Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Office of the Secretary Of Defense	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	45.712	15.584	10.882	10.376	-	10.376	10.428	10.524	10.595	10.789	Continuing	Continuing
819: *Industrial Base Analysis and Sustainment*	45.712	15.584	10.882	10.376	0.000	10.376	10.428	10.524	10.595	10.789	Continuing	Continuing

A. Mission Description and Budget Item Justification

Industrial Base Analysis and Sustainment (IBAS), directed in Title 10 USC Section 2508, provides the Department with a unique capability to achieve the strategic goal of a strong, resilient, responsive and healthy US Industrial Base (IB) that improves the Departments force readiness posture. This program is uniquely positioned to improve the US Industrial Base's ability to respond to the Departments needs by applying focused investments (as directed in 10 USC Sec 2508) to: 1) monitor and assess the current state of the IB, 2) address critical issues in the IB relating to Urgent Operational Needs, 3) address supply chain vulnerabilities and, 4) support efforts to expand the Industrial Base.

Manufacturing dominance underpins technical dominance. A healthy manufacturing and defense industrial base and resilient supply chains are essential to the economic strength and national security of the United States. The ability of the United States to maintain readiness, and to surge in response to an emergency, directly relates to the capacity, capabilities, and resiliency of our manufacturing and defense industrial base and supply chains.

IBAS is fundamental to achieving a modern IB that integrates traditional and emerging sectors to be able to respond at will to National Security Requirements.

IBAS investments focus on addressing Industrial Base issues that support defense needs by identifying and closing gaps in defense manufacturing capabilities and creating and sustaining reliable sources. Key areas of IBAS investment will include:
1) advancing and sustaining both traditional and emerging defense manufacturing sectors,
2) preserving critical and unique manufacturing and design skills,
3) supporting and expanding reliable sources, and
4) identifying and mitigating supply chain vulnerabilities

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Office of the Secretary Of Defense	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	16.195	10.882	10.461	-	10.461
Current President's Budget	15.584	10.882	10.376	-	10.376
Total Adjustments	-0.611	0.000	-0.085	-	-0.085
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.593	-			
• FFRDC Transfer	-0.018	-	-	-	-
• Economic Assumptions	-	-	-0.085	-	-0.085

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	Project (Number/Name) 819 / *Industrial Base Analysis and Sustainment*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
819: *Industrial Base Analysis and Sustainment*	45.712	15.584	10.882	10.376	0.000	10.376	10.428	10.524	10.595	10.789	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

IBAS mission is to strengthen the force posture and readiness of the U.S. Defense Manufacturing and Industrial Base to respond at will to national security needs.

The IBAS program has a multi-pronged approach to identify projects: 1) assessments of the national technology and industrial base by the OSD Acquisition, Technology and Logistics (AT&L) office of Manufacturing and Industrial Base Policy (MIBP) as directed by 10 U.S. Code 2505, and 2) working directly with defense programs, and 3) working directly with industry. MIBP collaborates with the services and agencies in performing assessments under the Title 10 USC Section 2505 program to identify elements of the industrial base critical to a healthy defense industrial base:

1) Gaps in national-security-related domestic manufacturing capabilities
2) Threatened, single, or sole source capabilities especially within the lower tiers
3) Education and manufacturing workforce skills

IBAS investments seek to ameliorate industrial base and manufacturing issues to strengthen the defense industrial base. All projects are evaluated for industrial base risk using fragility and criticality risk criteria, similar to the more familiar probability and consequence risk criteria. Fragility examines characteristics that make a specific capability likely to be disrupted. Criticality examines characteristics that make a specific capability difficult to replace if disrupted.

