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U.S. SPACE FORCE (USSF) ACQUISITION OCCUPATIONAL COMPETENCY INTEGRATION INTO A TALENT OPERATIONS PLATFORM

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THESIS

U.S. SPACE FORCE (USSF) ACQUISITION
OCCUPATIONAL COMPETENCY INTEGRATION
INTO A TALENT OPERATIONS PLATFORM

by

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December 2022

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13. ABSTRACT (maximum 200 words)

The idea of using competencies as a vehicle for effective talent management has been an idea explored by many organizations. Recently all service components across the Department of Defense (DOD) have begun a revolution within talent management, particularly with job placement. The DOD's newest component, the United States Space Force (USSF), actively seeks to implement a competency-based process as dictated by the Guardian Ideal. This capstone report provides USSF with recommendations on effectively integrating a scalable competency-driven system into a talent operations platform that manages Guardian talent during assignment placement. The team evaluated civilian and governmental talent operations systems and processes through interviews with relevant talent management personnel within the DOD and industry. This qualitative analysis fueled the team's development of a simulation model to identify the effects of competency integration on the system and its interaction with external variables. Throughout the research, the team confirmed that all services desire the effective integration of competencies but lack the implementation of accountable competencies by a validation method. The team recommends Space Force develop a way to validate and input competency assessments by implementing the competency framework within a software system in terms of a scoring algorithm to provide a clear picture for Guardians and Commanders to determine the best fit for vacant billets.

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iii

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ABSTRACT

The idea of using competencies as a vehicle for effective talent management has been an idea explored by many organizations. Recently all service components across the Department of Defense (DOD) have begun a revolution within talent management, particularly with job placement. The DOD's newest component, the United States Space Force (USSF), actively seeks to implement a competency-based process as dictated by the Guardian Ideal. This capstone report provides USSF with recommendations on effectively integrating a scalable competency-driven system into a talent operations platform that manages Guardian talent during assignment placement. The team evaluated civilian and governmental talent operations systems and processes through interviews with relevant talent management personnel within the DOD and industry. This qualitative analysis fueled the team's development of a simulation model to identify the effects of competency integration on the system and its interaction with external variables. Throughout the research, the team confirmed that all services desire the effective integration of competencies but lack the implementation of accountable competencies by a validation method. The team recommends Space Force develop a way to validate and input competency assessments by implementing the competency framework within a software system in terms of a scoring algorithm to provide a clear picture for Guardians and Commanders to determine the best fit for vacant billets.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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LIST OF ACRONYMS AND ABBREVIATIONS

AFCFM	Air Force Career Field Manager
AFPC	Air Force Personnel Center
AFSC	Air Force Specialty Code
AIM 2.0	Assignment Interactive Module 2.0
ATAA	Army Talent Alignment Algorithm
ATAP	Army Talent Alignment Process
CSO	Chief of Space Operations
DAWIA	Defense Acquisition Workforce Improvement Act
DOD	Department of Defense
DODAF	Department of Defense Architecture Framework
ETMO	Enterprise Talent Management Office
GAO	Government Accounting Office
HRC	Human Resources Command
IPPS-A	Integrated Personnel and Pay System-Army
KSB	Knowledge, Skills, and Behaviors
OPM	Office of Personnel Management
ORSA	Operations Research Systems Analysts
P&A ORSA	Plans and Analysis Operations Research Systems Analysts
PMMA	Program Manager for Manpower Analytics
RAM	Risk Assessment Method
TMTF	Talent Management Task Force
TRADOC	Training and Doctrine Command
USAF	United States Air Force
USSF	United States Space Force

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EXECUTIVE SUMMARY

The United States Space Force (USSF) seeks to develop a competency-based talent management system in all areas of human resources, including job selection, unit talent inventory, and Guardian development. The Naval Postgraduate School capstone team identified the Enterprise Talent Management Office (ETMO) as the primary stakeholder in the competency talent management effort to assist the Space Force with integrating competencies within a talent management environment (job matching). Team Space Force executed several convergent thinking strategies to develop the following problem statement in early 2022.

The USSF desires integration of a scalable competency-driven system into a talent operations platform that manages Guardian talent during assignment placement. The problem statement catalyzed a mixed methods methodology to discover how the Department of Defense (DOD) and industry managed talent in the past, how they are working with talent now, and how they plan to manage it in the future. Table 1 displays the qualitative research findings.

Table 1.   Qualitative Research Findings

Competency Category	Army	Airforce	USAJOBS	LinkedIn	Competency Category
Platform	AIM 2.0	MyVector	USAJOBS	LinkedIn	Platform
Accountability	Self-Professed	Validated	Validated	Validated	Accountability
Implementation	No	No	Yes	Yes	Implementation
Terminology	KSBs	Competencies	Competencies	Skills	Terminology
Number of Competencies	199	24	Based on Networks	Based on Companies	Number of Competencies
Validation Method	Interviews Only	Assessments Only	Surveys and Interviews	Skills Tests	Validation Method
Operational Environment	Mandated Move Cycle	Mandated Move Cycle	Continuous Hiring	Continuous Hiring	Operational Environment

As indicated through the qualitative research conducted by the team, competencies or skills used for talent management are largely self-professed, too subjective (unvalidated), and generally not implemented with any accountability. More specifically for the DOD, it appears that the Army and the Air Force have competencies but need to commit resources or time for the validation to make them relevant.

Using the inputs from the qualitative analysis, the team created a simulated marketplace that generated random guardians and billets. It matched them together using an algorithm that relied on external factors and competencies. First, the team found that more competencies allowed Guardians more opportunities for development (higher percent match). Next, the team integrated external variables such as years of experience and education and found that more variability can impact the results of a match based on the range of each factor.

Lastly, the team restricted the Guardian by allowing them to attain a limited number of competencies and found that an unregulated competency-driven system would significantly impact applicant means, driving a need for regulation to be matched to Guardian capability over a given period. These findings, both qualitative and quantitative, led the team to the final three recommendations for the Enterprise Talent Management Office to take under consideration:

- Competencies must have a way to be quantified and archived digitally to enable the talent operations platform to function with competencies. This quantification also must be validated to build trust among Guardian Deltas and Guardian Job Seekers. This recommendation will require the integration of competencies into all HR systems throughout the Space Force.

- The Space Force must map each competency to time or effort to understand Guardian's competency-earning capabilities per rank band. Then, each Space Force occupational proponent must match capability to billet requirements to ensure a "perfect fit" view of a candidate for a position.

xvi

- The marketplace must transparently reveal to both the Guardian and the Guardian Deltas the percent match by the competency of each Guardian for each respective unit to decide who they desire for each position based on their current inventory of Guardians or which position a Guardian desire based on their inventory of competencies and development path.

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I.   INTRODUCTION

A.   BACKGROUND

The United States Space Force (USSF) is embarking on a radical talent management strategy primarily structured on competency-based talent management as outlined in "The Guardian Ideal," approved by the first Chief of Space Operations (CSO), General Jay Raymond. This revolutionary talent management strategy will include the development of USSF foundational competencies that will apply to all Guardians, followed by the development of occupational competencies that will apply to the four occupations within USSF: operations, cyber, intelligence, and acquisitions. A critical challenge in this revolutionary talent management approach is integrating the scalable competency-driven system into a talent operations platform that manages the Guardian assignments process. Of all the sister services, only one has successfully developed foundational and occupational competencies but all has failed to fully integrate them into their talent operations platforms, nor have they been effectively applied in their officers' assignments processes.

The USSF foundational and occupational competencies were approved on October 5, 2022. The occupational competencies are comprised of four levels: "expert, advanced, intermediate, and basic" (United States Space Force [USSF] S1 2022). Further, the occupational competencies are founded on foundational competencies that apply across a broad range of occupational specialties.

The foundational competencies apply to all Guardians, such as "problem solving skills" and "communication" (USSF S1 2022). In contrast, as illustrated in Table 1, occupational competencies are specific to the organization's mission and position, such as the Defense Acquisition Workforce Improvement Act (DAWIA) certification requirements for acquisition professionals and related positions.

Table 1.   Example USSF Occupational Competency. Source: USSF S1 (2022).

Competency	Proficiency Levels	Observable Behaviors
Business Management - Financial Management	**Expert** Consistency of Application: Able to innovate and formulate strategies; able to model/guide/teach others the competency of how to apply the competency	- Guides the application of financial management policies and instructions to support financial planning, programming, budget development, and budget execution - Develops cost management guidance to inform financial decisions throughout the acquisition lifecycle - Proposes modification to financial management policy or law to improve acquisition outcomes
	Advanced Consistency of Application: Sustained application of competency over time in complex situations	- Provides, monitors, and updates cost position inputs to inform the defense budget - Directs and monitors cost control processes to deliver an acquisition within budget - Leverages multi-functional analysis (e.g., risks and opportunities, schedule constraints, sustainment) to inform the development of a cost estimate
Description Planning, estimating, budgeting, funding, and controlling costs to complete the acquisition within the approved budget.	**Intermediate** Consistency of Application: Sustained application of competency over time in a variety of situations	- Provides data for financial reports to support budget execution - Proposes appropriations to align with acquisition activities to ensure legal compliance - Assesses cost variances and proposes solutions to maintain program objectives within budget constraints - Selects an appropriate approach to estimate the cost of an acquisition program
Supporting Competencies Communication Problem Solving Accountability Collaboration	**Basic** Consistency of Application: Sustained application of competency over time	- Identifies and applies cost-estimating techniques to support budget development - Identifies and reviews financial reports to support budget execution - Assesses budget impacts on acquisition requirements and schedules to support tradeoff analysis

A significant challenge for this effort is not within the development of the foundational and occupational competencies but the application and integration of the competencies in a talent operations platform.

To implement this, USSF has established the Enterprise Talent Management Office (ETMO) to take the lead on talent management operations to integrate competencies into the talent operations platform. ETMO will develop the requirements for the talent management system to execute the Guardian Ideal objectives. The initial requirements include a scalable, cloud-based, secure platform which service members at all levels can access, conduct analysis on, and seek developmental opportunities based on transparent competencies assessable for desired positions in the marketplace. The option for Guardians to specialize in one career track or pursue a diverse variety of experiences through multi-disciplined career fields will be determined by the individual service member and not the branch or antiquated talent management policies.

2

B.   PROBLEM STATEMENT

The USSF desires integration of a scalable competency-driven system into a talent operations platform that manages Guardian talent during assignment placement.

C.   SCOPE

As ETMO embarks on its journey to provide a sound talent operations platform to its Guardians, the Naval Postgraduate School capstone team will assist in providing recommendations for ETMO by detailing the systems engineering approach and recommendations on how to apply and integrate a scalable competency-driven system effectively. The capstone team will assess best practices for implementing scalable competency-driven systems by reviewing software platforms already integrated into the respective civilian and military organizations for talent management and conduct qualitative and quantitative research to validate the recommendations through data analytics.

D.   WHAT IS THE GUARDIAN IDEAL?

USSF is the newest uniformed service of the six, established in December 2019 when President Donald Trump enacted the U.S. Space Force Act. The formation of the USSF separated space organizations from the Air Force and the Army, into an independent branch whose sole focus is Space. The USSF leadership published "The Guardian Ideal" in Figure 1 as one of their first directives prioritizing the talent management processes and ideas to foster a culture of transparency in a digitized system. In this document, the USSF leadership revolutionized talent management by navigating uncharted territory, forging a path through resistance accepted by the other services and civilian human approaches. The USSF leadership seeks a talent management system that integrates and strengthens equity, development, and human dignity by empowering Guardians to pursue positions of choice and latitude rather than follow a stovepipe in a highly structured career path. The document directs the workforce to transition from a career field-based talent management system to a competency and experience-based system to provide a multi-disciplinary force.
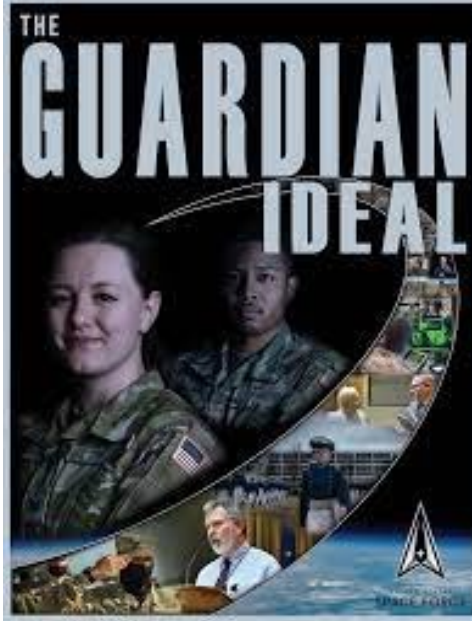
Figure 1.   The Guardian Ideal. Source: USSF (2021).

E.   WHAT IS THE TALENT OPERATIONS PLATFORM?

The USSF's next-generation talent operations platform is a modernized information system that provides the Space Force organization and Guardians with a tool to enhance talent management processes by facilitating a regulated marketplace to better match the Guardian's talent to unit positions.

To facilitate person-job matching, the Talent Operations Platform will centralize and visualize job constraints and requirements data associated with USSF occupations, positions, and personal data of Guardians/candidates. The platform will also interface with other Department of the Air Force systems to merge existing job data (such as the Manpower Programming and Execution System) and personal data.

F.   CURRENT CONCEPT OF OPERATIONS

As detailed in Figure 2's concept view of the current talent operations platform, every Guardian consists of preferences, and specific experiences, omitting competencies entirely. From the Space Force unit perspective, every unit has existing or forecasted vacancies, unit information, and candidate preferences during selection. These units'

4

requests for requisitions before a marketplace occurs must be validated by the Air Force Personnel Center (AFPC) for accuracy and approval for each vacancy. The validated vacancies are available to view on the user interface by the Guardian upon approval from the AFPC and initiation of the marketplace. Units also must update their unit information, and make their preferences known for candidates within the marketplace.

Once a marketplace is initiated, the prospective candidates and units make their preferences which lead to interviews discussing the limited information from what is provided by the talent operations platform.
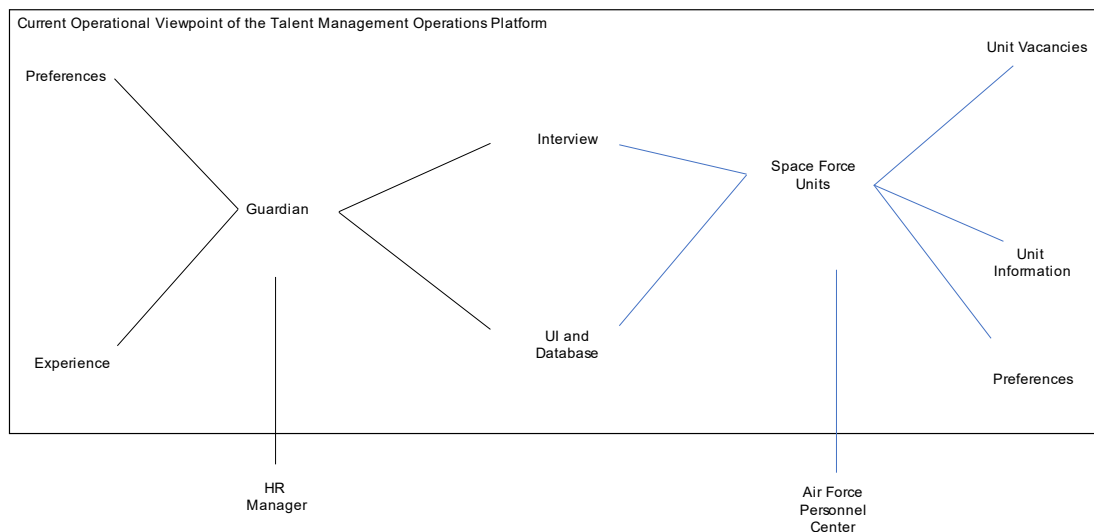
Figure 2.   Current Operational Viewpoint of the USSF Hiring Process

G.   RESEARCH QUESTIONS

- What is DOD and industry currently doing to integrate competencies within talent management?

- How might a competency-driven system improve talent management?

- How might the USSF integrate competencies in a talent operations platform?

- What is a satisfactory number of occupational competencies?

- What is the appropriate prioritization of competencies vs. external variables (e.g., experience and education)?

H.   BENEFIT OF STUDY

The stakeholders for this project are invested in the outcomes of the team's research and recommendations as they will drive the way ahead for selecting and implementing a talent management system that the Space Force will use for the foreseeable future. Implementing the best possible talent management system that integrates Guardian competencies will enable the Space Force to meet the critical objectives outlined in The Guardian Ideal. This implementation will allow the Space Force to align the right Guardian more effectively with the correct assignment. The individuals and organizations that will use the results of this project are the individual Guardians, each unit within the Space Force, AFPC, and other necessary Space Force personnel. Most individuals serving within USSF will interact with the talent management system in one form or another and will be influenced by the results of the project.

As it stands, the Space Force currently lacks a talent management system that integrates Guardian competencies. The team aims to address talent management challenges by using a systems engineering approach to research existing talent management systems and identifying the strengths and weaknesses of each one. To effectively communicate the results of the research efforts in the form of a formal product or outcome, the project will culminate with a thorough review and recommendation of the best talent management system the Space Force should implement. If the research finds that a talent management system with effective means to implement competencies does not exist, the team will recommend the creation of one.

