

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604666A - Modular Brigade Enhancement						PROJECT FC7	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
FC7 FCS - Spin Out Technology/Capability Integration	27900	64385	64900	67021	51026	56287	14637	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds all non-core Future Combat System (FCS) 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, unique Spin Out training, facilities, testing, etc. These Spin Out Programs will provide early capability in Force Protection, Networked Fires, Expanded Battle Space, and limited Battle Command to the current force.

The first Spin Out Program (Spin Out 1) will begin 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) and the Non Line of Sight Launch System (NLOS-LS)). This will be accomplished by integrating a common B-Kit 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 three current force platforms, the High Mobility Multipurpose Wheeled Vehicle (HMMWV), the Abrams System Enhancement Program (SEP) tank and the Bradley A3 Infantry Fighting Vehicle (IFV).

The Army has chosen to accelerate the current SUGV (Block 1) and Class I UAV (Block 0) technology to the current force in the Spin Out 1 timeframe. Both of these technologies are not full FCS threshold but the Army believes that the current level of technology would still greatly improve our Soldiers knowledge of the battlefield. These are not part of Spin Out 1. However, the Army is attempting to get them to the current force in the Spin Out 1 timeframe.

The Class I (Block 0) UAV Acceleration will field a Class I prototype to the AETF in FY08. If the Limited User Test (LUT) is successful at achieving the Army's goal, the unit will further undergo additional operator tests and go into production in FY09 with fielding in FY10.

The SUGV (Block 1) Acceleration features a FCS chassis with the Experiment 1.1 sensor head (not full FCS threshold capability). This unmanned platform will also undergo a LUT to measure their effectiveness to the current force. The platforms are scheduled for production in FY09 with fielding in FY10.

Both of these accelerations will be connected into the limited BCN so their pictures can be used by the current force vehicles within the FCS SO1 Network.

Future Spin Outs will continue to provide additional FCS technologies and capabilities to the current force.

<u>Accomplishments/Planned Program:</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Contractor Spin Out 1 A Kit Integration - Provides for the design of the current force platform A-Kits (wiring harness, mounts, brackets etc.) needed for the integration of FCS technologies that include the Integrated Computer System (ICS) and the Ground Platform Communication System (GPCS). Also provides for the administration of both the platform contract and any subcontract effort. FY07 funded the design of the integrations kits, finalization of hardware Interface Control Documents (ICD) and the Critical Design Reviews	7200	19782	20731

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<p>(CDR) for the three LUT configuration integration kits designs. FY08 will fund the completion of any design changes for the LUT configuration, start of the integration effort for the production configuration of the GMR and the ICS into the digital current force platforms to include ICD development. FY09 will continue to fund the integration effort for the production configuration for the digital current force platforms to include the completion of the design of the A-Kits.</p>				
Contractor Spin Out 1 A Kit Prototype Build and Integration - Provides for 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. FY07 funded the procurement of some of the material for the three LUT configuration integration kits. FY08 will fund the remaining material and labor required to make the LUT configuration prototype A-Kits and modify the digital current force platforms to receive the B-Kits, and procure some of the material for production configuration A-Kits. FY09 funding will procure the remaining material needed for the production configuration A-Kit as well as the labor required to build the prototype A-Kits and modify the digital current force platforms to accept the production configuration B-Kits.	4586	6680	4735	
Contractor Spin Out 1 Test - Provides for all testing performed by the current force prime contractors in support of the A-Kit design. FY07 started contractor testing of the LUT configuration integration kits. FY08 funding completes any contractor testing required for the LUT configuration of the B-Kit and starts the contractor testing for the production configuration of the B-Kit. FY09 funding will complete the contractor testing required for the production configuration of the B-Kit.	3100	3170	1305	
Contractor Spin Out 1 Software - Provides for the development and modification of any platform software needed for the integration of the ICS and GPCS into the current force platforms. FY07 funded the finalization of the software ICDs, the fielding of software updates for training devices and the continuing development of software for the LUT configuration of the B-Kit. FY08 funding will continue to integrate software drops for the LUT configuration and will start the software development of the production configuration of the B-Kit. FY09 funding will continue to integrate software drops for the LUT configuration to support the Classified Verification Test (CVT) and continue the development of software and integration of software changes for the production configuration of the B-Kit.	2500	2000	3500	
Contractor Spin Out 1 Logistics - Provides for the development of installation and maintenance procedures, logistics support analysis, development of any required diagnostics capabilities, technical manual changes and development of training procedures required for the A-Kit. FY07 started the development of training manuals for the LUT configuration and fielded Ft. Bliss terrain databases for SO1 capability. FY08 funding will continue to develop training procedures in support of the government testing in FY08 as well as start the supportability planning and modification of training devices in support of the fielding of A & B Kits into the current force Heavy Brigade Combat Team (HBCT) structure. FY09 will continue the supportability planning and development of training procedures for the HBCTs.	1000	975	3489	
Government Spin Out 1 Test - Provides for the development and coordination along with the Army Test Command (ATC) of any plans for the testing required at Aberdeen Proving Ground (APG) and the Electronic Proving Ground (EPG) to support safety releases, reliability, environmental and any other required testing. It also provides support to the Army Evaluation Task Force (AETF) during the completion of the Technical Field Test (TFT), Force Development Test and Experimentation (FDTE), Limited User Test (LUT), Initial Operational Test and Evaluation (IOTE) as well as any other testing that utilizes the AETF with current platforms. FY07 funded the start of IQT testing for the LUT configuration on the various current force platforms. FY08 funding will complete the IQT testing of the LUT configuration on the individual platforms and the operational field events to include the TFT and the LUT conducted by the US Army Operational Command. This includes Modeling and Simulation used to provide simulation of the FCS material and the wrap around virtual battlespace as well as unique instrumentation needed to support SO1 testing. FY09 funding will start IQT testing for the production configuration as well as the Classified Verification Test (CVT) required to test the ability of the B-Kit to support classified network operations.	3839	23277	6507	

