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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					R-1 Program Element (Number/Name) PE 0604027N / <i>Digital Warfare</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	26.691	-	26.691	26.120	25.944	25.942	26.466	Continuing	Continuing
3425: <i>Digital Warfare Office (DWO) MBE&DT Development</i>	0.000	0.000	0.000	26.691	-	26.691	26.120	25.944	25.942	26.466	Continuing	Continuing

Note

Digital Warfare (DW) previously funded in PE 0604231N (Tactical Command System), 0603582N (Combat System Integration), and 0605217N (Common Avionics) in FY18 under DW Proj 3425.

A. Mission Description and Budget Item Justification

The Digital Warfare (DW) supports systems of systems requirements modeling and allocation, development of data technical baselines, digital architectures and data models, and provides data science for enterprise and warfare pilots in support of a composeable, modular Navy.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	26.691	-	26.691
Total Adjustments	0.000	0.000	26.691	-	26.691
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	26.691	-	26.691

Change Summary Explanation

The Increase between FY18 to FY19 is attributed to Model Based Systems Engineering teams creating Data Technical Baselines for programs of record. Additionally, the increase supports the creation of the modeling environment and modeling standards and policies.

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare				Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3425: Digital Warfare Office (DWO) MBE&DT Development	0.000	0.000	0.000	26.691	-	26.691	26.120	25.944	25.942	26.466	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Digital Warfare (DW) previously funded in PE 0604231N (Tactical Command System), 0603582N (Combat System Integration), and 0605217N (Common Avionics) in FY18 under DW Proj 3425.

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), associated Program Executive Offices (PEOs), warfare and system centers and University Affiliated Research Centers (UARC)s/Federally Funded Research and Development Centers (FFRDCs) will support the Model Based Systems Engineering (MBSE), Technical Design, and Requirements branches in the new DW under Office of the Chief of Naval Operations (OPNAV) N2N6. In order to develop capability from the top down, the DW will develop requirements for the System of Systems (SoS) to include all of the associated interoperability requirements. Due to the complexity of this work, the DW will evolve the traditional requirements development methodology to a MBSE environment that will include associated model extensions, reports, views, configuration management, help desk 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 DW will include emerging digital technologies including human/machine teaming.

Each Systems Command (SYSCOM) will be involved in creating Data Technical Baseline (DTB) profiles specific for each PoR. DTBs will consist of interfaces, protocols, content, information quality, architectural aspects, and knowledge base frameworks. SYSCOMs will exercise technical authority to assess PoR compliance to DTBs and Key Performance Parameters (KPPs) in support of gate reviews and system engineering technical reviews.

DW funding supports development of requirements modeling and data science experimentation environment, mission area model-based engineering (MBE) teams, development of digital technical baselines, development of digital architectures, and the development of workforce training in model-based systems engineering.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Digital Warfare (DW) Model Based Systems Engineering (MBSE)	0.000	0.000	10.342	0.000	10.342

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare		Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:		-	-	-	-	-
FY 2018 Plans: FY18 Digital Warfare funding resides under PE 0604231N.						
FY 2019 Base 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. -Continue to establish and implement required extensions to model requirements trace and reports that will be used in the JCIDS process. -Continue to validate current standards across the SYSCOMs to form the overarching Navy 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. -Continue to 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. -Continue to integrate cyber requirements across all Digital Warfare (DW) architecture and standard efforts and verify cyber requirements are captured as part of the modeling process. -Continue to 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. -Continue to participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement Joint Capabilities Integration and Development System (JCIDS) and Program Objective Memorandum (POM) processes. -Curate models in the modeling environment and support development across Systems Commands (SYSCOMs) in Modeling Standards and Policies for Science and Technology (S&T) and Programs of Record (PoRs). -Develop an overarching Data Technical Baseline (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 2019 OCO Plans:						

