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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604121A I Synthetic Training Environment Refinement & Prototyping							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	109.165	39.890	136.761	-	136.761	22.672	10.668	7.735	7.896	0.000	334.787
FD6: Synthetic Training Environment Refine & Prototype	-	109.165	39.890	41.676	-	41.676	15.672	10.668	7.735	7.896	0.000	232.702
SV1: Soldier/Squad Virtual Trainer	-	0.000	0.000	95.085	-	95.085	7.000	0.000	0.000	0.000	0.000	102.085

## A. Mission Description and Budget Item Justification

The Synthetic Training Environment (STE) is the next generation holistic collective training capability that will train units where they will fight, with whom they will fight with, and in complex operational environments to include dense urban and sub-terrain; within the entire range of combined arms maneuver tasks in support of Multi-Domain Operations. STE will be a common synthetic environment enabled by a core of Global Terrain/One World Terrain (OWT); common authoritative data and models; Training Simulation Software (TSS), and Training Management Tools (TMT). The STE will be available where training occurs (Home Station, Armories, Institutions, Shipboard, Deployed) and will include Air and Ground Reconfigurable Virtual Collective Trainers (RVCTs) and a Soldier/Squad Virtual Training (S/SVT) close combat training capability. The first increment of the SSVT is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS). The STE will be cloud-enabled, compatible with the Army Enterprise Network, and service-based through the Common Operating Environment, including Live and Constructive. The STE will provide the realistic repetitions necessary to fight 25 bloodless battles before the first battle; a Secretary of Defense priority.

FY 2020 base funding of \$136.761 million will continue to develop and demonstrate prototype designs to reduce technical risk, validate designs, validate cost estimates, evaluate processes, and refine requirements for STE, support development and integration of the first increment of the S/SVT, which is an embedded STE training capability that includes OWT, TSS, TMT, into the operational capability of the IVAS. Based on these refined requirements and demonstrated prototype designs, integrated systems design of the end-item system can be initiated. Additionally, these efforts ensure the level of expertise required to operate and maintain the capability is consistent with the force structure. Increments 2 and 3 of SSVT provides the NEXTGEN Marksmanship and the NEXTGEN Call For Fire Artillery Virtual Training capability into the STE baseline. The SSVT system also combines individual Soldier and squad training capabilities (STE Squad Capability (SSC), Weapon Skill Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF)), into a single capability.

Funds were realigned from PE 0604715A in FY 2019 and 2020 for the first increment of the SSVT which is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army				Date: March 2019	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0604121A / Synthetic Training Environment Refinement & Prototyping			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	1.600	77.939	56.867	-	56.867
Current President's Budget	109.165	39.890	136.761	-	136.761
Total Adjustments	107.565	-38.049	79.894	-	79.894
• Congressional General Reductions	-0.001	-0.049			
• Congressional Directed Reductions	-	-38.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	107.629	-			
• SBIR/STTR Transfer	-0.063	-			
• Adjustments to Budget Years	-	-	79.894	-	79.894
Change Summary Explanation					
Funds were realigned from FY 2019 and 2020 for the first increment of the SSVT which is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS). The FY 2020 increase of \$79.894 million supports the Army's modernization priorities in support of the National Defense Strategy.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604121A / <i>Synthetic Training Environment Refinement &amp; Prototyping</i>				Project (Number/Name) FD6 / <i>Synthetic Training Environment Refine &amp; Prototype</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
FD6: <i>Synthetic Training Environment Refine &amp; Prototype</i>	-	109.165	39.890	41.676	-	41.676	15.672	10.668	7.735	7.896	0.000	232.702
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Synthetic Training Environment (STE) is the next generation holistic collective training capability that will train units where they will fight, with whom they will fight with, and in complex operational environments to include dense urban and sub-terrain; within the entire range of combined arms maneuver tasks in support of Multi-Domain Operations. STE will be a common synthetic environment enabled by a core of Global Terrain/One World Terrain (OWT); common authoritative data and models; Training Simulation Software (TSS), and Training Management Tools (TMT). The STE will be available where training occurs (Home Station, Armories, Institutions, Shipboard, Deployed) and will include Air and Ground Reconfigurable Virtual Collective Trainers (RVCTs) and a Soldier/Squad Virtual Training (S/SVT) close combat training capability, and a live training capability. The first increment of the SSVT is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS). The STE will be cloud-enabled, compatible with the Army Enterprise Network, and service-based through the Common Operating Environment, including Live and Constructive. The STE will provide the realistic repetitions necessary to fight 25 bloodless battles before the first battle; a Secretary of Defense priority.

