and drivers. Hence, the data in AIM 2.0 can be used in the assignment process. On the other side of the matching process, the job descriptions aren't currently formulated in a standardized process. Individuals writing these descriptions generally require considerable training, and it's not clear that the Army has provided that level of support.

The study team also found that while the TAB has predictive, diagnostic, and developmental elements aimed at differentiating cadets' unique talents, several of the instruments haven't been scientifically validated for use in job placement. HRC uses a method to identify high performers, but the assessment method isn't shared, making it difficult to discern its reliability and validity.

3.4 DEVELOP

More than the investment in formal training and education of the officer corps, officer development includes professional networks, mentorship, peer relationships, tenure, individual learning styles, as well as diversity of thought, experience, and culture.[12] As the study progressed, the study team made the following findings:

1. Assignments in the GF versus the OF. The Department of the Army (GF) is subject to the provisions of chapter 6 of the US Code Title 10, which makes it responsible for supporting and enabling the OF to execute Army missions.

Most company grade officers (Lieutenants and Captains) serve in the OF; most field grade officers (Majors through Colonels) and general officers serve in the GF. Relatively few cadets and junior officers have an awareness or understanding of the many opportunities available

[12] Wardynski, C., Lyle, D, Colarusso M. (2010). *Towards a U.S. Army Officer Corps Strategy for Success: Developing Talent*. Strategic Studies Institute, U.S. Army War College

to them in the GF. The Army spends little time and effort disseminating the mission, importance, and the opportunities available in the GF.

The Army Officer Development Program (ODP) is primarily focused on OF requirements, which require quite different talents than those needed in the GF (Fig. 3.1). OF billets and those in FA have proponents, but many key GF billets lack proponents and personnel development plans. Even if GF careers were managed the same, prescribed career paths for officers in the OF don't afford opportunities for broadening or professional development outside the OF, meaning there are no established paths for transitioning to the GF. Moreover, Army policy prevents dual-career paths for officers, limits continued branch experience for FA officers, and doesn't facilitate broadening beyond branch. The overwhelming emphasis on the OF has engendered a negative view of the GF within the Army's culture, where GF assignments are seen as detrimental to an officer's career, and senior officers boast to the fact that they never served in the GF.

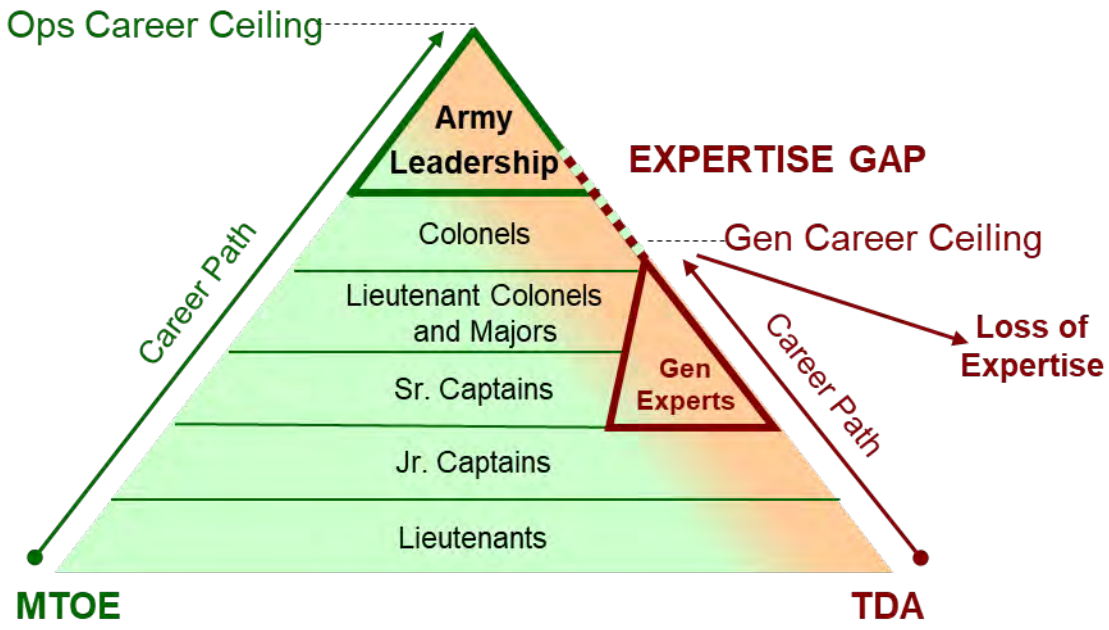

Figure 3.1 OF vs. GF Development

These factors have steadily increased the risk of not having the best-qualified officer candidates, in terms of skills and experience, for key billets in the GF. Many general officers are assigned to key GF positions with inadequate technical preparation, because Army culture promotes the idea that if an officer leads well in the OF, there's no need for him or her to have the required technical talents to lead well in the GF. Thus, many general officers are assigned to the GF with no previous experience in their assignment field.

Risk to the Army is magnified by having GF billet tenure match the relatively short OF billet tenure (2-3 years), compared to comparable, commercial industry positions (5.3 years).[13] Typically, during the first six months on the job, officers are learning the ropes, trying to compensate for their lack of technical knowledge. Leaving 1 ½ to 2 ½ years to implement changes or new strategies for the whole Army. That makes it virtually impossible to manage effective change in a disruptive environment.

2. Officer Developmental Assessment. New assessment programs are being piloted at the Captain's Career Course, battalion command selection, and the Army War College. The assessments are using standardized tools like the Graduate Record Examination (GRE), but whether and how the data generated will help with officer development is to be determined. There's some level of coordination among the efforts, but deliberate alignment may provide a higher yield for officer development.

3. Advanced Civil Schooling (ACS). "The Army has evolved from [nearly] the most educated [DoD] workforce to nearly the least educated."[14]

- Prior to 1987, the Army sent over 1,300 officers to obtain advanced degrees (Masters and Ph.D.) in civilian institutions per year. Today, it sends about 500 officers per year.

- In 1995, 70% of all general officers had civilian graduate degrees, but by 2015, only 35% had civilian graduate degrees.

- The most recent data shows that from 2008 to 2016, 22% of the newly selected general officers, 47% of the officers in FAs, and only 17% of branch officers had ACS.

[13] Korn Ferry Institute (2017). Age and Tenure in the C-Suite: Korn Ferry Institute Study Reveals Trends by Title and Industry. Press Release.
[14] OEMA, 2019.

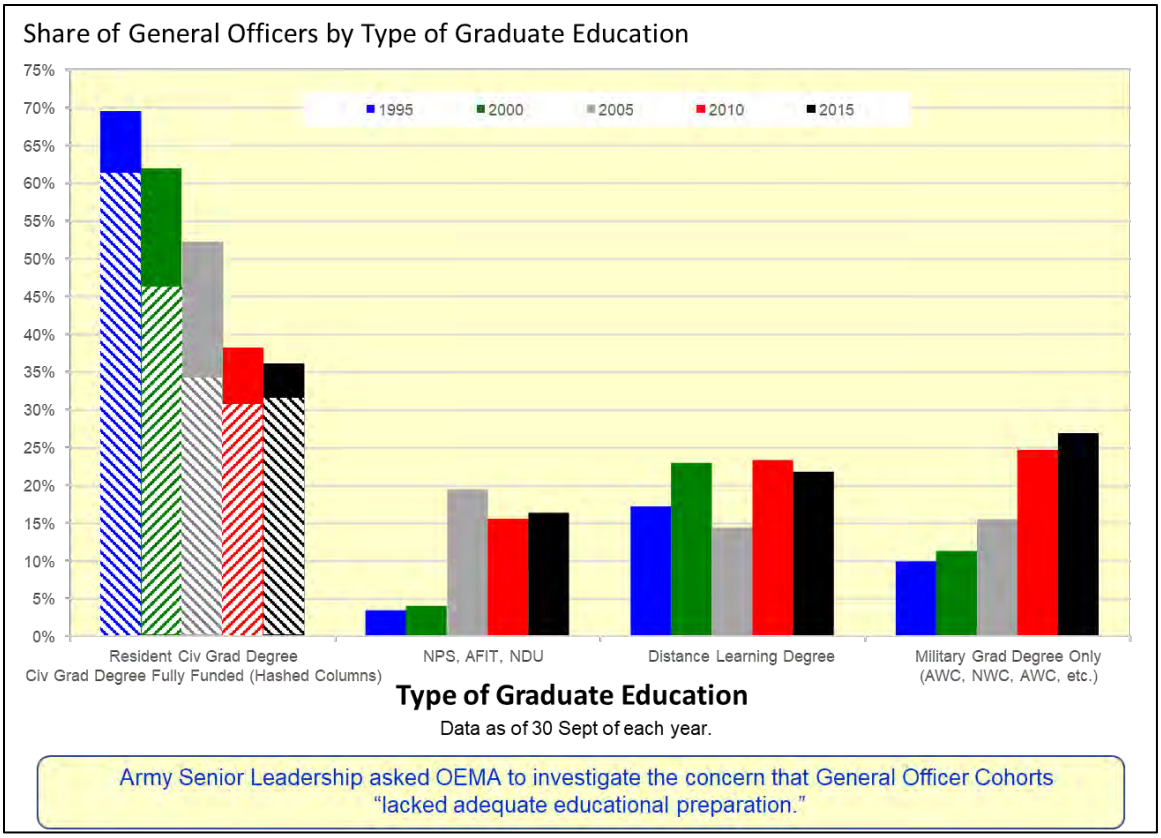

Figure 3.2 Decreasing Educational Diversity Among Army Officers

These trends raise concerns about the lack of adequate educational preparation in many general officers. The study team found three factors contributing to low education rates among Army officers:

1. Officers graduating from in-residence Command and General Staff and Army War Colleges receive the equivalent of a civilian master's degree, and therefore fail to see career benefit in pursuing ACS.

2. The prescribed career path for officers in the OF disincentivizes them from attending ACS because attending school takes them out of the career progression track. Officers who break from the norm place their career at risk. The study team found officers who went to ACS didn't compete well on promotion boards against peers who stayed on the prescribed path because they lacked OF developmental assignments. In some cases, the officers weren't selected for promotion and were separated from the Army. In other words, the Army paid for an officer's advanced civilian degree, then punished the officer for getting that degree, and sometimes separated the officer before the Army could collect a return on its investment in that officer. New congressional authorities will now allow officers attending ACS to be considered for promotion with a later cohort without being penalized for missing

the assignment opportunities of his/her year group. This will place the ACS officer in a better competitive environment. Another new congressional authority will allow the Army to extend the mandatory retirement age of ACS officers to take full advantage of their education and experience and get a better return on investment.

3. While the Army's leadership focused on the career path for OF officers, it lost sight of the value ACS brings to the force in term of technical expertise, diversity of thought, and strategic competencies. Army leadership needs to re-understand that ACS may equip officers with the expertise, diversity, and competencies required in the present fluid and disruptive environment, decreasing various types of risk to the Army.

4. Mentorship Program. The Army lacks a formal mentorship program for the development of its officers nor does it provide a clear distinction between raters, senior raters, coaches, and mentors. Formal mentoring occurs when an experienced individual helps another person develop his or her goals and skills through a series of limited, confidential, one-on-one conversations and other learning activities.[15] Mentored employees benefit from skill development (adding value to the organization), goal setting (personal and professional), career planning, problem solving, and networking.[16] Mentors also benefit from the formal process by experiencing rejuvenation and fulfillment from assisting the mentees and by gaining greater self-confidence.[17]

In general, mentoring programs benefit organizations through improved productivity, recruiting, and retention. For a mentorship program to work most effectively, the organization must establish clear objectives and measures of success, identify an executive to champion the program, recruit and train the mentors, advertise the program (especially to new hires), and close the loop by ensuring program objectives are met.[18]

3.5 PROMOTE/SELECT

Present promotion boards are assembled at regular intervals to select which officers within a particular grade and year cohort will be promoted. The information given to board members about perspective candidates is limited to portrait photographs, Officer Record Briefs (ORBs), and Officer Evaluation Reports (OERs). This situation has been kept relatively constant for decades, with seemingly little effort made to include more pertinent information. The output of

[15] The Center for Health Leadership and Practice, (2003). *Mentoring Guide, A guide for Mentors*. Center for Health Leadership & Practice, Public Health Institute, Oakland, CA.
[16] Mentor Scout (2019). *Tips for Mentorship Programs.* www.mentorscout.com/mentoring-tips-and-frequently-asked-questions.cfm
[17] Erlich, L.C. and Hansford, B. (1999). *Mentoring: Pros and Cons for HRM*. Asia Pacific Journal of Human Resources 37(3):92-107.
[18] National Center for Women and Information Technology (2011). *Evaluating a Mentoring Program.* www.ncwit.org

the promotion board deliberation is a listing of the top officers in that cohort without consideration of the talent needs of the Army. Commercial industry selects its leaders (promotes) based upon the talents needed in their organization and has incorporated advances from a revolution in IT to help in the selection of future managers; the Army has not.

During a typical promotion board session, board members will spend about one minute of time on each candidate before deciding whether that officer will be promoted. Not a single member of the study group could name one, large, U.S. corporation that spends so little time in selecting its future leaders. If there's any systematic effort within the Army to leverage the talents of its future leaders, it's not well known nor understood.