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SO1 Software Integration with Current Force Software: Software development for key current force C4ISR systems (AFATDS, FBCB2) to construct necessary interfaces with FCS technologies. 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. Contractors involved are Northrop Grummam, Lockheed Martin, and CSC to include support from FBCB2, Tactical Radio Communications Systems (TRCS), PM Battle Command, PM NetOps, and SE&I.	5675	6700	4540	
Training Devices Accomplishments - Continue the modification of training devices for the AETF and HBCTs: Includes:1. Close Combat Tactical Trainer (CCTT) 1.5M in FY08 and .7M in FY09: FY08 - Continues the FCS Spin Out hardware and software concurrency updates to the CCTT simulation facility at Fort Bliss, specifically for four Abrams M1A2 System Enhancement Package (M1A2SEP) modules, five Bradley M2A3 modules, four Reconfigurable Vehicle Simulator (RVS) modules, After Action Review (AAR) and Semi-Automated Forces (SAF). FY09 - Continues the FCS Spin Out hardware and software concurrency updates to the CCTT simulation facility at Fort Bliss. 2. Synthetic Environment (SE) (Core) .4 in FY08, .4M in FY09: FY08 - Development of concurrency updates and enhancements to the CCTT Fort Bliss terrain database (TDB). Tasks include the updating of the Database Virtual Environment Development (DVED) source data for the Fort Bliss training TDB and developing/enhancing FCS specific visual/3D models for use by the CCTT. FY09 - Continues concurrency updates and enhancements to the CCTT Fort Bliss terrain database (TDB) initiated in FY08.3. M1A2 SEP Trainer Upgrades for SO1 .6M in FY08, .1M in FY09: FY08 - Provides for the development upgrade to the currently fielded M1A2SEP MTS for individual maintenance level training of FCS unique enhancements to the M1A2SEP Abrams tank, specifically the Spin Out 1 A & B Kit technology.FY09 - Maintains concurrency with FCS Spin Out updates.4. M2A2 MTS Desktop Trainer Upgrades for SO1 .7M in FY08, .1M in FY09: FY08 - Provides for the development upgrade of the currently fielded Bradley M2A3 MTS for individual maintenance level training of FCS unique enhancements to the M2A3 Bradley Fighting Vehicle, specifically the Spin Out 1 A & B Kit technology.FY09 - Maintains concurrency with FCS Spin Out updates.			1300	
SUGV Block 1 Prototypes Acceleration - Procure, fabricate 25 prototypes for AETF tests; 19 (1per squad) for test, 4 spares and 2 for Network Integration. Includes costs of radios, sensor, platforms, controller unit, central processing unit, neck.			1265	
SUGV Block 1 Software Acceleration - Cost to integrate the pretest from SUGV into the Limited Battle Command Network for the Spin Out 1 platform.			690	
SUGV Block 1 Test Acceleration - Cost to facilitate, train, provide sustainment support and provide technical expertise for tests			879	
SUGV Block 1 SEPM Acceleration - Cost to manage program (government and LSI) to include development of logistic support and training support packages.			4845	
Class I (Block 0) Prototype Acceleration - Procure and fabricate 13 prototypes for AETF: 9 for Test, 2 spares and 2 for Network Integration. Includes cost of radio, experiment 1.1 configuration, EO/IR gimbaled sensor, surrogate controller			3300	
Class I (Block 0) Software Acceleration - Cost to integrate the pictures from Class I into the limited Battle Command Network n Spin Out 1 platforms.				
Class I (Block 0) Test Acceleration - Cost to facilitate, train, provide sustainment support and provide technical expertise for tests			2879	
Class I (Block 0) SEPM Acceleration - Cost to manage program (government and LSI) to include development of logistic support and training support packages.			4935	
Small Business Innovative Research/Small Business Technology Transfer Program		1801		

