Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy **Date:** May 2017

Appropriation/Budget Activity

R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)

1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational

Systems Development

COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	158.117	21.522	23.541	24.271	-	24.271	22.410	23.085	23.574	24.048	280.704	601.272
9C87: CANES Integration	158.117	21.522	23.541	24.271	-	24.271	22.410	23.085	23.574	24.048	280.704	601.272

Program MDAP/MAIS Code:

Project MDAP/MAIS Code(s): M417

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks and Enterprise Services (CANES) is the Navy's Program of Record (POR) to replace and modernize existing afloat networks with the necessary hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for the Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves for all basic network services (email, web, chat, collaboration) to a wide variety of Navy surface combatants, submarines and maritime operations centers. Hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Integrating these applications and systems is accomplished through the Application Integration process, which is used to evaluate and validate compatibility between CANES and the Navy-validated applications, systems and services. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), are dependent on CANES to field, host, and sustain their capability because they no longer provide their own hardware. In addition, CANES requires that Automated Digital Network System (ADNS) field prior to or concurrently with CANES due to the architectural reliance between the two programs.

CANES is programmed to develop regular technical updates to its hardware and software baselines to ensure that no cybersecurity vulnerabilities exist due to hardware and software obsolescence. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. This will allow for streamlined acquisition, contracting, and test events, and significant lifecycle efficiencies through consolidation of multiple current configuration management baselines, logistics, and training efforts into a unified support structure.

In FY 2018, CANES RDT&E investment will complete TI 2 hardware and software baseline development and initiate development of TI 3 software baseline including E2C laboratory engineering efforts. Perform systems engineering efforts for TI 3 to complete functional baselines and update technical data packages.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development

R-1 Program Element (Number/Name)

PE 0303138N / Consolidated Afloat Network Ent Services(CANES)

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	21.667	23.541	23.922	-	23.922
Current President's Budget	21.522	23.541	24.271	-	24.271
Total Adjustments	-0.145	0.000	0.349	-	0.349
Congressional General Reductions	-	_			
 Congressional Directed Reductions 	-	-			
 Congressional Rescissions 	-	-			
 Congressional Adds 	-	-			
 Congressional Directed Transfers 	-	-			
 Reprogrammings 	-	-			
 SBIR/STTR Transfer 	-0.145	0.000			
 Program Adjustments 	0.000	0.000	0.000	-	0.000
 Rate/Misc Adjustments 	0.000	0.000	0.349	-	0.349

Change Summary Explanation

Technical: N/A

Funding:

N/A

Schedule:

Operational commitments for the CANES Force Level Follow-On Test and Evaluation (FOT&E) test platform caused the Force Level DT and Force Level FOT&E test events to be re-phased. Development Testing for submarines shifted to Q1FY19 due to submarine test platform operational commitments. Full Deployment has been re-phased to align with program's Full Deployment Decision (FDD), which was updated to accommodate acquisition documentation requirements. FDD was achieved in 1QFY16.

Exhibit R-2A, RDT&E Project Ju		Date: May 2017										
Appropriation/Budget Activity 1319 / 7					PE 030313	am Elemen 38N / Consc es(CANES)	lidated Aflo		Number/Name) ANES Integration			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9C87: CANES Integration	158.117	21.522	23.541	24.271	-	24.271	22.410	23.085	23.574	24.048	280.704	601.272
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Droinet MDAD/MAIC Code: N/41	7											

Project MDAP/MAIS Code: M417

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks and Enterprise Services (CANES) is the Navy's Program of Record (POR) to replace and modernize existing afloat networks with the necessary hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for the Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves for all basic network services (email, web, chat, collaboration) to a wide variety of Navy surface combatants, submarines and maritime operations centers. Hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Integrating these applications and systems is accomplished through the Application Integration process, which is used to evaluate and validate compatibility between CANES and the Navy-validated applications, systems and services. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), are dependent on CANES to field, host, and sustain their capability because they no longer provide their own hardware. In addition, CANES requires that Automated Digital Network System (ADNS) field prior to or concurrently with CANES due to the architectural reliance between the two programs.