One promotion process that's somewhat unique to the Army and the military in general is the below-the-zone (BZ) promotion. This occurs when a younger cohort is compared to the in-the-promotion-zone (IPZ) group being considered by a promotion board. If any of the younger, BZ cohort compete and compare favorably against the IPZ group, they may be considered for promotion ahead of their year group peers. Congress allows the Services to select 10% of a promotion group BZ. Currently, the Army promotes about 4.7%. By not maximizing its BZ rate, the Army may be missing an opportunity to develop talent, because BZ selects stay in the Army longer and they get selected for command and other development opportunities at a higher rate than their peers. For example, nearly 2/3 of GOs were selected BZ at least once in their career (Fig. 3.2)

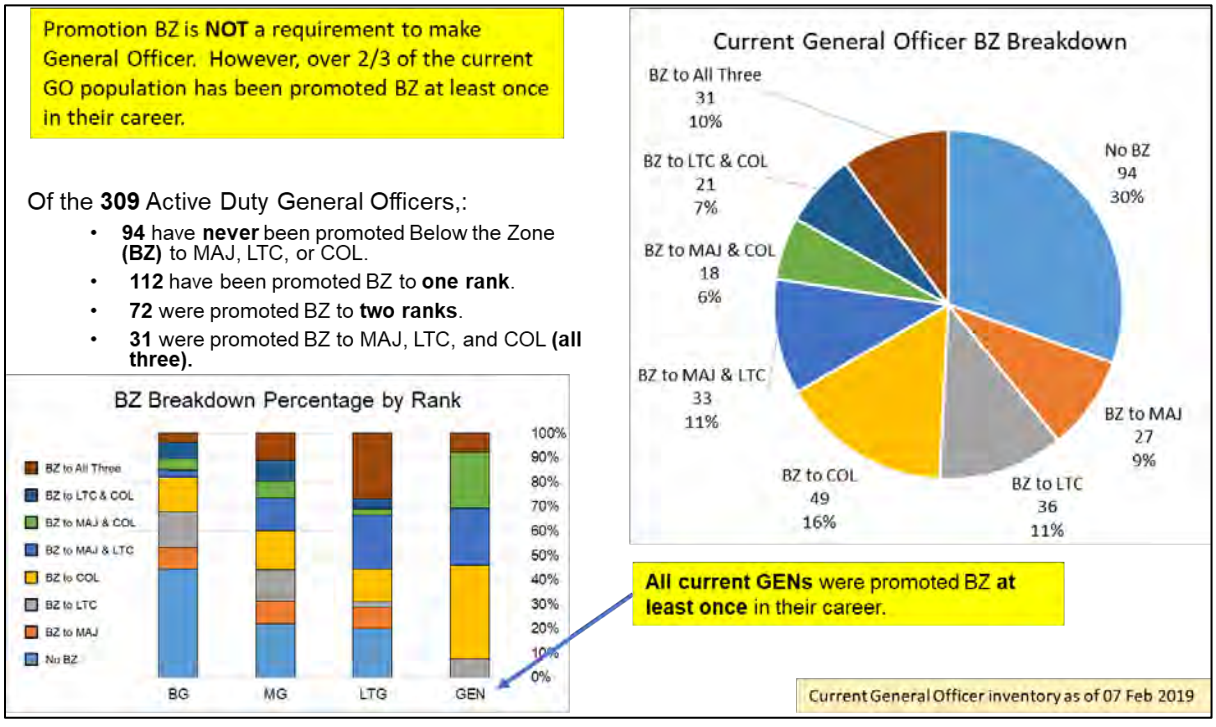

Fig. 3.3 BZ Promotion Rates of Current GOs

The backbone of any TM system being developed for the Army must have the quality that, once top-notch candidates have been recruited into the officer corps, it develops those officers in a way that reaps their talents to serve the Army's needs. That system should then be able to identify those officers best suited for the Army's needs, and once identified, select them for promotion.

3.6 RETAIN

Reducing turnover and retaining diverse, highly talented personnel to ensure the Army meets current and future requirements are critical aspects to the Army's success. Currently, the best and brightest are still leaving at too high a rate: about 40% of USMA graduates and ROTC 4-year scholarship winners leave active duty after their initial ADSO (Fig. 3.3).

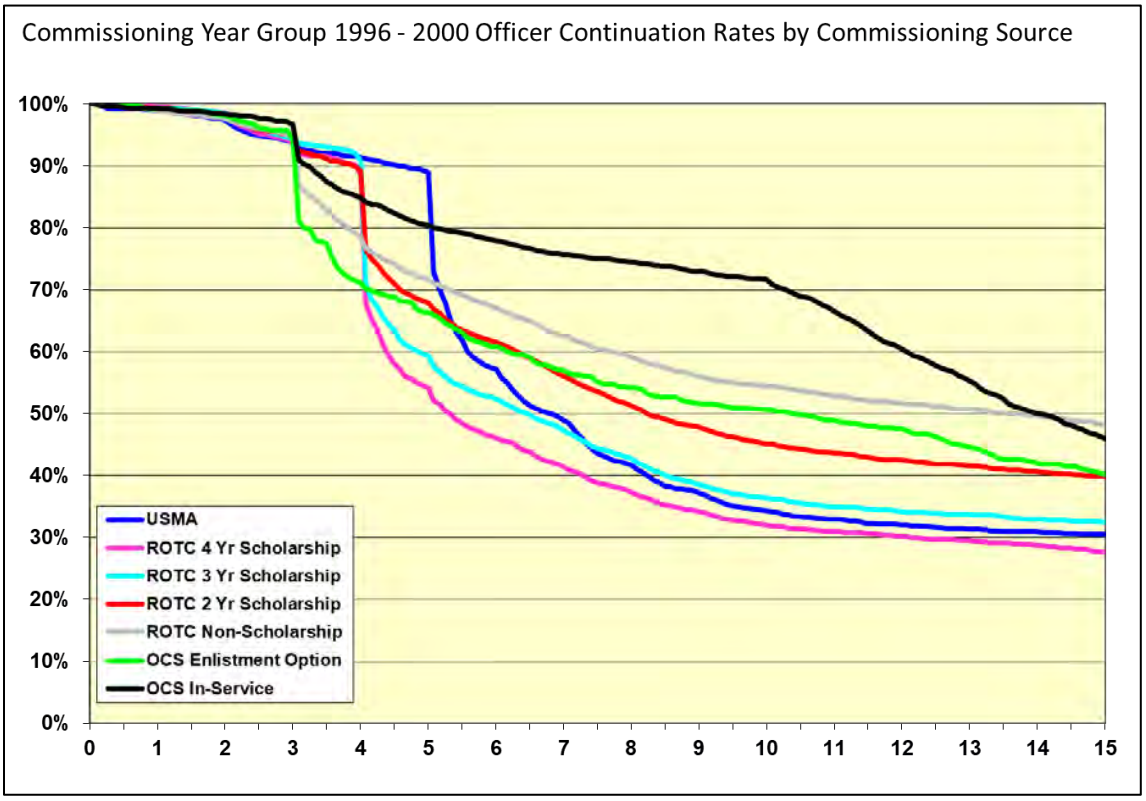

Figure 3.4 Separation from Active Duty by Source of Commission

The Army carries 4,600 active component lieutenants above its authorized strength level with no positions in which to assign them to meet downstream rank requirements for those year cohorts. Despite that, the Army is currently short 682 captains, while the Field Grade ranks (MAJ-COL) are all within 15% of target strength. There are several concerns about spending time and money to educate and commission nearly 5,000 lieutenants that won't pursue an Army career. Besides the financial cost, the Army is likely losing the best and brightest to industry. The Army's opportunities and career path for these individuals may not be an

attractive alternative once they complete their ADSO, considering the numerous factors that play into an officer's decision to continue to serve (e.g., family, job satisfaction, external job prospects, selective continuation, etc.). However, the factors that cause an individual to leave the Army aren't well documented and understood; exit surveys providing reasons for departure aren't mandatory, and only approximately 6% are completed. Furthermore, while commanders are given NCO re-enlistment goals and have reenlistment NCOs, they don't have lieutenant retention goals, nor are the commanders evaluated on their officer retention. Thus, it's not something commanders are necessarily cognizant of or focusing on.

The overage in lieutenants and shortage in captains indicates a loss of talented junior officers who are highly desired by commercial industries offering them incentives to leave service. The Army hasn't developed the necessary incentives and motivation to keep enough of its top lieutenants beyond their ADSO. For the most part, the failure stems from the Army's corporate inertia; its reluctance to change processes and desire to do things the way they've always been done. The rigid career path to higher ranks, the up-or-out promotion process, the timeline inhibiting true broadening/development opportunities, are all problematic in terms of retaining the best and brightest. Moreover, the limited number of continued promotion opportunities in the OF eliminate officers who might be highly successful in the GF. In addition, the Army doesn't offer an opportunity for individuals to change their minds after exploring careers in industry; once an officer leaves the Army and resigns their commission, there are no established procedures to re-commission them.

3.7 ADAPTING TO MULTIPLE GENERATIONS

The Army must acknowledge changes in the U.S. population from which it recruits. The number of people eligible for service is decreasing, and the competition for the youngest generational cohort—Gen Z born after 1995 is rising, because commercial industry increasingly needs tech-savvy individuals. In fact, industry calls it a "war for talent." After reviewing the literature on Gen Z, the study team found these future recruits want to:

- Use their unique strengths in their career
- Understand upfront what are the career benefits and requirements for promotion
- Experience amazing, diverse, challenging career opportunities
- Develop and be guided with options for rapid career growth
- Be integrated and heard
- Be self-directed

- Have an impact

The general perception of the Army as rigid, hierarchical, paternalistic, risk-averse, and relatively low-tech (compared to the other services) means the Army wouldn't be responsive to Gen Z's goals and desires. In other words, the Army may be out of sync with its youngest potential recruits who are being sought by industry.

The Army spans four generations of Soldiers, from ages 18-62 years (Fig. 3.3). The youngest, Gen Z and Millennials, demand more information, justification, and participation than prior generations regarding career opportunities and development. They also seek the most recent information when making career decisions by using TM technologies and trusted peer networks.

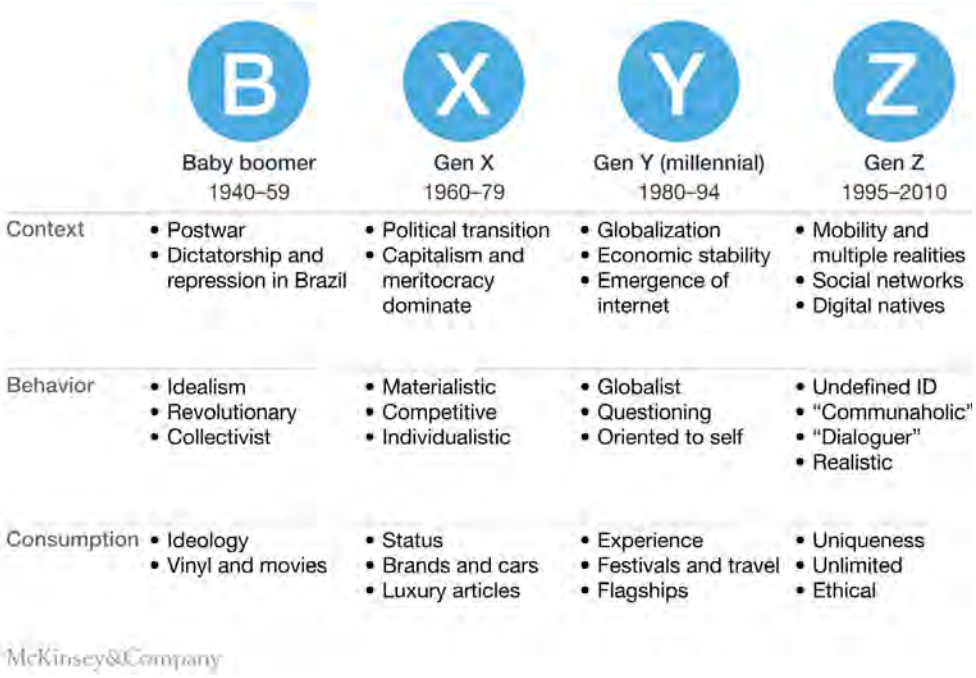

Fig. 3.5 Four Generations in the Army[19]

The Army's current personnel management provides little information for cadets and junior officers to use in gaining an understanding of how the Army operates, the difference between the OF and GF, the opportunities of the FAs, various missions, and career opportunities. There's also little to no information on how to influence one's own career opportunities and choices, or how to impact personnel management actions. Commercial industry more successfully recruits and employs potential talent (i.e., well-trained lieutenants) by using the latest technologies, such as microtargeting and deep linking coupled with social media applications.

[19] Source: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies

Given the nature of military service, the Army will employ four generations of service members for the foreseeable future. Corporations have become increasingly aware of both the advantages and challenges of a multigenerational workforce and they're exploring strategies to leverage diversity to maximize success. One benefit of such a diverse workforce is that it expands the corporate fund of knowledge[20] from which the organization can draw upon to achieve strategic objectives. A multigenerational workforce creates a deeper bench and cultivates continuity by supporting education, mentoring, leadership development, and succession planning. For the Army to experience these benefits, it will need to develop deliberate retention plans to ensure the knowledge and experience of older generations doesn't get lost through attrition. It will also need to develop a system of knowledge transfer between generations, maximizing the return on employees with significant longevity with the institution.[21] In doing so, the Army must consider the generational differences in learning styles when developing strategies for knowledge sharing and transfer.[22] In the end, recruiting and retaining a multigenerational workforce will strengthen the Army's ability to innovate by harnessing the knowledge, skills, and behaviors of service members adept at responding to evolving operational requirements.

Engaging, developing, and retaining a multigenerational workforce will require a flexible and agile TM system to meet distinct needs of each generational cohort. All components of the Army's TM system need to be comprised of multigenerational teams/assignments. For example, recruiting teams, leadership assignments, and selection and promotion boards need to reflect the multiple generations of the Army. Leadership and communication styles need to balance structure and flexibility to meet the needs across a multigenerational workforce. The Army, compared with other institutions or organizations, has the advantage of a shared value system and culture that transcends the generational differences among the workforce and create cohesion.

3.8 USE OF NEW CONGRESSIONAL AUTHORITIES

The 2018 NDAA provided the first significant legislative changes to the DOPMA/ROPMA in 38 years. These changes, summarized below, give the Army more flexibility in acquiring, promoting, and retaining talent with critical skills in hard to fill branches.

- Sec. 501 - Repeal of requirement for ability to complete 20 years of service by age 62 as qualification for original appointment as a regular commissioned officer (10 USC 532)

[20] Kipley, D., Lewis, A. & Helm, R. (2008). Achieving Strategic Advantage and Organizational Legitimacy for Small and Medium Sized NFPs Through the Implementation of Knowledge Management. The Business Renaissance Quarterly, Fall, Vol. 3 Issue. 3. p. 21-42.
[21] Calo, T. (2008). Talent management in the era of the aging workforce: The critical role of knowledge transfer. Public Personnel Management, Vol. 37, No. 4,p. 403-416.
[22] Wagner, C. (2009). When mentors and mentees switch roles. The Futurist, Vol. 43, No., 1, p. 6-7.

