

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC7 FCS - Spin Out Technology/Capability Integration	84111	111032		Continuing	Continuing

A. Mission Description and Budget Item Justification: Through FY 2009, this program funds all non-core Future Combat System (FCS) unique efforts required to develop and test the integration of FCS technologies and capabilities into the current force "Spin Out" Programs. This includes A-Kit development, software and network hardware integration, Spin Out Network architecture and development, unique Spin Out training, logistics, testing, training support and upgrades of Training Aids, Devices, Simulators and Simulations (TADSS), etc. All FCS Core development required for B Kits are included in their appropriate program element as part of core program development. The Spin Out Program will provide early capability in Force Protection, Networked Fires, Expanded Battle Space, and limited Battle Command to the current force. Beginning in FY 2010, the FCS program is transitioning to an incremental development program. As such, this program is no longer required to capture unique spin out costs.

The Spin Out Program begins the process of providing interoperability of current force systems technologies (Force XXI Battle Command, Brigade and Below (FBCB2) and the Advanced Field Artillery Tactical Data System (AFATDS)) with new FCS capabilities (Unattended Ground Sensors (UGS), the Non Line of Sight Launch System (NLOS-LS), Small Unmanned Ground Vehicle (SUGV); Block 1, and Class I Unmanned Aerial Vehicle Block 0 (UAV). This will be accomplished by integrating a common Network Integration Kit (NIK) consisting of the Joint Tactical Radio System (JTRS), the Integrated Computer System (ICS), and limited Battle Command System (BCS) software, to include System of System Common Operating Environment (SOSCOE), into the High Mobility Multipurpose Wheeled Vehicle (HMMWV).

As a result of the elimination of FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

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BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604666A - Spin Out Technology/Capability Insertion

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	64385	64900	67021
Current BES/President's Budget (FY 2010)	84111	111032	
Total Adjustments	19726	46132	-67021
Congressional Program Reductions		-368	
Congressional Recissions			
Congressional Increases		46500	
Reprogrammings	21500		
SBIR/STTR Transfer	-1801		
Adjustments to Budget Years	27		-67021

As a result of new direction to eliminate FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

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BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion			PROJECT FC7
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC7 FCS - Spin Out Technology/Capability Integration	84111	111032		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 SoS Engineering/PM FY08 - Includes engineering analysis and design, architecture developing, engineering support to ensure that FCS systems, currently under development, will interoperate with current force. Develop systems architectures that bridge the current force to the FBCT and the derived data products that are necessary for zero time system initialization for Spin Out test events, On-site tech support for current force software to the AETF to support success of Spin Out test events, scheduling, earned value program management, integrated program management, including data and supplier management, program control, procurement and contracts management, and operations management. Completed PDR and CDR like reviews for the Spin Out Configurations. Completed Specifications for the BKITs. Completed hardware and software integration of the limited EPLRS based network (A-Kit and B-Kit on ABRAMS, BRADLEY, and HMMWV). Begin to change design concept from a HBCT to IBCT for Spin Out. Analyzed effects of changing from an EPLRs based Network to Blue Force Tracking/WNW Network. Develop SoS level architecture for the SO IBCT Early Network.	8182		
Contractor SoS Engineering/PM FY09 IBCT - Completed the development of the Spin Out Early Network architecture, design, and specifications. Conducted CDR update for the Spin Out Configurations. Integrated Battle Command Software, SINCGARS, SRW and WNW Waveforms, and HMMWV A/B-Kits into a integrated Network. Coordinated Testing and analysis to verify the FCS capabilities to enhance the current IBCT. Inserted engineering changes to correct faults detected from FY 08 Preliminary-LUT. Integratee, verified and tested software changes. Supported FY09 LUT/FDTE/TFT testing.		6742	
Government and Contracting Training - FY08-09 - Spin Out training will support both the maintenance and enhancement of Current Force CCTTs, and modeling and simulations, and soldier training necessary to provide continuity of training in support of the Army's Tactical Field Test (TFT), Force Development Test and Evaluation (FDTE), and Limited Users Test (LUT) for E-IBCT.	1500	6332	
Contractor Logistics - FY09- Began the supportability planning and development of training procedures for the SO E-IBCTs, as well as the development of supportability planning and training procedures in support of government testing in FY09 efforts. This included coordination of spare parts, FSRs and labor to keep prototypes functioning during testing. It also included the fielding planning along with support planning for the FCS technologies in the IBCT. Coordinated and analyzed the logistics demonstrations and test activities in support of the SO IBCT Early Configuration.		2854	
Contractor SUGV - FY08 - In support of the Spin Out PLUT, procured, fabricated and delivered 22 prototypes (April, May 2008) for AETF tests; 16 for test, 4 spares and 2 for Network Integration. Includes costs of radios, sensor, platforms, controller unit, central processing unit, neck. Integrate SUGV Block 1 software/hardware into the Limited Battle Command Network. FY09 - In support of Spin Out IBCT (Early) refurbished and improved the 22 prototypes, in order to conduct follow-on testing (LUT/FDTE/TFT)to include	7895	2146	

