



Future Combat Systems—Enabling Soldiers to Meet Tomorrow's Challenges

Work on the Future Combat Systems (FCS)—scheduled for initial fielding in 2008—is progressing rapidly. This family of systems will equip the Army of the future—the Objective Force. FCS-equipped forces will provide the Army with a rapidly deployable yet highly lethal and survivable combat force. Since the end of the Cold War, the Army has completed a series of studies, hands-on experiments and wargames to create the vision for the land combat force of the 21st century. The Army was recently joined in its endeavor by the Defense Advanced Research Projects Agency (DARPA); thanks to the Army/DARPA team, the capabilities of the FCS will play a critical part in the realization of this vision.

FCS—The Concept of an Integrated Family of Highly Capable Combat Systems

• Manned Platforms			• Unmanned Platforms		
 Resupply	 APC, C ² , CV, RV	 Mortar	 Small UAV	 Organic UAV	 Tactical UAV
 NLOS	 BLOS/LOS	 Reconnaissance and Surveillance	• Combat Robots		• Soldier Robots
			 Armed Reconnaissance	 Tracked	 Legged
				 Mule	 Mule

APC = Armored Personnel Carrier, C² = Command and Control, CV = Control Vehicle, RV = Reconnaissance Vehicle, NLOS = Non-Line-of-Sight, BLOS = Beyond Line-of-Sight, UAV = Unmanned Aerial Vehicle

The FCS is in the concept and technology development (CTD) stage. As a result, while no hardware has been constructed yet, a concept of the final form of the FCS is beginning to emerge. This vision foresees a mix of manned and unmanned vehicles, sensors and weapons tied together by an advanced communications network. Various UAVs and robotic platforms will play a key role in the FCS, serving in reconnaissance, combat and combat support roles. The vehicles and equipment of the FCS will enable well-trained U.S. soldiers to fight, survive and win on the battlefields of the future while also dramatically reducing deployment time and logistics requirements.

FCS—Reducing the Logistics Footprint

Today's Army forces require a significant logistics tail to provide spare parts, fuel, food, ammunition and other supplies. A key goal for the FCS is to dramatically reduce the size of this support force, making U.S. Army forces easier to deploy and sustain. Initial analysis has already demonstrated the potential support requirement reductions that the FCS could make possible (e.g., 72 percent less ammunition required; see chart).

FCS Brigade Concept Compared to Current Armored Cavalry Regiment (ACR)*	
Shooter Vehicles	110%
Soldiers	60%
Support Unit Soldiers	55%
Lift Required for Transport	38%
Water Usage	60%
Fuel Usage	5%
Ammunition Usage	18%
*Minus aviation assets	



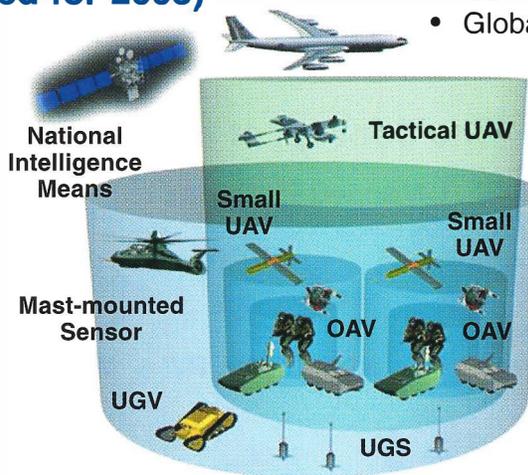
FCS—Enabling Situational Understanding for Soldiers

A key part of the FCS is the creation of an “information sphere”—an operational environment in which U.S. soldiers will know not only their own location but also the locations of friendly and enemy forces. This knowledge advantage over an enemy force will allow the FCS-equipped Objective Force to operate in entirely new ways while retaining the ability to close with and destroy enemy forces and seize key terrain when required. To enable this new kind of fighting, intelligence and surveillance sensors must be integrated into a seamless web that provides a continuous, accurate flow of knowledge to U.S. troops and their multinational and interagency allies.

FCS Sensor Network (Projected for 2008)

- Individual soldier system
- Vehicle mobility/weapon sight
 - LWIR FLIR, EO
- Vehicle warning and defensive aids
 - MWS, EO, glint, LRF, laser warning
- 5m RSTA mast for R&S vehicle
 - LWIR/MWIR FLIR, EO, LRF, laser warning, K_a band radar
- 2m RSTA mast for ARV
 - LWIR FLIR, EO
- Modular payloads for UAVs
 - MWIR, IICCD, LRF, gated SWIR
 - SIGINT
 - SAR/MTI radar
 - NBC, hyperspectral

- Joint STARS
- U2 Aircraft
- Global Hawk



LWIR=Long Wave Infrared, **FLIR**=Forward Looking Infrared, **EO**=Electro-Optical, **MWS**=Millimeter Wave Sensor, **LRF**=Laser Range Finder, **RSTA**=Reconnaissance, Surveillance, Target Acquisition, **R&S**=Reconnaissance and Surveillance, **MWIR**=Medium Wave Infrared, **ARV**=Armed Reconnaissance Vehicle, **UAV**=Unmanned Aerial Vehicle, **IICCD**=Image Intensified Charged Couple Device, **SWIR**=Short Wave Infrared, **SIGINT**=Signals Intelligence, **SAR**=Side-looking Aperture Radar, **MTI**= Moving Target Indicator, **NBC**=Nuclear-Biological-Chemical, **Joint STARS**=Joint Surveillance Target Attack Radar System, **OAV**=Organic Aerial Vehicle, **UGV**=Unmanned Ground Vehicle, **UGS**=Unmanned Ground Sensor

Putting It All Together—The Lead Systems Integrator (LSI)

The FCS is being developed using an entirely new model for defense procurement: the Lead Systems Integrator (LSI). Rather than a single platform (such as a tank or helicopter), the FCS will include many systems that, by operating together, will produce combat power in excess of today’s forces. To accomplish this integration, an LSI is an essential part of developing the FCS. In 2002, the FCS LSI contract was awarded to a Boeing/SAIC team.

The LSI is not a type of contract; it is a new way of operating. Unlike a traditional lead contractor, the LSI will focus on systems engineering, system integration, system planning and control. At the same time, the LSI will rely on various industry team members to develop the requisite technology to tackle the most difficult technical challenges with the individual pieces of the FCS. The LSI will be the integrator, not the builder, of the various parts of the FCS family of vehicles and equipment. The new approach is necessary due to the compressed schedule and fully integrated nature of the FCS.

Why the LSI? The LSI is responsible for

- a new way to develop defense systems: a partnership between government, the LSI and the best of industry;
- maintaining the focus on enabling soldiers, not just building “hardware”;
- rapid development and insertion of new technology and systems;
- seamless integration of the multiple pieces of the Future Combat Systems.