CANES is programmed to develop regular technical updates to its hardware and software baselines to ensure that no cybersecurity vulnerabilities exist due to hardware and software obsolescence. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. This will allow for streamlined acquisition, contracting, and test events, and significant lifecycle efficiencies through consolidation of multiple current configuration management baselines, logistics, and training efforts into a unified support structure.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2018	FY 2018	FY 2018
	FY 2016	FY 2017	Base	oco	Total
Title: CANES Integration	21.522	23.541	24.271	0.000	24.271
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Achieved Full Deployment Decision (FDD). Completed Technical Insertion (TI) software baseline development and initiated development for TI 2 hardware and software baseline including E2C laboratory engineering efforts. Performed systems engineering efforts to complete functional baselines and updates to technical data packages. Continued Follow-On Test & Evaluation (FOT&E) in support of force level testing.					
FY 2017 Plans:					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	umber/Name) NES Integration

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue TI 2 hardware and software baseline testing, including E2C laboratory engineering efforts. Perform systems engineering efforts to complete functional baselines and update technical data packages. Complete FOT&E in support of force level testing. Perform Development Testing (DT) Assist for TI 2 hardware and software development.					
FY 2018 Base Plans: Complete TI 2 hardware and software baseline development and initiate development of TI 3 software baseline including E2C laboratory engineering efforts. Perform systems engineering efforts for TI 3 to complete functional baselines and update technical data packages.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	21.522	23.541	24.271	0.000	24.271

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

			FY 2018	FY 2018	FY 2018					Cost To	
<u>Line Item</u>	FY 2016	FY 2017	Base	OCO	<u>Total</u>	FY 2019	FY 2020	FY 2021	FY 2022	Complete	Total Cost
 OPN/2915: CANES 	274.641	212.030	322.754	-	322.754	419.686	406.255	364.389	410.379	2,472.031	5,951.156
 OPN/2925: CANES Intell 	28.695	36.013	48.028	-	48.028	59.321	56.636	49.192	50.176	446.377	1,029.470

Remarks

Navy

D. Acquisition Strategy

CANES is an ACAT IAC Major Automated Information System (MAIS) program. The program office employed a multiple-phase, multiple-award down-select contract strategy to reduce program risks and maintain competition in both design development and limited production during contract performance. Milestone C was achieved in 1QFY13 and Full Deployment Decision (FDD) was achieved in 1QFY16. In 2QFY15, a separate full and open indefinite delivery indefinite quantity (IDIQ) multiple award contract (MAC) production contract was awarded to support future production. CANES is programmed to develop regular technical updates to its hardware and software baselines to ensure that no cybersecurity vulnerabilities exist due to hardware and software obsolescence.

E. Performance Metrics

Early RDT&E investment and sustainment of dual design contractors through the development phase reduced Total Ownership Cost (TOC) from Milestone B to Milestone C. Cost avoidance throughout the life of the program is based on 1) reducing the number of networks through the use of mature, certified, cross domain technologies; 2) reducing the infrastructure footprint and associated costs for hardware afloat; and 3) providing increased capability to meet current and projected war fighter requirements.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy

Appropriation/Budget Activity R-1 Program Element (Number/Name)

1319 / 7

PE 0303138N / Consolidated Afloat Network 9C87 / CANES Integration

Project (Number/Name)

Date: May 2017

Ent Services(CANES)

Product Developme	ent (\$ in M	illions)		FY 2	2016	FY 2	2017		2018 ase	FY 2	2018 CO	FY 2018 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	Total Cost	Target Value of Contract
Prior Year Product Development	Various	Various : Various	52.910	0.000		0.000		0.000		-		0.000	0.000	52.910	22.329
Primary Hardware Development	WR	SSC : San Diego, CA and Charleston, SC	38.562	7.507	Nov 2015	8.617	Jan 2017	9.120	Nov 2017	-		9.120	192.514	256.320	209.438
Primary Hardware Development	C/CPFF	AUSGAR : San Diego, CA	0.182	0.240	Mar 2016	0.000		0.000		-		0.000	0.000	0.422	-
Primary Hardware Development	C/CPFF	ImagineOne : Colonial Beach, VA	0.432	0.286	Feb 2016	0.000		0.000		-		0.000	0.000	0.718	-
Primary Hardware Development	C/CPFF	Navy Systems Management Agency (NSMA) : Washington DC	0.000	0.660	Apr 2016	0.000		0.000		-		0.000	0.000	0.660	-
Primary Hardware Development	C/CPFF	Client Solution Architects (CSA) : San Diego, CA	0.000	0.150	Apr 2016	0.000		0.000		-		0.000	0.000	0.150	-
Primary Software Development	C/CPFF	AUSGAR : San Diego, CA	0.000	0.224	Mar 2016	0.000		0.000		-		0.000	0.000	0.224	-
Primary Software Development	WR	SSC : San Diego, CA and Charleston, SC	20.347	6.569	Nov 2015	7.936	Nov 2016	9.821	Nov 2017	-		9.821	52.439	97.112	48.574
Primary Software Development	C/CPFF	Carahsoft : Reston, VA	0.000	0.185	Apr 2016	0.000		0.000		-		0.000	0.000	0.185	-
Primary Software Development	C/CPFF	TBD : TBD	0.000	0.000		0.397	Apr 2017	0.390	Dec 2017	-		0.390	0.000	0.787	-
Systems Engineering	C/CPFF	Systems Research and Applications (SRA) : San Diego, CA	0.000	0.116	Mar 2016	0.000		0.000		-		0.000	0.000	0.116	-
Systems Engineering	C/CPFF	Innovative Defense Technologies (IDT) : Arlington, VA	0.000	0.240	Apr 2016	0.668	Jun 2017	0.000		-		0.000	0.000	0.908	-
Systems Engineering	C/CPFF	Booz Allen Hamilton (BAH) : San Diego, CA	1.393	0.220	Jul 2016	0.657	Dec 2016	0.670	Dec 2017	-		0.670	0.000	2.940	0.690

