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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>							
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	44.892	6.824	12.119	8.683	-	8.683	9.967	10.052	9.981	10.181	Continuing	Continuing
2222: <i>Modeling & Simulation</i>	44.892	6.824	7.119	8.683	-	8.683	9.967	10.052	9.981	10.181	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000

A. Mission Description and Budget Item Justification

This Program Element addresses projects under the Navy Modeling and Simulation (M&S) Office. It supports technical and management initiatives directed by Congress, Department of Defense (DoD), Secretary of the Navy (SECNAV), and Chief of Naval Operations (CNO) with the aim of bringing organization, focus, and efficiency to the development and use of M&S throughout the Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S, and represents Navy interests in Joint and other Agency initiatives. It funds efforts to define and coordinate the corporate Navy M&S policy and guidance to evolve an interoperable and reusable core M&S capability consistent with the M&S technical framework prescribed by DoD.

Efforts are organized around three product areas:

- (1) Core Services: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S standards, visibility, and potential reuse across DoD.
- (2) Community Services: This activity provides M&S subject matter expert support embedded in the Navy M&S Communities to recommend implementations for M&S policies, standards, VV&A, and reuse within their Community and to ensure that the wider DON and DoD are aware (visibility) of the M&S products and services, initiatives, processes, and standards.
- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	7.097	7.119	7.291	-	7.291
Current President's Budget	6.824	12.119	8.683	-	8.683
Total Adjustments	-0.273	5.000	1.392	-	1.392
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	5.000	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	0.000	0.000	-	-	-
• SBIR/STTR Transfer	-0.273	0.000	-	-	-
• Program Adjustments	0.000	0.000	1.398	-	1.398
• Rate/Misc Adjustments	0.000	0.000	-0.006	-	-0.006

UNCLASSIFIED

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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *Joint simulation environment*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2019	FY 2020
	0.000	5.000
	0.000	5.000
	0.000	5.000

Change Summary Explanation

The FY 2021 funding request was reduced by \$0.667 million to account for the availability of prior year execution balances. FY 2021 increase of \$1.398M supports the need for simulation capabilities in the area of lethality, digital engineering, synthetic battlespace, interface and open architectures for enhanced interoperability, ship design, surface/air/undersea warfare and cyber efforts. Funding increase supports improvements and modernizations to M&S legacy systems, focusing on reducing software and hardware dependency, keeping pace with evolving Fleet capabilities and re-hosting software from a single machine to distributed, federated, or cloud-based architecture to offer greater accessibility and decrease maintainability.

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>					Project (Number/Name) 2222 / <i>Modeling & Simulation</i>		
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2222: <i>Modeling & Simulation</i>	44.892	6.824	7.119	8.683	-	8.683	9.967	10.052	9.981	10.181	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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Efforts are organized around three product areas:

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- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: CORE SERVICES	1.032	1.035	1.035	0.000	1.035
Articles:	-	-	-	-	-
Description: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S visibility and potential reuse across DoD. It provides updates to the Navy M&S website, M&S Master Plan, and M&S Investment Strategy. This activity supports development of common services, tools, and databases to ensure the integration and connectivity of M&S products employed in Naval assessments, training, acquisition, and among operational communities. It manages and maintains the Navy M&S Information Service (NMSIS), the central Naval M&S information resource to support informed M&S investment decision making across DON. It implements and manages the Modeling and Simulation (M&S) Quality Assurance (VV&A) process and guidelines for implementing for modeling, simulation, and data. It					