To support this latter recommendation, the project will provide an adjusted concept of operations and its associated use cases to be utilized as examples for the creation of a

6

competency-based talent management system. Finally, the project will also produce a qualitative research review that addresses the qualitative strengths and weaknesses of the team's researched areas of focus.

I.   MIXED METHODS RESEARCH METHODOLOGY

Within the Space Force competency integration capstone, the team will explore various talent operations programs from a historical standpoint through a literature review and interviews with the industry and various components within the DOD. This qualitative research serves as a starting point and informs the quantitative research portion of the project.

Completing the literature review and ongoing interviews will inform the quantitative research team and provide inputs into a designed algorithm to simulate a marketplace using competencies. The quantitatively supported marketplace model allows the team to reveal information regarding competency weighting, competency inclusion and omission, and the impacts of external variables on competency inclusion.

The results of the simulations founded on in-depth interviews combined with the concept of operations and use cases will answer all research questions and output a final recommendation and report to the stakeholders.

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II. LITERATURE REVIEW

A. LITERATURE REVIEW METHODOLOGY

The capstone team divided the literature review research into three separate categories. The first category involved talent management strategies used by differing organizations, both government and private institutions. This category included studies on generic talent management structures and then compared these structures to existing talent management structures currently used on the market. Next, the team examined software user interfaces and the attributes of an effective user interface that enhances software system performance and system requirements. Several general examples, both inside and outside of talent management, were compared to study results to define the successful user interface of today. Lastly, the team investigated the algorithms across various products and services, taking generic studies of effective codes and comparing those utilized today in talent management process.

B. TALENT MANAGEMENT DOD STRATEGIES

An absent unified talent management policy within the DOD allows components and units within those components to manage talent as required by their respective missions. After taking a more in-depth look, the management of talent across the components, and even within components, views on competencies, and factors that qualify, move, and assign servicemembers varies greatly. Where the components do find unity is in attempting to find and refine the best talent management strategy to fit their mission and their required outputs as dictated by the DOD. For the Army and the Air Force, this means recruiting, training, and deploying the best service members in the world, and for West Point, this means finding the best students from America's households to establish the next generation of leaders. The following sections provide an in-depth look into a few components within the DOD and their approach to talent management.

9

1. The U.S. Army Talent Management Strategy

The U.S. Army Talent Management Strategy Force 2025 and beyond defines talent as: "the intersection of three dimensions—skills, knowledge, and behaviors that create an optimal individual performance level provided the individual is employed within their talent set" (Graul 2019, 56).

An early attempt to manage talent for the Army was through their Green Pages Program. The program occurred from 2010 through 2012, allowing Engineer officers to create resumes as means to articulate their achievements. During this program, the Army discovered that 131 officers held advanced engineering certifications that were not accounted for in Army systems. The Green Pages program saved the Army over $28 million in educational funding used in a redundant effort to certify already qualified officers. (Headquarters, Deputy Chief of Staff, Army G-1/ Army Talent Management Task Force [Army G-1] 2019). The Green Pages Program catalyzed a more hands-on approach to talent management for the Army.

Assignment Interactive Module 2.0 enables officers to share their knowledge, skills, and behaviors (KSBs) in a resume-type format (Army G-1 2019). Army KSBs are synonymous with the civilian human resource terms for Knowledge, Skills, Abilities, and Other Characteristics (KSAOs). These have been used in civilian human resources systems for over ten years. KSAOs have improved the talent management process for the civilian sector in both hiring of internal and external personnel into their organizations. At the end of 2019 and start 2020, the Army implemented the Army Talent Alignment Process (ATAP) for talent management that maintains the AIM 2.0 marketplace and KSBs. However, the system now provides the opportunity for preferences to create KSB-Ps. AIM 2.0 marketplace was the first software platform to provide a common interface for both officers and units to view each other and select their preferences (Army G-1 2019). ATAP directed the Army's change in talent management from the command-directed assignment process to a competitive, interview-style system. It considers KSBs not included on officer record briefs, such as language skills and leisure or hobby activities (Dolasinski 2019).

AIM 2.0 facilitates a "Marketplace" section that allows input move cycle Offices, organizations with vacancies, and oversight capabilities for branch managers (Graul 2019, 57). AIM 2.0 also links to the Integrated Personnel and Pay System-Army (IPPS-A). Graul (2019) identified the system as a more robust talent management system for the Army to integrate talent management and all other human resources tasks (57). IPPS-A utilizes the 25 Point Solider Talent Profile to capture a Soldier's professed talents and skills. This 25-Point Soldier Talent Profile is used to match the Soldier's requirements and to the unit needs "placing the right talent into the right unit at the right time" (Graul 2019, 58). AIM 2.0 also uses the algorithm matched with the United States Military Academy (USMA) to match officers to assignments. The AIM 2.0 marketplace honors job matches by restricting Human Resources Command (HRC) and branch managers' abilities to freely slot soldiers for various reasons such as by-name-requests, dwell time, or back-door networking (Randel 2019).

From the unit perspective, AIM 2.0 enables units to search for qualified candidates with desired talents and then establish interview times and provide feedback to potential officers during the hiring process (Graul 2019 57). Randel (2019) argued that in theory, the ATAP strived to address the lack of officer control over their careers to include assignments and timelines to pursue key development assignments. Additionally, to incentivize specific duty assignments and locations; the Army could offer bonuses for officers to go to assignments of decreased desirability. With all the capabilities that AIM 2.0 provides, the system also maintains some deficiencies. During peak times, the overload of many users forces the system to experience technical glitches. According to Randel (2019), these bugs restricted users' access to the market and caused sporadic communication between all parties. The first marketplace one-to-one match ratio saw 45 percent of the 14,482 participating officers finding their ideal assignment, but this tiny setback overshadowed that achievement.
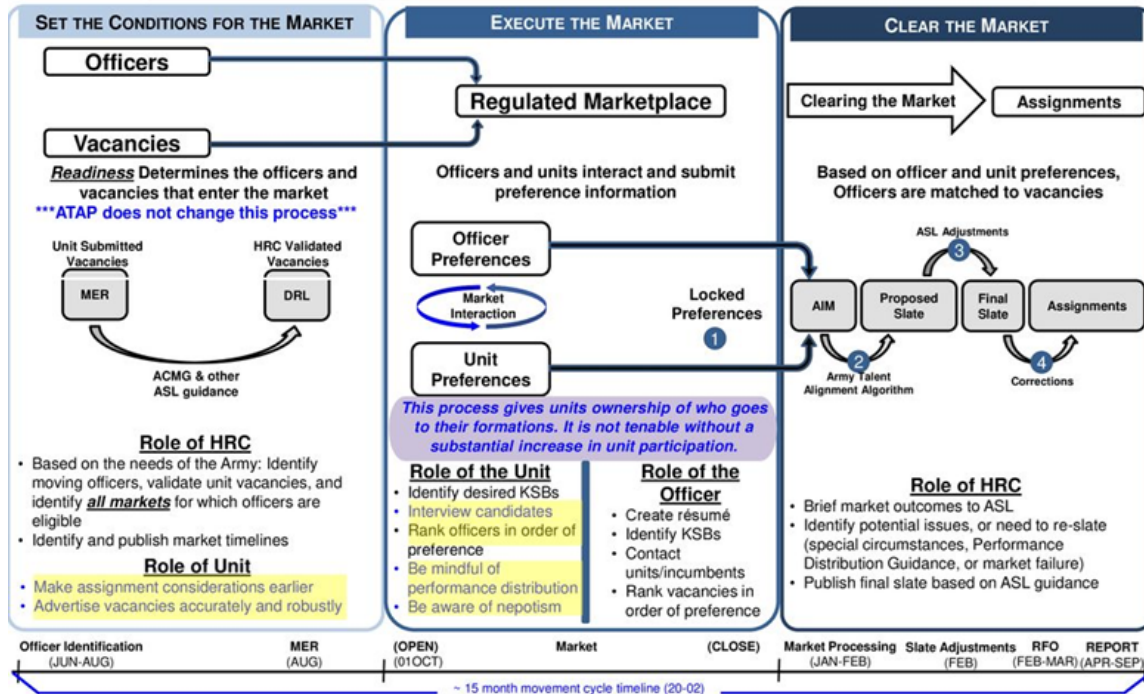
Figure 3.   Army Talent Alignment Roles. Source: Army Talent Management (2022).

Talent management's first requirement is to develop a system or interface for personnel to communicate their talents and understand the opportunities within an organization. The Army's efforts are actively accomplishing this feat through their AIM 2.0 platform, where soldiers and units can share and provide contact information. Additionally, this platform should capture and provide an opportunity to display professional certifications, publications, specialized knowledge, previous experience, and language skills. The resume builder within AIM 2.0 serves as the Army's vehicle for including these factors. Finally, the platform must allow organizations to find and assign officers based on their competency and requirement compatibility (Graul 2019, 47). AIM accomplishes this feat through their unit-perspective roles but does not fully embrace competencies as requirements for positions but rather as desired competencies by the units.

12

2. The U.S. Army West Point Talent Management Strategy

The United States Military Academy at West Point uses a one-sided talent-based branching strategy to transition cadets to active duty. The ATAP subsystem, market-model-branching (MMB), uses three phases during accessions. Phase I is focused on branch education and mentorship from current officers to broaden their perspective on branch preferences. Following branch education, cadets provide information on their desires and preferences (Graul 2019, 49). Also, during Phase I, cadets complete a "Talent Assessment Battery" (TAB), a "three-hour proctored test that measures cognitive and non-cognitive skills, knowledge, and behaviors" (Graul 2019, 51). The TAB compares cadets using 20 standard talent dimensions (Graul 2019, 51).

Phase II involves the whole profile of each cadet being examined by a knowledgeable, impartial team of human resource specialists (resume, TAB scores, and cadre evaluations). The talent evaluation for each cadet is provided by the human resources review. This evaluation is compared to the talent requirements for each branch to produce "best-fit" possibilities. Phase II consists of preference confirmation and submission by the cadets and branches. Phase III completes the process by assigning branches to cadets (Graul 2019, 52).

The success of cadets is based on a number of non-TAB variables, including as test results, physical fitness ratings, transcripts, personal statements, and branch interviews. A variant of the medical school algorithm is used to apply cadet rankings and preferences (Rempfer 2019). Under market-model-branching, there are three tiers. These tiered ratings of high, medium, and low were used for the Class of 2020, creating an underlying order of merit list (OML) prioritizing branch and then by tier. (Greenberg et al. 2021). A customized version of the National Resident Matching Program's algorithm, which received a Nobel Prize for Economics in 2012, is used to combine the consolidated data from above and the preferences of the branches' cadets (OConnor 2019).

West Point has experienced significant success using its phased talent management approach for cadets and the Army. In a ceremony on November 13, 88 percent of the 2020 West Point graduating class of cadets received their preferences, up from 77 percent the

year before (Dolasinski 2019). The Army can effectively show transparency and collaborate with an eager talent pool, which is a critical component of talent management. While completing MMB and transitioning to active duty, Accessions Chief Major Jared Sunsdahl provided a positive outlook on the process when he said, "that's what's going to, I think, help the Army be better. It's going to help the individual officer. It's going to benefit the Army for years to come" (Dolasinski 2019, para. 4).

3. The U.S. Air Force Talent Management Strategy

The U.S. Air Force (USAF) Human Capital Annex (HCA) to the USAF Strategic Master Plan published in 2015 describes how the Airmen are the Air Force's most essential asset. The HCA states that success "in a rapidly changing environment… rests squarely upon providing the right Airmen, sufficiently developed, equipped, and organized, to defend national interests through airpower" (United States Air Force [USAF] 2015). The HCA outlines goals, targets, and deadlines to support a talent management-focused approach. Newly recruited talent management and service member attrition are the HCA's main responsibilities (USAF 2015).

MyVector and its subsystem, Talent Marketplace, serve as two USAF online talent management systems. "MyVector is an enterprise solution that supports the Air Force's goal to provide a standardized process available to all Airmen for career development and mentoring. Airmen can be proactive about their career development and mentoring relationships" (U.S. Air Force [USAF] n.d.) MyVector platform has three critical functions mentorship, career planning, and knowledge sharing (Graul 2019, 59). The USAF (n.d) has integrated the MyVector's career planning feature to use experience codes that are specific to each professional sector to let users view their experiences. The user can use this tool to design their own career timeline depending on the options available, and they can share this timeline with mentors and development teams. In addition, a Bullet-Tracker application allows users to keep track of annual events and milestones for their quarterly Performance Reports (USAF n.d.). A subsystem within MyVector is the talent marketplace, where USAF officers can manage their personal assignment options. Within the talent marketplace, officers can also search and select open positions based on their

goals and talents (Graul 2019, 59). A Senior Master Sergeant who leads the enlisted assignments talent marketplace development effort, identified the goal of the talent marketplace is to become a "world-class assignment platform that will allow for more deliberate talent management through assignment transparency and leadership involvement" (Whaley 2021). Capt. Sean Freitag, Talent Marketplace Cell Chief, envisioned the talent marketplace capabilities as the primary platform for all career fields and all jobs.

By enabling transparency of available opportunities and alerting those who are interested in positions to its leadership, Talent Marketplace provides a solution for assignments. The MyVector website also "possesses interactive filtering capabilities, expanded billet information, and enhanced officer information to facilitate this level of responsiveness and agility" (Bailey 2019, para. 3).

The USAF Personnel Center managers, billet owners, commanders, and VML officers can all contribute to the Talent Marketplace. The potential new officers coming to their unit are selected by the commanders of those units having vacant billets or the owners of vacant billets. Organizations with vacancies can assess officers on the VML list, view their résumé, and learn more about their preferences. (Graul 2019, 59). USAF VML officers update their profile, conduct interviews, search, and rate their top choices among the open billets. VML officials can monitor assignments that are favorable or unfavorable for other movers. The owner of the billet may propose several officers and may even rank the officers in order of preference. The system is made to offer both the best fit for the individual and the unit (Graul 2019, 60).

C.   TALENT MANAGEMENT INDUSTRY STRATEGIES

Looking at only DOD talent management approaches would blind a recommendation to potential solutions existing in the civilian sector, both government and commercial. Through LinkedIn, the commercial application of talent management provides several unique approaches to talent management in a world driven by profit rather than time in service. Conversely, USAJobs provides a government perspective on handling

15

massive applicant pools with significant diversity in KSBs. The following section discusses the processes these civilian platforms utilize to succeed at their priorities.

1. The "LinkedIn" Company Talent Management Strategy

LinkedIn, "the world's largest professional network, has just over 800 million members across 200 countries around the world" (LinkedIn n.d.). LinkedIn creates economic opportunities for people in the global workforce through a relevant talent management platform used for recruiting and assessing various applicants (LinkedIn n.d.). LinkedIn has a free version and a fee version that provides organizations with recruitment enabling organizations to find, interact with, screen, and select the best candidate for their organization (Black, Washington, and Schmidt 2016; Nikolaou 2014).

Currently, LinkedIn uses the Risk Assessment Method (RAM) to target and accurately assess the characteristics of an individual (Warr and Bourne 1999). RAM is a process in which the hiring authority attempts to determine the individual characteristics of a target candidate for a specific job. RAM is used to examine judgments about various traits, including skills, abilities, and personality (Blackman and Funder 2002).

LinkedIn came up with their skills assessment (using RAM) so applicants can showcase their skills. Each assessment skill is constructed through a content review with LinkedIn industry subject matter experts. On LinkedIn profiles, applicants can self-profess their abilities, making them attractive to potential companies. LinkedIn provides a way to validate self-professed skills through assessments created by LinkedIn. Applicants can access and validate their profiles by clicking on a self-professed skill to take an exam. The applicant must score a 70 or above to receive credit on their profile. Although a passing score permits validation, an applicant can take the exam as many times as necessary to obtain a passing score. LinkedIn also provides learning courses to help applicants prepare for the assessment. After applicants pass the skills assessments, LinkedIn will send job recommendations that match the skill assessments the applicant has passed.

LinkedIn's methodology for how the hiring authority assesses job searcher characteristics could prove helpful to the U.S. Space Force human resource talent management system. LinkedIn's methodology compares closely to how the Space Force

16

develops its competencies to measure what skills are needed for Guardians to succeed in each career field. Each career proponent would be responsible for creating and assessing the competencies before embedding them into the Space Force human resources platform. The Space Force units would then judge the applicants who qualify for their specific career field and generate the best applicant possible for their organization.

LinkedIn has a few advantages that the Space Force can adopt to enhance its talent management platform. LinkedIn maintains an extensive training set with its abundance of jobs and career opportunities. LinkedIn allows connections with previous and current contacts and establishes professional networks outside of individual organizations. Most employers have recruiters on LinkedIn to network with future employers when researching companies. The Space Force can adopt this tool for Guardians to explore career paths, learning the training and credentials necessary to be competitive in the field. The Space Force can also create competency skill tests to validate the Guardians' self-professed skill sets and competencies.

