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 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601103A *I University Research Initiatives*							
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	-	79.122	72.603	69.166	-	69.166	69.339	70.730	71.205	72.701	-	-
D55: *University Research Initiative*	-	64.700	69.573	66.090	-	66.090	66.209	67.543	67.955	69.386	-	-
D58: *URI ACTIVITIES (CA)*	-	12.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-
V72: *Minerva*	-	2.422	3.030	3.076	-	3.076	3.130	3.187	3.250	3.315	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP), the Presidential Early Career Awards for Scientists and Engineers (PECASE)
program, and the Army's efforts in the Minerva Research Initiative (MRI). The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g., Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. The MRI is a university-based social science research program.

Work in this PE provides a foundation for applied research initiatives at the Army laboratories and research, development and engineering centers.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work on this PE is performed by the Army Research Laboratory (ARL) located in Research Triangle Park, NC.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	89.776	72.603	72.741	-	72.741
Current President's Budget	79.122	72.603	69.166	-	69.166
Total Adjustments	-10.654	0.000	-3.575	-	-3.575
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-8.000	-			
• SBIR/STTR Transfer	-2.654	-			
• Adjustments to Budget Years	-	-	-3.575	-	-3.575

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Project: D58: *URI ACTIVITIES (CA)*		
Congressional Add: *Program Increase*	12.000	-
Congressional Add Subtotals for Project: D58	12.000	-
Congressional Add Totals for all Projects	12.000	-

Change Summary Explanation

FY 2015: Congressional increase for University Research Initiatives - totaled $20M. Army reprogrammed $8M of the congressional increase to PE 0601102, Project T14 for proper execution of congressional intent - (i.e., for Single Investigator).

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*	Project (Number/Name) D55 / *University Research Initiative*	

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
D55: *University Research Initiative*	-	64.700	69.573	66.090	-	66.090	66.209	67.543	67.955	69.386	-	-

A. Mission Description and Budget Item Justification

This project supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP) and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program. The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers.

Work in this project provides a foundation for applied research initiatives at the Army laboratories and research, development and engineering centers.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work on this project is performed by the Army Research Laboratory (ARL) located in Research Triangle Park, NC.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: Multidisciplinary University Research Initiative (MURI)	48.660	53.136	53.134
Description: MURI programs are typically 5 years in length at a cost of $1.25 million per year.			
FY 2015 Accomplishments: Provided support for MURI awards made in prior years and started eight new Fiscal Year (FY) 2015 (FY15) MURI awards critical to supporting the future force. Effective transition mechanisms included collaboration among principal investigators, participation by 6.2/6.3 program managers in MURI program reviews, and communication of the MURI research results to the ARL, Research Development and Engineering Centers (RDECs), Engineer Research and Development Center (ERDC), Medical Research and Materiel Command (MRMC), Army Research Institute for the Behavioral and Social Sciences (ARI) and industry.			
FY 2016 Plans: Provide support for MURI awards made in prior years and start six to eight new FY16 MURI awards critical to supporting the future force. Effective transition mechanisms include collaboration among principal investigators, participation by 6.2/6.3 program			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*	**Project (Number/Name)** D55 / *University Research Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
managers in MURI program reviews, and communication of the MURI research results to the ARL, RDECs, ERDC, MRMC, ARI and industry. ***FY 2017 Plans:*** Will provide support for MURI awards made in prior years, and will start six to eight new FY17 MURI awards critical to supporting the future force. Effective transition mechanisms will include collaboration among principal investigators, participation by applied research and advanced technology development program managers in MURI program reviews, and communication of the MURI research results to the ARL, RDECs, ERDC, MRMC, ARI and industry.			
Title: Presidential Early Career Awards for Scientists and Engineers (PECASE) ***Description:*** Supports PECASE investigators started in prior years. ***FY 2015 Accomplishments:*** Continued support for prior year awardees and selection of four new awards. ***FY 2016 Plans:*** Continue support for prior year awardees and select four new awards. ***FY 2017 Plans:*** Will continue support for prior year awardees and select four new awards.	4.329	4.478	4.546
Title: Defense University Research Instrumentation Program (DURIP) ***Description:*** Supports basic research through competitive grants for research instrumentation. ***FY 2015 Accomplishments:*** Awarded competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army transformation. ***FY 2016 Plans:*** Award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army transformation. ***FY 2017 Plans:*** Will award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army transformation.	11.711	11.959	8.410
Accomplishments/Planned Programs Subtotals	64.700	69.573	66.090

