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MONTEREY, CALIFORNIA

JOINT APPLIED PROJECT REPORT

MODERNIZATION OF ACQUISITION PLANNING AND COMMUNICATION

June 2021

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MODERNIZATION OF ACQUISITION PLANNING AND COMMUNICATION

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Submitted in partial fulfillment of the
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from the

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MODERNIZATION OF ACQUISITION PLANNING AND COMMUNICATION

ABSTRACT

This Joint Applied Project analyzes the current and near propositions for automated tracking systems to modernize acquisition planning. The text provides recommendations on a standardized, seamless, end-to-end (E2E), shared process and data environment across a multitude of enterprises and communities of interest.

Research enhances available modules and decision aid tools to facilitate knowledge discovery and management for stakeholders in requirements generation, acquisition management and resource planning. The main goal is to educate stakeholders on resources available on a shared virtual working environment and to facilitate a common picture of individual platform mission capabilities and identified shortfalls. This knowledge enables decision makers to select the most capable platform to fill mission need and identifies capability gaps that steer planning and execution.

The data collection involves examining recent articles, automated system user guides, command metrics, and research data on new and existing automated tracking tools. Some of the text is inherently technical, discussing navigational tools and corresponding acquisition planning to the utility of each system. The text provides recommendations on automated workflow tracking implementation along with a basic checklist for the reader to use to ascertain what functionalities are best suited for tailored specific command mission.

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LIST OF ACRONYMS AND ABBREVIATIONS

AoA	Analysis of Alternatives
ADA	Anti-deficiency Act
ATO	Authority to Operate
AO	Authorizing Official
ADVANA	Advanced Analytics
BAH	Booz Allen Hamilton
BES	Budget Estimation Submission
BPA	Blanket Purchase Agreement
BSO	Budget Submitting Office
C2C24	Compile to Combat in 24 Hours
C5ISR	Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance and Reconnaissance
C&A	Certification and Accreditation
CAMO	Contracts and Acquisition Management Office
CAC	Common Access Card
CAO	Competency Aligned Organization
CCA	Clinger Cohen Act
CEPS	Communications Equipment Population Summary
CMAT	Contract Management and Analysis Tool
COCOM	Combatant Commander
CONOPS	Concept of Operations
COR	Contracting Officer's Representative
CSM	Contract Services Manager
CISO	Chief Information Security Officer
COTS	Commercial Off-the-Shelf (COTS)
CRB	Contract Review Board
CRM	Customer Relationship Management
CWS	Contract Writing System
DAA	Designated Approving Authority
DADMS	Database Management System

DISA	Defense Information Systems Agency
DEPS	DOD Enterprise Portal Service
DITPR	Department of Defense Information Technology Portfolio
DRPM	Direct Reporting Program Managers
DPG	Defense Planning Guidance
DTIC	Defense Technical Information Center
E2E	End to End
eMASS	Information Assurance Manager
ePS	electronic Procurement System
ERP	Enterprise Resource Planning
ESI	Enterprise Software Initiative
FM&C	Financial Management & Comptroller
FP	Function Point
FTE	Full-Time Effort/Equivalent
FURS	Fleet Unfunded Requirements System
FY	Fiscal Year
FYDP	Future Year Defense Program
FCMO	Force Contract Management Office
GT&C	General Terms and Conditions
HPC	Human Performance Center
IAC	Information Analysis Center
IAM	Information Assurance Manager
IDS	Intrusion Detection System
IFPUG	International Function Point Group
IGCE	Independent Government Cost Estimate
IGF	Inherently Governmental Function
IPT	Integrated Product Team
MAC	Multiple Award Contract
MAISP	Major Automated Information System Programs
MDAP	Major Defense Acquisition Program
MIS	Management information System
MOCAS	Mechanization of Contract Administration Services

NAVSUP FLC	Naval Supply Systems Command Fleet Logistics Center
NDS	National Defense Strategy
NECC	Naval Expeditionary Combat Command
NIWC	Naval Information Warfare Command
NMCI	Naval Marine Corps Intranet
OASIS	Operations and Systems Integration
ODC	Other Direct Cost
OSD	Office of the Secretary of Defense
PALT	Procurement Action Lead Time
PA	Procurement Analyst
PIEE	Procurement Integrated Enterprise Environment
PPBE	Planning, Programming, Budgeting, and Execution
PWS	Performance Work Statement
PEO	Program Executive Office
PM	Program Manager
RD&A	Research Development and Acquisition
RMF	Risk Management Framework
ROM	Rough Order of Magnitude
SAAR	System Authorization Access Request
SABRS	Standard Accounting, Budgeting, and Reporting System
SAPR	Sexual Assault Prevention and Response
SCR	System Change Request
SOP	Standard Operating Procedure
SRRB	Service Requirements Review Board SRRB
SMARTS	SABRS Management Analytical Retrieval Tools System
STARS	Standard Accounting and Reporting System
TCD	Target Completion Date
TYCOM	Type Commander
UI	User Interface
UIC	Unit Identification Code
VRAM	Vulnerability Remediation Asset Manager
XML	eXtensible Markup Language

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EXECUTIVE SUMMARY

The purpose of this text is to provide a comprehensive desk guide of automated tools and web-based portals for workflow tracking. The desk guide will provide a comprehensive list of available platforms to enhance efficiency and efficacy with regard to acquisition planning. Furthermore, the guide discusses primarily services acquisitions, establishing a baseline for mission need and communicating this plan to respective stakeholders. The intent is for the reader to understand those platforms readily accessible in the Navy, along with other commercial off-the-shelf offerings, to ascertain the best solution for an electronic tracking (eTracking) system.

The initial chapters of the text delineate historical background and strategic necessity for workflow tracking. This begins with an overview of the Navy's mission is to provide a standardized, seamless, shared process & data environment across the enterprise.

The text will then outline basic functions of an eTracking system in order to satisfy Department of Navy (DON) regulatory and policy requirements. This section will also serve to distinguish between the developers and the stakeholders on the functional and operational requirement accomplishments. Furthermore, this section can act as a mission statement or reference guide for proposed system development.

The latter sections of the desk guide identify a series of accessible platforms and tools that have been developed amongst multiple Navy commands and agencies. This section is more inherently technical, discussing navigational tools and corresponding acquisition planning to the utility of each system. The section concludes with recommendations on implementation, along with a basic checklist for readers to use to ascertain what resources are the best form/fit/function for workflow management.

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I. THE MODERNIZATION OF COMMUNICATION AND DECISION-MAKING

At the turn of the century, Department of Navy (DoN) undertook a number of initiatives to modernize planning and vulnerability assessment. During this time, DoN would conduct large-scale Integrated Product Teams (IPTs) at prescheduled events annually. These IPTs would provide the U.S. Fleet and coalition partners with comprehensive programmatic and technical support for in-service and emerging ship systems, information, and systems. The range of engineering and technical support services was extremely broad and included certifying U.S. Navy surface and sub-surface navigation systems ready for use, providing system troubleshooting support services for all aspects of U.S. Navy navigation, originating and maintaining all aspects of logistic documentation, designing/fabricating/testing prototype or experimental navigation systems, testing new and evolving navigation technology, cataloging ship equipment and information technology (IT) hardware and assisting with ship alteration efforts, as required. These collaborative events would also include evaluating intra-deploying group Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance and Reconnaissance (C5ISR) systems' integration and interoperability via robust at-sea testing, within a stressed operational environment. These initiatives were tracked and recorded through interview transcriptions, checklists, and spreadsheets.

During this time, the Navy generated a number of different developmental pilot programs to modernize how the agency records supply chain management and decision-making. One of these programs included the Navy Enterprise Resource Planning (ERP) system, which provides financial, acquisition, personnel management, and supply management functionality across the Navy. Development was not without numerous failed starts and stops, as the Navy reported, per a September 2005 Government Accountability Office (GAO) report, to have sunk nearly \$1 billion in numerous ERP pilot programs over a decade (Songini, 2005). These ERP versions were programmed through multiple companies, including International Business Machines (IBM), and Deloitte & Touche LLP

(Songini, 2005). Navy ERP continues to be a department-wide priority, with plans for full functionality with electronic Procurement System (ePS) contract writing system by 2023.

Additionally, the Navy established the Human Performance Center (HPC) SPIDER system. SPIDER is the DoN's online resource for human performance and training technologies. The system provides a wide range of learning and evaluation tools to ascertain human performance requirements and educate the Navy on the latest training research. The system was developed in coordination with the National Research Council, Division of Behavioral and Social Sciences and Education, Committee on Human Factors.

In 2000, Naval Tool for Interoperability and Risk Assessment (NTIRA) was also developed. NTIRA's mission is to provide a transparent, end-to-end (E2E), shared process & data environment across a multitude of enterprises and communities of interest. NTIRA was jointly developed by the Chief of Naval Operations (CNO), Commander Naval Surface Force U.S. Atlantic Fleet (COMNAVSURLANT), Commander Naval Surface Force U.S. Pacific Fleet (COMNAVSURFPAC) Communications and Information Systems directorates (N6). The platform, having gone live in April of 2002, was initially established with four modules—financial, composition, configuration and capability—and continues to be in operation today.

Each of these automated system solutions are devised with a certain purpose and mission goal. The government can be very reactive and re-generate many of the same decision-making processes, rather than forming a solid knowledge base. A lack of ownership, transparency, and the insistence of multiple disconnected departments being involved in every step of a decision-making process, ensures strategic paralysis and restricts any type of agility in operational thinking. The data generated from workflow automation allows for a knowledge base to be developed and evolved over time. Overall, the intent of automation is to create efficiencies in a business process flow for the government. Implementation of these automated systems is of critical importance in creating efficiencies with respect to government contractual requirements. The government requires a formal and traceable business process in place to identify, strategize, and validate contractual requirements when issuing and committing to financial obligations.

Throughout the contents of this text, workflow systems are identified with the intent to create better value, better initiatives, and find ways to reduce cost and administrative burden. Furthermore, these systems will allow for a greater opportunity of government portfolio management. The respective program offices that generate contractual requirement needs can, at times, be operational in nature, focusing on “near and present” needs of the command and mission capability. These stakeholders can expand focus to strategic guidance, overall program assessment, issue resolutions, and make pro-active planning decisions with workflow automation and artificial intelligence system functionality. The text reviews which system platforms provide the most vitality and utility for collaboration in the requirements development process, allowing opportunity for the best and most effective contract solution for the Government.

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II. THE ACQUISITION PLANNING PHASE

Acquisition planning is a program management process that defines all aspects of the requirement to the executing Contracting Officer. The requirements holder must be able to respond to a number of different challenges in the “Planning Phase” of a respective purchase. These responsibilities include the following (Department of Defense, 2012):

- Identifying the strategic alignment with mission need or impact absent the procurement
- Describing the historical summary of the requirement
- A requirement description that includes all relevant details, including tasks, responsibilities, measurable outcomes and other functions
- Assessing potential source selection and evaluation considerations

A lack of efficient workflow and a streamlined communication of these needs may cause procurement delays. The “Department of Defense (DOD) Guidebook for the Acquisition of Services” identifies the need for an effective Communication Plan between respective stakeholders during the Planning Phase. The knowledge gained through a decision-making capable platform to fill mission need and identify capability gaps will steer command planning and execution. With respect to acquisition planning, all the following stakeholders, at a minimum, will generally be involved in determining mission need for contract services:

- Portfolio Services Manager or Program Manager
- Comptroller
- Selected Command Senior Leaders
- Budget Officer
- Requiring Activity authorities

- Security/OPSEC (Operational Security)
- Workforce Management
- Contracting Activity Representative
- Legal representation

Per the DOD Guidebook, it is the responsibility of these stakeholders to apply a clear and systematic approach to achieve results that value mission requirements. The Planning Phase, set forth by the guidebook, identifies the need for the formation of an acquisition team and, in turn, a communication plan between those respective members. The “Comm Plan” is a living document, adjusted based on evolving needs through the acquisition process, and focuses communication targets throughout each stage of the planning process.

In alignment with the Planning Phase is the need to validate requirements and provide efficiency in acquisition solutions. These stakeholders must have a concise process for implementing strategic sourcing initiatives throughout the command to produce significant savings and help reduce waste (time, money, administrative). The members of the acquisition team must be able to integrate with one another, maintaining positive and transparent communication, being proactive in decision making and creating awareness and understanding.

In 2008, the Force Contract Management Office (FCMO), later named CAMO, was established to align the requirement development needs of the Navy with creating an effective Comm Plan. The development of CAMO came as a direct result of reported incident of Echelon IV command’s repeated reports of personal service contract violations or hiring contractors to perform inherently governmental functions (IGF). Where and when applicable, CAMO was tasked to participate in identifying streamlined procurement processes by leveraging strategic sourcing and portfolio management initiatives to optimize the support infrastructure and strengthen readiness. CAMO’s purpose is to promote the broad application of “best business practices” to contract programs and facilitate effective acquisition solutions to the Navy. CAMO was also responsible for

performing ongoing training and informal auditing on service contract management as part of their Supply Management Inspection (SMI) program. An example of that inspection program, which involved multiple program participants and stakeholders involved in the service contract, is shown in Table 1. The figure comes from Naval Expeditionary Combat Command (NECC) Force Supply Manual.

Table 1. NECC Supply Management Inspection.
Adapted from Varvel (2017).

SERVICES CONTRACT MANAGEMENT
<i>Contract Administrative Issues:</i>
Is the COR current with all required COR training; has the COR uploaded training certificates into their Joint Appointment Module (JAM) COR Profile in the Procurement Integrated Enterprise Environment (PIEE)? (CLC 222 COR every 3 years, CTiP annually, CLM 003 Procurement Ethics annually)
<i>Contract Validation and Management:</i>
Contract files are maintained in accordance with FAR 4.8 and NAVSUPINST 4205.3(series). To include: Copies of Contracts and all Mods, Funding documents, MOPAS, IGCE, DD254, Deliverables, Personnel Rosters, Invoices etc.
Positive control of contractor personnel on-site (within the command facilities and IT systems) is maintained through a check-in/out process according to locally established procedures including security screening and Information Assurance requirements. (COMNECCINST 5370.3)
All contract data is maintained in a secure file with access limited to only the COR, TA and Supply Department in accordance with the Procurement Integrity Act and FAR 3.104.
The service contract requirement is validated by the Service Requirements Review Board (SRRB) annually in the Fiscal Year prior to funding. (COMUSFLTFORCOMINST 4200.3 (series))

During this time, CAMO began validating all service contracts annually, with the first Contract Review Board (CRB) being performed in 2008. To formally prescribe policy, responsibility, and procedures to identify, review, validate, assess, prioritize, and approve contract services, the Service Requirements Review Board (SRRB) process was established. All Navy/Marine Corps Budget Submitting Offices (BSOs), Program Executive Offices (PEOs) and Direct Reporting Program Managers (DRPMs) must have established procedures that are in accordance with Assistant Secretary of the Navy for

Research, Development and Acquisition, Financial Management and Comptroller (ASN (RD&A)/ASN (FM&C)) memorandum of 12 October 2018. The process requires dedicated collaboration and, in many cases, requires the establishment of a portfolio manager or contract facilitator within requirements development. This may be separate and independent of actual contract execution departments or “mission partners” in the event of those subordinates managed by a type commander (TYCOM). A standard SRRB workflow process, which comes from NECC Force Supply Manual, may be enacted as shown in Figure 1.

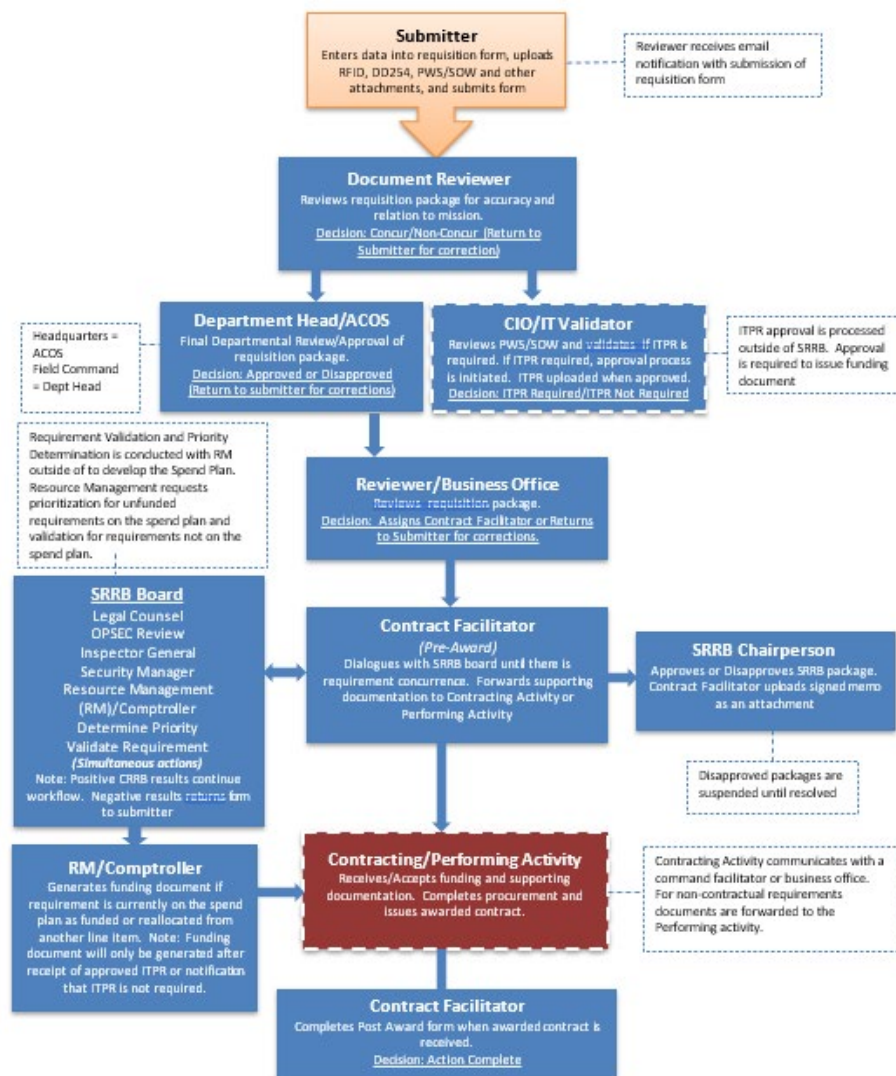


Figure 1. SRRB Workflow. Source: Varvel (2021).

As represented in the workflow process, there is insistence of continued facilitation between acquisition team members to ensure success of an effective contract award. SRRB approval considers mission need, strategic alignment, relationship to other requirements, prioritization, workforce analysis, market research, contract performance oversight, deliverables, and exit strategies.

A Contract Services Manager, or CSM as it will be identified for the remainder of this text, will typically be designated to administer the SRRB. The CSM facilitates the board and, therefore, is a prime facilitator and initial contact for requirements owners. The CSM would be potentially responsible for a multitude of tasks, including, but not limited to, scheduling SRRB meetings, collecting requirements data, preparing agendas, notifying other acquisition team members, compiling services record data for boarded requirements, and collecting board findings and results into enterprise-wide reports. The CSM may be an individual responsibility or jointly performed by multiple acquisition team members. It may be comprised of Contracting Officer Representatives (CORs), Program Managers (PMs), Procurement Analysts (PAs), or other professionals astute to acquisition requirements.

The need for an efficient workflow-tracking system is critical in ensuring successful communication and approvals within this process. Utilization of a shared network or email inbox for distribution of communication can be ineffective, resulting in deletion of records or malleability in the accuracy of the data. Consideration of timelines with relation to funding status is also a critical factor in the success of this workflow process.

