MAGNETO

TRAINING SIMULATIONS FOR THE FUTURE OF WARFIGHTING

OUR STORY

The Magneto team began in a Georgetown University graduate school classroom via the national Hacking for Defense initiative. The program teaches students to work with the Defense and Intelligence Communities to rapidly address the nation’s contemporary security challenges.

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- Former Policy Analyst at the Department of Homeland Security, advising senior government officials on military cyber operations and space security issues
- BA in Cybersecurity and Marketing from California State University, San Bernardino
- MA candidate for Security Studies from Georgetown University

MACK VON MEHREN

- Associate at Pallas Advisors, advising cutting-edge tech companies on navigating the national security ecosystem
- Former Marine Corps Infantry Officer
- BA in History and Leadership Studies from Williams College
- MA Candidate for Security Studies from Georgetown University

WHAT WE'RE SEEING

A SHIFT IN NATIONAL DEFENSE

- The 2018 National Defense Strategy recognizes the reemergence of long-term, strategic competition as a primary national security concern.
- Russia and China are seeking asymmetric battlefield advantages and have heavily invested in electronic warfare (EW) to disrupt command and control capabilities in conflict.

GAPS IN TRAINING

- Identifying and responding to adversary jamming has become a become a priority for the Department of Defense. However, the U.S. has not conducted widespread counter-jamming training in decades.
- Existing training equipment is inaccessible to units, resulting in troops being deployed without the ability to recognize, locate, and respond to jamming.
- Small units that do not have early access to counter-jamming training may never learn the appropriate tactics.

BARRIERS TO COUNTER-JAMMING TRAINING

LENGTHY APPROVAL TIMES

The process for getting jamming training approved can take 9 to 12 months. This is because live jamming within the U.S. can interfere with civilian safety-of-life systems and requires extensive deconfliction with the interagency.

LIMITED EXPOSURE

Live jamming for line-of-sight radios is rarely done outside of Combat Training Centers (CTCs), limiting a unit's exposure to jamming to once every year. Oftentimes, the first time a service member experiences jamming will be during a large-scale exercise.

OVERLY DISRUPTIVE

CTCs often prematurely stop jamming because units are unprepared to operate in a communications denied or degraded environment.

TRAINING EQUIPMENT IS EXPENSIVE

Current jamming systems that operate as training aids are expensive and a majority of units do not have the resources to purchase them.

LACK OF PRIORITIZATION

The past few decades have focused on counterterrorism and counterinsurgency operations, resulting in little command emphasis placed on training to fight an enemy with jamming abilites.

