



INSTITUTE FOR DEFENSE ANALYSES

## **DATAWorks 2020 Poster: Overarching Tracker**

Heather Wojton Project Leader

Caitlan Fealing

March 2020

Approved for Public Release

Distribution Unlimited.

. IDA Document NS D-13108

Log: H 2020-000083

INSTITUTE FOR DEFENSE ANALYSES  
4850 Mark Center Drive  
Alexandria, Virginia 22311-1882



The Institute for Defense Analyses is a nonprofit corporation that operates three Federally Funded Research and Development Centers. Its mission is to answer the most challenging U.S. security and science policy questions with objective analysis, leveraging extraordinary scientific, technical, and analytic expertise.

#### About This Publication

This work was conducted by the Institute for Defense Analyses (IDA) under contract HQ0034-19-D-0001 Task BD-09-2299(90) "Test Science Applications," for the Office of the Director, Operational Test and Evaluation. The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

#### Acknowledgments

The IDA Technical Review Committee was chaired by Mr. Robert R. Soule and consisted of Brian Vickers, Dean Thomas, Heather Wojton, Kevin Kirshenbaum, and Rebecca Medlin from the Operational Evaluation Division.

#### For more information:

Heather Wojton, Project Leader  
hwojton@ida.org • 703-845-6811

Robert R. Soule, Director, Operational Evaluation Division  
rsoule@ida.org • (703) 845-2482

#### Copyright Notice

© 2020 Institute for Defense Analyses  
4850 Mark Center Drive, Alexandria, Virginia 22311-1882 • (703) 845-2000

This material may be reproduced by or for the U.S. Government pursuant to the copyright license under the clause at DFARS 252.227-7013 [Feb. 2014].

Rigorous Analysis | Trusted Expertise | Service to the Nation

INSTITUTE FOR DEFENSE ANALYSES

IDA Document NS D-13108

**DATAWorks 2020 Poster: Overarching Tracker**

Heather Wojton, Project Leader

Caitlan Fealing



## Executive Summary

---

The attached poster was developed for the 2020 DATAWorks. It describes IDA's Overarching Tracker, and it will be presented during the poster session.

Since 2009, OED has conducted annual assessments of reliability (the Overarching Tracker) to allow our department to collect metadata related to the Test Plans, Test and Evaluation Master Plans (TEMPs), and Test Reports that we sign. The information received from the survey includes an overview of: the number of reports, developmental testing (DT) data, operational testing (OT) data, Modeling and Simulation (M&S), testing ranges, and test outcomes (suitability, reliability, availability, maintainability, and survivability). These data allow us to provide DOT&E with progress updates upon request rather than only at the end of a fiscal year.

Each year the survey is updated to include questions that reflect DOT&E's evolving priorities. Specifically, since 2016, the survey included questions to address rapid acquisition pathways, test size, reasons for effectiveness and suitability limitations, and test range utilization.

In Fiscal Year 2019, DOT&E completed 104 total actions across 77 unique programs (23 TEMPs, 47 Test

Plans, and 34 Test Reports). The actions indicate that DOT&E's involvement in the test planning typically results in an improved allocation of resources. In the past two Fiscal years, DOT&E has focused on shifting towards larger ACAT ID and IC programs, which demonstrate a greater focus on using DT data for OT evaluation. In addition, many programs used Integrated Testing and Modeling and Simulation to further implement their goal of improving operational testing. One result of the improved strategy is that DOT&E identified Human-System Interactions that degraded system performance in 21% of FY2019 OT reports, indicating that it is still possible to make progress with these systems.

Overall, data from the Overarching Tracker shows trends of more efficient testing that allows for fewer tests and an increased use of empirically-vetted surveys in Test Plans to improve validity.



# Caitlan Fealing

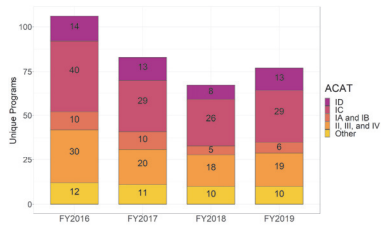
Institute for Defense Analyses

## Overview

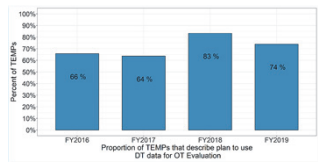
Since 2009, IDA's Operational Evaluation Division (OED) has used an Overarching Tracker survey to collect metadata from its researchers related to DOT&E Test and Evaluation Master Plans (TEMPs), Test Plans, and Test Reports.

