

1.8 Command Center Training Tool (C²T²)

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Abstract. This abstract presents the training approach taken to create a management-centered, experiential learning solution for the Virginia Port Authority's Port Command Center. The resultant tool, called the Command Center Training Tool (C²T²), follows a holistic approach integrated across the training management cycle and within a single environment. The approach allows a single training manager to progress from training design through execution and AAR. The approach starts with modeling the training organization, identifying the organizational elements and their individual and collective performance requirements, including organizational-specific performance scoring ontologies. Next, the developer specifies conditions, the problems, and constructs that compose exercises and drive experiential learning. These conditions are defined by incidents, which denote a single, multi-media datum, and scenarios, which are stories told by incidents. To these layered, modular components, previously developed meta-data is attached, including associated performance requirements. The components are then stored in a searchable library. An event developer can create a training event by searching the library based on meta-data and then selecting and loading the resultant modular pieces. This loading process brings into the training event all the previously associated task and teamwork material as well as AAR preparation materials. The approach includes tools within an integrated management environment that places these materials at the fingertips of the event facilitator such that, in real time, the facilitator can track training audience performance and resultantly modify the training event. The approach also supports the concentrated knowledge management requirements for rapid preparation of an extensive AAR. This approach supports the integrated training cycle and allows a management-based perspective and advanced tools, through which a complex, thorough training event can be developed.

1. INTRODUCTION

Our research and development team has developed the Command Center Training Tool (C²T²) to assist the Virginia Port Authority (VPA) in developing and executing training for their dispatchers at their Port Command Center (PCC). The C²T² platform is a training management tool that allows VPA training managers to execute training events for port dispatchers, providing both initial and recurring/refreshers

training. C²T² provides leaders and training managers the means to rapidly create highly complex training exercises, execute those exercises with a minimum of training overhead, and conduct a comprehensive After Action Review (AAR). During execution of the training event, C²T² allows trainers to, in real time, monitor the performance of the training audience, adjust the exercise to meet training objectives, and take advantage of training opportunities. The C²T² approach supports real time

training on any command center system that would otherwise be constrained by time and resources.

C²T² consists of four organizational features; training event creation, training event execution, after action review (AAR), and an administrative feature that allows training managers to better organize and track training events¹.

2. BACKGROUND

C²T² development is based on a Phase II Small Business Innovative Research (SBIR) effort for the Air Force Research Lab's Human Effectiveness Directorate, Warfighter Readiness Research Division. The Phase II product, the Collaborative Management Environment for Team Training (CoMETT), is the core of C²T². Lessons learned during the development and fielding of the CoMETT prototype have been incorporated in C²T² design and development, with specific modifications to meet VPA requirements. The CoMETT system is designed as a platform that supports small teams and teams of small teams. Prototype CoMETT consists of three components. The primary component is the Collaborative Information and Training Environment (CITE), which includes the ability to create, execute, and review a training event. Supporting the CITE is an Advanced Knowledge Base (AKB), which serves as a reference source for CITE users. In the future, CoMETT will also include a Training Management & Collaboration System (TMCS), which will allow a "Community of Training" for the organization that will help identify performance requirements and capabilities and recommend appropriate training interventions to close any gaps between the two.

Due to VPA's unique training requirements, certain components of

CoMETT are either removed or modified. The most prominent change is the modification of the system to function as a tool for training management and not as a tool to facilitate distributed training. While C²T² does not require a distributed capability, the system still supports collaborative interaction through a built-in chat feature. Within C²T², the chat feature is designed to allow training managers and observer/controllers to communicate remotely. However, the system is capable of supporting distributed training, if required by VPA.

Dispatchers at the Port Command Center (PCC) at VPA use Situator™, developed by NICE Systems, to monitor security at all VPA terminals. Situator gathers and correlates information from multiple and diverse systems across VPA and coordinates the response actions that dispatchers are required to perform. C²T² provides VPA with a training interface to conduct training exercises for dispatchers while they are using Situator. C²T² includes advancements to the CoMETT system to facilitate integration with Situator thereby providing a tool specific to VPA's unique requirements.

3. COMMAND CENTER TRAINING TOOL (C²T²)

3.1. Administrative Component

C²T² possess an organizational modeling component that allows VPA to re-create their training structure to include ontological markers of performance. These markers include lists of organizational objectives which trainees must meet, user lists with permission levels to create exercises, execute and monitor exercises, participate as a role player, and master level controls to interface with all aspects of C²T².