PE 0303138N: Consolidated Afloat Network Ent Services... Navy

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy **Date:** May 2017

Appropriation/Budget Activity R-1 Program Element (Number/Name)

1319 / 7

PE 0303138N / Consolidated Afloat Network 9C87 / CANES Integration Ent Services(CANES)

Project (Number/Name)

Product Developme	nt (\$ in M	illions)		FY 2	2016	FY 2	2017		2018 ise		2018 CO	FY 2018 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
Systems Engineering	C/CPFF	Science Applications International Corp. (SAIC): San Diego, CA	0.277	0.169	Mar 2016	0.000		0.000		-		0.000	0.000	0.446	-
Systems Engineering	WR	SSC : San Diego, CA and Charleston, SC	22.630	2.415	Nov 2015	3.434	Nov 2016	2.520	Nov 2017	-		2.520	45.743	76.742	50.798
Systems Engineering	MIPR	US ARMY CECOM (MITRE) : San Diego, CA	2.222	0.000		0.300	Dec 2016	0.300	Nov 2017	-		0.300	5.722	8.544	19.934
Systems Engineering	C/CPFF	CSA: San Diego, CA	0.165	0.556	Feb 2016	0.000		0.000		-		0.000	0.000	0.721	-
Systems Engineering	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.230	Dec 2017	-		0.230	0.000	0.230	-
		Subtotal	139.120	19.537		22.009		23.051		-		23.051	296.418	500.135	-

Support (\$ in Million	ıs)			FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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	Total Cost	Target Value of Contract
Studies & Design	MIPR	Washington HQ Services : Washington DC	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	0.650
Studies & Design	WR	SSC : San Diego, CA	0.388	0.218	Nov 2015	0.195	Jan 2017	0.460	Nov 2017	-		0.460	0.000	1.261	-
Studies and Design	C/CPFF	SRA : San Diego, CA	0.000	0.112	Feb 2016	0.000		0.000		-		0.000	0.000	0.112	-
Certification Authority	C/CPFF	AUSGAR : San Diego,CA	1.300	0.649	Mar 2016	0.000		0.000		-		0.000	10.987	12.936	-
Certification Authority	C/CPFF	NSMA : Washington, DC	0.370	0.000		0.214	Apr 2017	0.000		-		0.000	0.000	0.584	-
Certification Authority	C/CPFF	Innovative Defense Technologies (IDT) : Arlington, VA	0.167	0.000		0.000		0.000		-		0.000	0.000	0.167	-
Certification Authority	C/CPFF	Booz Allen Hamilton (BAH) : San Diego,CA	0.000	0.000		0.695	Dec 2016	0.450	Dec 2017	-		0.450	0.000	1.145	-