- Sec. 502 - Enhancement of availability of constructive service credit for private sector training or experience upon original appointment as a commissioned officer (10 USC 533) By current policy applies to certain branches

- Sec. 503 - Standardized temporary promotion authority across the military departments for officers in certain grades with critical skills (10 USC Ch 35, sec 605)

- Sec. 504 - Authority for promotion boards to recommend officers of particular merit be placed higher on a promotion list (10 USC 616, 624(a)(1))

- Sec. 505 - Authority for officers to opt out of promotion board consideration (10 USC 619, 611(a))

- Sec. 506 - Applicability to additional officer grades of authority for continuation on active duty of officers in certain military specialties and career tracks (10 USC 637(a))

- Sec. 507 - Alternative promotion authority for officers in designated competitive categories of officers (10 USC 649)

- Sec. 513 - Authority to designate certain reserve officers as not to be considered for selection for promotion (10 USC 14301(j))

- Sec. 518 - Authority to adjust effective date of promotion in the event of undue delay in extending Federal recognition of promotion (10 USC 14308(f))

3.9 ORGANIZATIONAL LEADERSHIP

Like materiel management and training and doctrine, TM is an overarching, highly technical Army effort, but it lacks a four-star general officer to champion, lead change, integrate efforts, and deploy solutions Army-wide. Many senior officers (i.e., ASA(M&RA), ASA(ALT), TRADOC, G1, CSA, VCSA) have pieces of the TM enterprise under their command, but there's no unity of command. At present, the Army is undertaking multiple, expensive, non-integrated or ill-coordinated efforts which will lead to suboptimal TM practices, a waste of time, opportunity, and resources.

4. RECOMMENDATIONS

Based on its findings, the study team made the following recommendations.

4.1 ACQUIRE

While the study team supports the continuation of USMA and ROTC scholarships, the Army should pursue additional benefits above and beyond the ADSO commitment. The Army should profile its talent needs at least four to ten years into the future to identify a targeted undergraduate educational mix for scholarships. For example, the need for STEM-related competencies and talents will continue to grow, so the Army should set a target percentage for STEM-related degrees with clearly defined criteria.

Given the significant number of junior officer departures after an officer's initial ADSO is completed, we also recommend that the Army identify other analytical assessments that would help it determine which candidates are motivated to serve beyond their initial ADSO.

Commendably, as part of its TBB effort, the Army has taken steps toward identifying relevant competencies and talents based upon input from branches. The information is being used to inform cadets of their potential strengths relative to others in their cohort class, and to explain how these strengths could support their preferences for branch selection. Beyond using TBB for cadets, the Army should consider evaluating all officers at key career points to re-assess talents and to generate more accurate data and information relative to potential assignments and development. This would allow the Army to monitor and cultivate talent that aligns with its tactical and strategic requirements. That said, the study team expressed concern over the derivation of talent definitions and the approach used to assess them in TBB. Multiple assessments are being used to gauge a single talent relative to respective classmates, and it's not clear how OEMA and/or ARI are using the respective scores from different assessments for the TAB without being standardized or normed to much larger populations. Though it's common practice in industry to have many assessment instruments designed to provide a unique measurement for multiple competencies (e.g., the Korn Ferry Four Dimensional Enterprise tool assess 30 competencies),[23] and it's understood that different assessment instruments can be used to assess different aspect of a different talent, what's not clear is how the Army is currently employing an effective, multi-variant method for combining the results from different instruments to derive an overall score relative to a cohort. It would be beneficial to develop absolute scores rather than simply scores relative to a cohort so that the assessment values could be retained and used during an officer's career. Thus, the Army must work with industry leaders in identifying the most critical talents essential to specific Army officer positions, in

[23] Korn Ferry Four Dimensional Enterprise Assessment: Research Guide and Technical Manual, Version 17.1a—11/2017, Nov. 2017, available online at https://dsqapj1lakrkc.cloudfront.net/media/sidebar_downloads/KF4DEnterprise-TM-NOV-2017-nav.pdf

finding and/or developing assessment instruments, and in using common industry definitions in a standardized lexicon and validated and normed instruments and methodologies for measurement.

The study team recommends the Army continue using the TBB, but scientifically assess and validate the effectiveness of the process. The Army must also educate, clarify, and stress the role and importance of the TAB to USMA and ROTC cadets early and often so that they better appreciate TBB. To even the playing field, ROTC cadets must have the same opportunities as USMA cadets to take the TAB twice during their undergraduate years by eliminating the common access card (CAC) requirement to access the TBB.

Finally, the Army must also make a deliberate attempt to better educate cadets and junior officers on the different branches, FAs, and OF and GF differences, all of which provide officers with a broader understanding of opportunities for exploring a diverse spectrum of career choices in the Army.

4.2 EMPLOY

If AIM 2.0 is deemed successful and acceptable for use to align talent with assignments, the assignment descriptions must be written by individuals trained to effectively use proper terminology. As Army Assignment Officers transition to Career Coaches, these individuals must be trained in writing the job descriptions concomitant with obtaining coaching certification.

The study team also recommended the following:

- Continue a marketplace-based assignment process like AIM 2.0.
- Continuously assess the success of AIM 2.0 with both employers and employees as a means of improvements.
- HRC should develop guidance for employers for better assignment descriptions and definition of talent needs
- Authorize officer's self-professed "resume" inputs to be added to official Army records and add them and talents/competencies as part of the AIM 2.0 assignment marketplace process.

4.3 DEVELOP

In general, the Army should continue to migrate to a TM data-rich environment to help more effectively manage an officer's full career. To do so, the Army must assess talents throughout an officer's career with standardized set of validated instruments to identify opportunities for

continued career growth and development. Maintaining a current, validated, picture of an officer's talents and preferences will also be essential for other TM-related decisions.

More specifically, the Army must promulgate the importance and role of the GF to its officers. Officers should be educated about the career opportunities present in the GF, starting at the commissioning source (USMA, ROTC, OCS) through subsequent professional military education, and at key points throughout their careers. The campaign to highlight the GF should support new procedures that facilitate officer broadening for GF expertise, as well as the means to transition from the OF to the GF. Officers should experience GF assignments that have a positive impact on their career development (i.e., ACS and other developmental assignments) as part of a larger transition program from the OF to the GF.

Developing the necessary expertise to effectively lead GF organizations is essential to the Army's strategic existence. A dynamic, global environment demands the best in class of every type of leader for mission success. Thus, all officers should have broadening assignments in the GF to provide future Army leaders with a foundational understanding of how the GF enables the OF. This would represent a cultural change, so to motivate the officer corps into accepting GF assignments, the Army should treat GF experience like Joint experience and make it a prerequisite for promotion to BG. The policy would reverse the present stigma of serving in the GF, underscoring the tremendous value placed on officers with broader awareness and experience of the Army's full capabilities.

The Army needs officers with advanced civilian degrees to most effectively run the GF and OF. Along with radically increasing the number of officers sent to ACS, the Army should take advantage of the new Congressional authorities to make these officers more competitive for promotion and prolong their time in service, thereby obtaining the best return on investment (ROI).

Formalized mentorship opportunities also represent an important and yet untapped aspect of officer corps development. The Army must explain the difference between raters, coaches, and mentors, and teach the role, emphasize the benefit, and facilitate the selection of mentors. A formalized mentorship program will require policies, senior leader champions, structure, selection and education of qualified mentors, and collection and evaluation of outcome data to validate and to improve the program.

Tenure of senior Army officers is extremely important to maximize the leader's opportunity to influence and lead effective change. The industry standard for senior leaders is 5.3 years. In the Army, it's 2-3 years. The Army should develop a policy that would routinely extend the mandatory retirement date of senior general officers to increase tenure, enabling both development and influence, similar to industry standards.

Officers in FAs will make a greater contribution to the Army if they maintain currency in their branches. A new policy needs to be enacted to allow these officers to return to service in their

branches to remain proficient. The Army should develop a policy to enable FA officers to periodically serve in OF units as a means of retaining branch relevance.

Finally, the study team recommends the Army conduct a pilot TM study for selected officers willing to develop a two-career path including both branch and FA paths. Data obtained from the study should guide the Army toward revisions of Officer Personnel Management System XXI (OPMS XXI).

4.4 PROMOTE/SELECT

The study group encourages the Army to focus its attention on operating its selection and promotion system in a way that leverages the advances in TM as described in other sections of this report. Promotion boards should review self-proclaimed input provided by the officer candidates about their potential for future assignments, talent assessment data, and leverage TM practitioners and tools to obtain more informed assessments of each candidate. In short, board members ought to be highly qualified, well-supported and well-trained in the process before they perform their duties on promotion boards.

4.5 RETAIN

While the Army can recruit and train an excess of lieutenants, the challenge is how to retain the best and brightest after they complete their ADSO. The Army needs to reduce/mitigate the loss of talent and compete effectively in a highly competitive global marketplace for top talent.

> These young men and women are consumers of data, live on the internet, play virtual games, develop virtual networks, and have lived most of their lives in relative economic prosperity… Successfully framing the Army for them requires a different approach…. Framing the Army so that it is seen as engaging, informative, socially based, and interactive aligns well with the sensibilities of the current generation…[24]

Some basic tenets of retaining employees include engaging and providing meaningful work, exciting through culture, developing for potential and retaining through opportunity, and rewarding for performance and retention.[25] While the Army's mission of fighting and winning the nation's wars is a strong patriotic motivator, much can be improved in terms of creating an environment where the best and brightest want to stay. Rather than the one path to success, the Army should provide multiple success profiles and paths to reach the top, allowing people to trampoline either sideways (to more rewarding positions or broadening opportunities) or ahead, depending on their performance and skills. Development opportunities and new experiences, including ACS and time off to explore industry, mustn't impede promotion opportunities. The Army could provide cross-training to increase transferable skills applicable to

[24] Wardynski, et al., Marketing for Millennials, Feb. 2010.

[25] Turner and Kalman (2014).

a wide range of opportunities within the OF and the GF, and officers' unique strengths could be tailored to the entire Army spectrum of OF to GF needs.

The Army must gather data to better understand the personal opportunity cost factors that influence a person's decision to leave service after the initial ADSO. All officers leaving the Army must be required to complete the survey describing reason(s) why they're leaving. The Army could use this and other data to make changes to improve officer retention on active duty beyond the ADSO.

The Army needs to do a better job at providing its cadets and young officers with a transparent system that clearly outlines career development opportunities across the entire Army, with the support of a formalized mentor program and without prejudice against the GF. It should also create and implement a campaign of learning to increase cadets' and junior officers' knowledge regarding branches, FAs, career broadening, and transition opportunities. The campaign must have clear rationale on the purpose and process of each aspect to ensure officers understand how they can influence their own career choices within the system. Greater understanding will promote broadening and learning opportunities within the system, and those who take advantage of these opportunities will be more likely to stay in service. With a data-supported (i.e., well-informed) selection process for broadening and ACS, the Army will pick inspired cadets and junior officers and keep enough of the best in the ranks.

It's critical to involve senior leaders in the career development of cadets and junior officers. The Army should assign lieutenant retention goals to battalion commanders, and should identify a cohort among newly-commissioned officers after two years who are considered high potential/must retain and facilitate obtaining a qualified mentor to continue an on-going process to motivate each of them as they approach their ADSO halfway point.

Finally, the Army should take advantage of new authorities from Congress aimed at improving officer retention and request additional authorities, as described below.

4.6 USE OF NEW CONGRESSIONAL AUTHORITIES

The Army should adopt the DOPMA/ROPMA changes provided in the FY 2019 NDAA to accelerate filling key shortages in critical skills branches. Specifically, the Army should adopt the following authorities:

- Sec. 507 to allow officers who are ACS graduates to be considered for promotion with an earlier year group

- Sec. 506 to extend officers' mandatory retirement dates for a similar period (earlier cohort)

- Sec. 504 to establish a policy to integrate BZ selected officers into the promotion OML consistent with the officer's capabilities

These changes aren't enough to meet the Army's Military Table of Organization and Equipment (MTO&E) management requirements, so it should request additional Congressional authorities, for example, the ability to re-commission officers who have left service (resigned their commission).

4.7 Management of the Officer TM Process

As it develops a formal TM enterprise, the study team recommends the Army take the following actions:

Unity of Command: Assign Officer TM responsibility to the VCSA to achieve unity of command. The VCSA has a unique position that affords the ability to establish unity of command over all the TM efforts of the Army. The study team recognizes this is new responsibility for an already busy senior officer, but it must be a priority for the effort to succeed. Delegation of the leadership effort to the G1 will not suffice.

TM System: Structure TM data to make it accessible, comprehensive, and object-oriented for use in TM systems with advanced data analytics and AI. The TM information system should be structured using the newest informatic tools like object-oriented databases instead of relational databases. Object-oriented databases will facilitate the mining of extremely large data sets. In addition, data mining tools using predictive analytics and AI should be acquired or developed to help inform the Army's TM efforts.

Run a pilot test in a selected Army branch or FA of COTS TM systems (one or two) applicable across all pillars. Many COTS TM tools on the market already feature object-oriented databases, advance analytics, and AI. The Army pilot should test COTS solutions by using them against small officer groups, either a small branch or a small FA. Lessons learned from the pilot should inform the acquisition of a larger TM informatics system.

Evaluate the TM system to ensure improvement in Army operational performance. An integral part of any system is outcomes measurement. The first step in the design of a TM system must be to define clear outcomes and ways to measure those outcomes. After the system is deployed, it must be evaluated to determine if the desired outcomes have been achieved and to use that data to continuously improve the system.

Provide a dedicated team of experts (e.g. data scientists) to adapt an industry-developed TM system to the needs of the Army. A team of dedicated Army data scientists and TM experts will be required to adapt industry developed TM systems and make them applicable to the Army. The team should have a good functional understanding of the Army's TM requirements and a

sound understanding of the advance analytic and AI tools to store and mine TM data. The Army should leverage ACS and the industry fellowship program to obtain the required expertise.

