The Urgency of Robust, Automated Manpower Requirements Determination Programs in a Climate of Austerity

Interactive Technologies Group
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Introduction

As the federal government continues to manage the process of reorganizing following a decade of war and the emergence of a revised set of priorities and financial constraints, the need for a sound methodology to determine the demand signal for human capital has never been more critical. Changes in healthcare and new technological threats only accentuates this need and exacerbates the challenge of ensuring that agencies are staffed with the right personnel in the right job at the right time. And as the "Baby Boomer" generation reaches retirement age, the loss of specific expertise adds an additional dimension to the aforementioned challenges. Within the Department of Defense alone, current estimates show that 50% of SES positions (over 750 personnel) will be eligible for retirement during the next 2-3 years.

In the past, federal agencies have made wide use of a variety of Manpower Requirements Determination (MRD) programs to analyze human capital demand based on measured workload data collected using a variety of tools including operational audit, engineered time studies and work sampling. While elements of these programs remain, in many cases efforts focus on application of staffing equations— staffing models and standards developed more than a decade ago. While some of these standards may yet hold true, in many cases the workload measured at that time has radically shifted due to process automation, policy changes and shifts in mission and focus.

Why MRD?

The decline in use of work measurement as a basis for manpower decisions over the past decade, in many cases, coincided with the advent of large scale enterprise accounting systems, Enterprise Resource Planning (ERP) systems and wider use of data warehousing. The broadening availability of these technologies and the proliferation of data mining tools made available highly-granular and easily-aggregated accounting data. Already logically grouped by program, these data allow analysts to perform analysis quickly and without the need to travel to multiple work locations to perform time-consuming studies. And because the results of the data are already aligned with the financial structure, the results are easily applied in the budget process.

The Pitfalls of the Accounting-based Approach

The downside of any accounting-based approach (as opposed to an engineering-based approach) is that the results always reflect what *did* take place-- not what *should* take place. Models and plans incorporating accounting data exclusive of functional analysis also incorporate process and

configuration inefficiencies and can overlook competencies gaps contributing to diminished organizational effectiveness. Additionally, organizations rarely capture overtime work performed by exempt personnel and accounting models cannot incorporate unperformed/underperformed required work that is delayed or relegated to backlog.

Challenges Associated with Traditional MRD

Sustaining a robust MRD program is not without challenges. Years ago, analysts were required to spend weeks or months of time working onsite with organizations at multiple locations to gather workload data. Beyond the significant financial impact of travel expenditures for mobile manpower teams, the personal strain of the travel itself resulted in elevated turnover rates for analysts in the manpower career field. In many cases, this resulted in the use of work center sampling wherein a representative sample of work centers would send representatives to workshops to participate in measurement activities with the results applied across the enterprise.

While work center sampling improved the efficiency of the data collection activity and heightened the accuracy of the resulting analysis, it was still an imperfect process. In some cases, complications arose because of unique additive requirements at locations not identified during sample selection. The omission of these additive requirements made some managers suspicious of the process and made implementation of developed standards more difficult. Data management also posed a challenge. The lack of an enterprise data repository forced analysts to employ spreadsheets as the primary too for collection. As teams of analysts often worked simultaneously on the same documents, version control and format consistency became difficult to maintain.

Automated MRD

In 2006, a major command within the Department of Defense sought to establish a series of staffing models to govern manpower requirements for the Environmental functional area. Environmental programs are often by their nature difficult to measure and the degree of complexity associated with engineering a standard with application at more than seventy locations CONUS and OCONUS was daunting. The approach selected was to examine sixteen representative locations in a traditional MRD approach. One or two Subject Matter Experts (SMEs) from each location would travel to Washington, DC to participate in a series of workshops as representatives of their location. As the workshop date approached, funding for travel in support of the effort was removed and would have made the effort impossible had it not been for the decision to incorporate Automated MRD.

