Evaluation and Gap Analysis tool for performance benchmarking in CBRNe Table Top Exercise emergency response management

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International Master Courses in «Protection Against CBRNe events»

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Although
We do expect to have always “good weather”

Sometimes it “rains”.

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CBRNe THREATS
ONE OF THE FIRST REQUIREMENTS TO DEAL WITH SUCCESS EACH CBRNe THREAT AND SCENARIO:

«PREPAREDNESS»
The EU Civil Protection Mechanism

- **Response**: Facilitates cooperation in civil protection assistance interventions in the event of major disasters inside and outside the EU
- **Preparedness**: Training, exercises, exchange of experts, modules
- **Prevention**: Support MS in preventing risks or reducing harm to people, the environment or property resulting from emergencies
- The Mechanism's **tools**
  - Emergency Response Coordination Centre (**ERCC**, ex-MIC)
  - Common Emergency and Information System (**CECIS**)  
  - **Training** programme
  - Civil Protection **modules**
Increasing Preparedness means: Efficient and specific key actor’s Training Activities

FIRST RESPONDER

DECISION MAKER
Project objective: A Tool for Decision maker performance improvement
Table Top Exercise (TTX) is a discussion based exercise, intended to stimulate discussion on various issues (assess plans, policies, and procedures) regarding a hypothetical situation.

Limit identification:
1. Qualitative evaluation.
2. Data reporting
Our experience

CBRNe Master Courses
2014-2016

1st-Level and 2nd Master Courses

OPEN THE APPLICATION - FOR BOTH COURSES FOR ACADEMIC YEAR 2014/2015

NATO SELECTED
OPCW AGREEMENT

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CSCM – World Congress on CBRNe Science & Consequence Management
Our experience

CBRN – Integrated Response Italy
Strengthening CBRN-response in Europe by enhancing on-site cooperation between safety and security organizations: an Italian pilot

http://cbrn.netseven.it/

With the financial support of the Prevention of and Fight against Crime Programme European Commission - Directorate-General Home Affairs
A 'gap analysis' consists in the comparison of the actual performance with the expected one. It is devoted to the identification of the gaps between these two levels, in order to reveal areas that can be improved.
A Tool for CBRNe TTX analysis

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It’s a gap analysis tool for data collection and **performance benchmarking in CBRNe** TTX, a set of **algorithms specifically developed**...

**CBRNe TTX process supported by GATE**

1. **TTX preparation activities**
2. **TTX**
3. **TTX Reporting/data collection**
4. **Inject’s answer analysis**
5. **Performance quantitative evaluation GAP analysis**

Digital data reporting

The tool provides support to all TTX activities

**Numerical Impartial evaluation** of player’s performance.

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“Checklist Logic”
Module 1 allows to verify the compliance to all the prerequisites for TTX and TTX evaluation process.

“Chat Logic”
Module 2 allows to display injects and player’s answers during TTX, recording them as a report and as an input file for module 3.

“GAP analysis approach”
Module 3 allows to perform a gap analysis by checking a complete set of report documents produced during TTX activities and phases.

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A sequence of questions to answer
In order to verify that each pre-exercise activity has been done

Traffic light logic

Red light: a «mandatory»

Yellow light: a «non mandatory»

Green light: all requirements are complied

### TTX EVALUATION AND GAP ANALYSIS

#### Pre-evaluation check requirements

1. Knowledge areas interested in the TTX screenplay match with the areas considered in this analysis tool | YES

**You can continue this evaluation process**

#### PRE EXERCISE REQUIREMENTS

2. Training/briefing

   2.1. Each player has been properly informed about TTX objectives | YES
   2.2. Each player is aware of his/her team role in the screenplay and his/her role within the team | YES
   2.3. Each player is aware of the role of the facilitator assigned to his/her team | YES
   2.4. Each player has been informed about roleplayers, agencies involved in the screenplay and about their expertise and capabilities | YES
   2.5. Each player has been informed about the importance of a correct document management and trained on documental drafting | YES
   2.6. Each player received a manual/instruction paper for the ongoing exercise | YES

