Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy										Date: March 2019	

Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*						R-1 Program Element (Number/Name) PE 0604027N *I (U)Digital Warfare*					

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	0.000	14.476	20.000	50.120	-	50.120	55.744	46.142	41.466	42.995	Continuing	Continuing
3255: *AI Dev Ops*	0.000	0.000	0.000	25.000	-	25.000	25.000	15.000	10.000	10.000	Continuing	Continuing
3256: *Warfighting Pilots*	0.000	0.000	0.000	2.000	-	2.000	3.000	4.000	5.000	6.000	Continuing	Continuing
3425: *Digital Warfare*	0.000	14.476	20.000	23.120	-	23.120	27.744	27.142	26.466	26.995	Continuing	Continuing

A. Mission Description and Budget Item Justification

Digital Warfare (DW) supports systems of systems digital engineering and requirements allocation, development of data technical baselines, digital architectures and data models, and provides for experimentation and data science for enterprise and warfare pilots in support of a composeable, modular Navy. DW provides the digital environment that supports the cross-functional/organizational teams performing the modeling and data science work.

B. Program Change Summary ($ in Millions)

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	26.691	26.120	-	26.120
Current President's Budget	14.476	20.000	50.120	-	50.120
Total Adjustments	14.476	-6.691	24.000	-	24.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-6.691			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.524	0.000			
• Program Adjustments	0.000	0.000	24.000	-	24.000
• Rate/Misc Adjustments	-0.001	0.000	0.000	-	0.000
• Congressional Add Adjustments	15.001	-	-	-	-

Change Summary Explanation

FY18 increase due to funding transfer into this PE from SPAWAR PE 0604231N_3425, NAVSEA PE0603582N_3425 and NAVAIR PE 0605217N_3425.

FY19 decrease is due to Congressional reduction of $6.7 million in project 3425 Digital Warfare due to unjustified request.

FY20 increased due to increase for Artificial Intelligence (AI) development effort and Combat Identification & Targeting (CID&T) Standard and Model Development, Implementation sustainment efforts.

Exhibit R-2, **RDT&E Budget Item Justification:** PB 2020 Navy		**Date:** March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604027N *I (U)Digital Warfare*	

The FY 2020 funding request was reduced by $3 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										Date: March 2019	

Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604027N / (U)Digital Warfare				Project (Number/Name) 3255 / AI Dev Ops		

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3255: AI Dev Ops	0.000	0.000	0.000	25.000	-	25.000	25.000	15.000	10.000	10.000	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This project is a continuation of a FY2019 Defense-Wide funding effort (Project Harbinger) that was a pathfinder for Navy Artificial Intelligence (AI) Developmental / Operations (DevOps). This PE shifts funding of an existing FY2019 effort to Navy (RDT&E) in FY2020. This project is a new start for the Navy in FY2020.

A. Mission Description and Budget Item Justification

Digital Warfare (DW) requires a comprehensive AI training and DevOps environment for advanced software tools to be deployed in support of highly volatile and rapidly changing warfare and threat environments. Such DevOps efforts are critical in the move to engage the warfighter directly in the development of advanced capabilities in establishing the framework and processes necessary to rapidly discover, develop, mature, certify, field, and train AI and human-machine teams. This overall effort supports our National Defense Strategy 2018 for building a more lethal force by investing in Advanced Autonomous Systems to gain the associated competitive military advantages of this modern capability .

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: New Accomplishment/Planned Program Entry	0.000	0.000	25.000	0.000	25.000
Articles:	-	-	-	-	-

FY 2019 Plans:
Funded in FY2019 from Defense Wide PE 0305245D8Z PRJ 245 for $5.2M total

FY 2020 Base Plans:
-$8M to maintain the Project Harbinger effort started under the Algorithmic Warfare Cross-Functional Team (AWCFT). The $8M includes acoustic data acquisition and transfer ($0.4M), data labeling efforts ($1.5M), data engineering lab ($1M), algorithm development and computing infrastructure ($3.6M), algorithm integration ($1.2M), and fielding to fleet ($0.3M). Increase above the $5.2M in AWCFT FY19 funding is for algorithm development and integration. DWO works directly with Undersea Warfighting Development Center (Groton) and COMSUBFOR (Norfolk) for Harbinger and has already tested it on a VACL SSN. This is in direct support of our National Defense Strategy to build a more lethal force using Advanced Autonomous Systems and the CNO's Design 2.0 LOE Green Paragraph 5.
-$2M for data architecture team (funds people) to develop a robust and sustainable data strategy for Naval operations to include all sensor data (acoustic, ISR, EW, etc). This expertise does not currently exist in the DoN.
-$15M for a DWO project to apply AI/DevOps to the operational level of war. It will develop planning and execution decision aids in support of U.S. Pacific Fleet and the Navy's Distributed Maritime Operations (DMO)