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*	**Project (Number/Name)** D55 / *University Research Initiative*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*	Project (Number/Name) D58 / *URI ACTIVITIES (CA)*	

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
D58: *URI ACTIVITIES (CA)*	-	12.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for University Research Initiatives.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016
Congressional Add: Program Increase	12.000	-
FY 2015 Accomplishments: Congressional increase for University Research Initiatives - totaled $20M. Army reprogrammed $8M of the congressional increase to PE 0601102, Project T14 for proper execution of congressional intent (i.e., for Single Investigator).		
Congressional Adds Subtotals	12.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*	Project (Number/Name) V72 / *Minerva*	

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
V72: *Minerva*	-	2.422	3.030	3.076	-	3.076	3.130	3.187	3.250	3.315	-	-

A. Mission Description and Budget Item Justification

This project supports the Minerva Research Initiative (MRI), a university-based social science research program initiated by the Secretary of Defense in Fiscal Year (FY) 2009. It focuses on areas in the social sciences that are of strategic importance to national security policy which have not been substantially pursued in the past. The Minerva research effort will be performed to understand the internal military-political dynamics of repressive regimes, the vulnerabilities of regimes and institutions to various kinds of disruption and instability, the nature of crowd dynamics, group violence, community belief structures, the potential to influence public opinion and attitudes in diverse cultures, cultural effects on network security and military operations, the influence of technology on military capabilities of potential adversaries and allies, and other intersections of social-cultural issues with military activities and national security. Predictive models and other analysis tools will be developed. Leveraging the expertise in the social sciences within the academic community is needed to provide understanding of the roots of terrorist organizations and the challenges and opportunities for military operations in a culturally diverse environment. Better understanding at a fundamental level and new computational tools will provide a beneficial impact on war fighting capabilities at the national policy, military strategy, operational, and tactical levels, and will enhance the capabilities of intelligence activities at all levels. All research results are open source.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: The Minerva Research Initiative (MRI)	2.422	3.030	3.076
Description: The MRI is a university-based social science research program initiated by the Secretary of Defense. It focuses on areas in the social sciences of strategic importance to national security policy. It seeks to increase the Department's intellectual capital in the social sciences and improve its ability to address future challenges and build bridges between the Department and the social science community. Minerva will bring together universities, research institutions, and individual scholars and support multidisciplinary and cross-institutional projects addressing specific topic areas determined by the Department.			
FY 2015 Accomplishments: Tested theories on the direct and indirect effects of characteristics of natural resources on violence and state stability, which have provided predictive models of the relationship between natural resources and conflict, and provided options for anticipating and mitigating the acceleration of violence around the globe; and performed social scientific surveys with neuroscientific brain imaging revealing the role of moral values in social mobilization which in the long term provides effective strategies and policies in reducing organized violence and preventing its contagion.			
FY 2016 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*	**Project (Number/Name)** V72 / *Minerva*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Design and validate new quantitative models to identify the antecedents of civil unrest and violence, to generate new predictive models of the relationship between social systems, natural systems, and sociopolitical instability worldwide, enabling enhanced Army capacity to detect emerging political instabilities; and develop integrated geo-coded databases and time series data sets from existing archives to serve as experimental test beds for developing and validating predictive theories to identify potential hotspots for violence and instability that will aid in Army development of strategies for early intervention and reduction of sociopolitical violence. ***FY 2017 Plans:*** Will develop and validate new computational models that represent how failures in telecommunications, energy, transportation, and economic, systems propagate into civil and governmental systems, thus putting nations and regions at risk of conflict and sociopolitical instability, Will build and validate new models for interdependence between natural resources and state power structures. This work will provide insight regarding national and regional risk of conflict, sociopolitical instability, and threat of violence resulting from studied failures allowing for the development of appropriate mitigation and intervention strategies.			
Accomplishments/Planned Programs Subtotals	2.422	3.030	3.076

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A