Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army											Date: February 2016	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604641A *I TACTICAL UNMANNED GROUND VEHICLE*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing
DV7: *Small Unmanned Ground Vehicle*	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing

Note

This Program Element 0604641A Project DV7 captures four efforts to include: the Common Robotic System - Individual (CRS(I)), Robotics Enhancement Program (REP), Robotics Architecture, (RA) and Robotics Development (RD). Beginning in FY 2017, the Robotics Architecture (Interoperability Profile (IOP)) will be under this PE, 0604641A Project DV7 rather than 0604808A Landmine Warfare Barrier-Eng Dev under the Mine Neutralization/Detection Project

The FY 2016 funding request was reduced for by $11.5 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The Common Robotic System – Individual (CRS(I)) will be a man-packable, small (<25lbs), highly mobile, unmanned robotic system with advanced sensors/mission modules for dismounted Service Members. The CRS(I) will be designed so operator can quickly re-configure for other various missions by adding or removing modules and/or payloads. The CRS(I) will also include the Army universal controller. The CRS(I) will provide interrogation, detection, confirmation, and neutralization capabilities employed to support a wide spectrum of mobility missions for current and future forces. This capability provides commanders the ability to persistently monitor the operation environment (OE) while protecting and sustaining the force. The CRS(I) complements the Joint Integrated War-fighting Force by providing standoff to the War fighter during major combat, stability, and homeland security operations.

The Robotics Enhancement Program (REP) uses a “buy, try, and inform” methodology to evaluate Commercial Off the Shelf (COTS), Government Off the Shelf (GOTS) and Non-Developmental Item (NDI) products that have the potential to enhance Soldier combat effectiveness. Actual operational user feedback and evaluation results obtained will inform emerging capabilities and requirements documents in support of a Cost-Benefit Analysis to support future Army decision making.

Robotic Architecture (RA) provides the engineering and development resources to manage the overarching architecture for robotic systems that are both modular and interoperable across the Joint Force in order to facilitate future modernization efforts. It will manage the interoperability standards, modular payload interface, common software and universal controllers. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Small Multipurpose Equipment Transport (SMET), Leader/Follower (LF), Route Clearance Interrogation System (RCIS), Common Robotics System-Vehicle (CRS(V)), CRS(I) Inc II, etc.) and new standards addressing emerging requirements (i.e. Cyber Security, Information Assurance, new payloads, etc).

Robotics Development (RD) includes efforts necessary to evaluate integrated technologies, validate material solutions and determine initial Analysis of Alternatives (AoA) in support of pre-material development decision activities for emerging requirements and programs of record. RD is designed to facilitate the transition of robotics and autonomous systems technology from Science and Technology (S&T) projects, REP initiatives and/or Small Business Innovative Research (SBIR) into emerging programs of record through development of emerging capabilities. This line is for robotic systems that are transported by individual Soldiers, by vehicle, maneuver

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604641A *I TACTICAL UNMANNED GROUND VEHICLE*

under their own power, or are installed as robotic applique kits. RD supports early evaluations for operational effectiveness studies of platforms (i.e. SMET, Leader/ Follower (LF), Route Clearance Interrogation Systems (RCIS), CRS(V), CRS(I) Inc II, Soldier Born Sensors, etc) to determine Technology Readiness Levels (TRL) and Manufacturing Readiness Levels (MRL). Studies support AoA that include Army Material Systems Analysis Activity (AMSAA), RAND studies, and/or modeling to increase confidence in the material solution defined in the emerging capability development document (CDD)/capability production document(CPD) that support appropriate Acquisition Category (ACAT), milestone decision authority (MDA) and office of primary responsibility designations.

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.769	40.374	50.782	-	50.782
Current President's Budget	2.663	15.374	39.282	-	39.282
Total Adjustments	-0.106	-25.000	-11.500	-	-11.500
• Congressional General Reductions	-	-25.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.106	-			
• Other Adjustments 1	-	-	-11.500	-	-11.500

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604641A / *TACTICAL UNMANNED GROUND VEHICLE*	Project (Number/Name) DV7 / *Small Unmanned Ground Vehicle*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
DV7: *Small Unmanned Ground Vehicle*	-	2.663	15.374	39.282	-	39.282	60.120	59.915	32.857	31.848	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This Program Element 0604641A Project DV7 captures four efforts to include: the Common Robotic System - Individual (CRS(I)), Robotics Enhancement Program (REP), Robotics Architecture, (RA) and Robotics Development (RD). Beginning in FY 2017, the Robotics Architecture (Interoperability Profile (IOP)) will be under this PE, 0604641A Project DV7 rather than 0604808A Landmine Warfare Barrier-Eng Dev under the Mine Neutralization/Detection Project 415.