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019		
Appropriation/Budget Activity 1319 / 4		**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3255 / AI Dev Ops		

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Concept. The project will clean and integrate existing Navy data, leveraging and expanding upon the AI DevOps components established for Project Harbinger. It includes data acquisition and transfer ($1.1M), data labeling efforts ($2.5M), data engineering lab ($2M), algorithm development and computing infrastructure ($7.3M), algorithm integration ($1.9M), and fielding to fleet ($0.2M). This is in direct support of our National Defense Strategy to build a more lethal force using Advanced Autonomous Systems and the CNO's Design 2.0 LOE Blue Paragraph 6. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 -- Project 3255 AI (Artificial Intelligence) Dev Ops is added in FY 2020.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	25.000	0.000	25.000

C. Other Program Funding Summary ($ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 DW is a non-acquisition effort that informs and matures Navy decisions, which in turn impacts acquisition programs.

E. Performance Metrics
 N/A

Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2020 Navy													**Date:** March 2019	
Appropriation/Budget Activity 1319 / 4					**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare						**Project (Number/Name)** 3255 / AI Dev Ops			

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AI DEVOPS	C/CPFF	UARC's : Various	0.000	0.000		0.000		7.000	Oct 2019	-		7.000	Continuing	Continuing	Continuing
AI DEVOPS	WR	WDC,SSCs : Various	0.000	0.000		0.000		5.100	Oct 2019	-		5.100	Continuing	Continuing	Continuing
AI DEVOPS	Various	Various : Various	0.000	0.000		0.000		12.900	Oct 2019	-		12.900	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		25.000		-		25.000	Continuing	Continuing	N/A

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.000	25.000	-	25.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		**Date:** March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3255 / AI Dev Ops

2020PB - 0604027N - 3255

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604027N / (U)Digital Warfare	Project (Number/Name) 3255 / AI Dev Ops

Schedule Details

Events by Sub Project	Start Quarter	Start Year	End Quarter	End Year
AI DEVOPS				
Data Acquisition: Data Acquisition	1	2020	4	2021
Data Clearinghouse: Data Clearinghouse	1	2020	4	2021
Data Labeling: Data Labeling	1	2020	4	2021
Algorithm Integration: Algorithm Integration	1	2020	4	2022
Fielding to Fleet: Fielding to Fleet	1	2020	4	2022
Data Engineering Lab: Data Engineering Lab	1	2020	4	2024
Algorithm Development and Infrastructure: Algorithm Development and Infrastructure	1	2020	4	2024
Navy Data Architecture Team: Navy Data Architecture Team	2	2020	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										**Date:** March 2019	

Appropriation/Budget Activity 1319 / 4				R-1 Program Element (Number/Name) PE 0604027N / (U)Digital Warfare				Project (Number/Name) 3256 / Warfighting Pilots			

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3256: *Warfighting Pilots*	0.000	0.000	0.000	2.000	-	2.000	3.000	4.000	5.000	6.000	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note
 This project is a new start in FY2020

A. Mission Description and Budget Item Justification

 DW requires extensive information exchanges and message compatibility in order to fully exploit kinetic weapons / target pairing tools. These tools and the related weapons require a robust and extensive set of data to properly engage a target. The Warfighting Pilot effort begins the process of creating message and data standards that will drive Navy to a uniform set of message standards and data. In order to fully leverage and improve the information exchange and weapon employment opportunities, regardless of data link or message type used, a standardized data and message standard is required to maximize todays sensors for over-the-horizon combat identification & targeting.

