

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC2 FCS SYSTEM OF SYSTEMS ENGR & PROGRAM MGMT	1292514	1414756	1067191	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This program includes contractor efforts and analysis associated with System of System (SoS) engineering analysis and integration, logistics, training, SoS test, fee, and program business management. This project also includes the following government effort: Title 10 contract oversight, SoS engineering, SoS test, modeling and simulation, government furnished equipment, and program management. This project includes support to other DOD agencies for joint programs and collaboration efforts with FCS and associated Complementary Programs. Beginning in FY 2010, this program includes all system engineering, test, logistics, training and program management cost associated with Early-IBCT and Threshold-IBCT development.

In FY08 and FY09, system level PDRs were conducted which will culminate in the SoS PDR scheduled for May 09. The SoS PDR will complete all engineering efforts associated with the establishing the FCS functional baseline for 14 +1 systems. After SoS PDR closeout, additional system engineering effort will be completed for the first two increments of FCS capability (E-IBCT and T-IBCT). Development for these increments will include requirements decomposition and allocation, specification and interface development, architecture development, design and analysis, and verification/validation of prototypes, along with the associated technical reviews (e.g. PDR, CDR).

Contractor SoS Engineering - Conduct technical reviews, top level trade studies, and architectural design of the FCS BCT, E-IBCT/T-IBCT, including requirements decomposition, requirements flow down to platforms, development of specifications, interface definitions, configuration management oversight, specialty engineering, and the analysis and verification of integrated force effectiveness.

Contractor Program Management-Execute the full range of program management functions, including the development of processes and tools, Earned Value Management, Risk, software development, etc. used to manage the FCS incremental program (to include over 600 subcontractors/partners) to achieve the SoS program requirements within the available dollars and schedules.

Test and Evaluation - Includes contractor and government test and analysis to verify the performance of each increment. This work validates the specifications and verifies that the specifications meet the applicable requirements document (ORD or CPD) and operational and organizational requirements. Component and platform level developmental testing is included in the respective platform program elements.

Contractor Logistics includes the development of the "factory to foxhole" products and services required to design, develop, assemble, integrate, and test the supportability processes. This includes: validating maneuver logistics; Performance Based Logistics (PBL), ensuring data collection for logistics decision support system software is adequate to support logistics modeling verification and validation; maximizing commonality of hardware and software to reduce the lifecycle costs and logistical footprint; provides integration of supportability including diagnostics functions and conducts logistics technical reviews at the system, vehicle, and component levels; increased Reliability Availability Maintainability Test (RAM-T) goals; and Pit-Stop Engineering designs for maintenance.

Training - Includes contractor analysis to support incremental training. Includes the design and development, engineering, integration, and testing of unique training devices,

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training systems engineering, training products, training support packages, and training integration. This mission assures that the training system is designed as an integral part of the overall incremental design to meet program and KPP requirements. Embedded training development for MGVs will not be pursued in the current contract after the program restructure.

Government Support Costs-Includes funding for government personnel for labor, travel, training, supplies, and other support costs (support contractors, Automated Data Processing (ADP), communications, supplies, and equipment). Supports other services for Joint Programs, Multinational Project Arrangements, and collaborative efforts. Includes the procurement of Government Furnished Equipment/Items/Data (GFX) for the LSI. GFX is used when procurement through the Government is less expensive than through the LSI. Includes Government engineering support and analysis for the New Combat Vehicle Program.

The FCS program has been changed due to restructuring of the MGV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this budget justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The budget justification program schedule reflects the current FCS program. The funding and accomplishments are a top-level attempt to incorporate the new direction to refocus the FCS program.

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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	1497321	1413945	1874987
Current BES/President's Budget (FY 2010)	1292514	1414756	1067191
Total Adjustments	-204807	811	-807796
Congressional Program Reductions		-4689	
Congressional Recissions			
Congressional Increases		5500	
Reprogrammings	-163398		
SBIR/STTR Transfer	-41896		
Adjustments to Budget Years	487		-807796

Change Summary Explanation: FY 2010: the MGV component of the FCS Program is terminated.