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III. THE BUDGET PROCESS DRIVER

The Planning, Programming, Budgeting, and Execution (PPBE) process establishes framework for acquisition planning. PPBE is an annual cycle by which the DOD programs funds based on strategic need and mission objectives. The goal of the PPBE to allocate limited resources in the most efficient manner possible given fiscal constraints. Combatant Commanders (COCOMs) are tasked with a joint decision-making process to distribute budget amongst manning, training and equipping initiatives (DOD, 2021). The PPBE is a review and decision system that translates a requirement to an operational capability.

Within the PPBE process are four distinct phases, each having a purpose relative to timeline. The first of which is the planning phase, which establishes analytical approaches to determine force development. This guidance document is outlined in the Defense Planning Guidance (DPG) during the planning phase. The next phase, or programming phase, creates another deliverable, the Program Objective Memorandum (POM). The POM is a five-year funding plan for each military and defense agency, providing structure for the Future Year Defense Program (FYDP). The FYDP further aligns program elements, such as strategic forces, administration activities, special operations, or research and development, by appropriation for planned years. The first phase, or budgeting phase, converts these programs into budget terms, in the form of the Budget Estimate Submission (BES), which is sent to Congress (DOD, 2021).

The final phase, execution review, monitors enactment of the budget. Execution review occurs in parallel to program review, informing strategic goals, and assessing actual performance in contrast to planned performance (DOD, 2021). Acquisition planning, much like the purpose of CAMO, facilitates contracting execution strategies and provides other valuable inputs during this phase of the budget and programming.

Congressional Marks, or the process by which amendments are made to budget, may affect requirement funding status within this timeline. As such, recurring requirements may be reduced or removed between fiscal years. Developmental projects, especially those

in pilot stage, could be potentially terminated and funding resources allocated to more promising prospects.

SRRB approval procedures, according to the ASN memorandum, must be submitted independent of requirements' funding status. Specifically, the categorization of a requirement as budgeted/funded requirements or unfunded would not directly impact the need for an SRRB to be performed. However, in defining mission need and communicating requirement criticality, does not necessarily translate into sufficient programming of funds. As allocation of resources materializes, decision makers may request realignment of funds between commands, BSOs, and branch components in order to satisfy emerging critical needs. As such, requirement funding availability status may not guarantee execution, especially if higher-valued requirements arise.

When an appropriation is enacted, the Department of Treasury fund apportionment is turned over to Comptrollers to allocate these funds amongst components. These funds flow in receipt of allocation to Responsible Offices and, further, to Administating Offices. The Administating Offices will receive funding, where it is then divided to subordinate commands based on spending plans. The hierarchical process of apportionments and allocations is, primarily, for legal responsibility. Commands must obligate funding responsibility, and proper planning avoids scenarios of overspending or a violation of the Anti-deficiency Act (ADA). Responsibility for allowances and avoidance of ADA are not simply held by qualified comptrollers, and many members of the acquisition team discussed in Section 2 of the text hold this responsibility.

Table 2 is a hypotheticalal abstract, for the purposes of this text, of how administrating offices allocate shares of their funding obligations throughout a fiscal year. As shown in the chart, a command will plan obligation of fiscal year appropriations as a percentage of total obligated dollars.

Table 2. Obligation Phasing Plan (in thousands of dollars)

	October	November	December	January	February	March	April	May	June	July	August	September	Total
Monthly	120	110	100	100	100	100	100	100	100	100	100	100	1,230
Cumulative	120	230	330	430	530	630	730	830	930	1,030	1,130	1,230	
Monthly %	10%	9%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	100%
Cumulative %	10%	19%	27%	35%	43%	51%	59%	67%	76%	84%	92%	100%	

The corresponding chart, identified as Office of the Secretary of Defense (OSD) Execution Benchmarks, provides annual benchmarks by appropriation category. This is a hypothetical chart generated for the purposes of this text. These benchmarks or rates represent execution percentage goals set by OSD. These rate goals are primarily derived from historical information, though delays in achieving these benchmarks must be justifiable. Commands that are unable to meet these benchmarks must provide an acceptable rationalization for delayed funds execution; otherwise, the program may result in a Congressional mark, or reduction, in funds. In Table 3, periodic analysis is performed on how activities and BSOs are able to meet execution benchmarks.

Table 3. OSD Execution Benchmarks

Appropriation Category	First Year Available		Cumulative for Second Year		Cumulative for Third Year	
	Obligation	Expenditures	Obligation	Expenditure	Obligation	Expenditure
O&M	100%	75%	100%	100%	100%	100%
RDT&E	90%	55%	100%	90%	100%	100%
Procurement	80%	N/A	90%	N/A	100%	N/A

The ability to meet benchmarks is typically the first metric for decision makers when determining whether to allocate funds to support unfunded requirements or, alternatively, boost other critical requirements. If a program, year after year, executes below benchmarks the program will be on the defensive for congressional marks and reductions. Financial and tracking/managerial systems utilize accounting data to measure actual financial performance, allowing information to be compared against the original obligation and expenditure phasing plans. This comparison provides useful insights into

overall program performance, giving managers and senior leaders the opportunity to make adjustments if the data highlights potential programmatic problems.

DOD is very focused on metrics to analyze performance; as such, monitoring tools align with DOD's National Defense Strategy (NDS) strategic goals "to build a more lethal, agile, and innovative joint force" (Office of the Under Secretary of Defense, 2021, pp. 9–10). The DOD FY 2021 budget informs the institutionalizing of the NDS. The NDS aims for "Modernization and Lethality...priority on innovation and modernization to strengthen competitive advantage across all warfighting domains...and advances development of critical technologies" (Office of the Under Secretary of Defense, 2021, pp. 9–10). The NDS reforms department strategies to enhance funding performance and allow for greater accountability when budgeting programs. Implementation of tracking systems will increase efficiency, performance and accountability through program metrics.

Funding tracking and oversight is managed by multiple external systems. Each of these individual systems has a purpose to serve in providing a snapshot of budget execution for financial analysts, whether in identifying executed dollars or correlating commitments with Object Class Codes (OCCs). Much of the data required to plan resource allocation effectively is available down to a micro-level, specifying anything from number of full-time equivalent (FTE) contract employees to individual contract line-item descriptions. The systems available to government financial analysts include both commercial and internally developed systems. One such platform is ADVANA, a simplified business analytics management web-tool that will be analyzed further in this text.

Based on the execution benchmarks and obligation phases previously identified, many of these funding investments proceed through a level of annual and quarterly cycle reviews. Workflow processes, to communicate these metrics, are coordinated between program managers and financial analysts. Many modules exist for this workflow communication, though it is absent the cooperation and accessibility of all acquisition team members. The availability and viability of commercial and internally developed business tools provide accessible communication avenues between respective acquisition team members.

IV. PROOF OF CONCEPT

An agency must first ask if an automated work system is necessary or will provide any substantial benefit to the communication that occurs between stakeholders on a daily basis. The International Function Point Group (IFPUG) is a nonprofit organization that endorses methodologies on system software. More specifically, the organization measures productivity relative to the implementation of a management information system (MIS) and other business applications. Productivity is measured as a function point (FP), or the IFPUG's metric to assess productivity of a project corresponding to an estimated size, effort, cost, schedule or other project planning. In summary, FPs represent the total weighted sum of a program's inputs, outputs, user inquiries, files, and interfaces between respective users. The IFPUG has summated that, on average, the implementation of an MIS increased productivity from 2 FPs per person per month, to 23 FPs per person per month. In other words, productivity jumps greatly once an automated workflow management system is introduced. Given the potential for a substantial increase in productivity, each command must perform a relative cost/benefit analysis when understanding the pros and cons of implementing such a system.

Note that the cost breakdowns identified within the next few chapters of this text are focused on sustainment software development only. These breakdowns are independent of inherent costs that would also be involved if the platform can even exist in a virtual environment. These "fixed" costs may include a multitude of factors. Unless the programmable environment is contained to a limited server network, much of the available platforms are programmed via an open web-based environment. This cloud service platform allows for content delivery and other functionality for multiple applications and protocols to be developed and stored. Sustainment purchases may include cloud-based access in an unclassified environment, hosting systems on a SIPRnet, and all necessary software licenses to run the respective workflow system. Commercially licensed software applications, such as Windows Server, Crystal Reports, Jira, or Confluence, are some sustainment purchases which all run separate applications to store data, fix defects, or translate data to another form.

Furthermore, there is the Navy's Compile to Combat in 24 Hours (C2C24) initiative or specifically tailored secure cloud environments. The C2C24 is also known as micro-

services, as it separates essential data from a legacy application for more expeditious and uninterrupted accessibility. Also, these secure cloud environments are designed for more advanced machine learning and artificial intelligence capabilities. In an attempt to modernize an automated workflow system, improved decision-making protocols are a valued functionality. In consideration of C2C24 and other IT sustainment elements, below is a breakdown of rough estimates for some of these potential fixed costs:

- Cloud Hosting: \$150,000.00
- Data Center SIPRnet Production System Hosting: \$57,000.00
- Development, testing, model, production environment and secure application hosting: \$95,000.00
- Commercial Software Licenses: \$40,000.00

Such fixed costs could be roughly an annual estimate in excess of \$300,000, though many command's CIO directorates, business development departments, and portfolio management teams already account for these costs and have existing contracts for support. As such, there are two tiers to cost considerations, one for the ability for the software to simply have the capability to run, and the other to develop and maintain the system.

In terms of acquisition costs to develop a contract, labor support through contracted services may augment a lack of internal government resources for design and programming efforts. Considerations should be made with regard to the level of effort required to initiate such a project. Labor mix may consist of all the following categories, at a minimum:

- Software Developer/Programmer (Level 1 through 3)
- Database Developer (Level 1 through 3)
- Systems Administrator (Level 2)
- Software Applications Tester
- Security Specialist

- Training Specialist

Software developers and programmers are a group that maintains the web application itself, ensuring all coding to establish the logic and functionality of the system. Software developers may also be continually tasked to ensure accuracy of functionality and data within the context of Navy policies and procedures and the application modules are optimized and functional on current Naval Marine Corps Intranet (NMCI) seat configurations. A database developer may be tasked to maintain a master client or user list, including mapping users to system functions and creating new records based on new and upcoming technologies. Most importantly, a database developer may be responsible for ensuring all data in the respective system is successfully backed up daily, weekly, monthly, and annually as required.

A system administrator may be a necessity for user account administration and enhancing system performance through software patches. A software applications tester would test the “cyber hygiene” of the system, ensuring all integrated software applications are working efficiently and without failure. As an example, a software applications tester may monitor automatic daily email notifications output from the system and report any failures in distribution of these emails.

A security specialist would be potentially tasked for system security engineering, policy adherence, reporting of cybersecurity posture per Navy policy, and preparing certification and accreditation documentation for the sustainment of the workflow system. Furthermore, this labor category may ensure software and systems meet technical security configuration guidance from new threats or engineer, coordinate, implement, and administer effective security principles.

The system platforms that are identified within this text are potential solutions, as a means to avoid full-scale development from scratch. Many of these solutions range from “out of the box” commercial products to extension of government-owned modules. Any development on these systems would be limited to sustainment needs. There are several considerations when it comes to sustainment. These considerations can be simplified into three primary areas: tasks completed by personnel on the project, cybersecurity and compliance, and modernization compliance.

From a technical perspective, an automated system sustainment effort can be defined as maintaining the servers to remain in compliance, ensuring total system compliance with all DOD, DISA, and DON policies and guidance, maintaining the databases and connections, making codebase changes when necessary due to either a change in policy or a change from an integrated or external application, or correcting any errors or bugs found in the system codebase. From an operational perspective, sustainment is defined as maintaining the necessary documentation for operation in accordance with current DOD and DON policy, maintaining a help desk for the system, ensuring proper configuration, ensuring cybersecurity policy is followed, and maintaining the system in accordance with the ATO. In consideration of the three primary areas of sustainment, personnel would perform daily tasks to maintain codebase and database to ensure the product is working as expected. Also, these developers would maintain versioning control for modules and database changes, as required. Cybersecurity considerations will be discussed further in the text, and modernization efforts would align with the C2C24 initiative previously identified within this Section.

Many pitfalls of developing a workflow system are due to the initiator's lack of accounting for the entire project life cycle. Even though the solutions provided in this text are extensions of preexisting automated systems, these options would all require all the decision factors that go into a defense acquisition. Given any defense acquisition, each project has a life-cycle with a beginning, middle, and end. The beginning is where concept exploration begins, and the goals of cost, schedule and performance objectives of a project are set forth. The middle of the life cycle involves execution of plan, deployment of the system, monitoring and control of the program. The end of the life-cycle involves scaling down production and support, with eventual disposal of the "legacy" system. It is instrumental that the acquisition program baseline, which establish program parameters, fully defines the most effective solution for the command. Using long-established platforms, for example, may provide a level of confidence with respect to low-risks to an operation. However, using outdated software or applications that are limited in their ability to modernize and evolve may cause a shorter overall life cycle that does not properly satisfy the acquisition program baseline. This is one of the many reasons why defense acquisition projects lead to billions of sunk costs each year.

V. FAILURE TO LAUNCH

On 26 September 2018, United States Fleet Forces Command (USFFC) coordinated execution of a contract for development of the Contract Management and Analysis Tool (CMAT). In accordance with the contract, N0018918P1422, the primary tasking of the contractor was listed as follows:

The contractor shall build prototype models using, but not limited to, Data Modeling Tools, mockup sites, and Flow Charts. These will be fully functional prototypes that allow users to get acquainted with a new way of doing business and provide a mechanism for feedback. Prototype will be reviewed by the government POCs and be modified to include any revisions or requested changes necessary prior to final government approval (Naval Supply Systems Command Fleet Logistics Center Norfolk Contracting Command, 2018, p. 3).

Upon expiration of the contract vehicle, USFFC was met with one of the basic challenges of contract interpretation. The objective and subjective interpretation of the words leveled in the contract statement were met with patent ambiguity. At the end of contract performance, the contractor provided a series of JavaScript programming scripts to UFFC, though the command was left without a method to interpret, institute and fully activate the platform. After a one-year development cycle, the automated workflow system was at a standstill and facing a large cost shortfall. Therein lies the most prominent aspect of acquisition planning: accurately defining your need. The step of need definition is inherently tied into any prospective decision to acquire an automated system to make workflow processes potentially more efficient.

In defining this mission need, the main requirements would stem from the following basic needs, as follows:

- An automated workflow management portal to be able to initiate actions, track progress, obtain approvals, store related documents and files, and analyze workflow performance metrics.
- A preference to automatically integrate with third-party tools for financial data and contract-related data.

- Broadly accessible via web-based portal to allow an established number of stakeholders and users to access the system, enter data, and analyze metrics. Platform accessibility would be based upon role or permission schema.
- Outcome-based performance metrics, linked to strategic goals.

These are basic needs, though an underlying branch of desired salient characteristics may further enhance functionalities of the system. Take for example the potential desire for “information technology (IT) democratization,” in which a platform allows individual users to create their own workflows. Another desirable salient characteristic is long-term reliability, as it may be prudent to align with long-term industry leaders if acquiring a COTS user license,

There are hundreds of tools out there that provide workflow management. Some are more flexible than others. Some are specifically tailored to certain types of workflows, while being more generic with other platforms. Any of these modern and existing systems will likely require some level of customization in order for to align with the workflow’s definition.

Whether an automated workflow system is to be developed internally by existing government assets or through Commercial Off-the-Shelf (COTS) means, quantifying the need is also vitally important. Software estimation models can be broken into two categories: algorithmic and non-algorithmic. Algorithmic models generally use formulas utilizing inputs such as software lines of code counts, function points, resources available, skillset of resources, hardware costs, and other set points. Non-algorithmic models generally utilize expert analysis and analogies from prior work performed to generate estimations of the level of effort and subsequently the cost based on the level of effort in conjunction with any necessary direct costs, hardware, and COTS costs. Other non-algorithmic models include Price-to-win, which is based on the sponsor’s budget instead of the needed functionality of the software.

Price-to-win is used when the sponsor’s budget is known up front and the work performed is based on keeping within that budget. Instead of deriving the requirements

first, performing an estimation based on those requirements, and then delivering a cost estimate for those requirements, price-to-win looks at the sponsor's budgets and the sponsor's requirements or needs, and determines which of those requirements the project can deliver given the pre-determined budget. While this method has cost as a fixed point, the requirements provided with that budget cannot account for any adjustments without impacting other portions of the project in order to avoid cost overruns. The risk is that the sponsor may not receive a functioning product if there are any requirement changes or rework that negates the health of the entire project. This methodology is most prone to cost overruns in order to deliver a functioning product.

Another primary indicator in developing an automated workflow system is determining the best approach for development. The algorithmic methods identified quantify cost per functionality, establish labor categories, and define experience required, in establishing a baseline cost for the software model. Development is planned and costed based on this established model. Such software development estimates typically rely on discussions with the sponsor and then develops an estimate based on labor expressed in man hours or FTEs, hardware, software, hosting fees, other direct costs (ODCs), and any other costs such as travel. At that point, the sponsor generates a Statement of Work (SOW) or Performance Work Statement (PWS) identifying scope, location of work performed, the tasks to be performed, and deliverables. The estimate breaks the labor out further into specific categories such as IPT Lead, Business or Program Manager, Software Engineer, and others, all with labor rates assigned.

There is a policy set forth that provides a blueprint for Competency Aligned Organization/Integrated Product Teams with respect to IT infrastructure systems. According to this Concept of Operations (CONOPS), the portfolio structure intent is to “manage and have sound accountability of cost, schedule, and performance; ensure effective and timely delivery of products and services; and speak with a single Command-voice in each business area” (Space and Naval Warfare Systems Center Atlantic, 2014, pp 30). Establishing an informed overall estimation and development process is antithetical to something called “Agile” software development.

Agile software development relies on iterative procedures or cyclical communication. This is a “plan as you go” approach, refining requirements, communication and input between the developers and the sponsors on an ongoing and frequent basis. Specifically, Agile development does not provide an overall estimate upfront for the cost of the entire project. This is a bit of a “Planning Poker” with respect to Agile development. There is an initial gamble to “hide” potential overall cost of the project, in lieu of continuous cycles of sponsor and developer feedback and project alternations. Instead, an ad hoc method has been employed which results in delivering inadequate estimates, SOWs which are not adhered to during the execution of funds, and deliverables which are either incomplete or not delivered at all. Agile software development can be efficient if coordination is performed continuously, though this appears to be a “not perfectly laid plan” at first glance.

Workflows are always unique to the organization; as such, even “out-of-the-box” implementations always need customizing to address particular needs. The aforementioned estimation and development processes will be impacted based on the determination of whether internal workforce assets are available to perform the required design, programming, implementation, and continued maintenance. While this chapter discussed frequent pitfalls in establishing a viable workflow system, the later chapters of the text introduce a series of pilot programs and currently available platforms readily available in the commercial and non-commercial market. Many of these contract service solutions are capable to balance gaps in workforce assistance. The next chapter of the text introduces another critical factor of consideration when introducing any program into a government secured system infrastructure.

VI. AUTHORITY TO OPERATE

Most critical is the automated system's authorized formal declaration by a Designated Approving Authority (DAA). This accreditation, known as Authority to Operate (ATO), is established by DON Chief Information Officer (CIO) guidance and direction. Major Defense Acquisition Programs (MDAP) and Major Automated Information System Programs (MAISP) incorporate IT data must meet information assurance (IA) guidelines (Naval Information Forces, 2018). The ATO consists of multiple considerations, including the Risk Management Framework and compliance with the Clinger Cohen Act. It is best to coordinate with Information System Security Manager (ISSM) to ascertain all necessary DOD and agency requirements for the automated platform, especially one accessible in a web-based environment.