 DWO funds support the various teams and efforts necessary to establish the Track Data Standard. The result will be a fully defined and documented message standard that will be capable of implementation across multiple data link systems. The funds will also support the development of operational and physics based models for various kinetic long range weapon systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: New Accomplishment/Planned Program Entry	0.000	0.000	2.000	0.000	2.000
Articles:	-	-	-	-	-

FY 2019 Plans:
N/A

FY 2020 Base Plans:
Build conversion standards of multi-security combat identification source data to confidence pedigree index.
-Develop weapons "meta-models" for use in mission planning tools enabling more accurate prediction of employment outcomes.
-Document field data for message standards.
-Coordinate with message standards governance elements across DoD to enable the resulting standard inclusion into existing systems and weapons.

FY 2020 OCO Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		**Date:** March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3256 / Warfighting Pilots

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A **FY 2019 to FY 2020 Increase/Decrease Statement:** Increase of $2.000 from FY 2019 to FY 2020 supports building conversion standards of multi-security combat identification source data to confidence pedigree index, developing weapons "meta-models" for use in mission planning tools, and coordinating with message standards governance elements across DoD to enable the resulting standard inclusion into existing systems and weapons.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	2.000	0.000	2.000

C. Other Program Funding Summary ($ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 N/A

E. Performance Metrics
 N/A

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | | | | | | | | | Date: March 2019 | | |

| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604027N / (U)Digital Warfare | Project (Number/Name) 3256 / Warfighting Pilots |

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Warfighting Pilots	WR	SSCs : Various	0.000	0.000		0.000		1.250	Oct 2019	-		1.250	Continuing	Continuing	Continuing
Warfighting Pilots	C/CPFF	JHU/APL : Laurel, MD	0.000	0.000		0.000		0.500	Oct 2019	-		0.500	Continuing	Continuing	Continuing
Warfighting Pilots	C/CPFF	Various : Various	0.000	0.000		0.000		0.250	Oct 2019	-		0.250	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		2.000		-		2.000	Continuing	Continuing	N/A

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.000	2.000	-	2.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy			**Date:** March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare		**Project (Number/Name)** 3256 / Warfighting Pilots

Warfighting Pilots	Start		End		FY17				FY18				FY19				FY20				FY21				FY22				FY23			
	Quarter	Year	Quarter	Year	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Track Message Development																																
Message Standard Data Collection	4	2020	1	2021																												
CID&T Data Flow Models	2	2020	1	2021																												
Draft Standard Development	2	2020	2	2021																												
Message testing	4	2020	4	2021																												
Program Integration	1	2022	3	2023																												
Weapon Meta Models																																
Meta Model Data Collection	2	2020	1	2021																												
Model Development Spiral 1	4	2020	4	2021																												
Model Development Spiral 2	4	2021	4	2022																												
Model Development Spiral 3	1	2023	4	2023																												

Exhibit R-4A, **RDT&E Schedule Details:** PB 2020 Navy			**Date:** March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3256 / Warfighting Pilots	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	**Year**	**Quarter**	**Year**
Proj 3256				
Message Standard Data Collection	4	2020	1	2021
CID&T Data Flow Models	2	2020	1	2021
Draft Standard Development	2	2020	2	2021
Message Detail	4	2020	4	2021
Program Integration	1	2022	3	2023
Meta Model Data Collection	2	2020	1	2021
Model Development Spiral 1	4	2020	4	2021
Model Development Spiral 2	4	2021	4	2022
Model Development Spiral 3	1	2023	4	2023

Exhibit R-2A, **RDT&E Project Justification:** PB 2020 Navy										**Date:** March 2019	

Appropriation/Budget Activity 1319 / 4				**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare				**Project (Number/Name)** 3425 / Digital Warfare			

COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
3425: *Digital Warfare*	0.000	14.476	20.000	23.120	-	23.120	27.744	27.142	26.466	26.995	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Digital Warfare (DW) was previously funded in SPAWAR PE 0604231N (Tactical Command System), NAVSEA PE 0603582N (Combat System Integration), and NAVAIR 0605217N (Common Avionics) under DW Proj 3425 for FY18 and prior. FY20 and out funding was transferred from SPAWAR and NAVAIR and consolidated under NAVSEA. Mission functions and tasking remain unchanged due to this transfer. FY19 funding to be transferred under NAVSEA once enactment of the FY19 funding occurs.

A. Mission Description and Budget Item Justification

The DW technical initiatives directly support the Chief of Naval Operations (CNO) vision of inherent interoperability across the Navy enabling faster deployment of capabilities to the warfighter.