Some limitations of LinkedIn involve employers that don't post jobs, discouraging applicants who want jobs in smaller career fields. Applicants also face difficulty in noticeability when using LinkedIn, meaning that businesses may not see all applicants with requisite skills depending on the established position thresholds. An abundance of applicants with the same professed talents is an obstacle for applicants in getting noticed and standing out from their peers applying for the same positions with the same validated skills.

The Space Force talent management system could implement posting all jobs and when they become available for transparency. Guardians performing above their peers will get noticed if the Space Force implements an order of merit list to give organizations a snapshot of the top performers available in the movement cycles.

2.   The USAJOBS Talent Management Strategy

The DOD uses USAJOBS as its talent operations platform. The platform is used to recruit and promote the best-in-class government workforce for the American people (Office of Personnel Management [OPM] n.d). The vision of USAJOBS is to connect job

17

seekers with employment in various fields across the world (OPM n.d). This is a site managed by the Federal Government and is the official government employment platform, which helps connect the right people to the right job. Federal agencies use the platform to post job openings and seek out qualified applicants for the right position (OPM n.d). According to the Office of Personnel Management, the USAJOBS serves as a hub to find careers in a multitude of federal agencies and organizations.

On average, USAJOBS receives approximately 2,000 applications for a posted position (Chen, 2012). About one-third of those applicants will make a mistake on the online application, to include uploading resumes and answering the questionnaire questions properly, and score below a 70 (Chen, 2012). Other issues are poor written resumes and lastly one-third will be reviewed as a potential candidate as they will be considered as Best Qualified for the position (Chen, 2012). Most questionnaires offer questions that are used to eliminate unqualified applicants. One flaw in this method is qualified applicants could score below 70 percent and become ineligible for the job.

The USAJOBS questionnaire is critical in cutting the first wave of unqualified applicants. Sometimes, qualified applicants score poorly on the assessment, which takes them out of the running for the position. The questionnaire can include 35–100 questions, depending on the available position. The human resource personnel reviewing packets typically view the questionnaire score before reviewing the applicant's resume. Figure 4 shows the USAJOBS job application model/ hiring process.

18
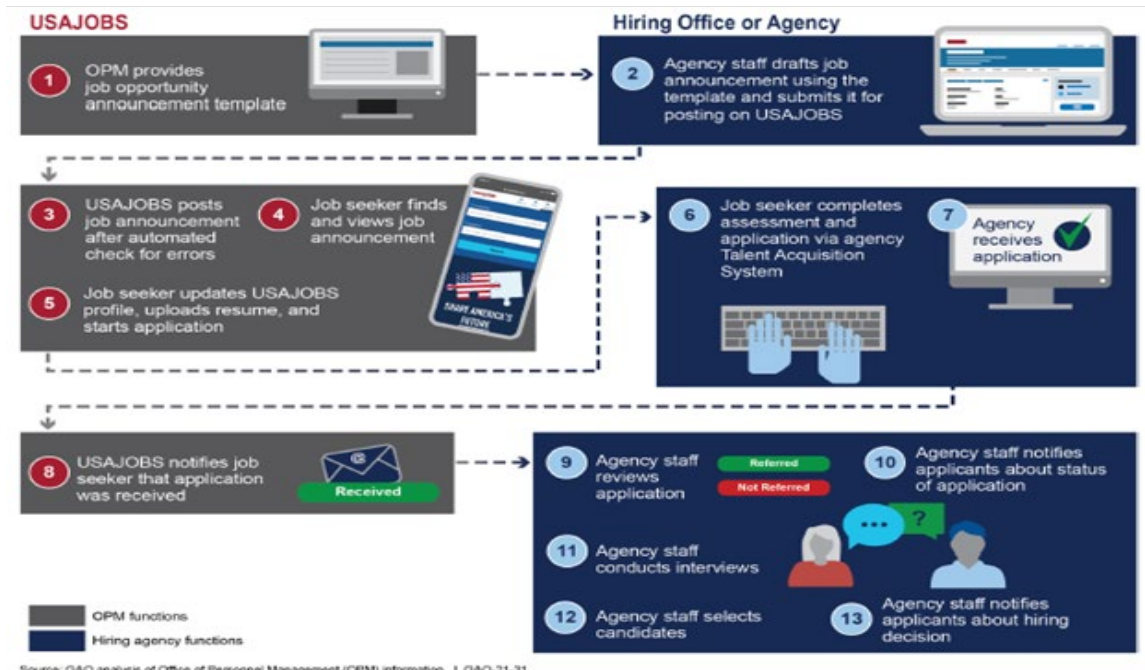
Figure 4.   USAJOBS Application Process. Source: GAO Report (2020).

A positive aspect of USAJOBS is the abundance of job availability due to regular personnel turnover. In the DOD, personnel retire or leave the profession daily. USAJOBS has positions available worldwide, giving an applicant the possibility of getting hired in multiple locations if their position is unavailable in their local area.

A negative aspect of USAJOBS is the unclear application processes. If an applicant does not pass the assessment, there is no way to correct the mistakes for future applications. Also, the application process can take 3–9 months, depending on the job and background checks required for certain positions. USAJOBS is often considered a complex hiring platform due to the unorthodox questionnaires and precise resume wording, making it difficult to succeed.

The Space Force can use the USAJOBS model to help develop a hiring flow for its talent management human resource system. The Space Force human resource command can act as the OPM in this scenario and post the Guardians approved positions for that specific movement cycle. The Space Force would then follow a model similar to the one

19

outlined in Figure 4, allowing Space Force applicants the transparency necessary to see desired positions.

USAJOBs standards for job qualification only offer a small amount of qualifications and may not be sufficient to determine if the applicant will be a fit for the organization. This will give USAJOBS a competency profile approach to talent management. This method provides competency profiles that will provide more details and valid descriptions of occupational job requirements (Rodriquez 2002).

D.   TALENT MANAGEMENT USER INTERFACES

The Space Force's integration of an effective competency-based talent management approach must also prioritize user interface design and database selection to ensure the model's suitability in a marketplace environment. Various studies focus on finding the best techniques for a user interface, including those that must synthesize massive amounts of data.

As digitization and gamification remain the goal in many aspects of the Space Force, the User Interface presented to each Guardian in and out of a talent marketplace should consider functionality, performance, and positive user effect (Johnson and Wiles 2003). As with entertainment software, "if a game does not generate positive emotions in the user, it is unlikely to succeed," the same holds for software intended to provide continued support for a Guardian's Development (Johnson and Wiles 2003, 1332). One common goal in a Guardian talent marketplace is to place the best Guardian in terms of development, skill, and unit need into the best fitting vacant Guardian billet. A streamlined user interface must not interfere with the connection between the Guardian, the unit, and the system to accomplish this task. In entertainment software, the concept of flow is discussed as an achievable goal. It deals primarily with placing the user in a place where all functions and inputs are so fluid that the user becomes focused on the purpose of the activity. This type of focus would be beneficial for a Guardian researching their next job and the implications of this job on their careers.

An early report in 1994 provides insight on usability problems related to specific heuristics common to user interfaces—issues that could get in the way of a Guardian

focusing on a talent marketplace (Nielsen 1994). The study's intent was not to provide a "winner" for the best interface; instead, the objective was to find usability problems within an interface. The study reveals that seven heuristics categorize user interface problems: "visibility of system status, the match between system and real-world, user control and freedom, consistency and standards, error prevention, recognition rather than recall, and flexibility and efficiency of use" (Nielsen 1994, 21). These factors along with two other heuristics "aesthetic and minimalist design, helping users recognize, diagnose, and recover from errors" serve as a foundation for focus within the Space Force's user interface and talent marketplace experience to ensure useability, and flow during execution by both the Guardian and the Space Force unit (Nielsen 1994).

1.   The U.S. Army's Talent Management User Interface

The Army's talent operations platform, AIM 2.0, allows users and units to view and make profiles and preferences using a user interface profile tool. First, before there can be a match of talented Army officers with vacant positions on AIM, the data on vacancies and officers must be visibly available on the platform's interface. Second, for this matching process to succeed, the officers must upload their unique attributes and competencies in KSBs on the AIM portal to attract interested parties through a resume-like interface, as shown in Figure 5 (Army Talent Management Task Force 2019). Those units will similarly do the same by uploading their intriguing duty descriptions, unit briefs, and motivating pictures of their organization and vacant assignments to entice the officers to preference their positions in the AIM marketplace. The job vacancies advertisement includes the required KSBs, incumbent contact information, security clearance requirements, and command or key development positions. "In the most recent 22–02 marketplace, 55 percent of officers utilized KSBs to showcase their unique attributes with 28 percent of the units participating in the same movement cycle employing KSBs to reveal their necessary demands for upcoming mission requirements" (Shalchi 2022, 7).
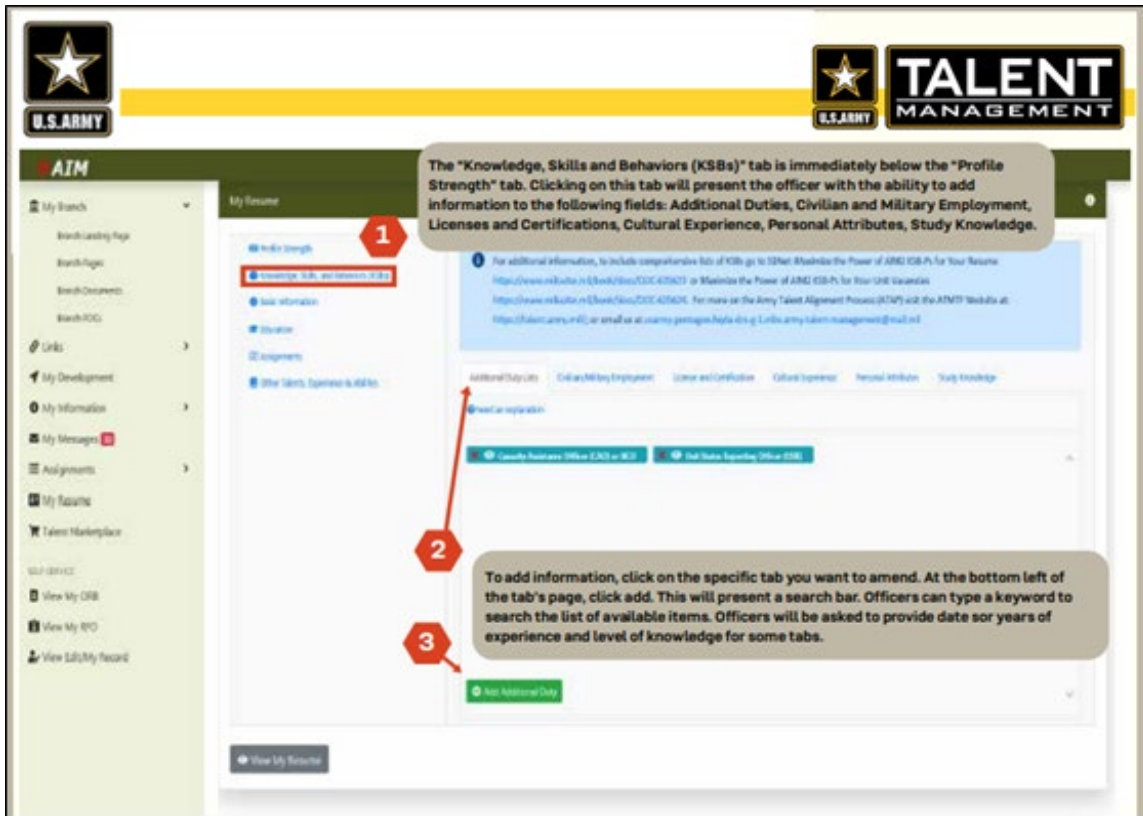
Figure 5.   AIM 2.0 Resume User Interface. Source: Army Talent
Management Task Force (2019).

When the market finally opens with a predetermined date and time provided by HRC, officers can log onto the AIM portal and view unit position vacancies but note that the officers can only view the positions based on what is available for their specific MOS or functional area. The AIM interface allows users to rank and order the available assignments based on user preferences. AIM will then signal the officers and units that show a mutual interest and AIM users can see which assignments are more popular than others. Figure 6 depicts the user interface of these capabilities. The tip below from HRC describes preferencing and its integration within the user interface, promoting successful matches during the AIM Marketplace.

> Officers need to preference as early in the market as possible. This [marketplace preferencing] ensures units receive feedback ... which can initiate the dialogue process. The top three units … that an officer preferences will auto-generate a notification to the unit. (Army Talent Management Task Force 2019, 6)

22
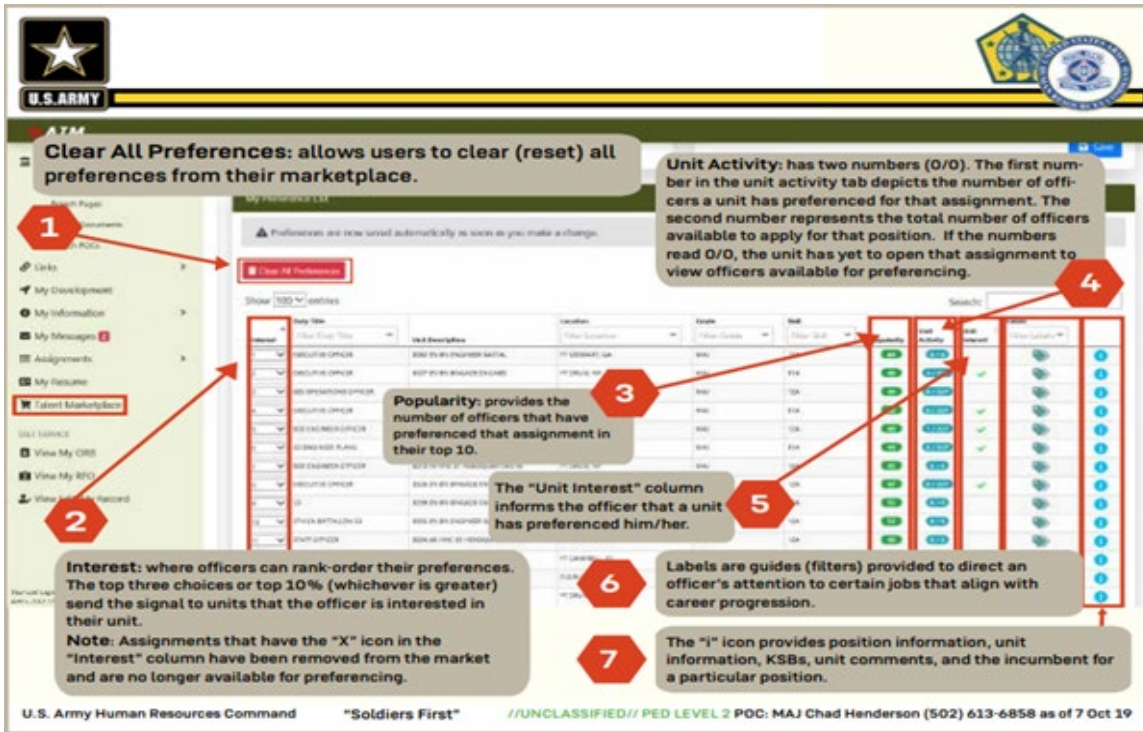
Figure 6.   AIM 2.0 Marketplace Interface. Source: Army Talent Management
Task Force (2019).

Once the officers begin to rank-order their preferences, the AIM interface enables interactions and ability for unit and job candidates to coordinate for interviews and communicate their goals. Units will then assess the officers' potential for assignment by viewing their "Baseball Card" provided on the AIM portal. This view consists of the candidate's resume and Officer Record Brief (ORB) as shown in Figure 7. Units will then interview the candidates and select them by assigning an order of merit (Army G-1 2019). Once there is a match established by AIM's mathematical algorithm, the branch manager at HRC will finalize the match by ensuring it satisfies Army guidelines for career progression. After confirmation, the branch manager will post Request for Orders (RFO) on the AIM portal to officially lock in the match (Army Talent Management 2019).

