

UNCLASSIFIED

Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology					
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	69.266	62.031	41.561						Continuing	Continuing
1AA: Tactical Computer Science Demonstrations (CA)	6.570	3.588	.000						Continuing	Continuing
1AB: SENSOR DEMONSTRATIONS (CA)	9.275	10.366	.000						Continuing	Continuing
101: Tactical Command and Control	15.850	16.326	13.692						Continuing	Continuing
243: Sensors and Signals Processing	37.571	31.751	27.869						Continuing	Continuing
A. Mission Description and Budget Item Justification										
Efforts in this program element (PE) mature and demonstrate technologies that will allow the Warfighter to effectively collect, analyze, transfer, and display situational awareness information in a network-centric battlefield environment. It matures and demonstrates architectures and provides technologies that enable synchronized Command and Control (C2) during rapid, mobile, dispersed, and Joint operations. It matures and develops software applications to more effectively integrate battle command across all echelons and to enable more effective utilization of resources (project D101). This PE also matures signal processing and fusion technologies for Army sensors; matures and demonstrates radio frequency (RF) systems to track and identify enemy forces and personnel; matures and demonstrates multi-sensor control and correlation for improving reconnaissance, surveillance, tracking, and target acquisition, (Project 243). Projects 1AA and 1AB fund congressional special interest items.										
Work in this PE is fully coordinated with PE 0602270A (EW Technology), PE 0602782A (Command, Control, Communications Technology), PE 0603008A (Electronic Warfare Advanced Technology), PE 0602120A (Sensors and Electronic Survivability), and PE 0603270A (EW Technology).										
The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.										
Work in this PE is performed by the Army Research, Development, and Engineering Command, Communications-Electronics Research, Development, and Engineering, Center (CERDEC), Fort Monmouth, NJ.										

UNCLASSIFIED

R-1 Line Item #51

Page 1 of 13

691 of 703

UNCLASSIFIED

Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification			DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology		
B. Program Change Summary (\$ in Millions)				
	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	74.096	48.236	41.699	
Current BES/President's Budget	69.266	62.031	41.561	
Total Adjustments	-4.830	13.795	-.138	
Congressional Program Reductions	.000	-.205		
Congressional Rescissions	.000	.000		
Total Congressional Increases	.000	14.000		
Total Reprogrammings	-3.078	.000		
SBIR/STTR Transfer	-1.752	.000		
Change Summary Explanation				
FY09 funding increase is due to Congressional adds.				

UNCLASSIFIED

R-1 Line Item #51

Page 2 of 13

692 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology					PROJECT NUMBER 1AA	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1AA: Tactical Computer Science Demonstrations (CA)	6.570	3.588	.000						Continuing	Continuing
<u>A. Mission Description and Budget Item Justification</u> Congressional Interest Item funding for Tactical Computer Science advanced technology development.										
<u>B. Accomplishments/Planned Program (\$ in Millions)</u>							FY 2008	FY 2009	FY 2010	FY 2011
Software Lifecycle Affordability Management Phase II (SLAM II)							1.932	.775	.000	
VideoArgus							.000	1.937	.000	
Embedding Iris Recognition Technology On-board Warfighter Personal Equipment							.000	.775	.000	
Aviation Responsive Maintenance System							1.545	.000	.000	
Shared Vision							3.093	.000	.000	
SBIR/STTR							.000	.101	.000	
Total							6.570	3.588	.000	
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A										
<u>D. Acquisition Strategy</u> N/A										
<u>E. Performance Metrics</u> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

