INSTITUTE FOR DEFENSE ANALYSES

Survey Testing Automation Tool (STAT)

Gary M. Finnegan, Project Leader

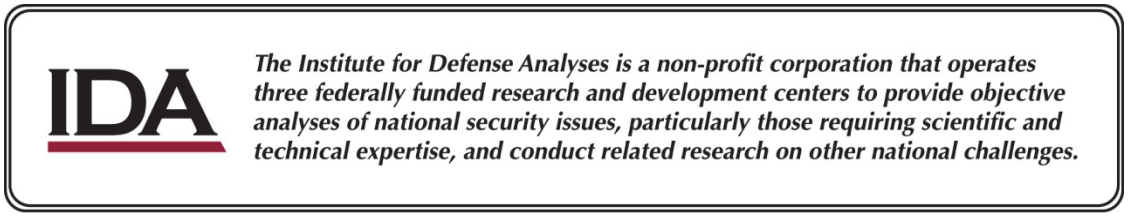
Kelly Tran
Tara A. McGovern
William R. Whitledge

March 2019

IDA Document NS D-10566

Log: H 2019-000147

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



About This Publication
This work was conducted under IDA's independent research program C9095, "Survey Testing Automation Tool." 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 Dr. Daneil J. Porter, Dr. Heather M. Wojton, Dr. Rebecca M. Medlin, Mr. Erick D. McCroskey, Dr. Keyla Pagan-Rivera, Dr. Jason R. Schlup and Dr. John T. Haman from the Operational Evaluation Division, and Dr. Emily A. Fedele from the Science and Technology Division.

For more information:
Gary M. Finnegan, Project Leader
gfinnega@ida.org • (703) 578-2969

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

INSTITUTE FOR DEFENSE ANALYSES

IDA Document NS D-10566

Survey Testing Automation Tool (STAT)

Gary M. Finnegan, Project Leader

Kelly Tran
Tara A. McGovern
William R. Whitledge

Executive Summary

As an Operational Test Agent (OTA) for the Department of Homeland Security, the Institute for Defense Analyses has developed a new tool, the Survey Testing Automation Tool (STAT), to help manage and administer operator surveys and to quickly analyze responses. During an operational test, surveys are typically distributed in-person using paper copies. After administering the surveys, the OTA has to quickly review the responses, and try to gather information that might lead to a more informative interview that follows. Managing survey questions and responses over multiple years is a challenge, especially as new versions of the surveys proliferate. This new tool will reduce the effort to manage survey questions, and will produce a quick analysis of the survey responses, allowing OTAs to ask more informed questions during interviews.

In this work, we present the web-based Survey Testing Automation Tool with a Structured Query Language (SQL) database backend, which integrates and automates survey construction, administration, and analysis procedures. The Survey Testing Automation Tool introduces a standardized approach to the construction of surveys and includes capabilities for survey management, survey planning, and form generation.

The surveys are administered via a website, using a locally hosted ad hoc wireless or wired network, or via the internet. Hosting the surveys this way gives administrators the flexibility to use multiple devices, such as portable electronic devices (tablets, laptops, or smart phones), which removes the dependency on paper survey forms.

The back-end analytics feature provides real-time analysis of survey responses, presenting the survey and interview administrator summary charts from the survey data. These summary charts help survey administrators to conduct more informed follow-up interviews during an assessment by identifying areas that the operators consider good, bad, or neutral, and reduce time needed to build charts for further reporting.

Survey Testing Automation Tool (STAT)

Kelly Tran, Tara McGovern, Bill Whitledge, and Gary Finnegan

Institute for Defense Analyses

ABSTRACT

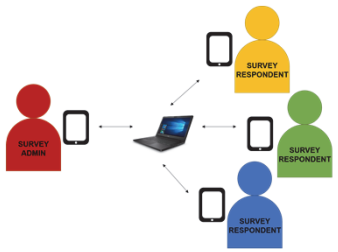
In operational testing, survey administration is typically a manual, paper-driven process. We have developed a web-based tool called Survey Testing Automation Tool (STAT), which integrates and automates survey construction, administration, and analysis procedures. STAT introduces a standardized approach to the construction of surveys and includes capabilities for survey management, survey planning, and form generation.