HOW MAGNETO SOLVES THE PROBLEM: EARLY EXPOSURE TO SIMULATED EFFECTS

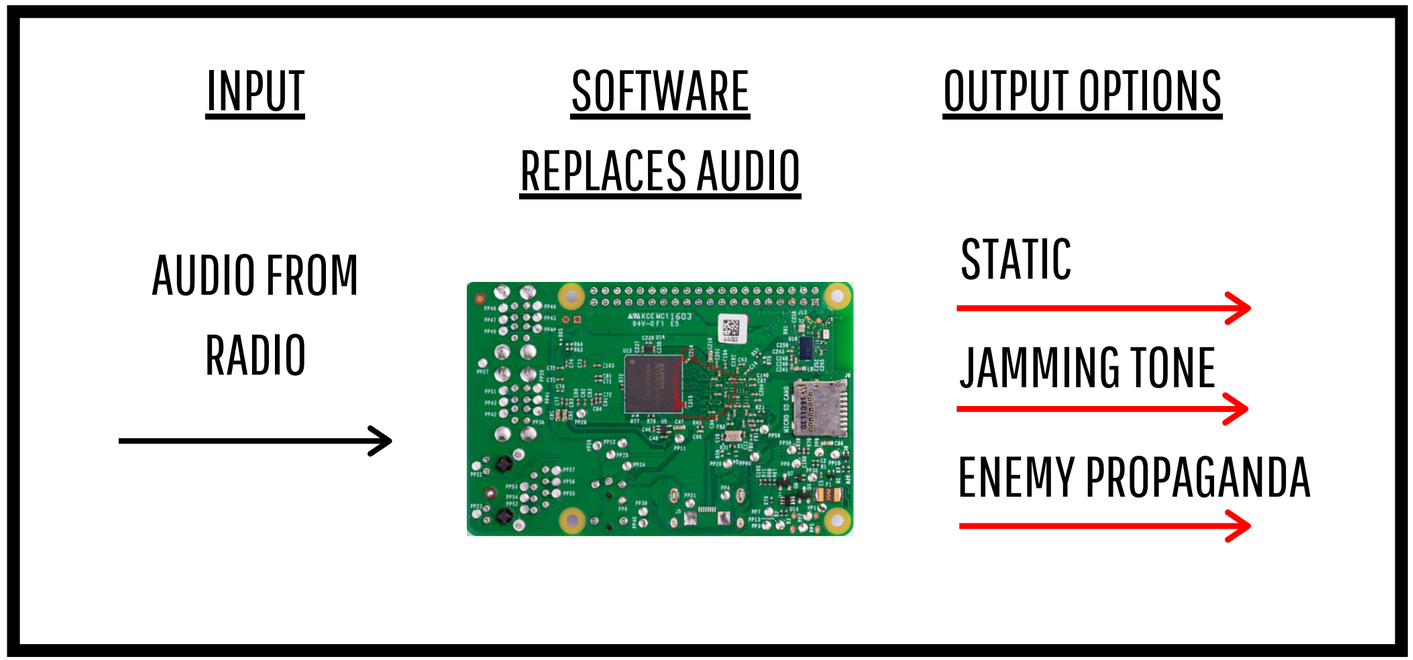
Our focus is to provide infantry units with the training equipment necessary to identify and respond to electromagnetic spectrum jamming in preparation for conflict with a near-peer adversary.

Using innovative voice manipulation technology, software, and advanced manufacturing capabilities, Magneto has developed a rapidly scalable product that minimizes training barriers more effectively and at a lower price than current alternatives.