FY 2020 base funding of \$41.676 million will continue to develop and demonstrate prototype designs to reduce technical risk, validate designs, validate cost estimates, evaluate processes, and refine requirements for STE, support development and integration of the first increment of the S/SVT, which is an embedded STE training capability that includes OWT, TSS, TMT, into the operational capability of the IVAS. Based on these refined requirements and demonstrated prototype designs, integrated systems design of the end-item system can be initiated. Additionally, these efforts ensure the level of expertise required to operate and maintain the capability is consistent with the force structure.

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

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Program Management	1.536	5.791	3.528
<b>Description:</b> Will provide program management, engineering and technical oversight, contract support, and travel for the development of the program.			
<b>FY 2019 Plans:</b> Funding will be used for program execution of rapid prototyping which allows refinement of the requirement for the capability that will be acquired. Funds also support the translation of validated capability gaps into system specific requirements, including the Key Performance Parameters (KPPs) and Key System Attributes (KSAs). Efforts facilitate refinement and decisions on the acquisition strategy for the capability.			
<b>FY 2020 Plans:</b>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army								Date: March 2019			
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping				Project (Number/Name) FD6 / Synthetic Training Environment Refine & Prototype			
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020	
Funding will be used for program execution of rapid prototyping which allows refinement of the requirement for the capability that will be acquired. Funds also support the translation of validated capability gaps into system specific requirements, including the Key Performance Parameters (KPPs) and Key System Attributes (KSAs). Efforts facilitate refinement and decisions on the acquisition strategy for the capability.											
FY 2019 to FY 2020 Increase/Decrease Statement: The decrease in FY20 funding aligns program funds to the program management requirements.											
Title: Engineering, Support, Test & Evaluation								107.629	34.099	38.148	
Description: Will provide Engineering, support, and any related test and evaluation for the development of the program.											
FY 2019 Plans: FY 2019 funding develops and demonstrates prototype designs to reduce technical risk, validates designs, validates cost estimates, evaluates processes, and refines requirements. Based on refined requirements, demonstrated prototype designs and User Assessments of the prototypes an integrated systems prototype design of the end-item system can be initiated through an OTA. Additionally, these efforts ensure the level of expertise required to operate and maintain the capability remains within the defined force structure.											
FY 2020 Plans: FY 2020 funding will continue to develop, demonstrate, and conduct User Assessments of prototype designs to reduce technical risk, validate designs, validate cost estimates, evaluate processes, and refine requirements. Based on refined requirements and demonstrated prototype designs, integrated systems design of the end-item system can be continued through an OTA. Additionally, these efforts ensure the level of expertise required to operate and maintain the capability remains within the defined force structure.											
FY 2019 to FY 2020 Increase/Decrease Statement: The increase in FY20 funding is due to the integration of the live capability into the STE, per the Secretary of the Army?s guidance.											
Accomplishments/Planned Programs Subtotals								109.165	39.890	41.676	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• NA2020: Synthetic Training Environment (STE)	-	-	20.749	-	20.749	70.978	70.887	72.969	66.683	0.000	302.266

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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping	Project (Number/Name) FD6 / Synthetic Training Environment Refine & Prototype	

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

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
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Remarks

D. Acquisition Strategy

The Synthetic Training Environment (STE) program will employ an incremental acquisition strategy where the full capability will occur in multiple increments as new capability is developed and delivered. Initial competitive prototyping development efforts will be conducted through Other Transactional Authority (OTA) awards resulting in system prototypes that reduce program risk and technology maturation risk.