OBJECTIVE

- Create a professional program to administer surveys electronically instead of manually.
- Reduce time spent constructing surveys and analyzing survey responses.
- Expand IDA's operational testing and analysis capability.
- Provide a free automated analysis capability to the operational test community.

DESIGN

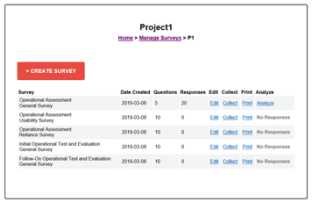
- Manage surveys, survey questions, and survey responses in an SQL database.
- Administer surveys via a website that may be hosted locally (stand-alone) or on the internet.
- Analyze survey responses using Python and GNU Octave.



MANAGE

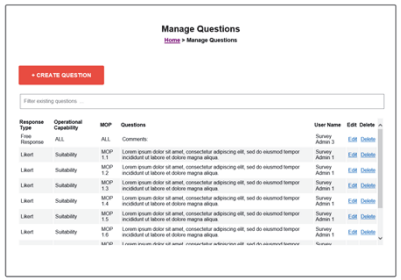
Manage Surveys

Create a new survey from scratch or use an existing survey as a template. Organize surveys by project, test type, and survey type.



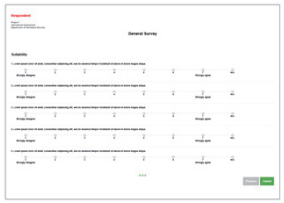
Manage Questions

View questions from all projects. Manage different question types including: free response, multiple choice, and Likert (5-, 6-, 7-point scale).



ADMINISTER

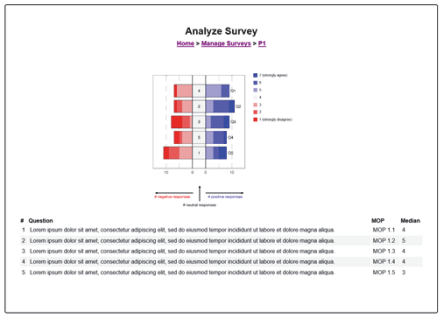
Administer Surveys Electronically



ANALYZE

Analyze Survey Responses

Real-time analysis of survey responses as data is collected.



OUTCOME

- Developed an integrated web-based survey tool to manage, administer, and analyze surveys.
- Ability to manage questions and responses for long-term projects.
- Conduct more informed follow-up interviews during an assessment.

FUTURE CAPABILITIES

- Sort survey questions
- Export survey data
- Enhance analysis reporting

ACKNOWLEDGEMENT

This project was supported by the Institute for Defense Analyses Central Research Program (C9095). Additional support from the Department of Homeland Security under Awards ER-9-3322 and ER-9-3712 are gratefully acknowledged. Analysis code originally created by Conor Schlick.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*
05-04-2019

2. REPORT TYPE
OED Draft

3. DATES COVERED *(From - To)*

4. TITLE ANDSUBTITLE

Survey Testing Automation Tool (STAT)

5a. CONTRACT NUMBER
HQ0034-14-D-0001

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Kelly Tran (OED); Tara A. McGovern (IAD); Gary M. Finnegan (OED); William R. Whitledge (OED);

5d. PROJECT NUMBER
C9095

5e. TASK NUMBER
C9095

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Institute for Defense Analyses
4850 Mark Center Drive
Alexandria, Virginia 22311-1882

8. PERFORMING ORGANIZATION REPORT NUMBER

D-10566NS

H 2019-000147

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Director, Operational Test and Evaluation
1700 Defense Pentagon
Washington, DC 20301

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER

____ ____ ____

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release. Distribution is unlimited.

13. SUPPLEMENTARY NOTES
Project Leader, Gary M. Finnegan

14. ABSTRACT

In operational testing, survey administration is typically a manual, paper-driven process. We have developed a web-based tool called Survey Testing Automation Tool (STAT), which integrates and automates survey construction, administration, and analysis procedures. STAT introduces a standardized approach to the construction of surveys and includes capabilities for survey management, survey planning, and form generation.

15. SUBJECT TERMS
survey administration tool; survey management; survey design and analysis

16. SECURITY CLASSIFICATION OF: Unclassified			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					Gary Finnegan (OED)
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**		7	**19b. TELEPHONE NUMBER** *(include area code)*
Unclassified	Unclassified	Unclassified	Unlimited		(703) 578-2969

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