APPENDICES

APPENDIX A. TERMS OF REFERENCE

SECRETARY OF THE ARMY
WASHINGTON

04 JAN 2019

MEMORANDUM FOR

Deputy Under Secretary of the Army, 110 Army Pentagon, Room 3E650, Washington, DC 20310-0110
Chairman, Army Science Board, 2530 Crystal Drive, Room 7098, Arlington, Virginia 22201

SUBJECT: Request for an Army Science Board Study titled "Reforming Talent Management in the Army"

1. I request that the Army Science Board (ASB) conduct a study titled, "Reforming Talent Management in the Army." The purpose of the study is to improve the Army's ability to recruit, retain, and advance its talent, and to plan for the anticipated demands of the future force. To do so, the Army's personnel system needs a dynamic information management (IM) system that aligns Army force requirements with Soldiers' talents, interests, and career desires. The study team will describe that system, its tools, and procedures to better manage and plan for the Army's most vital resource, its people.

2. The Army's personnel system must adaptively comprehend Army force requirements, current talent assessments, and the individual characteristics of Soldiers. Optimally, the IM system will:

a. Maintain the manning of Operating Force units.

b. Identify areas requiring greater "bench depth" in the Generating Force.

c. Form development opportunities to enhance technical competence.

d. Boost the recruitment, motivation, improvement, promotion, and retention of talent.

e. Optimize routine assignment processes.

f. Identify and plan for specific talent to fulfill rapidly evolving, unique requirements.

3. The ASB study team's tasks will include, but will not be limited to, the following:

SUBJECT: Request for an Army Science Board Study titled "Reforming Talent Management in the Army"

a. Review current and planned Army personnel management systems (e.g., IPPS-A), outside talent marketplace portals, and the best human resource management practices being used in industry, other agencies, and academia to assess their applicability in recruitment, development, position assignment, retention, and planning for the Army.

b. Examine the distinctions of Baby Boomers, Millennials, and Generation Z to understand the unique attributes of Army personnel in each generation. Key to that understanding is an awareness of how generational differences affect leadership, training, motivation, and retention of Soldiers, each of which contribute to the planning for future force needs.

c. Determine how best to scale the personnel IM system to meet Army needs.

d. Describe how to determine the desired attributes (personality, education, experience, etc.) associated with various Army career paths and positions, and how to use this data to develop officers to become qualified for these positions, paying specific attention to positions in the Generating Force.

4. This study will consider only the management of active duty officers in the Army. The study team also will build upon the findings and recommendation of the ASB's fiscal year 2013 (FY13) study titled "Evaluation of the Army Use of Predictive Data for High Risk Behavior," and its FY14 study titled "Talent Management and the Next Training Revolution."

5. The Secretary of the Army is the sponsor of this study. The Assistant Secretary of the Army (Manpower and Reserve Affairs) will assist the study team with accessing information necessary to conduct this study.

6. Provide a briefing with findings and recommendations by 30 September 2019 to the the Chief of Staff, Army and me. The study will operate in accordance with the Federal Advisory Committee Act and DoD Directive 5105.4, "Department of Defense Federal Advisory Committee Management Program." It is not anticipated that this study will need to go into any particular matters regarding the meaning of United States Code, nor will it cause any member of the study team to be placed in the position of acting as a procurement official that may constitute a conflict of interest.

Mark T. Esper

CF:
(see next page)

2

SUBJECT: Request for an Army Science Board Study titled "Reforming Talent Management in the Army"

CF:
Chief of Staff, Army
Under Secretary of the Army
Vice Chief of Staff, Army
Assistant Secretary of the Army (Manpower and Reserve Affairs)
Deputy Chief of Staff, G-1
Commander, U.S. Army Training and Doctrine Command

APPENDIX B. STUDY TEAM MEMBERS

GEN David M. Maddox (USA Ret), Chair

Teresa B. Smith, Vice Chair

Vivian Baylor, Independent Consultant

Alan Guarino, Vice Chairman of the Board & CEO Services, Korn Ferry

Jill Harp, PhD, Biochemistry Professor, Winston Salem State University

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Sung M. Lee, PhD, Senior Staff, Carnegie Mellon SEI

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Maria Mouratidis, PsyD, Psychologist & Professor, Notre Dame of Maryland University

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Alan Willner, PhD, Signal Processing Professor, University of Southern California

COL Joanne Moore and LTC Jenniper Tyler, Study Managers

Justine Federici, Graduate Research Assistant

Mark S. Swiatek, Tech Writer/Editor

APPENDIX C. LINES OF INQUIRY AND VISITATIONS

There were over 40 primary sources of data gathering for the study, including contact with over 170 different people. Information used in the study can broken into three broad categories, (a) military and government, (b) reference documents, and (c) industry and academia as follows:

Military and Government

- Army Analytics Group
- Army Futures Command
- Army Human Resources Command, AIM 2.0 Team
- Army Research Institute (ARI)
- Army TM Task Force
- Army War College
- Assistant Secretary of the Army, Manpower & Reserve Affairs
- Colonel Officer Management Office (COMO)
- Dept. of the Army (DA) G-1
- Defense Digital Service (DDS)
- General Officer Management Office (GOMO)
- House Armed Services Committee (HASC) Professional Staff
- Human Capital Big Data
- Human Resources Command (HRC), Officer Personnel Management Division
- IPPS-A
- Joint Staff J-1
- Leadership Development, G-3-5-7
- Office of Economic & Manpower Analysis
- U.S. Army Cadet Command (USACC)
- U.S. Army Recruiting Command (USARC
- U.S. Air Force A-1
- USMA (Behavioral Science & Leadership Department)

Primary Reference Documents

"Army Science Board FY14 Study Talent Management and the Next Training Revolution," Fall 2015.

S. Bryant and H.A. Urban, "Reconnecting Athens and Sparta: A Review of OPMS XXI at 20 Years", Oct. 2017.

M.J. Colarusso and D. S. Lyle, "Senior Officer Talent Management: Fostering Institutional Adaptability", Feb. 2014.

M.J. Colarusso, K.G. Heckel, D.S. Lyle, and W.L. Skimmyhorn, “Starting Strong: Talent-Based Branching of Newly Commissioned U.S. Army Officers”, Apr. 2014.

Industry and Academia

- Accenture Federal Solutions
- Bell Vertical Lift
- Campfire Capital
- Catalyte
- Censia Corporation
- GALLUP
- Gnowbe
- Harvard Business School
- Inter-City Fund (ICF)
- Knowledge Advantage, Inc.
- Korn Ferry
- Logistics Management Institute (LMI)
- National Resident Matching Program
- Plum
- SAP (Systems, Applications, and Products in Data Processing), Success Factors
- Society of Human Resources Management (SHRM)
- University of Texas at Austin
- Workday

APPENDIX D. ASSESSMENT INSTRUMENTS

In their publication, "Identifying and Validating Selection Tools for Predicting Officer Performance and Retention," Russell and her colleagues emphasize the importance of "critically selecting those officers who have the most promising potential to lead our future, rapidly changing Army."[26] Psychometrics are a key component, widely used in industry during selection and throughout the TM process. They can be administered during various stages of an Army officer's career to enhance both the employee experience and the Army's utilization and leveraging of that officer's talents. Assessments provide feedback on an individual's strengths or weaknesses and the data can be used to inform the type of job an officer is best suited for and most likely to succeed in at various points throughout the officer's career. For example, personality tests such as the Myers Briggs Type Indicator (MBTI) provides a report that explains the results, and a career coach can then help to interpret and explain the implications of the test results as they relate to an officer's career choices.

All assessments should meet certain standards, regardless of the intended use. They should be reliable (demonstrate consistent results), have construct validity (measure the attribute(s) they intend to measure), and be normed against equivalent populations.[27] When selecting assessments to support TM systems, the Army must consider how they are administered (paper and pencil or online) and scored, the time to complete, frequency of administration and whether practice effects are possible. It wasn't readily apparent to the study team that the methods used in the TAB and TBB met these standards.

The following summaries of various assessment instruments include those that comprise the TAB as well as those that were recommended or discussed during the study team's data gathering with TM subject matter experts. The study team analyzed these instruments to develop an appreciation for the complexities involved with combining outcomes, then using the data to inform TM decisions.

Cognitive Reflection Test (CRT): The CRT was designed to measure a person's ability or disposition to reflect on a question and resist reporting the first response that comes to mind. It consists of three questions designed to assess whether a person behaves as a cognitive miser, which refers to people's tendency to rely on heuristic processing rather than employing cognitive processes that require more effort.[28] Research studies show that the CRT correlates with many other measures such as general ability and risky choice.[29] An extended version of the test has been created as the three questions from the original test have become well known. The CRT is currently administered as part of the TAB. Army talents assessed by the CRT include logical/analytical and process disciplined. It's unknown which version of the test is

[26] Russell, Paullin, Legree, Kilcullen & Young, 2017, pg. iii.
[27] Passmore, 2012.
[28] Toplak, West, & Stanovich, 2011.
[29] (Szaszi, Szollosi, Palfi, & Aczel, 2017.

given and whether practice effects are a consideration as the test is administered multiple times.

Career Path Appreciation (CPA): The CPA is a complex assessment interview designed to measure employee's cognitive capacity for increasing levels of complexity. It was developed by Dr. Gillian Stamp and has foundations in the Stratified Systems Theory of Elliott Jaques.[30] The CPA consists of three interview sections: Phrases, Symbols, and Work History during which the interviewee's qualitative responses are recorded and scored. The CPA produces an overall score of current work capacity which can range from current level I to current level VII as well as a sub-category of high, medium or low, thus resulting in a score such as "low current level I" or "high current level I." In addition, a score for highest predicted future work capacity can be derived. Higher scores indicate a greater tolerance for working in ambiguous and complex environments. The CPA was recommended by Dr. Scott Snook and has been administered at the Army War College. A section of the interview process was modified by ARI, resulting in the MCPA-Phrases assessment[31] which consists of nine sets of statements. Reliability for the MCPA has been established through multiple studies at a coefficient of .85.[32]

Comprehensive Leaders Assessment Battery (CLAB): CLAB is a battery of assessments developed by ARI over the last 25 years. It's been used to predict the advancement of an officer to Colonel and beyond. It will be administered at Intermediate Level Education (ILT) starting in the Fall of 2019. The purpose for using the battery is to inform the Army Talent Alignment Process (ATAP), a TM Task Force initiative, on how officers are placed.

Captain's Development Battery (CDB): The CDB is under development by ARI and Army University (AU) to measure a number of attributes. It's not clear which Army talents will be assessed, but it will be administered at the Captains Career Course (CCC).

Rational Bio-data Inventory (RBI) 1.0: The RBI 1.0 is administered as part of the TAB to measure the following Army talents: Communicator, Cross-Culturally Fluent, Detail-Focused, Innovative, Interdisciplinary, Interpersonal, Mentally Tough, Perceptive, Problem Solver, Process-Disciplined, Prudent Risk Taker, and Technology Adept.

Rational Bio-data Inventory (RBI) 2.0: The RBI is administered as part of the TAB to measure the same Army talents as RBI 1.0, as well as the following: Bodily-Kinesthetic, Inspirational Leader Introspective, Logical/Analytical, Multi-Tasker, Physically Fit, Project Manager, and Spatially Intelligent.

Spatial Ability Test: OEMA administers the O*NET measure of Spatial Ability developed by the U.S. Department of Labor as part of the TAB. The test consists of 20 pictorial items representing

[30] Lewis, 1993.
[31] Russell, Paullin, Legree, Kilcullen & Young, 2017.
[32] Myers, 2008.

2-dimensional cut-out shapes and was correlated with academic performance and military tasks in a study of USMA Cadets.[33] The Army talent assessed is Spatially Intelligent.

Test of Personal Intelligence (TOPI 5): The TOPI was developed by John Mayer and colleagues to assess one's "capacity to reason about personality and to use personality and personal information to enhance one's thoughts, plans, and life experiences."[34] The test consists of 205 multiple-choice questions, each with four alternative responses, however, only one answer is correct. The questions are designed to require people to solve problems relevant to personality. Test takers receive a point for every correct answer. The test results in a single overall personal intelligence score however older versions of the TOPI yield 3 scores (overall PI, consistency-congruence and dynamic-analytical PI). There are several versions of the TOPI (i.e. TOPI 1.0, 1.4R, TOPI 1.2R, TOPI Mini-12 etc.), however, the study team couldn't determine which version is currently being administered as part of the TAB. Each version varies in its generalizability and correlations to other mental abilities. In a study conducted at USMA, the TOPI-1.4 was administered to over 2,000 cadets to determine whether personal intelligence correlates with other measures of intelligence.[35] Results showed a correlation between the TOPI 1.4 and SAT and spatial intelligence tests. The TOPI was also shown to predict key academic and military outcomes, as well as to correlate with the Five Factor Model. Army talents assessed include: Communicator, Inspirational Leader, Introspective, Perceptive, Problem Solver, and Prudent Risk Taker.

Graduate Record Exam Verbal (GRE-V) & Graduate Record Exam Quantitative (GRE-Q): The GRE is owned and administered by the Educational Testing Service (ETS) to measure verbal reasoning, quantitative reasoning, analytical writing, and critical thinking skills that have been acquired by an individual over a long period of learning. The total test takes approximately 3 hours and 45 minutes to complete, consists of six sections, and can be administer via paper and pencil or computer. The test consists of an analytical writing section (two 30-minute essays), verbal reasoning (two 30-minutes sections), a quantitative reasoning section (two 35-minute sections) as well as an unscored or research section. The study team couldn't determine which version of the GRE is administered as part of the TAB. Documents provided to the study team indicated the GRE-A is being utilized. Some portion of the GRE is also administered during the CCC as mandated by the SECARMY. Although the GRE is required by most graduate schools for admission within the U.S., some current literature shows the test doesn't correlate with success in advanced degree programs.[36] The Army talents assessed by the GRE are Logical/Analytical.