HOW IT WORKS

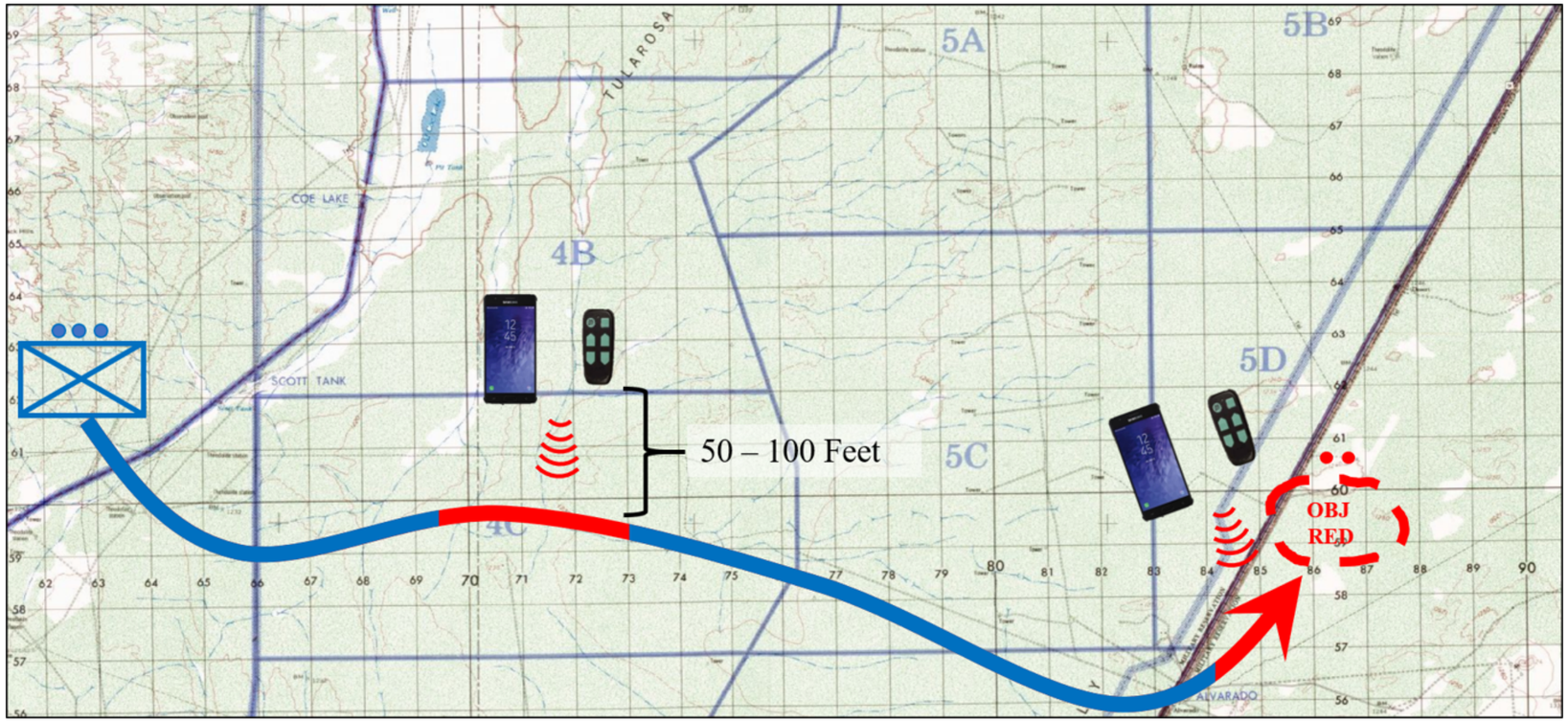
The In-line Jamming Simulator (IJS), is a small network connected device that is fastened between the radio and the hand microphone or headset to simulate live jamming. Upon activation, the device interrupts the audio from the radio and replaces it with prerecorded tones, providing a high-fidelity training environment for its users.

MOCK UP IJS



INCORPORATING THE IJS INTO YOUR TRAINING

A unit equips its soldiers with the IJS prior to the start of an exercise. The device remains in a small pouch which can be placed anywhere on a soldier's gear. Throughout the exercise, embedded Observer-Controller-Trainers (OCTs) activate the device using an infrared remote. This simulates a jamming environment as the unit moves through the exercise and forces soldiers to operate in a realistic jamming environment.



PLANNED SOPHISTICATED FEATURES

GPS ENABLED

GPS RECEIVER

Units will be able to purchase GPS enabled IJSs which allow OCTs to pre-plan geo-fenced areas. When soldiers enter those predefined areas, the IJS automatically simulates jamming on the soldier’s microphone. This feature simulates the footprint of threat jammers during operations.

Example: A unit walks within 500m of a predefined point, automatically activating their devices.

CELLULAR NETWORK ENABLED

Units will be able to purchase GSM enabled IJSs. This version will allow central exercise planners to activate and deactivate an entire unit's devices without having to be geographically collocated. The GSM version also enables units to update the IJS remotely.

Example: A central exercise control cell activates a unit's worth of IJS from their control center.

GSM RECEIVER

WHY IT WORKS

EARLY ACCESS TO COUNTER EW TRAINING

The IJS will provide infantry units early exposure to jamming tactics, techniques, and procedures, which will be invaluable in battle with near-peer competitors that employ EW.

SEAMLESS INTEGRATION

Due to its portable nature, units can easily integrate the device into routine exercise scenarios and increase the frequency of their counter-jamming training.

STREAMLINES TRAINING REQUESTS

Since the IJS only simulates jamming, the complicated and lengthy interagency approval process associated with live jamming is eliminated.

STAGE 1 → PROOF OF CONCEPT

$10,000 to research and verify functionality

STAGE 2 → PROTOTYPE

Seek additional funding to produce 10 prototypes for use on L3Harris radios that can be tested in a training environment

STAGE 3 → FINALIZE PRODUCT

Seek partnerships to field product at scale

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