E. Performance Metrics

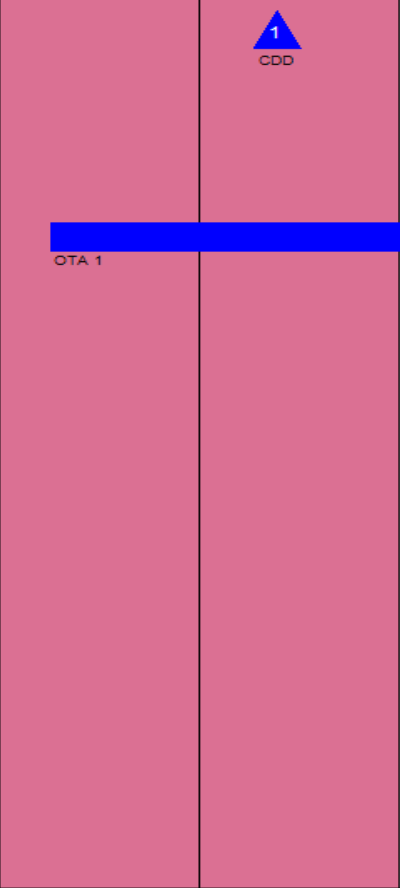







N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping						Project (Number/Name) FD6 / Synthetic Training Environment Refine & Prototype			
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Management Services	Various	PEO STRI : Orlando, FL	-	1.536		5.791		3.528		-		3.528	3.357	14.212	Continuing
Subtotal			-	1.536		5.791		3.528		-		3.528	3.357	14.212	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Product Development	TBD	To Be Determined : To Be Determined	-	107.629		32.906		37.523		-		37.523	37.773	215.831	Continuing
Subtotal			-	107.629		32.906		37.523		-		37.523	37.773	215.831	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Support Costs	TBD	To Be Determined : To Be Determined	-	-		1.193		0.625		-		0.625	0.841	2.659	Continuing
Subtotal			-	-		1.193		0.625		-		0.625	0.841	2.659	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	109.165		39.890		41.676		-		41.676	41.971	232.702	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019	
Appropriation/Budget Activity 2040 / 4		R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping		Project (Number/Name) FD6 / Synthetic Training Environment Refine & Prototype

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
CDD																												
Acquisition Entry Point																												
IOC																												
Other Transaction Authority 1																												
OTA Tech Insertion																												
Integration Contract																												
Production																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Army			<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604121A / <i>Synthetic Training Environment Refinement &amp; Prototyping</i>	<b>Project (Number/Name)</b> FD6 / <i>Synthetic Training Environment Refine &amp; Prototype</i>	

**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
CDD	2	2019	2	2019
Acquisition Entry Point	1	2020	1	2020
IOC	4	2021	4	2021
Other Transaction Authority 1	2	2018	4	2021
OTA Tech Insertion	4	2021	4	2024
Integration Contract	2	2020	4	2024
Production	2	2021	4	2024