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare		Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: The \$4,392K increase between FY18 to FY19 is attributed to Model Based Systems Engineering teams creating Data Technical Baselines for programs of record. Additionally, the increase supports the creation of the modeling environment and modeling standards and policies.						
Title: DIGITAL WARFARE		0.000	0.000	8.539	0.000	8.539
Articles:		-	-	-	-	-
FY 2018 Plans: FY18 Digital Warfare funding resides under PE 0605217N.						
FY 2019 Base Plans: Provide Subject Matter Expert support for the domain functional decomposition based on prioritized mission areas to include Anti-Submarine Warfare, Surface Warfare, Electronic Warfare and Air Warfare. Support the analytical agenda from OPNAV N81 and N9I for the specific mission area capabilities. Provide modeling and documentation support for Joint Capability Integration Development System (JCIDS), OPNAV Program Objective Memorandum (POM) process, and ASN Acquisition Process. Coordinate and work across the SYSCOMs and PEOs on the OPNAV Model Based Systems Engineering (MBSE) requirements allocation process. Develop an overarching Data Technical Baseline and profile for Program of Records (POR) under SYSCOM cognizance. Assess PORs against their profile during all Systems Engineering Technical Review events and gate reviews.						
Participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement JCIDS and POM processes. Support development of cross-SYSCOM Modeling Standards and Policies for Science and Technology and Program of Records.						
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.						

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare		Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Provide common infrastructure for Model Based System Engineering and Data Technical Baseline environments, to include access management, configuration management, and help desk support. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Increases between FY18 to FY19 are for DW Model Based System Engineering (MBSE) and Data Technical Baseline (DTB) ensuring technical baseline standup in FY20.						
Title: SYSCOM/PEO DW Support <div>Articles:</div>		0.000 -	0.000 -	7.810 -	0.000 -	7.810 -
FY 2018 Plans: FY18 funding for Digital Warfare resides in PE 0603582N.						
FY 2019 Base Plans: -Provide Subject Matter Expert (SME) support for the domain functional decomposition based on prioritized mission areas to include Anti-Submarine Warfare, Surface Warfare, Electronic Warfare and Air Warfare. -Continue to establish and implement required extensions to model requirements trace and reports that will be used in the JCIDS process. -Continue to validate current standards across the SYSCOMs to form the overarching Navy 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. -Continue to develop functional baseline architecture of Navy capabilities that maps back to mission threads. -Tune configuration of, and cyber monitor, the distributed MBSE and data science prototype environment for remote accessibility over a given network enclave, including but not limited to NIPR, SIPR, and JWICS. Investigate cloud computing with respect to the modeling environment. -Continue to integrate cyber requirements across all DW architecture and standard efforts and verify cyber requirements are captured as part of the modeling process. -Continue to 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. -Continue to participate in the definition of Model Based Systems Engineering (MBSE) tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement						

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0604027N / <i>Digital Warfare</i>		Project (Number/Name) 3425 / <i>Digital Warfare Office (DWO)</i> <i>MBE&DT Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Joint Capabilities Integration and Development System (JCIDS) and Program Objective Memorandum (POM) processes. -Curate models in the modeling environment and support development across Systems Commands (SYSCOMs) in Modeling Standards and Policies for Science and Technology (S&T) and Programs of Record (PoRs). -Develop an overarching Data Technical Baseline (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 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase for Digital Warfare (DW) MBSE Data Technical Baseline standup.						
Accomplishments/Planned Programs Subtotals		0.000	0.000	26.691	0.000	26.691
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 Digital Warfare (DW) Performance Metrics: Goal: Chief of Naval Operations (CNO) to set requirement, to prioritize resources, and lead efforts on information interoperability and human/machine testing. Metric: Echelon I development of requirements associated with modeling, data science experimentation environment, and digital architectures. The DW will set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming. This will result in a workforce that is trained in new systems engineering and modeling concepts and tools. It will also result in development of a requirements modeling environment to include associated model extensions, reports, views, and configuration management and in the development of digital technical baselines for programs to use to ensure cross-domain interoperability.						

