



Safer | Smarter | Deeper Learning

# Virtual Reality Firefighter Training for Firefighting in High Rise Buildings

Tall Building Conference – Indianapolis, USA

Mark (Ted) O'Brien

17<sup>TH</sup> April 2024

# Agenda

- Speaker's background
- The science of learning
- The challenge in fire & rescue training
- Immersive learning
- Case study - Newcastle International Airport



# Your speaker – Mark (Ted) O'Brien

- Joined Greater Manchester Fire & Rescue Service, January 1987
- **Operational Firefighter**, 1987 - 1999
- **Junior Officer**, 1999 – 2004
- **Station Manager/Middle Management**, 2004 – 2007
- **Group Manager**, Operational Training Manager, 2007 – 2013
- **Area Manager**, Head of Operational Training/Policy & Procedure, responsible for 8 Operational Fire Station in the Borough of Manchester 2013 – 2017
- **Director of Product & Quality**, The Fire Service College, Moreton-in-Marsh – 2017 - 2022
- **Director of Customer Experience**, UK & Ireland - FLAIM Systems





Practice isn't the thing you do once you're good. It's the thing you do that makes you good.



Malcolm Gladwell, *Outliers: The Story of Success*

## The challenges of practising in dangerous and difficult-to-conduct operations

In 2022, the NFPA reported 10 firefighter deaths to have occurred during live fire training<sup>1</sup>

Some scenarios are too dangerous, difficult or expensive to replicate e.g. bushfires, explosives and chemical fires



<sup>1</sup> <https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fatal-firefighter-injuries>

# Four key challenges of live fire training

## Human Hazards

Long-term health implications

**+8000** Training injuries per year in USA

Potential for Training deaths

## Environmental Impacts



**+150 GPM** of water consumed



**+60 GPM** Foam produced = **PFAS Contamination**



CO2 produced from fires & some extinguishers

## Efficiency

Inability to conduct objective training

Difficult to deliver consistent & Standardised Training

Train indoors during Extreme weather

Unable to replicate all scenarios e.g. Tall Buildings, Aviation

Inability to build skills critical to the mission

## Cost

Expense of props and refills

Expense and logistics of getting students in one place

Expense of students failing live fire training

# BOOST LEARNING CAPACITY AND COGNITIVE RETENTION THROUGH IMMERSIVE LEARNING

With immersive learning, students are:

**4x**

Faster to learn than in the classroom

**275%**

More confident to apply skills learned after training

**3.75x**

More emotionally connected to content than classroom students

**4x**

More focused than their e-learning peers

## Trainer

Trainer was developed to complement live fire training by providing firefighters with on-demand access to a broad range of environments, scenarios and incidents that cannot be viably replicated in the physical world.

Trainer delivers a range of scenarios that enables skills and drills to develop motor skills and build cognitive awareness so that they have a better awareness of how to react and communicate when confronted with real-life hazards.



### Classroom training

A theoretical understanding of fire, firefighting, search and rescue operations, techniques and equipment.



### Immersive learning

Kinesthetic learning with haptic feedback to learn crucial skills and practice techniques individually and as a team.

Practice scenarios that are too difficult or expensive to replicate in live fire training.



### Live fire training

Firefighters are equipped with the skills needed to get the most out of a high value live fire training event.

Better prepared for the mission ahead





## FLAIM Trainer

FLAIM Trainer offers a safe, smart and scalable fully immersive firefighter training solution, combining high fidelity virtual hazardous fire environments, haptic feedback and industry standard equipment. Through a multi-sensory experience, firefighters can train essential skills to prepare them for dangerous and difficult-to-conduct conditions.



Train Remote as a Team or Individually



Access Performance Data to Inform Training



Consistent & Standardised Training Methodology



Replicable Training for Practice & Skill Building



Reduces Logistics & Cost of Live Fire



Requires No Live Fire Equipment



Reduces Environmental Impact



Reduces Human Health Hazards



Train for a Variety of Relevant Fire Scenarios

## FLAIM Trainer – Creating organisational memory

- **HANDS-ON INTERACTION**

Combines industry equipment with a fully immersive experience to deliver real-time feedback on techniques used and decisions made.

- **FEELS-REAL SCENARIOS**

Offers immersive and authentic situations to mimic real-life firefighting challenges that engage the students' senses, boosting situational awareness for high risk low frequency of event incidents.

- **PROGRESSIVE LEARNING**

Scenarios cater to varying learner skill levels. The organisation can adjust difficulty based on the student's progress, transitioning from basic instructions to greater autonomy, thereby enhancing advanced firefighting skills and decision-making capabilities.

- **FEEDBACK AND ASSESSMENT**

Facilitates continuous performance-based feedback and assessments using organisational criteria and customised after action reviews and debriefings.

- **IMPROVED METHODOLOGY**

With replicable training, organisations can achieve a consistent, replicable and standardised training methodology, aligned to Policy & Procedures.



# Scenarios tailored to your unique Fire & Rescue needs

Helping individuals and teams train in high-risk environments that cannot be replicated safely in the real-world, such as bushfires, petrol tank explosions and lithium battery fires. With a gallery of over 80 scenarios, select the most relevant scenarios for your curriculum.



Air Base



Airport



Corrections



Country Farm



Docks



Gas Station



Highrise



Highway



Mine



National Parks



Navy



Refinery



Residential




Suburban & Rural Interface



Warehouse



Woodlands

A large, two-story white industrial building with a flat roof and several windows. To the left, a green tower is visible. The building is situated on a paved area, possibly an airfield or parking lot. The sky is blue with scattered white clouds. The text "Newcastle International Airport" is overlaid in white across the middle of the image.

# Newcastle International Airport

## FLAIM Trainer

Trusted by 400+ customers across the globe



# THANK YOU: Any Questions?

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17<sup>th</sup> April 2024

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