UNCLASSIFIED

R-1 Line Item #51

Page 3 of 13

693 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology					PROJECT NUMBER 1AB	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1AB: SENSOR DEMONSTRATIONS (CA)	9.275	10.366	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Sensor advanced technology development.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
HYPERSAR Radar							3.091	2.325	.000	
X-Band Interferometric Radar (XBIR)							1.932	.000	.000	
Sensor Visualization and Data Fusion (SVDF)							1.159	.000	.000	
Advanced Radar Transceiver Integrated Circuits Development							.775	.775	.000	
Enhanced Multi-Mission Radar							2.318	.000	.000	
Radar Tag Emitters							.000	2.325	.000	
Foliage Penetrating Reconnaissance, Surveillance, Tracking and Engagement Radar (FORESTER)							.000	3.101	.000	
CERDEC Airborne and Ground Wideband Digital Communications and Antenna Testbed							.000	1.550	.000	
SBIR/STTR							.000	.290	.000	
Total							9.275	10.366	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										

UNCLASSIFIED

R-1 Line Item #51

Page 4 of 13

694 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology	PROJECT NUMBER 1AB
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology					PROJECT NUMBER 101	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
101: Tactical Command and Control	15.850	16.326	13.692						Continuing	Continuing

A. Mission Description and Budget Item Justification

Efforts in this project mature and demonstrate technologies to move and display timely and relevant information across the battlefield to provide commanders at all echelons the situational awareness (SA) that allows them to understand, decide, and act faster than their adversaries, resulting in increased operating tempo (OPTEMPO), improved force synchronization, and reduced fratricide. This project matures and demonstrates technology solutions addressing: information storage and retrieval; digital transfer and display of battlefield SA and position/location information; synchronization of combined and Joint force operations; software services optimized for Command and Control (C2) of unmanned air and ground robotic systems; and C2 On-the-Move (OTM).

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Army Research, Development, and Engineering Command, Communications-Electronics Research, Development, and Engineering, Center (CERDEC), Fort Monmouth, NJ.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Command and Control (C2) for Unmanned Systems: This effort develops and demonstrates software services that provide coordinated dynamic battle command tactical control of Unmanned Systems (UMS) and software tool sets that enable the commander to manage teams of manned and multiple unmanned air and ground platform assets. In FY08, matured and demonstrated tactical battle command services for unmanned ground vehicles; prepared for and participated in a Command and Control of Robotic Entities (C2ORE) lab demonstration at Fort Monmouth, NJ; matured air/ground collaboration software services. In FY09, mature tactical battle command services and air/ground collaboration services to include unmanned ground systems (UGSs), unmanned aerial systems (UASs), and unmanned ground vehicles (UGVs) and demonstrate all in a relevant environment; execute a C2ORE capstone demonstration with up to five UGS clusters, five UGVs, and three UASs; analyze data and provide evaluation and analysis report detailing lessons learned and metrics evaluated. In FY10, will develop and mature software services for unmanned collaboration and coordination, UGV/UAV platform behaviors and C2 information knowledge management of unmanned systems to provide the capability to manage	8.700	9.132	3.652	

UNCLASSIFIED

R-1 Line Item #51

Page 6 of 13

696 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology			PROJECT NUMBER 101
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
large numbers of air and ground robots over extended urban areas at scales beyond current robot inventories due to the expansion of unmanned assets in the battlespace.				
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.188	.000	
<p>Integrated Battle Command (BC): This effort matures and demonstrates technologies that allow forces to effectively collect, analyze, transfer, and display information in a net-centric battlefield environment. Technology areas include intelligent software agents, server virtualization, knowledge management, and automated query technologies. In FY08, matured, demonstrated, and transitioned to PM FCS managed connector software (SW) to support the interfacing, and information management and exchange between Brigade Combat Team (BCT) and echelons above brigade (between disparate service-based architectures (SoSCOE and NCES)) command and control (C2) SW applications; matured and delivered final SW products for running estimate, information search and retrieval, and decision support services to PM for inclusion in PM Tactical Battle Command SW services baseline. In FY09, mature network monitoring service for application in dynamic control of the Global Information Grid, from tactical through enterprise level network architectures, will mature and demonstrate network monitoring services that allow other systems to monitor their own throughput and packet loss to enable dynamic adjustment and optimization of network utilization; demonstrate how quality of service metrics can be utilized to help intelligently manage the resources of distributed C2 service providers; develop digital mission representation to share/understand data between intelligence and operations functions. Related work is also accomplished under PE 0602782A/project 779.</p>	7.150	5.518	.000	
<p>Integrated Battle Command (BC)(continued): In FY10, will mature and demonstrate intelligent agent based BC services for compliance on a Service Oriented Architecture; will mature services for generation of warnings and alerts relevant to the commanders critical information requirements; will mature and evaluate methods and SW to train and improve information sharing and collaboration in network-enabled operations; will demonstrate/validate data aggregation and alert capabilities based on mission context. Related work is also accomplished under PE 0602782A/project 779.</p>	.000	.000	8.009	
<p>Battle Space Awareness and Positioning: This effort demonstrates positioning and navigation tools to mitigate the impacts of jamming, terrain features, and buildings that limit the performance of Global Positioning System (GPS) only navigation systems.</p>	.000	1.488	2.031	