IBAS currently focuses efforts and investments in four categories: Radars, Sensors, and Electronics Sectors; Materials Sector; Munitions and Missiles Sector; and Cross-cutting Supply Chain Vulnerabilities Mitigation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Radars, Sensors, and Electronics Sectors	3.364	2.836	2.207
Description: The enabling components and systems capabilities availability is limited with few domestic suppliers, presenting risks to system production and sustainment and directly impacting system procurement and maintenance costs. These limitations of technology can be overcome by identifying common industrial base challenges, development of sustainable modular and scalable architectures, supported by a strengthened and broadened domestic supplier base. Sector investments will improve production process efficiencies, explore modular and scalable technology, and upgrade outdated radar and sensor technology.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607210D8Z / *Industrial Base Analysis and Sustainment Support*	**Project (Number/Name)** 819 / *Industrial Base Analysis and Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY2017 Success Story - Fused Panoramic Night Vision Goggle (F-PANO): The scope of this FY2017 effort focused on the development, build, and evaluation of a system consisting of a fused panoramic binocular goggle, battery pack with embedded Augmented Reality (AR) processor. The F-PANO will be a modular, lightweight, ruggedized system, and support reconfiguration, maintenance, and future upgrade through module replacement, reprogrammable firmware, and software updates. ***FY 2018 Plans:*** Radar Affordability: Continuing an effort started in 2014 to collaborate and field cross reaching radar technologies, with an emphasis on driving down program costs through common technology optimization and industry coordination. FY 2018 focuses on industry engagement and DoD program office technology down selections. Unmanned Systems & Technologies: Wide spread adoption of unmanned systems and their supporting technologies are experiencing industry shortfalls in developing/delivering/servicing unmanned systems. This effort will identify and address material, manufacturing, and supply chain vulnerabilities from micro/man portable systems up to the large platforms – across all domains of air, surface, sub surface, land, blue water, and space. FY2018 focuses on assisting with the Navy Triton program, PMA-262, associated industrial base and production facilities. Technologies of focus include radar, sensors/apertures, power management, avionics equipment, and large scale complex composites manufacturing. Directed Energy (DE): OSD (MIBP) is coordinating critical technology investments that promote improvements in DE production technologies and applications involved in lasers and common electro optic technologies. FY2018 – Phase 0- coordinating with government and industry communities to in develop critical industrial base technology list and common investment strategies. Small Diameter Bomb Multispectral Zinc Sulfide (ZnS): Establish and qualify domestic source for multispectral Zinc Sulfide (ZnS) dome capability for critical munitions. FY 2018 efforts focus on identifying supply chain alternatives and establishing requirements to establish and certify a new production supply chain. ***FY 2019 Plans:*** Radar Affordability, Unmanned Systems & Technologies, and Small Diameter Bomb Multispectral Zinc Sulfide: continues efforts initiated in FY 2018, described above. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of $.629 represents reduced cost phasing of efforts initiated in FY 2018 and continuing into FY 2019. This decrease represents reprioritization and realignment of available resources within this Program Element.			
Title: Materials Sector	0.000	2.336	2.575

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: This multi-year Materials Sector is focused on maturing technologies necessary for the construction of DoD ground, air, and space assets, to mitigate risks associated with the reliance on non-US materials and components. This sector is envisioned to address the technical risk associated with the dependence on materials from foreign non allied countries. ***FY 2018 Plans:*** Carbon Nanotube (CNT) Sourcing: The scope of this industrial base risk mitigation program, with projects across multiple fiscal years, is to work with suppliers and DoD program offices to identify and transition additional sources of supply of ceramic materials for warfighter body armor and ballistic protection systems for defense platforms. This effort will include working with industry to develop, test, qualify and transition new ceramic materials and manufacturing processes. ***FY 2019 Plans:*** Boron Carbide Ceramic Materials Sourcing: Support the development, testing, qualification and potential transition of new boron carbide ceramic materials for DoD ballistic protection requirements. The goal of the program is to reduce existing defense industrial base and supply chain risks. Carbon Fiber Domestic Sourcing: The scope of this industrial base risk mitigation program is to work with suppliers and DoD program offices to identify and transition domestic alternatives to single foreign sources of carbon fibers used in DoD National Security Space applications and related programs (e.g., missiles, space launch vehicles, and satellites). This effort will include working with industry to develop, test, qualify and transition newly developed composite materials and manufacturing processing using commercially available carbon fibers. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $.239 reflects completion of funding for FY 2018 efforts and FY 2019 new start efforts for Boron Carbide and Carbon Fiber. This increase represents reprioritization and realignment of available resources within this Program Element.			
Title: Munitions and Missiles Sector ***Description:*** With a multi-decade decline in missile program development and procurement, design and production capabilities for critical components within the missile sector industrial base are at risk. This has a significant impact on current and future missile programs, limiting the readiness and availability of superior technology to U.S. Warfighters. The missile sector sustainment will exercise the design and production skills of this critical industrial base by improving existing production processes, exploring advanced materials for higher performance, and upgrading outdated technology for missile components. ***FY 2018 Plans:*** Fuze initiative for Electronic Sage and Arm Device (ESAD), an effort continuing from prior years, to mitigate a supply chain loss caused by a reduction in non-DoD demand. Industrial Base (IB) design and production workforce critical skills were needed to	8.496	1.633	4.481

