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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army **Date:** February 2015

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	49.636	-	49.636	69.477	69.478	77.454	88.737	-	354.782
606: <i>Cntrmn/Barrier Adv Dev</i>	-	-	-	-	-	-	-	-	3.000	14.285	-	17.285
EK7: <i>Area Denial Capability Development</i>	-	-	-	49.636	-	49.636	69.477	69.478	74.454	74.452	-	337.497

Note

Note

A. Mission Description and Budget Item Justification

This Program Element (PE) provides for the Concept Exploration and Refinement of a Deep-Range employed Networked Obstacle. This PE develops alternatives to the aging inventory of the Family of Scatterable Mines systems.

Project 606 enables component development of improved counter explosive hazard systems that focus on detecting, marking, and neutralizing mines and improvised explosive devices (IED). These capabilities will enhance the effectiveness of the Route Clearance Platoon within the Engineer Company, the Brigade Combat Team as well as other related Army missions.

Project EK7 Area Denial Capability Development will evaluate integrated technologies and prototype systems in a realistic operating environment to expedite technology transition for a Deep-Range employed Networked Obstacle that denies the enemy terrain and freedom of action while allowing friendly forces to maneuver freely within the same battlespace. Area Denial Capability Development provides Man-in-the-Loop (MITL) controlled scalable effects against mounted and dismounted enemy forces that disrupt, turn, fix or block their ability to maneuver. Area Denial Capability Development enables the Combatant Commander to establish early Situational Awareness of an area without exposing friendly forces to enemy engagement, and to actively detect, identify, discriminate, and engage the enemy in order to shape the battlespace at deep operational ranges. Area Denial Capability Development will utilize an open system, modular architecture to facilitate future development, maintenance, repair, and product improvements.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	49.636	-	49.636
Total Adjustments	-	-	49.636	-	49.636
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	49.636	-	49.636

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army **Date:** February 2015

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
606: <i>Cntrmn/Barrier Adv Dev</i>	-	-	-	-	-	-	-	-	3.000	14.285	-	17.285
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project enables component development of new counter explosive hazard systems that focus on detecting, marking, and neutralizing mines and improvised explosive devices (IED). These capabilities will enhance the effectiveness of the Route Clearance Platoon within the Engineer Company, the Brigade Combat Team as well as other related Army missions.

The Forward Reconnaissance and Explosive Hazard Detection (FREHD) system will provide a suite of vehicle-mounted capabilities that enable route clearance patrols to achieve higher rates of advance by accurately detecting and adjudicating potential explosive hazards with reduced hazard interrogation time. The system will automatically nominate potential hazards on the move and at standoff distance, and then let route clearance teams decide whether to perform more detailed examinations and identification of those hazards using additional tools within the FREHD suite. FREHD will also provide threat visualization and control capabilities that enable route clearance and allow Explosive Ordnance Disposal (EOD) and related mission personnel to remotely view video feeds of the hazard and remotely control the apparatus. The increased rate of advance will improve route clearance time, while the increased standoff improves force protection.

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

N/A

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• Mine Neutralization and Detection: <i>Mine Neutralization and Detection</i>	65.051	47.028	48.143	-	48.143	24.305	5.377	1.014	-	Continuing	Continuing

Remarks

654808/D415 Mine Neutralization and Detection is the engineering development follow on to this funding line. The above profile represents the total line, not only the follow on tasks within this program.

D. Acquisition Strategy

The Acquisition Strategy for the Forward Reconnaissance and Explosive Hazard Detection (FREHD) System will be developed in conjunction with program initiation.

E. Performance Metrics

N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army **Date:** February 2015

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</i>
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Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
x																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) 606 / <i>Cntrmn/Barrier Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
x	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>				Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
<i>EK7: Area Denial Capability Development</i>	-	-	-	49.636	-	49.636	69.477	69.478	74.454	74.452	-	337.497
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is a new start in FY16.

A. Mission Description and Budget Item Justification

This project provides for the Concept Exploration and Refinement of a Deep-Range employed Networked Obstacle. This project develops alternatives to the aging inventory of the Family of Scatterable Mines systems.

Area Denial Capability Development will evaluate integrated technologies and prototype systems in a realistic operating environment to expedite technology transition for a Deep-Range employed Networked Obstacle that denies the enemy terrain and freedom of action while allowing friendly forces to maneuver freely within the same battlespace. Area Denial Capability Development provides Man-in-the-Loop (MITL) controlled scalable effects against mounted and dismounted enemy forces that disrupt, turn, fix or block their ability to maneuver. Area Denial Capability Development enables the Combatant Commander to establish early Situational Awareness of an area without exposing friendly forces to enemy engagement, and to actively detect, identify, discriminate, and engage the enemy in order to shape the battlespace at deep operational ranges. Area Denial Capability Development will utilize an open system, modular architecture to facilitate future development, maintenance, repair, and product improvements.