Naval Air Systems Command (NAVAIR), Naval Sea Systems Command (NAVSEA), Space and Naval Warfare Command (SPAWAR), Program Executive Offices (PEOs), warfare and system centers, University Affiliated Research Centers (UARCs)/Federally Funded Research and Development Centers (FFRDCs), and industry partners will support the Digital Warfare Office (DWO) under the Office of the Chief of Naval Operations (OPNAV) N2N6.

In order to develop capability from the top down, the DWO will develop requirements for System of Systems (SoS) to include all of the associated interoperability requirements. Due to the complexity of this work, the DWO will evolve the traditional requirements development methodology to a MBSE methodology that will encompasses associated model extensions, reports, views, configuration management, model development support, and documentation. This work will be completed by a series of teams, each focused on a separate threat domain, and made up of system modelers, fleet representatives, Program of Record (PoR) representatives, architecture, and interoperability experts. The products generated by these teams will include data technical baselines for domain areas with individual profiles for each program of record, coordinated requirements recommendations, and potential areas for Science and Technology (S&T) and experimentation to fill gaps. The DWO will include emerging digital technologies including human/machine teaming, data science, and artificial intelligence.

DWO funding supports development of requirements modeling and data science experimentation environment at multiple security level. This environment will host the authoritative source of truth for Naval Echelon I requirements development. The DWO will support experimentation to provide necessary fidelity in the requirements allocation process, focusing on areas that may provide solutions across multiple domains.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)

	FY 2018	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Title: Digital Warfare (DW) Model Based Systems Engineering (MBSE)	0.000	10.342	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3425 / Digital Warfare

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY 2019 Plans: -Provide SME support for the domain functional decomposition based on prioritized mission areas to include Anti-Submarine Warfare, Surface Warfare, Electronic Warfare and Air Warfare. -Establish and implement required extensions to model requirements trace and reports that will be used in the Joint Capabilities Integration and Development System (JCIDS) process. -Validate current standards across the SYSCOMs to form the overarching Navy Data Technical Baseline (DTB) in order to facilitate tailoring of each standard for the PoR DTB. -Continue to validate different SYSCOM architectures and guidance to produce a Navy-wide high level architectural framework. -Develop functional baseline architecture of Navy capabilities that maps back to mission threads. -Tune configuration of, and cyber monitor, the distributed Model Based Systems Engineering (MBSE) and data science prototype environment for remote accessibility over a given network enclave, including but not limited to Non-Secure Internet Protocol Router (NIPR), Secure Internet Protocol Router (SIPR), and JointWorldwide Intelligence Communications System (JWICS). Investigate cloud computing with respect to the modeling environment. -Integrate cyber requirements across all Digital Warfare (DW) architecture and standard efforts and verify cyber requirements are captured as part of the modeling process. -Provide subject matter expert support for data science teams in the exploration of data analysis, information and knowledge extraction techniques and application to mission area requirements. -Participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement JCIDS and Program Objective Memorandum (POM) processes. -Curate models in the modeling environment and support development across SYSCOMs in Modeling Standards and Policies for Science and Technology (S&T) and Programs of Record (PoRs). -Develop an overarching DTB and DTB profiles for PoRs under SYSCOM cognizance. Assess PoRs against their DTB profile during all Systems Engineering Technical Review events and gate reviews. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N I (U)Digital Warfare	**Project (Number/Name)** 3425 I Digital Warfare

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY19 to FY20 decrease result of realignment of $10.342M under BSO 24.					
Title: DIGITAL WARFARE	0.000	8.539	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: N/A *FY 2020 Base Plans:* N/A *FY 2020 OCO Plans:* N/A *FY 2019 to FY 2020 Increase/Decrease Statement:* A decrease of $8.539 between FY19 to FY20 is due to the consolidation of sub lines into one Project Code. (3425.S19/-$8.539) is moved to Project (3425.S24 - Digital Warfare).					
Title: SYSCOM/PEO DW Support	14.476	1.119	23.120	0.000	23.120
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue to develop functional baseline architecture of Navy capabilities that maps back to mission threads. Provide SME support for the domain functional decomposition based on prioritized mission areas to include Anti-Submarine Warfare, Surface Warfare, Electronic Warfare, Air Warfare, and Strike Warfare. Develop an overarching Data Technical Baseline (DTB) and DTB profiles for PoRs. - Scale the distributed Model Based Systems Engineering (MBSE) and data science environment for remote accessibility over a given network enclave, including but not limited to Non-Secure Internet Protocol Router (NIPR), Secure Internet Protocol Router (SIPR), and Joint Worldwide Intelligence Communications System (JWICS). Port the existing environment to cloud computing. - Continue to participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Develop tool extensions to complement Joint Capabilities Integration and Development System (JCIDS) and Program Objective Memorandum (POM) processes. - Curate existing models in the modeling environment and support development of Modeling Standards and Policies for systems engineering - Continue to support fleet experimentation to provide necessary fidelity in the requirements allocation process, focusing on areas that may provide solutions across multiple domains.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019	
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3425 / Digital Warfare	