The organizational features of C²T² allow training managers to create lists of objectives that can be used to label exercises and scenarios. This includes a component to color code scenarios to make

¹ For the purposes of this paper, the authors use C²T² terminology. C²T² terminology differs from CoMETT's as it is designed to meet the language VPA uses for training.

them readily identifiable during the exercise execution, e.g. red colored scenarios represent fires. Through this organizational modeling component, the manager can create meta-date categories to tag exercises and scenarios, making future searches for required components easier. The labeling capabilities of C²T² also allow the training manger to organize data better for use during assessment components of C²T² training. If the training manager needs to conduct training on a specific requirement designated by the Coast Guard (or any other safety and security governing body), he/she can search for exercises and scenarios tagged with this requirement and either execute the exercise immediately, or make modifications to existing exercises and scenarios and then launch training.

3.2. Exercise Creation

We define four terms for developing training content and executing training within C²T²: incidents, scenarios, exercises, and training events. An incident is an individual trigger, occurrence, or message that acts as a stimulus for the training

audience. Examples include a fire alarm, a door ajar alarm, reported smoke, bomb threat, etc. A scenario is a time-ordered collection of incidents which, when combined, satisfy one or more training objectives. Incidents can be described in a variety of formats, such as documents, emails, audio, video, phone calls, etc. The simplest possible scenario contains a single incident (e.g. a fire alarm). An exercise is a series of one or more scenarios whose totality represents the training exercise. An exercise is an instrument to train for, assess, practice, and improve performance in prevention, protection, response, and recovery capabilities in a risk-free environment. An exercise includes scenarios to respond to and resolve assessed risks. A single scenario may occur more than once in an exercise. A training event is a specific instance of exercise execution in which specific trainees are presented with a selected exercise occurring at a particular time.

Complex exercise scripting is made easy within C²T² with an echeloned scripting process as shown in Figure 1.