23

NAVAL POSTGRADUATE SCHOOL | MONTEREY, CALIFORNIA | WWW.NPS.EDU
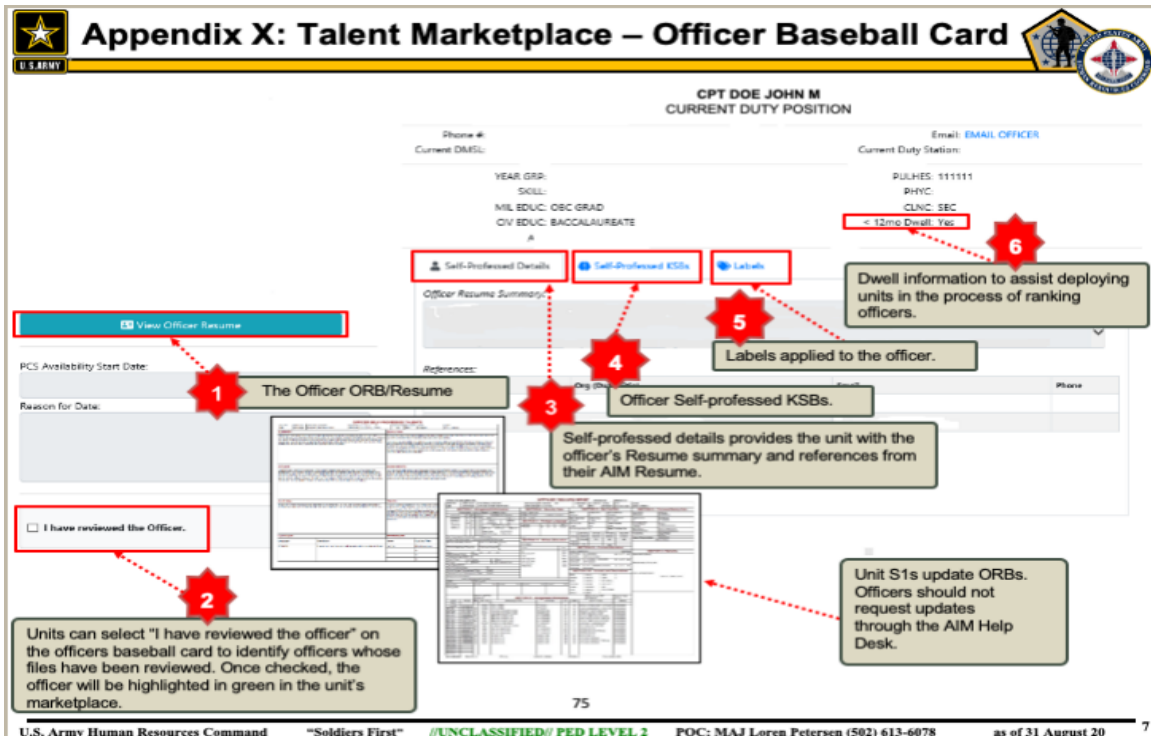
Figure 7.   AIM 2.0 Officer Baseball Card Interface. Source: Army Talent Management Task Force (2019).

The USSF leadership is directing for a talent management system that integrates and strengthens equity, development, and human dignity by empowering Guardians to pursue positions of choice and latitude rather than follow a stovepipe in a highly structured, sectioned career path. The USSF talent management user interface shall not limit the candidates by a specific MOS or functional area like AIM. Guardians will determine career progression to specialize in one career track or pursue a diverse variety of experiences through multi-disciplined career fields and not the branch, which is not the approach or culture the Army is pursuing.

In addition, KSBs are an excellent tool to manage talent, but there are significant concerns and flaws within this type of self-professed approach, as shown in Figure 8. The issue is that the data's validity and accuracy are questionable in a self-professed competency platform. This may be burdensome or biased for some organizations and may not be the best solution for the unique and special type of organizations such as the Space Force. A networked library of externally evaluated competencies with automated analytics

24

may provide the best results. Still, leaders must then trust the computational filters established by the system to make the perfect match for them. Therefore, AIM's human-moderated assignments tool that supports interviews for the organization to access and verify the accuracy of the self-professed competencies themselves may be the best alternative solution to approach accuracy challenges within the Army, given the size of the component.

OFFICER SELF-PROFESSED KNOWLEDGE, SKILLS & BEHAVIORS

ORB TYPE AIM	BRIEF DATE	FUNCTIONAL CATEGORY	DESIG DATE	CATL BRANCH BR STUDIED/RED	COMPONENT RA	AD GRADE - ADOR	NAME

SUMMARY

- What sets you apart from your peers? Summarize your overall skills, desires, career goals.
- Include information that makes people want to read more.
- What kind of job are you looking for next?
- What opportunities do you want to be considered for? (i.e. KD, command, aide de camp, speechwriter, WIAS, etc.).
- What are your career aspirations 5-10 years out?

EDUCATION

- Include civilian and military education that is not listed on your ORB (i.e. 30 credits in graduate program, cyber courses, etc.).
- Describe any significant educational information that goes beyond your degree title (i.e. thesis topic, area of specification; internships; etc.).
- How have you used your educatiton opportunities to improve the Army, your branch, or your unit?

CIVILIAN

- What work have you done to better the community? How did you solve a problem? What were the results?
- How have you improved civilian-military relationships?
- Have you organized or participated in unit events that served the community?
- Do you have a leadership position in any civilian organization? (i.e. schools, sports, etc.).

ASSIGNMENTS

- What key experiences/accomplishments do you want to convey from your past assignments? Review your OERs for potential input.
- What did you accomplish, how did you make an impact in key assignments?
- Highlight assignments that prepared you for the future jobs you want.

ADDITIONAL SKILLS & CERTIFICATIONS

- List any articles/writings you have published.
- List any military or civilian certifications that are not listed on your ORB.
- Include certifications you are working toward.
- Do you have a unique skill you have used to improve the Army, your branch, or your unit?

CULTURAL EXPERIENCES & TRAVEL

- How have you used your experiences/travel to improve the Army, your branch, or your unit?
- What have you done or experienced that sets you apart from your peers?
- Do you have any unique experiences that makes you better suited for the jobs you want?

LANGUAGE

Language	Description
	List all languages you have studied and/ or languages in which you are proficient, that are not listed on your ORB.

REFERENCES

Name	Org (Duty Title)	Email	Phone

Ensure your references know they are listed – if someone contacts them and they do not remember you or do not respond, it may not reflect well on you.

◆ AIM

- There is no one "right" way to fill out your resume. This is "a way" to fill out a resume, and not the only way.
- Feedback from the field varies. Some units prefer short and concise (bullet format) while other units prefer long and detailed resumes (narrative format).
- Craft your resume to illustrate your experiences and tailor it to your prospective positions.
- The AIM resume is just the start. Personal contact and interviews often give a more in-depth look into an officer's experiences/skills and create a more lasting impression on a unit.
- Officer KSBs do not appear on the resume, but are viewable and search-able by units. Find available KSBs at the following link: https://www.milsuite .mil/ book/docs/DOC-635623.

Figure 8.   AIM 2.0 Self-Professed KSBs Interface. Source: Army Talent Management Task Force (2019).

2.   The USAF and USSF User Interface

The USAF and USSF Talent Marketplace is a "web-based assignment systems platform subset of MyVector, the one-stop-shop for all Airmen and Guardians" (Whaley 2021). The Talent Marketplace allows the officers, enlisted, all components (national guard, active, and reserve), billet owners, commanders, and USAF/USSF Personnel Center

staff to provide input and get intimately involved in the assignments process. Like the sister services, MyVector's talent management initiatives offer flexibility and transparency in the assignment process. Still, the primary missing element in MyVector's Talent Marketplace approach is the integration of all enlisted components to ensure a "one-stop-shop." Members can express interest in an advertised billet which will show on the Billet Volunteers block highlighted in Figure 6. Also, the MyVector interface shows additional information such as where an Airman ranked a billet amongst their entire preference list, how they rated the location by desirability, and where the previous commander ranked them among their peers. The interface supports the ranking data with comments placed by the last commander.

Suppose Billet Owner seeks additional information to identify the candidate's qualifications. The Billet Owner can view MyVector records, including a wide variety of information, including duty history, education and training, location desirability, summary responses to assignment intent questions, and an officer career brief (SERF). The SERF provides various duty information, such as the last five evaluation ratings.

The USSF leadership is directing the component to transition from a career field-based talent management system to a competency and experienced-based system to provide a multi-disciplinary force that MyVector currently does not support. The integration of foundational competencies (e.g., leadership and character qualities) and occupational competencies (e.g., program management or engineering) support a talent operations platform outlined in the Guardian Ideal.

E.   TALENT MANAGEMENT ALGORITHMS

The USSF talent management system may examine the matchmaking algorithms and big data analytics used by industry and other services to identify applications if required. Understanding these algorithm concepts and helping apply them for proper competency-based integration will be crucial elements for the USSF talent management platform to succeed.

AIM 2.0 uses a mathematical algorithm to match officers to available positions in the AIM marketplace called the Army Talent Alignment Algorithm (ATAA). ATAA is an

algorithm that is Soldier driven, as it initiates assignments based on the officer's preference first and then the units (U.S. Army 2019). The ATAA algorithm will attempt to match officers to their first choice as the markets open. If the first choice is not possible, the algorithm will try to match the officer to the second choice or third choice until the officer is matched with a unit or all alternatives are exhausted.

F.   LITERATURE REVIEW CHAPTER SUMMARY

A talent operations platform that employs a talent marketplace with competencies as the main driver for candidate selection remains relatively absent in the DOD, government, and commercial sectors. West Point comes the closest with its controlled atmosphere and validated skills and talents, externally assessed through human resource teams. However, a group of cadets represents a control group filled with candidates who all have the exact date of rank and no experience.

Next, AIM and MyVector are significant force multipliers for the Army and Air Force in assigning personnel to billets. Still, competencies remain self-professed, creating vulnerabilities in the system regarding the accuracy of qualifications. Conversely, LinkedIn provides significant insight into how validation can support a self-professed value, but only in an unconstrained environment determined by employer needs.

27

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III. CURRENT TALENT MANAGEMENT PRACTICES WITHIN THE DOD AND INDUSTRY

A. QUALITATIVE RESEARCH METHODOLOGY

In support of the simulated marketplace model developed by the quantitative team and to also inform the recommendations of the capstone through a use case diagram, the qualitative team conducted interviews with various DOD components and industry leaders to acquire insight into today's talent management environment as it applies to a modern governmental talent structure and industry. Table 2 provides the list of the interviewees selected within DOD and industry (interviewees details are not disclosed in accordance with PII guidelines. The team followed proper NPS IRB determination regulations to ensure additional guidance and documentation was not required):

Table 2.   List of Interviewees

Service	Title	Unit	Roles and Responsibilities
Air Force	Branch Chief, Occupational Competencies	AETC/A3J Force Development Foundations Division	Key advisor for occupational competency development and integration.
	Industrial/ Organizational Psychologist	AETC/A3J Force Development Foundations Division	Lead psychologist and developer for foundational competencies.
	Branch Chief, Foundational Competencies	AETC/A3J Force Development Foundations Division	Critical developer on the foundational competency team.
	Chief, Assignment Program Development	AFPC	Liaison between the Airmen, the assignment teams, AFPC, and the developer.
Army	Plans and Analysis Operations Research Systems Analysts (ORSA)	HRC	Army manning, research, and data analysis.

Service	Title	Unit	Roles and Responsibilities
	Functional Management Division Deputy	IPPS-A	Army human resource platform and force development team lead.
	Deputy Chief	IPPS-A R4	Army human resource platform development deputy.
	AIM 2.0 / IPPS-A Integrator	HRC	Army talent management and human resource platform development liaison.
	Career Manager Acquisition Management Branch	HRC	Acquisition talent manager in charge of assignments and career progression.
DOD	Staffing Program Manager for Manpower Analytics and Human Resource Systems	USAJOBS	Responsible for managing the DOD competency library for USAJOBS. The competency library is used to generate surveys to validate self-professed skills/competencies applicants place on their resumes.
Industry	Space Force Government Account Director	LinkedIn	Space Force LinkedIn representative responsible for assisting the Space Force with talent management system capabilities to help improve human resource functions and hiring practices.

B. DATA AND FINDINGS

1. U.S. Army Interviews

a. *How is the Army integrating competencies into its talent management process?*

The qualitative team interviewed the U.S. Army talent management offices and discovered that the Army does not use competencies in its assignments selection process but is looking to integrate something similar via KSBs.

The U.S. Army HRC branch manager discussed that Soldiers are currently identifying and self-professing the 199 KSBs depicted in Figure 9 on the AIM 2.0 platform. The Deputy Chief, IPPS-A Release 4 (R4), identified that the Army Talent Management Task Force (TMTF) is actively working with the Army Research Institute and HRC to validate, assess, and acquire current and future KSBs. Furthermore, KSBs will only be a portion of ATAP (Talent Management Task Force 2019). It will help guide all users within the system to identify and match the best Soldier for the job within the right organization at the right time in their career. KSBs will provide an optional filter during the ATAP process. Once fully integrated, KSBs will be available for every position, every branch, and every Soldier within the Army.

Once KSBs are selected by the units, they can be a critical driving function to validate the alignment process within ATAP. The HRC branch manager emphasized how important it is for gaining units to have the ability to review potential candidates to evaluate both their work history and the Soldier's self-professed KSBs. The HRC Plans, and Analysis Operations Research Systems Analysts (P&A ORSA) and Deputy Chief, IPPS-A R4, indicated that this subsequently allows Soldiers to have transparency into what KSBs are essential for current and future positions, regardless of rank, and where they need to improve to ensure compatibility. Finally, KSBs will also have three to four levels of proficiency based on the desired behaviors and attributes.
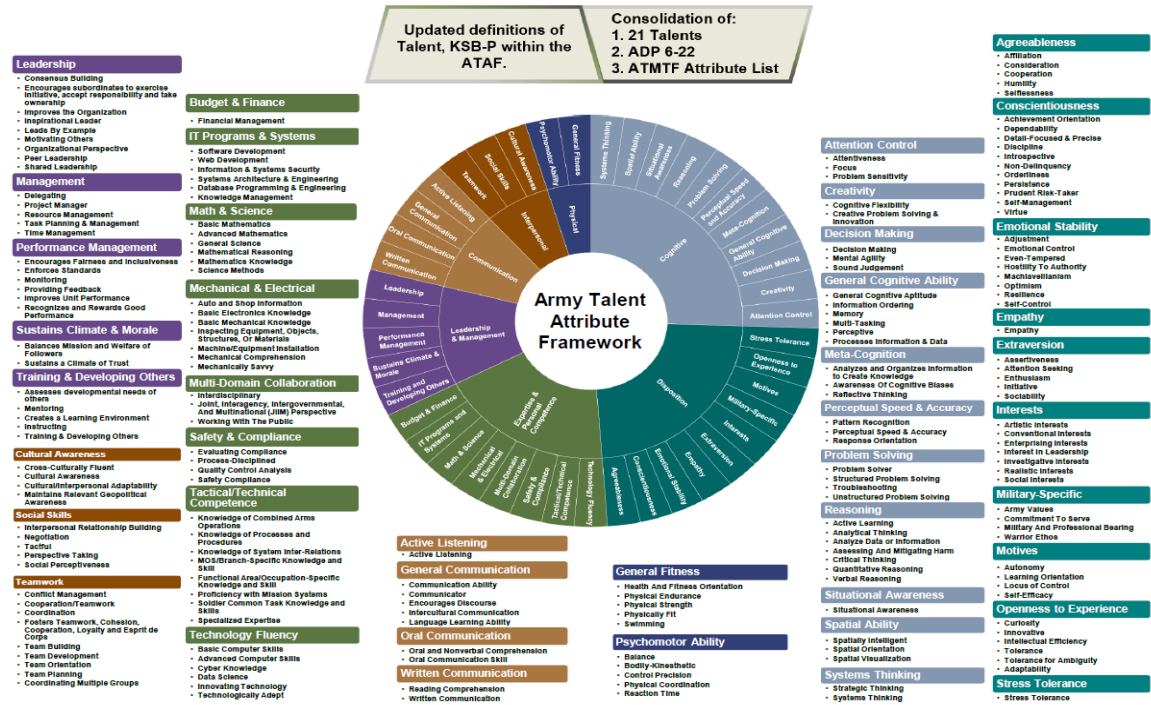
Figure 9.   Army Talent Attribute Framework. Source: Army Talent Management (2022).

Due to the Army not requiring use of KSBs, the Army has no way to measure their benefit or effectiveness. Currently, positions are filled without the use of KSBs.

b.   *What is the Army's optimum number of KSBs?*

Another topic discussed was the idea of the best number of KSBs for each position and if they should be identified as required or desired. The Deputy Chief, IPPS-A R4 commented that developing a specific number is complex due to the uniqueness of each position based on the organization's structure and mission. However, the AIM / IPPS-A Integrator, confirmed that there is an effort to standardize KSBs in as many positions as possible.

Many similar entry-level/basic positions across the Army will require the same KSBs. The Deputy Chief, IPPS-A R4, said that the Army is looking at previous exceptional performers in each position to create a baseline of KSBs for all positions, even those outside

32

of entry level jobs. Additionally, the TMTF and G-1 personnel are reaching out to individual branches and proponents to identify the correct KSBs for Soldiers based on position and rank. The feedback that TMTF receives along with observation of incumbent performers will create the baseline for Army ORSAs to create a standardized KSB framework by branch.

Based on the IPPS-A team and ORSA discussions, the Army doesn't want to rush a required KSB framework. Instead, they are taking an iterative approach to allow for flexibility as the KSB structure and framework are being created. Furthermore, the Deputy Chief, IPPS-A R4, stated that the time assessment of the success of KSBs will take time because Soldiers can hold a position for two years which delays the feedback and assessment of the validity of the chosen KSB to a position. Therefore, the Army plans to implement KSBs within the Army over the next 20 years, with a planned full integration culminating in 2040.

