| Activity reference number | MSG-147 | **Activity Title**<br><br>M&S Support for Crisis and Disaster Management Processes and Climate Change Implications | **Approval**<br>2015 |
|---|---|---|---|
| Type and serial number | RTG-070 | | **Start**<br>February 2016<br>IS |
| Location(s) and Dates | | Sofia, BGR,17th and 18th Mar 2016 | **End**<br>February 2019 |
| Coordination with other bodies | | NCIA, ACT, JCBRN CoE, JFTC, JWC, MS CoE | |
| NATO Classification of activity | | Public Release | **Non NATO Invited**<br>Yes |
| Publication Data | | TR | PR |
| Keywords | | Data Gathering, Data Analysis, Modelling, Command and Control, SOPs Implementation, Decision Making, Simulation Interoperability, Distributed Simulation, Simulation Environments, Training, Training and exercise requirements | |

## I.  Background and Justification (Relevance to NATO):

The responsibility for crisis management and disaster response is different for every nation and may involve several ministries and agencies. It is also a core task of the Alliance. Today the Alliance is able to take decisions in crisis and emergency situations, and to act under significant threat and time pressure. NATO develops capabilities to be ready, on a case-by-case basis and by consensus, to contribute to effective crisis management and disaster prevention. This enables the Alliance to actively engage in crisis management and disaster response, including through non-Article 5 crisis response operations. The Alliance is therefore encouraging the joint training of military and civilian personnel to help build trust and confidence. The 2015 Gap Analysis Report serves as the foundation for the development of the 2015 Action Plan (AP) on M&S in support of military training. Science, Technology, Modelling & Simulation Branch NATO HQ SACT and CMDR COE staff realized, that there is a gap in NATO computer supported capabilities dealing with big events with negative impact over human society like crisis and disastersas well evaluation of Climate Change. A CMDR COE Staff started working on the project for creating of technical platform using M&S for conducting of experimentations, tests and CAXs and training in the area of CMDR and Climate Change. The aim of the project is to develop a technical platform capable of supporting and conducting crisis management and disaster response exercises and analysis. It should be established with several crisis management and disaster response tools and simulations that are unique to NATO and enable non-military type operations. The software environment should enable to provide:

- automated data collection,
- engine for modeling with defined triggers,
- C2 logic and SOPs implementation;
- a dynamically generated plan for Crisis/Disaster Response,
- prognosticate and Climate Change analyses

The main purpose of the software environment is not to substitute the human of the crisis management. The main goal is to reduce the number of the problems on which the human should be focusing on.

The expected benefits are:
- Reducing of human influence over data collection and modifying process,
- Crisis/Disaster evolution trend forecast, synthesizing and usage of best practices, experience and knowledge related withspecific system conditions,
- Fast and accurate calculations for support of decision makers,
- Conducting CMDR exercise, experiments, tests, evaluation and analysis in proper close to reality environment,- Prognosticate and evaluation of disasters in support of decision makers, - Evaluation of Climate Change on Military activities.

The project combines NATO Crisis Response Process with industrial theory for system control in predefined parameters. The task is with significantly big scale and is out of the CMDR COE capabilities. However, it could be easily divided on subtasks and spread among NATO Nations, bodies, organizations and partners.

The timeline would be linked to the operational support for key events in the crisis management and disaster response community (NATO CMX, EADRCC exercises, SEESIM, other) as the major initial operational capability (IOC) milestone.
Having the Technical platform available to support it would go far to ensure the success of that key event.

## II.  Objective(s):

The aim of the project is technical platform development, enabling fast, accurate and objective Crisis/Disaster Response plan calculation in complex environment and dynamic conditions. The development includes researches, theory and concept creation, standardization and interoperability improvements.

## III.  Topic To Be Covered:

The project consists of following tasks, some of them enabling parallel development:
1. Database for storage and management of the information and data related with crisis and disasters.
2. Capability for determination of players, objects, infrastructures, systems. Should be defined: location, form, vulnerability,relations with other objects/systems. Capability for data import from different sources like GEO information.
3. Capability for implementation of control logic (command and control system, decision making and supporting system)
4. Capabilities for modeling and simulation of crisis and disaster events
a. Module for modeling environment parameters under defined initial conditions
b. Engine for model generation based on statistical data
c. Replay the events using the stored information into the database.
5. Capability for education and training
6. Artificial intellect for simulating actions of individual or collective players7. Report generating module for the environmental parameters

8. Integration with other used in NATO software tools.

**IV.** **Deliverable (e.g. S/W Engage Model, Database,...) and/or end product (e.g. Final Report):**

Technical Report, other deliverable(s) : see Comments field below **V.**

**Technical Team Leader And Lead Nation:**

Chair : Col Orlin NIKOLOV Bulgaria

Lead Nation: Bulgaria

**VI.** **Nations Willing/Invited to Participate:**

NATO Nations and Bodies : Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, United Kingdom, United States

PfP Nations : all PfP invited

MD Nations : none

ICI Nations : none

Global Partners : Afghanistan, Australia, Iraq, Japan, New Zealand, Pakistan, Republic of Korea

Contact / Other Nations : none

**VII.** **National And/Or NATO Resources Needed (Physical and non-physical Assets):**

The appointed persons will be funded by their respective nations to attend host meetings for the full duration of the MSG.

Nations are requested to resource:
• Personnel
• Travel costs
• Unclassified information about national participating simulations/learning systems/tools

**VIII.** **STO/CSO Resources Needed:**

Standard RTG support i.a.w. the STO CPoW Operating Procedures