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare				Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Warfare (DW)	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		1.052	Dec 2018	-		1.052	Continuing	Continuing	Continuing
Digital Warfare (DW)	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		1.228	Dec 2018	-		1.228	Continuing	Continuing	Continuing
Digital Warfare (DW)	FFRDC	MITRE : McLean, VA	0.000	0.000		0.000		0.615	Nov 2018	-		0.615	Continuing	Continuing	Continuing
Digital Warfare (DW)	C/CPFF	VENCORE : Chantilly, VA	0.000	0.000		0.000		4.026	Dec 2018	-		4.026	Continuing	Continuing	Continuing
Digital Warfare (DW)	C/CPFF	SAIC : McLean, VA	0.000	0.000		0.000		3.421	Jan 2019	-		3.421	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		10.342		-		10.342	Continuing	Continuing	N/A
Remarks															
The Digital Warfare (DW) previously funded in PE 0604231N (Tactical Command System), 0603582N (Combat System Integration), and 0605217N (Common Avionics) in FY18 under DW Proj 3425.															
The \$4,392K increase to Product Development between FY18 to FY19 is attributed to Model Based Systems Engineering teams creating Data Technical Baselines for programs of record. Additionally, the increase supports the creation of the modeling environment and modeling standards and policies.															
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Digital Warfare Support	WR	Naval Air War : Patuxent River, MD	0.000	0.000		0.000		2.482	Oct 2018	-		2.482	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		2.482		-		2.482	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DW	WR	NSWCs : Various	0.000	0.000		0.000		3.455	Dec 2018	-		3.455	Continuing	Continuing	Continuing
DW	WR	NUWC : Various	0.000	0.000		0.000		2.355	Dec 2018	-		2.355	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018		
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0604027N / <i>Digital Warfare</i>				Project (Number/Name) 3425 / <i>Digital Warfare Office (DWO)</i> <i>MBE&DT Development</i>				

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DW	C/CPFF	Various : Various	0.000	0.000		0.000		2.000	Dec 2018	-		2.000	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		7.810		-		7.810	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineer Support	Various	Various : Various	0.000	0.000		0.000		6.057	Dec 2018	-		6.057	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		6.057		-		6.057	Continuing	Continuing	N/A

Remarks
Funding Increased due to MBSE Data Technical Baseline standup.

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.000	26.691	-	26.691	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy

Date: February 2018

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0604027N / Digital Warfare

Project (Number/Name)

3425 / Digital Warfare Office (DWO)
MBE&DT Development

Digital Warfare (DW)	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Theater ASW Spiral 2 (C2)																												
Undersea Spiral 3 (Sensors)																												
Undersea Spiral 4 (Weapons)																												
Undersea Spiral 5 (Logistics, Maintenance, Training)																												
Undersea Model Curation and Threat Updates																												
Surface Spiral 1 (Pilot)																												
Surface Spiral 2 (C2)																												
Surface Spiral 3 (Sensors)																												
Surface Spiral 4 (Weapons)																												
Surface Spiral 5 (Logistics, Maintenance, Training)																												
Surface Model Curation and Threat Updates																												
IW/EW Spiral 1 (Pilot)																												
IW/EW Spiral 2 (C2)																												
IW/EW Spiral 3 (Sensors)																												
IW/EW Spiral 4 (Weapons)																												
IW/EW Spiral 5 (Logistics, Maintenance, Training)																												
IW/EW Model Curation and Threat Updates																												
Air Spiral 1 (Pilot)																												
Air Spiral 2 (C2)																												
Air Spiral 3 (Sensors)																												
Air Spiral 4 (Weapons)																												
Air Spiral 5 (Logistics, Maintenance, Training)																												
Air Model Curation and Threat Updates																												
Land Spiral 1 (Pilot)																												
Land Spiral 2 (C2)																												
Land Spiral 3 (Sensors)																												
Land Spiral 4 (Weapons)																												
Land Spiral 5 (Logistics, Maintenance, Training)																												
Land Model Curation and Threat Updates																												
Digital Pilot Modeling and Analytics																												
DTB Assessments (Quarterly)																												
MBSE Tool Development (Semi-Annually)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 4	PE 0604027N / <i>Digital Warfare</i>	3425 / <i>Digital Warfare Office (DWO)</i> <i>MBE&DT Development</i>
2019PB - 0604027N - 3425.L39		

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PE 0604027N: *Digital Warfare*
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R-1 Program Element (Number/Name) PE 0604027N / <i>Digital Warfare</i>
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Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development

Proj 3425.S24		FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
DW										1Q	2Q	3Q	4Q																
										Surface Requirements																			
										Gap Analysis																			
										Air Requirements																			
										Model IW Req																			
										Gap Analysis																			
											IW Requirements																		

