

## Improve Mission Outcomes and Reduce AOR and ConOps Costs

### Problem

Traditional mission planning and training methods require warfighters to either plan in ersatz environments or “in the planning room” rather than active environments. This can be costly and difficult to manage as personnel, assets and outcomes can be placed in jeopardy. It also makes it difficult for senior command to review and measure improvement.

### Solution

MantaSim is a training, planning and in-field simulator for MANTAS vessels that allows warfighters and command to learn and plan in “real-world” scenarios. MantaSim allows for individual and team learning with scenarios easily customized to the roles and key performance measurements of the missions.

### What is MantaSim?

MantaSim is a system that simulates operating MANTAS vessels with Mission Command Centers (MCCs). It closely simulates real-world operation of the MANTAS allowing warfighters to become competent so they can immediately operate the MANTAS effectively.



*MantaSim Simulation System*

### How Does MantaSim Work?

With MantaSim, warfighters and command can create missions, upload them to an MCC and run them on the simulator. As missions are prosecuted on the simulator, performance and energy consumption characteristics can be evaluated and missions can be re-configured to optimized outcomes.

Once simulated missions are optimized, they can be stored on an MCC and uploaded to a real MANTAS for prosecution.

All MANTAS piloting functions can be simulated on MantaSim including manual piloting, semi-autonomous and fully autonomous modes.

## MantaSim Benefits

### Practice without Pressure

Warfighters become field competent through a series of steps starting with learning how equipment/operations work and progressing to real-world assessment of operations. MantaSim contains and builds data libraries over many MANTAS operation runs that accurately approximate warfighter and vessel behaviors allowing them to learn how MANTAS works so they can operate MANTAS in the real-world. To do this, the simulator also has settings for parameters including length, payload weights and drive train characteristics that reflect changes in behavior for MANTAS vessels. Operators can even modify environmental settings for wave action and current drift allowing them to simulate and learn how these parameters affect MANTAS in similar real-world conditions. That way operators can learn MANTAS' operating characteristics, practice missions and anticipate outcomes and issues prior to real-world prosecution.



*Operator practicing with MantaSim*



*Ground Control Station (GCS) with Mission Command Center (MCC) embedded*

### Plan Before Prosecution

Autonomous missions including waypoints, speed and station keeping parameters can be quickly constructed via a Mission Editor GUI (graphical user interface). Missions can be located anywhere in the world with accurate maps and charts of an area of operations. Once an autonomous mission is created, it can be saved on an MCC and uploaded to a simulated or real MANTAS.

The autonomous mission can be run in the simulator and, as with the real MANTAS, can be interrupted for manual or semi-autonomous operation, then resumed.

**Enabling the warfighter to practice and plan missions prior to real-world execution improves mission outcomes and saves lives and costs when conducting mission operations.**

