Situation Present Assessment Method (SPAM)

Abstract:
SPAM is a method of measuring situation awareness (SA). The Situation Present Assessment Method is based on the assumption that SA may sometimes involve simply knowing where in the environment to find some information, rather than remembering what that information is exactly. In contrast to SAGAT, the SPAM method uses response latency as the primary dependent variable and does not require a memory component.

References

Developer and source:


Year of development / publication, updates etc:
1998

General Description

Purpose:
The SPAM technique focuses upon operator ability to locate information in the environment as an indicator of SA, rather than the recall of specific information regarding the current situation. Durso suggests that part of SA involves knowing where to obtain information, instead of holding the information in memory. The technique involves on-line probes to evaluate the operator SA. It measures the number of correct responses and the response latency to a question on the traffic situation as an indicator of SA.

Type (e.g. observation, questionnaire, interview, checklist, measurement instrument, etc.):
Verbal questions on the status of the traffic situation displayed.
Technical description of method or tool etc

Description of the content/study:

The Situation Present Assessment Method (SPAM; Durso et al., 1998) is an on-line, real-time probe method that was developed for use in the assessment of air traffic controller SA. The idea behind real-time on-line probe methods is that they retain the objectivity of on-line freeze probe approaches but reduce the level of intrusion on task performance by not using task freezes. SPAM focuses on operator ability to locate information in the environment as an indicator of SA, rather than the recall of specific information regarding the current situation. The analyst probes the operator for SA using task-related on-line SA queries based on pertinent information in the environment (e.g., which of the two aircraft, A or B, has the highest altitude?). Query response and query response time (for those responses that are correct) are taken as indicators of the operator?s SA. Additionally, the time taken to answer acts as an indicator of mental workload.

SPAM is procedurally similar to SAGAT but does not require a memory component for the traffic information, merely the location of this information. For example, a controller need not store in memory the call sign of an aircraft, but good SA may require that he or she know where to find the call sign should communication with the aircraft be required.

The questions are developed by subject-matter experts, so they are relevant to the operator?s task and more compatible with how controllers represent traffic information during the scenario. Therefore, the aims of the analysis should be clearly defined, since this affects the scenarios used and the SPAM queries administered. For example, the aims of the analysis may be to evaluate the impact that a new performance aid or technological device has on SA during task performance, or it may be to compare novice and expert performer SA during a particular task.

Technical requirements for using the method, tool, etc:

None, SPAM could be applied using pen and paper only.

Measure/Response Type:

Correct answers and response latency

Results obtained and interpretation:

Time elapsed

Evaluation

Advantages:

Very easy to administer. SPAM is quick and easy to use, requiring minimal training.

Provides an objective measure of SA.

On-line administration removes the various problems associated with collecting SA data post-trial.

There is no need for task freezes.

Has shown promising results in validation studies.

Administering probes in real-time removes the need for task freezes, allowing the technique to be applied ?in
Disadvantages:

Various preparatory activities are required, including the conduct of SA requirements analysis and the generation of queries.

Even without task freezes the method remains highly intrusive to task performance.

Attention may be directed to required SA elements.

Knowledge of statistics required for analysing data.

Alternative Methods:

SAGAT, SART, other SA methods & techniques

Usability (ease of use, efficiency, effectiveness)

Ease of use:
- high
Efficiency:
- high
Effectiveness:
- high

Constraints concerning conditions of use:

It can be adapted and used in field trials experiments as well as in simulator environments.

The development of an operationally relevant scenario requires extensive knowledge about the tasks, standard operating procedures, and regulations.

Reliability:

None reported

Validity:

n/a

Required effort (to conduct & to analyse):

The effort required to make the measure is low, the statistical analyses will vary this effort

Level of HF expertise needed (required user qualification)

Low: little expertise/ training required

Cost Information

Very low: (<100 €) low costs to purchase or free license, no special devices necessary

Experiences of use by SESAR partners (including references):
Reported and/or published experiences of use (including references):


Applicability to lifecycle phase (E-OCVM):

V3

Application Area:

The SPAM method was developed for measuring air traffic controller SA. However, the principles behind the approach (assessing participant SA using real-time probes) could be applied in any domain.

Keywords:

Situation Awareness, system performance, measurement, response latency.

Short Description:

SPAM focuses upon operator ability to locate information in the environment as an indicator of SA, rather than the recall of specific information regarding the current situation. The technique involves on-line probes to evaluate the operator SA. It measures the number of correct responses and the response latency to a question on the traffic situation as an indicator of SA.

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Links