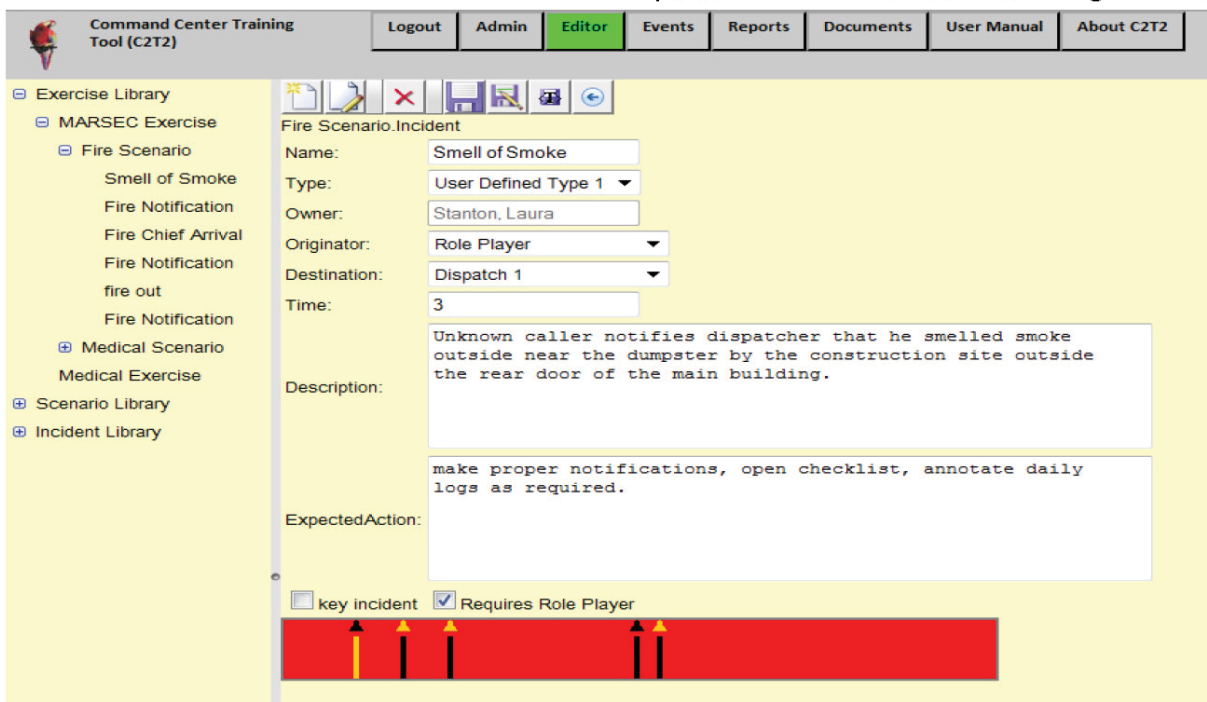


Figure 1. C²T² Scenarios and Incidents

Exercises are built by combining and sequencing any number of C²T² scenarios. The exercise development process is designed to flow in both directions so that a developer may start with generating scenarios by creating incidents within a timed sequence. They may also begin by creating a set of incidents and building subsequent scenarios and an exercise. A scenario can be a single sequence of incidents, or include branching between different sequences based upon preset decision points. A scenario starts at time "0" and incidents are scheduled by the number of minutes into the scenario, i.e. +2 minutes or +13 minutes. Scenarios also are associated with specific threats to VPA, specific supported performance requirements or organizational tasks, key words, and other meta-data. A scenario, once developed, is loaded to a scenario library, with appropriate security measures.

When the developer desires to create an exercise, he/she can search for scenarios based upon descriptive information. Thus, a developer might search for all scenarios supporting a specific objective/training task. C²T² provides a list of matching scenarios, from which the developer can select and load into his/her exercise. When the scenario is loaded into the exercise timeline, it is assigned a specific start time and all of the incident times are adjusted accordingly as shown in Figure 2. For example, if a scenario is assigned a start time of 35 minutes, then incidents at +2 are scheduled at 37 minutes. The developer can review chosen scenarios, adjust them as desired, or write new scenarios. Training event development is completed by preparing an accompanying simulation and any associated documents that are accessible from inside the C²T² environment.

3.3. Exercise Execution

For effective training, it is important that training facilitators be able to monitor the efforts of the training audience in order to

assess whether the training audience is reaching desired training objectives. With C²T², a training observer now has the added flexibility of communicating a trainee's progress to the training manager using a variety of methods to include a computer, an iPad, or an iPhone. Training facilitators should then be able to adjust the training exercise to make sure that objectives are met and the training benefit is maximized.

C²T² supports training managers and facilitators with a highly configurable interface/dashboard for monitoring and managing the training experience. The prototype CoMETT supported monitoring through the ability to open multiple "gauges" to monitor trainee performance as shown in Figure 3. C²T² allows the training manager to monitor trainee performance by observing a live feed of trainee performance with the Situator software. C²T² then allows the training manager to make notes of trainee performance using both a bookmark feature and scoring sheets currently used to evaluate training. C²T² provides a scrolling event timeline that shows upcoming incidents and scenarios. Training managers can interact with this timeline to reschedule incidents and scenarios, remove or add incidents or scenarios, and pause training if required.

In addition to these "active" tools for trainee performance monitoring C²T² also records trainee performance from the Situator tool itself. Trainee performance, as recorded by Situator, consists of checklists that a dispatcher must complete for each event type. C²T² receives the checklists opened during an event and relays them to the training manager during the AAR to help assess how well the trainee meet the requirements.

Based on guidance from VPA training managers, our team is exploring additional tools or gauges that a training manager may require to accurately monitor and record trainee behavior.