The ISSM monitors all layers of network and system security for any information system. The ISSM is an advisement role, as the CIO will designate the authorizing official (AO) regarding the security of an information system or program. The AO would be the information system owner or another selected stakeholder. Ultimately, the ISSM will guide stakeholders through the steps of acquiring the ATO for a potential automated workflow system. Also involved in this process is the Information Assurance Manager (IAM), who has authority to execute the command IA program and ensure compliance throughout the program or system's cycle (Naval Information Forces, 2018). The IAM and ISSM may be separate authorities by command delegation.

The ISSM will coordinate with all respective stakeholders to perform an integration effort, with the intent of gaining an ATO through the Risk Management Framework (RMF) process. The RMF mandates the management of cybersecurity risk across the enterprise through adaptation of the National Institute of Standards and Technology (NIST) Special Publication 800–37. According to the Process Guide, RMF uses a risk-based cybersecurity approach for enterprise-level authorization of IT systems and services. The RMF implements and enforces a tailored set of security controls, identifies qualifications and authorized cyber security officials, and focuses on security as an integral part of a system's

overall life cycle. The RMF will require system architectural diagrams, boundary diagrams, and data flow diagrams. An example of such a diagram is in Figure 2.

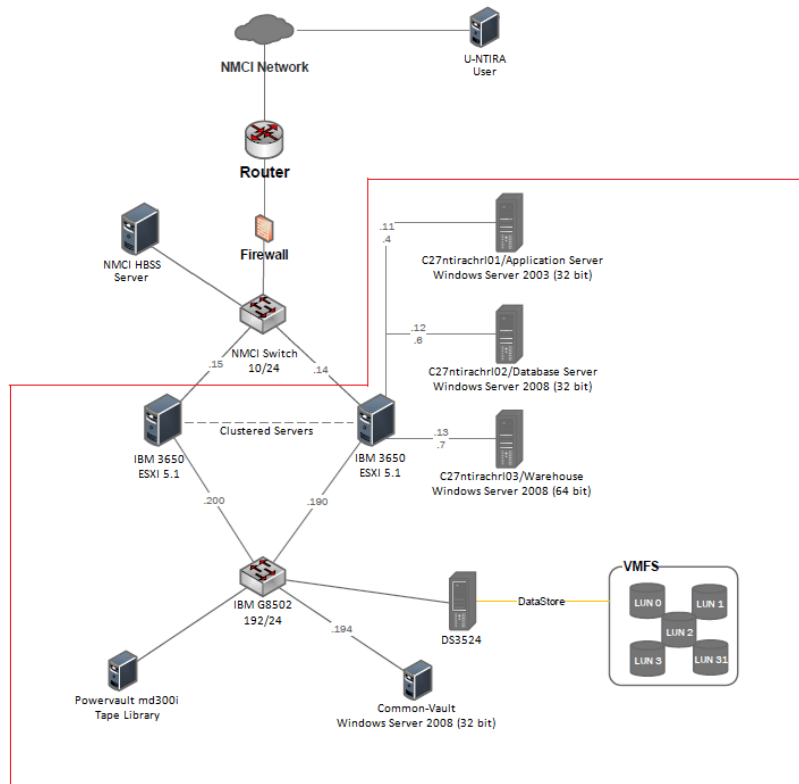


Figure 2. NMCI Risk Management Framework.
Source: Naval Information Forces (2018).

The Navy has identified a standard structural approach to how the workflow system will operate on a secured network. Per the diagram, the NMCI provides both firewall and intrusion detection system (IDS) that provide protection against cybersecurity threats. Within this architecture are data warehouse servers that will store the workflow system data. The cluster of data warehouse servers will connect to the internet through the NMCI network. Also within this architecture are virtual machines, or a means to add backup support for a system. Should one of the physical servers fail, the system could be recovered onto one server. The redline in the diagram denotes the “accreditation boundary,” or the information system limitation that the AO has provided approval for the system to operate

within. All information systems outside the accreditation boundary may be accredited by another AO or be components of external systems. As such, the ISSM will be providing guidance to the respective stakeholders regarding the limitations within this set architecture.

In consideration of IT infrastructure integrity, any recoding of existing government-owned systems would have to be formally requested and authorized. The ISSM oversees and ensures that the appropriate operational security posture, including network and system security, physical and environmental protection, personnel security, incident handling, security training and awareness, is implemented and maintained for an information system or program. If requesting administrative rights to a system, the requestor would have to submit a System Change Request (SCR), which advises the ISSM, the AO, an information system owner, and the Chief Information Security Officer (CISO) on the intent of the change to information system or program. A sample of such a form is contained in Figure 3.

System Name:		Name listed on system official documentation (PDD, CPD, AAP, SSAA etc)
Acronym:		Acronym including increment identification
Description:		Complete description of the system addressing: system functions, inputs/outputs, users, administrators, associated systems (FOS, SOS), Joint functions, MCME explanation, & MAC explanation
Associated Systems		List all related systems including: sub-systems, Families of Systems, System of Systems, Joint Systems
Activity		Select from Drop Down Menu
Resource Sponsor		Select from Drop Down Menu
ACAT Code:		Designation assigned to the system
Mission Criticality		PM Designation coordinated with MDA, Mission-Critical Information System defined in DoDI, 5000.2, May12, 2003.

Figure 3. New System Application Request.
Adapted From Naval Information Forces (2018).

Whether a “home grown” government-owned system, or a commercially owned software platform, the ISSM will also be responsible for coordinating with stakeholders regarding any and all user access privileges. The process can be brown down into two separate and distinct groups. As indicated previously, the first is a limited group of

administrators and developers, who are responsible for supporting and maintaining the system. These users are the only ones with direct login rights to the database, and server operating systems. The second group is much larger and consists of “low privileged” users who only access the system through the web portal. These web users are subdivided based upon need-to-know, and their required access. For example, some of these users may be able to edit data, while others could be limited to a “read only” status.

The ATO considers the Clinger–Cohen Act of 1996 in implementation planning, which is supplemental guidance that provides considerations for controlling system development risks, better managing technology spending through analysis of alternatives (AoA), and the achievement of measurable results. A checklist for Clinger–Cohen considerations is provided in the final section of this text. Implementation is only one consideration of ensuring cyber security compliance; another is ongoing safeguarding. There are a number of safeguarding procedures that can be followed and reported for IT systems, including, but not limited to, Department of Defense Information Technology Portfolio – Department of the Navy (DITPR-DON), Department of the Navy Applications and Database Management System (DADMS), Enterprise Mission Assurance Support Service (eMASS), and Vulnerability Remediation Asset Manager (VRAM) as directed per Navy policy. Planning and performing cybersecurity measures to assess security controls and record security control compliance status are necessary during sustainment of an automated system.

VII. PILOT PROGRAMS AND SYSTEMS

The government is currently pursuing a number of avenues to transform digital processes and complete the transition as rapidly as possible. The purpose is to reduce fragmentation and is designed to simplify the data environment for the DOD. In some cases, these are not coordinated efforts, especially given differing agency needs to transition from legacy systems or enable sophisticated systems to replace repetitive processes. The Advanced Analytics (ADVANA) system is one of these systems, as a central hub and workflow management tool for over 120 different applications and external systems. ADVANA, developed in 2019 as a joint effort between DOD and contractor Booz Allen Hamilton, is touted as the next-generation, commercial-grade platform leveraging enterprise advanced analytics to meet critical Department of Defense national security, mission, and business challenges. ADVANA is currently in “beta” stage, with select users and administrators providing ongoing testing results and recommendations for patches or improvements. User access is gained by submitting a DD Form 2875 System Authorization Access Request (SAAR) to register CAC information. Due to the nature of materials ranging from sensitive to classified available on the platform, levels of user access will be granted based on clearance levels. All respective web portals access through ADVANA require CAC certificate and PIN user prompts.

OSD has recently begun observing ADVANA as the “future standard data model,” simplifying over 3,000 business processes in a self-service platform. A user access account to ADVANA grants access to all other interconnected external systems, or organization partners, to tie these business processes together. The platform is described as an enterprise means to define, predict, and optimize mission and business performance. The system, given a greater enhancement and enforcement by OSD, will assist in creating benchmarks for business outcomes, usability, and customer experience. The intent is for the platform to meet broad mission use cases, including combat readiness, logistics, maintenance, budget, and acquisition. All of the DOD’s financial tracking and reporting systems, including Standard Accounting, Budgeting, and Reporting System (SABRS), Navy Financial Operations and Systems Integration Support (OASIS), and Standard Accounting

and Reporting System (STARS), feed into ADVANA. A dashboard image portraying how the system connects multiple external system, is shown in Figures 4 and 5.



Figure 4. ADVANA Platform Links – Acquisition Systems and Analytics.
Source: Navy (2021).



Figure 5. ADVANA Platform Links – Data Repositories and Audit Resources. Source: Navy (2021).

Per the dashboard image, the hyperlink for “Procurement Analytics” provides visibility into contracts, portfolios, contractors, obligations, de-obligations, pricing, execution and other data acquisition data. This subsection of ADVANA provides information on category management, with the intent to optimize spending and overall procurement strategy. Views under this subsection include contract performance data from the Mechanization of Contract Administration Services (MOCAS) system and USA Spending federal procurement data. The powerful analytics platform provides the U.S.

Marine Corps, DoN Secretariat, and U.S. Navy with a singular source library of unclassified and classified data. This is a critical leap forward in the effort to make Naval data a strategic, knowledge-based planning platform. In further focusing on acquisition effectiveness is the web data environment Jupiter, which is also shown in Figure 6.



Figure 6. Jupiter Dashboard Homepage. Source: Navy (2021).

Jupiter, developed in 2020, is one of the many “Data Governance Centers” connected to ADVANA. Jupiter provides a central point for promulgation from 12 Naval Information Domains. Jupiter presents a means to digitize communication in the informational domain. A document can be uploaded, extrapolated into multiple forms as designated by the user, and exposed to multiple analytical tools, also connected to ADVANA, as required. An example of this process is shown in Figure 7.

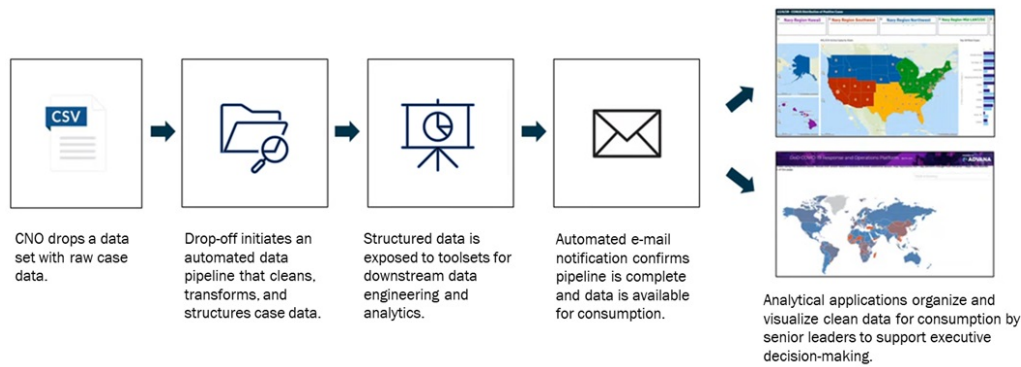


Figure 7. Jupiter Data Flow. Source: Navy (2021).

Jupiter allows for a document to be uploaded to the portal and a respective status category attributed to that document, including “Available for Query” or “Implemented,” as shown in Figure 8.

The screenshot shows the "Jupiter Data Catalog (BETA VERSION)" interface. On the left is a sidebar with navigation options: Overview, Responsibilities, Assets (selected), History, and Files. The main area displays a table of data assets. The table has columns for Name, Domain, Community, Status, and Asset Type. The status of each asset is either "Available for Query" or "Implemented".

Name	Domain	Community	Status	Asset Type
0vrc_m_30_cw_11	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_30_cw_17	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_30_cw_2	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_30_cw_9	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_40_cw_1	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_40_cw_14	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_40_cw_3	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_40_cw_7	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
0vrc_m_40_cw_8	cdmd_oa	Jupiter Databases, Tables, and ...	Available for Query	Column
100 - Main Computer Room	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1013 - PSTW DES 911	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1034 - FCRS DES ICIDS	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1039 - AFOD COMSOFT 1060	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1040 - SAFB - ARCENT TS	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
104 - NEC Fort Meade	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1060 - NEC Ft Polk 7840	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
1070 - FCRS DES Gate 1	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center
107 - Data Center - Warren	Jupiter Data Centers	Jupiter Data Sources	Implemented	Data Center

Figure 8. Jupiter Data Catalog. Source: Navy (2021).

The successful “handshake” between ADVANA and these Data Governance Centers allows for the user to create their own shortcuts on a respective homepage, as shown in Figures 9 and 10. The user has a number of available tools within the ADVANA environment to “drag and drop” websites links, generate reports, and create a list of favorites.

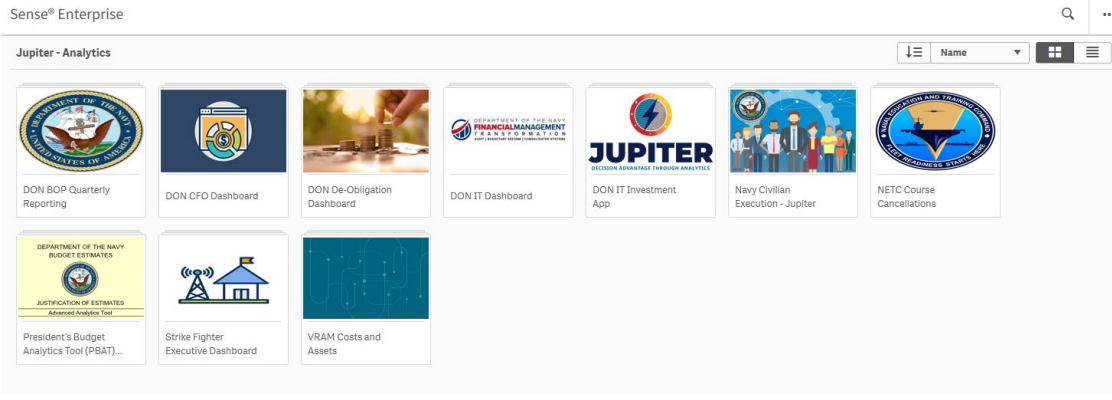


Figure 9. ADVANA Data Governance Branch Sites. Source: Navy (2021).

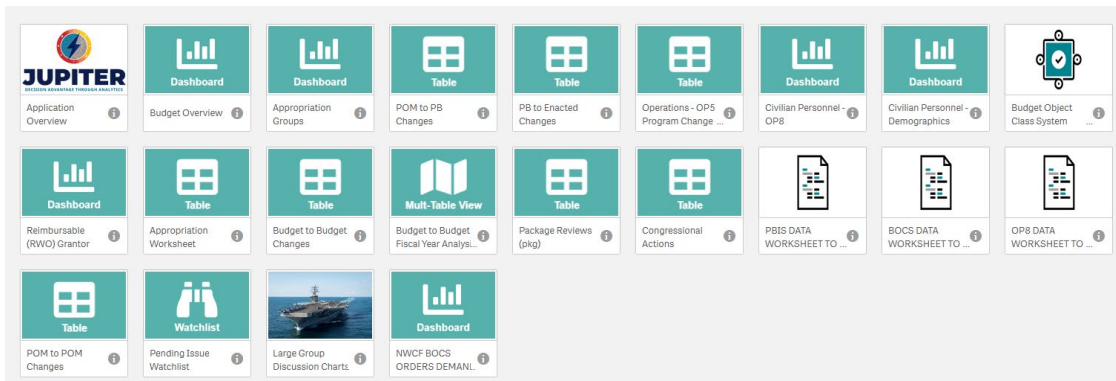


Figure 10. ADVANA Favorites Page. Source: Navy (2021).

The ability to manipulate how data is fed and made accessible to the user creates a high success rate as a joint information platform. While there are many benefits to this continually evolving platform, ADVANA does have limitations. ADVANA is currently a platform to “ingest,” not capture, user-entered data. As such, creating such functionality would require full-scale development within ADVANA. Additionally, if observing the SRRB process and requiring members to vote on approval of a project or acquisition, ADVANA does not have the capabilities of a voting tool. Also, while ADVANA is touted as a complete hub for unclassified and classified information, some of the Data Governance Centers, including Jupiter, do not yet have SIPRnet capabilities. In summary, ADVANA assists DOD organizations to transform data into decisions by allowing a free flow of information, but there are limitations for tangibility of that information for acquisition planning.

Another workflow program, currently in pilot stage, is the ProTrack web tool. Developed internally by Naval Supply Systems Command Fleet Logistics Center (NAVSUP FLC), the platform came as the result of a Lean Six Sigma Continuous Process Improvement. The program is currently in a pilot stage at their FLC Jacksonville, Florida site, with program oversight and implementation managed out of Mechanicsville, Pennsylvania. NAVSUP N7 found so many benefits from the tool that they are spending the entire 2021 calendar year implementing the ProTrack across their 11 sites and the hundreds of supported customers. The system manages a contract execution workflow through the process shown in Figure 11, derived from the ProTrack Mission Partner-Requestor Navigation Desk Guide.

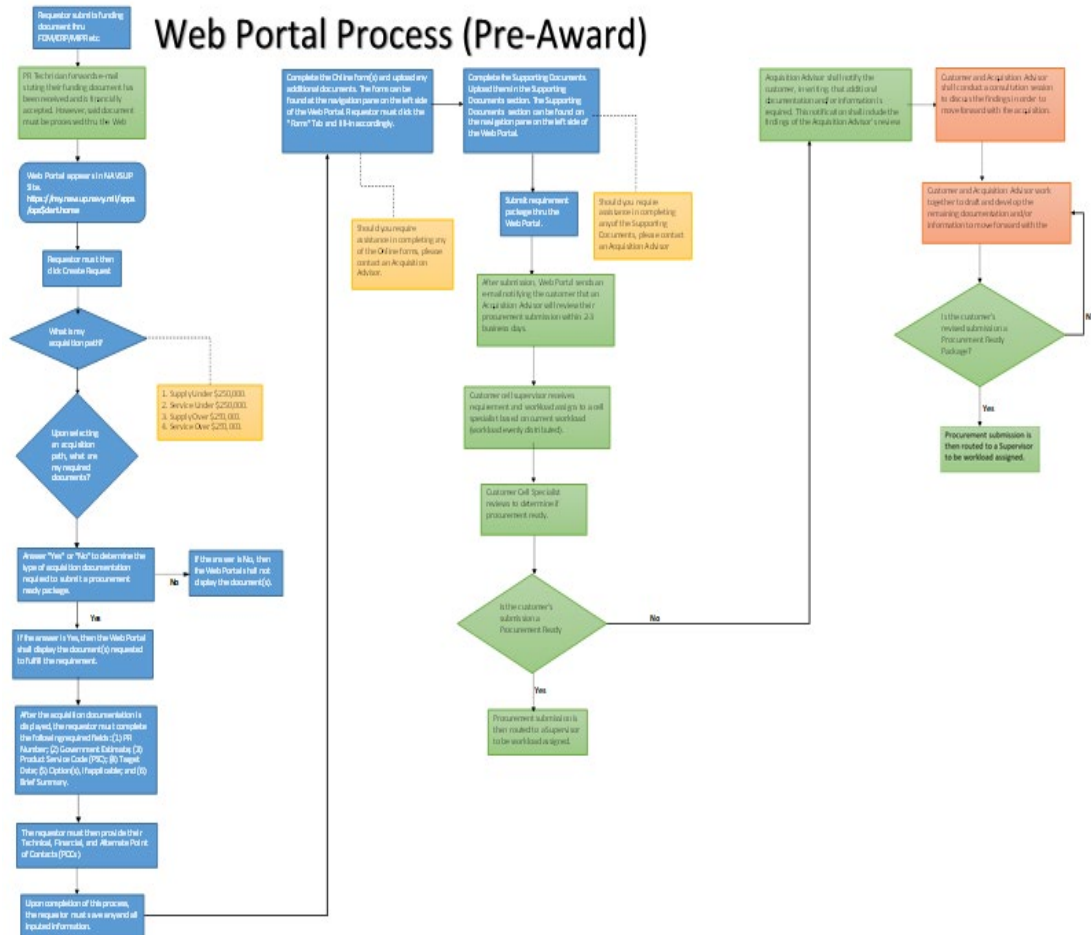


Figure 11. ProTrack Process Flow. Source: Whitaker (2020).