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Provide Subject Matter Expert support for data science teams in data exploration and analysis, information and knowledge extraction techniques, and application to mission area data requirements in support of enterprise productivity and warfighting pilots. Explore Machine Learning techniques to support human/machine teaming for decision making. ***FY 2020 Base Plans:*** - Continue to develop functional baseline architecture of Navy capabilities that maps back to mission threads. Provide SME support for the domain functional decomposition based on prioritized mission areas to include Anti-Submarine Warfare, Surface Warfare, Electronic Warfare, Air Warfare, and Strike Warfare. Develop an overarching Data Technical Baseline (DTB) and DTB profiles for PoRs. Generate PoR requirements based on functional models. - Support the distributed Model Based Systems Engineering (MBSE) and data science environment over multiple security enclaves. Test and deploy additional industry standard tools as required. Continue to scale to meet user demand. - Develop tool extensions to complement Joint Capabilities Integration and Development System (JCIDS) and Program Objective Memorandum (POM) processes. - Curate existing models in the modeling environment. - Continue to support fleet experimentation to provide necessary fidelity in the requirements allocation process, focusing on areas that may provide solutions across multiple domains. - Provide Subject Matter Expert support for data science teams in data exploration and analysis, information and knowledge extraction techniques, and application to mission area data requirements in support of enterprise productivity and warfighting pilots. Apply Machine Learning techniques to support human/machine teaming for decision making. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increased of $3.120 between FY 2019 & FY 2020 is for the stand up of multiple concurrent teams on the unclassified and classified networks. An over all Increase of $15.881 between FY19 to FY20 is the total of (3425.L39/-$10.342) plus (3425.S19/-$8.539) which is being moved to one Project (3425 - Digital Warfare) instead of three separate ones. The 3425 - Digital Warfare in FY 2020 funding request was reduced by $3 million to account for the availability of prior year execution balances.					
Accomplishments/Planned Programs Subtotals	14.476	20.000	23.120	0.000	23.120

Exhibit R-2A, **RDT&E Project Justification:** PB 2020 Navy		**Date:** March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3425 / Digital Warfare

C. Other Program Funding Summary ($ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 DW is a non-acquisition effort that informs and matures Navy decisions, which in turn impacts acquisition programs.

E. Performance Metrics
 N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare	**Project (Number/Name)** 3425 / Digital Warfare

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Warfare (DW)	WR	SSC LANT : Charleston, SC	0.000	0.000		2.280	Dec 2018	0.000		-		0.000	0.000	2.280	-
Digital Warfare (DW)	FFRDC	MITRE : McLean, VA	0.000	0.000		0.615	Nov 2018	0.000		-		0.000	0.000	0.615	-
Digital Warfare (DW)	C/CPFF	VENCORE : Chantilly, VA	0.000	0.000		4.026	Dec 2018	0.000		-		0.000	0.000	4.026	-
Digital Warfare (DW)	C/CPFF	SAIC : McLean, VA	0.000	0.000		3.421	Jan 2019	0.000		-		0.000	0.000	3.421	-
Digital Warfare	C/CPFF	JHU/APL : Laurel, MD	0.000	1.875	May 2018	0.000		3.000	Oct 2019	-		3.000	Continuing	Continuing	Continuing
Digital Warfare	MIPR	MITRE : McLean, VA	0.000	0.430	May 2018	0.000		0.750	Oct 2019	-		0.750	Continuing	Continuing	Continuing
Digital Warfare	C/CPFF	GTRI : San Diego, CA	0.000	0.475	May 2018	0.000		0.750	Oct 2019	-		0.750	Continuing	Continuing	Continuing
Digital Warfare	WR	NAWCs : Various	0.000	1.199	May 2018	0.000		2.500	Oct 2019	-		2.500	Continuing	Continuing	Continuing
Digital Warfare	WR	SSCs : Various	0.000	1.500	May 2018	0.000		2.500	Oct 2019	-		2.500	Continuing	Continuing	Continuing
Digital Warfare	WR	NRL : Washington, DC	0.000	0.700	May 2018	0.000		1.500	Oct 2019	-		1.500	Continuing	Continuing	Continuing
Digital Warfare	C/CPFF	G2OPS : San Diego, CA	0.000	0.500	May 2018	0.000		1.000	Oct 2019	-		1.000	Continuing	Continuing	Continuing
Digital Warfare	C/CPFF	Various : Various	0.000	4.422	May 2018	0.000		4.620	Oct 2019	-		4.620	Continuing	Continuing	Continuing
Subtotal			0.000	11.101		10.342		16.620		-		16.620	Continuing	Continuing	N/A