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The Common Robotic System – Individual (CRS(I)) will be a man-packable, small (<25lbs), highly mobile, unmanned robotic system with advanced sensors/mission modules for dismounted Service Members. The CRS(I) will be designed so operator can quickly re-configure for other various missions by adding or removing modules and/or payloads. The CRS(I) will also include the Army universal controller. The CRS(I) will provide interrogation, detection, confirmation, and neutralization capabilities employed to support a wide spectrum of mobility missions for current and future forces. This capability provides commanders the ability to persistently monitor the operation environment (OE) while protecting and sustaining the force. The CRS(I) complements the Joint Integrated War-fighting Force by providing standoff to the War fighter during major combat, stability, and homeland security operations.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604641A / *TACTICAL UNMANNED GROUND VEHICLE*	**Project (Number/Name)** DV7 / *Small Unmanned Ground Vehicle*

and Manufacturing Readiness Levels (MRL). Studies support AoA that include Army Material Systems Analysis Activity (AMSAA), RAND studies, and/or modeling to increase confidence in the material solution defined in the emerging capability development document (CDD)/capability production document(CPD) that support appropriate Acquisition Category (ACAT), milestone decision authority (MDA) and office of primary responsibility designations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: CRS-I and emerging robotic requirements.	2.663	15.374	39.282

Description: The CRS-I program expects a Material Development Decision (MDD) in FY16. In FY15, CRS-I completed AoA letter of sufficiency, began the program Test & Evaluation Working-Level Integrated Product Team (T&E WIPT), formed a CRS-I program IPT to support the acquisition process. An IPT was formed to support emerging robotic system requirements and REP.

FY 2015 Accomplishments:
The CRS-I program completed an AoA letter of sufficiency. Limited ADM to begin program Test & Evaluation Working-Level Integrated Product Team (T&E WIPT) and formed a CRS-I program IPT to support the acquisition process and MDD justification in 1Q16. The REP program established a website where industry and Gov't submits initiatives. A monthly stakeholders review was established leading towards a biannual Council of Colonels (CoC) review and approval of REP initiatives.

FY 2016 Plans:
The CRS(I) program will receive MDA delegation as ACAT III with MDD and an ADM to complete entrance criteria for MS B. Systems engineering activities will include completion of the TEMP, SEP and performance specification. The product support IPT will complete the LCSP. CRS(I) will collaborate with appropriate PEOs for development of common radio, universal controller architecture and modeling and simulation. The procurement specialist will conduct and compile results from a RFI from industry, a draft RFP with an industry day and prepare for release of the development RFP.
The REP program utilizes an established website where industry and Gov't submits initiative proposals. Per standard operating procedure (SOP) and MOA between PEO CS&CSS and TRADOC/MCOE, a monthly stakeholders working group has proven continually effective in reviewing emerging capabilities leading towards a biannual Council of Colonels (CoC) review and selections of proposals in support of CoE determined REP initiatives. Industry and Gov't responses indicate proposal experimentation in support of these initiatives could exceed a $10M level of effort. REP 16.1 and 16.2 initiatives will be conducted at Ft Benning and Ft Leonard Wood to inform emerging requirements.

FY 2017 Plans:
The CRS(I) program will enter MS B, conduct a source selection board and complete EMD contract award(s) beginning in 3QFY17.
REP will continue to inform emerging robotic system requirements and risk reduction initiatives per SOP and MOA, to include 16.1 and 16.2 project reviews and complete REP 17.1and 17.2 demonstrations. REP initiatives will be completed and published for PEO review at Knowledge Point 2 for program effectiveness and efficiency.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
RA will monitor, validate, and update IOP for MTRS and CRS(I) instantiations as well as continuous revision for cyber security and information assurance. RA will also initiate development of SMET and LF instantiations. RD will initiate Pre-MDD activities to support AoA and draft CDD for SMET, LF and RCIS to include follow-on S&T activities and REP to support emerging requirements.			
Accomplishments/Planned Programs Subtotals	2.663	15.374	39.282