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>		Project (Number/Name) 2222 / <i>Modeling & Simulation</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
reviews both new and legacy M&S VV&A plans and reports and develops and maintains the Naval M&S VV&A repository. It establishes and implements a VV&A training curriculum for developers and Accreditation Agents.					
FY 2020 Plans:					
- Promote consistent application of M&S "Best Practices" and associated technologies to improve support across the DON Enterprise.					
- Review and Update the Verification, Validation and Accreditation (VV&A) policy and guidance.					
- Educate the M&S workforce on use of M&S to support efficient and interoperable RDT&E.					
- Provide VV&A, Standards and M&S support to programs, PEOs and other DON activities.					
FY 2021 Base Plans:					
Continue to promote consistent application of M&S "Best Practices" and associated technologies to improve support across the DON Enterprise.					
Update the Verification, Validation and Accreditation (VV&A) policy and guidance.					
Continue to educate the M&S workforce on use of M&S to support efficient and interoperable RDT&E.					
Provide VV&A, Standards and M&S support to programs, PEOs and other DON activities.					
FY 2021 OCO Plans:					
N/A					
Title: COMMUNITY SERVICES					
Articles:					
	1.737	1.700	2.059	0.000	2.059
	-	-	-	-	-
Description: This activity provides M&S subject matter expert support embedded in the Navy M&S Communities to recommend implementations for M&S policies and standards within their Community and to ensure that the wider DON is aware of the M&S products and services, initiatives, processes, and standards (visibility). It promotes M&S reuse through cooperative Community M&S activities which identify and prioritize M&S capability requirements between and across Communities. It also provides an M&S degree program through the Naval Postgraduate School (NPS), Modeling Virtual Environments and Simulation (MOVES) curriculum which qualifies officers to fill 6202-P coded billets. Financial support for thesis and dissertation efforts done by the students is covered by this funding. Topics are broad M&S topics of concern which are prioritized based on how they meet the requirements across, between and within the M&S Communities.					
FY 2020 Plans:					

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
<ul style="list-style-type: none"> - Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions. - Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions. - Develop DON Officer M&S postgraduate Knowledge requirements and submit to the M&S program at Naval Postgraduate School. - Fund DON M&S Forum tasks to share M&S efforts, Best Practices, and lessons learned. - Coordinate M&S workforce education across DON. - Train and educate workforce in efficient use of Live-Virtual-Constructive environments and VV&A of large-scale complex simulations. 					
FY 2021 Base Plans:					
Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions.					
Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions.					
Develop DON Officer M&S postgraduate Knowledge requirements and submit to the M&S program at Naval Postgraduate School.					
Fund DON M&S Forum tasks to share M&S efforts, Best Practices, and lessons learned					
Coordinate M&S workforce education across DON.					
Train and educate workforce in efficient use of Live-Virtual-Constructive environments and VV&A of large-scale complex simulations.					
Coordination and modernization of standards, architectures, and Virtual Environments to keep pace with evolving technologies and Fleet capabilities					
FY 2021 OCO Plans:					
N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					
FY 2020 to FY2021 increase of \$0.359 million supports expansion of the M&S Forums to share best practices and lessons learned. In addition, it increases training and education of the workforce in the use of Live-Virtual-Constructive environments of large-scale simulations.					
Title: COMMUNITY EXPERIMENTS and PROTOTYPES					
Articles:					
	4.055	4.384	5.589	0.000	5.589
	-	-	-	-	-

UNCLASSIFIED

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Description: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S, and investigate Service-unique requirements for standards or guidance. Individual efforts focus on developing or evaluating approaches to optimize training, assessments and acquisition functional, mission objectives through more efficient development and use of M&S. This activity develops methodologies and standards that will result in model and data reusability and interoperability through the formulation of a technical framework. These standards support the full range of architecture and engineering design requirements across the Navy. This activity also supports Fleet exercises and experiments through the application of distributed simulations across a wide variety of warfighting and supporting communities. Specifically, it develops and integrates appropriate M&S into Fleet Synthetic Training (FST), and develops simulation efforts to test and evolve the standards for models, interfaces, and data. It supports development of tools necessary to enable the seamless access and use of operationally relevant M&S products to support Navy training, warfare assessments and acquisition requirements.</p> <p>FY 2020 Plans:</p> <ul style="list-style-type: none"> - Advance and efficiently integrate leading edge M&S capabilities in response to complex emerging threats and future warfighting environments. - Provide a comprehensive set of M&S capabilities and tools to support analysis, engineering, prototyping , testing, experimentation, and training to assess and address mission capability gaps and enhance interoperability. - Establish enterprise open architectures and standards. - Identify core models and simulations requiring integration. - Improve M&S networking environments to ensure labs and facilities are persistently connectable. - Validate scenario, simulation, and threat environments that can be reused across domains and throughout the program life-cycles. - Initiate development of a Common M&S Environment - Development of standards, architectures and open interfaces will add a new focus on integrating Live Navy Aircraft/Ship/Subs/Networks with Virtual simulations and Constructive models as well cyber effects in the battlespace. - Develop M&S modules in the Naval Integrated Capabilities database that will capture current DON Core Models, Simulations, and Data. Create an accessible repository of models, standards, relevant guidance and policy that will drive down cost. Develop a technical plan for incorporation of the Architecture Management 					