UNCLASSIFIED

R-1 Line Item #51

Page 7 of 13

697 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology			PROJECT NUMBER 101
B. Accomplishments/Planned Program (\$ in Millions)		FY 2008	FY 2009	FY 2010	FY 2011
<p>In FY09, build on the munitions-focused Common Guidance Common Sense Micro-Electro Mechanical System (MEMS) Inertial Measurement Units (IMUs) effort and mature the MEMS IMUs for suitable precision and accuracy for dismounted Soldier and tactical vehicle applications; evaluate MEMS preliminary design models of gyroscopes in a laboratory environment and develop prototype gyroscopes suitable for integration into a MEMS IMU for evaluation in a relevant environment.</p> <p>In FY10, will begin the integration of position/navigation sensors with technologies that exploit the synergy between position/navigation and communications, such as radio frequency (RF) ranging and network-assisted GPS. Related work is also accomplished under PE 0602782A/project 779.</p>					
Total		15.850	16.326	13.692	
<p>C. Other Program Funding Summary (\$ in Millions) N/A</p> <p>D. Acquisition Strategy N/A</p> <p>E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.</p>					

UNCLASSIFIED

R-1 Line Item #51

Page 8 of 13

698 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology					PROJECT NUMBER 243	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
243: Sensors and Signals Processing	37.571	31.751	27.869						Continuing	Continuing

A. Mission Description and Budget Item Justification

Efforts in this project mature and demonstrate improved radar, sensor fusion, and correlation technologies for wide area reconnaissance, surveillance, tracking, and targeting of platforms and individuals in all terrain including complex and urban environments. Sensor fusion efforts mature and demonstrate sensor management and data correlation, and relationship discovery services of a multi-INT fusion system. Sensor and simulated sensor candidates may include moving-target-indicator (MTI)/synthetic aperture radar (SAR), electro-optical/infrared (EO/IR), signals intelligence (SIGINT), measurements and signatures intelligence (MASINT), Human Intelligence (HUMINT), and biometrics technologies. Technologies will be matured with significant leveraging of achievements from industry, Defense Advanced Research Projects Agency (DARPA), and other Services.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Army Research, Development, and Engineering Command, Communications - Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth NJ.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Foliage Penetrating (FOPEN) Radar for Unmanned Aerial Systems (UASs): This effort matures and demonstrates a FOPEN radar capability to meet the size, weight, and power requirements for a Class IV fixed wing UAS. Advancements in both radar and exploitation processing technology enable increased radar performance to include ground and non-metallic building penetration for detection of hidden roadside target/weapons caches. In FY08, began fabrication of two system demonstrators and spares (specific steps include: integration and test of transmitters, antennas, receivers, and processors; lab tests for sensitivity/calibration, motion compensation, frequency notching, interface and control, modes, mission planning, built-in-test, and data link functions; and environmental and ground end-to-end acceptance tests); completed development of first FOPEN system; conducted radar performance flight testing on a manned surrogate UAS platform; began air worthiness release documentation. In FY09, complete development of second system; complete air worthiness release documentation and flight testing of second system on manned surrogate UAS platform; mature algorithms for increased detection of targets of interest,	20.205	19.340	16.738	