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FC2 FCS SYSTEM OF SYSTEMS ENGR & PROGRAM MGMT	1292514	1414756	1067191	Continuing	Continuing

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
CONTRACTOR PROGRAM MANAGEMENT - Implement processes, models, tools & management structure to integrate all subcontractor partners into one team to meet cost, schedules, and technical performance requirements in the contract to include program overview, Earned Value Management, briefings, technology reviews, reports, program risk, subcontract management, data, operation management, contract management, procurement and acquisition management along with Small and Minority Business Integration, SDD Affordability/CAIV/ Life Cycle Management and development of program baseline & Integrated Master Schedule. FY08 & FY09 supported FCS Core and Common Spin Out; FY10 includes Program Management for the Incremental Programs.	162279	87173	89248
GOVERNMENT - SYSTEM ENGINEERING & PROGRAM MANAGEMENT - SYSTEM ENGINEERING: Participate and ensure the government and soldiers best interest/values are considered in the following: System of System (SoS) reviews, trade studies, architectural management, requirements decomposition, requirements flow down, development of specifications, interface definitions, configuration management oversight, specialty engineering, the analysis and verification of integrated force effectiveness, Software Management, Risk Management, Modeling and Simulation Management, Performance Assurance Management, Product and producibility assurance, Integration & Verification Management, Technology Management and Experimentation. In addition, in FY10, includes the system engineering and analysis required to support the New Combat Vehicle Program, T-IBCT architecture and requirements development, and E-IBCT operation assessment analysis. Begin preparation for the PDR for the T-IBCT. PROGRAM MANAGEMENT: Provide integrated program management (i.e. planning, directing, tools and controlling functions), for all development activities to include data and supplier management, program control, government training, procurement and contracts management, operations management for incremental IBCT and new combat vehicle development. Provide Congressional Title 10 oversight, cost analysis and management, budget development, justification and tracking, Earned Value Management, Integrated Master Schedule development and management, Complementary Program management and operations management associated with contractor management. Also includes TRADOC support for requirements analysis, AoA support, and Milestone reviews.	107511	125991	135436
CONTRACTOR SoS Engineering & Integration FY08 - Conducted SoS Engineering Maturity Review 1 (EM1), Integration Phase 1 Assessment Anchor Point, Engineering Integration 2 Planning Anchor Point as well as the SW Build 2 Planning Checkpoint. In support of these reviews, continued development and maturation of the SoS Architecture with a release of the Single Integrated Model v4.x. Updated and maintained the program technical baseline consisting of releasing the next version of the SoS Specification and Prime Item Development Specifications. Managed execution of the System Level Preliminary Design Reviews (PDR's) for Multi-purpose Utility MULE variants (Transport, Countermine, ARV-A(L)) and Autonomous Navigation System (ANS). Managed execution of Capability Maturity 1, Integration and Verification Phase 1 (IV1) execution consisting of integrating SW build 2, SoSCOE and Prime Item models and simulations into the program SILs and executing the Integrated Mission Test. During IV1 execution, data gathering, reduction and	430106		