Automated MRD leverages technology to extend the reach of the analyst by providing a virtual environment for collaboration and data collection. With Automated MRD, there is virtually no travel required to complete studies. Additionally, web-based, enterprise data repositories allow users to input data simultaneously and provide the facilitating manpower analyst with visibility into inputted values in real time. Equally important, a web-based deployment strategy enhances the quality of the data provided by widening the circle of participants in the data collection effort. With Automated MRD, Subject

Matter Experts at multiple levels within the organization can participate in studies from their location in their area of expertise and then return to work, minimizing interruption of their workflow! Finally, because participants at all levels of the organization are allowed to provide data and participate, the change management exercise is simplified because all stakeholders have had a voice in the process.

Returning to the aforementioned Environmental function, the successful implementation of Automated MRD-- completed in a fraction of the time of a traditional MRD exercise-- empowered the organization to expand the scope of the study. The leadership made the decision to engage **over sixty locations around the world with over three hundred participants-- a ten-fold increase from the previous goal!** This expanded scope provided the command with the opportunity to examine data from units operating in countries where special environmental regulations dictate additional processes and activities. Without the additional reach of Automated MRD, the omission of these activities would have invalidated the results of the study.

The information necessary to optimize the workforce exists with the organization. Automated MRD provides the framework to unleash that information and to drive the necessary changes required to meet the new challenges of austere times.

Interactive Technologies Group (ITG)

ITG implements a six-phased, systematic methodology used to document the requirements of an organization and its workforce. By documenting this information, the leadership is able to clearly see how the work being delivered is linked to the skills and/or competencies of the workforce, how much it costs to perform all tasks in support of the organization's mission and properly plan its future state workforce.

ITG's J-Accomplish™ is a flexible suite of web-based tools designed to assist the complex organization in accomplishing its mission through enhanced collaboration and communication. J-Accomplish™ provides uniform system architecture and user interface designed to allow interoperability between applications and their respective data and makes the overall user experience more productive and efficient. Built-in web services capabilities further enhance communication and collaboration between J-Accomplish™ and the rest of the organization's information management infrastructure.

Combining the proven effectiveness of ITG methodology with the state-of-the-art technology in J-Accomplish™, ITG provides organizations with a framework to evaluate comprehensive workforce needs. Each phase of analysis is designed to specifically document how the client organizations is structured, what delivery requirements each organization component is responsible for, what work is performed by each team member, and how that work is completed. ITG believes it is essential to work with client-identified internal Subject Matter Experts (SMEs) to measure the work being executed to ensure there is a thorough and complete understanding of the obligations the client's workforce is responsible for accomplishing.

Leveraging existing measurements of work or transactional data, bench-mark data, and other task completion based information, ITG develops staffing estimates to execute work and develops aggregate views of future state manpower requirements across the organization.

ITG's methodology is a six-phased, systematic approach used to document the requirements of an organization and its workforce. This methodology and J-Accomplish™ work together to help the organization answer the following four critical questions:

1. What do we produce?
2. How do we produce it?
3. How much do we produce?
4. Who within our organizations is producing it?

Each of the six phases moves the organization closer to understanding the answer to these four questions:

Beginning with preliminary Study Planning, ITG considers the operating environment of the organization under study and establishes the relevant stakeholders and channels to which and through which communication of study activities should flow. In the second phase, Organizational Analysis, our approach examines and captures the existing or intended mission of the organization as well as the major work products to be produced or provided by the organization ("What do we produce?). The third phase, Functional Analysis, incorporates the procedures catalogued establishing the relationship of each process to the mission of the organization and detailing the process through which each individual output is produced ("How do we produce it?).

In the fourth phase, Work Measurement, ITG will work with identified SMEs to measure each process scientifically and incorporate project operating capacities ("How much do we produce?) and projected skill compositions and available human capital resources ("Who within our organizations is producing it?).

Work measurement may take multiple forms including a workshop-based approach implementing a ***Modified Delphi*** technique for the solicitation of cycle time estimates from SMEs or other conventional time study techniques as determined appropriate for the work under study.

The collected data will then be analyzed and published in the fifth and sixth phases, Analysis and Reporting, respectively. The outcome of the Analysis phase is the determination of an optimized, cost-effective staffing model for the organizational element or elements in aggregate. The objective of the Reporting phase is to communicate the results of that analysis, including an explanation of the staffing model and instruction on the application of that staffing model with consideration to changes in the planned operating environment of the future.