Neo Personality Inventory (NEO PI-R): A taxonomy was established by psychologists to describe personality traits from extroversion, openness, agreeableness, conscientiousness, and neuroticism, often referred to as the Big Five or Five Factor Model. An advanced body of research regarding these traits led Paul Costa and Robert McCrae to develop an assessment for

[33] Mayer & Skimmyhorn, 2017.
[34] Mayer, Caruso, and Panter, 2019, pg.1.
[35] Both a main and replication sample for the SAT-math (r = 0.17 for both samples), O*NET spatial ability test (r= 0.23 & 0.20), and the SAT-verbal (r = 0.30 & 0.31).
[36] Sealy, Saunders, Blume, & Chalkley, 2019.

these traits, the Revised NEO Personality Inventory (NEO PI-R), consisting of 240 items. The NEO PI-R also reports on six subcategories of each Big Five personality trait (called facets). The NEO FFI, a shorter version of the NEO-PI-R, has 60 items (12 per domain).[37] OEMA administers this version as part of the TAB. The Army Talents Assessed include Communicator, Detail-Focused, Innovative, Inspirational Leader, Interdisciplinary, Interpersonal, Mentally Tough, Perceptive, Problem Solver, Process Disciplined, Project Manager, and Prudent Risk Taker.

Grit: The grit scale, a 12-item questionnaire, was developed to measure the extent to which individuals are able to maintain focus, interest, and persevere in obtaining long-term goals. Respondents are given 5-point response scale, ranging not gritty to extremely gritty. The test is administered as part of the TAB. Hardiness and grit have been shown to predict persistence through Cadet Basic Training (CBT) and achievement in the first year at USMA.[38] The Army talent assessed is Mentally Tough.

[37] Costa & McCrae 1995.

[38] Internal consistency estimates (Cronbach's alpha) for the Grit Scale were 0.85 (Duckworth et al., 2007). "Grit did not relate positively to IQ but was highly correlated with Big Five Conscientiousness. Grit nonetheless demonstrated incremental predictive validity of success measures over and beyond IQ and conscientiousness."

	Assessment	Description	Army Talents Assessed	Outcome Measures	When Administered	Validity/Reliability/Correlations	Notes
1	Army Physical Fitness Test (APFT)	The APFT is a 3-event. It includes the following: maximum number of push-ups (PU) and sit-ups (SU) each in 2-minutes (muscular endurance) and a 2-Mile Run for time (2-MR; cardiorespiratory fitness).	Physical fitness	Number of sit-ups, push-ups and a timed two-mile run. The required scores are based on sex (male/female) and age category.	Physical fitness is assessed with cadets as well as at the Lieutenant Colonel Battalion Commanders Pilot test.	Normative data for the APFT was conducted with over 6,000 soldiers in a 1994 study (Knapik, Bandelet, Bahrke, O'Connor, & Jones, 1993). In addition, many researchers have conducted studies examining the reliability of push-ups, sit-ups and timed runs (Diener, Golding, & Diener, 1995).	The Physical fitness test may restrict some very talented applicants for specialized occupations in the Army due to the physical fitness requirements. This may be a limitation that may need to be explored and modified especially to recruit for and retain specific occupational functions and skill sets needed in the Army.
2	Captain's Development Battery (CDB):	The CDB is under development by ARI and the Army University (AU) to measure a number of attributes.	The CDB was not developed to address the Army Talents identified by OEMA and ARI as part of Talent Based Branching therefore they are TBD.	Unknown	The CDB will be administered at the Captains Career Course (CCC).	Unknown	This battery is still being developed and additional information regarding the talents assessed by this battery are not available at the time of this report.
3	Career Path Appreciation (CPA)	The CPA is a complex assessment interview designed to measure employee's cognitive capacity for increasing levels of complexity. It was developed by Dr. Gillian Stamp and has foundations in the Stratified Systems Theory of Elliott Jaques (Lewis, 1993).	Mentally Tough, Perceptive, Problem Solver	The CPA consists of three interview sections: Phrases, Symbols, and Work History during which the interviewee's qualitative responses are recorded and scored. The CPA produces an overall score of current work capacity which can range from current level I to current level VII as well as a sub-category of high, medium or low thus resulting in a score such as "low current level I" or "high current level I." A score of higher predicted future work capacity can be derived. Higher scores indicate a greater tolerance for working in ambiguous and complex environments.	The CPA is administered at the Army War College and was recommended by Scott Snook, Ph.D., an organizational behaviorist.	Reliability for the MCPA has been established through multiple studies at a coefficient of .85 (Myers, 2008).	A section of the interview process was modified by ARI resulting in the MCPA-Phrases assessment (Russell, Padilla, Legree, Kilcullen & Young, 2017) and consists of nine sets of statements.
4	CliftonStrengths Assessment (CSA)	This assessment was developed by Donald Clifton, PhD, who is credited for developing the area of strength-based psychology. This strength-based assessment tool is organized around four themes and strengths which are condensed into seven competencies. Over 20 million people worldwide have taken the assessment (Clifton & Harter, 2019).	Communication, Inspirational Leaders, Process Disciplined, Prudent Risk Taker, Interpersonal	The precise scoring of the CSF is proprietary to Gallup.		This is a proprietary test. The Gallup website includes links to in-house research conducted on the validity and reliability of their assessment. Asplund, J., Agrawal, S., Hodges, T., Harter, J., Lopes, S. I. (2014). The Clifton Strengthsfinder 2.0 Technical Report, Development and Validation. Retrieved from https://www.gallup.com	
5	Cognitive Reflection Test (CRT)	This test was designed by Shane Frederick to measure a person's ability or disposition to reflect on a question and resist reporting the first response that comes to mind. It consists of three questions which are designed to assess whether a person behaves as a "cognitive miser," which refers to people's tendency to rely on heuristic processing rather than employing cognitive processes that require more effort (Toplak, West, & Stanovich, 2011).	Logical/Analytical, Process Disciplined	Questions are open-ended. The respondent supplies an answer that is either correct or incorrect.	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets.	Research studies show that the CRT correlates with many other measures such as general ability and risky choice (Szaszi, Szollosi, Palfi, & Aczel, 2017) . An extended version of the test has been created as the three questions from the original test have become well known.	A seven-question version of the test is administered based on documents provided by OEMA. It should be noted that practice effects are a consideration as the test is administered multiple times and the test has a limited number of questions.
6	Comprehensive Leaders Assessment Battery (CLAB)	The CLAB is a battery of assessments developed by ARI over the last 25 years. It has been used to predict the advancement of Colonel and beyond (per the talent management task force).	The CLAB was not developed to address the Army Talents identified by OEMA and ARI as part of Talent Based Branching therefore they are TBD.	The intent of the battery is to inform the Army Talent Alignment Process (ATAP) which is a Talent Management Task Force initiative to serve as the future process for how officers are placed.	The CLAB will be administered at Intermediate Level Education (ILE) this fall (2019).	Unknown	
7	Graduate Record Exam Verbal (GREV) & Graduate Record Exam Quantitative (GREQ):	The GRE is owned and administered by the Educational Testing Service (ETS). It was revised in August of 2011. It measures verbal reasoning, quantitative reasoning, analytical writing, and critical thinking. The total test takes approximately 3 hours and 45 minutes to complete, consists of six sections, and can be administer via paper and pencil or computer. The test consists of an analytical writing section (two 30-minute essays), verbal reasoning (two 30 minutes sections, 20 questions per section), a quantitative reasoning section (two 35-minute sections, 20 questions per section) as well as an unscored or research section.	Logical/Analytical	The test has six sections. One analytical writing, two verbal, two quantitative, and one experimental or research section. Scored on a 130-170 scale	A portion or all of the GRE is administered during the Captain's Career Course (CCC).	Although the GRE is required by most graduate schools for admission within the U.S., current literature is showing that the test does not correlate with success in advanced degree programs (Sealy, Saunders, Blume, & Chelkey, 2019).	It is not clear which version of the GRE is being administered as part of the TAB. Documents provided to the study team indicated the GRE-A is being utilized.

D.1 Talent Assessment Tools Matrix

8	Grit	The grit scale was developed by Angela Duckworth (University of Pennsylvania), Christopher Peterson, and Mike Matthews & Dennis Kelly (USMA West Point). The Grit s a 12-item questionnaire designed to measure the extent to which individuals are able to maintain focus and interest, and persevere in obtaining long-term goals. Respondents are given 5-point response scale (not all like me to very much like me) to indicate how much a statement reflects how they see themselves. Scores range from 1 (not at all gritty) to 5 (extremely gritty).	Mentally Tough, Prudent Risk Taker	12-item questionnaire, uses 5- point scale likert- type questions, scores range from 1 (not at all gritty) to 5 (extremely gritty).	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets.	Internal consistency estimates (Cronbach's alpha) for the Grit Scale were 0.85 (Duckworth et al., 2007). Hardiness and grit have been shown to predict persistence through Cadet Basic Training (CBT) and achievement in the first year at West Point (Duckworth et al., 2007; Duckworth & Quinn, 2009).		
9	Multi-Dimensional Aptitude Battery II (MAB)	The MAB is a test of intelligence created by Douglas N. Jackson. It assesses 10 distinct areas of intelligence grouped into two broad categories of scores: verbal and performance and takes approximately 100 minutes to complete. It is similar to the Wechsler Adult Intelligences Scale-Revised (WAIS-R), however it can be administered by paper and pencil and consists of multiple- choice questions (Kirkeshuk & Harrington, 1985).	Logical/Analytical, Problem Solver	It can be administered by paper and pencil; objective-multiple choice format	This test is being pilot tested as part of a series of assessments with the Lieutenant Colonel Battalion Commanders.	The test-retest reliability based on timed performance correlates with values of 0.85 for the verbal section, 0.96 for the performance section and 0.97 for the full scale (https://www.sigmaassessmentsystems.com).		
10	Neo Personality Inventory (NEO PI-R)	A taxonomy was established by psychologists to describe personality traits which include extroversion, openness, agreeableness, conscientiousness, and neuroticism, which are often referred to as the Big Five or Five Factor Model. There is an advanced body of research regarding these traits which includes studies by J.M Digman, Warren Norman, Lewis Goldberg, Paul Costa, and Robert McCrae. Paul Costa and Robert McCrae developed an assessment for these traits which is called The Revised NEO Personality Inventory (NEO PI-R) and consists of 240 items. In addition, the NEO PI-R also reports on six subcategories of each Big Five personality trait (called facets). The NEO FFI is a shorter version of the NEO-PI-R which has only 60 items (12 per domain) (Costa & McCrae 1995).	Communicator, Detail-Focused, Innovative, Inspirational Leader, Interdisciplinary, Interpersonal, Mentally Tough, Perceptive, Problem Solver, Process Disciplined, Project Manager, Prudent Risk Taker	5-point agree/disagree scale. The full NEO PI-R consists of 240 items and provides detailed facet scores; the shorter NEO-FFI (NEO Five Factor Inventory) has only 60 items (12 per domain)	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets, also administered at the Army War College	A study with the Australian Army showed that high conscientiousness and low extraversion scores predicted high leadership effectiveness. High openness scores predicted the likelihood of attending a promotion course which was indicative of leadership effectiveness (McCormack, & Mellor, 2002). Personal intelligence has been shown to correlate at approximately r = 0.20 with the Openness trait of the five-factor model (Mayer & Skimmyhorn, 2017).	OEMA indicated that they are administering the NEO-FFI (i.e. the shorter version of the NEO).	
11	Rational Biodata Inventory (RBI) 1.1	Rational Biodata inventories are "self-report tests that measure prior behavior and reactions to specific life events" (Kilcullen, White, Mumford & Mack, 1995, pg.17). The RBI 1.1 was developed by OEMA and ARI. It consists of 130 questions and takes approximately 40 minutes to complete. It measures factors related to officer retention such as achievement orientation and stress tolerance among others (briefing from OEMA to ASB RTM team, April 2, 2019).	Communicator, Cross-Culturally Fluent, Detail-Focused, Innovative, Interdisciplinary, Interpersonal, Mentally Tough, Perceptive, Problem Solver, Process-Disciplined, Prudent Risk Taker, and Technology Adept	Unknown how the test is scored.	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets.	Unknown		
12	The RBI 2.0 was also developed by ARI and OEMA. It consists of 134 questions and takes approximately 40 minutes to complete. The measures were selected to assist with the talent-based branching process (OEMA).		Bodily-Kinesthetic, Communicator, Cross-Culturally Fluent, Detail-Focused, Innovative, Inspirational Leader Interdisciplinary, Interpersonal, Introspective, Logical/Analytical, Mentally Tough, Perceptive, Problem Solver, Process-Disciplined, Prudent Risk Taker, Multi-Tasker, Physically Fit, Project Manager, Spatially Intelligent, and Technology Adept. (All 20 talents assessed)	Unknown how the test is scored.	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets.	Unknown		
13	Test of Personal Intelligence (TOPI)	The TOPI was developed by John Mayer and colleagues to assess one's "capacity to reason about personality and to use personality and personal information to enhance one's thoughts, plans, and life experiences," (Mayer, Caruso, and Panter, 2019, pg.1).	Communicator, Inspirational Leader, Introspective, Perceptive, Problem Solver, and Prudent Risk Taker	The TOPI 5 consists of 205 multiple-choice questions; each with four alternative responses, however, only one answer is correct. The questions are designed to require people to solve problems relevant to personality. Test takers receive a point for every correct answer. The test results in a single overall personal intelligence score however older versions of the TOPI yield 3 scores (overall PI, consistency-congruence and dynamic analytical PI). TOPI 1.4 is available to researchers under limited conditions. The test takes from 35-45 minutes to take and is about 90 items in length.	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets	In a study conducted at West Point the TOPI-1.4 was administered to over 2,000 cadets. The objective of the study was to test whether personal intelligence correlates with other measures of intelligence in both a main and replication sample for the SAT-math, O*NET spatial ability test and the SAT-verbal. Results showed a correlation between the TOPI 1.4 and SAT-math (r = (0.17 for both samples), SAT-verbal (r = 0.30 & 0.31), and spatial intelligence (r= 0.23 & 0.20). The addition, the TOPI was shown to predict key academic and military outcomes. Finally, the TOPI 1.4 was shown to correlate with the Five Factor Model.	There are several versions of the TOPI (i.e. TOPI 1.0, 1.4R, TOPI 1.2R, TOPI Mini-12 etc.), however the study team is not sure which version is currently being administered as part of the TAB. The various versions of the TOPI vary in their generalizability and correlations to other mental abilities. This test measures personality, not intelligence.	
14	Spatial Ability Test	OEMA indicated that they are administering the Spatial Ability Test developed by the U.S. Department of Labor, therefore it is assumed that they are referring to the O*NET measure of Spatial Ability. This test consists of 20 pictorial items which represents a 2-dimensional cut-out shape (Mayer & Skimmyhorn, 2017).	Spatially Intelligent	Unknown how the test is scored.	This test is currently administered as part of the Talent Assessment Battery (TAB) given at West Point and to ROTC cadets	The test was correlated with academic performance and military tasks in a study with West Point Cadets (Mayer & Skimmyhorn, 2017).		
15	Subject-Object Oriented (SOI) Interview	The SOI assessment is based on Robert Kegan's constructive-developmental theory which is described in *The Evolving Self* (1983) and further refined in his later book *In Over Our Heads* (1994). Kegan outlined six stages which he refers to as balances, in cognitive development. Stage 0 is known as the incorporative balance, Stage 1 is the imperial balance, Stage 2 is the interpersonal balance, Stage 3 is romanticism, or cross categorical knowing, Stage 4 is the institutional balance or modernism, and Stage 5 is interindividual balance or postmodernism. (Erikson, 2006).	Unknown which talents this interview assessment could potentially measure.	Unknown how the test is scored.	Not currently administered by the Army.	Unknown	This assessment was recommended by Scott Sinnok, Ph.D. The SOI is used by leadership coaches, HR professionals, and researchers whose primary focus is adult learning and development. (https://www.mindsatwork.com)	

D.1 Talent Assessment Tools Matrix (cont.)