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

	FY 2014	FY 2015	FY 2016
Title: Area Denial Capability Development Concept Prototype Contracts	-	-	35.000
Description: System level concept prototypes that will be evaluated for affordability and feasibility and inform the Analysis of Alternatives and Technology Maturation and Risk Reduction (TMRR) contract solicitation.			
FY 2016 Plans: Up to 5 contract agreements to build prototypes that represent system level concepts for test and evaluation of potential operational effectiveness, suitability and affordability.			
Title: Engineering Support	-	-	7.878
Description: Provide Engineering Support.			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Engineering support for Analysis of Alternatives, Concept Prototype Contract Award, initial development of Models and Simulations, and Technology Readiness Assessment of Concept Prototypes.			
Title: Test and Evaluation Description: Support Government Test and Evaluation of concept Prototypes in realistic operating environments. FY 2016 Plans: Technical Demonstration and Evaluation of concept Prototypes, initial development of Models and Simulations, and Technology Readiness Assessment.	-	-	3.879
Title: Program Management and Oversight Description: Program Management and Support FY 2016 Plans: Program Management support for Analysis of Alternatives, Test and Evaluation, Modeling and Simulation, and Concept Prototype agreements.	-	-	2.879
Accomplishments/Planned Programs Subtotals	-	-	49.636

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

N/A

Remarks

D. Acquisition Strategy

An Analysis of Alternatives (AoA) will be conducted to assess the feasibility and affordability of various system concepts. The AoA will be informed by previously executed studies and input from Government, Industry and Academia. In parallel to the AoA, up to 5 Concept Prototype awards will be provided to industry to develop representative prototypes (hardware and/or models) that will be used to assess the technology risks and costs associated with multiple system level concepts. The results of the AoA and evaluation of representative prototypes will support a Milestone A Decision and lead to up to 5 Technology Maturation and Risk Reduction (TMRR) contract awards based on Full and Open competition. Technologies that support the selected system level concepts will be matured during TMRR, and a Capability Development Document (CDD) will be developed. At the end of TMRR, and after a successful Milestone B Decision, up to 2 Engineering and Manufacturing Development (EMD) contracts will be awarded to further mature the technology associated with the most affordable and achievable materiel solution(s).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army **Date:** February 2015

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / Landmine Warfare and Barrier - Adv Dev	Project (Number/Name) EK7 / Area Denial Capability Development
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Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
Program Mgmt	MIPR	PM-CCS : Picatinny Arsenal, NJ	0.000	-		-		2.879		-		2.879	-	2.879	-
Subtotal			0.000	-		-		2.879		-		2.879	-	2.879	-