Remarks
Digital Warfare funding was transferred to SYSCOM/PEO DW Support in FY20 and out.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Warfare Support	WR	NAVAIR : Patuxent River, MD	0.000	0.000		2.482	Oct 2018	0.000		-		0.000	0.000	2.482	-
Digital Warfare	WR	NSWCs : Various	0.000	1.775	May 2018	0.119	Dec 2018	2.250	Dec 2019	-		2.250	Continuing	Continuing	Continuing
Digital Warfare	WR	NUWC : Various	0.000	1.600	May 2018	0.500	Dec 2018	2.000	Dec 2019	-		2.000	Continuing	Continuing	Continuing
Digital Warfare	C/CPFF	Various : Various	0.000	0.000		0.500	Dec 2018	1.750	Dec 2019	-		1.750	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | **Date:** March 2019

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604027N / (U)Digital Warfare	Project (Number/Name) 3425 / Digital Warfare

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	3.375		3.601		6.000		-		6.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contract Engineer Support	Various	Various : Various	0.000	0.000		6.057	Dec 2018	0.000		-		0.000	0.000	6.057	-
Digital Warfare	C/CPFF	Various : Various	0.000	0.000		0.000		0.500	Dec 2019	-		0.500	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		6.057		0.500		-		0.500	Continuing	Continuing	N/A

			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	14.476		20.000		23.120		-		23.120	Continuing	Continuing	N/A

Remarks

PE 0604027N: (U)Digital Warfare
Navy

R-1 Line #74

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy				**Date:** March 2019
Appropriation/Budget Activity 1319 / 4		**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare		**Project (Number/Name)** 3425 / Digital Warfare

FY19	Start Quarter	Start Year	End Quarter	End Year
Theater ASW Spiral 2 (C2)	1	2019	1	2019
Undersea Spiral 3 (Sensors)	1	2019	4	2019
Undersea Spiral 4 (Weapons)	3	2019	4	2019
Surface Spiral 1 (Pilot)	1	2019	1	2019
Surface Spiral 2 (C2)	1	2019	4	2019
Surface Spiral 3 (Sensors)	3	2019	4	2019
Surface Sprial 4 (Weapons)	3	2019	4	2019
IW/EW Spiral 1 (Pilot)	1	2019	4	2019
IW/EW Spiral 2 (C2)	3	2019	4	2019
Air Spiral 1 (Pilot)	2	2019	2	2019
Air Spiral 2 (C2)	4	2019	4	2019
Land Sprial 1 (Pilot)	2	2019	4	2019
Land Spiral 2 (C2)	4	2019	4	2019
Digital Pilot Modeling and Analysis	1	2019	4	2019

(Schedule bars shown across FY17–FY23 quarterly columns, with activity occurring in FY19.)