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assessment were conducted. Additionally, planned for IV Phase 2, with the maintenance and update of the SoS Integration Plan. Updated the Integrated Analysis Plan and executed assessments in the areas of areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety and force effectiveness for SoS PDR. Safety Assessment and MANPRINT analysis reports completed and released for SO1 (FDT&E, TFT, LUT), IMT1 and Experiment 2.1. Updated the NEPA Assessment and completed ESOH Evaluation. Updated, maintained and released the Design Concept Baseline and release the System of Systems/System Design Description (SSDD). Began transforming SO from HBCT to E-IBCT to include converting SO ORD to SO CDD & CPD and technical baseline.			
CONTRACTOR SoS Engineering & Integration FY09 - Conduct the SoS Preliminary Design Review (SoS PDR), Engineering Integration 3 Definition Anchor Point and Engineering Integration 3 Readiness Anchor Point. Continue development and maturation of the SoS Architecture. Update and maintain program technical baseline consisting of releasing the next version of the SoS Specification and Prime Item Development Specifications. Develop requested test plan for Experiment 3.0 (execution occurs in 2009 finishing in 2010). The SoS Engineering Iterations (EI) will be updated for EI2 and EI3. Manage execution of System Level Integrated Product Teams Preliminary and Critical Design Reviews (PDR & CDR). Update the Integrated Analysis Plan and execute assessments in the areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety, Information Assurance and force effectiveness for SoS PDR. Safety Assessment and MANPRINT analysis reports along with an update of the Programmatic NEPA Assessment and a Programmatic ESOH Evaluation will be completed for SO and core program. Update, maintain and release the Design Concept Baseline and release the System of Systems/System Design Description. Completed adjudication of SO CDD & CPD along with continued maturation of SO technical baseline for integration of SO SoS TFT/FDT&E/LUT and prepare for SO MS C in FY10.		240479	
CONTRACTOR SoS Engineering & Integration FY10 - Continue builds of Brigade Combat Team Software with Build 2 Final (B2F) and MS C decision for Low Rate of Initial Production (LRIP) for the E-IBCT. Manage the execution of the System Level Critical Design Reviews (CDR) for Class I & IV Unmanned Air Vehicles (UAV), Common Controller, Small Unmanned Ground Vehicle (SUGV), MULE Variants, and the T-IBCT network. Conduct the T-IBCT system of system level design review. Update the Integrated Analysis Plan and execute assessments in the areas of areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety, Information Assurance and force effectiveness for SoS PDR. Update Program NEPA Assessment and complete a Programmatic ESOH Evaluation. Prepare and execute the E-IBCT Operational Assessment. Integrate Ground Soldier Ensemble and JTRS NSA certified radio into the IBCT Network. Includes architecture development, design engineering, test and program planning to include incorporation of cross domain guard. Conduct Production Readiness Review to include major suppliers. Conduct Industrial Capability Assessment. Insert engineering changes to correct faults detected from FY 09 LUT. Support FY 10 OA testing.			244293
CONTRACTOR SoS TEST FY08 - Completed SO1 Test Readiness Review for TFT. Conducted Technical Field Test Report. Developed and conducted Test Participant Training in support of IMT1. Completed IMT Test Readiness Review. Completed IMT SoSCOE Scalability and Discovery Test Runs for Record and assessed test results. Completed IP2 IPTP. Developed Draft IV2 TFT Detailed Test Plan. Delivered Test Resources Requirements Document. Develop IV2 IMT Detailed Test Plan. Delivered Test Resources Requirements Document. Completed LSI Input to FCS TEMP in prep for PM Update for FCS SoS PDR. Completed Interim Update to ITEP. Supported JEFX08 and FCS Experiment 2. Completed Integration Verification 1 Integrated Mission Tests, SO Tactical Field Test/ Force Development Test & Evaluation/Preliminary Limited User Test (SO TFT/FDTE/PLUT), Experiment 2.		27923	
CONTRACTOR SoS TEST FY09 - Planned Accomplishments Develop IMT1 Master Procedures Set. Begin Preparation for the Test Infrastructure (HW, SW, Participants, and Facilities) to support IMT 2 and TFT2. Early planning to support SSEI development of Integrated phase. Complete Update to ITEP supports CR changes to FCS program. Begin development of TEMP update to include annexes for Spin Out Early to the IBCT. Support CTO & T&E WIPT issues resolution, BCT SW Build 2 Early Distributed Qualification Test (B2E DSQT), Integrated Verification 1 Integrated Mission Test 1 (IV1 IMT1).			9713

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CONTRACTOR SoS TEST FY10 - Plan and execute developmental testing of the new form factor U/T-UGS, Range Extension Relay (RER) updated Network Integration Kit (NIK) - formerly B-kit, updated SUGV, and Class I Block. Plan and conduct two Technical Field Tests in a classified network environment. Provide support to the Operational Assessment conducted as an excursion to the GMR LUT.		39083
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY08 - MGV testing focused on the NLOS-C System Demonstrator and Firing Platform testing and NLOS-M Firing Platform and Tube proofing. MGV Top Deck Deconfliction/Co-site testing at EPG continued for C2V and RSV development and MGV modeling efforts. Supported MCS armament proof and safety testing as well as the Firing Platform testing on the TARDEC Turret Based Motion Simulator. Electromagnetic Environmental Effects / Initial Nuclear Radiation (E3/INR) testing was conducted at WSMR on Common components and NLOS-C Subsystems. Automate Fire Extinguisher System (AFES) testing and NLOS-C/M compartment testing was conducted at APG, and MGV CBRN materials testing at Dugway Proving Ground (DPG). NLOS-C SDD Early Prototype testing was initiated with Firing Tests on Prototype P1 and Mobility Testing on Prototype P3. Continued developmental testing of the Full Spectrum (HAS) Short Range and Long Range Counter measure effort. Supported Test ammunition requirements for all FCS firing tests. Provided ATEC range support for the LSI C4IT field test events and Class 1 UAV experiment flight test. Provided DREN connectivity between the LSI and OTP SILs. ATEC provided 25 MY of SME support to the LSI and surge engineering support as required to support test. Funded the development and modifications of modeling and simulation test tools. These tools included stimulators and data collection and analysis tools to test during IP2 field events. Funded the support costs of the Common Control Nodes and WSMR and APG. These facilities are program test facilities used in support of system of system tests events.	81152	
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY09 - MGV testing will focus on the NLOS-C SDD prototype testing at YPG, WSMR and APG. This includes Firing Tests on P1, Automotive test on P3, Improved Mobility/RAM test on P4, E3, Safety, Mobility, Firing test on P5, Safety and RAM test on P6, and Reliability test on P7 as well as the continuation of the NLOS-C Firing Platform. Testing. NLOS-M Firing Platform and Proof testing will continue as well as the continuation of MGV Top Deck Deconfliction/Co-site testing at EPG on the RSV and the NLOS-C. NLOS-C/M compartment testing will continue as will Automate Fire Extinguisher System (AFES) testing at APG, MGV CBRN materials testing at DPG MGV Band track testing will also continue at YPG and Armor development testing to include structure testing and coupons will occur at ARL/APG. HAS/APS will also continue thought FY09 as will the APS Countermeasure Munitions testing. MCS testing will continue with the firing of the MSC Firing Platform at APG, MCS Armament safety and qualification testing at APG and MCS Ammunition Compatibility testing. Supports Test ammunition requirements for all FCS firing and ammunition tests. DREN connectivity between the LSI and OTP SILs will continue. ATEC will again provide 42 MY SME support to the LSI and surge engineering support as required to support tests. Continues testing of armor recipes. Initiates Class IV UAV Army/Navy cooperative E3 testing. Funds the development and modifications of modeling and simulation test tools for future test events. These tools include test event design tools as well as test data collection capabilities. Additionally these tools include stimulators used to test FCS systems. Funds the operational and maintenance costs of the Common Control Nodes and WSMR and APG. These facilities are program test facilities used in support of system of system tests events.		99702
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY10 - Full Spectrum Hit Avoidance Systems procured in FY09 will be tested in FY10 for support of the New Combat Vehicle Program. Conduct a simulation based test in support of E-IBCT development at the WSMR Common Control Node. FY10 funding provides for range support for E-IBCT platform testing, two E-IBCT Technical Field Tests and the Operational Assessment. ATEC will provide SME support to the contractor and surge engineering support as required to support specific E-IBCT test events. Funds the development and modification of modeling and simulation test tools for future test events.		75650