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• F00001: *OPA BCT Unmanned Ground Vehicle*	-	-	-	-	-	-	47.510	95.640	130.360	Continuing	Continuing

Remarks

D. Acquisition Strategy

CRS(I) will enter MS-B as an ACAT III program, and the Acquisition strategy will be completed in FY 2016 prior to Pre-EMD in 4th quarter FY 2016. CRS(I)strategy to include the following considerations: Full and open competition with incentive type contract (i.e. Cost Plus Incentive (CPI) and Fixed Price incentive Fee (FPIF), and award of up to three contractors to support EMD phase.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CRS(I)	Various	PM FP, PdM UGV : Warren, MI	0.000	-		3.500	Jun 2016	1.000	Jan 2017	-		1.000	0	4.500	0
REP	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.108	Feb 2016	3.784	Jun 2016	1.500	Jan 2017	-		1.500	0	5.392	0
Robotics Development	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.282	Mar 2017	-		0.282	0	0.282	0
		Subtotal	0.000	0.108		7.284		2.782		-		2.782	0.000	10.174	0.000

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CRS(I) EMD Contract	C/CPIF	PM FP, PdM UGV : Warren, MI	0.000	-		2.000	Mar 2016	24.000	Apr 2017	-		24.000	0	26.000	0
REP	TBD	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.750	Dec 2015	2.000	Feb 2016	3.000	Dec 2016	-		3.000	0	5.750	0
Robotic Architecture	MIPR	PM FP, PdM UGV, PdM ALUGS & TARDEC : Warren, MI	0.000	-		-		1.500	May 2017	-		1.500	0	1.500	0
Robotics Development	TBD	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		1.000	Jan 2017	-		1.000	0	1.000	0
		Subtotal	0.000	0.750		4.000		29.500		-		29.500	0.000	34.250	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CRS(I)	Various	PM FP, PdM UGV : Warren, MI	0.000	1.000	Jan 2016	2.000	Jul 2016	2.000	Nov 2016	-		2.000	0	5.000	0
REP	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	0.805	Jan 2016	1.090	Jul 2016	1.000	Nov 2016	-		1.000	0	2.895	0
Robotic Architecture	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Nov 2016	-		0.500	0	0.500	0
Robotics Development	Various	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Nov 2016	-		0.500	0	0.500	0
		Subtotal	0.000	1.805		3.090		4.000		-		4.000	0.000	8.895	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CRS(I)	MIPR	PM FP, PdM UGV : Warren, MI	0.000	-		0.500	Jan 2016	2.000	Aug 2017	-		2.000	0	2.500	0
REP	MIPR	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		0.500	Jan 2016	0.500	Jan 2017	-		0.500	0	1.000	0
Robotics Development	MIPR	PM FP, PdM UGV & PdM ALUGS : Warren, MI	0.000	-		-		0.500	Mar 2017	-		0.500	0	0.500	0
		Subtotal	0.000	-		1.000		3.000		-		3.000	0.000	4.000	0.000

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	2.663		15.374		39.282		-		39.282	0.000	57.319	0.000

