Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army											Date: February 2020	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0303032A / *TROJAN - RH12*							
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	-	5.721	3.936	3.451	-	3.451	3.404	3.809	3.911	3.950	0.000	28.182
RH5: *TROJAN - RH12 - MIP*	-	5.721	3.936	3.451	-	3.451	3.404	3.809	3.911	3.950	0.000	28.182

A. Mission Description and Budget Item Justification

This project is a Military Intelligence Program (MIP). TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remotable, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time Signals Intelligence (SIGINT) training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	5.721	3.936	3.454	-	3.454
Current President's Budget	5.721	3.936	3.451	-	3.451
Total Adjustments	0.000	0.000	-0.003	-	-0.003
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.003	-	-0.003

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army	Date: February 2020
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*

Change Summary Explanation

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / *TROJAN - RH12*	Project (Number/Name) RH5 / *TROJAN - RH12 - MIP*	

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
RH5: *TROJAN - RH12 - MIP*	-	5.721	3.936	3.451	-	3.451	3.404	3.809	3.911	3.950	0.000	28.182
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project is a Military Intelligence Program (MIP). TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remotable, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time SIGINT training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Integrate Direction Finding and geo-location	1.115	0.765	1.200	-	1.200
Description: Integrate Direction Finding (DF) and geolocation (GL) technologies into TROJAN Remote Receiving Groups.					
FY 2020 Plans: Will continuously adapt/improve the latest Direction Finding (DF) and geolocation technologies for integration into TROJAN NexGEN systems in accordance with Joint Interface Control Document (JICD) 4.2. Will utilize field based risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise. Continue to research and test for the integration of Electronics Intelligence (ELINT) capabilities.					
FY 2021 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*	**Project (Number/Name)** RH5 / *TROJAN - RH12 - MIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Will continuously adapt/improve the latest Direction Finding (DF) and geolocation technologies for integration into TROJAN NexGEN systems in accordance with Joint Interface Control Document (JICD) 4.2. Will utilize field based risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise. Continue to research and test for the integration of Electronics Intelligence (ELINT) capabilities. Resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers will be accounted for in the Integrate Direction Finding (DF) and geolocation (GL) project. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funds increase reflects anticipated task requirements and the internal realignment of software engineer labor.					
Title: Enable assured communications for the TROJAN Network architecture (formerly Improve security of the TROJAN Network architecture). ***Description:*** Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence network throughput. ***FY 2020 Plans:*** Will continue efforts that will enable communication in an anti-access/area denial environment; will continue testing with anti-jam technologies for satellite communications. ***FY 2021 Base Plans:*** Will continue efforts to utilize Government off the shelf (GOTS) / Commercial of the shelf (COTS) solutions to enable communication in an anti-access/area denial environment; will continue to integrate and test with technologies to enable redundant communications paths; will continue to test with anti-jam technologies for satellite communications. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY 2021 funds decreased to support higher priority requirements.	1.504	1.035	0.751	-	0.751
Title: Integrate and test specialized hardware/software ***Description:*** Integrate and test specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Resource development of GLAIVE software (SW). Integrated several new National Security Agency (NSA) SW packages. ***FY 2020 Plans:***	1.803	1.001	0.500	-	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*	**Project (Number/Name)** RH5 / *TROJAN - RH12 - MIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Will continue integration and testing of specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Will continue resource development of GLAIVE software. Will continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Will continue efforts to integrate JICD 4.2 and the C4ISR Modular Open Suite of Standards (CMOSS). ***FY 2021 Base Plans:*** Will continue integration and testing of specialized hardware/software for classified pre-processing and detection of new signals of interest. Continue to resource development, integration and test of GOTS/COTS software. Will continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Will continue efforts to integrate JICD 4.2 across all platforms. Begin efforts to integrate C4ISR Modular Open Suite of Standards (CMOSS). ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY 2021 funds decreased to support higher priority requirements.					
Title: Research and testing of receivers ***Description:*** Research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using Digital System Processing (DSP) and Software Defined Radio (SDR) technologies. ***FY 2020 Plans:*** Will continue research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using DSP and SDRs. ***FY 2021 Base Plans:*** Will continue research and testing of receiver packages for fixed and transportable TROJAN systems to detect and process non-standard modulations using DSP and SDRs. Integration of receiver packages to enable additional and wideband frequency ranges for COTS/GOTS Software Defined Radios. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY 2021 increase supports additional research and testing of receiver packages for fixed and transportable TROJAN systems	0.524	0.360	1.000	-	1.000
Title: Labor cost software (SW) engineers	0.775	0.775	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*	**Project (Number/Name)** RH5 / *TROJAN - RH12 - MIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Description: Labor for two software (SW) engineers in support of GLAIVE and other above applicable efforts. Labor for one Material Developer (MAT DEV) technologist, one MAT DEV software and one MAT DEV Hardware (HW) engineer. ***FY 2020 Plans:*** Will continue to resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** FY 2021 decrease due to labor being resourced within the Integrate Direction Finding (DF) and geolocation (GL) effort.					
Accomplishments/Planned Programs Subtotals	5.721	3.936	3.451	-	3.451