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<p>These tools include test event design tools as well as test data collection capabilities. Funds the operational and maintenance and hardware (HW) refresh costs of the Common Control Nodes and WSMR and APG. Funds for infrastructure and test facilities that will support the E-IBCT testing.</p>		
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY08 - Continued development of Government models and simulations in support of the Future Combat Systems Synthetic Environment (FSE) which is integrated by the LSI. FSE is the simulation environment utilized in Integrated Mission Test 1. This development included modifications to One SAF Objective system (OOS) as the core FSE simulation, the development of digital terrain databases, modifications to the RDECOM MATREX simulation federation, as well as the modifications of the Ocean, Atmosphere, Space and Environmental Services (OASES) weather server. Funded the continued development of the 3CE Cross Command Distributed Network capabilities between FCS, ATEC, and RDECOM. This effort managed the use and reuse of individual command simulations to facilitate distributed integration and testing, thus reducing time and cost of material development and test. FY08 funded the development of future simulations required for IP2 and IP3 Integrated Mission Tests. These simulations included the effects of communications in an urban environment as well as the inclusion of urban terrain into the FSE.</p>	2850	
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY09 - Continues funding of the Cross Command Collaboration Effort (3CE). Goals include the identification of requirements and design, develop, and integrate technologies and data related to user common areas of interest through FY13 that support FCS Program and user needs, with emphasis on IP2. Enables a multi-level secure network backbone; maintains a persistent and secure 3CE network (peering points); continues M&S systems process to develop common M&S and data architecture for IP2 and IP3. Support to IP2 laboratory events: Continues enhancements of the Communications Effects Server (CES) to support Quality of Service testing. Provides funding for FCS unique enhancements of OneSAF to support: FCS Unit-level behavior modeling; Tactical Network Gateway; FCS Battle Command stimulation; ability to command and control the SAF at the Company and Battalion levels; continues the integration of representations of insurgents and the impact of urban terrain, building interiors, and competing urban radio frequencies into OneSAF and the CES.</p>		10164
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY10 - Continues funding of the Cross Command Collaboration Effort (3CE). In addition to funding persistent 3CE capabilities described in FY09, emphasis will be on support to T-IBCT M&S development to support developmental testing. Provides funding for FCS unique enhancements of OneSAF to support: adaptation to T-IBCT releases of FCS Battle Command; updated representations of FCS equipment based upon evolving platform CDR design baseline.</p>		11490
<p>CONTRACTOR TRAINING Specs and Products FY08 - Delivered individual and collective task analyses (1,500+). Continued training inputs and support to FCS Systems PDRs for all platforms and the Network/Battle Command. Continued Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Defined and recommended the interfaces necessary to incorporate appropriate in-lieu-of systems supportability requirements and information technology applications IAW the Supportability Strategy. Continued integration of Training software with Warfighter Machine Interface (WMI), along with development of interface requirements specifications. Updated and Delivered: Training Management Plan, Training Data Products Report, Training Support Packages, Training Facilities Survey Report. Developed and delivered 17 Interactive Multimedia Instruction (IMI) Training Support Packages (TSPs) for Individual Training and 25 Simulation-based Collective TSPs. Continued integration of Embedded Training software and products in the Training Systems Integration Lab (SIL). Continued integration of Training software with Warfighter Machine Interface (WMI) leading to FCS Engineering Iteration 2. Developed Training Common Component Build 2 Drop 1 (engineering release). Delivered Individual Task Lists in support of System PDRs. Delivered Final Task Analysis Report (DI-026) in support of System CDRs. Continued Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Completed Training support to SO1 Tech Field Test/Limited User Test (Apr 08-Jul 08). Provided FCS SME oversight of TCC Software Architecture and Software development.. Integrated TCC capabilities horizontally across PEO STRI baseline program functionality.</p>	57410	