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
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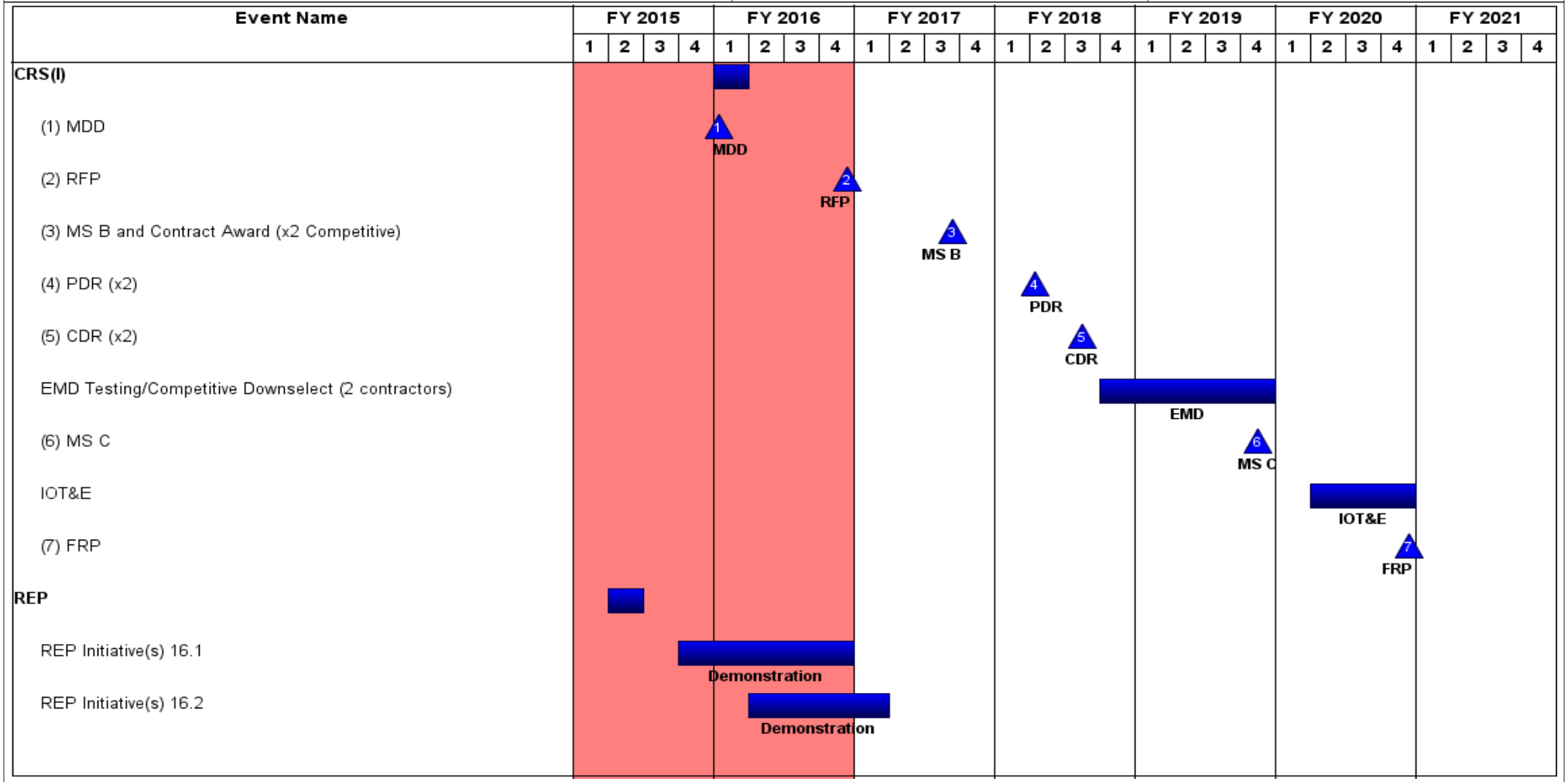