ProTrack acts as a requirement submission platform, utilizing a decision tree question flow. The platform observes decision trees for both pre-award and post-award acquisition processes. A dashboard interface pre-populates forms based on initial question responses, and allows for communication between the customer and the NAVSUP contracting team throughout the review process. Through the system's requirement tracker, customers can see real-time status of a requirement package at any stage of the acquisition process. Based on this real-time Procurement Action Lead Time (PALT), ProTrack tracks and displays timeline metrics for acquisition categories for analysis by the contracting management team. Furthermore, based on various metrics including DODAAC, customer information, PSC (Product Service Code), and fiscal year, users can search historical procurement packages for market research purposes and to resubmit follow-on requirements.

Once a procurement package is received to the contracting activity, ProTrack has the ability to assign, retrieve, re-assign, push forward, cancel, revise, package, and field information amongst the NAVSUP team. A prioritization functionality allows NAVSUP supervisors to prioritize workload assignments, which is also visible to customers. Once a contract is awarded, there are multiple functionalities that support ongoing administration considerations. A reminder feature, actually referred to in the ProTrack user guide as the "nagging feature," will send automated notices to select stakeholders for when follow-on requirement packages or options are due. A view of the homepage dashboard is included in Figure 12.

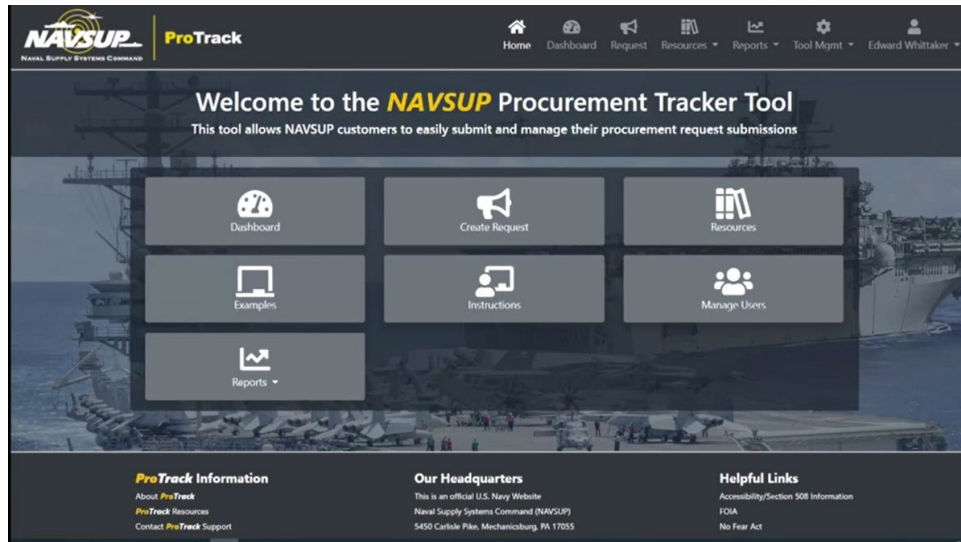


Figure 12. ProTrack Homepage. Source: Navy (2021).

In Figure 13, the user has manipulated the environment to create streamlined navigation for popular functions and data views. The consolidated user view provides a multi-sectional snapshot of in-process requirements, on-hand actions, administrative needs, procurement milestones, and adjustable search filters as required.

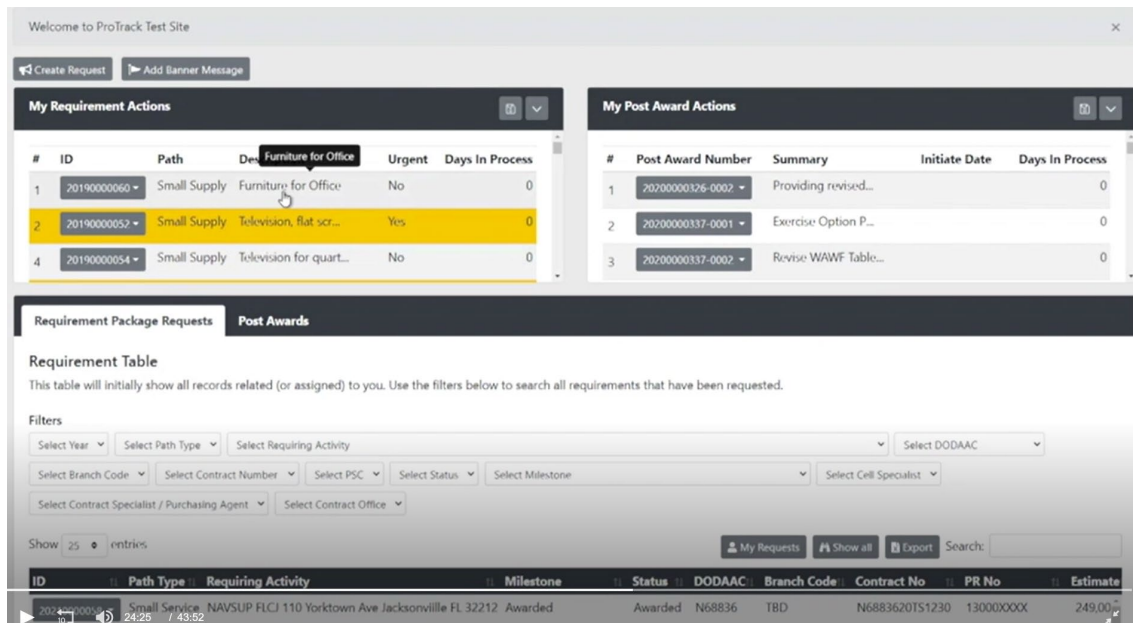


Figure 13. ProTrack Consolidated User View. Source: Navy (2021).

Visual snapshots of the platform, providing step by step training of how to create consolidated views or provide general training and awareness of platform functionality, are available through the ProTrack training website (DOD, 2020).

There are limitations to the platform as well. ProTrack is only accessible through the Google Chrome web browser. Users of Internet Explorer or Microsoft Edge browsers are met with application errors and disconnects. Furthermore, NAVSUP is currently rolling out the platform for accessibility amongst all contract sites. This implementation is expected to be completed by January 2022. Afterward, the focus is to introduce, train, and create understanding of the tool among their customer base. Any attempts to extend the platform to enhance administrative use would be considered later in this timeline. Most importantly as a limitation, the platform is focused on contract execution. While ProTrack provides easily accessible and retrievable information on procurement history for market research purposes, much of this workflow occurs between a limited “contract cell.” In other words, the decision tree is between the requirements holder and the executing contract team. Any communication or approvals between the stakeholders in the acquisition planning phase are not a consideration of the platform. As there is no learning or artificial intelligence of the respective system, ProTrack would have to undergo full-scale development for this added logic and functionality.

The Fleet Unfunded Requirements Systems (FURS) has existed, in multiple iterations, since 2018. The system began development as a means for customers to generate plans that moves spending “left” in the timeline as much as possible. The system was created by U.S. Fleet Forces Command (USFFC) from a collection of ideas and innovative solutions on proactive steps to avoid the spending “hockey stick” that occurs at the end of each fiscal year. Due to competing dynamics, including stretching funds to support full-year operations, congressional markings, and contract processing time constraints, year after year, Fleet Forces was finding itself in September executing funds at a pace disproportionately higher than the rest of the year.

FURS is utilized as a means to capture unfunded requirements amongst the Fleet Echelons. While there is constant review of the Fleet’s unfunded requirements, there are, generally, three specific milestone periods during the year that require substantial

oversight. The Fleet Comptroller collects and reviews submissions from activities during mid-year and end of year for current-year execution and during the DON Budget Submission. This is in line with the PPBE process discussed earlier in the text. During the year of budget execution, a mid-year review is held along with final scrubbing at the end of the year to help ensure that maximum buying power is achieved for the year. Unfunded requirements, or a repository of these items, informs Congress each year on where money would be spent if more funding and resources were provided.

The system is a database that creates an automated standardized form for Unfunded Requirement submissions. Attachments can be uploaded to each respective record, providing background on an entry. Figure 14 provides a desktop view of a data record. The Figures provided are derived from navigating through the FURS portal environment with a guest account.

Figure 14. FURS Data Record – Edit/Update. Source: Navy (2021).

By creating a record for each Unfunded Requirement, a complete and central repository is created by simply searching for records by cycle. These repositories allow for a document workflow, providing color coded status levels for stages in Unfunded Requirement review process. The platform, as shown in Figure 15, allows for a structured and formalized approval process to assist in prioritizing requirements.

Cycle: FY21 Mid Yea▼ Program: All Programs▼ BLI: All BLIs▼									
Approved Disapproved In work Awaiting FMB Response Incomplete									
Title	Internal ID	Program	TYCOM	Mitigation	Funds (K\$)	BLI	Requestor	Status	Workflow
2711 - NWC NIGEN R Customer Advocacy	69235-MY21-0003038	N02RO	IFOR		500	BSIT	ANTONIO ROBINSON		TYCOM
2711 - MICROSOFT 365 Migration, Operation and Sustainment	69235-MY21-0003037	N02RO	IFOR		12,200	1CCY	ANTONIO ROBINSON		TYCOM
82B - Satellite Vulnerability Training and Support	69235-MY20-0002961	N02RO	IFOR		3,064	1C1C	CAROL MCBRIDE		TYCOM
SSP D95: IWTG Fleet Intelligence Detachments OFRP Travel	55722-MY21-0002995	N02RO	IFOR		125	1B2B	MARY PENNINGTON		TYCOM
SSP 091: IWTG NORFOLK BLDG U132 EXTERIOR SECURITY DOOR REPLACEMENTS	55722-MY21-0003000	N02RO	IFOR		300	4CAP	MARY PENNINGTON		TYCOM
SSP 35A: IWTG FLEET TRAINING MISSION SUPPORT	55722-MY21-0002996	N02RO	IFOR		1,900	1CCY	MARY PENNINGTON		TYCOM
SSP 35A: TAV TEAM CONTRACTOR SUPPORT	55722-MY21-0002997	N02RO	IFOR		300	1CCY	MARY PENNINGTON		TYCOM
SSP 35A: IWTG NORFOLK N9 FLEET LIBRARY ENGINEERING EXCHANGE (FLEX)	55722-MY21-0002999	N02RO	IFOR		612	1CCY	MARY PENNINGTON		TYCOM
SSP 35A: IWTG NORFOLK VIGILANT PROSPECTOR "MARITIME" (VPR-H) CONTRACTOR SUPPORT	55722-MY21-0002998	N02RO	IFOR		205	1CCY	MARY PENNINGTON		TYCOM
SSP 35A: IWTG SAN DIEGO BLDG 3141 N84 FURNITURE	55722-MY21-0003001	N02RO	IFOR		170	1CCY	MARY PENNINGTON		TYCOM
2711 - Microsoft Cloud Engineer support	3029A-MY21-0003039	N02RO	IFOR		600	BSIT	TULLY CARR		TYCOM
2711 - Office 365 support	3029A-MY21-0003041	N02RO	IFOR		790	BSIT	TULLY CARR		TYCOM
32F - Countermeasures Assessment Endave (Phase two)	3029A-MY21-0003036	N02RO	IFOR		2,500	1CCY	TULLY CARR		TYCOM
32F - CIT 1020 Watch Floor Video Wall Improvements	3029A-MY21-0003042	N02RO	IFOR		1,200	1CCY	TULLY CARR		TYCOM
32F - HawkEye 2.0 High Speed Production	3029A-MY21-0003035	N02RO	IFOR		5,200	1CCY	TULLY CARR		TYCOM
32F - Nufanix Platform support	3029A-MY21-0003054	N02RO	IFOR		150	1CCY	TULLY CARR		TYCOM
32F - SPLUNK Phantom Licenses	3029A-MY21-0003051	N02RO	IFOR		482	1CCY	TULLY CARR		TYCOM

Additionally, based on the financial forensics required, the user can select different search criteria and filters. In Figure 16, the user is choosing the budget cycle.

FR21 Mid Year cycle is now open.

* = required field

Cycle*

TYCOM:

DoN Submission
DoN 19
OSMA DoN 18
OSMA INT 19
OIE Comprehensive Review 18
DoN 20
OIMD FY19 Execution
COMS INT 19
FY19 End of Year
DoN 21 Budget Submission
INT 20
DoN 22 Budget Submission
FY20 End of Year
FY21 Mid Year

Exceptions: Hide Disapproved

BLZ:

0
0000
000000
000005000
00128658
0204015M

APRIC:

ROI
RHS
OHS
OHSR
OHS
RCHEN

Line Bar

Bar/Line chart for TYCOM and BLZ

Years:

Refresh Grid

File/Donut chart for Program, ES, APRR, and Risk Assessment

Workflow Status:

COMPTROLLER
ONE
PROGRAM
REQUESTOR
TYCOM
TYCOM UNAPPROVED

File Donut

Figure 16. FURS Search Field. Source: Navy (2021).

Utilizing these different options and features, the system creates an approval process to assist in prioritizing requirements. FURS acts as an ongoing tracking mechanism for initial submissions and modifications that occur as a result of the PPBE process or political events, such as sequestration, that impact funding decisions. The module is still under development, with selected administrators performing testing and reporting glitches or recommending functionality changes. There are currently no formal plans to mandate use of the platform or to extend the platform for use by USFFC. Should the platform be

modified to handle acquisition planning workflow processes, this would require full-scale development of a separate module within FURS.

While the aforementioned platforms are homegrown and evolving solutions for the Navy, there are a number of commercially available workflow systems readily available in the market. Many of these are “out of the box” solutions, requiring modifications that range from minor programming to full-scale development to meet the needs of the government.

VIII. COMMERCIAL-OFF-THE-SHELF SYSTEMS

There exists a number of automated workflow management platforms readily available in the commercial marketplace. Two of these platforms are the Purchase Request (PR) Builder and the Universal Interface (UI) platform. Each of these platforms was developed as a means for various portfolio application management for the Marine Corps Systems Command.

PR Builder is a Common Access Card (CAC) enabled, web-based tool which creates streamlined process to generate, track, and process funding documents globally. The Universal Interface (UI) is an enterprise service portal that allows various users, also known as trade partners, to send and receive transactions via one central interface as part of the Procure to Pay (P2P) Process. Transactions include Contract Awards, Commitments, Contract Closeouts, and General Terms and Conditions (GT&C). These UI feeds information into the appropriate financial, database, or contract writing system (CWS). This includes the Standard Accounting Budgeting and Reporting System (SABRS), Procurement Integrated Enterprise Environment (PIEE), or Standard Procurement System (SPS). An overview of the interconnected relationships between these systems, and their respective meanings, are identified in Figure 17. The figures within this section come from a U.S. Marine Corps briefing on the PR Builder and UI Platforms that occurred in March 2021.

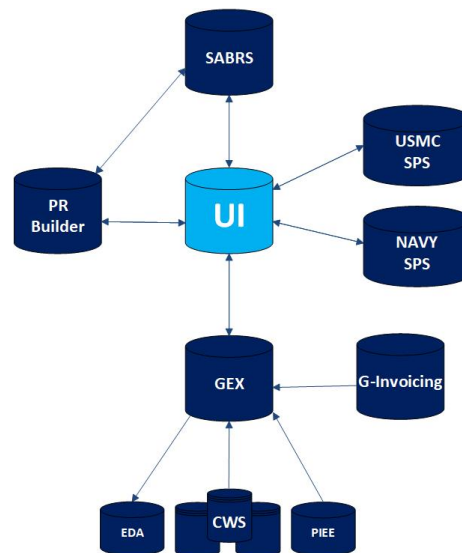


Figure 17. UI Overview and System Interfaces. Source: Hartley (2021).

The typical components of a UI system interface include the following:

- PR Builder
- Standard Accounting Budgeting and Reporting System (SABRS)
- UI
- Standard Procurement System (SPS)
- Global Exchange (GEX)
- Government Invoicing (G-Invoicing)
- Electronic Document Access (EDA)
- Procurement Integrated Enterprise Environment (PIEE)
- Contract Writing System (CWS)+

These systems operate on webMethods 9.12, a Java, C/C++ programming-based software platform. This cross-platform operating system has existed since 2000, though it has experienced continual upgrades through 2019. The program “flow” supports the integration of diverse services applications, including translating text and data amongst multiple formats and permitting communication between systems. An estimate to perform minor programming, including revisions of data field descriptors, drop-down results, and license expansion is provided below. The quotation, as represented in Table 4, is considered a minimum estimate, as any functionality and expansion to other Navy-based systems would require full-scale development. The quotation, as such, is considered a minimum estimate of around \$400,000 annually for standing up a module utilizing existing logic and sustaining that module.

Table 4. Implementation of PR Builder

	Base Year (2021 – 2022)			Option Year I (2022 – 2023)		
Labor Category	Rate	Hours	Amount	Rate	Hours	Amount
Program Manager	\$82.37	1800	\$148,266.00	\$84.43	1800	\$151,974.00
Software Engineering Manager	\$52.20	900	\$46,980.00	\$53.51	900	\$48,159.00
Software Engineering Lead	\$76.15	900	\$68,535.00	\$78.05	900	\$70,245.00
Junior Software Developer	\$32.06	1000	\$32,060.00	\$32.86	1000	\$32,860.00
Technical Writer	\$40.09	1000	\$40,090.00	\$41.09	1000	\$41,090.00
Administrator (Personnel)	\$34.56	1300	\$44,928.00	\$35.42	1300	\$46,046.00
Administrator (Financials)	\$42.96	500	\$21,480.00	\$44.03	500	\$22,015.00
TOTAL		7400	\$402,339.00		7400	\$412,389.00

The aforementioned PR Builder and UI are cloud-based, permitting all system components to be accessible and programmed via an online space. The government does retain some data rights to these systems; however, the coding runs on over nine different protocol languages that are proprietary to those respective companies. As such, while the government can readily acquire contractor or internal workforce to perform development, doing so will require costs to renew licenses and will limit certain data rights ownership. Additionally, given the last update to webMethods 9.12 having been done in 2019, the platform is quickly becoming “antiquated” as a workflow solution.

UI is most predominantly summarized as a system hub, ensuring a “cradle to grave” process for generating funding documents, performing contract execution, and connecting those actions to respective financial and contractual databases. One of these UI flows, translating eXtensible Markup Language (xML), or extrapolating and transforming data

into another system format is shown below. In Figure 18, PR Builder submits data to the UI hub, which in turn submits it to the Marine Corps SPS.

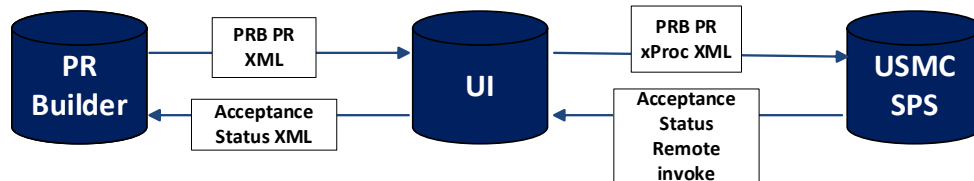


Figure 18. PR Builder Services/Scenarios – SPS Interface. Source: Hartley (2021).