APPENDIX E. ASB APPROVED BRIEFING WITH FINDINGS AND RECOMMENDATIONS

The following briefing was presented to ASB members in plenary session on 18 July 2019. The study team's findings and recommendations were adopted unanimously by the ASB membership.

Terms of Reference

- Describe how to determine the desired **attributes** (education, experience, personality, etc.) associated with various Army career paths and positions, and how to use this data to develop officers to become qualified for these positions, with particular attention to positions in the GF.
- Review current and planned Army **personnel management systems** (e.g., IPPS-A), outside talent marketplace portals, and the best human resource management practices being exploited in industry, other agencies, and academia to assess their applicability in recruitment, development, position assignment, retention, and planning for the Army.
- Determine how best to **scale** the use of this **personnel** information **management system** to meet all the Army needs.
- Examine the strengths, weaknesses, and **generational differences** of personnel (e.g., baby-boomers, millennials, and generation Z) to assess the potential impact of changes in attributes of different personnel generations and how to maintain this awareness as it affects how to lead, train, motivate, and retain Soldiers, as well as plan for future force needs.

TM Team, Visits, and Sources

ASB Members

- **GEN David M. Maddox (USA Ret), Chair**
  Independent Consultant
- **Teresa B. Smith, Vice Chair**
  Independent Consultant
- **Vivian Baylor**
  Independent Consultant
- **MG David Fastabend (USA Ret)**
  Owner Fastabend Solutions
- **Alan Guarino**
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- **Jill Harp, PhD.**
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- **Deanne J. Idar, PhD.**
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- **Mike Molino**
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- **Maria Mouratidis, PsyD.**
  Psychologist & Professor, Notre Dame of Maryland University
- **Wendy Newstetter, PhD.**
  Cognitive & Learning Sciences, Georgia Tech
- **Tom Ramos**
  Physicist, Lawrence Livermore National Laboratory
- **Alan Willner, PhD.**
  Signal Processing Professor, University of Southern California
- **COL Joanne Moore, LTC Jennifer Tyler**
  Study Managers
- **Justine Federici**
  Graduate Research Assistant
- **Mark S. Swiatek**
  Tech Writer/Editor

Over 40 Organizations and 170 Contacts:

- Army Analytics Group
- Army Futures Command
- Army Human Resources Command, AIM 2.0 Team
- Army Research Institute (ARI)
- Army Talent Mgmt Task Force
- Army War College
- Assistant Secretary of the Army, Manpower & Reserve Affairs
- Colonel Officer Mgmt Office (COMO)
- DA G-1
- Defense Digital Service (DDS)
- General Officer Mgmt Office (GOMO)
- HASC Professional Staff
- Human Capital Big Data
- Human Resources Command (HRC), Officer Personnel Mgmt Div
- IPPS-A
- Joint Staff J-1
- Leadership Development, G-3-5-7
- Office of Economic & Manpower Analysis
- University of Texas-Austin
- US Army Cadet Command
- US Army Recruiting Command
- USAF A-1
- USMA (Behavioral Sci & Ldrshp Dept)
- *Army Science Board FY14 Study Talent Management and the Next Training Revolution, Fall 2015*
- *Reconnecting Athens and Sparta: A Review of OPMS XXI at 20 Years, S. Bryant and H.A. Urban, Oct. 2017*
- *Senior Officer Talent Management: Fostering Institutional Adaptability - M.J. Colarusso & D. S. Lyle, Feb 2014*
- *Sterling Strong: Talent-Based Branching of Newly Commissioned U.S. Army Officers, M.J. Colarusso, K.G. Heckel, D.S. Lyle & W.L. Skimmyhorn, Apr. 2014*
- Accenture Federal Solutions
- Bell Vertical Lift
- Campfire Capital
- Catalyte
- Censia Corporation
- GALLUP
- Gnowbe
- Harvard Business School
- Inter-City Fund (ICF)
- Knowledge Advantage, Inc.
- Korn Ferry
- Logistics Management Institute (LMI)
- Nat'l Resident Matching Program
- Plum
- SAP (Systems, Applications, and Products in Data Processing), Success Factors
- Society of Human Resources Management (SHRM)
- Workday

The Army Must Embrace Talent Management

- As great as the Army is, how much better could it be if we understood and exploited **each officer's unique talents** in their assignments, development, selection and promotion, and retention?
- **The talents** of our people are the Army's major **competitive advantage.**
- **Challenges** to our competitive advantage:
  - Our peer **competitors are investing heavily** in reducing our military competitive advantage.
  - Industry aggressively seeking officers in a war for talent.
  - Gen Z officers desire increased information, justification, and participation which are not being provided by current personnel management practices.
  - Cognitive complexity requirements increasing due to the rapid introduction of sophisticated technology.
  - Technology's advantages are becoming readily available to everyone.
- The Army produces **great leaders**; but it's **not enough!** OF and GF require a spectrum of different talents.
- **Winning** on the battlefield is NOT by technology alone but **by leveraging our officers' talents.**
- Modern talent management tools and procedures allow the Army to **optimize TM.**

The Army must maintain and enhance our military competitive advantage by understanding and optimizing the differentiating officer competencies

There's Been a Revolution in Talent Management

- For 25 yrs. commercial firms have increasingly employed advances in managing talent.
  - **Data analytics,** e.g., the development of object-oriented databases and database accelerators.
  - Increasing use of **artificial intelligence (AI)** to organize and analyze data containing human attributes associated with talent.
- Most, if not all, of the top Fortune 100 corporations have embraced the use of these advances.
  - At least 8 million employees will be profiled for talent management this year.
  - Corporations have achieved stunning results, to include **tripling executive retention rates.**

To a striking extent, the Army has not leveraged or benefited from this technical revolution

Operating vs. Generating Force Development Findings

- **Operating Force (OF)** conducts the warfighting mission.
  - Almost all Lieutenants
  - Few Generals
- **Generating Force (GF)** enables the Army to fight and win wars.
  - Few Lieutenants
  - Most Generals

Operating Force: MTOE Billets

Generating Force: TDA Billets

- As careers progress, differentiating "talents" are the key building blocks on top of core "talents."
- Career progression assessments need to re-use & build upon the core set of assessments.
- Pyramid tools need to dynamically adapt to assignment type & assessment evolution.

Talent Management: Not Simply Job Assignments!

Recognize all officers are different; each has distinct "talents."

Acquire	Employ	Develop	Promote / Select	Retain	Separate
Recruit	Assign	Experience	Select	Inspire	Out of Scope for Study
Train		Educate	Promote	Motivate	
Branch		Broaden	Separate		
Commission					

Elements of Talent: KSBPs

- **K**nowledge: Experience, education, and training.
- **S**kills: Capability or proficiency developed through training or hands-on experience.
- **B**ehavior: What people do; observable and measurable reaction to the environment.
- **P**references: What people desire.

Where We Have Been?

- ASB Talent Management and the Next Training Revolution study completed in FY14.
- Four major FY14 study recommendations:
  - Design and implement an integrated TM enterprise under a single leader.
  - Task TRADOC to create a TM proving ground to test latest advances.
  - Sponsor an Army Software Integration Laboratory.
  - Sponsor a pilot project to build a talent pool for critical GF positions through broadening assignments.
- FY14 Recommendations were not implemented.

What Has Changed?

- FY12: Talent-Based Branching (TBB) commenced.
- Jun 2016: G-1 Talent Management Task Force established.
- Oct 2016 / Oct. 2019: Assignment Interactive Management (AIM 2.0) piloted & scheduled for full-scale use by Officers.
- Jan 2018: Blended Retirement System started with earlier retirement benefits while reducing the retention benefit of the old system.
- Aug 2018: FY19 NDAA - DOPMA/ROPMA authorities modified.
- Dec 2018: RAND Workshop "Identifying Opportunities for Furthering Talent Management in the Army."
- Jan 2019: Talent Management Planning Conference @ NDU.
- Jun 2019: Army Talent Management Strategy drafted.

- *Under development:*
  - Army Talent Management Implementation Plan.
  - ASA M&RA People Strategy – to include military and civilian personnel.

What Opportunities Remain?

- **Improve** the selection, definition, validation, and measurement of **Army talents.**
- **Employ** additional **talent management data** in all the TM pillars.
- Assess and propose commercially **validated talent management software systems** to support the TM pillars.
- Provide the officer corps a better understanding of the role and importance of the **GF** relative to the **OF.**
- Develop processes & procedures for **transitioning from OF to GF career paths.**
- Develop processes to **exploit the differences** in the Army's multiple generational groups.
- Develop policies to fully **exploit the FY2019 NDAA authorities.**
- **Centralize the authorities and responsibilities** for talent management to achieve unity of command.

Findings and Recommendations: Across the Talent Management Life Cycle

Recognize all officers are different; each has distinct "talents."

Acquire	Employ	Develop	Promote / Select	Retain	Separate
Recruit	Assign	Experience	Select	Inspire	Out of Scope for Study
Train		Educate	Promote	Motivate	
Branch		Broaden	Separate		
Commission					

Officer Acquisition Findings

- In 1995, 40% of youth ages 16-24 had a parent who served in the military; in 2016 the proportion was 15%, only 8% of 16-21-year-olds say they are likely to join the military.
  - Sources of Commission:
    - ✓ USMA (AC) — 1000 cadets/year w/ full scholarship and 5 yr. obligation.
    - ✓ ROTC (AC, NG, AR) — 5500 cadets/year 3 yr. obligation; 60% w/scholarship & 4 yr. obligation.
    - ✓ OCS (AC, NG, AR) — Fill Branch shortfalls.

- Potential cadets are assessed for propensity for service – Recruiting, Marketing and Incentives Directorate (RMID) conducts surveys of ROTC candidates using the Cadet Background Experience Form to assess propensity for service.

- The Army has not set quotas for college majors.
  - Navy requires 65% STEM
  - ROTC scholarships are not limited by choice of major

Officer Acquisition Findings (cont.)

- Talent-Based Branching system used at USMA for 6 years and ROTC for 3 years; an eight test Talent Assessment Battery (TAB) determines values of 20 Army-defined talents and is used by cadets and branches to establish their branch.
  - Talents are not correlated with industry-standard terms; assessment methodology has not been scientifically validated.
  - Talents and cadet scores are not being used beyond branch selection.
  - Effectiveness of the Talent-Based Branching process (improving branching and operational performance) has not been assessed.
  - Cadets don't adequately understand the role and importance of the TAB in branch selection.
  - 79% of cadets changed their first branch preference during their senior year because of the TAB.
  - ROTC cadets can't take the TAB until contracted; limiting them to one TAB administration.

- Cadets have limited knowledge of branches and functional areas and the relationship between the OF and GF in the Army. ROTC cadets are limited to three hours of exposure to branch representatives at Advanced Camp.

- Industry is leveraging AI to harvest potential recruits via social media and other online mechanisms such as LinkedIn.

Officer Acquisition Recommendations

- USMA and ROTC Scholarship Selection:
  - Determine the undergraduate educational mix needed by the Army and use it for USMA and ROTC scholarship selection.
  - Identify analytic assessments that can be used to determine ROTC and USMA candidates who are motivated to serve beyond their active duty service obligation (ADSO) (i.e., the Rational Biodata Inventory (RBI) portion of the Cadet Background Experience Form (CBEF)) and use as a factor in awarding a scholarship.
- Talents:
  - Review the current 21 Army talents to assess the most critical to the Army, correlate them with industry-accepted lexicon, and make them measurable by validated assessment instruments.
  - Assess officer talents at the appropriate assessment timelines; use them in all TM pillars.
- Talent-based Branching:
  - Continue the talent-based branching process, but scientifically assess and validate the effectiveness of this process.
  - Clarify and stress to cadets the role and importance of the TAB and provide ROTC cadets a second TAB opportunity.
  - Provide additional instruction to cadets on the branches, functional areas, and GF elements and opportunities in the Army, and significantly increase the knowledge of branches to ROTC cadets beyond that currently provided during Advanced Camp.

Findings and Recommendations: Across the Talent Management Life Cycle

Recognize all officers are different; each has distinct "talents."