Besides enabling OED to quickly generate progress reports upon request, the tracker data provides more accurate information about systems for our sponsors, and enables us to identify our own strengths and areas that need improvement.

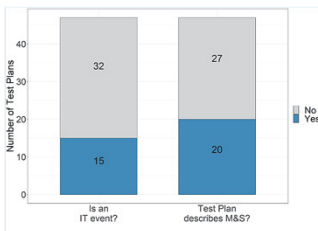
### DOT&E's focus has shifted towards larger programs (ACAT ID and IC)



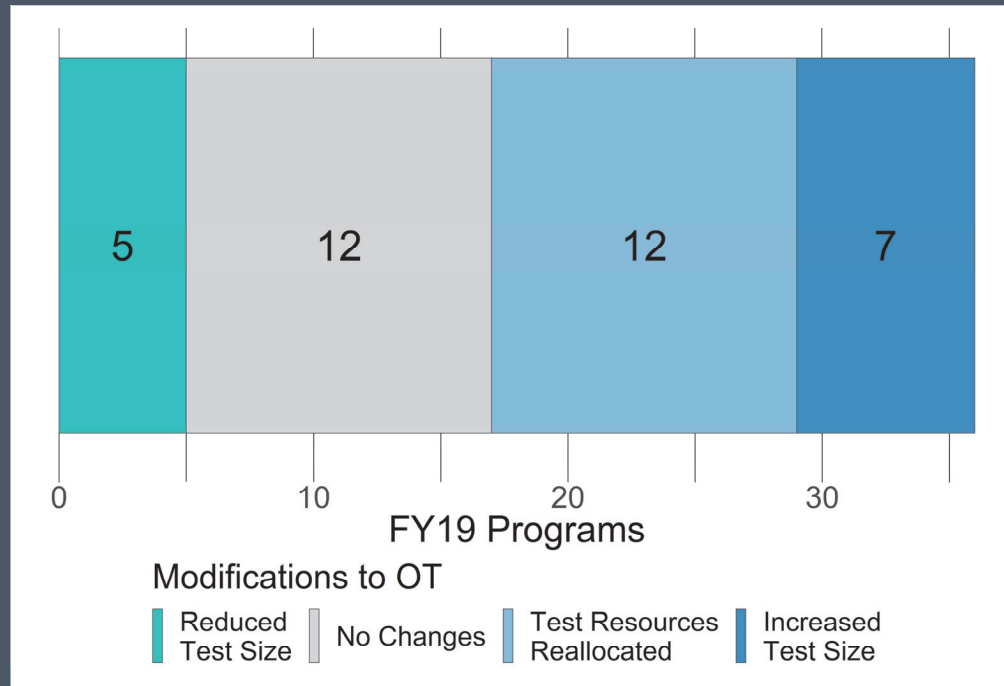
### An increased percentage of TEMPs are using Developmental Testing (DT) data for Operational Testing (OT) evaluation



### Many programs used Integrated Testing (IT) and Modeling and Simulation (M&S) as part of their Operational Testing Approach



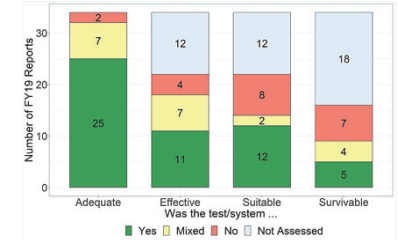
# IDA tracks the impact of DOT&E policies and guidance on test strategies and outcomes



In 80% of cases, DOT&E involvement in test planning for FY19 programs did not increase test resource requirements