The UI hub, in extracting data from the overall system architecture, can generate critical reports for a command, including obligation information and contractual data. An example of a generated report in UI is provided in Figure 19.

Transactions - FY 20			
	USMC	Navy	GEX
Commitments	908	5	-
Commitment Batches	83	3	-
Commitment Responses	59	1	-
PRs	11,711	659	-
AppAdvice	1,894	20	-
PAS – Pre-Award Status	8,794	-	-
Punchout (Pre-Release Awards)	8,789	-	-
NAFI (PS/IDX, Auto-Attach)	18,762	-	-
Contract Awards (xProc)	9,183	48,107	17,870
PDS Awards	8,953	-	11,985
PR-Award Status	8,789	33,124	-
Obligation Files	8,426	36,616	19,999
Obligation Batches	5,503	16,619	1,415
Close-outs	9,255	-	322
GT&C	-	-	7,998
Total	101,109	135,154	59,589
Percentage of Transactions	34%	46%	20%

Figure 19. UI Managed Transactions Report – System Generated Output. Source: Hartley (2021).

As an acquisition planning system, PR Builder offers a multitude of functional benefits. Search criteria can be matched to various fields, including contract information, funding and billing data, billing information, or line-item data, presented in Figure 20.

Figure 20. PR Builder Search Criteria. Source: Hartley (2021).

Individual entry forms also allow for easily achievable workflow solutions, providing automated population of certain data fields, including PSC or Object Class Code (OCC) with a respective data entry. Furthermore, these fields will eventually, through the UI hub, transfer to this information to the contract writing system. A navigational view of this individual system entry is shown Figure 21.

Figure 21. PR Builder Data Entry – Edit Line Item. Source: Hartley (2021).

The transfer of data between the PR Builder and UI emulates that of the Electronic Procurement System (ePS), which is also a considered an end-to-end workflow system to

be adopted by the Navy and Marine Corps. ePS is currently in testing stages throughout the DOD, with the ultimate intent to standardize, integrate, and streamline the contracting community within the next three years. Given the similar functionalities with ePS, it is anticipated that PR Builder and UI may ultimately be “sunset” by the Marine Corps in the coming years. Another primary concern of these respective systems is that they are fit for contract execution, as shown by the system logic and navigational windows. Acquisition planning, and the communication required between those stakeholders, does not currently exist within the logic of these respective systems and would require “full-scale” development through Java.

Many of these preexisting, widely used workflow platforms allow for third-party integration plugins and custom integrations as required. Depending upon how many systems and workflows you want to integrate with, along with extending licensing agreements with established commercial entities, developing or modifying a workflow system may become cost prohibitive for low returns. It is critical that the best automated solution represent the greatest vitality in the long term. Reliance on new technologies, especially artificial intelligence, could become a prominent consideration when communicating acquisition planning. Section IX identifies some of these more advanced or evolution workflow solutions.

IX. SERVICENOW

Software Company ServiceNow developed the Now cloud-based workflow platform in 2011. The platform itself was initially conceived as IT service management based, identifying operational failures of computer hardware and tracking helpdesk ticket resolution. The User Interface (UI) was tailored to the needs of IT data analysts and computer specialists. As the software platform began to be utilized by commercial conglomerates, including Walmart and Disney, the application and company itself grew itself into one of the highest-ranked software solutions in the United States. The desire to expand the software program was also met with recommendations to make the program a “low code” management solution. ServiceNow continues to invest in powerful end-to-end automation capabilities, advancing the artificial intelligence possibilities of the Now platform and its integration into various legacy systems.

The company continues to operate as a direct competitor to Salesforce, which is another commercial entity with a self-named cloud-based software program. While the Now platform is more focused on simplifying workflow processes, Salesforce is a customer relationship management (CRM) program. To that end, the goal of the Now platform is workflow customization, differentiating itself from Salesforce as a customer-based communication system.

As a complete customizable tool, the application is designed to process the business logic desired by the user. The platform operates on mostly JavaScript, a standard coding language for web development in the industry. Because it maintains itself as an “out of the box” solution, users will not have administrative access to the Now code. The main capability of the platform is discovery, as the user can create all required workflows through easy to use and preexisting prompts and navigational tool sets. The software has pre-existing capabilities to connect with many software programs without any additional coding. Now software creates lists and forms, which it can export in multiple types of Microsoft software file types. ServiceNow has a dedicated and extensive website that details aspects of their Navy ATO, as they continuously maintain DOD Impact Level 4 (IL4) and Impact Level 5 (IL5) from the Defense Information Systems Agency (DISA) and

the DOD. Furthermore, they have extensive training modules, providing step-by-step instructions on how a user can easily create workflow processes in the system through their “Flow Designer” application.

The Now software application is available for procurement through contractual support as well. The DOD Enterprise Software Initiative (ESI) is mandatory for consideration in accordance with DFARS 208.7400, as an efficient way to acquire COTS software. Now software licensing and contractor support is available through multiple ESI Blanket Purchase Agreements (BPAs), which provides a simplified means to order service support. Call orders can be executed on contract within 30 to 60 calendar days, given procedural communication between a Contracting Officer and the DOD ESI Navy-assigned ordering officer. Given Now’s “no-code” interface, the system can be fully implemented at an agency within 8 weeks thereafter.

Through the Now software, the user can quickly create workflow logic through a series of field descriptors. In Figure 22, the User is creating a workflow for “Patching Program,” and creating steps for tracking number generation when attempting to identify the need and resolution for a software path.

The screenshot displays the ServiceNow Flow Designer interface for a workflow named "Patching Program". At the top right, there is a "Team lead" field with a text input box. Below this, a horizontal tab bar contains four tabs: "Patching Program" (which is selected and highlighted in green), "Instance Defaults", "Comments", and "Definition". Under the "Patching Program" tab, there are three main sections. The first section, "Enterprise SPP", includes a checkbox and a dropdown menu currently showing "-- None --". The second section, "Enterprise SPP date", also features a dropdown menu showing "-- None --". The third section, "Maximum # of entitlements", contains a text input box.

Figure 22. ServiceNow Flow Designer – Workflow Creation. Source: ServiceNow (2021).

Upon generation of the workflow, which is simulated through a set of decisional prompts, the user can then begin creating the look of a submission entry at each stage of the workflow. The following image represents an entry within the “Patching Program” resolution workflow. The user has also designated a status descriptor, called “Remediation Status,” that identifies to selected parties if something is “Planned,” “Rejected,”

“Resolved” or any other identifier as created by the user. In Figure 23, the user has generated a data record, complete with required entry fields, for the desired workflow.

Figure 23. ServiceNow Flow Designer – Data Entry Record. Source: ServiceNow (2021).

A completed workflow pattern is represented in Figure 24, with a tracking number associated with a task, status, next stage of the process, and stakeholder assignment.

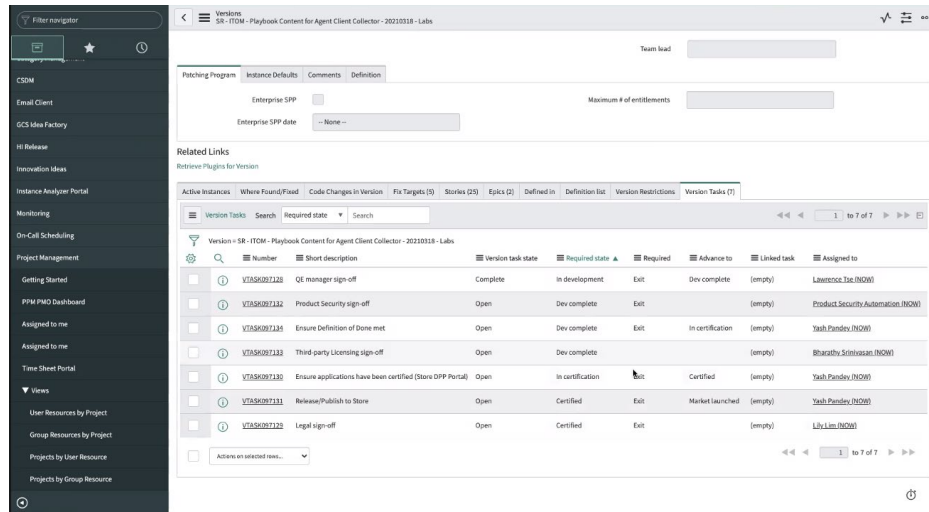


Figure 24. ServiceNow Flow Designer – Status View. Source: ServiceNow (2021).

Table 5 identifies a hypothetical estimate for implementation and business management. The estimate is based on labor categories established in Chapter IV and an average of labor rates queried from available market Governmentwide Acquisition Contracts (GWACs). A number of ServiceNow partnered companies are available in the market on these GWACs to perform implementation and ongoing business management of the Now Platform. Implementation services consist of consulting services to initially build the application to user needs and ensure operability of the platform within a data environment.

Table 5. Implementation of Now Platform

DESCRIPTION	QTY (MONTHS)	PRICE EA MONTHLY	PRICE EXT ANNUALLY
Implementation and Business Management	12	\$46,875.00	\$562,500.00

While the system has connectivity to many external platforms, additional development would be required to extend the platform to connect with many other government systems. Now software is also listed as a SAAS, “Software as a Subscription”,

which would limit any potential data rights ownership on the part of the government. The contractor bears all rights to coding and interconnecting logic developed by the platform. All workflows developed within the system do not have any data or intellectual rights, as they are creations utilizing insourced tools. The software continues to evolve based on customer needs, with continuing focus on AI to learn about a customer's workflow needs and consolidate plug-ins and tool-sets based on these behaviors. While the restriction of data rights ownership can limit the government's ability to in-source development, the software provides an expeditious method to procure and maintain automated workflow processes.

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X. NTIRA

NTIRA is a web-based workflow management tool that relies upon Naval Information Warfare Center (NIWC) Atlantic Charleston to cost and execute work for the program. NTIRA is managed by Commander, Naval Information Forces (CNIF) N4 for manpower and planning. NTIRA hosts and collects personnel situation reports, including Sexual Assault Prevention and Response (SAPR) for an unlimited data set of users and commands. This functionality is managed and overseen by U.S. Fleet Forces (USFF) N1.

It is a module-based decision aid tool to facilitate knowledge discovery and management for Command, Control, Communications, Computers, Combat systems and Intelligence (C5I) stakeholders in requirements generation, acquisition management and resource planning. It allows stakeholders to share a working environment among the Fleet, OPNAV, and the acquisition communities to facilitate a common picture of individual platforms mission capabilities and identified shortfalls. This knowledge enables decision makers to select the most capable platform to fill mission need and identifies capability gaps that steers C5I Modernization. For Undersea Modernization, NTIRA serves as the authoritative data source for C5I Modernization planning and execution.

NTIRA exists on both the NIPRnet and SIPRnet and interfaces with multiple other Navy information systems, including Navy Data Environment (NDE) databases and the Configuration Data Managers Database – Open Architecture (CDMD-OA).

To obtain an NTIRA account, users must have valid CAC cards and utilize the PIV certification to apply for an account. If the user is a contractor, a government sponsor must be provided in the account request form. Additional rights in individual modules are approved by trusted agents for those specific modules.

NTIRA has six modules, each with distinctive functionalities. The first is the C5I Baseline Manager. This module is utilized by Air Forces, Surface Forces, Carriers, Large Deck amphibious vessels, and Shore stations to schedule track maturity of programs during the execution year. Fleet Commanders vote on established “baseline” by installation on a monthly basis during automated Baseline Reviews, which is then automatically exported to

other respective Afloat planning systems, such as the Navy Data Environment-Afloat Master Planning System (NDE-AMPS). Upon approval of an installation baseline, the Baseline Manager considers the program “locked” by Fleet Commanders. Figure 25 presents the desktop image for the Baseline Manager module. Many of the modules have similar customized views, allowing for the user to status of an action and observe individual entry details. The figures within this section come from the Navy Enterprise Personnel Requirements (NEPR) Overview Brief.

Description	HW	STATUS	SCD	HM	AMPS	Auth
DDG-52 BARRY	AR	STATUS	SCD	HM	AMPS	Auth
HAVER (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
HAVERSEA (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
1. ANSWSG-5(V) TTWCS	SW	STATUS	SCD	HM	AMPS	Auth
2. AEGIS WEAPON SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
3. ANSLG-32B(V)2 ES (ICAD)	SW	STATUS	SCD	HM	AMPS	Auth
4. ANSWSG-89 SASWCS	SW	STATUS	SCD	HM	AMPS	Auth
5. ANWSN-7(V)1 RLGN	SW	STATUS	SCD	HM	AMPS	Auth
HAVER (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
6. ANSWSG-5(V) TTWCS	SW	STATUS	SCD	HM	AMPS	Auth
7. ANSWSG-5(V) TTWCS- V5 UPD (SCD 3512)	SW	STATUS	SCD	HM	AMPS	Auth
HAVERSEA (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
8. AEGIS WEAPON SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
9. MK 15/28 PHALANX BLK 1A(FWD) AND 1B(AFT)	SW	STATUS	SCD	HM	AMPS	Auth
10. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
11. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
12. MK 41/2 VLS (90-CELL)	SW	STATUS	SCD	HM	AMPS	Auth
13. SSGSAC (MK 162/1 COMPUTER)	SW	STATUS	SCD	HM	AMPS	Auth
SPAWAR (A-78)	SW	STATUS	SCD	HM	AMPS	Auth
14. MS NEXT GEN C2P (NGC2P)	SW	STATUS	SCD	HM	AMPS	Auth
15. MS NEXT GEN C2P (NGC2P) FC 4 (NGC2P FIELD)	SW	STATUS	SCD	HM	AMPS	Auth
HAVERSEA (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
16. AEGIS WEAPON SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
17. MK 15/28 PHALANX BLK 1A(FWD) AND 1B(AFT)	SW	STATUS	SCD	HM	AMPS	Auth
18. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
19. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
20. MK 41/2 VLS (90-CELL)	SW	STATUS	SCD	HM	AMPS	Auth
21. SSGSAC (MK 162/1 COMPUTER)	SW	STATUS	SCD	HM	AMPS	Auth
SPAWAR (A-78)	SW	STATUS	SCD	HM	AMPS	Auth
22. MS NEXT GEN C2P (NGC2P)	SW	STATUS	SCD	HM	AMPS	Auth
23. MS NEXT GEN C2P (NGC2P) FC 4 (NGC2P FIELD)	SW	STATUS	SCD	HM	AMPS	Auth
HAVERSEA (A-70)	SW	STATUS	SCD	HM	AMPS	Auth
24. AEGIS WEAPON SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
25. MK 15/28 PHALANX BLK 1A(FWD) AND 1B(AFT)	SW	STATUS	SCD	HM	AMPS	Auth
26. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
27. MK 160/4 GUN COMPUTER SYSTEM	SW	STATUS	SCD	HM	AMPS	Auth
28. MK 41/2 VLS (90-CELL)	SW	STATUS	SCD	HM	AMPS	Auth
29. SSGSAC (MK 162/1 COMPUTER)	SW	STATUS	SCD	HM	AMPS	Auth
SPAWAR (A-78)	SW	STATUS	SCD	HM	AMPS	Auth
30. MS NEXT GEN C2P (NGC2P)	SW	STATUS	SCD	HM	AMPS	Auth
31. MS NEXT GEN C2P (NGC2P) FC 4 (NGC2P FIELD)	SW	STATUS	SCD	HM	AMPS	Auth

Figure 25. Baseline Manager. Source: Navy (2021).

Similar to the Baselines Manager is the Submarine Modernization and Alteration Requirements Tool (SMART). This second module of the NTIRA system is utilized for all C5I submarine focused planning and execution.

The third NTIRA module is the Communications Equipment Population Summary (CEPS) tool. This module is used by every ship in the Navy to report their C4I current configuration in an effort to reduce or eliminate the need for Naval Message traffic. The

information from the CEPS tool is used to improve situational awareness by allowing the assessment of the technical and operational impact of system equipment casualties and outages.

Personnel Situational Reports (SITREPS) is the fourth module of NTIRA. This is a navigational and data entry tool that allows for reporting events and special incidents occurring related to personnel that may attract national command or high-level U.S. Navy interest, also known as Special Incident Reporting (OPREP-3).

The fifth module is the Target Completion Date (TCD) Alteration (Alt) Tracker. The TCD Alt Tracker is used to allow N43 personnel to track alterations that have been added to platform baselines after the baseline lock by Fleet Commanders. The module allows users to attach documents, provide comments, vote on alterations, and provide ongoing configuration management.

The sixth module, which is most prudent in utility for acquisition planning, is the Personnel Requirements Manager (PRM). This platform documents personnel requirements to meet objectives and capabilities. Manpower, planning, and budgeting are performed in this module. The module allows for exportation to multiple Microsoft-based platforms for reporting needs, including PowerPoint and Excel. Figures 26 and 27 represent the data entry record views within PRM extended utility module, NEPR.

- Unclassified Title

TACAMO INFORMATION SYSTEM TECHNICIAN AND USER (FAB-T) MILITARY MANNING INCREASE

- Classification

Unclassified NEPR Type: BLD Command UIC: 70240 Command UIC

Command Name: NAVCOMTELSTA SAN DIEGO

- Status

Submitted Priority: Low FCC/C10F Endorser: Select FCC/C10F Endorser

- Context

POM

- Current Action Officers

Select Action Officer

☒ Show only Action Officers where Concurrency has not been set ☐ Show All Action Officers including Concurrency

No Action Officers

- Current Step

FCC/C10F/NCF N12 Review N12 POC: Nixon, Carol Select N12 POC

- NEPR Step Change History

Stepped From	Stepped To	Changed By	Date Changed	Comments	Edit Comments
Draft	Authentication Higher Authority Staffing	WISCH, DAVID	3/28/2019 5:19:29 PM	Submitted to ISIC for review and forwarding to FCC/C10F. I utilized the information from 317-18 to populate the Info for the Dualie Worksheet and Dualie. I used the same BLD from 317-18 so that none of the current data got messed up.	Edit
Authentication Higher Authority Staffing	Draft	Melton, Rocky	4/5/2019 3:32:43 PM	Please include requirement for GS-12 ISSM resourcing.	Edit
Draft	Authentication Higher Authority Staffing	WISCH, DAVID	4/9/2019 5:13:57 PM	Returned to ISIC for forwarding. The CO NCTS does not want to add the ISSM billet to confuse the issue with the enlisted billet increase that should happen in FY-20.	Edit
Authentication Higher Authority Staffing	FCC/C10F/NCF Review	Melton, Rocky	4/9/2019 5:31:31 PM	Resubmission for PM/N2/N6 approval/funding in FY20.	Edit
FCC/C10F/NCF Review	Draft	Langlois, Ruth	4/10/2019 11:41:24 AM	NCTS San Diego - Request correct BLD format from POM-21 format to POM-22 format. Additionally, please ensure Requirement Only BINs that are established in UICs 49657, 49658, and 49659 are included on the BLD. I am standing by if you have any questions.	Edit

Figure 26. NEPR Entry and Change History. Source: Navy (2021).

PBIS Issue: IW #: 70588
RS: 2/6 BSO: 60 PERS BSO: 22
APPN: MPN
PE: 010131SN PERS LI: 1C1C

MPWR for TACAMO FAB-T Installation

Capability/Program Description: Mission requirements and DoD directives mandate additional manpower to fully support the Family of Advanced Beyond Line-of-Sight Terminal (FAB-T) TACAMO mission. These specialized personnel are crucial to providing situational awareness, configuration management, maintenance and operation to meet the Navy and DoD requirements. This requirement also enables the Navy to perform high-level analysis of configuration and implement changes to the cybersecurity posture in the respective environment.