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604027N / <i>Digital Warfare</i>	Project (Number/Name) 3425 / <i>Digital Warfare Office (DWO)</i> <i>MBE&DT Development</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Digital Warfare (DW)</i>				
Theater ASW Spiral 2 (C2): Theater ASW Spiral 2 (C2)	1	2019	1	2019
Undersea Spiral 3 (Sensors): Undersea Spiral 3 (Sensors)	1	2019	1	2020
Undersea Spiral 4 (Weapons): Undersea Spiral 4 (Weapons)	3	2019	1	2021
Undersea Spiral 5 (Logistics, Maintenance, Training): Undersea Spiral 5 (Logistics, Maintenance, Training)	3	2020	1	2022
Undersea Model Curation and Threat Updates: Undersea Model Curation and Threat Updates	3	2021	4	2023
Surface Spiral 1 (Pilot): Surface Spiral 1 (Pilot)	1	2019	1	2019
Surface Spiral 2 (C2): Surface Spiral 2 (C2)	1	2019	1	2020
Surface Spiral 3 (Sensors): Surface Spiral 3 (Sensors)	3	2019	1	2021
Surface Spiral 4 (Weapons): Surface Spiral 4 (Weapons)	3	2019	1	2021
Surface Spiral 5 (Logistics, Maintenance, Training): Surface Spiral 5 (Logistics, Maintenance, Training)	3	2020	1	2021
Surface Model Curation and Threat Updates: Surface Model Curation and Threat Updates	3	2021	4	2023
IW/EW Spiral 1 (Pilot): IW/EW Spiral 1 (Pilot)	1	2019	1	2020
IW/EW Spiral 2 (C2): IW/EW Spiral 2 (C2)	3	2019	4	2020
IW/EW Spiral 3 (Sensors): IW/EW Spiral 3 (Sensors)	2	2020	3	2021
IW/EW Spiral 4 (Weapons): IW/EW Spiral 4 (Weapons)	2	2021	3	2022
IW/EW Spiral 5 (Logistics, Maintenance, Training): IW/EW Spiral 5 (Logistics, Maintenance, Training)	2	2022	3	2023
IW/EW Model Curation and Threat Updates: IW/EW Model Curation and Threat Updates	2	2023	4	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018	
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604027N / Digital Warfare		Project (Number/Name) 3425 / Digital Warfare Office (DWO) MBE&DT Development	
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Air Spiral 1 (Pilot): Air Spiral 1 (Pilot)	2	2019	2	2020
Air Spiral 2 (C2): Air Spiral 2 (C2)	4	2019	4	2020
Air Spiral 3 (Sensors): Air Spiral 3 (Sensors)	3	2020	3	2021
Air Spiral 4 (Weapons): Air Spiral 4 (Weapons)	1	2022	1	2023
Air Spiral 5 (Logistics, Maintenance, Training): Air Spiral 5 (Logistics, Maintenance, Training)	4	2022	4	2023
Air Model Curation and Threat Updates: Air Model Curation and Threat Updates	3	2023	4	2023
Land Spiral 1 (Pilot): Land Spiral 1 (Pilot)	2	2019	2	2020
Land Spiral 2 (C2): Land Spiral 2 (C2)	4	2019	4	2020
Land Spiral 3 (Sensors): Land Spiral 3 (Sensors)	3	2020	3	2021
Land Spiral 4 (Weapons): Land Spiral 4 (Weapons)	1	2021	1	2022
Land Spiral 5 (Logistics, Maintenance, Training): Land Spiral 5 (Logistics, Maintenance, Training)	4	2022	4	2023
Land Model Curation and Threat Updates: Land Model Curation and Threat Updates	3	2023	4	2023
Digital Pilot Modeling and Analytics: Digital Pilot Modeling and Analytics	1	2019	1	2020
DTB Assessments (Quarterly): DTB Assessments (Quarterly)	1	2019	4	2023
MBSE Tool Development (Semi-Annually): MBSE Tool Development (Semi-Annually)	1	2019	4	2023
Support: DW Support	1	2019	4	2023
DW: Develop Surface Requirements	1	2019	1	2019
DW: Air Functional Gap Analysis	1	2019	1	2019
DW: Develop Air Requirements	1	2019	3	2019
DW: Model IW Capabilities/Req	1	2019	1	2019
DW: IW Functional Gap Analysis	1	2019	2	2019
DW: Develop IW Requirements	2	2019	1	2020