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Total

27900

64385

64900

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<u>B. Program Change Summary</u>	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008/2009)		64796	32442
Current BES/President's Budget (FY 2009)	27900	64385	64900
Total Adjustments	27900	-411	32458
Congressional Program Reductions		-411	
Congressional Recissions			
Congressional Increases			
Reprogrammings	27900		
SBIR/STTR Transfer			
Adjustments to Budget Years			32458

<u>C. Other Program Funding Summary</u>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components		592254	774257	785575	358641	214207	103230	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management		1497321	1413945	1874987	1916207	1290308	1027816	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms		43388	34379	14296	9235	4556	1336	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles		90091	96918	64744	43601	26855	3580	Continuing	Continuing
0604664A FCS Unattended Ground Sensors		10929	12967	18968	16754			Continuing	Continuing
0604665A FCS Network Hardware & Software		647649	539145	334085	365287	290790	169526	Continuing	Continuing
0604646A Non Line of Sight - Launch System	313981	253075	200099	40043	5957			Continuing	Continuing
0604647A Non Line of Sight - Cannon	108689	136929	89841	71396	43222	28775		Continuing	Continuing
0604666A FCS Spin Outs	27900	64385	64900	67021	51026	56287	14637	Continuing	Continuing
0603639A FCS MRM		44294	45866	71451	56296	106353	50757	Continuing	Continuing
0604715A STRICOM/NAWCTSD Support		378	388	398	406	415	426	Continuing	Continuing
WTCV G86100 FCS Core Program		80932	154583	148028	677820	2175327	5744649	Continuing	Continuing
WTCV G86200 FCS Spin Out Program		19987	176667	367962	550821	766274	944999	Continuing	Continuing

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AMMO E88103					24634	47624	61762	134020
0604645 F52 UAV Recon & Sensors	26360						Continuing	Continuing
0604645 F53 UGV	106516						Continuing	Continuing
0604645 F54 UGS	10612						Continuing	Continuing
0604645 F55 SUSTAINMENT	106517						Continuing	Continuing
0604645 F57 MANNED GROUND VEHICLES	563946						Continuing	Continuing
0604645 F61 SoS Engineering and Program Management	2142970						Continuing	Continuing

Comment:

D. Acquisition Strategy The FY2008 President's budget reflects the Army successfully achieving a balance between three competing priorities: legislation, the demands of war, and the need to modernize the force. The FCS program was adjusted to help strike the balance. Due to FCS requirements changing in the last 3 years, coupled with the challenge to meet all its reset and modernization requirements, the number of platforms that the Army plans to develop and buy within the FCS family of systems, as well as the timeline for buying and fielding these platforms and simultaneously improving the Current Force through early delivery of selected FCS capabilities has been adjusted. The adjustments maintained the Army focus on FCS-equipped Brigade Combat Team (BCT) development and substantially reduced program risk. The following are adjustments made to the FCS program which affected the Spin Out program:

1. Adjusting the development of the Core and Spin Out capabilities so that the Army can benefit from the economies realized with concurrent testing.
2. Increasing the rate of fielding of FCS technologies to the current force
3. Fund the Spin Out Technology Insertion program.

ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604666A - Modular Brigade Enhancement							PROJECT FC7		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor SO 1 A kit Integration	CPFF	Various - remarks 3 - 5		7200	2-3Q	19782	1-2Q	20731	1-2Q	Cont.	Cont.	
Contractor SO 1 A kit Prototype	CPFF	Various - remarks 3 - 5		4586	2-3Q	6680	1-2Q	4735	1-2Q	Cont.	Cont.	
Contractor SO 1 Software	CPFF	Various - remarks 3 - 5		2500	2-3Q	2000	1-2Q	3500	1-2Q	Cont.	Cont.	
Contractor SO 1 Logistics	CPFF	Various - remarks 3 - 5		1000	2-4Q	975	1-2Q	3489	1-2Q	Cont.	Cont.	
SO1 Software Integration with Current Force Software	CPFF	Various		5675	1-2Q	6700	1-2Q	4540	1-2Q	Cont.	Cont.	
Modification of Training Devices	CPFF	Various					1-2Q	1300	1-2Q	Cont.	Cont.	
SUGV Block 1 Prototype Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 2)					1-3Q	1265	1-3Q	Cont.	Cont.	
SUGV Block 1 Software Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 2)					1-3Q	690	1-3Q	Cont.	Cont.	
SUGV Block 1 Test Acceleration	MIPR	PM FCS (BCT) St. Louis, MO					1-3Q	879	1-3Q	Cont.	Cont.	
SUGV Block 1 SEPM Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 2)					1-3Q	4845	1-3Q	Cont.	Cont.	
Class 1 (Block 0) Prototype Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 1)					1-3Q	3300	1-3Q	Cont.	Cont.	
Class 1 (Block 0) Software Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 1)					1-3Q			Cont.	Cont.	
Class 1 (Block 0) SEPM Acceleration	CPFF	The Boeing Company, St. Louis, MO (see remark 1)					1-3Q	4935	1-2Q	Cont.	Cont.	
Class 1 (Block 0) Test Acceleration	MIPR	PM FCS (BCT) St. Louis, MO					1-3Q	2879	1-3Q	Cont.	Cont.	
Subtotal:				20961		36137		57088		Cont.	Cont.	

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Remarks: Remark 1: Subcontractor: Honeywell Defense and Electronics System, Albuquerque, New Mexico

Remark 2: Subcontractor: iRobot Corporation, Burlington, MA

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

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR		OSD				1801	2-3Q				1801	
Subtotal:						1801					1801	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government SO1 Test	MIPR	Various		3839		23277	1-3Q	6507	1-3Q	Cont.	Cont.	
Contractor SO 1 Test	CPFF	Various		3100		3170	1-3Q	1305	1-3Q	Cont.	Cont.	
Subtotal:				6939		26447		7812		Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
Project Total Cost:				27900		64385		64900		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

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Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	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) A-Kit Critical Design Review	▲ A-Kit CDR																											
B Kits Delivered	■				B Kits Delivered																							
Installation of A/B Kits Thru System Qualification Test / Safety Release on CFV	■				Installation thru SR on CFV																							
Technical Field Test					TFT ■																							
Force Development Testing and Experimentation					FDTE ■																							
Limited User Test					LUT ■																							
(2) Milestone C					MS C ▲																							
Classified Verification Test									CVT ■																			
Initial Operational Test and Evaluation													IOTE ■															
(3) First Unit Equipped																	FUE ▲											
Fielding																	Fielding ■				■							
Class I UAV (Block 0)																												
(4) Class I UAV (Block 0) Contract Award					▲ Contract Award																							
Class I UAV (Block 0) FDTE Excursion					■ Block 0 FDTE																							
Class I UAV (Block 0) LUT Excursion					■																							

Schedule Profile (R4 Exhibit)

February 2008

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Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	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
	Operational Test	<div style="position: relative; height: 100px;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> <p>5</p> <p>Contract Award</p> <p>SUGV FDTE</p> <p>SUGV LUT</p> </div> </div>				Test																						
SUGV (Block I)																												
(5) SUGV (Block I) Contract Award																												
SUGV (Block I) FDTE Excursion																												
SUGV (Block I) LUT Excursion																												
Operational Test										Test																		

Schedule Detail (R4a Exhibit)

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<u>Schedule Detail</u>	<u>FY 2007</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>	
A-Kit PDR								
A-Kit Critical Design Review	1Q							
B Kits Delivered	2Q - 4Q							
Installation of A/B Kits Thru System Qualification Test / Safety Release on CFV	2Q - 4Q	1Q						
Technical Field Test		2Q						
Force Development Testing and Experimentation		3Q						
Limited User Test		3Q - 4Q						
Milestone C			2Q					
Classified Verification Test				1Q - 2Q				
Initial Operational Test and Evaluation					1Q - 2Q			
First Unit Equipped					3Q			
Fielding						2Q - 4Q	1Q - 4Q	
Class I UAV (Block 0)								
Class I UAV (Block 0) Contract Award		1Q						
Class I UAV (Block 0) FDTE Excursion		3Q						
Class I UAV (Block 0) LUT Excursion		4Q						
Operational Test			3Q - 4Q					
SUGV (Block I)								
SUGV (Block I) Contract Award		1Q						
SUGV (Block I) FDTE Excursion		3Q						
SUGV (Block I) LUT Excursion		4Q						
Operational Test			2Q - 4Q					