

White Paper

# AI (Artificial Intelligence) Assistant for Military Training

Harnessing AI and LLM  
(Large Language Models)  
for Exercise Development

## Technology for Military Training

Military training customers are always looking for ways to use technology to deliver a more realistic training experience, or to improve the process of developing training. Military training is intended to prepare units for the challenges they will face on operations. For high-readiness formations, this means preparing for a specific operation or deployment.

To sustain readiness, realism is essential. This is especially relevant since the 2022 invasion of Ukraine. The war in Ukraine has refocused training from counterinsurgency and smaller-scale military operations to large-scale conventional conflict. New lessons are being learned regularly, meaning that part of the exercise challenge today is developing exercise concepts that reflect the contemporary operating environment.

### The Challenge

The biggest challenge for military exercise planners and developers is the time and effort required to build the content for a military exercise. For a ten-day exercise, months and months of preparation are required. Defining training objectives and scenarios sets the frame for the overall concept of the exercise. Then the most time-consuming and resource-intensive work begins: scripting events and injects that will deliver a valuable exercise that meets the training objectives. This is an enduring challenge for military customers: how to fit in the time and devote the resources necessary to turn the vision for an exercise into reality.

This process is the hardest part of any large exercise. Hundreds of individual injects need to be developed, organized into events, and aligned to training objectives. Injects are developed simultaneously by exercise scripters to develop the exercise.

The challenge is the time and effort required. Injects and event development are time and labour-intensive for exercise writers to draft. The exercise developers are there to provide their professional expertise to enhance the overall training and they don't tend to be efficient typists, so actual production takes time. In other words, warriors—not keyboard warriors—are who you want developing your exercises.



### The Innovation Project

MaestroEDE™ is an exercise management tool that Calian training experts developed working side-by-side with military customers to meet their training needs. MaestroEDE provides a single platform for designing, developing and delivering constructive simulation for military customers. MaestroEDE provides an end-to-end platform where exercise designers link training objectives to events, build exercise concepts and scenarios, and where developers build exercise events and injects to deliver the exercise.

Development is time- and effort-intensive. The innovation project began as an exploration of how artificial intelligence (AI) and large language models (LLM) could be used to accelerate exercise content development. Over decades of delivering exercises for military customers, Calian has libraries of data on exercise concepts, scenarios, events, injects and other exercise content. These libraries of data served as the data baseline for AI and LLM.

# The Results

## Content Development

The most significant result from the innovation project was creation of an AI chatbot assistant able to successfully create a training event and injects with a single input: that is, a single request to create an event on a subject through the interface. Our chatbot prototype delivered a title, an overview, a description of the event, a desired end-state and five sample injects to deliver the event in a simulated environment.

The summary on the right is provided by the chatbot as a draft for review. With a single additional click, a draft event was created in MaestroEDE including five supporting injects with no additional human input other than the initial input request. The human user can then review the output to ensure that it meets the needs of the exercise event and aligns with the overall scenario and training objectives.

This result was exactly as intended. The AI chatbot assistant creates the draft content and populates it into MaestroEDE with a single click. From there, the user can request that the chatbot provide more details and content to the draft injects it just created. It will use the original event as context to produce all the fields needed for the inject. The output is slower than a typical search that leverages the expansive data available on the open internet. However, each time this was attempted, the chatbot provided the additional details.

**Title**  
Calgary Stampede Evacuation Due to Tornado

**Overview**  
A sudden tornado hits the Calgary Stampede grounds, causing damage and endangering the lives of attendees and staff. An evacuation is ordered to ensure everyone's safety.

**Description**  
A tornado suddenly hits the Calgary Stampede grounds, causing significant damage to buildings, structures, and equipment. Attendees and staff are endangered by flying debris and other hazards, and emergency services are called to the scene. Due to the severity of the situation, an evacuation order is issued to ensure the safety of all those present.

The evacuation process will be coordinated by the Stampede's emergency management team, who will work with local authorities and emergency services to ensure a safe and orderly evacuation. Attendees and staff will be directed to designated evacuation routes and assembly areas, and transportation will be provided for those who need it.

The supporting injects for this event will be delivered primarily from LCCON STA, representing the local authorities, emergency services, and other agencies involved in the response effort. Injects could also be introduced by EXCON as needed.

The primary effect of this event will be to generate stress on the agencies forming the PTA, as they work to coordinate a rapid and effective evacuation in the face of a sudden and unexpected disaster.

