Augmented Reality Training for CBRN Handheld Devices

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Introduction

MRIGlobal, in partnership with ForgeFX Simulations, has developed an augmented reality (AR) training tool for warfighters to aid in chemical, biological, radiological, and nuclear (CBRN) device familiarization. This tool utilizes the Microsoft Hololens 2.0 to provide a user with interactive device training that can be used anytime, anywhere providing a flexible option to typical user learning. The use of AR enables users to learn new procedures, assess their skills, troubleshoot issues, and enhance refresher training by mixing hands-on device training with a virtualized environment.

AR Training Benefits

Typical device training involves users reviewing operators manuals with additional in-person classroom lessons, but can be limiting depending on size of class and number of physical devices. Virtual trainers such as AR can accelerate and enhance comprehension of equipment functionality and operational procedures. Using AR gives users a "hands-on" experience which is a valuable tool for learning retention.

VR training includes the following benefits:

Location independent – Headset can be used anywhere for users to train on a variety of devices

Safety - Allows users to practice sampling "virtual" hazardous substances safely

Consumables – Users can practice device sampling with an infinite amount of sampling supplies

Equipment Suite Access – Users can access an extensive suite of virtual equipment from a single headset
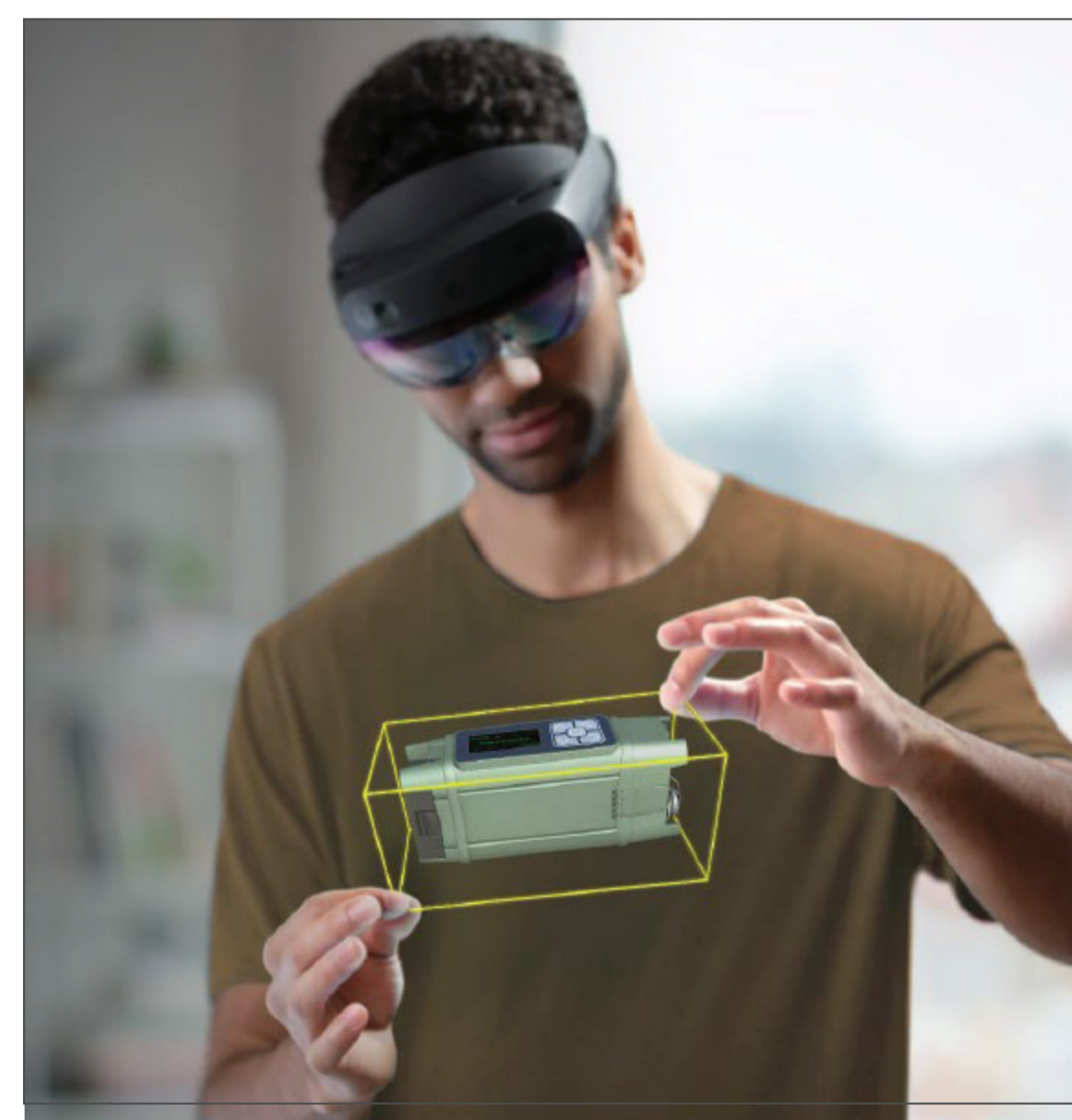