Proposed Adjustment: Fund \$5.43M (FYDP) to fund 14 enlisted billets to mitigate critical manpower gaps imposed by increased operational requirements and DoD directives. The ability to support operation and maintenance requirements for TACAMO is a DoD imperative that the Navy is mandated to fully support.

Rationale for Adjustment: The operational imperative to operate, maintain and secure the Navy FAB-T system supporting the TACAMO ground mission and defend against evolving and ever-increasing threats continues to grow. Failure of any of these efforts will result in a mission failure. This functionality will provide leadership and network operators a clear, concise, and near real-time picture of the TACAMO system, its status, capabilities and impacts. Supports IW IPCL PRI #3.

Warfighting Capability Impact: Mission(s) Warfare Impacts: Navy currently unable to meet DoD direction, deficiencies may lead to "very high" negative operational/mission impact. Cybersecurity Impacts: (Very High) Provide cybersecurity coverage and meet high availability objectives for TACAMO to meet objective detect/respond time and enable cybersecurity compliance. Without, there is a very high probability of TACAMO mission failure. The TACAMO issue has significant joint impact for mission completion.

Dependency: No.

R3B Action: No.

ITEM	FY21	FY22	FY23	FY24	FY25	FY26
PB21 MPN	1.1	1.1	1.1	1.2	1.2	1.2
POM 22 MPN	1.7	2.3	2.3	2.4	2.4	2.4
DELTA MPN	0	1.2	1.2	1.2	1.2	1.2
POM TOC + DHAN/RS	2	5	5	5	5	5
TOTAL DELTA \$	2	1.7	1.7	1.7	1.7	1.7
QTY	FY21	FY22	FY23	FY24	FY25	FY26
PB21 MPN ES	14	14	14	14	14	14
POM 22 MPN ES	29	29	29	29	29	29
DELTA MPN ES	14	14	14	14	14	14
POM22 TOC MPN ES	2	2	2	2	2	2
TOTAL DELTA ES	17	17	17	17	17	17

Category: Manpower
Bil Cat: Readiness
09/30/2019 09:40

PM: Jim Swallow
RO: E.J. High DPMV N2/N6P115 705-695-8032
RS Approval: Captain Lehtrom, COMNAV N2/N6P92, 705-695-7744

Figure 27. NEPR Dualie Automatic Generation. Source: Navy (2021).

In Figures 7.2.1, the user has created a data entry to view, update, comment or approve and reject a manpower requirement. In Figure 7.2.2, the user, through PRM functionality, has chosen to translate this data into a Dualie, or a financial perspective for POM submission.

In addition to C5I Modernization, NTIRA hosts and collects personnel situation reports including Sexual Assault Prevention and Response (SAPR) for an unlimited data set of users and commands. This functionality is overseen by USFFC N1.

NTIRA has been identified as an Abbreviated Acquisition Program and is compliant with all necessary regulations and instructions as required (Fleet Forces Command, 2019). However, trying to find accessibility and support with the module is met immediate obstacles. The current methodology of estimating sponsor work is not sufficient to accurately capture the sponsor's needs for the initial work or to cover the true cost of sustainment.

To date, NIWC has not developed a standardized costing model for the program when dealing with NTIRA or NTIRA sponsors. When a sponsor approaches the program for work, NIWC develops an estimate for the specific work and tries to determine the follow-on sustainment cost and level of effort that will follow after the work has been completed. However, without a standardized model, the sustainment cost does not appear to be in line with either the necessary sustainment work for that particular sponsor nor are there any service-level agreements in place to ensure the sponsor is receiving a minimum of functionality for those costs. The downfalls of looking at each and every sponsor without a model is twofold: the sponsor cannot have an understanding of the cost or service level during sustainment until the initial project is complete; and lack of consistency when approached by sponsors for new work results in either inaccurate or inadequate estimates.

Current estimation techniques employed by NIWC do not properly account for various types of requirements. Some sponsors come to the program with fully realized requirements, but the vast majority do not have itemized requirements and instead have only a vague understanding of the end product but a greater understanding of what the end product should accomplish. NTIRA and NIWC utilize the Agile software development process, which naturally lends itself to iterative development in which requirements are refined and further defined as part of the overall process. There is a gap between how NIWC generates estimates

for sponsors and how the software development process occurs, resulting in failures both in terms of proper execution of funds and delivering a viable product that meets sponsor expectations. Table 6 provides a hypothetical cost estimation of contractor-supported development for the current calendar year, along with two potential annual option years. The estimate is based on labor categories established in Chapter IV and an average of labor rates queried from available market GWACs.

Table 6. NTIRA Implementation

Labor Category	FTE	Base Year (2021 - 2022)			Option I (2022 - SEP 2022)		
		Hrly Rate	Hrs	Total	Hrly Rate	Hrs	Total
Software Developer/ Programmer	1	\$93.84	1,920	\$180,172.80	\$95.72	1,920	\$183,776.26
Software Applications Tester	1	\$61.20	1,920	\$117,504.00	\$62.42	1,920	\$119,854.08
TOTAL COST				\$297,676.80			\$303,630.34

These development costs include modernizing the system to meet C2C24 requirements, ongoing system testing, fixing deprecated code and existing bugs, revising designating and descriptive fields, and overall helpdesk operations of the system. The costs in the chart are for development within the existing PRM module environment. The above costs do not incorporate a complete “overhaul” to system logic, as the existing legacy functionality will remain within the parameters of the PRM module. Based on the above costs, “full-development” would require an estimated \$300,000 annually.

If choosing to minimize support efforts merely to sustainment, performing only minor updates and helpdesk services, the chosen labor categories would be “Database Administrator” and “Training Specialist/Help Desk” respectively. Costs can be significantly reduced if these positions are limited to be less than an FTE each.

XI. ETRACKER

In 2006, Naval Expeditionary Combat Command (NECC) began development of a tracker specifically for the purposes of acquisition planning. The program, spearheaded by NECC Contracts and Acquisition Management Office (CAMO), was designed in conjunction with contractor Booz Allen Hamilton (BAH) for the specific purpose of communicating the acquisition plan amongst stakeholders. The system operates on the Microsoft SharePoint design platform, which permits an accessible and easily navigational place to store, organize, share, and access information. The platform operates successfully on all known web browser applications, including Microsoft Edge, Internet Explorer, Chrome, or Firefox. This platform is referred to as both “eTracker” and “eContracts” within the User Guide, which denotes both the system’s functionality for user data entry and as a database. For the remainder of this text, the platform is referred to as “eTracker.” Users submit contract information via the system’s “Contract Request Form” and then can populate data within the form itself, per Figures 28 and 29.

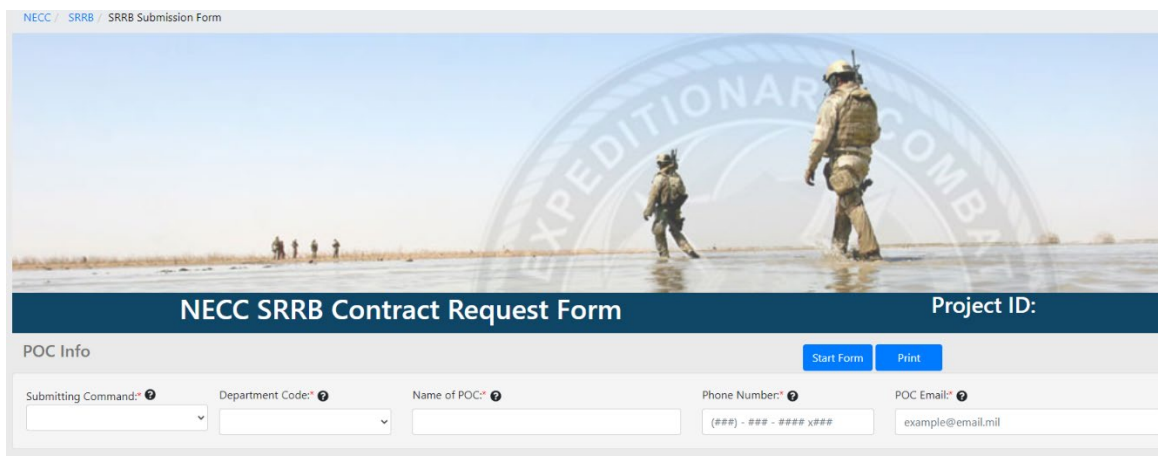
The image shows a web browser window displaying the "NECC SRRB Contract Request Form". The browser's address bar shows "NECC / SRRB / SRRB Submission Form". The page features a large header image of two soldiers in a desert environment, with a large, semi-transparent circular seal of the "EXPEDITIONARY COMBAT COMMAND" overlaid. Below the image is a dark blue banner with the text "NECC SRRB Contract Request Form" on the left and "Project ID:" on the right. Underneath the banner is a "POC Info" section containing several input fields: "Submitting Command:" (a dropdown menu), "Department Code:" (a dropdown menu), "Name of POC:" (a text input field), "Phone Number:" (a text input field with a placeholder "(###) - ### - #### x###"), and "POC Email:" (a text input field with the placeholder "example@email.mil"). To the right of the "POC Info" section are two buttons: "Start Form" and "Print".

Figure 28. eTracker - NECC SRRB Contract Request Form – Requestor.
Source: Navy (2021).

Contract Info

Contract Title*	New Contract or Task Order*	Requirement Type*	Funded / Unfunded*
Total Contract Award Cost*	Period of Performance Start Date*	Period of Performance End Date*	SRRB Date*
\$ 0.00			
PSC*	OCC*	Click here for PSC OCC Crosswalk	
COR/Local TA*	COR/Local TA Training Date*	Ethics Training Date*	Human Trafficking Training Date*
Select A COR/Local TA			
Contract Number*	Option Year to be Executed*	PoP to be Executed Start Date*	PoP to be Executed End Date*
Task Order Number*	Vendor*	Total Number of Onsite FTEs*	Total Number of FTEs*
		0.00	0.00

Figure 29. eTracker - NECC SRRB Contract Request Form – Contract Info.
Source: Navy (2021).

When editing the entry form, the user is guided through prompts for every data field. These automated prompts initiate field descriptions, provide downloadable hyperlinks for additional instructions, or provide external links for more information. Per Figures 30 and 31, these prompts provide instructional guides if the user is attempting to understand the nature of PSCs in correspondence to their requirement. In another example, the user is attempting to complete a data field related to requirement Tripwires, or thresholds that provide greater scrutiny by higher levels of management on whether to accept potential risk.

CATEGORY MANAGEMENT
SPEND CATEGORY

1. Information Technology and Telecommunications
2. Professional Services
3. Security and Protection
4. Facilities & Construction
5. Industrial Products & Services
6. Office Management
7. Transportation and Logistics Services

[+ See All Spend Categories](#)

Filter by Object Class Code

References

DOWNLOAD

- ▶ PSC Tool Navigation Quick Start Guide
- ▶ PSC Tool Training
- ▶ PSC to Object Class Crosswalk Version 2.2 – October 2020
- ▶ PSC to Category Management Alignment

EXTERNAL LINKS

- ▶ Improving Transparency of Procurement Spend DPC
- ▶ PSC Manual on Aquisition.gov October 2020
- ▶ NAICS Code List 2017

Search by Better Buying Portfolio

Figure 30. eTracker Instructional Prompt – PSC to Object Class Code Crosswalk. Source: Navy (2021).

Category	Definition
Labor Rate	Hourly Rate (\$/HR)
Labor rates utilizing fully burdened hourly rates in excess of those defined before per individual shall require additional review/approval.	\$157.00
Intra-agency Acquisition Fees	Funds being sent to an activity within Department of Defense (DOD) that will charge a fee to process/administer the requirement of 10% of the estimated costs or \$500,000 whichever is lower.
Other Direct Costs (ODC)	If ODCs are estimated to be greater than 10% of the total annual labor value or \$100,000.00, whichever is lower, for any given contract or task.
Sole Source and Bridge Contracts	Sole source and/or first bridge actions with a total acquisition value greater than or equal to \$7 million or above the SAT.

Figure 31. eTracker Instructional Prompt – Tripwires. Source: Navy (2021).

The logic of the system allows the most accurate data submission possible, absent any artificial intelligence properties within eTracker itself. The system will automatically reject submissions that neglect to incorporate uploaded minimum attachments under certain categories. These categories include documents such as a Performance Work Statement (PWS), Independent Government Cost Estimate (IGCE), Inherently Governmental Functions (IGF), and Certificate on Non-Personal Services. Figure 32 provides an example of a dashboard prompt for missing mandatory attachments.

The screenshot displays the eTracker system interface. At the top, a notification from 'usff.navy.deps.mil' states 'Submission Complete. You may close the window now!' with an 'OK' button. Below this, a red box on the right side of the screen lists the following attachments that must be added:

- PWS
- IGCE
- IGF
- Inherently Governmental Functions Indicator
- Certificate on Non-Personal Services

The main interface shows a 'POM Submission' section with a 'Yes' dropdown and a 'POM Fiscal Year' of '2024'. Below this is a table with columns for 'Attachment(s) Title', 'Document Type', and 'Delete Attachment'. The table contains one entry: '2040-NECCLogo785x85.png' with a document type of 'Inherently Governmental Functions Indicator'. A blue circular arrow highlights the 'Delete Attachment' button next to this entry. Below the table is a 'Command Level Review' section with a status of 'Request has been reviewed at the Command Level and is ready for submission to the Service Requirements Review Board' and a 'Submit SRRB Contract Request Form' button. At the bottom, there is an 'N41 Accept/Reject (CAMO Use Only)' section with a 'Dual Funded' checkbox and a 'Comments' field.

Figure 32. eTracker – Mandatory Attachments Missing. Source: Navy (2021).

In Figure 33, the user has attempted to bypass a field to enter in a Tripwire justification. A prior data entry field required the user to enter in separate dollar value estimates for total labor costs and Other Direct Costs (ODCs). The system recognized the ODCs as exceeding 10% of the overall labor cost, thereby exceeding a threshold as a Tripwire. At this point, the system mandated this subjective data entry field as a required form submission, and will not permit the user to submit the SRRB without its completion.

The screenshot shows a web interface for the eTracker system. At the top, there is a section titled "Tripwires:" with a blue button labeled "Click here to view Tripwire definitions". Below this, a red warning banner displays the text: "Warning! ODC exceeds 10% of funding required. Please enter justification." Underneath the banner is a large, empty white text box for the user to provide justification.

Figure 33. eTracker – Automated Tripwire Prompt. Source: Navy (2021).

In Figure 34, eTracker system’s SRRB submission process requires selection of a COR. The COR is required to be a designated user within the system. Selecting the field for COR or local technical advisor (TA), will initiate a drop-down field with all delegated personnel in the system. Selecting an individual’s name will auto-populate many of the corresponding fields related to respective certification standards. In the event that the COR’s or TA’s certification is set to expire within 90 days, the SRRB submittal will provide an alert to the user that they will not be able to submit their request in the system and can only save the draft entry. More information on system COR tracking is provided later in the text.

The screenshot displays a form for SRRB submission with several fields organized in a grid. The first column contains "COR/Local TA:" (a dropdown menu with "Select A COR/Local TA"), "Contract Number:", and "Task Order Number:". The second column contains "COR/Local TA Training Date:", "Option Year to be Executed:" (a dropdown menu), and "Vendor:". The third column contains "Ethics Training Date:", "PoP to be Executed Start Date:", and "Total Number of Onsite FTEs:" (with a value of 0.00). The fourth column contains "Human Trafficking Training Date:", "PoP to be Executed End Date:", and "Total Number of FTEs:" (with a value of 0.00). Each field has a small question mark icon for help.

Figure 34. eTracker – COR Selection Fields. Source: Navy (2021).

SRRB submission also includes financial data entry fields, allowing for metric data that ties costs to average price per FTE or to provide analytics on cost savings between estimated and awarded values. Figure 35 represents the funding data fields available on each respective SRRB entry.

Funding Data

BSO 60 FY Funding: [dropdown] BSO 60 Labor Costs: \$ 0.00 BSO 60 ODC: \$ 0.00 BSO 60 Contract Fee / Reimbursable Amount: \$ 0.00 BSO 60 Appropriation: [dropdown] BSO 60 Funding Type: [dropdown]

BSO 70 FY Funding: [dropdown] BSO 70 Labor Costs: \$ 0.00 BSO 70 ODC: \$ 0.00 BSO 70 Contract Fee / Reimbursable Amount: \$ 0.00 BSO 70 Appropriation: [dropdown] BSO 70 Funding Type: [dropdown]

+ Funding Required: \$ 0.00 Amount of Last SRRB Request: \$ 0.00

Figure 35. eTracker – SRRB Financial Data Fields. Source: Navy (2021).

SRRB submissions is only one of many modules, as shown by the Figure 36. Among these many tools and resources, are separate needs for respective acquisition planning stakeholders, including required optics for Comptrollers, CORs, or senior command leadership.

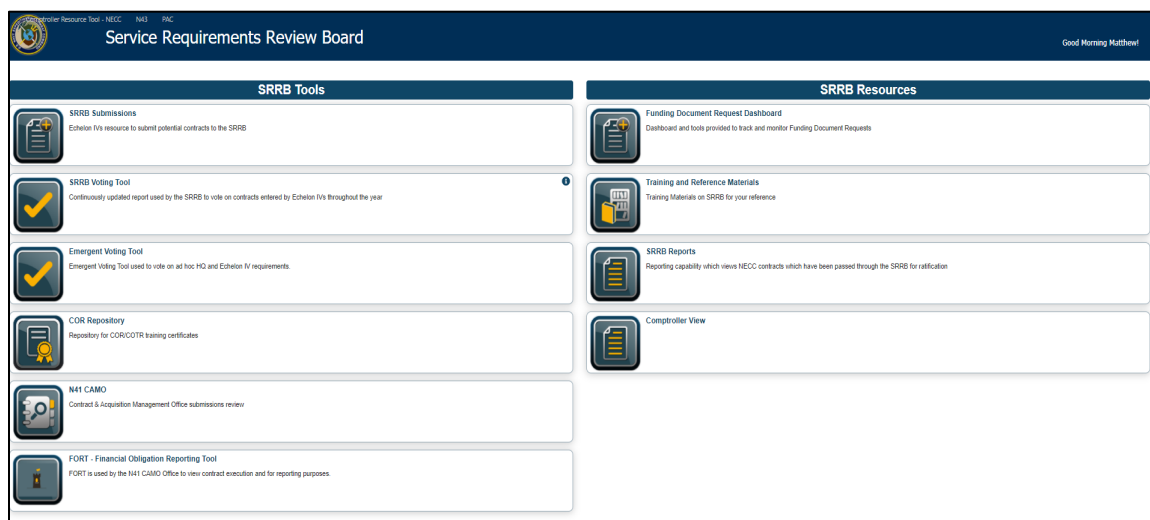


Figure 36. eTracker – Homepage. Source: Navy (2021).

“Pre-SRRB” are those communications and questions facilitated before a formal panel to vote on acceptance of a SRRB request. In Figure 37, Voting Members have a summarized list of actions that can be expanded to view the decision summary of each respective stakeholder.

Expand/Collapse	Priority	Contract Title	Submitting Command	Name of POC	Decision Summary
		MESF Schools Student Control	MESG TWO	Edmondson, David Dwight (Dave) CIV USN MESG TWO (USA)	1 Accept 5 Deferred
		MESF Advanced Engineering Course Curriculum Development and Instruction	MESG TWO	Edmondson, David Dwight (Dave) CIV USN MESG TWO (USA)	1 Accept 4 Deferred
		Recovery Care Management Option 1 year modification	NECC HQ	CAPT Joseph Bonvie	5 Accept 1 Deferred

Figure 37. eTracker – Voting Member Summary List. Source: Navy (2021).

