

ARCHIVED REPORT

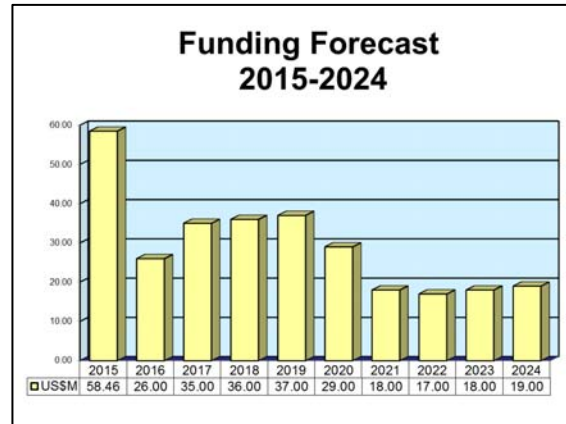
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Exploitation Systems

Outlook

- Forecast International projects that DARPA will spend approximately \$293 million on the Exploitation Systems project over the next 10 years
- The DoD's desire to develop technology that will permit U.S. military personnel to more effectively use ISR data in the execution of wide-area search and other missions is driving this program's funding stream
- In FY16, expect the Media Forensics subproject to work on developing approaches for countering evolving anti-forensics technologies



Orientation

Description. The Exploitation Systems research and development project of the U.S. Defense Advanced Research Projects Agency (DARPA) develops algorithms, software, and information-processing systems to extract information from massive intelligence, surveillance, and reconnaissance (ISR) data sets. In particular, the project develops new technologies for the detection and discrimination of targets from clutter, the classification and fingerprinting of high-value targets, and the localization and tracking of targets over wide areas, as well as for threat network identification and analysis.

Sponsor

U.S. Defense Advanced Research Projects Agency
3701 N Fairfax Dr
Arlington, VA 22203-1714

Status. Ongoing research and development.

Application. Intelligence, surveillance, and reconnaissance.

Contractors

Contractor(s) not selected or not disclosed.

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Services; Companies, Contractors, Force Structures & Budgets) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Exploitation Systems

Technical Data

Project efforts focus on difficult ISR environments. These include: 1) urban environments with extensive building obscuration, large volumes of civilian traffic, and feature-rich terrain; 2) mountain environments with highly variable terrain elevation, complex local and regional threat networks, and predominantly dismounted adversaries; and 3) jungle environments with targets under heavy canopy, filled with animals and other sources of clutter masking human activity, and with widely dispersed threat activities.

This project is part of PE#0603767E (Sensor Technology) and consists of the following subprojects.

Insight. The Insight subproject is developing the next-generation multi-intelligence (multi-INT) exploitation and resource management system. Insight provides new exploitation capabilities through an integrated, standards-based system. Insight will enable the detection of threat networks and irregular warfare operations through the analysis of information from imaging and non-imaging sensors and other sources. The technical approach of this subproject emphasizes

model-based correlation and adversary behavior modeling and a unified data management and processing environment, and applies threat network analysis tools, resource management tools, novel exploitation algorithms and analysis methodologies, and tools to integrate human and machine processing (including visualization, hypothesis manipulation, online learning, and distributed social intelligence).

Media Forensics (formerly Battlefield Evidence). The Media Forensics subproject creates technologies for analyzing diverse types of content and media to determine their trustworthiness for military and intelligence purposes. Current approaches to media forensics for authentication and verification are manpower-intensive and require analysts and investigators to undertake painstaking analyses to establish context and provenance. Media Forensics will develop, integrate, and extend image and video analytics to provide forensic information that can be used by analysts and automated systems. Technologies will transition to operational commands and the intelligence community.

Program Review

Background. PE#0603767E funds the Exploitation Systems project. Recent developments of the Exploitation Systems project are as follows.

Insight. In FY11, the Insight subproject designed and developed multi-source exploitation tools for modeling and detection, element discovery and labeling, and multi-INT fusion. In FY12, the subproject worked on populating a development database with collected data to support rapid prototyping of innovative exploitation, collection management, and other analytic tools.