The conversation with Deputy Chief, IPPS-A R4, led to the discussion of the Army's way forward in prioritizing specific competencies. According to the Deputy Chief, IPPS-A R4, the TMTF is the team leading the charge and is actively working with proponents to get the needed feedback on the initial KSBs requirements specific to each position.

c.   *What is the Army doing to improve the integration of KSBs?*

When asked about how to better integrate KSBs into the AIM system. The Deputy Chief, IPPS-A R4, commented that the Army must first find a way to standardize KSBs by branch then rank and position. There is significant analysis required for drafting KSBs, since these same KSBs evolve over a Soldier's career due to MOS and rank changes.

All interviews confirmed that KSBs are currently self-professed and are not validated when a Soldier adds them to their AIM portal. There is some reluctance regarding trust within the system due to this lack of validation, as an HRC branch manager stated that KSBs must be validated at some point for them to have an impact on talent management. This reluctance within KSB integration reveals that even experts working at HRC as branch managers feel that self-professed KSBs may not be sufficient, additionally stating that a

33

military component must understand all the KSBs in the world might not establish a perfect fit between a Service member and a position.

However, the HRC branch manager did just leave the conversation with the stated problem but rather proposed that KSBs should be validated using the current iPERMS system for certificates of validation. Once the certificate is uploaded, the KSBs aligned with that training could automatically populate within AIM. Furthermore, the Deputy Chief, IPPS-A R4, commented that there is some discussion about using senior rater comments to assess and validate the KSBs as a component of the official evaluation report process.

The talent alignment process within the Army is focused on the talent marketplace via the AIM 2.0 website. The HRC P&A ORSA explained that the marketplace is the foremost tool for Army alignment. This marketplace allows Soldiers and units to reach out and perform interviews like what one would see in the civilian sector. Once interviews are complete, the unit and the Soldier create a preference list that rank orders every Soldier and every position. Finally, the Gale Shapely algorithm only looks at preferences to align officers to jobs. HRC P&A ORSA commented that the integration of KSBs is the missing link to ensure that it can incorporate the best fit for the officer based on matching the KSBs aligned to the position.

The Army is also looking to incorporate training and education into KSBs development and talent management. Today the Training and Doctrine Command (TRADOC) is the leading entity for the Army in educating and training Soldiers. Deputy chief, IP PS-A R4 discussed that KSBs would be integrated into TRADOC's training and certification framework. Furthermore, the Army currently has specified training for each rank and additional certifications based on military occupational specialty (MOS). For example, as a Functional Area 51 Officer, there are required DAU and DAWIA certifications for each rank and 80 hours of continuous training to be completed every two years.

d. *What is the Army's operational environment for talent management?*

The Army's distribution cycle structure, talent marketplace, and timeline were discussed during all interviews. However, they did provide insight into the schematics of the marketplace. The HRC branch manager informed the research team that two major distribution cycles occurred during the summer and the winter. The summer distribution cycle is usually the largest due to Soldiers' family considerations and the end of the school year. Overall, each cycle spans a six-month window with 500–600 movers in the summer to 100–200 movers in the winter. Before the start of the distribution cycle, each unit provides its mission essential requirements list (MER) to HRC's Officer Personnel Management Directorate, which creates the demand signal or an assignment to be populated within AIM per the unit's manning guidance. Once all the units MER are received, HRC begins to build the positions that Soldiers will interview and rank. Simultaneously, Soldiers are to create their resumes and prepare themselves for interviews with organizations with their preferred positions. Once the market is set and interviews are conducted there is a window during the marketplace for both the Soldier and the unit to preference the position and Soldier, respectively. After the rank order, both parties submit their list in AIM. Then HRC initiates the algorithm. There are some considerations for the algorithm. If an officer does not preference all the positions or if the unit does not prefer all the officers within their marketplace, then the army talent alignment algorithm will not work. For example, if you only rank 50%, it's not that the other 50% are considered equal, but someone didn't complete their preferences. Therefore, the rest of the list must be populated with the imputed preferences using an algorithm that considers rank, location, Army needs, etc. Once all positions/Soldiers are ranked then the modified version of the Gale Shapely algorithm will proceed to match Soldiers to a position.

2. U.S. Air Force Interviews

a. *How is USAF integrating competencies into its talent management process?*

The Air Force is working to integrate its established foundational and occupational competencies into their talent management process. To develop their 24 foundational

competencies and establish the Air Force competency model, the Air Force conducted a large-scale appraisal with essential stakeholders from various organizations across multiple career fields and ranks. Additionally, the delineation between these competencies' basic and advanced proficiency levels further separates talent. With the foundational competencies identified, the Air Force can integrate these competencies into the talent management process using MyVector. The talent management platform, MyVector can be used to accurately measure each of these competencies once Airmen individually complete a short assessment and receive feedback. This assessment provides automated personal feedback and online educational resources that are tailored to help build each competency. Furthermore, occupational competency integration is also done by Air Force senior leaders. They can use these assessment tools to identify where their subordinates are in relation to where they are supposed to be based on the competency model for their Air Force specialty code (AFSC) and rank.

Airman's Foundational Competencies			
Developing Self	*Developing Others*	*Developing Ideas*	*Developing Organizations*
Accountability Perseverance Communication Decision Making Information Seeking **Flexibility** Resilience Initiative Self-Control	Teamwork Develops People Service Mindset Leadership **Fosters Inclusion**	Analytical Thinking **Digital Literacy** Creative Thinking **Fostering Innovation** Influence	Resource Management Results Focused **Change Management** **Strategic Thinking** Precision
What is a competency?			
The combination of: <u>Knowledge</u>, <u>Skills</u>, <u>Abilities</u>, and <u>Other Characteristics</u> that manifest in an observable, measureable pattern of <u>Behaviors</u>			
What is a foundational competency?			
Competency universally applicable to all Airmen (Officer, Enlisted, Civilian). Competencies in **bold** in the list above are particularly important for the future.			

Figure 10.   List of Airman's Foundational Competencies. Source: Department of Air Force (2022).

Due to the voluntary competency implementation for each career manager and their respective AFSC leadership, there is limited data to assess the benefits of competency implementation. However, Branch Chief, Occupational Competencies, has collected data on competency integration in formal training learning environments. Schools within Air

36

Force Air Traffic Controller's AFSC have already shifted to fully implemented training. The Keesler AFB, outside of the city of Biloxi, Mississippi, has identified significant benefits with the changes to the training.

b.   *What is USAF's optimum number of competencies?*

During the interviews, the discussion on the optimum number of competencies was straightforward. According to Industrial/Organizational Psychologists, the ideal number of foundational competencies has been identified at 24. However, the specific number of occupational competencies is still undefined. The science of finding that number is dependent on the complexity of the career field. Therefore, creating competencies for each of these career fields can vary from five core competencies with an average of 10 to 15 sub-competencies created for career fields to define the mastery level better. Although no more than five is recommended, there is an opportunity to expand through sub-competencies. Occupational competencies are designed and implemented with competency rubrics. Once applied, they align with the competency model that is broken across four proficiency levels. This ensures that talent managers can map occupational competencies to specific positions.

There is no need to prioritize foundational competencies. However, the significance or level of importance for occupational competencies is fueled by the career field or AFSC manager. Each competency rubric identifies crucial competencies to specific career fields and positions. An example of a competency rubric is below.

Competency	←	The competency section states the competency group.
Readiness		
Sub-Competency	←	The sub-competency section states the narrower category that forms part of the competency group.
Force Generation		**Note:** Some models may only consist of a competency and not include a sub-competency.
Description	←	The description section provides a statement that gives details about the sub-competency, enabling career field members to better understand how sub-competency relates to the AFS.
Prepare, deploy, and sustain capabilities across the full spectrum of military operations		
Supporting Competencies	←	The supporting competencies section are supported-level competencies that are linked to the success of the sub-competency. These competencies lend themselves more toward areas like values, traits, and attitudes. These competencies were included as part of a larger survey that went out to the entire AFS; respondents were asked to rate the top supporting competencies they believe will attribute to higher successful performance within the sub-competency.
Teamwork Decision Making Problem Solving Strategic Thinking		

Proficiency Levels	←	The proficiency levels are broken into four parts: basic, intermediate, advanced, and expert.
Expert Scope is integrated with AF-level		Under each proficiency level are predetermined criteria selected by a group of SMEs from your career field and validated by the career field. The criteria were used as the basis to develop the observable behaviors. These criteria provide concrete parameters for the behaviors, which are consistent but progressive in nature as a member moves up the scale from basic to expert.
Advanced Scope is integrated within organizational strategies		
Intermediate Scope is integrated within concerned areas		Some of the criteria (e.g. depth of knowledge, consistency of application/complexity, and thinking challenge) allows an individual to become an expert through the experience gained in a particular job and over a period of time. For example, the person can quickly move up different proficiency levels while they are serving as a technician at a flight; they move quickly because they are exposed to a variety of situations.
Basic Scope is integrated within a specific area		While other criteria (e.g. scope, impact, and reach of influence) requires more of a hierarchical approach to gain the experience needed to progress through the competency levels. Moving through the proficiency levels may be difficult to do in certain jobs. For example, if scope at the expert level requires job integration with the AF-level, then the individual may have to be in a position where they can gain that experience (i.e. at HHQ, Wing, or an organization with far reaching capabilities).

Observable Behaviors	←	The observable behaviors are statements of what can be observed from an individual manifesting the competency at the respective competency level.
– Applies strategies and integrates planning factors to problem sets in order to produce actionable orders and plans – Manages integration of functional experts to resolve systemic force generation challenges		
– Develops courses of actions; advises senior leaders to mitigate force generation impacts due to limiting factors (LIMFACS) and shortfalls		They provide objective evidence that the individual possesses the competency level, and shows what effective performance looks like.
– Analyzes APEX orders to identify execution challenges – Resolves force generation challenges with applicable agencies to produce feasible execution plans – Oversees deployment and JRSO&I operations to meet force generation requirements.		
– Reviews Adaptive Planning and Execution (APEX) orders to identify required agencies and anticipated actions – Initiates deployment execution actions within force generation systems to support tasked capabilities – Operates force generation systems to provide C2 during deployment and Joint Reception, Staging, Onward Movement, and Integration (JRSO&I) operations		The behaviors are written to be specific enough so they can be observable and lend themselves towards measurement.

Figure 11.   USAF Competency Rubric. Source: Department of Air Force (2022).

38

c. ***What is the Air Force doing to improve the integration of competencies?***

The Air Force determines and validates Airmen's competencies in a variety of ways. There is a manual process for identifying foundational and occupational competencies using an electronic training record. Formal feedback, like evaluation forms, documents applicable foundational competencies. Finally, some career fields have developed competency assessments that could be used as a tool for supervisors to assess and track their subordinates' skills and competency progression. However, validation and assessment depend on the individuals' experience and developing products to show proficiency. This can happen in weeks, months, or years depending on how often certain events occur or how often the organization provides these opportunities.

For the Air Force, the efficacy of the competency is assessed on the job by the supervisor. However, with minimal implementation, it is hard to determine its effectiveness. Still, Air Force leaders and talent managers understand that you cannot necessarily assess teamwork by a knowledge check on what work needs to be demonstrated during the training, so there need to be some behavioral observation measures of these competencies. Therefore, training, competencies, evaluations, and talent management needs to synchronize. In the next three to five years, the Air Force's goal is to incorporate occupational competencies throughout the Air Force.

According to the Branch Chief of Foundational Competencies, the Air Force has created a competency model for the career fields that participate in competencies to align competencies to jobs. Subject matter experts develop the competency model in the career field with the assistance of the competency division. Development of the model is a component of integrating competencies into the workforce. Each competency model has the competency, sub-competency, description, and criteria for the associated behaviors, behaviors, and soft skills. Per the discussion with the Branch Chief of Occupational Competencies, when building a competency model, we have working groups that discuss the definition of mastery for a given competency. From there, rubrics are created to ensure definitions are clear. Training must ensure that the Airmen have the tools they need to be successful and to demonstrate mastery of required behaviors.

39

The Branch Chief of Occupational Competencies stated the Air Force is incorporating training and education into talent management and career progression by mandating foundational competencies integration into instruction at the accession training and education (e.g., Basic Military Training) and Professional Military Education levels. Supplementally, the Branch Chief of Occupational Competencies strongly communicated that occupational competency could never be mastered or attained in a formal training setting because much mastery comes from on-the-job experiences.

The self-assessment tool is the current method for identifying the competency proficiency of foundational competencies for Airmen, however there is no self-assessment tool for occupational competencies. Both competencies can be validated through technical training, and on-the-job task completion by trainers or supervisors as the Air Force has validated the competency model for each career field instead of validating individual Airmen's credentials. The ability to earn competency proficiency is critical to effective integration.

d. What is the Air Force's operational environment for talent management?

The Air Force has a talent marketplace that aligns talent with positions in addition to AFCFM. The talent marketplace is a subset of the overarching program, MyVector, which has more than just an assignment matching program. It is accessible through the Air Force portal and contains talent-related resources such as mentoring, development planning, financial readiness planning, air force competency assessments, and a developmental special experience catalog. The talent marketplace provides an interface for assignment teams, Airmen on the vulnerable-to-move list (VML), and organizations with vacancies. The Air Force has two officer move cycles a year: a winter cycle with about 400–600 movers and a summer cycle with 9–10k, which is the primary move window.

3. USAJOBS Interviews

a. How is USAJOBS integrating competencies?

The team interviewed USAJOBs Staffing Program Manager for Manpower Analytics (PMMA) and Human Resource Systems to dig deeper into USAJOBS'

methodology of competency integration. The PMMA stated that USAJOBS has various competency models that have been validated by the OPM and used in the surveys given to potential applicants. USAJOBS uses competencies to build specific job surveys for potential applicants to solicit interviews.

USAJOBs ensures that competencies undergo a stringent process before approval and usage during job matching. Before the competencies are put into the USAJOBS staffing talent management platform, they are validated by the functional community leaders of the specific job fields. The OPM conducts final validation. The DOD and OPM divided the competencies into five tiers outlined in Table 3.

Table 3.   USAJOBS Tier Group Definitions. Source: USAJOBS (2022).

Tier	Competency Type	Description
1	Core Competencies	Apply across DoD regardless of Component or occupation (e.g., DoD leadership competencies)
2	Primary Occupational Competencies	Apply across discrete occupational series/functions, (i.e., one or more functionally related occupations that share distinct, common technical qualifications, competencies, career paths, and progression patterns)
3	Sub-Occupational Specialty Competencies	Unique to sub-occupational specialty (e.g., set of geo-technical competencies within the civil engineering occupation)
4	Component-Unique Competencies	So unlike any of the other competencies identified that they exist at the Component level and are unique to the context or environment in which the work is performed.
5	Position-Specific Competencies	Required for a particular position within an occupation and are not addressed in the Tiers above (e.g., a specific civil engineer may require financial management competencies)

USAJOBs categorizes competencies by a multi-tier approach and by varying occupational libraries. These libraries house occupational-specific competencies. For

41

example, human resource specific jobs may require human resource systems proficiency, as indicated in Table 4.

Table 4.   USAJOBS (Human Resource Specialist) Competency Network.
Source: USAJOBS (2022).

0201 Competency Network

Number	Source	Competency	Competency No./Type		No. Items
12	DoD Tier 1	Accountability	1.0	General	25
		Computer Literacy	4.0	General	36
		Conflict Management	5.0	General	8
		Customer Service	6.0	General	18
		Developing Others	7.0	General	51
		Financial Management	10.0	General	19
		Influencing and Negotiating	15.0	General	9
		Oral Communication	20.0	General	57
		Partnering	21.0	General	42
		Problem Solving	24.0	General	18
		Strategic Thinking	28.0	General	16
		Written Communication	32.0	General	92
10	DoD Tier 2	Benefits and Work Life Programs	2.0	Technical	35
		Compensation Management	3.0	Technical	28
		Employee Relations	9.0	Technical	35
		Human Resources Information Systems Application	11.0	Technical	37

The PMMA further elaborates on the talent management process by detailing that from these competency specific libraries, USAJOBS generates a list of survey questions to ensure self-professed competencies are validated. The answers from potential hires determine eligibility for interviews. For example, how well the applicants answer the

42

questions about accountability on the survey will confirm competence in accountability, as shown in Table 5. The scores accumulated from the DOD Tier 1 and 2 questions provide an overall score. The higher the score, the more likely an applicant will be deemed qualified and provided an opportunity to interview for the position.

Table 5.   USAJOBS (Accountability Competency) Description and List.
Source: USAJOBS (2022).

Comp ID	Competency Title	Competency Description
1.0	Accountability (DoD Tier 1)	Manages programs and fosters an environment that administers all resources in a manner that instills public trust while accomplishing the mission. Monitors progress and evaluates outcomes to improve organizational efficiency and effectiveness. Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and ensures sound management processes and procedures are in place, ensuring that national interests are well served. Accepts responsibility for mistakes. Complies with established control systems and rules.

1.	Administer methods to implement a human resources program.
2.	Assess the effectiveness of a human resources recruitment process.
3.	Assess an organization's progress towards meeting a human resources program goals.
4.	Define a human resource program goals or long-range work plans to allocate resources.
5.	Develop long-range plans or operating schedules for a human resource program.
6.	Develop methods to increase the effectiveness of human resources recruitment process.
7.	Develop military personnel action procedures based on new regulations.
8.	Develop procedures to monitor the effectiveness of a human resources program.
9.	Develop strategies to align human resources policies with an organization's mission and goals.

