C³I Advanced Development (U.S. Air Force) - Archived 2/2007

Outlook

- Forecast International projects the U.S. Air Force will spend some $356.63 million over the next 10 years on its C³I Advanced Development program

- In FY 2007, expect Project 4872 to complete developing technologies that will revolutionize air mobility information superiority

Forecast Funding Levels 2006 - 2015

Values (In millions of U.S. FY06 dollars)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	30.13	37.37	30.71	37.73	37.82	42.87	35	35	35	35

Years
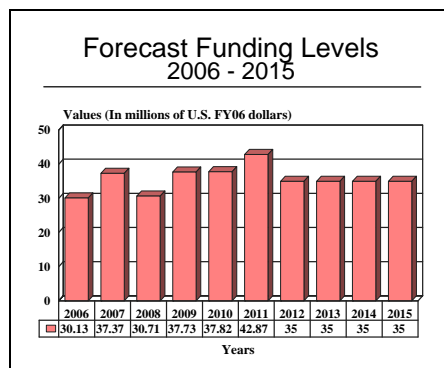
Orientation

Description. The C³I Advanced Development program is a United States Air Force research and development endeavor. The program develops aerospace command, control, communications, and intelligence (C³I) technologies for the Air Force warfighter. The technologies developed under the program support the global exchange of information to ensure the execution of U.S. Air Force missions.

Sponsor
U.S. Air Force
   U.S. Air Force Research Laboratory
   Rome Research Site
   Griffiss AFB, New York (NY)

Status. Ongoing research and development.

Total Produced. Not applicable.

Application. Command, control, and communications.

Price Range. Not applicable.

Contractors

Contractors(s) not selected or not disclosed.

Technical Data

Design Features. PE#0603789F is composed of three projects: Project 4072, Project 4216, and Project 4872.

<u>Project 4072, Dominant Battlespace Awareness</u>. Project 4072 develops technologies essential to

achieving Dominant Battlespace Awareness (DBA). DBA is the possession of knowledge that enables warfighters to take full command of their combat areas. Technology development to achieve DBA includes

fusing information from multiple sources to create a digital representation of the battlespace.

In addition to creating information fusion technologies, work conducted under Project 4072 involves producing technologies that access, extract, process, and store information. Project 4072 also devises technologies for machine reasoning, pattern recognition, and timeline analysis.

Project 4216, Battlespace Information Exchange. Project 4216 develops communications technologies that allow the worldwide exchange of near-real-time voice, data, video, and imagery information. Technology developments under Project 4216 include communications transmission systems.

Project 4872, Aerospace Information Dominance. Project 4872 develops technologies necessary for command and control (C^2) decision-making. Specifically, Project 4872 provides the technology needed to enable the U.S. Air Force warfighter to plan, assess, execute, monitor, and replan missions rapidly. Work conducted under Project 4872 includes creating distributed C^2 technologies that provide the commander with seamless access to tailored multimedia data.

Variants/Upgrades

The purpose of the C^3I Advanced Development program is to upgrade existing C^3I technology for the United States Air Force.

Program Review

Background. As mentioned earlier, the C^3I Advanced Development program is composed of three projects.

Project 4072, Dominant Battlespace Awareness. In FY03, Project 4072 demonstrated fusion systems and architectures capable of exploiting multiple sources to find and track moving air and ground targets. Additionally, the project initiated collaborative collection and fusion of intelligence, surveillance, and reconnaissance information to improve accuracy and timeliness for situational awareness and targeting.

In FY04, Project 4072 completed the development of tools that extract information from data derived from measurement and signature intelligence (MASINT), as well as from image intelligence. Also in FY04, the project began developing an exploitation toolkit for advanced intelligence, surveillance, and reconnaissance (ISR) platforms that detect and track air and ground targets.

In FY05, Project 4072 continued developing an operations-based approach for intelligent and adaptive intelligence, surveillance, and reconnaissance (ISR) management based on quantified information deficiencies in the fused data-space. The project also continued to develop and deliver an initial fusion evaluation environment, providing for the analysis, evaluation, and transition of fusion products to the warfighter.

Recent Activity. In FY06, look for Project 4072 to work on developing an automated process to visualize the overlaying of disparate information domains on a single screen and provide an optimal means of fusing all source intelligence data. In FY07, expect the project to work on developing and demonstrating advanced fusion tools to enhance the capability for Predictive Battlespace Awareness (PBA).

Project 4216, Battlespace Information Exchange. In FY03, Project 4216 developed and demonstrated advanced application and network technologies that provide the capability to monitor, understand, and maintain the status of distributed C^2 weapon systems. In FY04, the project continued developing and demonstrating information hiding, steganography, and digital watermarking for information protection and authentication systems.

In FY05, Project 4216 continued developing the Intelligent Information Manager, Integrated Network Controller, and the Global Media Access Controller into a software application for a software-defined radio in preparation for transitioning the capability to the Joint Tactical Radio System clusters.