When expanded, the Voting Tool, as shown in Figure 38, displays details for the requirement including Board Member positions, decisions made, and comments entered. Actions can also be deferred for further clarification by a selected team member. Automated notifications of an action of the system are submitted to all respective stakeholders in the workflow process via email. These may include notices of approval, rejection, or reminder “pings” of a pending item for action by a user.

Expand/Collapse	Priority	Contract Title	Submitting Command	Name of POC	Decision Summary	Comment(s)
	↑ ↓	met bah support -update Update	CRC-2	Hughes, Melanie	2 Accept 1 Reject	
Board Member	Decision	Comments		Board Member	Decision	Comments
Executive Director	Accept	test IE Update		DNHQ	Pending	Submit
NECC BSO 60 Comptroller	Reject	Update		NECCBAC BSO 70 Comptroller	Pending	Submit

Figure 38. eTracker – Voting Member Tool. Source: Navy (2021).

Most importantly, in Figure 39, at any stage of these workflows within the respective modules, attachments can be uploaded to the system through a quick “drag and drop” functionality.



Figure 39. eTracker – Uploading Attachments. Source: Navy (2021).

In providing oversight and traceability to CORs and technical advisors, the system requires all users with that defined role to upload required certification standards. In Figure 40, the system requires CORs to upload attachments of the completed certifications and complete data entry fields with the date of completion. This repository connects with the SRRB data entry form to ensure that contract actions are not initiated without the COR and technical advisor having valid certificates for the requested performance or delivery period.

Name	COR/COTR TA	Ethics	Human Trafficking
Lopez, Jose A II LCDR USN (US)		2021-02-19	2021-02-19
Sammons, David			
Dominguez, Anisa A LCDR USN NAVELSG (USA)	2020-05-15	2021-02-01	2021-01-06
Elliott, Jennifer A CIV USN NCG 2 (USA)	2021-02-24	2021-02-25	2020-12-03
Bollinger, Daniel M CIV USN COMNAVEXPDCMBTCOM VA (USA)	2021-02-08	2021-02-09	2021-02-06
Ford, Steve CIV USN COMNAVEXPDCMBTCOM VA (US)	2021-01-21	2020-12-16	2020-12-11
Villena, Mandel C CIV USN CORVGRU TYWO (USA)	2020-10-23	2020-10-22	2020-10-22
Drage, Jamie P LCDR USN (USA)	2020-10-15	2020-10-15	2020-10-13
Rhude, Randall P EODTEU-2	2019-11-30	2019-11-27	2019-11-30
King, Thomas M II CIV USN COMNAVEXPDCMBTCOM VA (USA)	2020-06-01	2020-06-03	2020-06-03
Sancho, Carlos CIV USN COMNAVEXPDCMBTCOM VA (USA)	2020-04-23	2020-03-19	2020-03-19
LTJG Adam J Goldsmith	2020-04-30	2020-04-30	2020-04-30
Risley, Dena B CDR USN COMNAVEXPDCMBTCOM VA (USA)	2020-04-30	2020-04-30	2020-05-01
Mueller, Michael C (Mike) JR CIV USN NAVELSG (USA)	2020-04-03	2020-03-27	2020-03-27
Velez, Roberto M PO1 USN (USA)	2019-10-22	2021-01-07	2021-01-07
Hagan, Jacob M LT USN (US)	2020-02-17	2020-02-16	2020-02-16
Flynn, Sandra Deering (Sandy) LCDR USN EODGRU 1 (USA)	2020-04-03	2019-06-21	2020-04-28

Figure 40. eTracker – COR Repository. Source: Navy (2021).

Another prominent feature of the eTracker is the ability for full financial perspective on requirements. The financial module can create instantaneous financial reports for any selected time period. Using data entry fields, financial analysts can input tracking numbers, funding document request (FDR) numbers, or upload SMARTS (SABRS Management Analytical Retrieval Tools System) financial reporting forms. With continuous submittals of this data, all stakeholders would have visibility over financial obligations on a contract action from “cradle to grave.” In Figures 41 and 42, the “Comptroller View” shows SRRB financial metric data or account obligations by FDR.

Tracking Number	Contract Title	SRRB Total Approved Amount	NECCANT FDR	NECCPAC FDR
CTF-75-2021-0167-1599	Guam IT SUPPORT	\$0 of \$1,254,836	\$0.00	\$0.00
ECRC-2021-0167-1650	Fleet and Family Services	\$0 of \$98,916	\$0.00	\$0.00
ECRC-2021-0167-1656	Mission Support Services	\$0 of \$357,410	\$0.00	\$0.00
ECRC-2021-0167-1657	Logistics Support Services	\$0 of \$210,456	\$0.00	\$0.00
NGC-2-2021-0233-1662	NGC TWO Non Boat Maintenance	\$0 of \$11,316,876	\$0.00	\$0.00
NGC-1-2021-0233-1663	NGC ONE Non Boats Maintenance	\$0 of \$1,097,393	\$0	\$0
EOD-1-2021-0233-1664	EOD ONE Non Boat	\$0 of \$2,371,000	\$0	\$0

Figure 41. eTracker – SRRB Comptroller View. Source: Navy (2021).

Amount Remaining Details	
SRRB Approved Funding:	\$4,516,978.29
N4027319MP00112	127,117.68
N4027319WR0028F	0.00
N4027319WR0028F	0.00
N4027319WX0029C	0.00
N4027319WX0029C	34,320.00
N4027319WX0029C	28,057.00
N4027319WX0029C	0.00
N4027319WX0029C	0.00
N4027319WR0015L	0.00
N4027319WR0015L	0.00
N4027319WR0015L	0.00
N4027319WR0015L	0.00
Total	76,682.27

Figure 42. eTracker – SRRB Financial Obligations. Source: Navy (2021).

The eTracker system incorporates all the requisite stakeholders observed through the standard SRRB workflow process described in previous chapters. It also provides consideration for multiple workflows within the Comm Plan initiate during the Planning Phase of any acquisition. Given that this system is readily available for acquisition planning, there are factors that must be considered if attempting to utilize the eTracker. In terms of cost, as previously identified, absent qualified and experienced workforce, contractor support can be acquired to assist in coding and development.

The Defense Technical Information Center (DTIC) operates an Information Analysis Center (IAC) Multiple Award Contract (MAC) that incorporates over 22 technical focus areas. These categories include defense systems, cybersecurity, homeland defense and security, and, most importantly, information systems. DTIC, with a pass through fee, provides contract execution services to issue task orders of varying size and scope that leverage the expertise of industry leaders. DTIC's full and open MAC vehicles, which consist of contract numbers FA8075-18-D-0001 through 0015, are the main resource for these task orders. Each of these contracts has a nine year ordering period and a six month extension. Orders can have a period of performance that can end up to 60 months after the IAC MAC expiration date of 30 March 2028. An annual rough order of magnitude (ROM) estimate, for the 2021 to 2022 performance period, is provided in Table 7. The estimate in Table 7 is based on labor categories established in Chapter IV and an average of ROM estimates queried from the DTIC IAC MAC.

Table 7. eTracker Implementation

DESCRIPTION	FTE
Project Manager	0.02
Software Engineer	0.54
Systems Analyst	0.50
Test Engineer	0.33
Systems Analyst	0.50
TOTAL FTEs	<i>1.89</i>
TOTAL ANNUAL COST	<i>\$383,757.44</i>

There are a number of factors that impact the successful of implementing the eTracker for an agency. The command must already maintain a SharePoint portal to host the platform. Many DOD agencies operate a scalable cloud-based collaboration tool on SharePoint through the DOD Enterprise Portal Service (DEPS), which was established by the DISA. Another consideration of eTracker is the limitation of a 5,000 line item “view screen.” As such, if recording contract data or SRRB requests, this repository would be limited to 5,000 individual entries. After this record size is exceed, development would be required to exceed this limitation, or the platform would suffer latency and complete operational failure.

Another factor is the inherent system logic of an active COR record. The eTracker platform requires CORs and technical advisors to submit information pertaining to competencies, experience and minimum training requirements of a “Type A” certification standard program. The repository is separate and distinct from Procurement Integrated Enterprise Environment (PIEE), which is another mandatory platform for maintaining this data. This creates duplicative efforts on the part of the COR and technical advisor to ensure updated information is included in both respective platforms. If attempting to submit a record that specifies an annual contract performance period which exceeds the COR’s or technical advisor’s valid certification record within a 90-day period, the record is summarily rejected. This logic is inherent in the logic of the system and would require additional development to remove this functionality from eTracker.

The system also has another major consideration in use and cost. As identified in the cost estimation, a total annual cost of \$300,000.00 provides minimal effort to extend of the platform from NECC information system ownership to the respective agency. However, this cost accounts for the existing workflow logic within eTracker, absent any new workflow patterns. More specifically, there are two separate phases observed by the platform. The first phase is submission of the SRRB request, which is directed to a “permission group” designated by the command. After completion of SRRB request, that said permission group will activate the Voting Tool for the selected record. At which point in time, there are no workflows within the voting module. All voting members have access to the record and attachments at the same time, and can approve, reject, or defer the record

without consideration of sequential order. The aforementioned permission group, which is typically the CAMO office, is responsible for selecting voting members and can extend automated email notices and reminders for selected parties.

eTracker is, in practice, a decision summary tool. It is completely user driven, with no current capabilities of artificial intelligence to determine trends or make independent system decisions based on historical contract data. The system can transform data to multiple forms, including generating multiple file types in Microsoft software applications based on input data. It is further anticipated that the platform will continue to evolve with expanding connectivity with external platforms, mainly financial systems, into the coming the subsequent calendar year.

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XII. RECOMMENDATIONS AND OVERVIEW

In accordance with the DOD Guidebook for the Acquisition of Services, an acquisition team should be established to perform customer-focused, multi-functional management of the service requirement throughout its life cycle. In the planning phase, the acquisition team members are selected to define the key outcomes of the requirement. The determination of whether to acquire an automated process to facilitate this planning process is based on analysis of potential efficiencies gained that outweigh costs involved. The contracting officer, or an acquisition professional, is a key stakeholder in the acquisition team.

The role of the acquisition professional is evolving, transforming from a procedurally focused, contract execution mindset to a subject matter expert informed in the complete business acumen. This requires injecting the latest offerings in technology to help expedite planning phases to successful mission execution. The rapid pace of the technological environment, along with the needs to accelerated decision-making in the government, require the ability to establish a knowledge-base and make this accessible to all stakeholders.

The future of an acquisition professional requires a holistic view of procurement, connecting all pieces of requirement into a successful whole picture. Guidance and collaboration with the acquisition team, including financial, security posture, senior leadership, and technical advisor members, can grow more efficient with an automated workflow system. Given the acquisition professional's position of importance in facilitating this communication from origination of the requirement to close-out, this stakeholder is an important center point in the overall workflow. With the acquisition professional as the caretaker and administrator of an automated workflow system, there is the potential to solve procurement needs with the greatest efficiency of accessible data.

An automated workflow system has the possibility to increase accuracy of data and reports generated by each respective stakeholder. Any found discrepancies can be found instantaneously and adjusted timely, increasing accuracy in data and accountability.

Through an efficient flow of information, all respective stakeholders can have the transparency and the real-time communication to expound upon service scope or deliverables. As such, there would be an upward and downward trend of communication and understanding of requirement in how it supports the broader organizational mission.

Workforce Analysis can be executed more efficiently, allowing for accessible data trends. Automating workflows allows for expeditious access to information on whether the requirement could be fulfilled with internal billets or if contracting services are a more viable option. Additionally, inherently governmental functions and personal services review and certification can be more centralized, providing greater accountability. Contractual requirements could be more effectively prioritized by having clear visibility on impact to mission readiness or impact to command priorities. Through separate leadership tracking modules, command leadership could quickly identify low priority programs for reduction or reallocation of resources.

From a financial perspective, an automated workflow system could provide a better understanding of the command's fiscal position and requirements, planning of fiscal health, and development of FY strategy to support the domain. Optics of budget cycles and expeditious extrapolation of exhibits can allow financial departments to defense congressionally approved funds and support budget considerations.

The financial estimations provided within this text will be vary based on implementation requirements. There will be fixed costs involved with potential commercial licenses and hosting requirements, at a minimum, for any platform to successfully run and perform automated workflows on web-based platform. One major cost driver is the level of development required, as extending utility to preexisting systems and legacy applications may be both more expeditious and less financially burdensome. If attempting to establish a brand name platform, this will require significant coordination with the ISSM and, absent available government resources, could cost millions of dollars to perform initial development.

The workflow management system must integrate into the entire acquisition process much like an assistant coach of sports game. The system instructs the players in

the rules, regulations, equipment and techniques available to the requirements holders. The system assesses programs, monitor progress during each stage, and keeps the decisional authorities informed. An automated method of workload tracking, distribution, and receipt control will standardize procedures, create transparency, and develop cohesion amongst the multiple segregated governmental departments.

Much like the evolutions occurring to the acquisition professional, automation platforms are also advancing and shifting the possibilities of decision-making. Workflow tools may solve initial issues related to loss or degradation of data. Furthermore, they reduce the level of communication waste and task duplication that occurs when relying on antiquated tracking and traceability methods. If considering the use of workflow tools to resolve immediate issues, implementation plans should also incorporate the full potential life cycle of the system. Using process improvement tools, these systems may continue to enhance the way decisions are made. Whether a full-scale, homegrown creation or a customized platform, the most ideal path for acquisition planning is based on the best value solution. The command must find efficient ways to optimize communication and reduce redundancy and time waste in defining mission execution.

In consideration of most current and “out of the box” solutions, the Now platform and eTracker system are readily available for Navy acquisition planning. Both options allow for simplified methods to communicate planning and execution needs between all stakeholders or those parties that are in a “need to know” status. The most effective solution for “big data,” or the most effective and existing mechanism to share data jointly among the Navy, is ADVANA. The platform continues to build upon existing data repositories and creates synergies throughout an intelligence-based network. ADVANA currently lacks the workflow automation capabilities of the Now Platform and eTracker, however, the tool’s ability to customize the user environment allows for continued functionality growth. Table 8 provides a comparison between many of the systems identified in the text, given cost considerations and currently available platform functionalities.

Table 8. Workflow System Comparison

	ADVANA	Flow Designer	NTIRA	eTracker
Annual Price	To Be Determined	\$562,500.00	\$297,676.80	\$383,757.44
Automated Workflow		X	X	X
Data Repository	X	X	X	X
Artificial Intelligence	X	X		
External System Functionality	X	X	X	X
Accredited	X	X	X	X
Government Owned	X		X	X
Joint DoD Solution	X	X		

Table 8 provides a view of what is currently available in the market, which depicts that there are no current and complete solutions for all potential needs. ADVANA provides the greatest opportunity, as a government owned system, for growth and advancement throughout the DoD. Unless there is a joint effort to advance the platform's capability for business flow, however, ADVANA will always be limited to a data hub for information share. The next alternative is to adopt a commercial license for the Now Platform, as this provides a widely used commercial platform that is easily accessible and tailored to each user's needs. While the Now Platform is not a government-owned system, given the software's accreditation and current use by multiple DoD agencies, it proves to be a viable and secured option for workflow processing. Artificial intelligence protocols within systems like ADVANA or Now platform will expel the data as required and when required for users to make informed decisions at each procurement stage. The Now Platform provides the greatest utility as existing solution for workflow management.

XIII. WORKFLOW SYSTEM CHECKLIST AND QUESTIONNAIRE

Contained within this chapter is a checklist of critical factors for consideration of concept development and selection of mission parameters when determining to acquire an automated workflow tracking system. *Step 1:* Create a milestone plan that will be a living document as you continue through research and selection of the automated workflow system.

Table 9. Milestone Plan. Adapted from Naval Information Forces (2018).

Phase Description		Responsible Entity	Completion Status	Estimated Start Date	Estimated End Date
1.0 Concept Development					
	Research Certification and Accreditation Requirements				
	Define Mission Need				
	Generate CONOPS				
	Define User Roles, Descriptions, and Access Levels				
	Identify Physical and Non-Physical Security Measures/Facilities & Threat Analysis				
	Research Accreditation Boundary				
	Document Hardware, Software Protocols				
	Research Implementation Methods				
	Research Validation Procedures				
2.0 Systems Acquisition/Development					
	Validation and Testing				
	Finish Compiling the C&A Package				
	Develop POA&M for Non-Compliant findings				
	Gather and Submit Package Documentation (Plans for Implementation and Accreditation)				
	Respond to Requests for additional information and Resubmit				
	Receive Accreditation Decision				

Phase Description	Responsible Entity	Completion Status	Estimated Start Date	Estimated End Date
3.0 Sustainment				
Transition to Sustainment Operations & Maintenance				
Operate & Maintain System				
Monitor System and Security Compliance				
Upgrade System				
Retire and Dispose of System				

Step 2: Create cross-functional working groups with principal parties to represent focus areas. Develop a mission description of the automated system.

Step 3: In consideration of the Milestone plan, incorporating decision-making by working groups, ensure all inputs, decision points, processes, and alternative procedures are all recorded for the workflow.

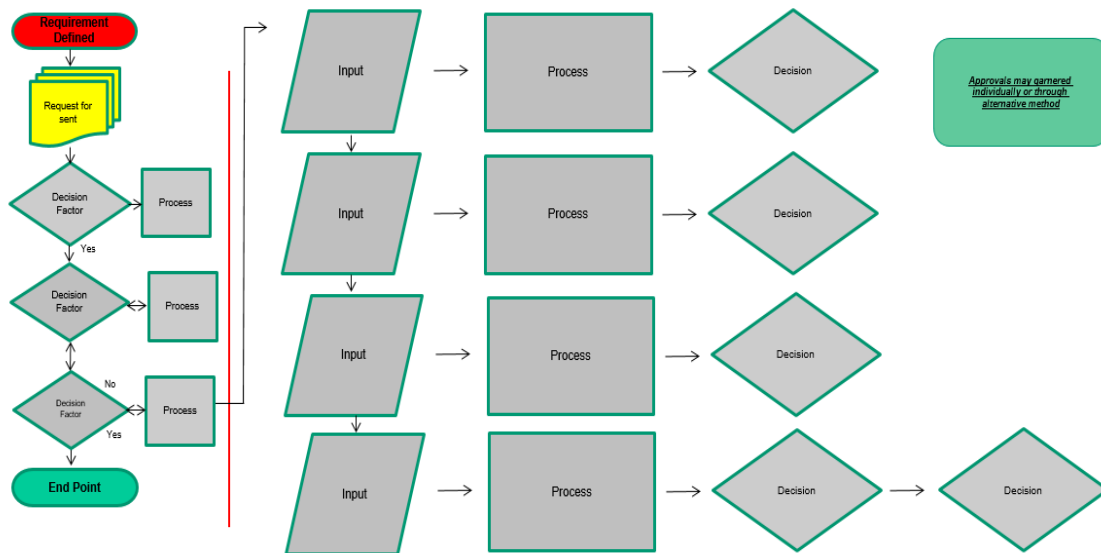


Figure 43. Standard Workflow Template

Identify system outcomes and minimum logic requirements of the system. For example:

- Presentation logic— provides an interface for users that enables the viewing of data with standard web-browsers.
- Business logic—manages transactions between the presentation and storage layers and routes request to its respective service based on conditions set that including user privileges and roles.
- Storage—persistence of data that is required for users to read/write data to carry out their respective responsibilities

Step 4: Identify a matrix for user account roles, in association with departmental approvals and authority.

Table 10. User Account Matrix

Username	Submitter	Department Head	Document Reviewer	Determine Priority	Legal Counsel	Chairperson
Firstname.lastname@navy.mil	X		X			
	X		X			
	x					

Step 5: Determination Accreditation standards. Coordinate with respective Security Office, Information System Security Manager (ISSM), and OPSEC officer to identify internal and external system threats. Furthermore, review all system compliance requirements as identified by the RMF Process Guide. Table 10 provides examples of RMF considerations and checklists and Table 11 is a checklist for areas of system compliance.