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• BA0326: *TROJAN (MIP)*	27.549	18.705	17.593	1.766	19.359	18.125	15.893	16.052	16.212	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Acquisition Strategy for the TROJAN NexGEN Systems supported by TROJAN RDT&E is to adapt and leverage from Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) products. Additionally, the Acquisition Strategy leverages off of development by DoD and other Government agencies to the greatest extent possible. TROJAN RDT&E is used to fund the development of enhancing these technologies to meet specific user requirements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / *TROJAN - RH12*	Project (Number/Name) RH5 / *TROJAN - RH12 - MIP*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Labor Costs MAT DEV HW/SW Engineers	Various	CERDEC I2WD, APG, MD : MD	5.112	0.775	Oct 2018	0.775	Oct 2019	-		-		-	0.000	6.662	-
		Subtotal	5.112	0.775		0.775		-		-		-	0.000	6.662	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrate Direction Finding and geo-location	Various	APG : MD	5.095	1.114	Oct 2018	0.765	Oct 2019	1.200	Oct 2020	-		1.200	Continuing	Continuing	-
Improve security of the TROJAN Network architecture	Various	APG : MD	4.651	1.505	Oct 2018	1.035	Oct 2019	0.751	Oct 2020	-		0.751	Continuing	Continuing	-
Research and testing of Receivers	Various	APG : MD	1.896	0.524	Oct 2018	0.360	Oct 2019	1.000	Oct 2020	-		1.000	Continuing	Continuing	-
Develop Satellite Communications (SATCOM) Dishes and transceivers	Various	APG : MD	3.644	-		-		-		-		-	0.000	3.644	-
Specialized Software Enhancements	Various	APG : MD	0.998	-		-		-		-		-	0.000	0.998	-
Develop Hardware/ Software Interface	Various	APG : MD	0.445	-		-		-		-		-	0.000	0.445	-
		Subtotal	16.729	3.143		2.160		2.951		-		2.951	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Testing of Hardware/Software	Various	APG : MD	5.337	1.803	Oct 2018	1.001	Oct 2019	0.500	Oct 2020	-		0.500	0.000	8.641	Continuing
		Subtotal	5.337	1.803		1.001		0.500		-		0.500	0.000	8.641	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0303032A / *TROJAN - RH12*	Project (Number/Name) RH5 / *TROJAN - RH12 - MIP*	

	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	27.178	5.721		3.936		3.451		-		3.451	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*	**Project (Number/Name)** RH5 / *TROJAN - RH12 - MIP*