UNCLASSIFIED

R-1 Line Item #51

Page 9 of 13

699 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology			PROJECT NUMBER 243	
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011	
develop specifications and perform required analysis for testing on target UAS platform; begin radar integration on target UAS. In FY10, will obtain UAV test bed platform; complete development of second system; continue integration data link with radar for remote operation and data dissemination; continue conduction of environmental and ground end-to-end acceptance tests; conduct and complete radar performance flight testing on a manned surrogate UAS platform; complete first system radar integration on target UAS; conduct UAS flight testing on first system; and begin second system radar integration on target UAS.					
Sensor Fusion: This effort matures and demonstrates automated tools to mitigate the fusion, exploitation, and sensor management/ cross-cueing problems associated with prosecuting and tracking individuals, recognizing their patterns of association, and thereby, being able to track the organizations they form. This effort allows the commander to target significant individuals and to understand the organizations exerting influence in his area of operation sufficiently to disrupt or attack the organizational infrastructure. In FY08, matured initial human intelligence (HUMINT) extraction, multi-INT Correlation (Level 1 Fusion), and contextual data mediator software services; matured and finalized the Service Oriented Architecture (SOA) fusion framework; demonstrated and evaluated initial integrated software services; matured relationship discovery service (Level 2a Fusion). In FY09, finalize services development and integration and test in the integration lab; demonstrate mature software services in Army or Joint experiments; conduct final high fidelity lab experiments and demonstrations of fusion automation and demonstrations of fusion automation and answering capabilities, and transition to PM Distributed Common Ground System Army (DCGS-A). Related work is also accomplished under PE 0602120A/project H15, PE 0602270A/project 442, and PE 0602270A/project 906.	3.875	3.401	.000		
Weapon-Locating (Ground) radar technologies: This effort matures and demonstrates medium-range sensor technologies for locating indirect fire weapons and extending traditional counterfire target acquisition to shooters operating into or from within natural and urban canyons and firing in improvised fashions (tracks rocket, artillery and mortar targets). In FY10, will mature radar beam forming technologies and multi-aperture/multi-spectral unconventional signal processing (non-Fourier frequency transforms and non-Gaussian clutter estimates) techniques.	.000	.000	2.045		
Measurement and Signature Intelligence Technologies (MASINT) for clandestine tagging, tracking, and locating:	2.878	3.372	1.965		