**End State**  
The end state for this event will be achieved when all attendees and staff have been safely evacuated from the Stampede grounds and transported to designated assembly areas. Emergency services will have responded to the situation and begun to assess the damage and provide assistance as needed. The Stampede's emergency management team will continue to work with local authorities and other agencies to coordinate the response and begin the recovery process.

**Injects**

- Tornado Hits Calgary Stampede Grounds**  
A tornado suddenly hits the Calgary Stampede grounds, causing significant damage to buildings, structures, and equipment.
- Emergency Services Respond**  
Emergency services are called to the scene to provide assistance and assess the situation.
- Evacuation Order Issued**  
An evacuation order is issued to ensure the safety of all those present at the Stampede grounds.
- Attendees and Staff Directed to Evacuation Routes and Assembly Areas**  
Attendees and staff are directed to designated evacuation routes and assembly areas, and transportation is provided for those who need it.
- Assistance Provided to Those in Need**  
Emergency services provide assistance to those in need, including medical attention and shelter.

Actions: Create Event

This version of the chatbot for MaestroEDE is currently in our production service as a beta version. Our testers have been generating events and injects across a spectrum of military, national security and public safety applications to validate that the chatbot performs for other scenarios and concepts as it did for our initial testing.

Exercise Workbench: AI Testing Exercise

Dashboard Themes Events Injects MaestroGPT AI Assistant [AI-1000] Calgary Stampede Evacuation

Save Event Timeline Objectives

**Event Details**

Lead: -- No Lead Set --  
Start: -- No Start Date Set --  
End: -- No End Date Set --  
Event #: 1000 | Calgary Stampede Evacuation  
Tags: Apply tags - These help for searching

**Overview** Description Related Plans End State

A sudden tornado hits the Calgary Stampede grounds, causing damage and endangering the lives of attendees and staff. An evacuation is ordered to ensure everyone's safety.

**Injects** Activities

Add Inject Open Delete Link Inject Unlink Inject Assignments

Status	Inject #	Key Inject	Title	Input Date	Lead Assignment	Last Updated
Open	AI-1000-10.1	▲	Tornado Hits Calgary Stampede Grounds	-- Not Set --	-- No Lead Set --	a few seconds ago
Open	AI-1000-10.2	▲	Emergency Services Respond	-- Not Set --	-- No Lead Set --	a few seconds ago
Open	AI-1000-10.3	▲	Evacuation Order Issued	-- Not Set --	-- No Lead Set --	a few seconds ago
Open	AI-1000-10.4	▲	Attendees and Staff Directed to Evacuation Routes and Assembly Areas	-- Not Set --	-- No Lead Set --	a few seconds ago
Open	AI-1000-10.5	▲	Assistance Provided to Those in Need	-- Not Set --	-- No Lead Set --	a few seconds ago

Ready In Development Write Mode Andrew Brown (Activity Leader) EST (UTC-05:00)