Recent Activity. In FY06, look for Project 4216 to work on developing networked communications to support Special Operations Forces (SOF) ground elements, connecting them into the Airborne Network to weapon platforms. In FY07, expect the project to demonstrate multiplatform tracking.

Project 4872, Aerospace Information Dominance. In FY03, Project 4872 continued to develop and integrate multiuser collaborative interaction technology for adaptive visualization and presentation. In FY04, the project continued developing and demonstrating data system wrapper technologies to integrate disparate and legacy C^2ISR information systems into the Joint Battlespace Infosphere (JBI).

In FY05, Project 4872 worked on developing tools and technologies to revolutionize air mobility information superiority to respond swiftly and effectively to global demands across all spectrums of operations from humanitarian relief to a major conflict. Also in FY05, the project began developing an automatic options generation capability for correcting failures and degradations within the C^2 system of the Advanced Technology Air Operations Center weapon system.

Recent Activity. In FY06, look for Project 4872 to begin developing automated machine-to-machine exchange of selected information between Combat Air Force (CAF) aircraft, Mobility Air Force (MAF) aircraft, their respective command and control elements. In FY07, expect completion of developing tools and technologies, revolutionizing air mobility information superiority to respond to operations from humanitarian relief to a major military conflict.

Funding

U.S. FUNDING

	FY05 QTY	FY05 AMT	FY06 QTY	FY06 AMT	FY07 QTY	FY07 AMT	FY08 QTY	FY08 AMT
RDT&E (U.S. Air Force)								
PE#0603789F	-	35. 77	-	30.13	-	37.37	-	30.71

	FY09 QTY	FY09 AMT	FY10 QTY	FY10 AMT	FY11 QTY	FY11 AMT
RDT&E (U.S. Air Force)						
PE#0603789F	-	37.73	-	37.82	-	42.87

All $ are in millions.

Source: U.S. Department of the Air Force FY 2006/2007 RDT&E Budget Document

Recent Contracts

Little contract information is available that can be directly attributed to work performed under the C^3I Advanced Development program. No recent contracts have been identified.

Timetable

Month	Year	Major Development
Aug	1982	Advanced Tactical Radar contract awarded
Dec	1983	Surveillance network single-site test
Jul	1985	Surveillance network dual-site test
	1990	CART CDR completed for the next-generation AWACS
	1992	Development of enhanced communications networks initiated for improved MLS and survivable networking
	1993	Ground test of integrated, quarter-filled CART array completed
	1994	Initial joint-service SPEAKEASY Phase I demonstration
	1995	Final joint-service SPEAKEASY Phase I demonstration
	1996	Phase 2 SPEAKEASY programmable radio architecture established
	1998	Advanced communications technologies integrated into the IFTW Advanced Technology Demonstration
	1999	Demonstration of active radar identification technology on board an operational surveillance platform
	FY 2000	Project 4072 develops target identification systems
	FY 2001	Project 4216 develops an Intelligent Adaptive Communications Controller (IACC) system

Month	Year	Major Development
	FY 2002	Project 4872 develops distributed C^2 technologies
	FY 2003	Project 4925 continues developing and demonstrating next-generation distributed collaborative environments
	FY 2004	Project 4216 continues developing information hiding, steganography, and digital watermarking for information protection and authentication systems
	FY 2005	Project 4872 worked on developing tools and technologies to revolutionize air mobility information superiority
	FY 2006	Look for Project 4072 to work on developing an automated process to visualize the overlaying of disparate information domains on a single screen
	FY 2007	Expect Project 4216 to demonstrate multiplatform tracking

Worldwide Distribution

The C³I Advanced Development program is a **United States Air Force** program.

Forecast Rationale

The C³I Advanced Development program researches and develops aerospace command, control, communications, and intelligence (C³I) technologies for the United States Air Force fighter. The technologies researched and developed under the program support the global exchange of information to ensure the execution of U.S. Air Force missions.

As indicated by the **Ten-Year Outlook** chart, Forecast International projects the U.S. Air Force will spend some $356.63 million over the next decade on its C³I Advanced Development program. Once again, the U.S.

Air Force's desire to achieve information superiority over United States enemies is driving its investment in the U.S. Air Force C³I Advanced Development program.

A major thrust of the C³I Advanced Development program is the development of sophisticated data handling and event visualization technologies. Successful development of these technologies will enable U.S. Air Force intelligence analysts to better utilize the vast amounts of data available to them.

Ten-Year Outlook

			High Confidence Level			Good Confidence Level			Speculative			Total
Designation	Application	Thru 05	06	07	08	09	10	11	12	13	14	15	06-15
C³I ADVANCED DEVELOPMENT	C³I TECHNOLOGY DEVELOPMENT (U.S. AIR FORCE)	494.52	30.13	37.37	30.71	37.73	37.82	42.87	35.00	35.00	35.00	35.00	356.63

ESTIMATED CALENDAR YEAR FUNDING ($ in millions)

February 2006