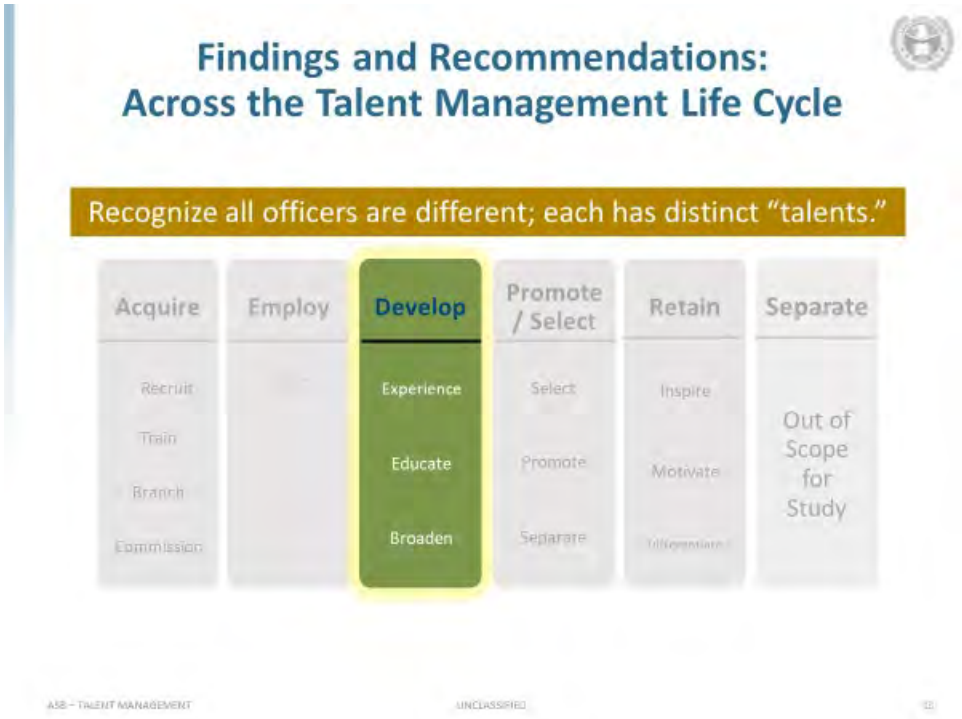
Acquire	Employ	Develop	Promote / Select	Retain	Separate
Recruit	Assign	Experience	Select	Inspire	Out of Scope for Study
Train		Educate	Promote	Motivate	
Branch		Broaden	Separate		
Commission					

Officer Employment Findings

- Assignment Interactive Management (AIM) 2.0 is a marketplace matching tool between officers needing assignments and existing vacancies, however, AIM 2.0 is not a program of record.
  - 84% assignments based on AIM 2.0 in 2019.
  - 100% projected for 2020.
  - 58% units submitted job descriptions.
  - Current system has met with some success and benefit.
- The effectiveness of AIM 2.0 in enhancing organizational performance has not been determined.
- The Army relies on a limited amount of data to make assignments, in contrast with industry which uses data on talents and capabilities to match people to positions.
  - 70% of officers provided 8 fields of self-professed KSBs in their "resume", which is input into AIM 2.0; however, these data do not become part of the officer's permanent record.
  - Talent-related data are not being used outside Talent-Based Branching either by organizations with open positions in describing positions or by officers who need assignments in their resumes.
- HRC has re-designated assignment officers as career coaches, however they have not been trained and certified as career coaches to industry standards.

Officer Employment Recommendations

- Continue the marketplace-based assignment process (e.g., AIM 2.0) in TM, add the talent data, and develop metrics to assess its effectiveness to enhance organization performance and officer satisfaction.
- HRC should develop guidance to organizations to better develop assignment descriptions using talent definitions.
- Authorize officer's self-professed resume data to be added to official Army records and use it for development, promotion/selection and retention in addition to assignment.
- Train an adequate number of talent management coaches at HRC through certification (through ICF or other accredited organization) prior to re-designating assignment officers as career coaches.


Findings and Recommendations:
Across the Talent Management Life Cycle
Recognize all officers are different; each has distinct "talents."
Acquire
Recruit
Train
Branch
Commission
Employ
Develop
Experience
Educate
Broaden
Promote / Select
Select
Promote
Separate
Retain
Inspire
Motivate
Separate
Out of Scope for Study


Officer Development Findings
• GF versus OF:
– The Army has neither proponents nor development paths for key GF positions except for current functional areas (FAs).
– OF prescribed career paths inhibit opportunities for broadening professional development outside the OF, and don't provide the means for transitioning to the GF.
– GF assignments are not viewed as beneficial to OF officers.
• Assessment instruments are being piloted for the captains' career course, battalion command selection, and Army War College.
• 20% of field grade officers are in functional areas.
• "The Army has evolved from [nearly] the most educated [DoD] workforce to nearly the least educated." (OEMA)
– Prior to 1987, advanced civil schooling (ACS) starts were ~1,300/FY officers; NOW ~500/FY.
– In 1995, 70% general officers had graduate degrees; in 2015, 35% had graduate degrees.
– Army Senior Leadership asked OEMA to investigate the concern that General Officer Cohorts "lacked adequate educational preparation."
– 2008 to 2016 Officers with ACS:
✓ 22% of newly selected brigadier generals.
✓ 47% officers in functional areas.
✓ 17% branch officers.
– ACS provides technical expertise plus strategic competencies.
– Low perceived value of ACS and adverse time impact of ACS.
• The Army lacks a formal mentorship program for officer development.
• New Congressional authorities allows for extension of mandatory retirement date of senior officers and changing officer cohort.
• OF general officers are assigned to key GF positions with inadequate technical preparation.
• Senior Army general officers position tenure is far shorter than their civilian counterparts.
• Army policy prevents a two-career path for officers, limits continued branch experience for functional area officers, and does not facilitate broadening beyond branch.

Officer Development Recommendations

- The GF:
  - Describe and promulgate to the officer corps the importance and role of the GF.
  - Develop and institute procedures to facilitate officer broadening for GF expertise and the means to transition from the OF to the GF.
  - **Establish a requirement for GF experience as a prerequisite for promotion to BG.**
- **Assess talents throughout an officer's career** with a standardized set of validated instruments to identify opportunities for continued career growth and development.
- **Significantly increase** the number of officers receiving **advanced civil schooling** to develop the strategic competencies necessary to run the GF and the major commands in the OF.
- Teach the role, emphasize the benefit, and facilitate the selection of mentors.
- Develop a policy which would **routinely extend the mandatory retirement date of senior general officers** to increase tenure, enabling both development and influence, similar to industry standards.
- Develop a policy to enable **functional area officer** to periodically **serve in OF units** as a means of retaining branch relevance.
- As a pilot, authorize a limited number of officers to develop two career paths.

Findings and Recommendations: Across the Talent Management Life Cycle

Recognize all officers are different; each has distinct "talents."

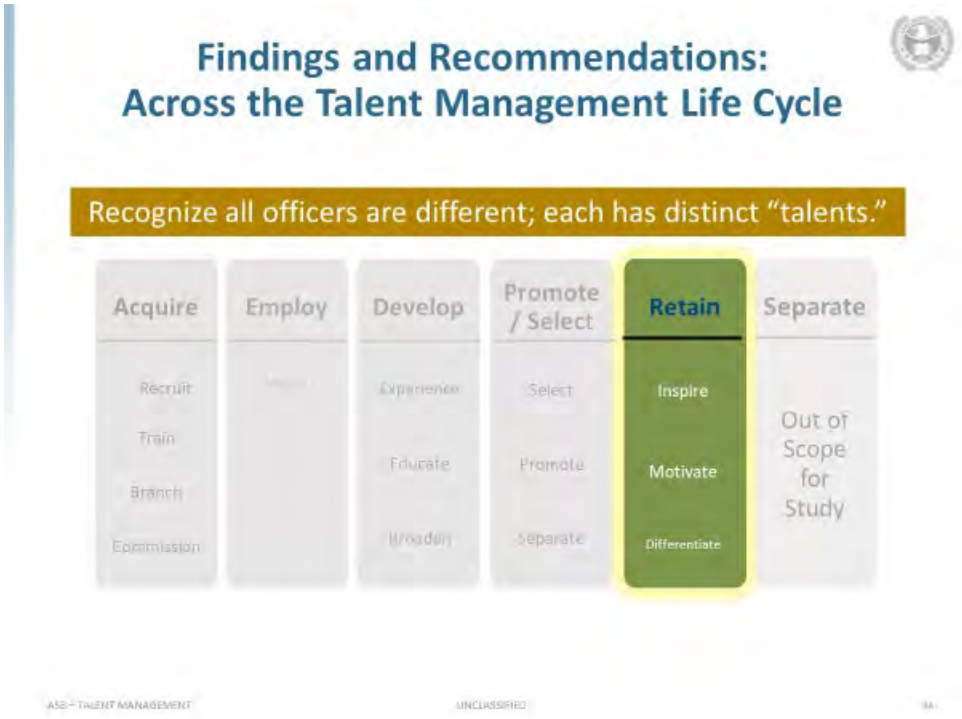
Acquire	Employ	Develop	Promote / Select	Retain	Separate
Recruit		Experience	Select	Inspire	Out of Scope for Study
Train		Educate	Promote	Motivate	
Branch		Broaden	Separate		
Commission					

Officer Promotion/Selection Findings

- Current promotion/selection processes are order-of-merit based without regard to position or specific talent requirements, and boards spend limited time (~57 sec/file) for promotion/selection.
- There is an absence of guidance to promotion boards about the relative importance of GF assignments compared to the OF assignments.
- Promotion is largely based upon the OF model without adequate understanding of equivalent GF positions.
- Selections and promotions are based only upon a photo, ORB, and AERs/OERs with no additional talent assessments, skills evaluation, or other self-professed data.
- Regardless of a 10% Congressional authorization, less than 5% of the current Active Competitive Category (ACC) officer population are promoted below zone (BZ), even though statistically BZ officers remain on active duty longer and are selected at a higher rate.
- Historically, BZ selected officers were placed at the end of the Order-of-Merit List (OML). The new Congressional authority #504 allows for placing BZ officers in the OML by relative ranking.

Officer Promotion/Selection Recommendations

- Board Guidance:
  - Develop and provide board guidance that requires the **promotion** of officers based upon the talents required for **Army professional needs**.
  - Develop and provide Board guidance that **equates GF to OF positions**.
- **Add talent-based assessments and self-professed data** to the officer's Board File in addition to the current photo, Officer Records Brief (ORB), and subjective Army Educational Reports (AERs) and Officer Evaluation Reports (OERs) used by promotion and selection system.
- **Increase BZ selection** up to the 10% Congressional limit consistent with their quality.
- Establish policy to **integrate** selected **BZ officers into the OML** according to competency in according with Congressional authority #504.


Findings and Recommendations:
Across the Talent Management Life Cycle
Recognize all officers are different; each has distinct "talents."
Acquire
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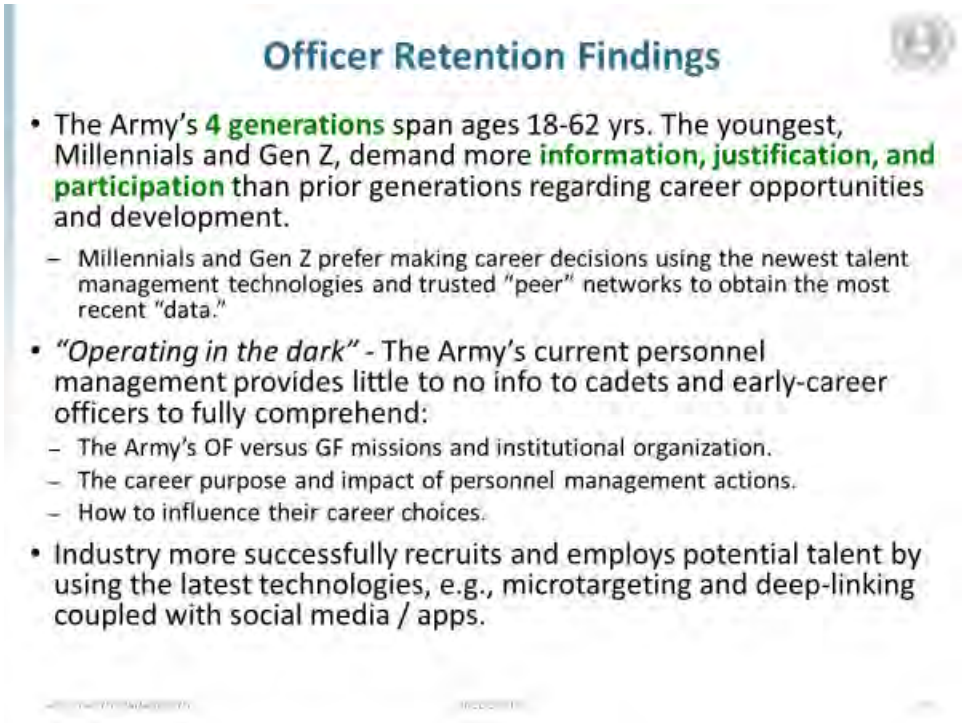

Officer Retention Findings
• The Army's 4 generations span ages 18-62 yrs. The youngest, Millennials and Gen Z, demand more information, justification, and participation than prior generations regarding career opportunities and development.
– Millennials and Gen Z prefer making career decisions using the newest talent management technologies and trusted "peer" networks to obtain the most recent "data."
• "Operating in the dark" - The Army's current personnel management provides little to no info to cadets and early-career officers to fully comprehend:
– The Army's OF versus GF missions and institutional organization.
– The career purpose and impact of personnel management actions.
– How to influence their career choices.
• Industry more successfully recruits and employs potential talent by using the latest technologies, e.g., microtargeting and deep-linking coupled with social media / apps.

Officer Retention Findings (cont.)

- Once an officer leaves the Army and resigns their commission, there are **no established procedures to re-commission them**.
- 4,600 active component lieutenants are commissioned above the authorized strength into surplus positions to fill shortcomings in higher grade ranks, yet the **Army is short 682 captains**.
- Junior officer talent is highly desired by external industries with incentives viewed as more attractive than Army officer opportunities.
- **40%** of officers commissioned by USMA and ROTC 4yr scholarships **leave active duty after their ADSO**.
- The Army has not developed the necessary **incentives and motivation to keep a sufficient number of lieutenants beyond their ADSO**, nor provide them enough information into the range of potential assignment opportunities for development.
- Exit surveys providing reasons for departure for Soldiers and officers leaving the Army are not mandatory; only approximately **6% are being completed**.
- Commanders are given Soldier re-enlistment goals, but **not lieutenant retention goals**; nor are they evaluated on their officer retention.
- Limits in the OF eliminate officers who might be highly successful in the GF (up or out).