PE 0303138N: Consolidated Afloat Network Ent Services... Navy

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Appropriation/Budg 1319 / 7		ost Analysis: FY 2 y					ogram Ele 3138N / C		(Number	,					
						Ent Ser	vices(CAI	NES)							
Support (\$ in Millior	ıs)			FY 2	2016	FY 2017		FY 2018 Base		FY 2					
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	Total Cost	Target Value of Contrac
		Subtotal	2.875	0.979		1.104		0.910		-		0.910	10.987	16.855	-
Test and Evaluation	(\$ in Milli	ions)		FY 2	FY 2016		2017		2018 ase	FY 2018 OCO		FY 2018 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
Operational Test & Evaluation	WR	COTF : Norfolk, VA	2.064	0.651	Dec 2015	0.000		0.250	Dec 2017	-		0.250	8.510	11.475	5.89
Operational Test & Evaluation	MIPR	JITC : Fairfax, VA	0.000	0.000		0.167	Feb 2017	0.000		-		0.000	0.000	0.167	-
Development Test & Evaluation	WR	SSC : San Diego, CA	0.406	0.105	Nov 2015	0.145	Nov 2016	0.000		-		0.000	3.967	4.623	-
Development Test & Evaluation	MIPR	JITC : Fairfax, VA	1.368	0.250	Nov 2015	0.000		0.000		-		0.000	4.015	5.633	4.67
Development Test & Evaluation	MIPR	DTIC : Ft Belvoir, VA	0.100	0.000		0.061	Feb 2017	0.000		-		0.000	0.000	0.161	-
		Subtotal	3.938	1.006		0.373		0.250		-		0.250	16.492	22.059	-
Management Servic	es (\$ in M	lillions)		FY 2	2016	FY 2	2017		2018 ase	FY 2		FY 2018 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	Total Cost	Target Value of Contract
Prior Year Management Services	Various	Various : Various	11.980	0.000		0.000		0.000		-		0.000	0.000	11.980	2.74
Program Management	C/CPFF	CSA : San Diego, CA	0.204	0.000		0.000		0.000		-		0.000	8.732	8.936	-
Program Management	C/CPFF	STF : San Diego, CA	0.000	0.000		0.055	Jan 2017	0.060	Nov 2017	-		0.060	0.000	0.115	-
		Subtotal	12.184	0.000		0.055		0.060		-		0.060	8.732	21.031	_

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PE 0303138N: Consolidated Afloat Network Ent Services... Navy

Prior FY 2018 FY 2018 Cost To Total Value of	Exhibit R-3, RDT&E Project Cost Analysis: FY 2	018 Navy	'							Date:	May 2017	7	
Prior FY 2018 FY 2018 FY 2018 Cost To Total Value of Years FY 2016 FY 2017 Base OCO Total Complete Cost Contra	• • • • • • • • • • • • • • • • • • • •			F	PE 030	3138N / C	Consolida	•	•	•	,		
Project Cost Totals 158.117 21.522 23.541 24.271 - 24.271 332.629 560.080		2016	FY 2	017		 					Target Value of Contract		
	Project Cost Totals	158.117	21.522		23.541		24.271	-		24.271	332.629	560.080	-

Remarks

2017 2 3 4 1	PE 0303138N / Ent Services(C.	R-1 Program Element PE 0303138N / Conso Network Ent Services	etwork 9C87 / CA	Number/Name) ANES Integration DATE Project (Number 9C87 / CANES Integrated)	r/Name)
		PE 0303138N / Conso Network Ent Services	lidated Afloat	Project (Number	r/Name)
		PE 0303138N / Conso Network Ent Services	lidated Afloat		
				A 24	
		2019	2020	2021	2022
	2 3 4		2 3 4 1	2 3 4 1	
V Dev	TI 3	- SW Dev	TI 4 - HW/	/SW Dev	TI 5 - SW Dev
DTA	DT (S	DTA DTA		DTA	
		7			
		FOI &E (Subs)			
		FD			
		FD			
	TI2	TI2 DTA	TI2 DTA DT (Subs) FOT&E (Subs) FD	TI2 DTA DT (Subs) FOT&E (Subs) FD	TI2 DTA DT (Subs) FOT&E (Subs) FD

PE 0303138N: Consolidated Afloat Network Ent Services... Navy

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	, ,	umber/Name) NES Integration

Schedule Details

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Fiscal Year				
Acquisition Milestone: Acquisition Milestone - Full Deployment Decision Review (FDD)	1	2016	1	2016
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - Technical Insertion (TI) Software (SW) Development	1	2016	1	2016
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 2 Hardware (HW)/SW Development	2	2016	1	2018
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 3 SW Development	2	2018	1	2020
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 4 HW/SW Development	2	2020	1	2022
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 5 SW Development	2	2022	4	2022
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 2	3	2017	3	2017
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 3	3	2019	3	2019
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 4	3	2021	3	2021
Test & Evaluation Milestone: Development Test: Developmental Test - Sub	1	2019	1	2019
Test & Evaluation Milestone: Operational Test: Operational Test Force Level - Follow- on Operational Test & Evaluation (FOT&E)	1	2016	1	2017
Test & Evaluation Milestone: Operational Test: Operational Test - FOT&E Sub	3	2019	3	2019
Production Milestone: Limited Deployment: Production Milestone - Limited Deployment (LD)	1	2016	3	2016
Production Milestone: Full Deployment: Production Milestone - Full Deployment (FD)	1	2016	4	2022
Deliveries: Deliveries - Limited Deployment (LD)	1	2016	3	2016
Deliveries: Deliveries - Full Deployment (FD)	3	2016	4	2022

PE 0303138N: Consolidated Afloat Network Ent Services...

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