3. Plot - screenplay

   3.1. There is matching between expertise of players and the plot developed | YES
   3.2. A list of injects has been prepared | YES
   3.3. A list of expected answers for each inject has been provided | YES

4. Accommodation/equipment

   4.1. Rooms and other structures are adequate to team’s needs | YES
   4.2. Communication, elaboration and other equipment is adequate to team’s needs | YES
   4.3. All equipment has been tested and is ready to use before the start of exercise | NO

**WARNING!** Evaluation process can not be completed
Chat logic

Main features of **Module 2**: 

- **Intuitive Management** of injects and player’s answers.
- **Searching function** to display previous facts and information
- **Recording data** with a precise time reference
The tool supports the evaluator in the analysis of each single player answers, inject per inject.

**INPUT**
- “TTXInfo”: information about TTX organization and structure
- “Players-info”: information about Player’s background and expertise
- “Inject”: solicitations and answers given per single inject

**OUTPUT**
- “Results”: final individual and cumulative evaluation of player’s answers to all injects
The tool collects the evaluations for each inject and allows to weight the influence of:

- **Answer accuracy**

**Give back a final weighted average grade!!**

### Quantitative evaluation

<table>
<thead>
<tr>
<th>Area</th>
<th>Tool output</th>
<th>Evaluator report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Op/tch</td>
<td>short of expectations</td>
<td>according to the expectations</td>
</tr>
<tr>
<td>CMS</td>
<td>beyond the expectations</td>
<td>beyond the expectations</td>
</tr>
<tr>
<td>Media</td>
<td>expectations</td>
<td>according to the expectations</td>
</tr>
<tr>
<td>Report</td>
<td>according to the expectations</td>
<td>beyond the expectations</td>
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</tbody>
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### Qualitative evaluation
A case study

CBRNe Master TTX analysis
CBRNe Master TTX – Introduction

Organized by “Protection against CBRNe events” Master Course (University of Rome “Tor Vergata”) and the Italian National Fire Corps (VV.F.F.), Italian Ministry of Home Affairs and Italian Ministry of Defense

12th October 2013, Department of Industrial Engineering

R-SCENARIO

port

Explosions and fire on a carrier ship with 5 containers of suspicious materials

PLAYERS
Students were divided into 4 Team, each one acting as “Comitato provinciale per l'ordine e la sicurezza pubblica”

STAFF ROLES
IC (Incident Commander), Police (Superintendent), Public Health (118), Prefecture and other Stakeholders from COC (Centro Operativo di Controllo)

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Process to test:

TTX standard reports

Module 3

Evaluation and statistics

Testing activities main GOAL was:

TOOL CALIBRATION

CBRNe Expert* evaluation
“Comparison between Tool and evaluator Q. Evaluation”

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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>final grade (pure)</td>
<td>final grade (knowledge weighted)</td>
</tr>
<tr>
<td>Op/tech</td>
<td>short of expectations</td>
<td>short of expectations</td>
</tr>
<tr>
<td>CMS</td>
<td>beyond the expectations</td>
<td>beyond the expectations</td>
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The deviations can be ascribed to the **emotional involvement** of the evaluator in the organized TTX and to the **difficulty** for the evaluator to simultaneously consider all the **concomitant factors** that can influence the response to the specific injects.
A gap analysis tool for performance benchmarking in CBRNe Table Top Exercise emergency response management was developed.

**GATE strength points**

- immediate, user-friendly;
- Support each phase of Table Top Exercise process
- **flexible:** it will be set for evaluation of TTX in other fields
- it is **versatile**, it is **modular** and can be easily **implemented**
- its use is oriented to specific competence free users
The tool collects the evaluations per each inject and allows to weight the influence of:

- **Answer accuracy**
  - not given: -1
  - not adequate: -0.5
  - not available/necessary: -
  - partially adequate: 0.33
  - adequate: 0.66
  - good: 1
  - more than adequate: 1.5

- **Reaction time**

- **Players CBRNe background and expertise**

**Give back a final weighted average grade!!**
Master courses in Protection against CBRNe Events

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