AR Trainer Interface

The AR training interface allows for any number of device trainers to be loaded onto the Microsoft HoloLens. A user navigates the virtual menu by using hand gestures to select menus and interface with the virtual devices. The AR Training platform is developed in the Unity game engine allowing for high resolution graphics and realistic models of the handheld devices. The interface is very intuitive and most users gain basic proficiency with the first few minutes of interaction after becoming comfortable with the steps to use AR.

Multi-User Capabilities

Multi-user Augmented Reality allows for multiple team members, outfitted with HoloLens 2.0 headsets, to see the same virtual device at the same time in the same place. In a training context, this allows for users to practice as a team or for more senior warfighters to guide less seasoned team members through virtual training exercises. Available network architectures include peer-to-peer, and client-server.
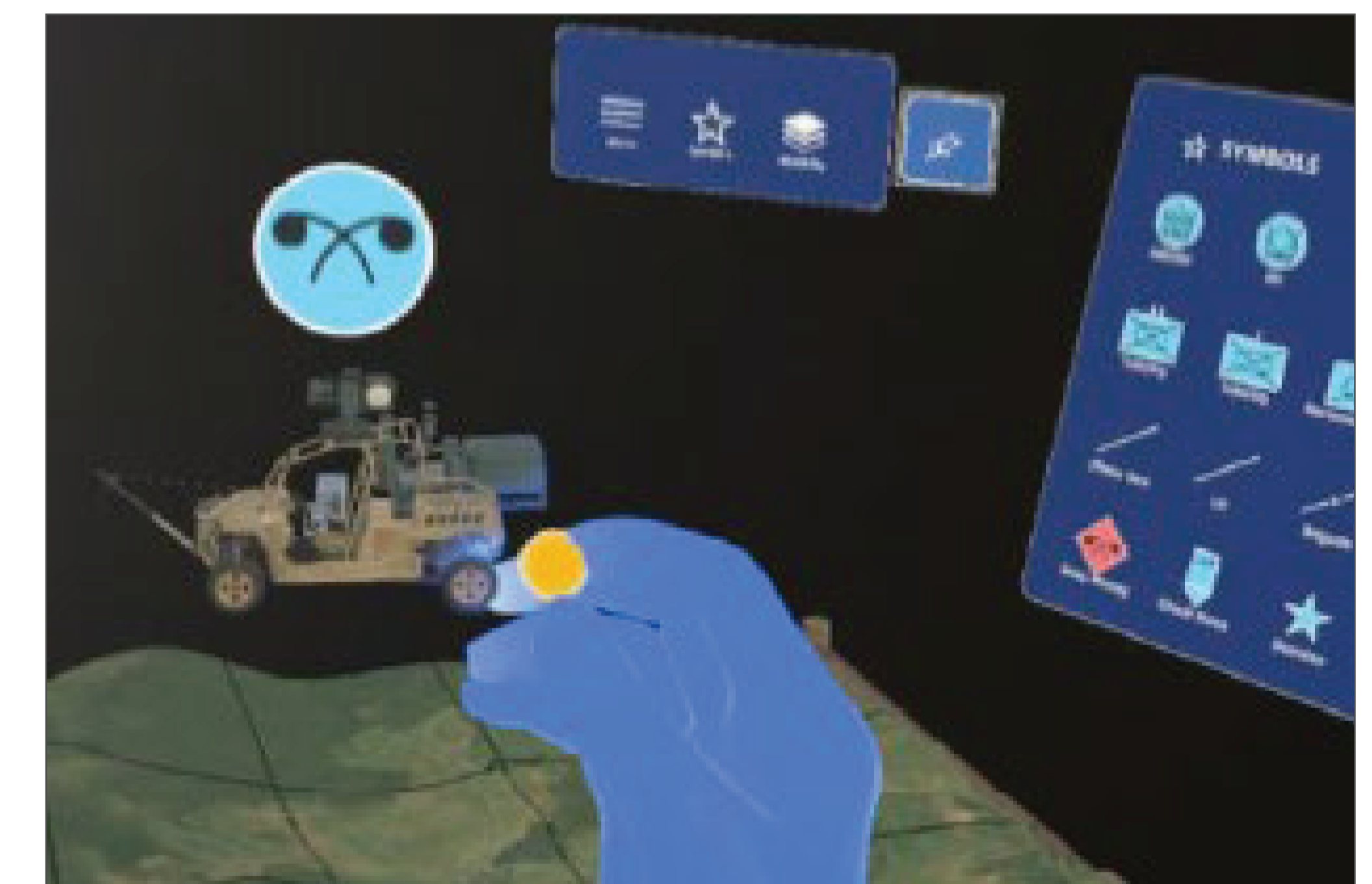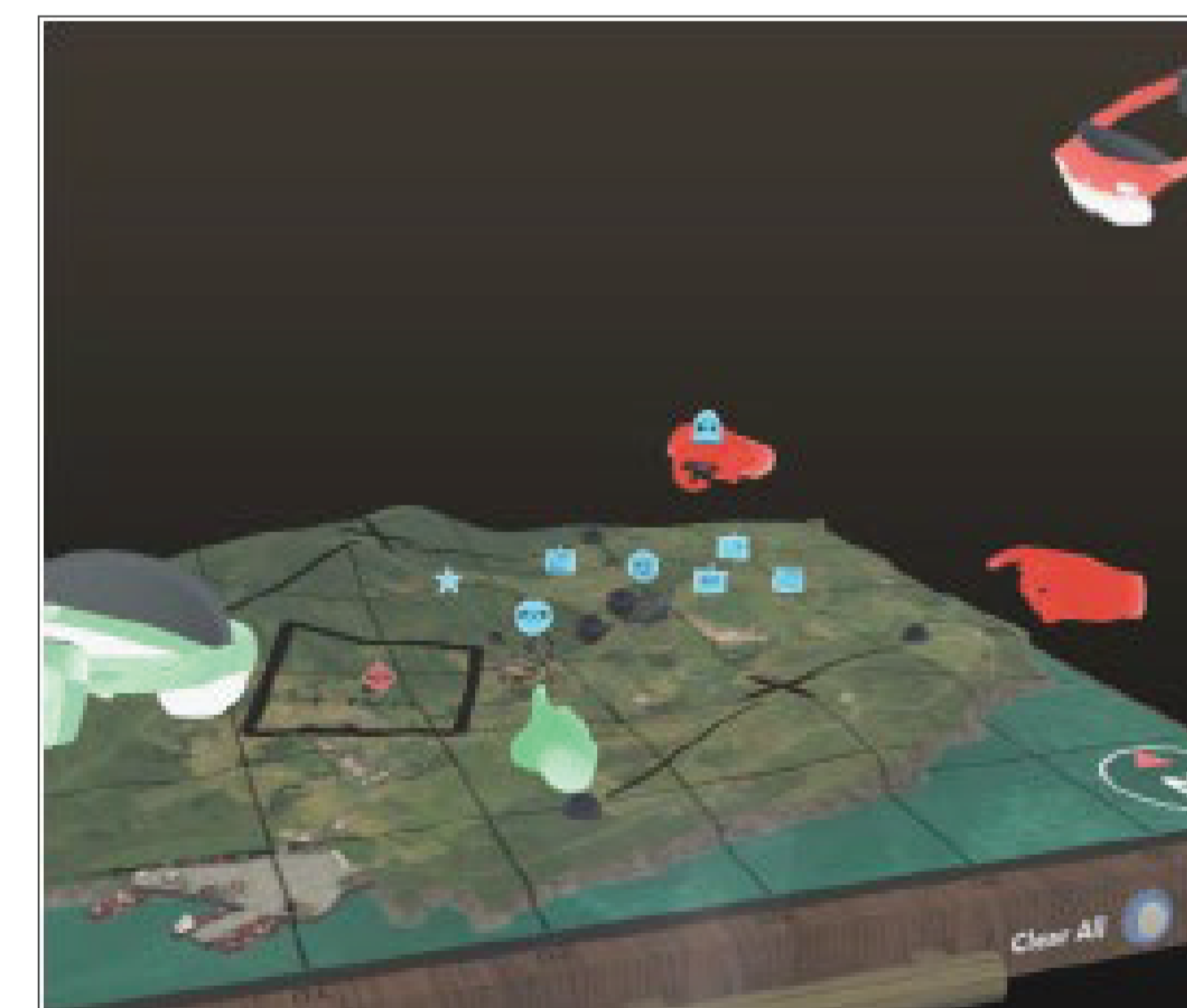
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