UNCLASSIFIED

R-1 Line Item #51

Page 10 of 13

700 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology		PROJECT NUMBER 243	
B. Accomplishments/Planned Program (\$ in Millions)		FY 2008	FY 2009	FY 2010	FY 2011
<p>This effort matures and demonstrates MASINT technologies capable of detecting, tracking, and/or identifying human activities and/or infrastructures. The emphasis is to identify appropriate technical approaches, demonstrate embedded processing, and mature algorithms for multi-mode fusion of sensor data. Candidate technologies include: fiber optic seismic/magnetic technologies (highly sensitive for detection of walking personnel with/without weapons and/or tunneling detection); air deployable (air droppable) networked sensor system for a jungle environment (integration of seismic/acoustic sensor with jungle canopy relay); human infrastructure detection technologies (algorithms, sensors, etc); radio frequency MASINT detector, ultra-light multi-target indicator radar for unattended ground sensors and unmanned air vehicles.</p> <p>In FY08, evaluated candidate technologies for tagging, tracking and locating (TTL), selected Modern Communications Emitter Geolocation (MCEG) technologies as the most viable to pursue for near-term demonstration and testing for potential spiral transition to the user community.</p> <p>In FY09, enhance demonstrators and/or evaluate new candidate technologies for near-term prototype development; integrate selected technologies into a system demonstrator; demonstrate/test selected technologies for potential spiral transition to the user community.</p> <p>In FY10, will mature and down-select candidate technologies for TTL based on updated guidance from user community and conduct prototype integration.</p> <p>Related work is also accomplished under PE 0602120A/project H16.</p>					
Small Business Innovative Research/Small Business Technology Transfer Programs		.000	.822	.000	
<p>Omni-directional Situational Awareness (SA) (Airborne) radar technologies:</p> <p>This effort matures and demonstrates coupled radar-Electro-Optical (EO)/Infrared (IR) SA technologies for small unmanned aerial systems (UAS) to extend detection.</p> <p>In FY10, will develop and mature a Ground Moving Target Indicator (GMTI) radar sensor weighing less than one pound with 360-degree field-of-view and investigate integration with an existing EO/IR payload including control and display software integration techniques necessary to facilitate efficient cueing and complementary usage of GMTI and EO/IR sensors.</p>		.000	.000	2.047	
<p>Suite of Sense Through the Wall (STTW) Systems:</p> <p>STTW matures and demonstrates technologies to provide mounted/dismounted users with the capability to detect, locate, and see personnel with concealed weapons and explosives hidden behind walls, doors, and other visible obstructions.</p>		6.103	.000	.000	

UNCLASSIFIED

R-1 Line Item #51

Page 11 of 13

701 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)		R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology		PROJECT NUMBER 243	
B. Accomplishments/Planned Program (\$ in Millions)		FY 2008	FY 2009	FY 2010	FY 2011
In FY08, completed integration of personnel/Concealed Weapon Detection (CWD)/Concealed Explosive Detection (CED) prototypes; conducted final development testing of integrated STTW CWD/CED technology demonstrators against multiple wall types; conducted additional testing in urban and complex environments to continue evaluation of new operational concepts/tactics, techniques, and procedures; transitioned complete suite of STTW systems to PEO Solider (Soldier borne) and PM Robotic Unmanned Systems (RUS) (SUGV/UGV mounted). Work related to this effort is also being accomplished under PE 0602270A/project 442.					
Ground Moving Target Indicator (GMTI) and Imaging Surveillance Radar: This effort demonstrates an all-weather GMTI and Synthetic Aperture Radar (SAR) for all-terrain (foliated and open) detection and tracking of mounted and dismounted threats in a package form-fit-function compatible with a Class IV rotary wing UAS. This effort is maturing DARPA investments in GMTI and synthetic aperture radar and applying lessons learned to build a multi-function radar system that will satisfy Class IV UAS size weight and power requirements. In FY08, matured radar model and existing trackers; continued hardware and software development; conducted component testing; assembled radar components; conducted tower testing of the prototype system to support risk reduction and acquired data needed for the development of signal processing algorithms; developed moving target indicator (MTI) exploitation approach; integrated software package into the development environment for evaluation under varying operating conditions. In FY09, complete radar development and tower testing; integrate system onto a manned surrogate platform and initiate flight testing; collect tower and flight test data to support development of adaptive MTI processing algorithms, advanced motion compensation techniques and advanced exploitation and evaluation tools. In FY10, will complete development and demonstrate advanced tracking and exploitation algorithms, techniques and tools; will demonstrate payload on manned surrogate platform.		4.510	4.816	5.074	
Total		37.571	31.751	27.869	
C. Other Program Funding Summary (\$ in Millions) N/A					
D. Acquisition Strategy N/A					

UNCLASSIFIED

R-1 Line Item #51

Page 12 of 13

702 of 703

UNCLASSIFIED

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603772A Advanced Tactical Computer Science and Sensor Technology	PROJECT NUMBER 243
<p><u>E. Performance Metrics</u></p> <p>Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.</p>		

UNCLASSIFIED