UNCLASSIFIED

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Integration Environment and persistent connectivity across Navy M&S capabilities that will enable reuse and improved response time for LVC events.</p> <ul style="list-style-type: none"> - Develop reusable M&S technologies in FY20 will add the integration of the Complex threat models (ITASE, DIADs, NGTS and TMAP models) in partnership with Intelligence Centers to create a high fidelity agile threat environment reusable across programs, domains (Air, Sea, Surface, Subsurface) and communities (Analysis, Acquisition, Training and Experimentation). -Experiments, model development efforts and simulation prototypes will include cyber effects modeling, virtualization methodologies for complex tactical code and improved visualization/virtual reality to support next generation M&S supporting emergent Naval warfighting requirements. <p>FY 2021 Base Plans:</p> <ul style="list-style-type: none"> - Advance and efficiently integrate leading edge M&S capabilities in response to complex emerging threats and future warfighting environments. - Provide a comprehensive set of M&S capabilities and tools to support analysis, engineering, prototyping , testing, experimentation, and training to assess and address mission capability gaps and enhance interoperability. - Establish enterprise open architectures and standards. - Identify core models and simulations requiring integration. - Improve M&S networking environments to ensure labs and facilities are persistently connectable. - Validate scenario, simulation, and threat environments that can be reused across domains and throughout the program life-cycles. - Initiate development of a Common M&S Environment - Development of standards, architectures and open interfaces will add a new focus on integrating Live Navy Aircraft/Ship/Subs/Networks with Virtual simulations and Constructive models as well cyber effects in the battlespace. - Develop M&S modules in the Naval Integrated Capabilities database that will capture current DON Core Models, Simulations, and Data. Create an accessible repository of models, standards, relevant guidance and policy that will drive down cost. Develop a technical plan for incorporation of the Architecture Management Integration Environment and persistent connectivity across Navy M&S capabilities that will enable reuse and improved response time for LVC events. - Develop reusable M&S technologies in FY20 will add the integration of the Complex threat models (ITASE, DIADs, NGTS and TMAP models) in partnership with Intelligence Centers to create a high fidelity agile threat 					

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>environment reusable across programs, domains (Air, Sea, Surface, Subsurface) and communities (Analysis, Acquisition, Training and Experimentation).</p> <p>-Experiments, model development efforts and simulation prototypes will include cyber effects modeling, virtualization methodologies for complex tactical code and improved visualization/virtual reality to support next generation M&S supporting emergent Naval warfighting requirements.</p> <p>- Improvements and modernization of Core Enterprise Modeling and Simulation capabilities in areas such as lethality, synthetic battlespace, interface and open architectures for enhanced interoperability, ship design, surface/air/ undersea warfare and cyber effects. Improvements and modernization will focus on reduced software and hardware dependency, modernizing M&S to keep pace with evolving Fleet capabilities, re-hosting software from a single machine to distributed, federated, or cloud-based architecture to offer greater accessibility and increase maintainability.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: FY21 increase of \$1.205M is to support requirements for modernization and improvement of "Core" M&S capabilities to keep pace with new and evolving Fleet capabilities and technologies.</p>					
Accomplishments/Planned Programs Subtotals	6.824	7.119	8.683	0.000	8.683