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CONTRACTOR TRAINING Specs and Products FY09 - Continue development of individual and collective tasks analyses to support design implications of Embedded Training. Develop of interface requirement specifications and begin preparation of interface design specifications. Update and Deliver: Training Management Plan, Training Data Products Report, Training Support Packages, Training Facilities Survey Report. One Team Partners continue to develop and update Embedded Training capability and products for the FCS program: Training (Instructional) Support Packages (TSPs), Interactive Multi-media Instruction (IMI), Embedded Training software. Complete Platform PDR and SoSPDR architecture products. Deliver Individual Task Lists in support of System PDRs (CI IV UAS, MG, CC, A/GPCS). Deliver Final Task Analysis Report (DI-026) and TSP Development Plan (initial DI-027) in support of System CDRs (CI IV UAS, ANS, MULE, CC, A/GPCS. GSI). Continue Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Continue integration of Training software with Warfighter Machine Interface (WMI). Deliver TCC Build 2 Engineering Release (Apr 09) and TCC Build 2 Final (Sep 09). Provides updates to current force TADSS such as CCTT, SE Core, Gaming, and other TADSS as necessary to provide continuity to the IBCT. In conjunction with DAE direction, Embedded Training efforts for MG will be curtailed after FY09.	16507	
CONTRACTOR TRAINING Specs and Products FY10 - Continue development of individual and collective Training Support Packages (TSPs) to support IBCT. Develop and deliver of interface design specifications. Determine if any Embedded Training requirement is cost effective for the T-IBCT. Provides further updates to current force TADSS such as CCTT, SE Core, Gaming, and other TADSS as necessary to provide continuity to the T-IBCT. Begin Initial planning for T-IBCT training plan.		59117
CONTRACTOR - SUPPORTABILITY / LOGISTICS FY08/09- Provide test support for equipment testing and demonstrations for SoS and FoS supportability performance verification. Validate Maneuver Sustainment, PBL, and other applicable support concepts during testing, demonstrations, and validations. Ensure sensor collection of data for logistics decision support system software is adequate to support logistics modeling verification and validation efforts as well as operational PBL. Define, Develop & Integrate the following Manned / Unmanned Platform Vehicle (MUPV) Systems requirements. Ensure Supportability architectures and requirements are implemented during design, development, fabrication and test of Vehicle Systems to achieve Transportability, Deployability and Operational Availability. Conduct Logistics Planning, Modeling and Simulations to mitigate risk and verify reductions in FCS Logistics Footprint while increasing Readiness & Availability. Identify the logistics test requirements for the soldier or warfighter level health tests (originating from the ORD), and the requirements for integration testing with multiple systems and platforms as well as the system of system level testing. Provide and administer a TSP capable of sustaining test and evaluation efforts. Plan for the conduct of maintenance and provision of repair parts, tools, test fixtures, and facilities. Provide technical support to all logistics 1) demonstrations and simulations and 2) system verification, validation, and integration tests to ensure that requirements for RAM-T and supportability are met. Provide support for Verification & Validation of IETMs, prognostics diagnostic equipment, data collection, and instrumentation. Provide analysis develop requirements for integration and test of Current Force spiral testing. Maintenance Plan, Readiness report to SU, Sustainment request Handling, Class (I, III, V, IX) supply & Distribution Status.	1327	344
CONTRACTOR - SUPPORTABILITY / LOGISTICS FY10- Provide test support for equipment testing and demonstrations for E-IBCT supportability performance verification. Ensure sensor collection of data for logistics decision support system software is adequate to support logistics modeling verification and validation efforts as well as operational PBL. Define, develop & integrate the unmanned platform systems requirements. Ensure Supportability architectures and requirements are implemented during design, development, fabrication and test of vehicle systems to achieve Transportability, Deployability and Operational Availability. Conduct Logistics Planning, Modeling and Simulations to mitigate risk and minimize FCS E-IBCT Logistics Footprint while increasing Readiness & Availability. Identify the logistics test requirements for the soldier. Provide and administer a Test Support Package capable of sustaining test and evaluation efforts. This will include coordination of spare parts, FSRs and labor to keep prototypes functioning during testing		3676