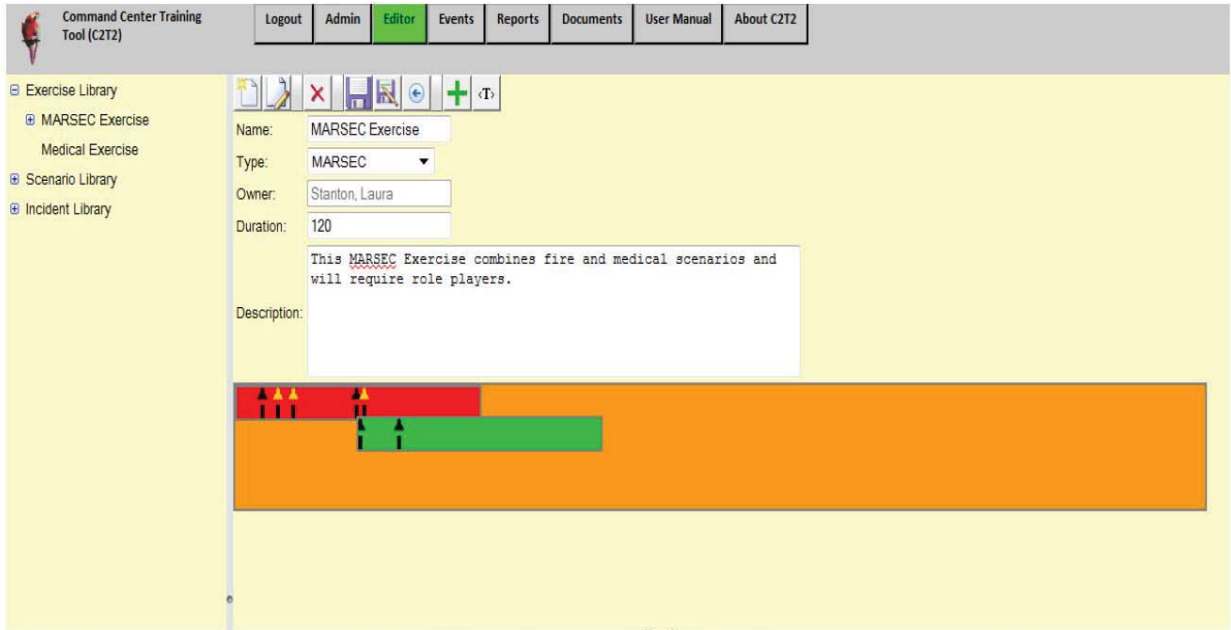


Figure 2. C²T² Exercise

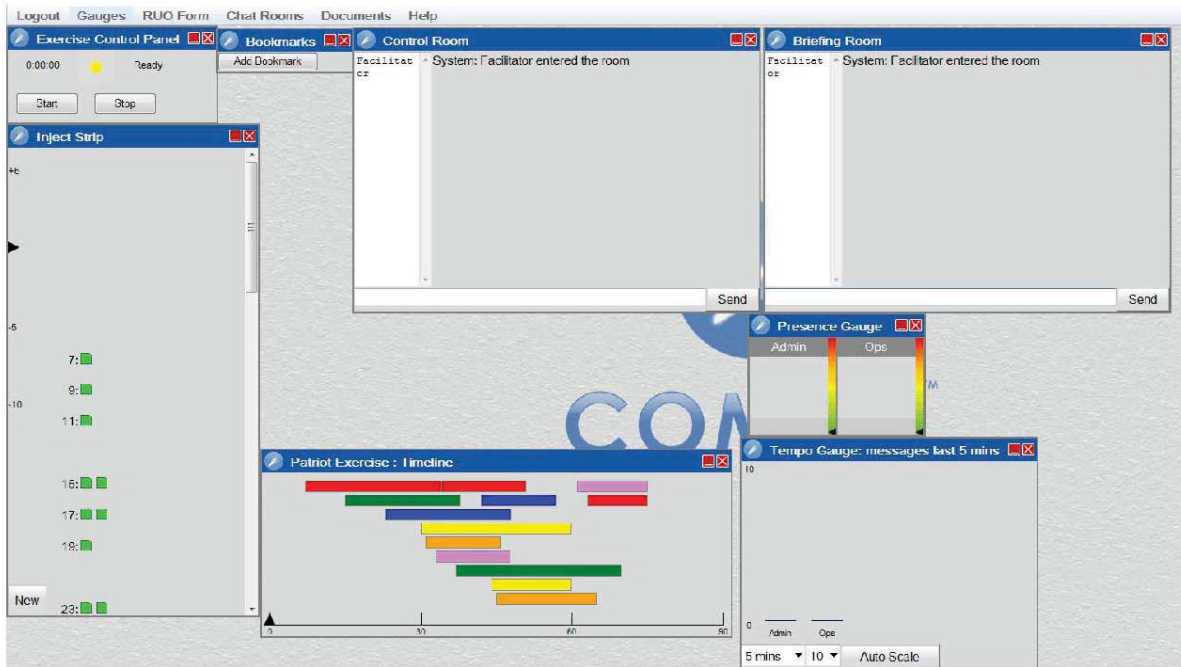


Figure 3. CoMETT Gauges

3.4. After Action Review (AAR)

C²T² includes the ability to conduct an immediate AAR. Following a training event, the training manager can print, or using his computer monitor display: the training event timeline, as it was executed, any training

performance record sheets the manager completed, and the checklists completed by the trainee. VPA requires that trainees cannot access C²T² and, therefore, the AAR occurs either at the manager's desk or at the trainee workstation. During the AAR,

the manager can use their bookmarks, performance assessment sheets, checklists and event timeline to go through the event and talk to the trainee about specific performance.

4. CONCLUSION

The C²T² system is currently in the final stages of development for VPA. The success of the system and the underlying ideas present a new and unique way to manage training events. The ability to rapidly create training exercises, monitor and adjust them on the fly, and track trainee performance for an immediate AAR produce a tool that is both robust and highly suited for training individuals who are required to make decisions in high stress environments. Additionally, the ability to include a collaborative component within C²T² enables future versions of the tool to support VPA or other users in developing training for larger audiences beyond dispatchers, i.e. the ability to create a training event that tests dispatchers, police responders, and other crisis managers within VPA.

5. ACKNOWLEDGEMENTS

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