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-ACAT program. The focus of the Navy Modeling and Simulation (M&S) Office is to facilitate and enable the efficient use of M&S by minimizing duplication of M&S efforts and maximize the reuse of M&S and data.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support					Project (Number/Name) 2222 / Modeling & Simulation						
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
DoD Support	WR	SPAWAR : Charleston, SC	0.383	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
NMSO Director	WR	SPAWAR : Charleston, SC	2.107	0.299	Feb 2019	0.300	Jan 2020	0.300	Jan 2021	-		0.300	0.000	3.006	-
NMSO Data Archiving Effort	WR	NAVAIR : Pax River, MD	0.503	0.000		0.000		0.000		-		0.000	0.000	0.503	-
DREN Connectivity	WR	SPAWAR : Charleston, SC	0.043	0.000		0.000		0.000		-		0.000	0.000	0.043	-
M & S Data Lead	WR	SPAWAR : Charleston, SC	0.740	0.000		0.000		0.000		-		0.000	0.000	0.740	-
NMSIS Web Presence	WR	SPAWAR : Charleston, SC	0.896	0.000		0.000		0.000		-		0.000	0.000	0.896	-
VV&A Standards & Support	WR	NAVAIR : Pax River	1.818	0.266	Mar 2019	0.270	Mar 2020	0.270	Mar 2021	-		0.270	0.000	2.624	-
Plans & Policies	WR	SPAWAR : Charleston, SC	2.268	0.466	Jan 2019	0.470	Oct 2019	0.470	Oct 2020	-		0.470	0.000	3.674	-
DON Mission Level Gap Analysis	WR	NAVAIR : Pax River, MD	1.100	0.000		0.000		0.000		-		0.000	0.000	1.100	-
M&S Interoperability Initiative	WR	NAVAIR : Pax River, MD	0.950	0.000		0.000		0.000		-		0.000	0.000	0.950	-
M&S Interoperability Initiative	WR	SPAWAR : Charleston, SC	0.649	0.000		0.000		0.000		-		0.000	0.000	0.649	-
Navy Training Test Harness	WR	NAWC TSD : Orlando, FL	0.375	0.000		0.000		0.000		-		0.000	0.000	0.375	-
CSP for NTI	WR	NAWC TSD : Orlando, FL	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Navy STORM	MIPR	NAWC : Pax River, MD	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
USMC STORM	MIPR	USAF : Triangle, VA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
M&S Services	WR	SPAWAR : Charleston, SC	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