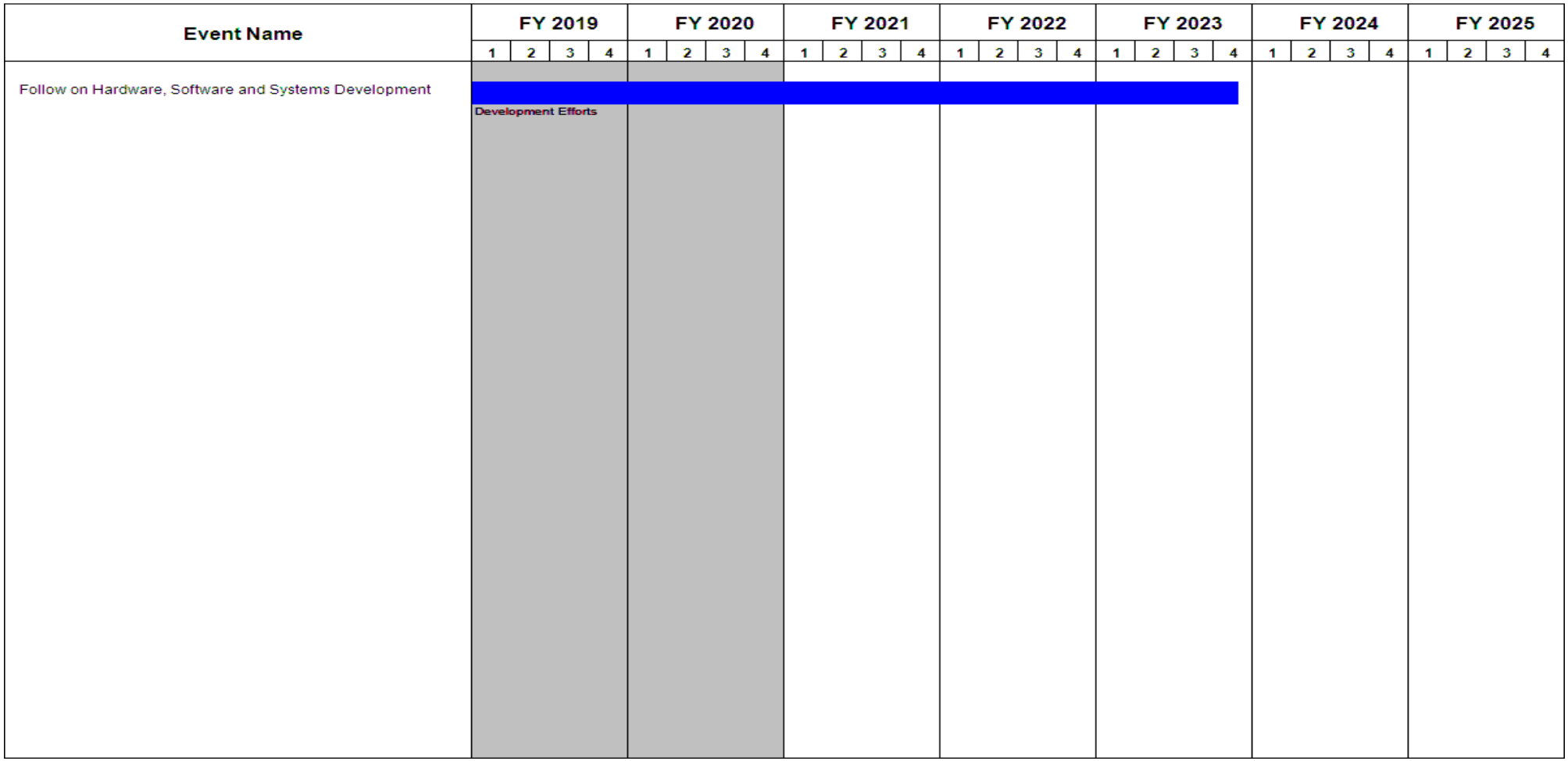

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0303032A / *TROJAN - RH12*	**Project (Number/Name)** RH5 / *TROJAN - RH12 - MIP*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Hardware, Software and Systems Development	1	2014	4	2018
Follow on Hardware, Software and Systems Development	1	2019	4	2023