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
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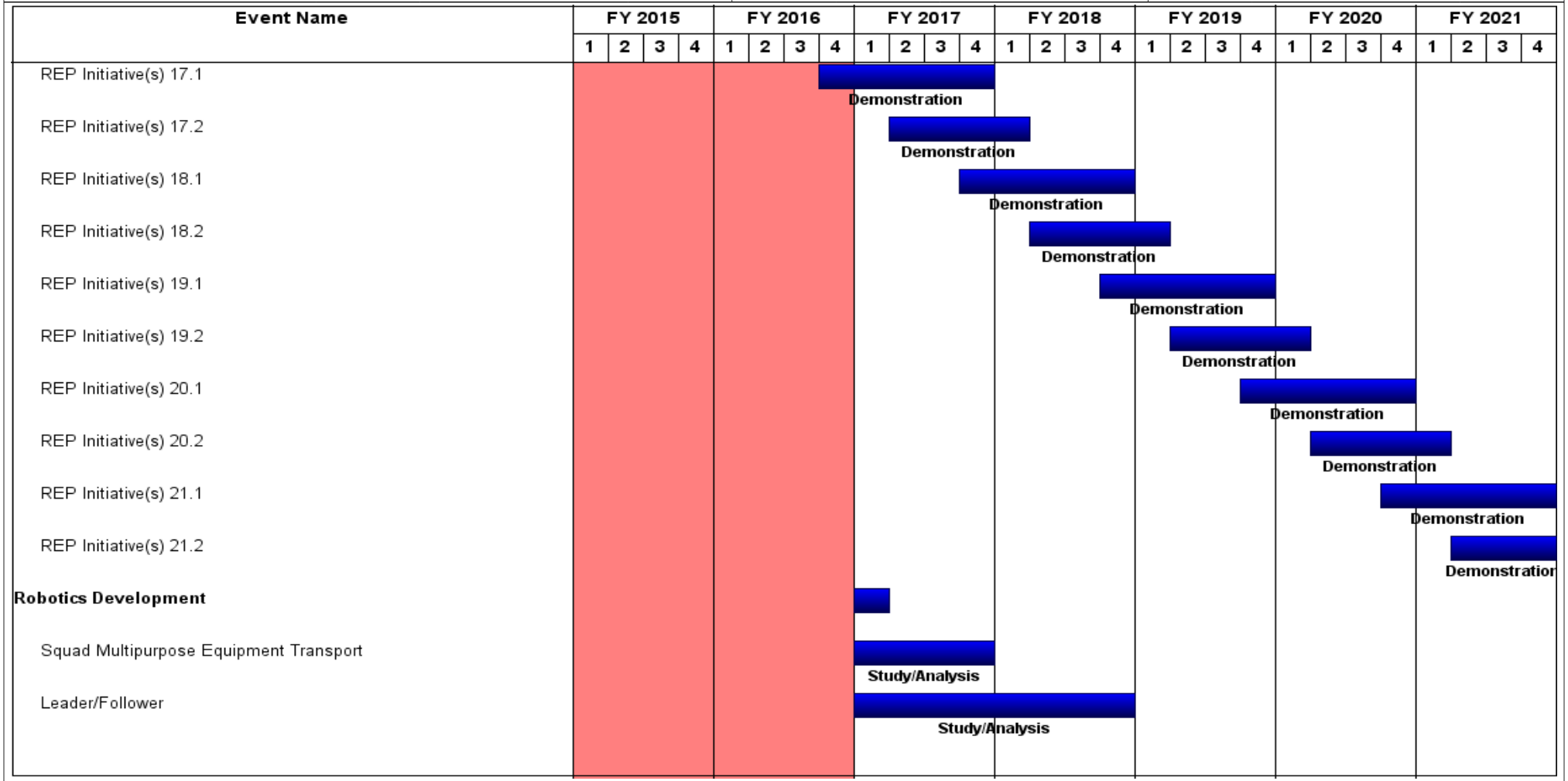

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604641A / *TACTICAL UNMANNED GROUND VEHICLE*	**Project (Number/Name)** DV7 / *Small Unmanned Ground Vehicle*