UNCLASSIFIED

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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
Data Assistant	WR	SPAWAR : Charleston, SC	0.918	0.000		0.000		0.000		-		0.000	0.000	0.918	-
Navy VV&A Lead	WR	NAVAIR : Pax River, MD	0.428	0.000		0.000		0.000		-		0.000	0.000	0.428	-
Enterprise Level SBD M&S Components	WR	Various Warfare Centers : Not Specified	1.308	0.592	Jan 2019	0.700	Oct 2019	0.700	Oct 2020	-		0.700	0.000	3.300	-
LDUVV SBD Implementation Net-Centric Systems Test	WR	Various Warfare Centers : Not Specified	0.430	0.000		0.000		0.000		-		0.000	0.000	0.430	-
Net-Centric Systems Test Evaluation Capability Module -NECM	WR	NAVAIR : Pax River, MD	0.292	0.150	Feb 2019	0.160	Oct 2019	0.160	Oct 2020	-		0.160	0.000	0.762	-
Common Development Environment	WR	NAVAIR : Pax River, MD	1.014	0.731	Jan 2019	0.735	Oct 2019	0.735	Oct 2020	-		0.735	0.000	3.215	-
Architecture Framework	WR	NAVAIR : Pax River, MD	0.412	0.212	Jan 2019	0.215	Oct 2019	0.215	Oct 2020	-		0.215	0.000	1.054	-
MBSE SYSML Reference Architecture Standard	WR	Various Warfare Centers : Not Specified	0.212	0.212	Feb 2019	0.215	Oct 2019	0.215	Oct 2020	-		0.215	0.000	0.854	-
AMIE - Architecture Management Integration Environment	WR	NAVAIR : Pax River, MD	2.666	0.200	Feb 2019	0.210	Feb 2020	0.210	Feb 2021	-		0.210	0.000	3.286	-
M&S Integration Analysis	WR	Various Warfare Centers : Not Specified	0.139	0.159	Jan 2019	0.165	Oct 2019	0.165	Oct 2020	-		0.165	0.000	0.628	-
Common Development Environment Integration	WR	Various Warfare Centers : Not Specified	0.000	0.108	Jan 2019	0.108	Oct 2019	0.108	Oct 2020	-		0.108	0.000	0.324	-
Architecture Integration	WR	Various Warfare Centers : Not Specified	0.318	0.742	Feb 2019	0.750	Oct 2019	0.922	Oct 2020	-		0.922	0.000	2.732	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NAVAL - LIFT	WR	Various Warfare Centers : Not Specified	0.212	0.367	Feb 2019	0.370	Oct 2019	0.370	Oct 2020	-		0.370	0.000	1.319	-
M&S Visulation	WR	Various Warfare Centers : Not Specified	0.212	0.315	Feb 2019	0.320	Oct 2019	0.320	Oct 2020	-		0.320	0.000	1.167	-
Core M&S Modernization & Improvements	WR	Various Warfare : Not Specified	0.000	0.000		0.000		1.073	Oct 2020	-		1.073	0.000	1.073	-
Subtotal			21.640	4.819		4.988		6.233		-		6.233	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RDA POC	WR	NAVAIR : Pax River, MD	1.846	0.380	Jan 2019	0.396	Jan 2020	0.396	Jan 2021	-		0.396	0.000	3.018	-
RDA IDS (#1&3)	WR	Various Warfare Centers : Not Specified	2.290	0.238	Feb 2019	0.240	Jan 2020	0.240	Jan 2021	-		0.240	0.000	3.008	-
Training IDS (#1)	WR	Various Warfare Centers : Not Specified	1.823	0.246	Mar 2019	0.265	Mar 2020	0.265	Mar 2021	-		0.265	0.000	2.599	-
Training IDS (#2)	WR	SPAWAR : Charleston, SC	0.951	0.000		0.000		0.000		-		0.000	0.000	0.951	-
Analysis IDS (#1)	WR	SPAWAR : Charleston, SC	0.000	0.233	Mar 2019	0.250	Mar 2020	0.250	Mar 2021	-		0.250	0.000	0.733	-
Analysis IDS (#2)	WR	SPAWAR : Charleston, SC	0.058	0.000		0.000		0.000		-		0.000	0.000	0.058	-
IDS Training and Coordination	WR	SPAWAR : Charleston, SC	0.044	0.000		0.000		0.000		-		0.000	0.000	0.044	-
USMC IDS	WR	MCCDC : Quantico, VA	0.670	0.000		0.000		0.000		-		0.000	0.000	0.670	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MOVES	WR	NPS : Monterrey, CA	4.588	0.318	Feb 2019	0.330	Jan 2020	0.330	Mar 2021	-		0.330	0.000	5.566	-
RDA M&S Forum	WR	NAVAIR : Pax River, MD	2.538	0.176	Feb 2019	0.195	Jan 2020	0.189	Jan 2021	-		0.189	0.000	3.098	-
NMSO Technical Support	WR	SPAWAR : Charleston, SC	0.483	0.000		0.000		0.000		-		0.000	0.000	0.483	-
Simulated Shipboard FMVS	WR	NWDC : Norfolk, VA	0.365	0.000		0.000		0.000		-		0.000	0.000	0.365	-
M&S Officer Postgraduate Ed	WR	SPAWAR : SSC-LANT	0.852	0.000		0.000		0.000		-		0.000	0.000	0.852	-
M&S Workforce Coordinator	WR	SPAWAR : SSC-PAX	0.000	0.149	Jan 2019	0.155	Oct 2019	0.155	Oct 2020	-		0.155	0.000	0.459	-
Core M&S Moderization & Improvements	WR	Various Warfare : Not Specified	0.000	0.000		0.000		0.325	Oct 2020	-		0.325	0.000	0.325	-
Subtotal			16.508	1.740		1.831		2.150		-		2.150	0.000	22.229	N/A