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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping				Project (Number/Name) SV1 / Soldier/Squad Virtual Trainer			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
SV1: Soldier/Squad Virtual Trainer	-	0.000	0.000	95.085	-	95.085	7.000	0.000	0.000	0.000	0.000	102.085
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note S/SVT is not a New Start for FY2020. The program was previously funded under PE 0604715A.												
A. Mission Description and Budget Item Justification The Synthetic Training Environment (STE) is the next generation holistic collective training capability that will train units where they will fight, with whom they will fight with, and in complex operational environments to include dense urban and sub-terrain; within the entire range of combined arms maneuver tasks in support of Multi-Domain Operations. STE will be a common synthetic environment enabled by a core of Global Terrain/One World Terrain (OWT); common authoritative data and models; Training Simulation Software (TSS), and Training Management Tools (TMT). The STE will be available where training occurs (Home Station, Armories, Institutions, Shipboard, Deployed) and will include Air and Ground Reconfigurable Virtual Collective Trainers (RVCTs) and a Soldier/Squad Virtual Training (S/SVT) close combat training capability, and a live training capability. The first increment of the SSVT is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS). The STE will be cloud-enabled, compatible with the Army Enterprise Network, and service-based through the Common Operating Environment, including Live and Constructive. The STE will provide the realistic repetitions necessary to fight 25 bloodless battles before the first battle; a Secretary of Defense priority.  FY 2020 base funding of \$95.085 million will continue to develop and demonstrate prototype designs to reduce technical risk, validate designs, validate cost estimates, evaluate processes, refine requirements, and support development and integration of the first increment of the S/SVT, which is an embedded STE training capability that includes OWT, TSS, TMT, into the operational capability of the IVAS. Based on these refined requirements and demonstrated prototype designs, integrated systems design of the end-item system can be initiated. Additionally, these efforts ensure the level of expertise required to operate and maintain the capability is consistent with the force structure.  The first increment of the SSVT which is the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the integrated Visual Augmentation System (IVAS). Increments 2 and 3 of SSVT provides the NEXTGEN Marksmanship and the NEXTGEN Call For Fire Artillery Virtual Training capability into the STE baseline. The SSVT system also combines individual Soldier and squad training capabilities (STE Squad Capability (SSC), Weapon Skill Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF)), into a single capability.  S/SVT is not a New Start for FY2020. The program was previously funded under PE 0604715A.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2018	FY 2019	FY 2020	
Title: Engineering, Support, Test & Evaluation									-	-	95.085	

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Army		<b>Date:</b> March 2019	
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604121A / <i>Synthetic Training Environment Refinement &amp; Prototyping</i>	<b>Project (Number/Name)</b> SV1 / <i>Soldier/Squad Virtual Trainer</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>
<p><b>Description:</b> Will provide Engineering, support, and any related test and evaluation for the development of the program.</p> <p><b>FY 2020 Plans:</b> FY 2020 funds the remaining two capability sets of the Squad immersive Virtual Trainer (SiVT) capability and the Heads Up Display (HUD) 3.0 which comprises the Integrated Visual Augmentation System (IVAS) and will continue to develop, demonstrate, and conduct User Assessments of prototype designs to reduce technical risk, validate designs, validate cost estimates, evaluate processes, and refine requirements. Based on refined requirements and demonstrated prototype designs, integrated systems design of the end-item system can be continued through an OTA.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> The increase in FY20 funding is due to the requirement for the accelerated Research and Development for IVAS, per the Secretary of the Army's and Secretary of Defense's guidance, as well as the SVT integration.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		-	95.085
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b>			
The Synthetic Training Environment (STE) program will employ an incremental acquisition strategy where the full capability will occur in multiple increments as new capability is developed and delivered. Soldier and Squad Virtual Trainer (S/SVT) program will employ an incremental acquisition strategy where the full capability will occur in multiple increments as new capability is developed and delivered. Initial competitive prototyping development efforts will be conducted through Other Transactional Authority (OTA) awards resulting in system prototypes that reduce program risk and technology maturation risk.			
<b>E. Performance Metrics</b>			
N/A			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Army												<b>Date:</b> March 2019			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0604121A / <i>Synthetic Training Environment Refinement &amp; Prototyping</i>						<b>Project (Number/Name)</b> SV1 / <i>Soldier/Squad Virtual Trainer</i>			

<b>Product Development (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>				
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
Product Development	C/FFP	Aberdeen Proving Grounds : MD	-	-		-		95.085		-		95.085	0.000	95.085	-	
<b>Subtotal</b>			-	-		-		95.085		-		95.085	0.000	95.085	N/A	

	<b>Prior Years</b>	<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	-		0.000		95.085		-		95.085	0.000	95.085	N/A

**Remarks**

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**Appropriation/Budget Activity**  
2040 / 4

**R-1 Program Element (Number/Name)**  
PE 0604121A / *Synthetic Training*  
*Environment Refinement & Prototyping*

**Project (Number/Name)**  
SV1 / Soldier/Squad Virtual Trainer

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / Synthetic Training Environment Refinement & Prototyping	Project (Number/Name) SV1 / Soldier/Squad Virtual Trainer

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IVAS/HUD 3.0	2	2018	1	2021
SVT	2	2019	4	2024