In addition, within the competency libraries, the competencies are written to match all grade levels. For example, even though the competency might say develop strategies to align human resource policies with an organization's mission and goals. That competency will not be used for an applicant applying for a grade three to five level jobs as the candidate

43

will not have the job experience for that competency. Also, within the competency libraries, USAJOBS Staffing will be able to input the proper competencies used on the survey depending on the job and grade applicants are perusing.

b.   What is USAJOBS's optimum number of competencies?

Currently, USAJOBS has 34 competencies across five tiers and 880 items (questions for the survey) that can be used under the human resource specialist competency network. Each USAJOBS occupational competency network is set up like the human resource competency network model, so maintaining and updating competencies can be challenging.

The PMMA goes on to state that when USAJOBS access new applicants or recruits, the applicants will not have a lot of competencies, hindering the organization's ability to find qualified applicants. The OPM recommends their organizations use three to five and no more than six competencies. For personnel going for mid to senior-level grades within the DOD, more competencies will be added as the applicants will be more seasoned, and more competencies are needed for higher-level positions. Additionally, on the surveys, applicants can expect to answer two to eight questions per competency to validate their competency proficiency.

c.   What is USABJOBS doing to improve the integration of competencies?

While applicants must take a survey to validate if they have the proper competencies for a job, the applicants' competencies are still self-professed. The questions on the survey can be answered A. (Not very competent in the task) through E. (highly competent in the task). Due to how the survey is administered, applicants can put down E. for all answers and bolster them to the top of the applicant pool as they would have pretty much archived a perfect score. USAJOBS, under some questions, asks you to explain a situation you encountered to validate further that you had to perform the competency. The hiring authority also validates the likeliness of the applicant having the competencies by reviewing their resumes and looking for jobs that applicants would have performed competencies.

When asked if the current USAJOBS competency model and pre-screening surveys are effective in eliminating non-qualified applicants, the PMMA responded that the USAJOBS staffing process needs to change due to the inefficiencies within the use of competency libraries. The PMMA goes on to identify the issue with the current subjective approach, where at times when the best-qualified applicant gets passed over for an interview due to modesty in answering survey questions by not selecting E (the highest competency rating in the task). For example, if the job posting is for a human resource specialist and a former military human resource specialist with 15 years of experience applies, he or she could still get passed over for the job. Though, their resume and job experience would qualify them to do the job. Their modest A-C responses on the questionnaire assessment would hinder their ability to receive a high enough score to be referred as qualified and receive an interview.

The USAJOBS business practice is the top 5 applicants (typically scoring over 90 points) would be referred to the hiring manager for an interview. If only two applicants score above a 90%, then USAJOBS staffing would refer the subsequent three highest-scored applicants to be interviewed. The interviewer can be as simple as the hiring manager of the subject matter expert in that field. Some commands require a panel and a human resource staff member present during their interview process. During the interview, process commands have the flexibility to ask competency questions to validate the applicant's competency in specific areas.

d.   *What is USAJOBS operational environment for talent management?*

Additionally, to provide context to the USAJOBS talent strategy, the PMMA stated they are the only federal hiring system and maintain about four million valid resumes at any given time.

4.   LINKEDIN Interviews

a.   *How is LinkedIn integrating competencies?*

The qualitative team interviewed Space Force Government Account Director for LinkedIn. He stated LinkedIn uses skills in lieu of competencies to validate if candidates

are qualified for a job. LinkedIn currently uses skills to validate if a potential applicant has the necessary skill set to be successful in the job they are applying. Using LinkedIn learning, users can take courses to validate their skills or acquire new skills, so applicants are more competitive for their jobs. This feature also makes LinkedIn users more marketable as corporations scour LinkedIn to find new talent to bring to their organizations.

LinkedIn tracks the skills of the global workforce through LinkedIn users and corporations that subscribe to its services. The users can self-profess skills and have colleagues endorse that the potential candidate possesses the skill or talent. Next, users can take courses on skills that are made visible on the individual's profile once complete. The users can also take LinkedIn skill assessment exams to validate their knowledge of a particular skill. Some skills have multiple levels; you can take a skill assessment exam for software levels 101,102, and 103 courses.

LinkedIn's system can assist users with finding the right skillsets needed for the user's preferred jobs. For example, if the user wants to work in human resources, LinkedIn will give the user a notice that human resources hire typically have these associated skills. The user can then take the classes or skill assessment exams needed to be competitive for a human resource position.

b. *What is LinkedIn doing to improve the integration of competencies (skills)?*

Cooperation's use of LinkedIn software helps with job sources and other services. LinkedIn's artificial intelligence and machine learning algorithms will assist Cooperation's with announcing job positions. The artificial intelligence and machine learning tools will then help Cooperation's find applicants through user profiles on the LinkedIn platform. The more a user updates his/her profile and adds skills, the more cooperation the user will have for possible job interviews. Currently, about 30% of users on LinkedIn are active job seekers as stated by the Space Force Government Account Director for LinkedIn.

The applicants can apply to all jobs on LinkedIn regardless of if they are qualified for the position. LinkedIn does not have a scoring system for applicants applying to jobs, eliminating biases. The only problem with not having an order of merit list is the volume

46

of applicants could lengthen the amount of time it takes to find a qualified applicant when thousands of people apply for one position.

From a cooperation standpoint, LinkedIn artificial intelligence can assist Cooperation's with pinpointing specific applicants that meet a certain criterion. If a company is looking for an engineer that lives in Monterey, California the system can filter active users on LinkedIn to find applicants that meet the company's criteria. After LinkedIn artificial intelligence finds the applicant, the information will be passed to the company's recruiter and the recruiter will reach out to the user. A lot of the filters the company uses to find applicants are skills based.

LinkedIn believes in developing employees and training to enhance personal growth and provide competent employees that can enhance productivity. Their company allows employees to take as many skill courses and exams as necessary. The company also allows employees to conduct tours of duty at other companies and bring the knowledge and skills back to LinkedIn once their tour is done. LinkedIn believes in helping other cooperation's by sending employees to work for other companies and improving the company by using skills they learned at LinkedIn.

LinkedIn learning uses the leading experts in the industry to create skills test assessments. The courses that LinkedIn learning provides are taught by industry-leading professionals. Typically, LinkedIn brings in professionals that have written a book on the skills topic to teach the course or develop the skills exam. LinkedIn only has software experts in-house, so all other skills must be outsourced by the industry.

c. *What is LinkedIn's optimum number of competencies (skills)?*

When asked what the perfect number of skills a job should require the Space Force Government Account Director replied that it's company dependent. LinkedIn does not currently have a philosophy or strategy for what the perfect number of skills should be required for a job. This gives companies the flexibility to have one or two skills required to open their applicant base or fifteen skills required only having a few qualified applicants. This flexibility helps Cooperation's find the best fit for their organizations.

47

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IV. TALENT OPERATION MODEL DEVELOPMENT

A. METHODOLOGY

1. Background

The USSF has asked that the team assist in their effort to implement a scalable competency-driven system to manage officer talent during assignment placement movement cycles. Their aim is to integrate Guardian competencies in the assignment process to better place officers who possess the right skills and attributes with the right assignment. To acquire quantitative data to identify the impacts of competency integration into the talent management system, the quantitative team created a model that would randomly generate both Guardians and Space Force billets, decomposing each into a list of attributes. These attributes will plug into an algorithm that provides a score. Following scoring, the model will compete Guardians against several positions, like a real marketplace event. The team developed this model by creating code in Python (appendix A) that allows the simulation of a Guardian against multiple Space Force billets. This simulation approach within the team's research allowed for the control of variables to see the effects of competency integration on the system and their interaction with external variables.

2. How Does This Model Integrate Competencies?

To begin, the team's model composed of both the Guardian and the Space Force billet into several attributes. Qualitative analysis identified several external variables in the model, including education, experience, certifications, and skill identifiers. For competency integration, 13 total competencies were simulated based on 11 plus two competencies listed on the recently approved competency list from the Space Force ETMO (USSF S1 2022). The team included two additional competencies to the simulate should the Space Force identify additional competencies they would like to incorporate moving forward. These competencies were assigned at four varying levels (basic, intermediate, advanced, and expert). Initially, past performance was an external variable that was included; however, through the team's discussions with the Space Force, they indicated a

49

desire not to include past performance in the talent management system, which was confirmed through later interviews with the stakeholder directly.

Accordingly, the team removed performance as an external variable from the model as the Space Force does not plan to use past performance as a metric for future job placement. After removal, the Guardian and the Space Force Billets were decomposed of 17 different attributes that had to be randomized, as indicated in Figure 12.

Next the team desired to see the effects of weighting competency variables to values that would represent up to senior candidates to see how wide variation in assignment requirements would impact the individual Guardian. For years of experience, years of education, and certifications, 1 through 10 variations were used. For special experience identifiers, or SEIs, 1 through 5 were used. The model normalized competencies to 1 through 4 to account for the varying competency proficiency levels with 1 being basic, 2 being intermediate, 3 being advanced, and 4 being expert. The model assumes that all Guardians have at least basic level qualifications in all competencies.
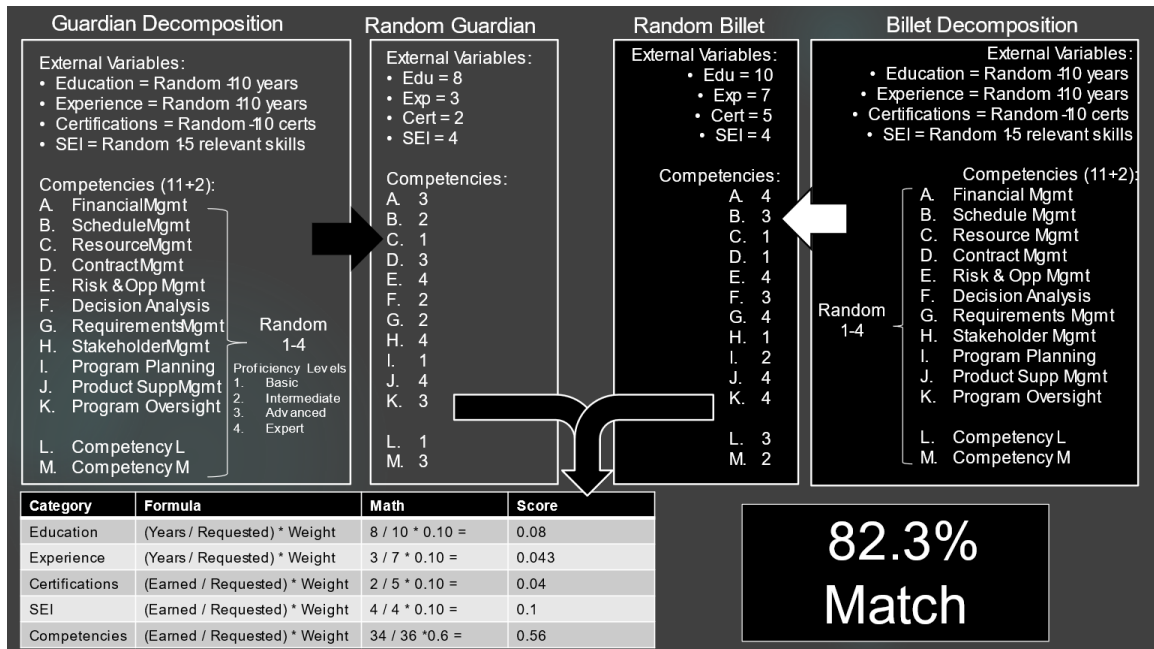

Figure 12.   USSF Scoring Model with Competency Integration

To execute the simulation, the team initially tested one randomly generated Guardian against 10 randomly generated billets and executed that baseline 10 times to test 10 random Guardians against 10 random billets (results found within the data analysis starting with Figure 14). The algorithm works the same from an inverse perspective since the decomposition is the same among billets and Guardians—the model could be viewed as a randomly generated billet against 10 randomly generated Guardians executed 10 times.
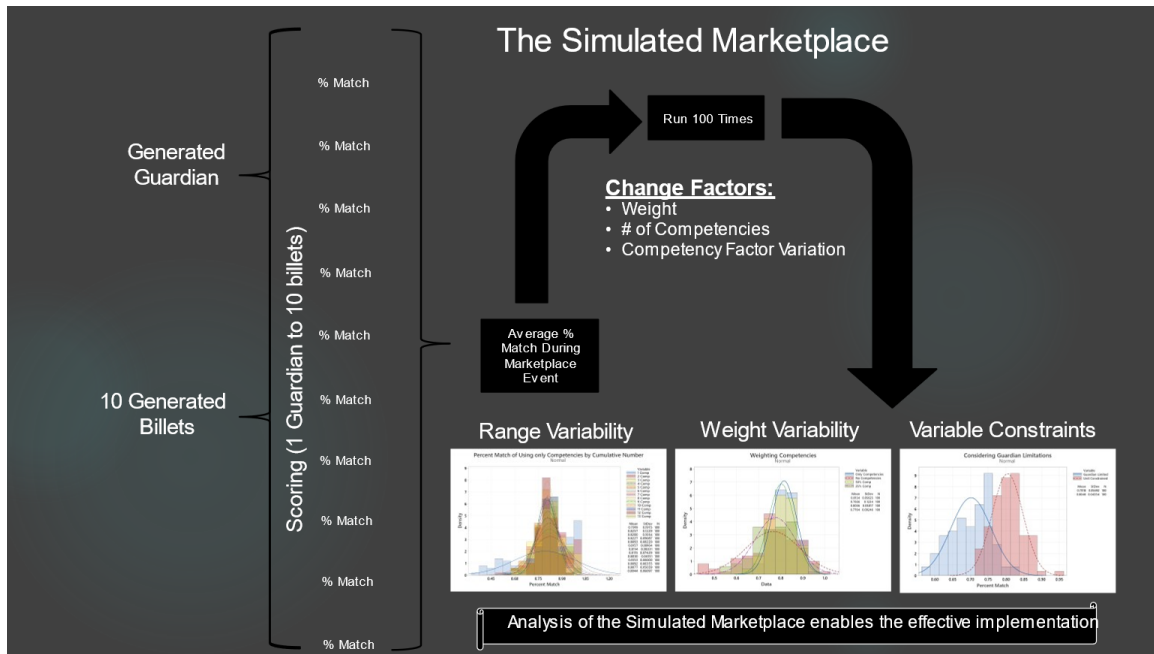

Figure 13.   Simulated Marketplace

The team then explored the variation in the weight given to the competency variables. For example, if competencies are given 75 percent of the weight, a Guardian will only be able to earn 25 points with external variable matches. The team conducted simulations with equal weight as the other variables and then weighted the competency variable at 0% (not including competencies at all in scoring), 10%, 25%, 50%, 75%, and 100% (only including competencies in scoring) to see the effect that applying weight to the competency variables would have on the overall results. Based on the randomly generated values for each simulated Guardian, the algorithm would then calculate the total score for each Guardian. The team was then able to take the total scores and display them on a

51

histogram in Minitab, which allowed for the visualization of the simulated results, such as the mean and distribution of the data. By plotting the data, the team could also see the type of curve it produced.

