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**Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 1: Basic Research</i>	<b>R-1 Program Element (Number/Name)</b> PE 0601103A / <i>University Research Initiatives</i>
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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	-	62.813	87.858	67.148	-	67.148	68.487	69.857	70.639	71.350	0.000	498.152
AB3: <i>MURI/PECASE/DURIP</i>	-	0.000	65.858	67.148	-	67.148	68.487	69.857	70.639	71.350	0.000	413.339
D55: <i>University Research Initiative</i>	-	62.813	22.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	84.813

**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), 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 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 Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	65.202	65.858	67.214	-	67.214
Current President's Budget	62.813	87.858	67.148	-	67.148
Total Adjustments	-2.389	22.000	-0.066	-	-0.066
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	22.000	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-2.389	-	-	-	-
• Adjustments to Budget Years	-	-	-0.066	-	-0.066

**Change Summary Explanation**

FY20 increase related to \$22.000 million of Congressional Add funding

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army										<b>Date:</b> February 2020			
<b>Appropriation/Budget Activity</b> 2040 / 1					<b>R-1 Program Element (Number/Name)</b> PE 0601103A / <i>University Research Initiatives</i>					<b>Project (Number/Name)</b> AB3 / <i>MURI/PECASE/DURIP</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
AB3: <i>MURI/PECASE/DURIP</i>	-	0.000	65.858	67.148	-	67.148	68.487	69.857	70.639	71.350	0.000	413.339	

**Note**

In Fiscal Year (FY) 2020 this Project was realigned from:  
 Program Element (PE) 0601103A University Research Initiatives  
 \* Project D55 University Research Initiative.

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

FY20 realignments are due to financial restructuring in support of Army Modernization Priorities.

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

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> Multidisciplinary University Research Initiative	-	52.559	54.555
<b>Description:</b> MURI programs are typically 5 years in length at a cost of \$1.25 million each per year.			
<b>FY 2020 Plans:</b> Provide continued support for MURI awards made in prior years and initiate six to eight new FY20 MURI efforts that will enable advances in select interdisciplinary basic science and/or engineering research areas determined to be of critical importance to national defense.			
<b>FY 2021 Plans:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
Will provide continued support for MURI awards made in prior years and will initiate six to eight new FY21 MURI efforts that will enable advances in select interdisciplinary basic science and/or engineering research areas determined to be of critical importance to national defense.  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Increased FY21 funding supports new MURI awardees.				
<b>Title:</b> Presidential Early Career Awards for Scientists and Engineers  <b>Description:</b> Supports PECASE investigators started in prior years as well as new award recipients.  <b>FY 2020 Plans:</b> Support 12 existing PECASE awardees. FY20 plans assume there are no new PECASE awards made during FY18 through FY20. Funding for new awards is moved to DURIP. If new PECASE awards are made during FY19 through FY20, funding to support the new PECASE awards will come from DURIP.  <b>FY 2021 Plans:</b> Will evaluate and award competitive grants for new award recipients to conduct world class research and enhance educational capabilities critical to Army transformation.  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Increased FY21 funding supports new PECASE awardees.		-	1.503	4.691
<b>Title:</b> Defense University Research Instrumentation Program  <b>Description:</b> Supports basic research through competitive grants for research instrumentation.  <b>FY 2020 Plans:</b> Evaluate and award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research and enhance educational capabilities critical to Army transformation.  <b>FY 2021 Plans:</b> Will evaluate and award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research and enhance educational capabilities critical to Army transformation.  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding realigned to support new PECASE awardees.		-	8.806	7.902
<b>Title:</b> FY 2020 SBIR/STTR Transfer		-	2.990	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Description:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2020 Plans:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>Accomplishments/Planned Programs Subtotals</b>		-	65.858	67.148
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
N/A				

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<b>Appropriation/Budget Activity</b> 2040 / 1	<b>R-1 Program Element (Number/Name)</b> PE 0601103A / <i>University Research Initiatives</i>	<b>Project (Number/Name)</b> D55 / <i>University Research Initiative</i>
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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
<i>D55: University Research Initiative</i>	-	62.813	22.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	84.813

**Note**

In Fiscal Year 2020 (FY20) Core funding in this Project was realigned to:  
 Program Element (PE) 0601103A University Research Initiatives  
 \* Project AB3 MURI/PECASE/DURIP

Current FY20 funding is Congressional Interest Item funding provided for University Research Initiative Program Increase.

**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.

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FY20 realignments are due to financial restructuring in support of Army Modernization Priorities

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

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

	FY 2019	FY 2020	FY 2021
<b>Title:</b> Multidisciplinary University Research Initiative (MURI)	51.093	-	-
<b>Description:</b> MURI programs are typically 5 years in length at a cost of \$1.25 million per year.			
<b>Title:</b> Presidential Early Career Awards for Scientists and Engineers (PECASE)	4.408	-	-
<b>Description:</b> Supports PECASE investigators started in prior years as well as new awards initiated in current year.			
<b>Title:</b> Defense University Research Instrumentation Program (DURIP)	7.312	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Description:</b> Supports basic research through competitive grants for research instrumentation.			
<b>Title:</b> Basic Research Program Increase	-	22.000	-
<b>FY 2020 Plans:</b> Program Increase to support basic research on University Research Initiative.  Work executed by Army Futures Command.			
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> This program increase is only valid in FY2020.			
<b>Accomplishments/Planned Programs Subtotals</b>	62.813	22.000	-

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**  
N/A