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
meet future requirements. Application of ESAD designs as common architecture to multiple missiles and munitions during this phase enables realization of the desired cost savings. This project is continuing under other investment programs. Continues efforts from prior years for Fuze initiatives (Electronic Safe and Arm Device (ESAD). ***FY 2019 Plans:*** Fuze initiatives (Electronic Safe and Arm Device (ESAD): continues efforts from FY 2018 and prior years. Critical Energetic Materials (CEM): Develop prototype manufacturing processes to maintain an adequate North American industrial base for critical key energetic materials and their pre-cursors. Project phasing is expected to be: Phase 1 – Analysis of current technology/capability; Phase 2 – Develop a plan for a prototype manufacturing process; Phase 3 – Build the prototype manufacturing process; and Phase 4 – Provide samples of the materials with that manufacturing process. Solid Rocket Motor (SRM): This initiative is to conduct advanced propulsion system technology development, maturation and demonstration in order to maintain critical skillsets and advance the state-of-the-art in propulsion component, subsystems and system solutions that enable multi-mission capabilities. Fund two tactical SRM producers to conduct tradeoff analysis and initial system/design engineering of multiple propulsion concepts. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $2.918 includes 1) increase for tentatively final FY 2019 investment in the multiple year Fuze initiative efforts, and 2) new-start efforts for Solid Rocket Motor and Critical Energetic Materials. Munitions and Missiles Sector increase represents reprioritization and realignment of available resources within this Program Element.			
Title: Supply Chain Vulnerabilities Mitigation	3.724	4.077	1.113
Description: Supply Chain Mitigation will be a multi-year program that leverages the best industrial, academic, and government resources through formal collaborations to enable the highest technical talent to define and address strategic manufacturing value chain vulnerabilities and program specific technical issues in support of the IBAS mission. ***FY 2018 Plans:*** Securing the Industrial Base (SIB) – Hack for the Defense Industrial Base (DIB) Cyber: The Industrial Base and manufacturing sector is a major target for both foreign and domestic cyber attacks and data security issues. The objectives of this multiple fiscal years of effort include: analyze the MIB ecosystem (people, processes, and systems); empower the Manufacturing Industrial Base; monitor the dynamic threat environment; identify operational vulnerabilities and prevent the impact of cyber threats; and maintain resiliency and cybersecurity assurance.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Southeast Manufacturing Skills Challenge: Similar to STEM efforts such as First Robotics, the SMSC project seeks to close gaps in industrial capabilities, increase industrial base readiness, elevate the prestige of manufacturing, and identify future supply chain members by establishing a manufacturing skills challenge. This effort across multiple fiscal years starting in FY 2017 is a collaboration between OSD and the National Aeronautics and Space Administration (NASA) to define and address strategic manufacturing value chain vulnerabilities and technologies, and strengthen workforce skills. This effort includes competitions with "Support for a prize". The pilot effort will focus on welding and machining workforce in the Southeast corridor including Mississippi, Louisiana, Alabama, and South Carolina where large ship, aerospace, and automotive growth have created workforce skills and supply chain challenges. Accelerator Pilot Project, continuing from FY2016, FY2017 and across multiple future fiscal years, is an effort that comprehensively addresses some of the discovery-to-transition infrastructure shortfalls, including both identifying emerging companies and increasing business viability for startup and other nascent companies focused on advanced manufacturing and application technologies. The Pilot Program will be uniquely focused on hardware and manufacturing based companies. The comprehensive program will provide access to business strategy and development, mentors in their technology domain, DoD users, investors, and prototype manufacturing facilities. The first cohort of six to ten startup teams in Phase 1, will encompass the following components: Curriculum and Faculty; Advisor/Mentor Network; Marketing coalition of public and private partners and sponsors; Solicitation and Selection Plan; “demo days” at the end of the program. ***FY 2019 Plans:*** Continues efforts initiated in FY 2018 for Securing the Industrial Base (SIB) – Hack for the Defense Industrial Base (DIB) Cyber, and Manufacturing Skills Challenge. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $.353 reflects phasing of funding for FY 2018 continuing efforts and FY 2019 new start efforts. This increase represents realignment and reprioritization of available resources within this Program Element.			
Accomplishments/Planned Programs Subtotals	15.584	10.882	10.376