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604666A - Spin Out Technology/Capability Insertion	FC7	
mobility, range, endurance, RAM-T, logistics, and environmental tests.			
Contractor T-UGS/U-UGS - FY08 - Began long lead procurement of prototype 10 T-UGS and 16 U-UGS prototypes to support the Spin Out IBCT user test. Note original test assets were procured under the core program. Since these assets are only required for the Spin Out they are funded out of the Spin Out funding line. FY09 - Refurbished the 10 T-UGS to enhance and upgrade them to the new form factor. Fabricated, assembled and delivered 6 sets of T-UGS with new form factor configuration to support the Spin Out IBCT user test. Also, provided refurbishment and new gateway enhancements to the 16 U-UGS.	1300	1922	
Contractor UAV - FY08 - Procured 11 Class I Block 0 Systems, 9 primary and 2 spares. The AV systems, based on the g-MAV airframe and engine, featured gimbaled Electro Optical (EO) and Infrared (IR) sensors, and Small Form Factor (SFF)-A JTRS radios. FY09 - Upgraded 11 Class I Block 0 Systems with electric engine controllers, and Microhard 320 Command and Control (C2) and L3 VNTX (video) analog radios	7353	7578	
Contractor B-Kits - B-Kits include: Ground Platform Communication System (GPCS), Integrated Computer System, Ground Mobile Radio (GMR)-Joint Tactical Radio System (JTRS), GPCS consists of two antenna, 4 GMR radios, 4 power amplifiers, Network INFO/SEC Unit (NIU), and Local Control Display Device (LCDD). FY08 - Delivered (5) Abrams, (5) Bradley and (4) HMMWVs B Kits in support for the planned HBCT Spin Out LUT. When the Spin Out Program was refocused to the IBCT from the HBCT, began procurement of an additional 14 B-Kits to support the dual configuration HMMWV applications. FY09 - Final fabrication, assembly and delivery of the 14 additional B-Kits for the HMMWVs integration in support of the user testing.	1300	12848	
Contractor Software FY08 - Provided for the development and modification of any platform software needed for the integration of the ICS and GPCS into the current force platforms. This includes taking Current FCS FQT software and integrating that into the Spin Out Systems. Testing this network and fixing problems that arise during the testing. Continued to integrate software drops for the Spin Out 1 LUT configuration and started the software development of the Spin Out E-IBCT configuration of the NIK. FY09 - continued to integrate software drops for the Spin Out E-IBCT LUT configuration to support the Technical Tests (TTs). Provided the framework for NLOS-LS's communications link into the network.	4985	18817	
Contractor Test FY08 - Provided for personnel and instrumentation test & evaluation equipment to support the Integrated Qualification Test (IQT) of the Spin Out P-LUT configuration on the individual platforms and the operational field events to include the TFT and the P-LUT conducted by the US Army Operational Test Command (OTC). FY09 - Provides for personnel for IQT testing for the Spin Out E-IBCT configuration on the current force platforms and the operational field events to include the TFTs and the Spin Out E-IBCT LUT conducted by OTC. This includes similar M&S and instrumentation support for the Spin Out 1 test.	5710	5183	
Government Test FY08 - Completed the IQT testing of the Spin Out 1 P-LUT configuration on the individual platforms and the operational field events to include the TFT and the Preliminary LUT conducted by the US Army Operational Test Command (OTC). This included Modeling and Simulation used to provide simulation of the FCS material and the wrap around virtual battle-space as well as unique instrumentation needed to support Spin Out 1 testing. FY09: Provides for range support for SUGV and Class 1 Block 0 UAV characterization testing. Provides range support for SO Technical Field Test (TFT) and funds E-IBCT LimitedUser Test (LUT). Funds the development and deployment of a M&S wrap around simulation and common instrumentation package for TFT and LUT.	20005	31300	
A Kit Development/Installation FY08 - A Kit Prototype Build and Integration - Provided the procurement of all material required for the current force platform A-Kits and the labor required for both the fabrication of the A-Kits as well as the installation of both A-Kits and FCS technologies and all associated material onto the current force platforms. Funded the remaining material and labor required to make the Spin Out P-LUT configuration prototype A-Kits and modified the digital current force platforms to receive the NIKs. FY09 - Funded	22324	4800	