J-Accomplish™ Overview

In order to answer those four questions, J-Accomplish™ has been constructed in a modular fashion wherein each module or "Zone" is designed to provide access to logically grouped system functionality. The data within each Zone are interchangeable and configurable to allow multiple types of user interaction based on the desired level of user access.

What do we produce?

The "My Organization" zone of J-Accomplish™ provides robust tools for capture of complex work breakdown structures. Using a Hierarchy of Work Units (HWU) to define the organization's processes from the top down, J-Accomplish™ ensures that all activities support the organization's mission. J-Accomplish™ also captures qualitative dimensions of work such as performance standards, Critical to Quality metrics and pre-defined tolerance levels.

How do we produce it?

Beyond capturing the procedural requirements for an organization's goods and services, J-Accomplish™ provides tools in the "Measurement" zone to evaluate the Human Capital components necessary to complete the mission. Using competency and proficiency data to provide a linkage from the organization's Processes to its defined Skills and Job Titles, J-Accomplish™ provides tools to evaluate the effective resources employed to execute the mission.

How much do we produce?

The basic formula for calculation of workload is fairly simple: activity frequency multiplied by cycle time yields total man-hours. But, many organizations lack sufficient historical data to evaluate ongoing production requirements. To address this shortcoming the "Measurement" zone of J-Accomplish™ provides the framework for Virtual Workshops wherein team members operating from locations worldwide can simultaneously and collaboratively assemble existing data or leverage their expertise to build accurate projections.

In many cases, organizations may have no historical data from which to obtain work output measurement. Where this is the case, the "Measurement" zone of J-Accomplish™ is equipped with tools to allow for real-time collection of work output. By distributing the labor associated with collection of work output measurement, J-Accomplish™ provides the analyst with highly accurate measurement with minimal impact to day-to-day work flow. Throughout the data collection phase, analysts and stakeholders maintain visibility into work measurement and near real-time analysis of total manpower requirements.

Who within our organizations is producing it?

The "Workforce Planning" zone of J-Accomplish™ captures the organization's managerial and financial structure and employs Point-In-Time Manning to

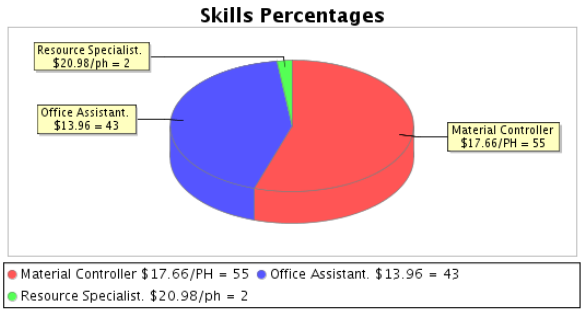
provide real-time visibility into current job positions and managerial hierarchies. With support for multiple fiscal years, J-Accomplish™ also captures the future state organization and identifies personnel shortfalls in critical areas for present planning.

J-Accomplish™ enables specification of which functional tasks and outputs are produced within the identified structure and which personnel are filling the positions. The TimeTaskr™ plug-in for J-Accomplish™ extends the application's measurement capabilities. Using the definitions from baseline measurement, J-Accomplish™ provides a mechanism for measuring ongoing output production and time spend on each associated process task. This module also provides management with visibility into opportunities for operational improvement.

Technical Innovation

WARPfactors™

WARPfactors™ (Workload Accelerated Requirements Processing) combines the J-Accomplish Virtual Workshop approach and skills analysis tools with robust correlation and regression calculation to streamline the requirements standards development process. Where historical standards development emphasized correlation of total work center workload to one or more factors, WARPfactors™ provides the analyst with the ability to evaluate workload correlated to specific Work Outputs.