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Standard Interfaces for Virtual World	WR	NAVAIR : Pax River, MD	2.727	0.265	Feb 2019	0.300	Feb 2020	0.300	Feb 2021	-		0.300	0.000	3.592	-
Semantic and Structural Metadata Schema	WR	NAVAIR : Pax River, MD	0.562	0.000		0.000		0.000		-		0.000	0.000	0.562	-
Semantic and Structural Metadata Schema	WR	SPAWAR : Charleston, SC	0.289	0.000		0.000		0.000		-		0.000	0.000	0.289	-
Tactical Operational Software Environment (TOSEE)	WR	NAVAIR : TSD, Orlando	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	-
Cross Cultural Competence in OPS Environment	WR	NAVAIR : TSD, Orlando	0.350	0.000		0.000		0.000		-		0.000	0.000	0.350	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Framework for Assessing Cost and Technology (FACT)	WR	MCCDC : Quantico, VA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Intergrated Air/Missile Defense IAMD	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Measuring Immersion Training	WR	MCCDC : Quantico, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
VVA of Real Time Propagation Loss Model	WR	ONR : Arlington, VA	0.588	0.000		0.000		0.000		-		0.000	0.000	0.588	-
Navy M&S Education Program	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Sensor Federate	WR	ONR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Contracting Language for M&S	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
VCE for CPD&T	MIPR	WHS : Arlington, VA	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
Navy VV&A Lead	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
LVC Training Enviroment Tech Advisor	WR	NAVSEA JHU : Wash. DC	0.567	0.000		0.000		0.000		-		0.000	0.000	0.567	-
Human Anatomy Motion Tracking & Display	WR	MARCORSYSCOM : Arlington, VA	0.091	0.000		0.000		0.000		-		0.000	0.000	0.091	-
CapabilityModule Enhancement	WR	NAVAIR : Pax River	0.120	0.000		0.000		0.000		-		0.000	0.000	0.120	-
Subtotal			6.744	0.265		0.300		0.300		-		0.300	0.000	7.609	N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	44.892	6.824	7.119	8.683	-	8.683	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Develop reference architecture and implementation for a common M&S engineering frameworks																																
Develop and deploy a Virtual Collaborative Environment in response to Enterprise Requirements																																
Identify and integrate MBSE tools and best practices																																
Update Enterprise level Naval Models and Simulations to ensure accurate operational representation and increased validity																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2222				
Incorporate Best Practices for Contracting M&S in DON	1	2021	4	2022
Publish M&S Contracting Best Practices Guide	1	2021	4	2022
Change Culture through Education, Outreach and Training	1	2021	4	2022
Host Summit for Face to Face Workshop on Issues and Reuse	1	2021	4	2022
Incorporate Learning courses in SYSCOM Workforce Education	1	2021	4	2022
Coordinate across DON and other Services/DoD to develop an M&S Support Plan	1	2021	4	2022
Establish draft MSSP Policy among the Services/DoD	1	2021	4	2022
Draft a Common Digital Environment	1	2021	4	2022
Coordinate quarterly Fleet Training Integration Panels	1	2021	4	2022
Plan Quarterly Fleet Training Requirements Management Group	1	2021	4	2022
Conduct Forums across all the Communities	1	2021	4	2022
JBUS AIME Integration to fix future LVC training integration issues	1	2021	4	2022
Aegis, Development Environment_AIME integration	1	2021	4	2022
Identify NR&DE capabilities for AMIE integration and conduct integration	1	2021	4	2022
Develop reference architecture and implementation for a common M&S engineering frameworks	1	2024	4	2025
Develop and deploy a Virtual Collaborative Environment in response to Enterprise Requirements	1	2024	4	2025
Identify and integrate MBSE tools and best practices	1	2024	4	2025
Update Enterprise level Naval Models and Simulations to ensure accurate operational representation and increased validity	1	2024	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Interest Item not included in other projects.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020
Congressional Add: Joint simulation environment	0.000	5.000
FY 2019 Accomplishments: N/A		
FY 2020 Plans: Through this increase, the DoD and DON will significantly upgrade advanced Government-owned, non-proprietary simulation capability to support a broad range of Acquisition programs, tactics development and capability analysis. This furthers the U.S. Navy's efforts to continue development & improvement of the Government designed / built Joint Simulation Environment supporting 5th generation systems integration and mission systems Research, Development and Test and Evaluation (RDT&E). Development will focus on upgrades and integration of a wide range of blue and red models and improvements to major Enterprise M&S. Improvement areas include the Next Generation Threat System (NGTS), Architecture Management Integration Environment (AMIE), Global Reusable Interface Domain (GRID), Threat Modeling & Analysis Program (TMAP) modeling and simulation of threat playbooks, integration of new Threat products (ITASE, LIVE), improvements to weather services and capabilities, expansion of space asset representation, improvements to analysis and reporting capabilities and Multi-Special Access Program considerations.		
Congressional Adds Subtotals	0.000	5.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 9999 / Congressional Adds
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Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Need Item Text	C/BA	Not Specified : Not Specified	0.000	0.000		5.000	Jan 2020	0.000		-		0.000	0.000	5.000	-
Subtotal			0.000	0.000		5.000		0.000		-		0.000	0.000	5.000	N/A

Remarks
congressional add

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	5.000	0.000	-	0.000	0.000	5.000	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 9999	
Schedule Detail	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
Schedule Detail	1	2020	1	2021