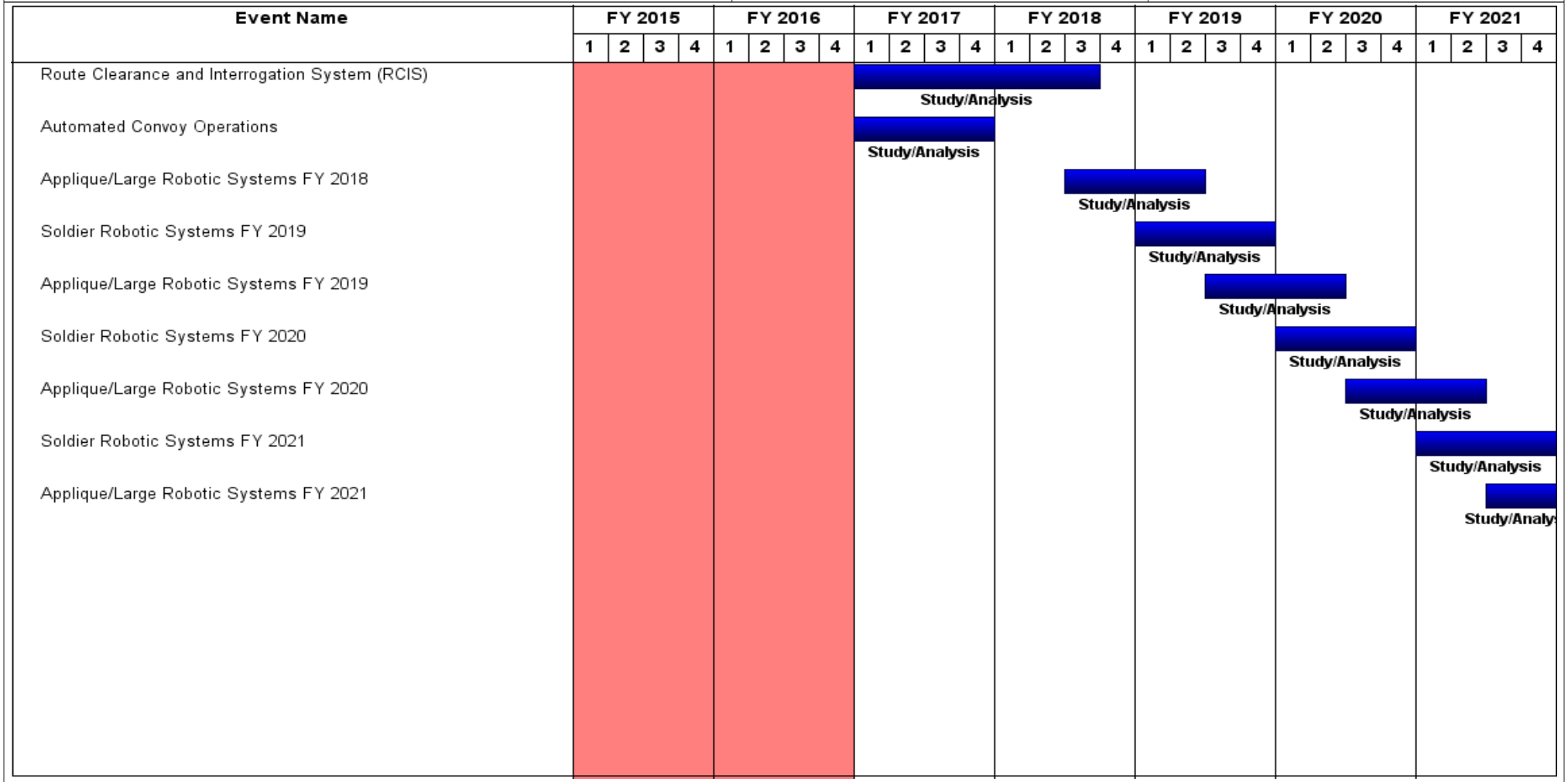

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CRS(I)	1	2016	1	2016
MDD	1	2016	1	2016
RFP	4	2016	4	2016
MS B and Contract Award (x2 Competitive)	3	2017	3	2017
PDR (x2)	2	2018	2	2018
CDR (x2)	3	2018	3	2018
EMD Testing/Competitive Downselect (2 contractors)	4	2018	4	2019
MS C	4	2019	4	2019
IOT&E	2	2020	4	2020
FRP	4	2020	4	2020
REP	2	2015	2	2015
REP Initiative(s) 16.1	4	2015	4	2016
REP Initiative(s) 16.2	2	2016	1	2017
REP Initiative(s) 17.1	4	2016	4	2017
REP Initiative(s) 17.2	2	2017	1	2018
REP Initiative(s) 18.1	4	2017	4	2018
REP Initiative(s) 18.2	2	2018	1	2019
REP Initiative(s) 19.1	4	2018	4	2019
REP Initiative(s) 19.2	2	2019	1	2020
REP Initiative(s) 20.1	4	2019	4	2020
REP Initiative(s) 20.2	2	2020	1	2021
REP Initiative(s) 21.1	4	2020	4	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
REP Initiative(s) 21.2	2	2021	1	2022
Robotics Development	1	2017	1	2017
Squad Multipurpose Equipment Transport	1	2017	4	2017
Leader/Follower	1	2017	4	2018
Route Clearance and Interrogation System (RCIS)	1	2017	3	2018
Automated Convoy Operations	1	2017	4	2017
Applique/Large Robotic Systems FY 2018	3	2018	2	2019
Soldier Robotic Systems FY 2019	1	2019	4	2019
Applique/Large Robotic Systems FY 2019	3	2019	2	2020
Soldier Robotic Systems FY 2020	1	2020	4	2020
Applique/Large Robotic Systems FY 2020	3	2020	2	2021
Soldier Robotic Systems FY 2021	1	2021	4	2021
Applique/Large Robotic Systems FY 2021	3	2021	2	2022