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and Logistics demo. Plan for the conduct of maintenance and provision of repair parts, tools, test fixtures, and facilities. Provide support for Verification & Validation of ETMs, diagnostic equipment, data collection, and instrumentation. Maintenance Plan, Readiness report to SU, sustainment request handling, Class (I, III,V,IX) supply & Distribution Status. It will also include the fielding planning along with support planning for the FCS technologies in the IBCT. It will also include development of all milestone C required Supportability documentation. Begin Initial planning for T-IBCT and new combat vehicle supportability plans.				
SMALL BUSINESS TECHNOLOGY INSERTION - Congressionally directed activities for small businesses to conduct high risk/high reward component and technology development for inclusion into the FCS program to enhance technology readiness by using the best of industry to reduce TRL risk. Fee portion of the \$20M Congressional Earmarked includes in Contractor Fee Line. In addition to the \$17.4M the LSi has actually include another \$3M of effort in their SOS Engr effort to reduce TRL risk through small business.	17391			
CONTRACTOR FEE - This includes both the LSI incentive, 7.5% and fixed fee, 7.5%.	345533	280673		266106
Government Other - Includes support of non-PM government support offices that provide technical expertise (PEO C3T, TRADOC, UAMBL, ARL, FFID, etc). This also includes other technical support contracts like the Sandia Labs - FCS Integrated Support Team (FIST), (MITRE), Software Steering Committee from University South California and University of Maryland which also reviews LSI software performance. logistics products, network requirements and capabilities. It includes all electronic hardware and software required for government personnel (computers, Blackberry, software, internet and ACE software agreements). CIO and Security management within the PM. Tech base insertion into the FCS program to reduce program TRL Risk. TRADOC support of analysis to support spinout and the future new combat vehicle system.	47534	136332		126766
GOVERNMENT GFX- FY08 - FY10 - Continue Technical Management Integration support to the Training IPT throughout the development of the Training Common Components (TCC) effort between PEO STRI and PM FCS (BCT). PEO STRI SMEs develop strategies to transition TCCs from FCS training IPT to One Team Partners (Warfighter Machine Interface (WMI) and Battle Command), with long term plans for continued baseline program support to FCS by PEO STRI. Continue development of TCC Software Architecture and Software. Deliver Build 3 Early to FCS Training IPT and to LSI in Jul 10. Fully integrate TCCs with Warfighter Machine Interfaces and applications running as a single SOSCOE application. Continue Live/Virtual/Constructive interoperability between Live and Constructive training capabilities for an integrated WMI solution. Provide Government oversight of additional TCC construction and Live/Constructive Integration. Provided M2, MK19 and the M240 ammunition required for LSI testing Support Model and SIM updates to support JEFX08 and Experiment 2.	11498	15088		6750
Spin Out Development Efforts in FY09 - This effort will support the Spin Out to IBCT effort. This Spin out unique effort is required to finish the expanded software to provide more network capabilities to the current force than originally planned. This requires additional architecture and design work not budgeted for. In addition the support of the NLOS-LS (FSR and spare parts) at the AETF was not included in the original budget due to an additional test being added. In addition a NLOS-LS control cell is required for IBCT control of the NLOS-LS. Based on lessons learned during last year's Spin out to HBCT, FFID and TRADOC require additional funding to support analysis and support of the training for the Spin out to the IBCT.		14641		
NLOS-LS Development Efforts in FY09 - This effort will support the design, engineering and software efforts to support new National Security Agency (NSA) mandated Data Storage Devices (DSD); NDA certifiable JTRS-SFF-J (Small Form Factor) surrogate radio. Currently the NLOS-LS uses a surrogate radio in the Spin Out Configuration and this additional funding will support integration of the JTRS radio along with several new testing efforts required for radio and NLOS-LS certification. Will also support the newest version of Battle Command and SOSCOE integration.		51500		