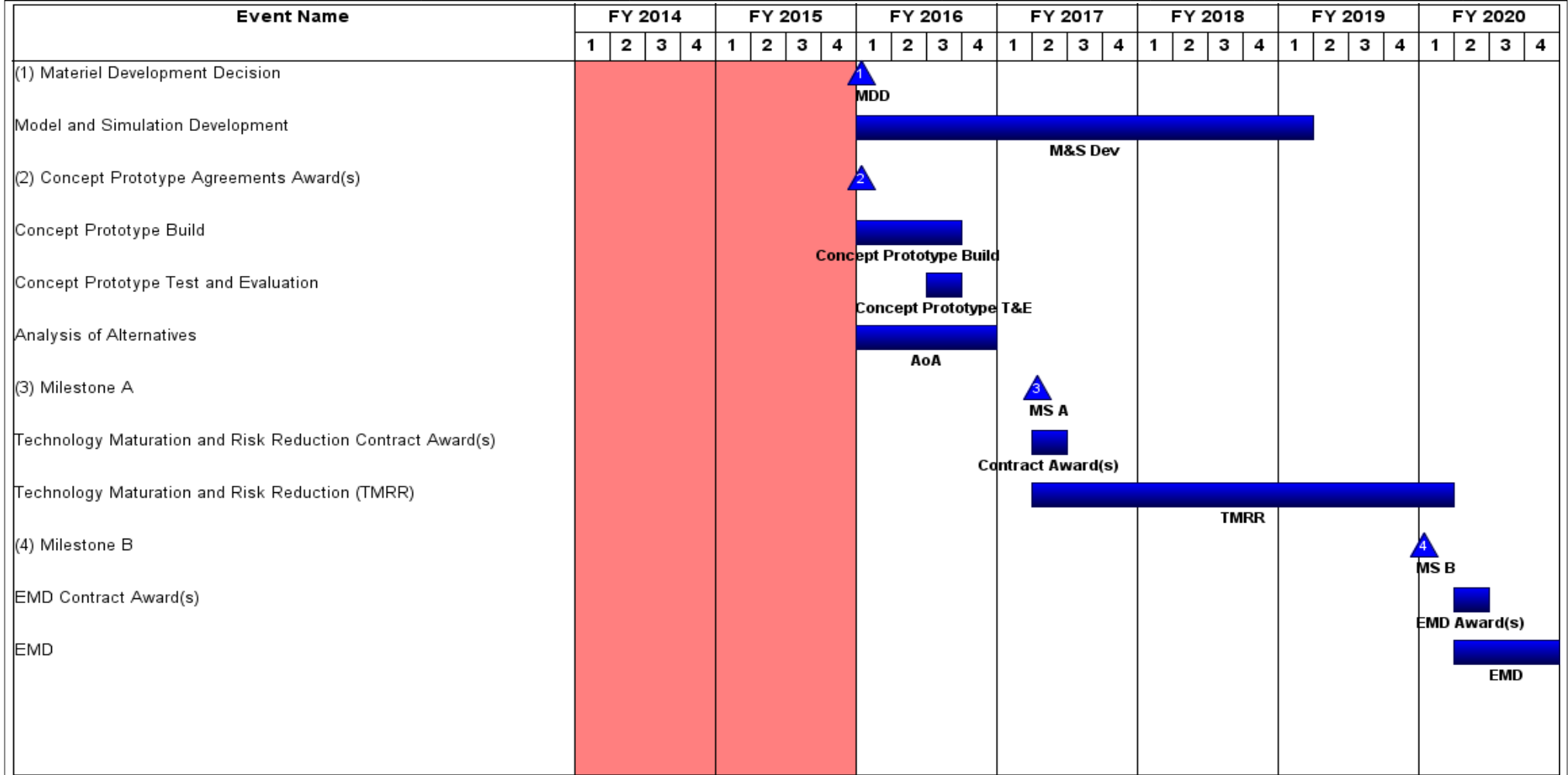
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prototype Development A	SS/TBD	TBD : TBD	0.000	-		-		7.000		-		7.000	-	7.000	-
Prototype Development B	SS/TBD	TBD : TBD	0.000	-		-		7.000		-		7.000	-	7.000	-
Prototype Development C	SS/TBD	TBD : TBD	0.000	-		-		7.000		-		7.000	-	7.000	-
Prototype Development D	SS/TBD	TBD : TBD	0.000	-		-		7.000		-		7.000	-	7.000	-
Prototype Development E	SS/TBD	TBD : TBD	0.000	-		-		7.000		-		7.000	-	7.000	-
Subtotal			0.000	-		-		35.000		-		35.000	-	35.000	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			
ARDEC Engineering Support	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	-		-		2.164		-		2.164	-	2.164	-
CERDEC Engineering Support	MIPR	CERDEC NVESD : Fort Belvoir, VA	0.000	-		-		1.365		-		1.365	-	1.365	-
Mitre Engineering Support (C4)	MIPR	Mitre : McLean, VA	0.000	-		-		0.780		-		0.780	-	0.780	-
Millenium Program Support	MIPR	Millennium : Arlington, VA	0.000	-		-		0.580		-		0.580	-	0.580	-
ARL Engineering Support	MIPR	ARL : Adelphi, MD	0.000	-		-		0.994		-		0.994	-	0.994	-
AMSAA Engineering Support	MIPR	AMSAA : Aberdeen, MD	0.000	-		-		1.995		-		1.995	-	1.995	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army **Date:** February 2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603619A / <i>Landmine Warfare and Barrier - Adv Dev</i>	Project (Number/Name) EK7 / <i>Area Denial Capability Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision	1	2016	1	2016
Model and Simulation Development	1	2016	1	2019
Concept Prototype Agreements Award(s)	1	2016	1	2016
Concept Prototype Build	1	2016	3	2016
Concept Prototype Test and Evaluation	3	2016	3	2016
Analysis of Alternatives	1	2016	4	2016
Milestone A	2	2017	2	2017
Technology Maturation and Risk Reduction Contract Award(s)	2	2017	2	2017
Technology Maturation and Risk Reduction (TMRR)	2	2017	1	2020
Milestone B	1	2020	1	2020
EMD Contract Award(s)	2	2020	2	2020
EMD	2	2020	4	2021