

Virtual Observation Platform: Enhanced Perceptual Training



EXHIBIT FACT SHEET

Virtual Observation Platform: Enhanced Perceptual Training

The modern military operational environment is complex, filled with subtle psychological, social, and sociocultural cues. In this context, personnel must not only possess typical warfighting abilities, but they must also be able to rapidly perceive, understand, and respond to a range of stimuli.

These stimuli may include immediate threats, such as Improvised Explosive Devices (IEDs), snipers, or suicide bombers. They may also include more nuanced indicators; for instance, Warfighters may need to interpret cues that imply a foreign national is lying, signs that point to an insurgent network, or the behavioral signals of a disgruntled (but nonviolent) citizen.

To support development of these skills, the Perceptual Training Systems and Tools (PercepTS) research team is identifying opportunities to enhance the range of perceptual training available to Marines. PercepTS is a five-year Science and Technology (S&T) project, currently in its third year.

The team has identified five major milestones (one per year). In FY11, the team completed an extensive baselining effort, documenting Marine Corps advancements in perceptual training, i.e., the Combat Hunter curriculum. In FY12, the team developed and tested its Combat Hunter computer-based trainer, and in FY13 the team will deliver its Small Unit Leader Kit, designed to support in-garrison practice and sustainment. In FY14, the team

will deliver advanced algorithms for more accurately replicating patterns of life within a virtual environment, and, finally, in FY15, the PercepTS team will test and deliver its capstone simulation-based trainer, the Virtual Observation Platform.



Virtual Observation Platform

The Virtual Observation Platform is an immersive team trainer designed to support experiential learning of perceptual-cognitive skills, including patterns-of-life sensemaking and related communication competencies. The simulator is intended to facilitate and extend the training delivered via the Marine Corps Combat Hunter program, which trains personnel in enhanced observation



and combat profiling (among other skills).

In the Virtual Observation Platform, Marines will observe a location from a combat outpost, located between 300–1000 meters away. They will have to identify the patterns of activity within the region to establish a baseline, identify anomalies, and, ultimately, predict deleterious events before they occur. More specifically, the system will support the following learning outcomes:

- **Sociocultural sensemaking.** Sensemaking is “a motivated continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively” (Klein, Moon, & Hoffman, 2006). It describes the process of pattern recognition, semantic formulation, anticipation, and holistic understanding. In a sociocultural setting, sensemaking supports situation assessment, anomaly detection, and anticipatory thinking.
- **Developing mental baselines.** A baseline is the “normal” status of a thing. Every individual, group, society, and location has a baseline. Baselines, however, are not static; they change over time and as conditions evolve. In order to identify anomalies, military personnel must first establish a mental model for normalcy in their areas of operation and be vigilant for changes to that baseline.
- **Identifying anomalies.** An anomaly occurs when something above or below the baseline happens. An above-the-baseline anomaly reflects the presence of a new event or object in the environment (e.g., a new vehicle in a neighborhood). Below-the-baseline anomalies reflect the absence of something (e.g., many fewer people in a town square). When personnel observe an anomaly, they must determine its operational relevance.
- **Communication.** Effective communication of perceived patterns is an essential component of operational performance. Some Marines could have preternatural perceptual skills, but if they cannot convey what they sense and interpret, then these capabilities offer little meaningful benefit.

In order to better facilitate these learning objectives, the simulation will use dynamic tailoring and other adaptive simulation-based training techniques. These will allow the system to monitor students’ progress within scenarios, estimate their proficiency as scenarios evolve, and invoke tailoring strategies to enhance their learning.