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Unmanned Ground Vehicle Development Efforts in FY09 - This effort will allow the Program to incorporate additional speed capability for the MULE variant.		4300
Unattended Ground Sensor Development Efforts in FY09 - This effort will incorporate UGS new design requirements which will reduce the Procurement and Sustainment cost associated with the production and fielding of the Unattended Ground Sensors.		3600
FCS Network Development Efforts in FY-09 - This effort will enable the network software efforts to meet the program schedule. These adjustments are based on completed definition of software functionality and requirements to support software builds 2 early and build 2 final. Dollars represent efforts of 12 subcontractors and the prime to integrate 5.5 million effective software lines of code (ESLOC) and associated C4ISR and vehicle hardware into a fighting system.		279000
Termination Liability		9576
Small Business Innovative Research/Small Business Technology Transfer Programs.		39549
Total	1292514	1414756

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS MGV Manned Ground Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
0605625A Manned Gound Vehicles			100000	Continuing	Continuing

Comment: Comp Programs:

ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT

FC2

C. Acquisition Strategy The original FCS Contract was awarded to the Boeing Company, 30 May 2003 and definitized 10 Dec 2003. The LSI is responsible to PM FCS BCT to provide the following: Systems Engineering and Program Management, System Tests and Evaluation, Modeling and Simulation, Training, Contractor Program Management, Contractor System Requirements and Integration, Contractor Training Products, Contractor System of Systems Test, Distributing and Contractor Fee.

During FY09 the System of System Engineering and Program Management provides primary support to the Systems of Systems platform Preliminary Design Reviews (PDRs). Based on new direction the MGVT portion of the program and FCS BCT SoS will be curtailed after the SoS PDR. E-IBCT and T-IBCT SoS engineering will continue using the current contractual arrangement. A new contractual arrangement (new contractors) will be created to support the new combat vehicle program. The SoS engineering will transition over time from the contractor to the government.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604661A - FCS Systems of Systems Engr & Program Mgmt							FC2		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor SEPM	FAR	The Boeing Company-ST. LOUIS, MO, see remark 4		162279	1-3Q	87173	1-3Q	89248	1-3Q		338700	
Contractor System Requirements and Integration	FAR	The Boeing Company-ST. LOUIS, MO, see remark 4		430106	1-3Q	240479	1-3Q	244293	1-3Q		914878	
Contractor Training Products	FAR	The Boeing Company-ST. LOUIS, MO, see remarks 1-4		57410	1-3Q	16507	1-3Q	59117	1-3Q		133034	
Contract Fee	FAR	The Boeing Company-ST. LOUIS, MO		345533	1-3Q	280673	1-3Q	266106	1-3Q		892312	
Contractor- Small Business Technology Insertion	FAR	The Boeing Company-ST. LOUIS, MO		17391	1-3Q						17391	
Spin Out Efforts	Direct	ABO				14641	1-2Q				14641	
NLOS-LS Efforts	Direct	ABO				51500	1-2Q				51500	
UGV Development Efforts		ABO				4300	1-2Q				4300	
UGS Development Efforts		ABO				3600	1-2Q				3600	
Network Development Efforts		ABO				279000	1-2Q				279000	
Subtotal:				1012719		977873		658764			2649356	
<p>Remarks: Remark 1: Subcontractor: Computer Science Corp. Federal Sector Defense Group, Fsls Church, VA. Remark 2: Subcontractor: Dynamics Research Corp. Systems Division, Andover, MD. Remark 3: Subcontractor: Northrop Grumman, Info Tech, Def Enterprise Solutions Div, Mclean, VA. Remark 4: Subcontractor: SAIC Corp., San Diego, CA</p>												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government SEPM	Direct	PM FCS(BCT) - St Louis, MO		107511	1-3Q	125991	1-3Q	135436	1-3Q		368938	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604661A - FCS Systems of Systems Engr & Program Mgmt							FC2		
Government GFX	Direct	PM FCS(BCT) - St Louis, MO		11011	1-3Q	15088	1-3Q	6750	1-3Q		32849	
Government - Other Support	Direct	PM FCS(BCT), St. Louis, MO		47534	2-3Q	136332	2-3Q	126766	2-3Q		310632	
SBIR/STTR	Direct	OSD				39549	1-2Q				39549	
Adjustment to Budget Year:	Direct	ABO		487	1-2Q						487	
Subtotal:				166543		316960		268952			752455	