B.   DATA AND ANALYSIS

1.   Overall Results

The model revealed in Figure 14 displays similar distributions across the various weights assigned to the competency variable. Differences in the distributions were .07587 in standard deviation, revealing that weighting will impact scoring among Guardians and Guardian billets. The model also showed the widest distribution at 0% competency weight which indicates that external variables at 10 (and 5 for skill identifiers) held greater variability than the four levels of competencies. The initial 100 runs were informative however, the team spoke with USSF ETMO and decided variations were required in external factors, competency internal weighting, and number of competencies.
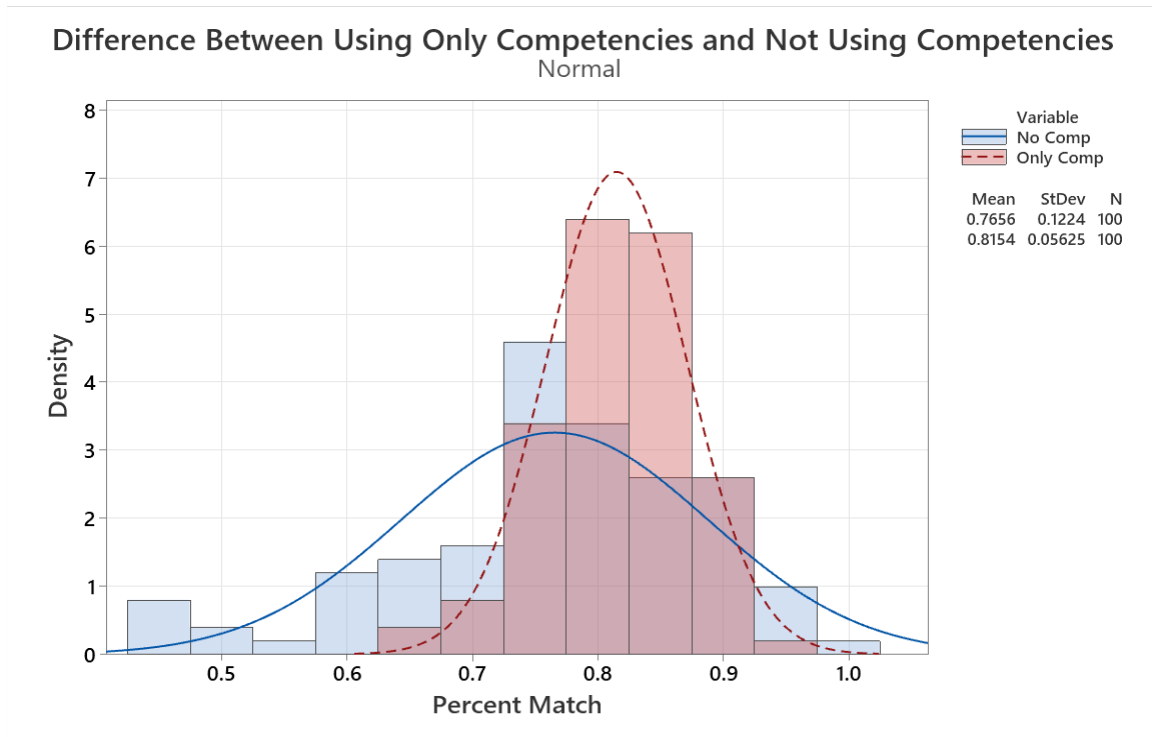

Figure 14.   Model Testing Variations of Competency Weighting

52

2.   Results from Lowering the Variability within External Factors

After testing the model with the external variables of education, experience, certifications, and SEIs normalized to 10, 10, 10, and 5, respectively, the weighting of these variables was lowered, and the results were compared to the results of the original weighting. The weights of education and experience were each lowered to 3, while the weights of the certifications and SEI variables were each lowered to 2. The team compared the results of the lowered weightings, as illustrated in Figure 15, and determined that the means from both iterations stayed relatively similar while an increased difference in standard deviations was observed. As the variability in the external factors was reduced, the standard deviation was also reduced. This means that the range of possible scores for Guardians increases when the variability in requirements decreases. This is seen in Figure 17 when external variables were held at 10, the range began at less than 50 percent compared to above 60 percent when variables were lowered.
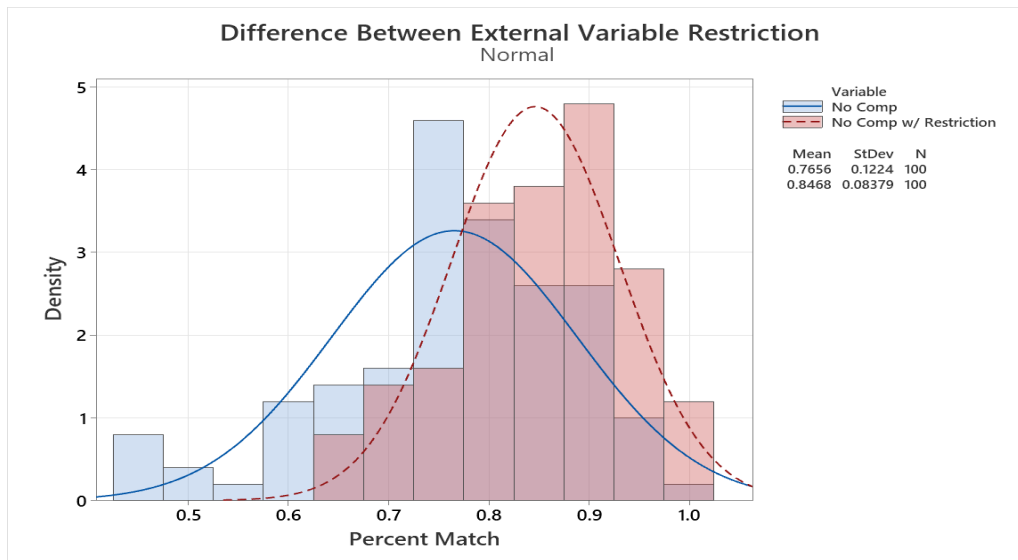

Figure 15.   Lowered Variability within External Factors

3.   Results from Categorizing and Weighting within Competencies

After testing external variability within education, experience, certifications, and SEIs, that left changing competency weights and the number of competencies included. To

see what would happen with competency weighting changed, the team cut the 13 competencies into three separate categories: high priority, medium priority, and low priority. Three total competencies were assigned to high priority, five to medium priority, and five to low priority. Randomization of Guardian and Guardian billet remained unchanged.

Figure 16 reveals little change between the mean when categorizing and prioritizing a set of competencies. However, the data does reveal a wider distribution of candidates when weighting and categorizing are implemented. This is due to the decreased number of chances that specific individuals will have to acquire the top three categories rather than the top 13 categories in an equally weighted model.
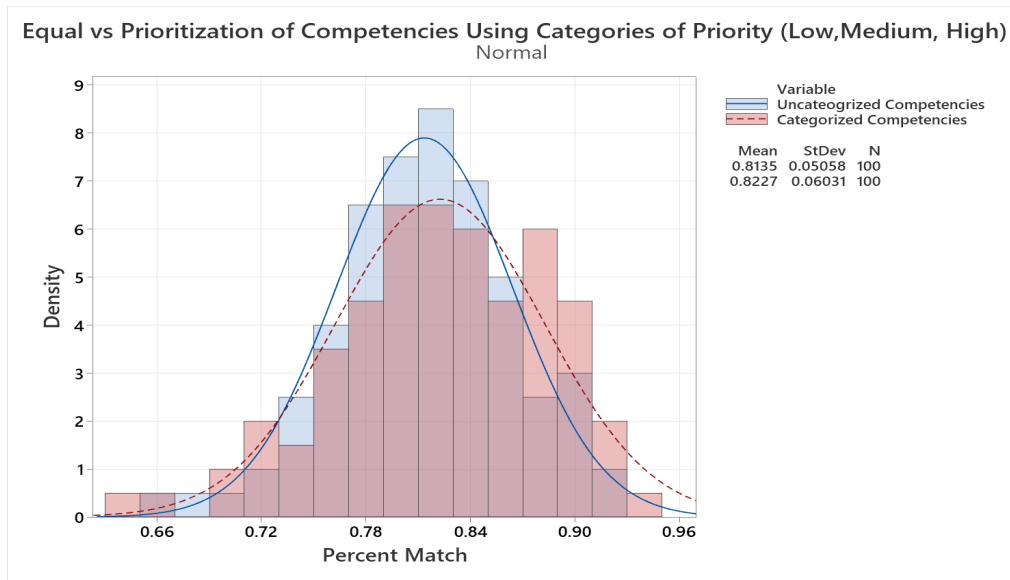
Figure 16.   Implementation of Unequal Competency Weighting

4.   Results of Elimination of Competencies

Following the change in competency weighting, the team returned weighting back to equal among all 13 competencies and then omitted all but one and ran the model. After receiving the results, the team continued running the model, adding competencies until they reached 13 total competencies. As pictured in Figure 19, the density of applicants increases as more competencies are added to the model. This is due to the same reasons

54

described for Figure 17, the peaks of the density functions increase with the cumulative number of competencies included. This is not to say that the average is always higher; however, the mean values changed by up to three percent from R51 to R54.
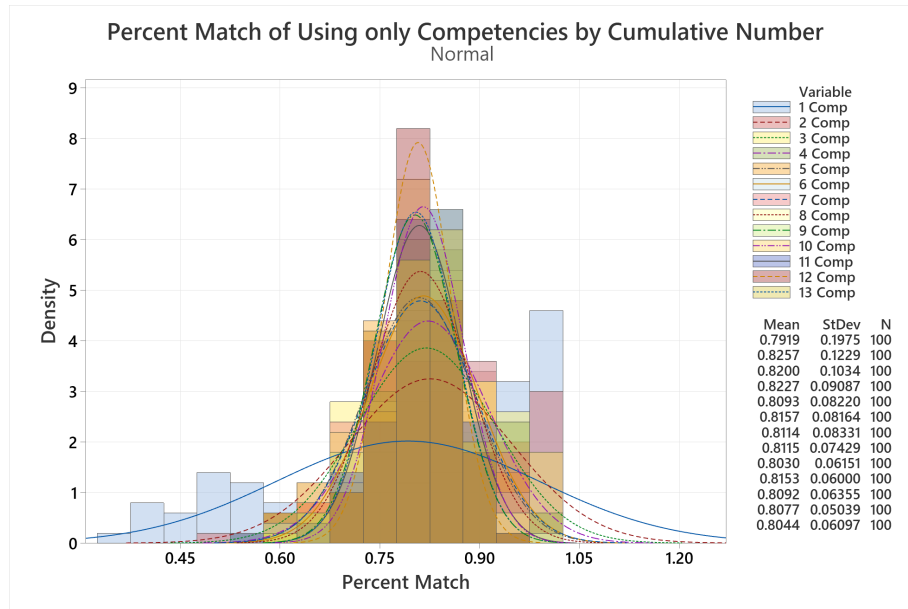
Figure 17.   Implementation of Competency Omission

a.   *What is the optimum number of competencies to support the model?*

When the team and USSF ETMO first began this journey, they were asking themselves if there was a secret formula for the best candidate. Several times during conversations the team mentioned the requisite number of competencies for highest impact per job.

Unfortunately, the answer is not as simple as a definitive formula, but rather on leadership within policy to determine the vision for job matching using competencies in terms of operationalizing the model. Previous figures assumed that Guardians had the ability to max out all competencies at expert level if they desired, and that all Guardian proponents were able to set maxed out competency requirements for billeting. This assumption fails to account for a system that places time constrains that might disallow Guardians from achieving expert ratings on 13 out of 13 established competencies.

55

Upon further consideration, the quantitative team ran a model (Figure 18. R-Limited - red dotted line) restricting the Guardian, only allowing the possible achievement of three expert, five advanced, and five intermediate, while providing the Guardian proponent the ability to establish policy to accept stricter competency requirements than the Guardian could achieve. Of course, with these imposed Guardian limitations and allowances for increased expectations from Guardian Proponents, the number of qualified Guardians significantly drops, and the curve widens revealing that over nine competencies, given operational limitations, may not in fact provide the Guardian more opportunity to score higher on a job match as indicated in earlier figures.

Next, the team established a model (Figure 18. R-Unit Limited - green dotted line) with strict guidance to Guardian occupational proponents, allowing Guardian billets to only require three competencies at expert, five competencies at up to advanced, and five competencies at up to intermediate. This simulated restriction, reveals that when Guardian occupational proponents take potential operational capability into account, Guardian Deltas and Guardians will receive genuine scores during a given marketplace based on realistic billet requirements.
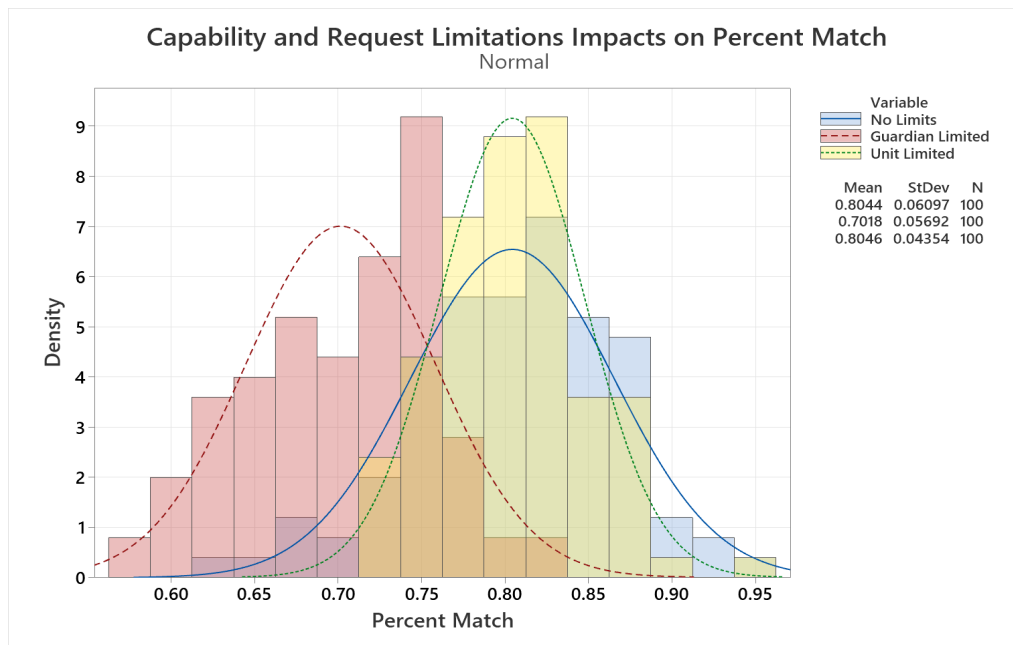

Figure 18.   Operationalizing Competencies Rather than Guessing Numbers

Although the addition of competencies within the job matching module will not guarantee performance from the Guardian, or satisfaction from the Guardian unit, the integration of competencies will complement meta-system elements such as job interviews and reviewing resumes providing a much clearer picture of job-fit for the Guardian unit. The Guardian, likewise, will see very clearly jobs for which they are fit as well as unfit.

b.   *How can this model be improved to better integrate competencies?*

The model assumes that each Guardian will have at least one SEI, one year of experience, one year of education, one certification, and at least basic level in all competencies when randomized.

The model does not compensate for the likelihood of Guardians attaining competencies based on their respective difficulty. Although this serves as a weakness for our analysis, accounting for difficulty levels of varying competencies would have to be studied at length since different Guardians will have varying levels of proficiency and talents in different areas. The team felt that complete randomization was appropriate given the model. Therefore, all competencies are viewed as equal.

The model uses a random function with its own constraints within Python on how it generates randomized numbers and should be considered before acting on data from the analysis results.

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V. APPLICATION OF FINDINGS AND ANALYSIS FOR USSF

A. INTRODUCTION

Throughout Chapters I through III the team has provided an in-depth investigation on how certain DOD components and companies have implemented competencies within their hiring processes in the past, and currently through research and interviews. In chapter four, the team provided analysis on the implementation of competencies within a randomized model to provide context on how competencies as a metric impact an organization's hiring process. These practices and simulations provide the team a way to articulate best practices, and recommendations for the Space Force as they continue to develop their interim, and future talent operations platform.

B. FINDINGS AND ANALYSIS

Table 6 represents Team Space Force's comparison of DOD Service Components and industry practices regarding the integration of competencies within a talent management platform. There is a significant range of variability within the application of competencies that have been tailored to respective desires of internal stakeholders within these organizations. Of course, it wouldn't be fair to rate these organizations for effectiveness as implementation is designed around specific mission sets and organizational environments. What the team can say, is that DOD components and industry alike share the desire to use competencies to influence and even drive decision making when it comes to the hiring process.

Table 6.   Comparison Chart

Competency Category	Army	Airforce	USAJOBS	LinkedIn
Platform	AIM 2.0	MyVector	USAJOBS	LinkedIn
Accountability	Self-Professed	Validated	Validated	Validated
Implementation	No	No	Yes	Yes
Terminology	KSBs	Competencies	Competencies	Skills
Number of Competencies	199	24	Based on Networks	Based on Companies

59

Competency Category	Army	Airforce	USAJOBS	LinkedIn
Validation Method	Interviews Only	Assessments Only	Surveys and Interviews	Skills Tests
Operational Environment	Mandated Move Cycle	Mandated Move Cycle	Continuous Hiring	Continuous Hiring

Figure 19 contains the important recommendations founded on the simulations within the quantitative section.

Implementation Policy

- Competency Range
  - Added Competencies allows Guardians *more opportunities* for higher percent, with diminishing returns after 9.

- Consideration for External Factors
  - Adding external factors within competencies increases variability overall.

- Considering Guardian Development Limitations
  - Providing guidance for proponent decisions on realistic competency requests **increases match clarity**

Figure 19.   Quantitative Outputs for Competency Integration within Policy

C.   RECOMMENDATIONS

1.   Competency Accountability AND Validation Method

The comparison chart above identified that all services have developed competencies or a competency-like system to integrate into its talent management processes. However, through qualitative research and interviews, the team confirmed that the services desire the effective integration of competencies but lack the implementation of accountable competencies by method of validation. The success of effective integration of competencies begins with the institution of specific, measurable, achievable, relevant, and time-based competencies that ideally can be validated through a cloud-based platform

60

interconnected through HR systems. These results are further evident through the team's quantitative analysis, in which the team was left wondering how scores would be calculated given the USSF's descriptions of their recently published competency framework. (e.g., For Intermediate Financial Management Competency—how will the USSF calculate "sustained application of competency over time" in "providing data for financial reports to support budget execution?" Will this be subjectively rated by a Guardian's supervisor? And if so, what policy are they supported with—best judgement?)

Unquantifiable processes and policies for competency implementation are the reason why DOD organizations are mired in methods that did not yield desired outcomes. Through these practices, the services are still integrating self-professed competencies, which have been identified as ineffective by the components themselves. The team identified that the Army has integrated these self-professed competencies in some manner but are not utilizing them due to ineffective enforcement. Further, while the USAF has the capability to match Airmen to positions through accountable competencies, it never implemented competencies within the hiring process on MyVector or through updated policies and directives.