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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion	PROJECT FC7	
material and labor required to make the Spin Out E-IBCT LUT configuration prototype A-Kits, procured material needed for the production configuration A-Kit, as well as the labor required to build the prototype A-Kits and modified the digital current force platforms to accept the production configuration NIKs. Started development of the modular A-Kit for additional HMMWV variants.			
Government Integration of FBCB2 and Network - FY08 - Provided Systems Engineering, SW code changes and technical support to ensure a successful 2008 Spin Out 1 P-LUT, including the following: Developed and implemented Spin Out 1 interface in FBCB2 EPLRS network (start/shut down and VMF exchange with FCS). Implemented a direct Ethernet interface to the Ground Mobile Radio to accommodate lack of Internet Controller. Designed and developed imagery dissemination capability and interface with FCS for FCS produced photos/imagery. Provided Onsite technical support during developmental and field tests of the SO1 functionality. Developed and implemented revised So1 interface to FBCB2 JCR 1.0. FY09 - Provided Systems Engineering, SW code changes and technical support to ensure a successful 2009 E-IBCT Spin Out LUT, including: Adapt 2008 FBCB2 6.5 capability to a BFT (SATCOM) configuration. Enhanced Imagery capability (adds MPEG, provides more robust capability). Added ability to interface simultaneously to multiple networks (FCS provided WNW and BFT) for information dissemination. Provided on site technical support during developmental and field testing. Provided continuous support to Software Problem Report (SPR) resolution. Provided dedicated BFT Network Operations Center (NOC) to support Spin Out 1 LUT (need Unclass and 6.5 based NOC). Provided same capability with FBCB2 JCR 2.x with FCS Spin Out capability but adds ability to "intelligently" route FCS images over the BFT2 network and adds limited logistics threads.		3557	7401
Small Business Innovative Research/Small Business Technology Transfer Program			3109
Total		84111	111032

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	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
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

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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion			PROJECT FC7
0605625A - Manned Ground Vehicles			100000	Continuing

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

C. Acquisition Strategy The Army initially determined that implementation of a LSI was the best program management approach for developing and managing the complexities of the Concept and Technology Development (CTD) and System Development and Demonstration (SDD) phases of the FCS (BCT) program. The Army has further determined that the LSI approach remains the most viable approach for Spin Out (SO) LRIP efforts.