Table 11. Physical and External System Threat Matrix. Adapted from Department of the Navy (2018).

Internal Threats	External Threats
Malicious and compromised insiders (programmers and database administrators)	Hostile eavesdropping
Security flaws in commercial off the shelf licenses/products	Hacking vulnerability, malicious code and viruses
Theft of user access keys and authentication information	Intentional malfunction of hardware/software components of structural integrity
Spillage and inadvertent release through online portal	Service interruptions and signal jamming
Configuration errors or improper security practices	Rerouting attacks

Table 12. Clinger Cohen Checklist. Adapted from Fleet Forces Command (2019).

Review Areas	Compliant	Marginal	Non-Compliant
Acquisition supports core, priority functions			
Outcome-based performance measures linked to strategic goals			
Processes redesigned to reduce costs, improve effectiveness & maximize COTS usage			
No private sector/government source can better support the function			
Analysis of Alternatives (AoA) has been conducted			
Economic Analysis or Life Cycle Cost Estimate has been conducted			
Established measures and accountability for program progress			
Consistent with DOD Information Enterprise policies and architecture			
Cybersecurity Strategy consistent with DOD requirements			
Modular contracting is being used, and program has phased implementation			
System Registered in DITPR-DON			

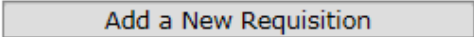
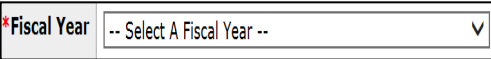
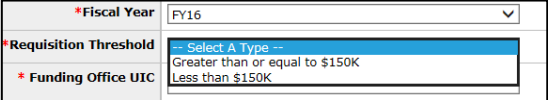
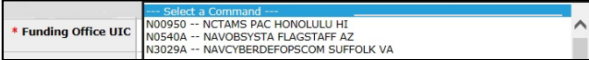
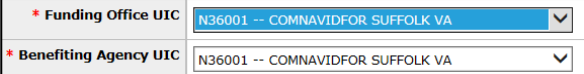
Compliant = Fully complies with the letter and intent of the Clinger Cohen Act

Marginal = Complies with the intent/spirit of the Clinger Cohen Act, if not the letter

Non-Compliant = Shows no evidence of compliance

Step 6: Begin establishing a draft Standard Operating Procedure (SOP) or operational concept for how the system should function. Depending on predefined roles, each step within the workflow will be required to verify a certain stage in the process before proceeding to the next step. In the event that contractor support is required to assist in development of the SOP, incorporate this consideration into Step 10. See an example below of some singular workflow processes, as established in Table 12.

Table 13. Workflow SOP Template

SUBMISSION WORKFLOW PROCESS		
Drafts requisitions into functional terms aligning it to command mission areas.		
New Requisition - Contractual		
Work Flow	Screen Shot (as applicable)	
1	At the home page click on the desired module.	
2	Click on the icon “Add A New Requisition”	
General Requisition Information		
3	<u>Fiscal Year</u> : Select the applicable fiscal year from the drop down menu	
4	<u>Requisition Threshold</u> : Select either “Greater than or equal to \$150K” or “Less than \$150K” from the drop down menu.	
5	<u>Funding Office Unit Identification Code (UIC)</u> : Use the drop down menu to select the UIC of the command creating the contracting action.	
6	<u>Benefiting Agency UIC</u> : Use the drop down menu to select the UIC of the command or detachment benefiting from the contracting action.	
7	<u>Requisition Title</u> : Enter a short descriptive title for the requisition in the field.	
8	<u>How does this effort support the command strategic goals and mission?</u> : Enter a narrative describing how this requisition does that.	

Step 7: Analysis of Alternatives; identify any potential strategic sourcing initiatives and pre-existing platforms currently available on the market.

Table 14. Analysis of Alternatives

System Name	OEM	Contract # / vehicle	Annual Estimate	ATO Status	Purpose
Platform Name 1	Commercial Provider	DOD ESI	\$350,000.00	Approved, Connected to NMCI Switch and hosts the VM Servers	Automated workflow, data hub
Platform Name 2	Government-owned	N/A	N/A	N/A	Tracks funding status

Step 8: Based on the Analysis of Alternatives (AoA), develop a Return on Investment (ROI) rationale. For example:

Platform 1 provides a comprehensive global C51 enterprise view. The system can create reductions and provide savings annual. Manual efforts are severely reduced or eliminated to validate and display data. This further eliminates spreadsheet redundancy and provides version control of authoritative documents. Platform 1 creates real-time spreadsheets that identify up to date consolidate review and reports. Functionality duplicates seamlessly efforts performed by system X and system Y. Recommend reallocation of duties to Platform 1 and decommissioning use of system X and system Y. Continuous Process Improvement via Process Simplification.

Total Potential Savings in Recurring Costs = X amount per year

Annual Productivity Analysis:

Function Point (FP) = 1 completed workflow per person per month

Current Average FP per person = 1 completed workflow takes 60 days

Average FP per perform after implementation of Platform 1 = 3
completed workflows in 1 day

Result: From 1 FP to 180 FPs completed in a 60 day period

Step 9: Begin implementation of the concepts identified in Steps 1 through 6. Determine level of workforce support required, whether through internal billets or through contractor support. There are a number of GWACs available for procurement use to support contractor needs. A number of examples are provided below:

- 8(a) STARS II
- Alliant 2 (A2)
- NASA SEWP
- CHESS (Computer Hardware, Enterprise Software and Solutions)
- SeaPort-Next Generation (NxG)
- DTIC IAC MAC

Step 10: Create and define a deliverable end product, a functioning automated workflow system, through definition and communication of actionable items with administrative and development support staff. Through defining deliverable and operational needs, begin establishing a Statement of Work (SOW) for the automated workflow system. A sample template is provided below:

TASKS

The integrated employment of the Navy's information-based capabilities requires the use of advanced automation and learning abilities to enhance the effectiveness of operations across all domain. The contractor shall perform the following four category duties:

1. Project Management: includes overseeing, reviewing, and evaluating the set of activities related to the schedule, risk, delivery, and resources associated with the project.
2. Business Solution Architecture, Development, and Integration: includes the processes and actions associated with the software development life cycle to enhance quality delivery
3. Data Management, Engineering, and Validation: includes the handling and analysis of changes to the sources, integration, structures, relationships, and validity of data
4. Operations and Maintenance: includes the maintenance of existing functionality, support to users, and compliance with policies, directives, and guidance to ensure minimal system downtime

1.0 Project Management

The Project Manager will be responsible for the total performance of the Application's project team and is responsible for the quality of all project deliverables.

1. Plan of Actions and Milestones and Schedule Management: Provide at a minimum, a monthly updated schedule of tasks as prioritized by the business tool owner along with a Project Management Plan at the kick-off of each contract option year
2. Risk Management: Identify and mitigate risks associated with the tasks and adhere to formalized process to manage these risks to ensure uninterrupted and trusted usage of the products. This includes participation in risk review, which entails providing quarterly briefs regarding task risk posture, execution status, and adherence to industry standards regarding successful systems delivery
3. Financial Management: Collaborate with the Contract Program Manager in the development and management of labor and other direct costbudget

estimation, projections, execution and documentation and reporting of all financial activity

4. **Staff Management:** Assemble the best combination of technical and subject matter expertise as it relates to the tasks in this SOW in order to deliver all approved requirements as outlined and discussed with product owner.
5. **Delivery Management:** Manage each two-week development sprint (as well as the next two sprints) by adhering to priorities requested by the product owner. Ensure a quality working product(s) is delivered within each release and received within prescribed timeframes by coordinating sprint planning sessions, scrums, showcase demonstrations, and retrospectives
6. **Stakeholder Engagements:** Oversee the communications with external stakeholders who provide inputs to requirements and who utilize Application products to ensure receipt of delivery and successful usage by end users

2.0 Business Solution Architecture, Development, and Integration

The Contractor shall work with Application stakeholders to modify existing business solutions for optimal performance, interoperability and usability. This task will encompass support to the following lines of effort and business solutions, as identified in Table 14.

Table 15. Workflow Lines of Effort and Business Solutions

Application Modules -
Submissions
Workflow Approval
Requirements Management
Reports - Master and Summary Report

1.2.1 Requirements Management

System requirements specify how user needs are implemented in a software application. These requirements describe in granular detail every aspect of the application behaves and what the application must do in order to meet the users identified needs. The contractor shall apply a structured requirement process that has been customized to the Applications environment to collect and document requirements. This process begins with the collection of new requirements and culminates in the user acceptance of development efforts when the user acknowledges that the application provides the requested functionality. This support will include:

Requirements Collection:

- Conduct stakeholder interviews and working groups to identify key functional needs
- Analyze the information collected to identify knowledge gaps, determine implementation options, and anticipate the impact of the development effort on existing applications
- Coordinate with the contractor technical team to understand the technical requirements and limitations
- Document the system requirements to be developed in requirements traceability matrices or other approved requirement artifact repositories
- Conduct requirements review sessions with stakeholders to validate that all requirements are captured and finalize the scope of the development effort

Mockup Creation

- Design mockups with stakeholder user interface preferences in mind that create an intuitive user experience while implementing all documented requirements
- Create visual mockups based on the complexity of the application being developed or enhanced
- Review the mockup with all stakeholders to collect feedback
- Refine the mockup incorporating stakeholder feedback

Risk Analysis

- Discuss anticipated requirements and development timeline to identify risks and leverage other teams' experiences
- Ensure that all future functionality can be delivered in accordance with mockups, business rules, constraints and critical integration points
- Requirements Implementation Tracking
- Coordinate with developers to ensure requirements are understood and implemented correctly
- Collaborate with testers to validate that applications are functioning as specified in the requirements
- During each sprint planning meeting, calculate a level of effort (LOE) for the delivery of each requirement set while accounting for associated risks and potential scope changes
- Provide updates and demos of application components to stakeholders throughout the development process

Requirements Management:

- Manage the scope and priority of all requested requirements to provide the most impact while balancing time constraints
- Track requirements updates to maintain historical records of what was built, when requirements changed, and why changes were made

Deliverables: Deliverables for this task include: Standard Operating Procedure Version 2.0 / Concept Mockup

Workflow Management

The Contractor shall create workflows associated with the Application. The contractor shall develop new workflows based on stakeholder requirements where applicable. Workflow management support will include:

- Adhering to the requirements collection and documentation process
- Creating permission groups and SharePoint lists as necessary to accommodate workflow requirements
- Developing and modifying applicable workflow templates within the production and test environments to ensure adequate architecture, data and related requirements are operational
- Publishing applicable workflows to the production and test environments
- Adhering to the test plan

Deliverables: Deliverables for this task include: Workflow Documentation supporting the Application

Solution Engineering and Development

The contractor shall lead the development of all approved and prioritized requirements. Application development will follow a standardized agile software development life cycle focused on implementing functionality incrementally and in iterative releases. The contractor shall identify and inspect all application code, software

libraries, and technical information to ensure the Application is developed, deployed, and operated in a secure manner that is compliant with applicable Navy and Command policies and instructions. This support will include:

- Collaboration between the client and workstream requirements and development representatives to verify mockups and user stories to create a detailed roadmap for workstream application development and delivery. This will ensure all new application requirements are thoughtfully incorporated and satisfied without risking defects to the existing system components and functionality
- Conducting research for of Application Programming Interfaces or code libraries to accommodate new requirements
- Development and updating of code to implement all documented requirements as prioritized during client meetings. Code development will be based upon style guides, past lessons learned, and industry best practices for SharePoint front-end development.
- Conduct code reviews and peer programming as necessary to ensure best practices are adhered to by the development team
- Utilize code configuration management and release planning to ensure consistency, reliability, and traceability to changes for all applications
- Application testing will be conducted prior to code release to staging and production environments
- Assisting client and/ or users in system troubleshooting, identifying system errors, and documenting fixes, as necessary, for future code implementation

Integration with Internal Applications

The contractor shall ensure that connections, linkages and relationships amongst existing applications are continuous and defect-free when new features are released as well as during normal operations. We will also identify and propose any integration points for future consideration that would reduce time and save costs for the end user, optimize the utility of applications and/or build further integrity into the system of applications. This support will include:

- Leverage architecture diagrams to ensure new business rules, process steps and controls align with the existing application architecture
- Identify common adjacencies between other external applications that could be leveraged to enhance the performance and utility of these business functions
- Inform all associated product / system owners and support teams the technical, schedule, and business process changes prior to implementation
- Update programming language support implementation of new requirements, changes to authoritative data source's schema or third-party applications

Application Testing

The contractor shall conduct and evaluate system tests to ensure SRRB business tools meet all functional and technical requirements and to minimize defects reaching the production environment. A comprehensive agile test process is applied to meet quality standards while testing the business tools. The test team conducts continuous testing throughout all phases of development and evaluates system tests to ensure the business tools meet approved, documented requirements. This includes a variety of testing methodologies ensuring the software product is of the highest quality. This support will include:

- **Test Case Creation:** Step-by-step testing instructions based on the system and functional requirements which are used to validate each development effort is functioning and implemented as specified in the requirements
- **Integration Testing:** Testing performed to evaluate the results of interaction of all hardware/software in a managed environment
- **System Testing:** Evaluation of the system's compliance with documented requirements
- **Patch Testing:** Testing focused on how fixes or other changes to software affect the unchanged portions of the software/hardware system
- **Functionality Testing:** A subset of test cases selected and executed that cover the most important functionality of a system to ascertain if crucial functions of a program work correctly
- **User acceptance Testing:** Testing conducted with a designated set of Subject Matter Experts in the Staging environment with software release candidates before release of the software to the general user community

3.0 Data Management, Engineering, and Validation

The contractor will manage and treat data as sensitive information. The contractor shall follow in accordance DOD, DON, firmwide guidance and regulations related to Controlled Unclassified Information (CUI)/Covered Defense Information (CDI) handling. Below are the support elements related to the effective management of data across the systems:

- **Data Verification and Validation:** Ensuring quality throughout applications, reports, and front-end graphics enables programmatic decision making. The contractor shall utilize both manual and automated techniques to verify that data matches the authoritative source while utilizing the approved business rules to assign, allocate, and disperse data

sets. Automated validation techniques and manual testing are designed to confirm the data type for further processing and reporting

- **Data Storage and Protection:** As described, the contractor shall adhere to DOD, DON, and internal firmwide guidance and regulation as it pertains to the storage and protection of CUI. This adherence applies to development, staging, and production environments
- **Ad-hoc Inquiries and Reporting:** Emergent demands and inquiries from leadership are required to merge, analyze, and report data using new groupings and relationships.

4.0 Operations and Maintenance

The contractor shall provide operational, technical and analytical subject matter expertise and experience to ensure continued utilization of existing functionality as well as the successful implementation and adoption of requirements developed within this Period of Performance. Support for this will include:

- Create and maintain user Training guides, resources and material
- Provide Help Desk support
- Operational Testing will be conducted to validate program operation and performance prior to and post implementation of each new release
- Brief development and ad-hoc data call support
- Providing users with over-the shoulder training, troubleshooting support and demonstrations for optimal application usage
- Maintain permissions across lists, libraries and web pages to ensure access is secured as prescribed by the business tool owners

Deliverables: Deliverables for this task include: Application User Guides

APPENDIX. GLOSSARY OF KEY TERMS

Agile development – Software coding that relies on iterative procedures or cyclical communication. This is a “plan as you go” approach, refining requirements, communication and input between the developers and the sponsors on an ongoing and frequent basis.

Authority to Operate - Formal declaration and accreditation to operate within a set Navy network boundary. The ATO consists of multiple considerations, including the Risk Management Framework and compliance with the Clinger Cohen Act.

Contracts and Acquisition Management Office (CAMO) – Department that occupies a technical advisor and portfolio management role for acquisitions. The office’s purpose is to promote the broad application of “best business practices” to contract processes and programs, and facilitate effective acquisition solutions to the Navy.

Contract Services Manager (CSM) – Individual designated to facilitate acquisition solutions with requirement owners. Profession leans toward expertise in data analytics to draw conclusions about markets, industries, and procurement solutions.

Database Developer – Maintains a master client or user list, including mapping users to system functions, creating new records based on new and upcoming technologies. Most importantly, a database developer may be responsible for ensuring all data in the respective system is successfully backed up daily, weekly, monthly, and annually as required.

Electronic Tracking System – General term for automation of a workflow to create a standardized, seamless, shared process and data environment across an enterprise.

Information System Security Manager (ISSM) – Authorized individual to ascertain all necessary DOD and agency requirements for the automated platform, especially one accessible in a web-based environment.

Multiple Award Contract (MAC) – A contract awarded to multiple contractors to ensure execution of supplies or services of varying size and scope that leverages industry expertise. These vehicles allow for a limited pool of competition, whom have established pricing and terms and conditions at a basic contract level.

Naval Expeditionary Combat Command (NECC) eTracker - The program, spearheaded by NECC Contracts and Acquisition Management Office (CAMO), was designed in conjunction with contractor Booz Allen Hamilton (BAH) for the specific purpose of communicating the acquisition plan amongst stakeholders. The system operates on the Microsoft SharePoint design platform, which permits an accessible and easily navigational place to store, organize, share, and access information.

Naval Tool for Interoperability and Risk Assessment (NTIRA) – Module based decision aid tool to facilitate knowledge discovery and management for Command, Control, Communications, Computers, Combat systems and Intelligence (C5I) stakeholders in requirements generation, acquisition management and resource planning. It allows stakeholders to share a working environment among the Fleet, OPNAV, and the

acquisition communities to facilitate a common picture of individual platforms mission capabilities and identified shortfalls.

Now Platform – Commercial cloud-based platform initially conceived as IT service management based, identifying operational failures of computer hardware and tracking helpdesk ticket resolution. This web-based software program is identified as a “low code” workflow management solution.

Planning, Programming, Budgeting, and Execution (PPBE) System – A system of processes, both iterative and hierarchical, where financial decisions are review by chain of command, preliminary decisions are made, and programmed/reprogrammed based on allocation of resources.

Risk Management Framework (RMF) – Series of instructions and guidelines that informs on the management of cybersecurity risk across the enterprise. RMF uses a risk-based cybersecurity approach for enterprise-level authorization of IT systems and services. The RMF implements and enforces a tailored set of security controls, identifies qualifications and authorized cyber security officials, and focuses on security as an integral part of a system’s overall life cycle.

Service Requirements Review Board (SRRB) – A workflow process that engages members of the acquisition team to communicate and validate the mission need and alignment of a contract service requirement.

Services Acquisition – The use of contract tools, methodologies or instruments used to acquire services for the government. This requires continued facilitation and engagement with an acquisition team, whom are each stakeholders in the success of the acquisition.

Service Contract – A means to acquire a set of tasks through use of professional or non-professional contract work. In contrast to receiving an end deliverable, a service contract identifies measurable outcomes and acceptable quality levels through the time and efforts put forth by contractor staff.

Software Applications Tester - Ensures the “cyber hygiene” of the system, ensuring all integrated software applications are working efficiently and without failure.

Software Developers – Group of programmers that performs and maintains the web application itself, ensuring all coding to establish the logic and functionality of the system. Software developers may also be continually tasked to ensure accuracy of functionality and data within the context of Navy policies and procedures and the application modules is optimized and functional on current network configurations.

System Administrator – Ensures user account administration and enhancing system performance through software patches. Additional duties involve server management and system auditing.

Unfunded Requirements – Those programs and functions that cannot be performed within current resource constraints. Informs Congress each year on where money would be spent if more funding and resources were provided.

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