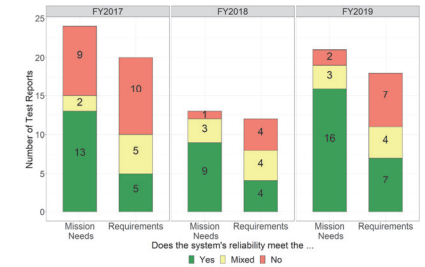
DOT&E found most programs to be at least partially adequate, effective, and suitable

Survivability is only metric where less than 50% of evaluated systems were found unsatisfactory

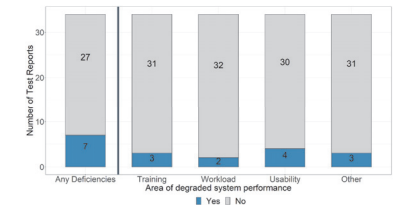


\*Nearly all programs that did not assess one of these measures were early test events (Pre-IOT). Similarly, some systems were deemed to have insufficient data to definitively conclude if the system meets the requirements for the evaluation.

### System reliability meets mission needs more often than it meets test requirements



Seven of 34 reports (21%) indicated there were Human-System Interaction (HSI) deficiencies that degraded system performance



### Future Initiatives

- Increase design of experiments (DOE) implementation in Test Plans to increase efficiency.
- Continue and increase early DOT&E involvement in testing, including use of DT data in OT evaluation.
- Increase the use of empirically-vetted surveys in OT evaluation to improve HIS.

### Acknowledgements

Contributing Researchers: Matt Avery, Kristina Carter, Caitlan Fealing, Heather, Wojton, and Alli Goodman







# CLEARANCE REQUEST FOR PUBLIC RELEASE OF DEPARTMENT OF DEFENSE INFORMATION

(See Instructions on back.)

(This form is to be used in requesting review and clearance of DOD information proposed for public release in accordance with DODD 5230.9.)

**TO:** (See Note) Chief, Defense Office of Prepublication and Security Review, 1155 Defense Pentagon, Washington, DC 20301-1155

**Note:** Regular mail address shown above. For drop-off/next day delivery, use:  
Room 2A534, 1155 Defense Pentagon, Washington, DC 20301-1155

## 1. DOCUMENT DESCRIPTION

a. TYPE Poster	b. TITLE DATAWorks 2020: Overarching Tracker
c. PAGE COUNT 1	d. SUBJECT AREA System Performance Data; Test and Evaluation

## 2. AUTHOR/SPEAKER

a. NAME (Last, First, Middle Initial) Fealing, Caitlan A.	b. RANK Contractor	c. TITLE Data Science Fellow
d. OFFICE Operational Evaluation Division		e. AGENCY Institute for Defense Analyses

## 3. PRESENTATION/PUBLICATION DATA (Date, Place, Event)

March 31-April 2 2020, Springfield, Virginia, DATAWorks annual conference on data analysis methods in DoD and Aerospace.

All data is non-event, non-government data and for demonstration purposes only.

Unlimited distribution requested.

**CLEARED  
For Open Publication**

## 4. POINT OF CONTACT

Feb 25, 2020

a. NAME (Last, First, Middle Initial) Wojton, Heather M	b. TELEPHONE NO. (Include Area Code) (703) 845-6811  Department of Defense
--	---

## 5. PRIOR COORDINATION

OFFICE OF PREPUBLICATION AND SECURITY REVIEW

a. NAME (Last, First, Middle Initial)	b. OFFICE/AGENCY	c. TELEPHONE NO. (Include Area Code)

## 6. REMARKS

All questions concerning this poster: Overarching Tracker, please contact Heather Wojton, 703-845-6811. After security review, please contact Danny Ray, (703) 845-6704, dray@ida.org or Raynetta Rivers, (703) 845-2048, rrivers@ida.org

## 7. RECOMMENDATION OF SUBMITTING OFFICE/AGENCY

a. THE ATTACHED MATERIAL HAS DEPARTMENT/OFFICE/AGENCY APPROVAL FOR PUBLIC RELEASE (qualifications, if any, are indicated in Remarks section) AND CLEARANCE FOR OPEN PUBLICATION IS RECOMMENDED UNDER PROVISIONS OF DODD 5230.09. I AM A GOVERNMENT EMPLOYEE (civilian or military), AND NOT A CONTRACTOR, AUTHORIZED TO MAKE THIS RECOMMENDATION FOR RELEASE ON BEHALF OF:

DOT&E

b. CLEARANCE IS REQUESTED BY: <u>20200306</u> (YYYYMMDD).	
c. NAME (Last, First, Middle Initial) Zacharias, Greg	d. TITLE Chief Scientist
e. OFFICE DOT&E	f. AGENCY OSD
g. SIGNATURE 	h. DATE SIGNED (YYYYMMDD) <u>20200225</u>



# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

<b>1. REPORT DATE (DD-MM-YYYY)</b> 03-2020	<b>2. REPORT TYPE</b> IDA Publication	<b>3. DATES COVERED (From - To)</b> February 7, 2020-March 31,2020
<b>4. TITLE AND SUBTITLE</b>  DATAWorks 2020 Poster: Overarching Tracker	<b>5a. CONTRACT NUMBER</b> HQ0034-19-D-0001	
	<b>5b. GRANT NUMBER</b> _____	
	<b>5c. PROGRAM ELEMENT NUMBER</b> _____	
<b>6. AUTHOR(S)</b>  Caitlan A. Fealing (OED);	<b>5d. PROJECT NUMBER</b> BD-09-2299	
	<b>5e. TASK NUMBER</b> 229990	
	<b>5f. WORK UNIT NUMBER</b> _____	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b>  Institute for Defense Analyses 4850 Mark Center Drive Alexandria, Virginia 22311-1882	<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>  NS D-13108 H 2020-000083	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b>  Director, Operational Test and Evaluation 1700 Defense Pentagon Washington, DC 20301	<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b> DOT&E	
	<b>11. SPONSOR/MONITOR'S REPORT NUMBER</b>	
<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited		
<b>13. SUPPLEMENTARY NOTES</b> Project Leader, Heather Wojton		
<b>14. ABSTRACT</b> Since 2009, OED has conducted annual assessments of reliability (The Overarching Tracker) to allow our department to collect metadata related to the Test Plans, Test and Evaluation Master Plans (TEMPS), and Test Reports that we sign. The information received from the survey includes an overview of: the amount of reports, developmental testing (DT) data, operational testing (OT) data, Modeling and Simulation (M&S), testing ranges, and test outcomes (suitability, reliability, availability, maintainability, and survivability). These data allow us to provide DOT&E with progress updates upon request rather than only at the end of a fiscal year. Each year the survey is updated to include questions that reflect DOT&E's evolving priorities. Specifically, since 2016, the survey included questions to address rapid acquisition pathways, test size, reasons for effectiveness and suitability limitations, and test range utilization. In Fiscal Year 2019, DOT&E completed 104 total actions across 77 unique programs [23 TEMPS, 47 Test Plans, and 34 Test Reports]. The actions indicate that DOT&E's involvement in the test planning typically results in improved allocation of resources. In the past two Fiscal years, DOT&E has focused on shifting towards larger ACAT ID and IC programs, which demonstrate a greater focus on using DT data for OT evaluation. In addition, many programs used Integrated Testing and Modeling and Simulation to further implement their goal of improving operational testing. One result of the improved strategy is that DOT&E identified Human-System Interactions that degraded system performance in 21% of FY2019 OT reports, indicating that it is still possible to make progress with these systems. Overall, data from The Overarching Tracker shows trends of more efficient testing that allows for fewer tests and an increased use of empirically-vetted surveys in its Test Plans to improve validity.		
<b>15. SUBJECT TERMS</b> Acquisition Category (ACAT);Human Systems Interactions (HSI);Integrated Testing and Evaluation; Modeling and Simulation (M&S)		

<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>	<b>18. NUMBER OF PAGES</b>	<b>19a. NAME OF RESPONSIBLE PERSON</b> Heather Wojton (OED)
<b>a. REPORT</b> Unclassified	<b>b. ABSTRACT</b> Unclassified	<b>c. THIS PAGE</b> Unclassified	Unlimited	9	<b>19b. TELEPHONE NUMBER</b> <i>(include area code)</i> (703) 845-6811

**Standard Form 298 (Rev. 8-98)**  
Prescribed by ANSI std. Z39.18