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense		Date: February 2018
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E. Performance Metrics

Goal - Insert industrial base considerations consistently in program review:
To make informed investment and production decisions
To avoid reconstitution costs for capabilities that DoD will need again.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Office of the Secretary Of Defense			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Munitions and Missiles Sector	C/Various	various : various	34.311	6.394		0.901		2.787		-		2.787	Continuing	Continuing	-
Supply Chain Vulnerabilities Mitigation	C/Various	various : various	1.300	2.912		2.838		0.757		-		0.757	Continuing	Continuing	-
Radars, Sensors, & Electronics Sector	C/Various	various : various	6.045	2.630		1.800		1.500		-		1.500	Continuing	Continuing	-
Critical Materials Sector	C/Various	various : various	2.800	-		1.800		1.750		-		1.750	Continuing	Continuing	-
		Subtotal	44.456	11.936		7.339		6.794		-		6.794	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Army Navy NASA Air Force Interagency Propulsion Committee	MIPR	Arlington VA : Arlington VA	-	0.250		0.235		0.235		-		0.235	Continuing	Continuing	-
SBIR/STTR Tax Estimated Contributions/Reductions	MIPR	Various : Various	-	-		0.397		0.381		-		0.381	Continuing	Continuing	-
		Subtotal	-	0.250		0.632		0.616		-		0.616	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management - Army level support	Option/ BOA	Frontier Technology Inc : Rock Island, IL	-	1.550		1.295		1.319		-		1.319	Continuing	Continuing	-