In FY13, the Insight subproject worked on conducting a system integration demonstration of functionality and performance of the next-generation multi-INT exploitation and resource management system. In FY14, the subproject augmented the reasoning component of the aforementioned system in support of the mission profiles of emerging operational environments. In FY15, the subproject worked on testing and maturing advanced analytic and resource management technologies in live and virtual operational environments.

In FY16, expect Insight to test advanced analytic and resource management technologies in coordination with a military training rotation to demonstrate improvements and maturity of system capabilities. Also, look for the subproject to prepare and finalize software packages and documentation for transition to services.

Media Forensics. In FY15, the Media Forensics subproject worked on formulating approaches to automatically detect when image and video files have been altered or manipulated. The subproject also initiated development of techniques for detection of information sources not consistent with other observations, indicative of possible disinformation efforts.

In FY16, expect Media Forensics to work on developing advanced techniques for media fingerprinting and the ability to search large repositories for content produced by the same device. Also, look for the subproject to work on developing approaches for countering evolving anti-forensics technologies.

Exploitation Systems

Funding

	U.S. FUNDING					
	FY14 <u>QTY</u>	FY14 <u>AMT</u>	FY15 <u>QTY</u>	FY15 <u>AMT</u>	FY16 <u>QTY</u>	FY16 <u>AMT</u>
RDT&E (DARPA) PE#0603767E Exploitation Systems Project	-	36.91	-	58.46	-	28.66
	FY18 <u>QTY</u>	FY18 <u>AMT</u>	FY19 <u>QTY</u>	FY19 <u>AMT</u>	FY20 <u>QTY</u>	FY20 <u>AMT</u>
RDT&E (DARPA) PE#0603767E Exploitation Systems Project	-	40.70	-	30.14	-	19.14

All \$ are in millions.

Source: DARPA FY16 RDT&E Budget Document

Contracts/Orders & Options

No contract information regarding the Exploitation Systems project has been made public. Consequently, no recent contracts have been identified.

Timetable

<u>Year</u>	<u>Major Development</u>
FY10	POSSE subproject examines feasibility of new sensor designs
FY11	Foliage-Penetrating Radar Planning and Exploitation subproject evaluates and optimizes algorithms that will mitigate impact on radar systems of non-living objects in motion and better distinguish between humans and animals
FY12	Multi-Sensor Exploitation subproject demonstrates flow-based tracker improvements
FY13	WISR subproject to develop and implement techniques for automatically locating and extracting relevant videos and images in particular area
FY14	WISR subproject to create techniques for automatically correlating and integrating diverse media types, such as still images, videos, audio, and text
FY15	Insight subproject works on testing and maturing advanced analytic and resource management technologies in live and virtual operational environments
FY16	Media Forensics subproject to work on developing approaches for countering evolving anti-forensics technologies

Worldwide Distribution/Inventories

The U.S. Defense Advanced Research Projects Agency oversees the Exploitation Systems project.

Exploitation Systems

Forecast Rationale

The U.S. Defense Advanced Research Projects Agency's Exploitation Systems project develops new technologies for the detection and discrimination of targets from clutter, the classification and fingerprinting of high-value targets, and the localization and tracking of targets over wide areas, as well as for threat network identification and analysis.

Projected funding for the project is being driven by the Pentagon's desire to develop technology that will allow U.S. military personnel to more successfully use ISR data for wide-area searches, border and road

monitoring, high-value target tracking, over-watch purposes, and other missions. Forecast International projects that DARPA will invest at least \$275 million into the Exploitation Systems project over the next 10-plus years. Expect projected funding to average approximately \$32 million per year from FY16 through FY18.

According to DARPA FY16 budget documents, planned spending is expected to decrease greatly from the FY15 budget request. Forecast International's current projection reflects that reduction.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR RDT&E FUNDING (in millions US\$)												
Designation or Program	High Confidence				Good Confidence			Speculative			Total	
	Thru 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		2024
MFR Varies												
EXPLOITATION SYSTEMS Military <> United States <> Department of Defense												
	898.75	58.46	26.00	35.00	36.00	37.00	29.00	18.00	17.00	18.00	19.00	293.46
Total	898.75	58.46	26.00	35.00	36.00	37.00	29.00	18.00	17.00	18.00	19.00	293.46