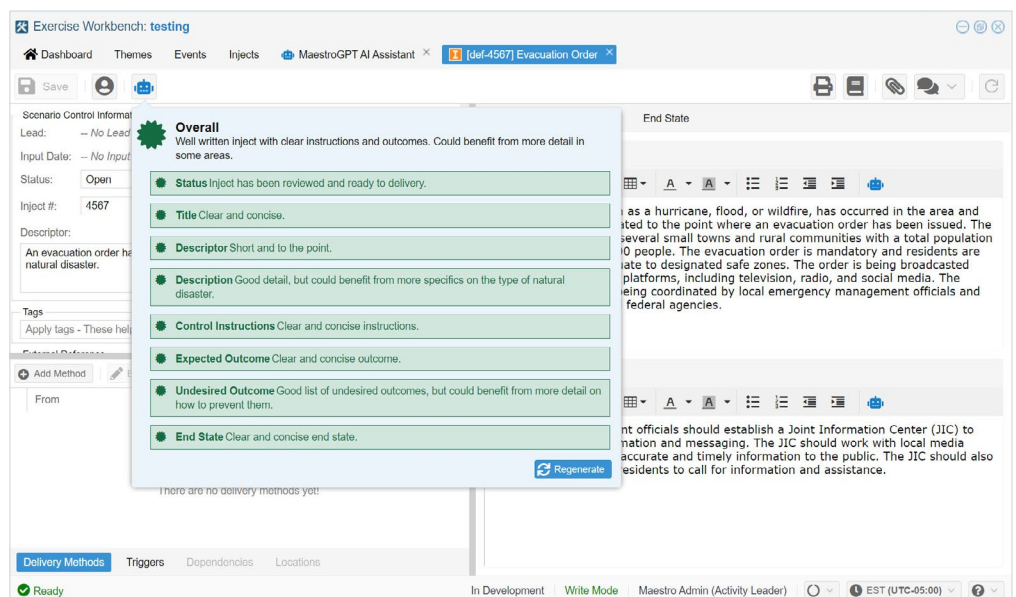
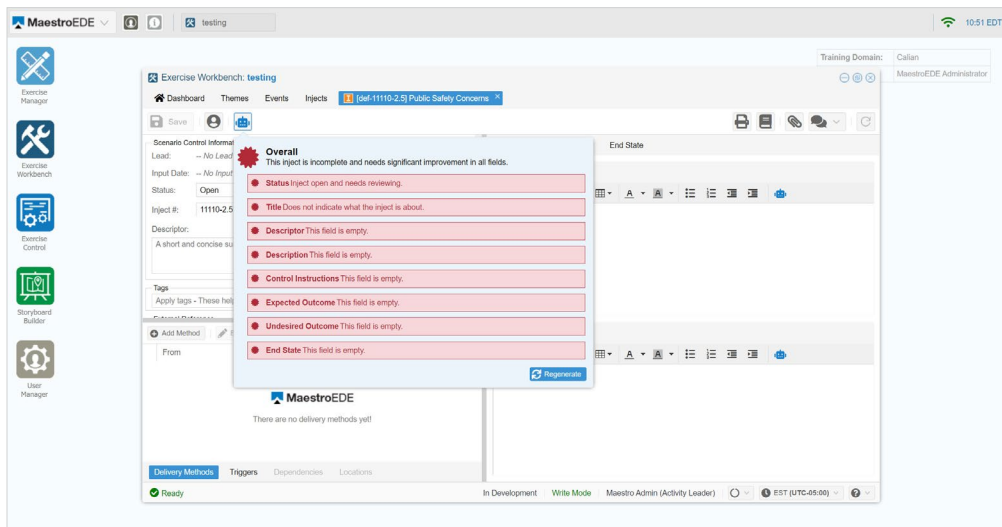
## Content Quality Assurance

We extended the testing parameters during a hackathon to build on the initial success. Our team developed a prompt that evaluates the quality of human-developed injects. Our subject matter experts develop content for exercises, and this feature provides a rapid quality assessment of the content, along with suggestions for how to improve it. Using a red/yellow/green approach, our chatbot evaluates the quality of the content and comments for how to improve it. This is in addition to the standard spelling, grammar and punctuation verification. It will even offer suggestions for fields that are blank based on the existing data and automatically populate the field from the evaluation screen.

**Overall**  
This inject needs improvement. It is too short and does not provide enough detail to be useful for the exercise.

- Status** This inject is currently open and needs reviewing.
- Title** The title is descriptive and provides a good indicator of what the inject is about.
- Descriptor** This field is incomplete and needs more detail.
- Description** Provides some detail but could be more specific.
- Control Instructions** Provides some instruction but could be more specific.
- Expected Outcome** This field is specific and provides a good expected outcome.
- Undesired Outcome** This field is specific and provides a good undesired outcome.
- End State** This field is specific and provides a good end state.

[Regenerate](#)





## What's Next?

The first iteration of the MaestroEDE AI virtual assistant was a success. Exercise development can be partially automated, saving time and effort on manual development. And we are just getting started.

Improving the ability to create events and creating more detailed injects are the next objectives. We have proven the original intent and will now seek to improve the functions and the variety of tasks that can be performed, as well as expand the capabilities of our AI virtual assistant.

These innovations can reduce exercise development time and increase the number of overall injects to fully cover multi-domain operations and enrich the entire exercise.

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### About Calian

We keep the world moving forward. Calian® helps people communicate, innovate, learn and lead safe and healthy lives. Every day, our employees live our values of customer commitment, integrity, innovation and teamwork to engineer reliable solutions that solve complex problems. That's Confidence. Engineered. A stable and growing 40-year company, we are headquartered in Ottawa with offices and projects spanning North American, European and international markets.

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