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor - SoS Test	FAR	The Boeing Company - St. Louis, MO		27923	1-3Q	9713	1-3Q	39083	1-3Q		76719	
Government STE	Direct	PM FCS(BCT), St. Louis, MO , see remarks 1-3		81152	1-3Q	99702	1-3Q	75650	1-3Q		256504	
Government - Modeling and Simulation	Direct	PM FCS(BCT), St. Louis, MO		2850	2-3Q	10164	2-3Q	11490	2-3Q		24504	
Supportability Log	Direct	PM FCS(BCT), St. Louis, MO		1327	1-3Q	344	1-3Q	3676	1-3Q		5347	
Subtotal:				113252		119923		129899			363074	

Remarks: Remark 1. Subcontractor, Netversant Co., Baltimore, MD
 Remark 2. Subcontractor, 3D Research, Huntsville, AL
 Remark 3. Subcontractor, Jacobs/Sverdrup, Aberdeen, MD

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Termination Liability	FAR	The Boeing Company, St. Louis, MO						9576	1-4Q		9576	
Subtotal:								9576			9576	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT

FC2

Project Total Cost:

1292514

1414756

1067191

3774461

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT
FC2

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	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	1	2	3	4
(1) FCS SoS Critical Reviews-PDR					PDR 																											
UAS PDRs																																
(2) Class I PDR									Class I PDR 																							
(3) Class IV PDR									Class IV PDR 																							
UGV PDRs																																
(4) SUGV Block 1 PDR									SUGV PDR 																							
(5) ARV A(L) PDR					ARV A(L) PDR 																											
(6) ANS PDR, (7) CDR					ANS PDR 				CDR 																							
E-IBCT Major Activities																																
(8) E-IBCT LUT									LUT 																							
E-IBCT OA																	OA 															
E-IBCT IOTE													IOTE 																			
(9) E-IBCT FUE																	IOC 															
(10) Threshold IBCT (T-IBCT) PDR, (11) CDR									PDR 				CDR 																			
T-IBCT Major Activities																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
5 - System Development and Demonstration		0604661A - FCS Systems of Systems Engr & Program Mgmt																FC2														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	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	1	2	3	4
T-IBCT Projected Delivery																																
T-IBCT TFT/LUT																	 IQT-EDIT															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT
FC2

<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
FCS SoS Critical Reviews-PDR		3Q						
UAS PDRs								
Class I PDR		1Q						
Class IV PDR		1Q						
UGV PDRs								
SUGV Block 1 PDR		1Q						
ARV A(L) PDR	2Q							
ANS PDR	1Q							
CDR		3Q						
E-IBCT Major Activities								
E-IBCT LUT		4Q						
E-IBCT OA			4Q					
E-IBCT IOTE				3Q - 4Q				
E-IBCT FUE				4Q				
Threshold IBCT (T-IBCT) PDR			2Q					
CDR				4Q				
T-IBCT Major Activities								
T-IBCT Projected Delivery					2Q - 3Q			
T-IBCT TFT/LUT					3Q - 4Q	1Q		

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt	PROJECT FC2	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Other Termination	755700	637100	620000
Special Termination	427600	415800	387500
Total Termination Liability Funding:	1183300	1052900	1007500
<p>Remarks: The SDD Contract contains FAR 52.232-22, Limitation of Funds, and FAR 52.249-6, Termination (Cost-Reimbursement) clauses to define allowable termination costs. The above costs are estimated to cover contract performance and termination liability incurred. Special Termination Cost (STC) clause is approved and included in LSI's FAR contract. STC are not included in the program budget. If the contract is terminated, the government will pay for the following prime and subcontractor costs:</p> <ul style="list-style-type: none"> - Severance Pay, as provided in FAR 31.205-6(g) - Reasonable costs continuing after termination, as provided in FAR 31.205-42(b) - Settlement of expenses, as provided in FAR 31.205-42(g), and - Costs of return of field service personnel from sites, as provided in FAR 31.205-35 and FAR 31.205-46(c) <p>Other termination is currently not covered by the Government. Therefore, due to Limitation of Funds clause in the FAR, the LSI must retain funding to cover the full other termination costs in case of termination. Those costs governed by FAR part 31 include prime and subcontractor costs for:</p> <ul style="list-style-type: none"> - Allowable Fee - Cost incurred, but not billed to the FAR contract - Non-cancelable commitments - Unexpired leases - Alteration/restorations required by leases - Loss of useful value of capital property <p>Full termination liability is a combination of the above Special Termination Cost and Other Termination Costs.</p> <p>This termination liability value represents contract values prior to any contract actions based on new direction.</p>			