



CREATIF

Network of Testing Facilities for
CBRNE detection equipment



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Work Package 3

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Presentation Outline



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Work Package 3 Participants



- **Peter Myers:** Cotecna: Contributor for Explosives, editor, WP3 leader
- **Pär Wasterby:** FOI: Contributor for Chemical, editor
- **Jasper Kieboom:** TNO: Contributor for Biological
- **Friederike Strel:** Seibersdorf Labor GmbH: Contributor for Radiological/Nuclear, editor

WP3: Overview



- **Objective:** To develop a draft framework for operational testing scenarios and concepts, ensuring that the Human Factor is taken into account.
- **Duration:** approx 12 months
 - Started in month 10
 - Ended in month 21
- **Deliverables:**
 - D.3.1: Draft operational testing framework (m16)
 - D.3.2: Technology user needs and user feedback compilation document (m20)

Operational Testing & Human Factors



Operational testing

In contrast to laboratory testing where the results are considered best-case, operational testing is designed to quantify the use-case. Essentially what capability can be reasonably achieved by the end-user.

Human Factors

Human Factors, is a discipline of study that deals with human-machine interface. Human Factors deals with the psychological, social, physical, biological, and safety characteristics of a user and the system the user is in.

Concept of testing

Situation Individual Task Effect → scenario based testing

Scenario Based Testing



Scenarios

The scenario based tests can be used to evaluate if desirable capabilities are obtained with the detectors, training and methods available to the end-users. Test and evaluation of performance in an operational environment is done to get specifications of detectors in an operational environment. In scenario based operational testing whole processes including detectors, methodology and human factors can be evaluated.

Only practical way to conduct operational testing with Human factors testing.

- **Numbers of scenarios:** 13 total: 4 chemical, 3 biological, 2 R/N, and 4 explosives
- **Scenario development:**
 - Either happened in the past or likely to happen in the future
 - Many scenarios have been adapted from previous works
 - Scalable (single person-simple to many people-very complex)
 - Emersion (people need to be **IN** the scenario)
 - Modifiable (many permutations to test all characteristics)

Characteristics to Test/Report






- **Data sheet presented as an example to move discussion forward**
- **Designed for end-users**
- **Focused on operational issues/operationally gathered capabilities**
- **Can use several rating schemes**
- **Can have different numbers of characteristics**
- **Needs standardisation**
 - Min set
 - Max set
 - Overall rating scheme
 - Levels of reporting
 - etc

Data Field	Rating Scheme		Notes
Resistance to interferences			
Start-up time			
Response time			
Time for data analysis			
Alarm type & effectiveness			
Environmental conditions			
Durability			
Ease of use			
Decontamination protocol			
Physical			
Size			
Weight			
Power requirements and capabilities			
Mobility/transportability			
Logistical			
Calibration required			
Repairs required			
Shelf life			
Unit cost			
Maintenance cost			
Consumables required			
Cost of consumables			
Special			
Operator skills required			
Training required/availability			
Manuals quality/availability			
Communications capability			
Security			
Warranty			
Applicable regulations			







Rating Schemes



Sample Rating Scheme 1		
Green		Fully Capable
Yellow		Capable with limitations
Red		Failure/No Capability

Sample rating scheme 2	
Excellent	Highest capability
Good	Medium-high capability
Acceptable	Medium capability
Poor	Low-medium capability
Extremely poor	Lowest or no capability

The exact rating scheme has yet to be determined. What is important is that whatever characteristics have been chosen to be tested, a standard rating scheme should be used to quantify/qualify it.

Sample rating scheme 3	
	Highest capability
	Medium-High capability
	Low-Medium capability
	Lowest capability
	No capability
	Not specified

Sample rating scheme 4	
10 Excellent	Highest capability
9	
8 Good	Good capability
7	
6 Acceptable	Acceptable capability
5 Acceptable	Acceptable capability
4	
3 Poor	Poor capability
2	
1 Extremely poor	Lowest or no capability

Conclusions



- **The operational testing framework (D.3.1) lays the groundwork (1st step)**
- **Scenarios are the only practical way of doing operational testing with Human Factors**
- **To be effective operational testing needs to be standardized across the EU if not worldwide**
- **It could be useful to leverage experiences from other countries/regions**
- **Don't forget the expertise of the military and their resources (financial, ranges)**
- **There is a need for an accepted characteristics list, rating scheme, or (need to find one)**
- **Most end-users have limited or no experience with actual detector operations**

Future Work



- **“CREATIF II”**
 - Further elaboration of testing scenarios with a focus on the creation of testing procedures
 - Standardisation of operational characteristics, rating schemes, and reporting
 - Investigate collaboration with Military (experience, training ranges)
 - Transition from theory to practice as soon as possible



QUESTIONS

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