Program Management - OSD level support	Option/ BOA	ByteCubed LLC : Alexandria VA	-	1.342		1.100		1.121		-		1.121	Continuing	Continuing	-
Program Management - Army	MIPR	RDECOM ECBC : Rock Island IS	1.256	0.506		0.516		0.526		-		0.526	Continuing	Continuing	-
		Subtotal	1.256	3.398		2.911		2.966		-		2.966	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Office of the Secretary Of Defense			Date: February 2018
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	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	45.712	15.584		10.882		10.376		-		10.376	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Office of the Secretary Of Defense			Date: February 2018
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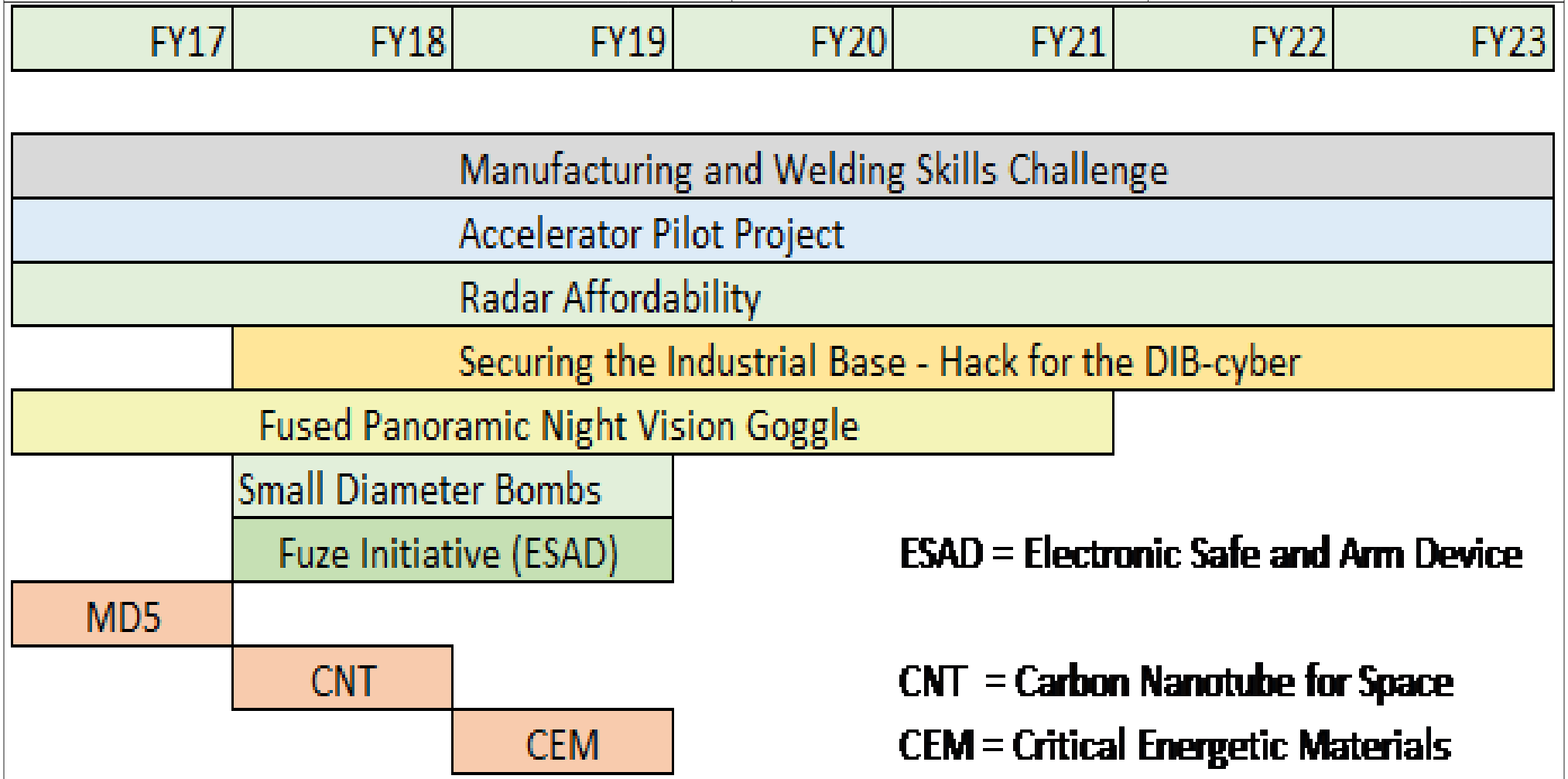

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Office of the Secretary Of Defense		Date: February 2018
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
All Sectors				
Securing the Industrial Base - Hack for the Defense Industrial Base - Cyber	2	2018	4	2023
Manufacturing and Welding Skills Challenge	2	2018	4	2023
Accelerator Pilot Project	2	2017	4	2023
Radar Affordability	2	2017	4	2023
Fuzed Panoramic Night Vision Goggle	2	2017	4	2018
Small Diameter Bombs	2	2018	4	2020
Boron Carbide Ceramic Material Sourcing	2	2019	4	2021
Carbon Nanotube for Space	2	2018	4	2019
PAN Alternative to Rayon Carbon Fiber	2	2019	4	2022
Fuze Initiative	2	2017	4	2020
Solid Rocket Motor	2	2019	4	2021
Critical Energetic Materials	2	2019	4	2020