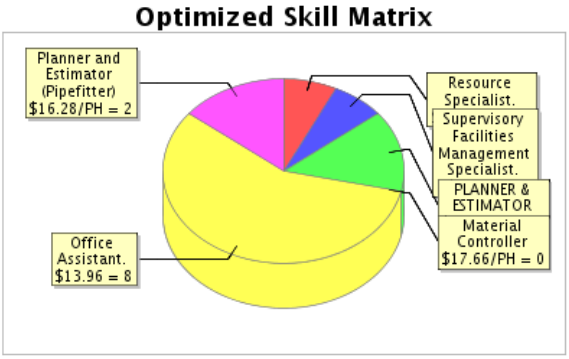
Combining this enhanced level of granularity with data relating Skills with Work Output production, J-Accomplish™ empowers organizations to pinpoint specific manpower position requirements under multiple environmental scenarios to ensure adequate coverage for the function across multiple locations.

Beyond simplified linear regression models, WARPfactors™ simultaneously tests for correlation using linear, parabolic, ratio curve and power curve algorithms. By allowing for various relationships between environmental factors and workload, J-Accomplish increases the accuracy of manpower requirements.

Workload Optimization

As a compliment to the J-Accomplish work definitions and workload measurement tools, the J-Accomplish Optimization™ functionality provides the user with tools to perform optimization analysis on data captured in the "Measurement" zone to arrive at a more efficient organization. Optimization is made possible by ability of J-Accomplish™ to map each Process to not only those Skills currently performing the work at a particular Cost Center, but to

all Skills which could potentially perform the work across all Locations where the Work Center's activities are performed.



Coupling these data with Workload Measurement data captured as part of baseline measurement, the J-Accomplish™ Optimization™ functionality implements Mixed Integer Programming techniques to enable the user to derive the most cost-effective combination of Skills to accomplish the Workload at individual Work Center Locations.

J-Accomplish™ also takes into consideration those skills which require a whole FTE manpower requirement and those which are either part-time or contractible requirements. This same analysis allows the user to simulate Work Center consolidation scenarios wherein the workload from multiple Locations is combined into a central Location. The resulting reports provide the user with the ability to compare past, existing and theoretical organizational structures based on past or planned operating conditions.

Scaling for the Enterprise

Methodology

The ITG Methodology has been implemented to measure large organizations in their entirety as well as enterprise functions that span multiple organizations. ITG's preferred approach to enterprise-wide implementation begins with a pilot project organized to demonstrate the capability of the techniques and technology in an Integrated Product Team (IPT) configuration. Every organization is different and this pilot phase allows ITG to combine industry best practices and analyst experience with the expertise within the organization to solidify a unified implementation strategy that best meets the specific needs of the organization.

As the team enters the latter portion of the Analysis phase of the methodology, ITG and client project leaders meet to initiate the next round of the Project Planning. This typically involves the identification of three tiers of organizations or functions that will be incorporated into the program and studied. These three tiers are typically categorized according to study priority:

1. Priority 1- organizations/functions that are known to be planning significant, near-term budget changes including additions or reductions in manpower
2. Priority 2- organizations/functions that provide support to or are the direct consumers of products and services produced by organizations/functions identified in Priority 1.
3. Priority 3- organizations/functions that are seen as relatively stable where the majority of manpower funding is based on directed

requirements as opposed to variable manpower based on changes in the enterprise operating environment.

Following this determination, ITG analysts work with client leadership to recommend a schedule of activities based on a combination of budget, mission priority and other factors.

Technology

J-Accomplish™ is an n-tiered application designed for numerous potential configurations ranging from a single server to a grouping of servers designed to balance system activities. For example, a customer may decide to implement J-Accomplish™ in a single-server environment or a multiple-server environment in a load-balancing configuration with each server group handling a specific functional area.

List of Current and Former ITG Manpower Clients

US Army Forces Command (FORSCOM)
US Army Installation Management Command (IMCOM)
US Army Military Surface Deployment and Distribution Command (MSDDC)
US Army Medical Command (MEDCOM)
US Army Corps of Engineers (USACE)
Defense Contract Management Agency (DCMA)
Defense Acquisition University
US Coast Guard, CG-1
National Labor Relations Board (NLRB)
US Navy, Navy Manpower Analysis Center (NAVMAC)

Notes

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