** Note this schedule has been incorporated with 3425.S24 -- Digital Warfare starting with FY 2020

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy						Date: March 2019	
Appropriation/Budget Activity 1319 / 4				**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare		**Project (Number/Name)** 3425 / Digital Warfare	

	Start		End		FY17				FY18				FY19				FY20				FY21				FY22				FY23			
	Quarter	Year	Quarter	Year	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DW Support	1	2019	4	2023																												

** Note this schedule has been incorporated with 3425.S24 -- Digital Warfare starting with FY 2020

Exhibit R-4, **RDT&E Schedule Profile:** PB 2020 Navy				**Date:** March 2019	
Appropriation/Budget Activity 1319 / 4			**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare		**Project (Number/Name)** 3425 / Digital Warfare

	Start Quarter	Start Year	End Quarter	End Year	FY17	FY18	FY19	FY20	FY21	FY22	FY23
SCHEDULE DETAILS CONSOLIDATED TO INCLUDE 19 & 39 TASK DETAILS FY 2020 & Out											
Undersea Spiral 1 (TASW C2)	1	2018	4	2018							
Undersea Spiral 2 (ASW C2)	4	2018	3	2019							
Undersea Spiral 3 (Sensors)	3	2019	3	2020							
Undersea Spiral 4 (Weapons)	3	2020	3	2021							
Undersea Spiral 5 (Readiness)	3	2021	3	2022							
Undersea Req Curation/Threat Updates	4	2018	4	2023							
Surface Spiral 1 (MOC C2)	3	2018	3	2019							
Surface Spiral 2 (SUW C2)	3	2019	3	2020							
Surface Spiral 3 (Sensors)	3	2020	3	2021							
Surface Spiral 4 (Weapons)	3	2021	3	2022							
Surface Spiral 5 (Readiness)	3	2022	3	2023							
Surface Req Curation/Threat Updates	3	2019	4	2023							
IW/EW Spiral 1 (C2)	4	2018	4	2019							
IW/EW Spiral 2 (Sensors)	3	2019	3	2020							
IW/EW Spiral 3 (Weapons)	3	2020	3	2021							
IW/EW Spiral 4 (Readiness)	3	2021	3	2022							
IW/EW Req Curation/Threat Updates	4	2019	4	2023							
Air Spiral 1 (C2)	2	2019	2	2020							
Air Spiral 2 (Sensors)	2	2020	2	2021							
Air Spiral 3 (Weapons)	2	2021	2	2022							
Air Spiral 4 (Readiness)	2	2022	2	2023							
Air Req Curation/Threat Updates	2	2020	4	2023							
Land Spiral 1 (C2)	3	2019	3	2020							
Land Spiral 2 (Sensors)	3	2020	3	2021							
Land Spiral 3 (Weapons)	3	2021	3	2022							
Land Spiral 4 (Readiness)	3	2022	3	2023							
Land Req Curation/Threat Updates	3	2020	4	2023							
MBSE/Data Science Environment	1	2018	4	2023							
MBSE Methodology/Tool Development	1	2018	4	2023							
Pilots and Experimentation (Aperiodic)	1	2018	4	2023							

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy				**Date:** March 2019
Appropriation/Budget Activity 1319 / 4		**R-1 Program Element (Number/Name)** PE 0604027N / (U)Digital Warfare		**Project (Number/Name)** 3425 / Digital Warfare

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3425.L39				
The following items have been moved/consolidated with 3425.S24 for FY2020 and out:	1	2018	4	2023
--Theater ASW Spiral 2 (C2)	1	2019	1	2019
--Undersea Spiral 3 (Sensors)	1	2019	4	2019
--Undersea Spiral 4 (Weapons)	3	2019	4	2019
--Surface Spiral 1 (Pilot)	1	2019	1	2019
--Surface Spiral 2 (C2)	1	2019	4	2019
--Surface Spiral 3 (Sensors)	3	2019	4	2019
--Surface Sprial 4 (Weapons)	3	2019	4	2019
--IW/EW Spiral 1 (Pilot)	1	2019	4	2019
--IW/EW Spiral 2 (C2)	3	2019	4	2019
--Air Spiral 1 (Pilot)	2	2019	2	2019
--Air Spiral 2 (C2)	4	2019	4	2019
--Land Sprial 1 (Pilot)	2	2019	4	2019
--Land Spiral 2 (C2)	4	2019	4	2019
--Digital Pilot Modeling and Analysis	1	2019	4	2019
The following items have been moved/consolidated with 3425.S24 for FY2020 and out	1	2018	4	2023
--DW Support	1	2019	4	2023
SCHEDULE DETAILS CONSOLIDATED TO INCLUDE 19 & 39 TASK DETAILS.	1	2018	4	2023
Undersea Spiral 1 (TASW C2)	1	2018	1	2024
Undersea Spiral 2 (ASW C2)	4	2018	3	2019
Undersea Spiral 3 (Sensors)	3	2019	3	2020