ONEBONSAI

CASE STUDY

Naval Firefighting Training

Hyper-realistic VR firefighting that trains naval crews to handle onboard emergencies safely and effectively.

Platform: VR

Project overview

Hyper-realistic VR firefighting that trains naval crews to handle onboard emergencies safely and effectively.

About the project

OneBonsai collaborated with the Belgian Navy and RMA to build a hyper-realistic VR firefighting simulator that replicates life aboard a frigate. The solution improves safety, boosts retention, and standardizes naval training, delivering authentic experience without the risks of live fire exercises.

Challenge

Safe and Standardized Firefighting Training at Sea

For naval forces, fire at sea represents one of the most dangerous and complex emergencies. Crews must be able to react quickly, follow strict protocols, and work as a team under extreme conditions. Traditional firefighting training for naval personnel often relied on live drills or static classrooms, both of which carried significant limitations.

Live fire exercises are risky, resource-intensive, environmentally unfriendly, potentially unhealthy and unsafe and difficult to standardize across units, while classroom instruction lacks the realism needed to prepare sailors for the sensory and psychological intensity of real onboard emergencies.

The Belgian Navy and Royal Military Academy (RMA) recognized the need for a safer, more consistent, and highly realistic way to prepare their crews for fire emergencies aboard frigates.

> *"Live fire exercises at sea were too dangerous and inconsistent to prepare crews properly."*

Solution

Hyper-Realistic VR Firefighting Simulator

OneBonsai, in partnership with the Belgian Navy and RMA, developed a VR training program that accurately simulates firefighting scenarios aboard a naval frigate. The training includes realistic fire and smoke effects, restricted visibility conditions, and the use of a tracked fire hose to replicate the handling of real equipment.

Sailors are immersed in the ship's environment, navigating corridors, containing fires, and working as a coordinated team to follow naval firefighting protocols. The simulator enables crews to experience the full intensity of a fire emergency without the dangers of live flames or the logistical hurdles of conducting repeated drills at sea.

Approach

Realism with Controlled Risk

The VR program was built in close collaboration with naval officers and firefighting instructors to ensure accuracy and relevance. Realistic physics, environmental effects, and team-based interaction were central to the design, allowing trainees to practice not only technical firefighting skills but also communication and teamwork under stress.

The system was created to be modular and portable, allowing it to be deployed in naval academies, bases, or onboard vessels. Because scenarios could be easily repeated and adapted, instructors had the flexibility to tailor training to different units, skill levels, or emergency situations. This approach delivered a balance of high realism with total safety and repeatability.

> *"It felt like being on a real frigate but without the danger. It allowed us to train multiple times and focus on communication."*

Outcome

Safer, More Effective Naval Preparedness

The VR Naval Firefighting Training program significantly improved readiness and knowledge retention among naval crews. Trainees reported that the immersive experience helped them understand the urgency and complexity of firefighting at sea in a way classroom lessons never could. Instructors highlighted the ability to standardize training across units, ensuring all personnel were prepared to handle emergencies with the same protocols and expectations.

By reducing reliance on live drills, the program improved safety, cut logistical costs, and allowed for more frequent practice. The solution not only strengthened the Belgian Navy's preparedness but also set a new benchmark for how immersive technology can transform military training, combining realism, safety, and efficiency.

> *"VR provides us with options to train at scale. We therefore see it as a force multiplier."*