Officer Retention Recommendations

- Congressional Talent Management Authorizations:
  - Use new Congressional authority #507 to allow officers who are advanced civilian school graduates to be considered for promotion with an earlier year group and #506 to extend their mandatory retirement date for a similar period.
  - In accordance with new Congressional authority #504, establish a policy to integrate BZ selected officers' consistent with the officer's ranking in the promotion OML.
  - Request additional Congressional authority to re-commission officers who have resigned their commission.
- Retention Beyond ADSO:
  - Determine means to **keep officers on active duty beyond their ADSO** and use this information to inspire cadets and junior officers to keep a sufficient number of the best lieutenants in the Army.
  - Create and implement a **Campaign of Learning** that increases officers' knowledge of TM systems regarding branches, functional areas, broadening, and transitions with clear rationale on their purpose and process, and in how officers can influence their career choices within the system.
  - Require all officers leaving the Army to **complete the survey** describing the reason(s) why they are leaving and use this and other data to make changes to increase retention.
  - **Assign lieutenant retention goals** to battalion commanders.
  - Identify a cohort among newly commissioned officers after two years who are considered "must **retain**" and facilitate obtaining a qualified mentor to continue an on-going process to motivate each of them as they approach their ADSO halfway point.

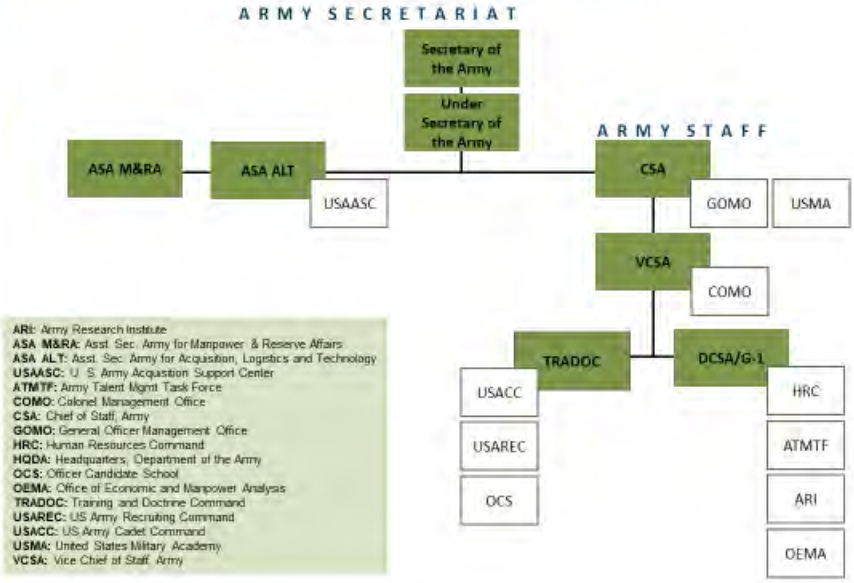
Findings and Recommendations: Across the Talent Management Life Cycle

How Should the Army Manage the Officer TM Process?

Management of Officer TM Process Findings

- Industry commonly uses talent management systems to assess, recruit and retain top performers.
- Talent Management is an **overarching**, highly technical Army effort, just like Material Management, Future, Training and Doctrine, but lacks a 4-star general in charge.
- There is an immediate need for **a champion** for the integrated development and deployment of a TM system.
- Nonintegrated efforts will lead to a **suboptimal** TM system, unnecessary high **costs**, and increased **risk** to the Army.
- Integrated Personnel and Pay System-Army **(IPPS-A)** is a financial software system which **includes personnel transaction data** with plans to add talent management functionality.
  - It is based on an Oracle product with uncertain sustainability.
  - Uses a relational database that does not offer the flexibility and capability of an object-oriented database.
- **Data scientists** will be required to adapt and modify the future TM software system to keep it relevant.

Who's In Charge?



ARI: Army Research Institute
ASA M&RA: Asst. Sec. Army for Manpower & Reserve Affairs
ASA ALT: Asst. Sec. Army for Acquisition, Logistics and Technology
USAASC: U. S. Army Acquisition Support Center
ATMTF: Army Talent Mgmt Task Force
COMO: Colonel Management Office
CSA: Chief of Staff, Army
GOMO: General Officer Management Office
HRC: Human Resources Command
HQDA: Headquarters, Department of the Army
OCS: Officer Candidate School
OEMA: Office of Economic and Manpower Analysis
TRADOC: Training and Doctrine Command
USAREC: US Army Recruiting Command
USACC: US Army Cadet Command
USMA: United States Military Academy
VCSA: Vice Chief of Staff, Army

Management of Officer TM Process Recommendations

Unity of Command:

- Assign Officer Talent Management responsibility to the **VCSA** to achieve unity of command.

Talent Management System:

- Structure TM **data** to make it accessible, comprehensive, and object-oriented for use in **TM systems with advanced data analytics and AI**.
- Run a **pilot** test in a selected Army branch or functional area of **COTS talent management systems** (one or two) applicable across all pillars.
- Evaluate the TM system to ensure improvement in Army operational performance.
- Provide a dedicated team of experts (e.g. data scientists) to adapt an industry-developed TM system to the needs of the Army.

SUMMARY

- The talents of our people are and must continue to be our major competitive advantage.
- The Army can be much better if we understand and exploit each officer's unique talents in their assignments, development, selection and promotion, and retention.
- While our competitive advantage is being challenged, implementing our recommendations will make the entire Army much better and make our people our true competitive advantage.

Make it Happen!

APPENDIX F. GLOSSARY OF TERMS, ABBREVIATIONS, AND ACRONYMS

TALENT MANAGEMENT VOCABULARY

Aptitude – the potential for performing an activity, reflected in a person's natural ability, suitability, and/or fitness for the activity

Attributes – describing characteristics and competencies that can be observed and measured, such as aptitude, personality, education, experience, knowledge, and skills

Behavior – one's observable and measurable reactions to the environment (does not include thoughts and feelings)

Competencies – skills and behaviors required for performing an observable task efficiently and effectively

Drivers – values and interests that influence a person's motivation, preferences and engagement

Experiences – what you have done that has developed your capabilities

Intellectual Capacity – an individual's aptitude for increasing knowledge, skills and abilities

Knowledge – the level of understanding of concepts derived through education, training, and experiences. Not the expertise in applying the knowledge. The basis of beliefs

Personality – consistent patterns of behaviors, emotions, thinking, and ways of relating formed through biological and environmental influences

Skills – the capability or proficiency developed through training or hands-on experience; the practical application of knowledge; an observable proficiency to perform an innate or learned psychomotor act

Trait – inclinations, aptitudes and natural tendencies a person leans towards, including personality traits and intellectual capacity

ABBREVIATIONS AND ACRONYMS

AAG-PDE	Army Adjutant General Person-Event Data
AC	Active Component
ACS	Advanced Civil Schooling
ADSO	Active Duty Service Obligation
AI	Artificial Intelligence
AIM	Assignment Interactive Management
ALT	Acquisitions, Logistics and Technology
AR	Army Reserve
ARCYBER	U.S. Army Cyber Command
ARI	Army Research Institute
ASA	Assistant Secretary of the Army
ASB	Army Science Board
ATMTF	Army Talent Management Task Force
BG	Brigadier General
BZ	Below the Zone
CBEF	Cadet Background Experience Form
COMO	Colonels Management Office
COTS	Commercial Off-The-Shelf
CRT	Cognitive Reflection Test
CSA	Chief of Staff of the Army
DA	Department of the Army
DDS	Defense Digital Services
DoD	Department of Defense
DOPMA	Defense Officer Personnel Management Act
FA	Functional Area
GF	Generating Force
GOMO	General Officer Management Office
GRE	Graduate Record Exam
GRE-V	Graduate Record Exam Verbal
GRE-Q	Graduate Record Exam Quantitative
HASC	House Armed Services Committee
HR	Human Resources
HRC	Human Resources Command
IM	Information Management
IPPS-A	Integrated Personnel and Pay System – Army
IT	Information Technology
ITME	Integrated Talent Management Enterprise
KSAs	Knowledge, Skills, And Abilities
LOI	Lines of Inquiry
M&RA	Manpower and Reserve Affairs
MBTI	Myers Briggs Type Indicator
MTO&E	Military Table of Organization and Equipment

NCO	Noncommissioned Officer
NDAA	National Defense Authorization Act
NG	National Guard
OCS	Officer Candidate School
ODP	Officer Development Program
OEMA	Office of Economic and Manpower Analyses
OER	Officer Evaluation Reports
OF	Operating Force
OML	Order of Merit List
O*NET	Occupational Information Network
OODMS	Object-Oriented Database Management Systems
OPMS XXI	Officer Personnel Management System XXI
ORB	Officer Record Brief
POM	Program Objective Memorandum
RBI	Rational Biodata Inventory
ROPMA	Reserve Officer Personnel Management Act
ROTC	Reserve Officer Training Corps
ROI	Return on Investment
SECARMY	Secretary of the Army
SELCON	Selective Continuation
SIL	Systems Integration Lab
STEM	Science, Technology, Engineering and Mathematics
TAB	Talent Assessment Battery
TBB	Talent Based Branching
TM	Talent Management
TOR	Terms of Reference
TRADOC	Training and Doctrine Command
US or U.S.	United States
USAASC	United States Army Acquisition Support Center
USACC	United States Army Cadet Command
USAREC	U.S. Army Recruiting Command
USMA	United States Military Academy
VCSA	Vice Chief of Staff of the Army

APPENDIX G. BIBLIOGRAPHY

Barrick, M. R., & Mount, M. K. (1991). The Big Five Personality Dimensions and Job Performance: A Meta-Analysis. Personnel Psychology, 44(1), 1-26.

Calo, T. (2008). Talent management in the era of the aging workforce: The critical role of knowledge transfer. Public Personnel Management, Vol. 37, No. 4,p. 403-416.

The Center for Health Leadership and Practice, (2003). *Mentoring Guide, A guide for Mentors*. Center for Health Leadership & Practice, Public Health Institute, Oakland, CA

Costa Jr, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of personality assessment*, *64*(1), 21-50.

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (GRIT–S). *Journal of personality assessment*, *91*(2), 166-174.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology*, *92*(6), 1087.

ETS GRE (n.d.). About the GRE General Test. http://www.ets.org/gre/revised_general/about/

Erlich, L.C. and Hansford, B. (1999). *Mentoring: Pros and Cons for HRM*. Asia Pacific Journal of Human Resources 37(3):92-107.

Edenborough, R. (2007). Assessment Methods in Recruitment, Selection & Performance: A Manager's Guidet to Psychometric Testing, Interviews & Assessment Centers. Kogan Page.

Frederick, S. (2005). Cognitive reflection and decision making. Journal of Economic perspectives, 19(4), 25-42.

Jaques, E., & Stamp, G. (1990). *Development of stratified systems theory for possible implementation in the US army*. BRUNEL UNIV UXBRIDGE (UNITED KINGDOM).

Kipley, D., Lewis, A. & Helm, R. (2008). Achieving Strategic Advantage and Organizational Legitimacy for Small and Medium Sized NFPs Through the Implementation of Knowledge Management. The Business Renaissance Quarterly, Fall, Vol. 3 Issue. 3. p. 21-42.

Korn Ferry Institute (2017). *Age and Tenure in the C-Suite: Korn Ferry Institute Study Reveals Trends by Title and Industry*. Press Release

Lewis, P. (1993). *Career Path Appreciation (CPA) data reduction and analysis* (No. AU-TR-970). AUBURN UNIV AL.

Mayer, J. D., Caruso, D. R., & Panter, A. T. (2019). Advancing the Measurement of Personal Intelligence with the Test of Personal Intelligence, Version 5 (TOPI 5). Journal of Intelligence, 7(1), 4.

Mayer, J. D., & Skimmyhorn, W. (2017). Personality attributes that predict cadet performance at West Point. *Journal of Research in Personality*, *66*, 14-26.

McCormack, L., & Mellor, D. (2002). The role of personality in leadership: An application of the five-factor model in the Australian military. *Military Psychology*, *14*(3), 179-197.

Mentor Scout (2019). *Tips for Mentorship Programs.* www.mentorscout.com/mentoring-tips-and-frequently-asked-questions.cfm

Myers, S. R. (2008). Senior leader cognitive development through distance education. *The Amer. Jrnl. of Distance Education*, *22*(2), 110-122.

National Center for Women and Information Technology (2011). *Evaluating a Mentoring Program.* www.ncwit.org

Passmore, J. (Ed.). (2012). *Psychometrics in coaching: Using psychological and psychometric tools for development*. Kogan Page Publishers.

Russell, T. L., Paullin, C. J., Legree, P. J., Kilcullen, R. N., & Young, M. C. (2017). *Identifying and Validating Selection Tools for Predicting Officer Performance and Retention*. HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA ALEXANDRIA United States.

Sealy, L., Saunders, C., Blume, J., & Chalkley, R. (2019). The GRE over the entire range of scores lacks predictive ability for PhD outcomes in the biomedical sciences. *PloS one*, *14*(3), e0201634.

Society for Human Resource Management. (2004). Leadership styles series part ii: Leadership styles. Society of Human Resource Management.

Szaszi, B., Szollosi, A., Palfi, B., & Aczel, B. (2017). The cognitive reflection test revisited: exploring the ways individuals solve the test. Thinking & Reasoning, 23(3), 207-234.

Toplak, M. E., West, R. F., & Stanovich, K. E. (2011). The Cognitive Reflection Test as a predictor of performance on heuristics-and-biases tasks. Memory & cognition, 39(7), 1275.

Wagner, C. When Mentors and Mentees Switch Roles. The Futurist, 43:1 (2009), pp. 6-7.

Wardynski, C., Lyle, D, Colarusso M. (2010). *Towards a U.S. Army Officer Corps Strategy for Success: Developing Talent*. Strategic Studies Institute, U.S. Army War College

Westerhoff, Nikolas, (2008). https://www.scientificamerican.com/article/the-big-five/

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