Spin Out as presently structured is now Infantry-BCT focused rather than Heavy-BCT focused, and is slated for LRIP acquisition, test, and fielding in two major roll-outs: Spin Out Early IBCT Initial Production (FY10-FY12) and Spin Out Threshold IBCT LRIP (FY13 and beyond). The complete Spin Out Early IBCT Initial Production Acquisition Strategy is covered in the "Future Combat Systems Acquisition Plan- Revision E". A MS C decision for Spin Out Early in the FY 2010 budget is scheduled for FY2010 and for Spin Out Threshold in FY2013. It is anticipated that the Spin Out efforts, both Early and Threshold, will also require acquisition of Long Lead Items (LLI), tooling, facilitization, testing, ILS, STS, technical liaison personnel, and training. Spin Out Early IBCT Initial Production is envisioned for limited initial production only, based on the expectation that the Early configuration will not continue to be proliferated once the Spin Out Threshold configuration becomes available. A Full Rate Production (FRP) decision milestone for Spin Out Threshold has not yet been scheduled.

As a result of the elimination of FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604666A - Spin Out Technology/Capability Insertion							FC7		
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 SoS Engineering/PM	CPFF	Various - remarks 3-5	3100	8182	1-2Q	6742	1-2Q				18024	
Contractor Training	CPFF	Various - remarks 3-5		1500	1-2Q	6332	1-2Q				7832	
Contractor Logistics	CPFF	Various - remarks 3-5	1000		1-2Q	2854	1-2Q				3854	
Contractor SUGV	CPFF	Various - remark 2		7895	1-2Q	2146	1-2Q				10041	
Contractor T/U UGS	CPFF	Various - remark 6		1300	1-2Q	1922	1-2Q				3222	
MBE A Kit Development/Installation	CPFF	Various - remark 5	11786	22324	1-2Q	4800	1-2Q				38910	
Contractor B-kits	CPFF	The Boeing Company, St. Louis, MO (see remark 7)		1300	1-2Q	12848	1-2Q				14148	
Contractor UAV	CPFF	The Boeing Company, St. Louis, MO (see remark 1)		7353	1-2Q	7578	1-3Q				14931	
Contractor Software	MIPR	PM FCS (BCT) St. Louis, MO	8175	4985	1-2Q	18817	1-3Q				31977	
TRADOC Support											Cont.	
Subtotal:			24061	54839		64039					Cont.	

Remarks: Remark 1: Subcontractor: Honeywell Defense and Electronics System, Albuquerque, New Mexico
 Remark 2: Subcontractor: iRobot Corporation, Burlington, MA, Honeywell for Class 1
 Remark 3: Spin Out Integration into the Abrams, General Dynamics, Sterling Heights, MI
 Remark 4: Spin Out Integration into the Bradley Fighting Vehicle, BAE, Santa Clara, CA
 Remark 5: Spin Out Integration into the High Mobility Multi Wheeled Vehicle (HMMWV), AM General, Livonia, MI
 Remark 6: Textron, Willington, MA
 Remark 7: BAE Systems, Wayne NJ

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
SBIR/STTR	Direct	OSD				3109	1-2Q				3109	

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BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion						PROJECT FC7	
Adjustment to Budget Years	Direct	ABO		28	1-2Q					28	
Subtotal:				28		3109				3137	

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
Government Test	MIPR	Various	3839	20005	1-3Q	31300	1-3Q				55144	
Contractor Test				5710		5183					10893	
Subtotal:			3839	25715		36483					66037	

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
Government Integration of FBCB2 and Network				3529		7401					10930	
Subtotal:				3529		7401					10930	

Project Total Cost:			27900	84111		111032					Cont.	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604666A - Spin Out Technology/Capability Insertion

PROJECT
FC7

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
Preliminary Limited User Test (P-LUT)	P-LUT																															
Capability Development Document Update	CDD Update																															
Capability Production Document Update	CPD Update																															
Technical Field Tests (A - B - C)					TFTs																											
Force Development Testing and Experimentation					FDTE																											
Limited User Test					LUT																											

Schedule Detail (R4a Exhibit)

May 2009

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<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>
Preliminary Limited User Test (P-LUT)	4Q							
Capability Development Document Update	4Q	1Q						
Capability Production Document Update		2Q - 4Q						
Technical Field Tests (A - B - C)		3Q - 4Q						
Force Development Testing and Experimentation		4Q						
Limited User Test		4Q						

The schedule reflected in this budget justification 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.