The Space Force must ensure that competency definitions are easily quantifiable and then integrate competency validation through already existing systems such as the evaluation system (myEval), Personnel Records Display Application (PRDA), training pathways, and Career Acquisition Management Portal (CAMP) for DAWIA Certification.

2. Scoring Process within TOPS

Once the Space Force develops a way to validate and input competency assessments, the Space Force must determine and implement the competency framework within a software system—in terms of time and a scoring algorithm.

One way to accomplish this is by calculating external data such as experience, education, relevant SEI, and certification attainment with approved required competencies as separate categories for scoring. For positions with requirements that have high variation, this could result in significant swings in candidate scores (from 50% to 100% match).

61

Another way is to merge external data as a driver for competency attainment is modeled by the Air Force (e.g., to attain expert in a given competency, you must have seven years of experience). This merge will impact the operationalization of competencies as discussed in recommendation three, limiting the achievement of competencies based on time rather than skill (i.e., if 10 years is required to become expert in a certain competency, then candidates are limited at the next marketplace to only view those who have 10 years of experience—even if the 9-year candidate is a better fit).

Whatever the approach, the team recommends considering Guardian limitations based on a tour length of four years (average tour length for an officer) when deciding the algorithm. (e.g., If a Guardian is required to have 9 competencies for a certain job, but the competency decay rate is 2 every 4 years, with a competency gain rate of 3 every 4 years, the Guardian will only be able to gain and maintain 1 additional competency at expert every duty assignment for a 20 year career, meaning that even at 20 years no Guardian will be fully qualified for a position that calls for 5 expert competencies).

3.   Operationalize Competencies

Through the findings and analysis of the data from the simulated marketplace model, the quantitative team determined that the incorporation of competencies can provide a genuine comparison between a Guardian and a unit—given that Guardian proponent policies consider individual Guardian limitations in acquiring validated competencies.

The quantitative team attempted to answer if a single number of competencies would output the best fit for marketplace matches and the answer is—it depends. The team discovered through the application of external factors, the integration of competencies must account for a Guardian's capability in competency attainment and competency maintenance. The team recommends the Space Force establish policies that consider competency decay (rate at which competencies will fall off), time required for competency achievement (guardian competency achievement limitations), and billeted competency requirements (occupational proponent limitations) to define "genuine" fit.
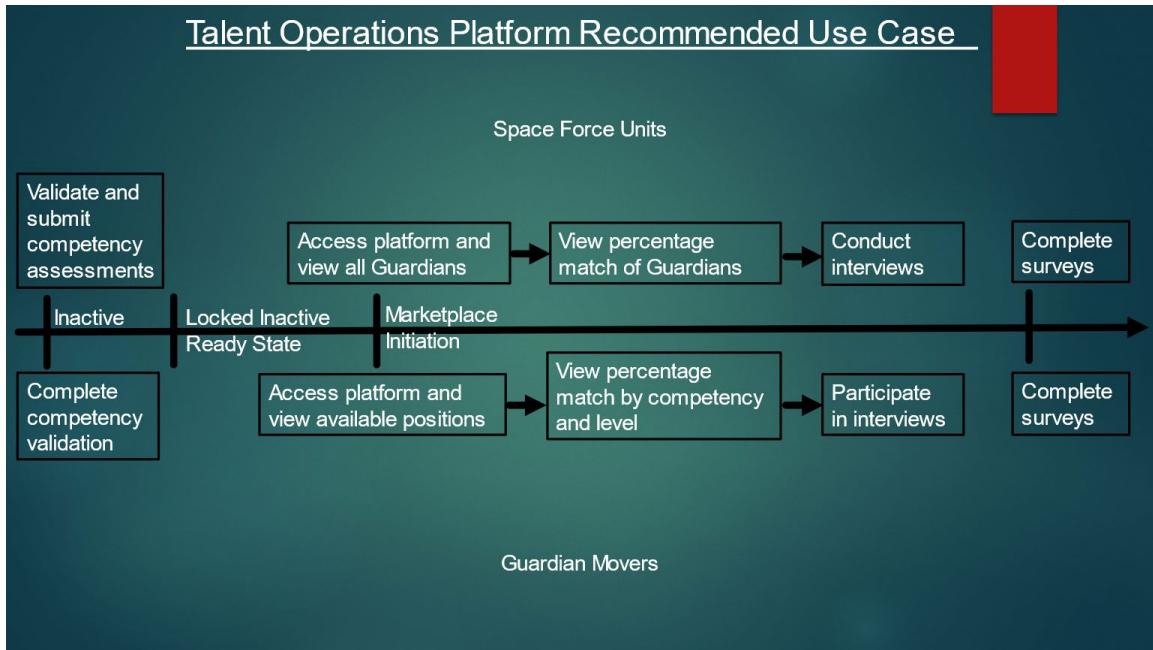
4. Recommended Use Case

Figure 20.   Recommended Use Case Diagram

With the supporting data and the recommendations mentioned in this chapter the following use case is how the team envisions the implementation of competencies within the talent operations platform (TOPS).

Inactive and Locked Inactive Ready Marketplace

Prior to (no later than 30 days) marketplace initiation, the USSF G1 office requires submission from all Space Force Deltas to validate and submit completed competency assessments through myVMPF. Additionally, all identified Guardian movers are provided a suspense for the completion of all competency tests to be recorded for the next movement cycle.

Simultaneously, also 30 days prior to marketplace initiation, AFSC proponent chiefs are required to review and confirm competency requirements per position validated by the AFSC proponent as a vacancy. Upon completion of these events, 30 days prior to the initiation of the marketplace, the software talent placement module will be placed into

63

a locked inactive ready state (LIRS) awaiting time-based initiation in accordance with the USSF G1 order. When the software is placed into its LIRS, the system will interface with all data entry programs containing validated competencies and execute the scoring algorithm, comparing Guardians to positions.

Marketplace Initiation

Upon initiation of the marketplace, the Guardian will access the talent operations platform to find the list of available positions with their associated match percentage, providing complete transparency of how qualified the respective candidate is for each position given their validated competencies. Likewise, the Guardian Deltas will be able to access all Guardians within the current marketplace who will have associated match percentages for how qualified they are for each position the Delta is offering.

The module will also have a feature that allows for articulation of this percentage by competency and level, providing further transparency to the Guardian—who may use these metrics as a review of themselves, and to the unit, who may use these metrics to mitigate or find acceptable risks among candidates.

The metrics provided by the competency scoring will also serve as a generator for conversations during the meta-hiring processes such as interviewing—allowing units to ask more precise questions and allowing Guardians to go into interviews well prepared.

Post Marketplace

Following completion of the marketplace, the hiring results will be logged by the system which will send surveys to the units and Guardians at years 2 and 4 (assuming a 4-year assignment). These surveys are mandated by the USSF G1 and tracked at the Delta level to ensure completion. This survey will ask questions to discover the effectiveness of competency matching by comparing qualitative surveys, and quantitative results from the marketplace. USSF proponent chiefs will be able to use this data to discover when or if changes are required for billets regarding competency requirements.

D.   FURTHER RESEARCH

This, in conjunction with Competencies, will also accomplish component digitization as called for in the Guardian Ideal by creating a vehicle for the integration of artificial intelligence and machine learning algorithms such as LinkedIn's Cooperation's to best support USSF's talent management vision. The team also recommends further research on how to best support the integration of competencies in a talent operations platform by researching the best practices on how to store and validate measurable competencies in a cloud database.

65

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APPENDIX A. SIMULATED MODEL SOURCE CODE

```
1.      import random
2.      from datetime import datetime
3.      random.seed(datetime.now())
4.      eduWeight=.25
5.      expWeight=.25
6.      #perfWeight=.06
7.      certWeight=.25
8.      asiWeight=.25
9.      compAWeight=.0
10.     compBWeight=.0
11.     compCWeight=.0
12.     compDWeight=.0
13.     compEWeight=.0
14.     compFWeight=.0
15.     compGWeight=.0
16.     compHWeight=.0
17.     compIWeight=.0
18.     compJWeight=.0
19.     compKWeight=.0
20.     compLWeight=.0
21.     compMWeight=.0
22.
23.     #Randomizing the Guardian
24.     class Guardian():
25.     def __init__(self):
26.       self.Education=(random.randint(1,10))
27.       self.Experience=(random.randint(1,10))
28.       #self.Performance=(random.randint(1,10))
29.       self.Certifications=(random.randint(1,10))
30.       self.ASI=(random.randint(1,5))
31.       self.CompetencyA=(random.randint(1,1)*(random.randint(1,4)))
32.       self.CompetencyB=(random.randint(1,1)*(random.randint(1,4)))
33.       self.CompetencyC=(random.randint(1,1)*(random.randint(1,4)))
34.       self.CompetencyD=(random.randint(1,1)*(random.randint(1,4)))
35.       self.CompetencyE=(random.randint(1,1)*(random.randint(1,4)))
36.       self.CompetencyF=(random.randint(1,1)*(random.randint(1,4)))
37.       self.CompetencyG=(random.randint(1,1)*(random.randint(1,4)))
38.       self.CompetencyH=(random.randint(1,1)*(random.randint(1,4)))
39.       self.CompetencyI=(random.randint(1,1)*(random.randint(1,4)))
40.       self.CompetencyJ=(random.randint(1,1)*(random.randint(1,4)))
41.       self.CompetencyK=(random.randint(1,1)*(random.randint(1,4)))
42.       self.CompetencyL=(random.randint(1,1)*(random.randint(1,4)))
```

```
43.        self.CompetencyM=(random.randint(1,1)*(random.randint(1,4)))
44.
45.     x=Guardian()
46.
47.     #Randomizing the Billet
48.     class Billet():
49.     def __init__(self):
50.       self.BEducation=(random.randint(1,10))
51.       self.BExperience=(random.randint(1,10))
52.       #self.BPerformance=(random.randint(1,10))
53.       self.BCertifications=(random.randint(1,10))
54.       self.BASI=(random.randint(1,5))
55.       self.BCompetencyA=(random.randint(1,1)*(random.randint(1,4)))
56.       self.BCompetencyB=(random.randint(1,1)*(random.randint(1,4)))
57.       self.BCompetencyC=(random.randint(1,1)*(random.randint(1,4)))
58.       self.BCompetencyD=(random.randint(1,1)*(random.randint(1,4)))
59.       self.BCompetencyE=(random.randint(1,1)*(random.randint(1,4)))
60.       self.BCompetencyF=(random.randint(1,1)*(random.randint(1,4)))
61.       self.BCompetencyG=(random.randint(1,1)*(random.randint(1,4)))
62.       self.BCompetencyH=(random.randint(1,1)*(random.randint(1,4)))
63.       self.BCompetencyI=(random.randint(1,1)*(random.randint(1,4)))
64.       self.BCompetencyJ=(random.randint(1,1)*(random.randint(1,4)))
65.       self.BCompetencyK=(random.randint(1,1)*(random.randint(1,4)))
66.       self.BCompetencyL=(random.randint(1,1)*(random.randint(1,4)))
67.       self.BCompetencyM=(random.randint(1,1)*(random.randint(1,4)))
68.
69.     z=Billet
70.
71.     class Scores():
72.     def __init__(self):
73.       self.eduScore=0
74.       self.expScore=0
75.       #self.perfScore=0
76.       self.certScore=0
77.       self.ASIScore=0
78.       self.compAScore=0
79.       self.compBScore=0
80.       self.compDScore=0
81.       self.compEScore=0
82.       self.compFScore=0
83.       self.compGScore=0
84.       self.compHScore=0
85.       self.compIScore=0
86.       self.compJScore=0
87.       self.compKScore=0
```

68

```python
88.        self.compLScore=0
89.        self.compMScore=0
90.        self.totalScore=0
91.    #Create 5 Guardians
92.    personA = Guardian()
93.
94.    #Create 5 Billets
95.    billetA = Billet()
96.
97.    def indScore(person,billet):
98.        dummy = Scores()
99.        dummy.eduScore=(person.Education/billet.BEducation)*eduWeight if
           person.Education < billet.BEducation else eduWeight
100.       dummy.expScore=(person.Experience/billet.BExperience)*expWeight if
           person.Experience < billet.BExperience else expWeight
101.       #dummy.perfScore=(person.Performance/billet.BPerformance)*perfWeight if
           person.Performance < billet.BPerformance else perfWeight
102.       dummy.certScore=(person.Certifications/billet.BCertifications)*certWeight if
           person.Certifications < billet.BCertifications else certWeight
103.       dummy.ASIScore=(person.ASI/billet.BASI)*asiWeight if person.ASI <
           billet.BASI else asiWeight
104.       dummy.compAScore=((person.CompetencyA/billet.BCompetencyA)*compA
           Weight) if person.CompetencyA < billet.BCompetencyA else compAWeight
105.       dummy.compBScore=(person.CompetencyB/billet.BCompetencyB)*compB
           Weight if person.CompetencyB < billet.BCompetencyB else compBWeight
106.       dummy.compCScore=(person.CompetencyC/billet.BCompetencyC)*compC
           Weight if person.CompetencyC < billet.BCompetencyC else compCWeight
107.       dummy.compDScore=(person.CompetencyD/billet.BCompetencyD)*compD
           Weight if person.CompetencyD < billet.BCompetencyD else compDWeight
108.       dummy.compEScore=(person.CompetencyE/billet.BCompetencyE)*compEW
           eight if person.CompetencyE < billet.BCompetencyE else compEWeight
109.       dummy.compFScore=(person.CompetencyF/billet.BCompetencyF)*compFW
           eight if person.CompetencyF < billet.BCompetencyF else compFWeight
110.       dummy.compGScore=(person.CompetencyG/billet.BCompetencyG)*compG
           Weight if person.CompetencyG < billet.BCompetencyG else compGWeight
111.       dummy.compHScore=(person.CompetencyH/billet.BCompetencyH)*compH
           Weight if person.CompetencyH < billet.BCompetencyH else compHWeight
112.       dummy.compIScore=(person.CompetencyI/billet.BCompetencyI)*compIWei
           ght if person.CompetencyI < billet.BCompetencyI else compIWeight
113.       dummy.compJScore=(person.CompetencyJ/billet.BCompetencyJ)*compJWei
           ght if person.CompetencyJ < billet.BCompetencyJ else compJWeight
114.       dummy.compKScore=(person.CompetencyK/billet.BCompetencyK)*compK
           Weight if person.CompetencyK < billet.BCompetencyK else compKWeight
           dummy.compLScore=(person.CompetencyL/billet.BCompetencyL)*compLW
           eight if person.CompetencyL < billet.BCompetencyL else compLWeight
```

69

```
115.    dummy.compMScore=(person.CompetencyM/billet.BCompetencyM)*comp
        MWeight if person.CompetencyM < billet.BCompetencyM else
        compMWeight
116.    dummy.totalScore=(dummy.eduScore + dummy.expScore +
        dummy.certScore + dummy.ASIScore + dummy.compAScore +
        dummy.compBScore \
117.        + dummy.compCScore + dummy.compDScore + dummy.compEScore +
        dummy.compFScore + dummy.compGScore + dummy.compHScore \
118.        + dummy.compIScore + dummy.compJScore + dummy.compKScore +
        dummy.compLScore + dummy.compMScore)
119.    return dummy
120.    #dummy.perfScore + < in case we need to add it back to total score calc
121.    avgArray = []
122.
123.    for i in range(100):
124.    person = Guardian()
125.    scoreA = indScore(person,Billet())
126.    scoreB = indScore(person,Billet())
127.    scoreC = indScore(person,Billet())
128.    scoreD = indScore(person,Billet())
129.    scoreE = indScore(person,Billet())
130.    scoreF = indScore(person,Billet())
131.    scoreG = indScore(person,Billet())
132.    scoreH = indScore(person,Billet())
133.    scoreI = indScore(person,Billet())
134.    scoreJ = indScore(person,Billet())
135.
136.    avgArray.append((scoreA.totalScore + scoreB.totalScore + scoreC.totalScore
        + scoreD.totalScore + scoreE.totalScore
137.        + scoreF.totalScore + scoreG.totalScore + scoreH.totalScore +
        scoreI.totalScore + scoreJ.totalScore)/10)
138.    i=0
139.    for x in avgArray:
140.    print(x)
141.    i=i+1
142.
143.    #print (Scores.certScore)
144.    #print(i) <provides count of total runs
```

(Waldon and Ford, 2022)

APPENDIX B. INTERVIEW QUESTIONS

General Questions for all Organizations:

Questions 1: Does your organization use competencies to manage talent?

Question 1a: How does your organization measure the benefit of competencies? Is it beneficial?

Question 2: What is the perfect number of competencies required vs desired?

Question 4: What tools does your organization currently use to determine or verify the competencies possessed by applicants.

Question 5: How does your command assess the efficacy of that competency integration?

Question 6: What tools does your organization use to align competencies to jobs?

Question 7: How does your organization incorporate training and education into talent management and career progression?

Question 8: How does your organizations' marketplace work?

Question 9: How many average movers does your organization have per movement cycles?

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