getty images
Credit: Prompilo

Revolutionising Fire Response Teams

The role of fire response teams within buildings has historically followed a typical trajectory in the ever-changing world of fire safety. However, great technological breakthroughs have occurred in the last several decades, from human activation to automatic systems and, more recently, the incorporation of current wireless technology. Despite these advances, issues remain, particularly in the arena of unwanted fire signals, necessitating the development of novel solutions to improve the performance of fire response teams.

One of the key elements would be the speed at which any incident is dealt with, this might be summarised as the speed at which detection/discovery happens and then the qualifying of the cause and putting in appropriate actions such as restoring normality for a false alarm, dealing with the outbreak of fire or the escalation of an incident for a developing scenario. Timeliness is paramount, influencing the overall success of any response.

Despite significant advances in technology in recent decades, including the shift from manual to automatic activation and the incorporation of modern wireless technologies, challenges remain. Whilst modern systems raise knowledge of possible fire dangers, they also present new difficulties, such as an increase in the occurrence of undesired fire signals. According to recent studies, such activations result in full evacuations in nine out of ten situations, with annual expenditures in the UK estimated to be approximately £700 million. Customer experiences, healthcare visits, and educational activities are all affected, in addition to financial reasons.

Employees assigned to fire-related roles, such as Marshal, Warden, Emergency Controller, Evacuation Controller, Head Marshal make up the fire response team, which is responsible for ensuring a well-coordinated and planned response. However, despite serious repercussions, the low frequency of fires may cause confusion amongst staff and their responsibilities. This trend towards flexible work schedules complicates the task of sustaining resilience across fire response teams even more.

The impact of remote work on fire response

The internet has transformed organisational structures, enabling remote work and creating a culture of working from home, a trend that has been exacerbated by the global

pandemic. According to the Chartered Institute of Personnel and Development (CIPD), 40% of organisations are seeing a rise in requests for flexible working. Businesses understand the value of giving flexible working choices, with 33% of advertised jobs specifically noting this option and 39% showing a greater inclination to approve flexible working requests post-pandemic. Notably, middle and senior management positions are more likely to accept remote work.

This shift has pushed organisations to reconsider and alter their fire response methods in order to accommodate varying worker presence throughout the day. Coordinating an efficient response entails not only having the proper staff in the right place, but also ensuring accurate information is communicated in a timely manner. When estimating the 'available' safe egress time in a fire emergency, factors such as sensory and physical capabilities, age, and occupancy type must be addressed.

Understanding human behaviour in fire incidents

Organisations have developed their strategies to try and achieve a robust team accounting for fluctuations of staff throughout the day.

The effective coordination of any incident does not just extend to the correct people at the right time. It also would include the communication of the correct information. Buildings are constructed to ensure that evacuations can take place safely without compromise to occupant safety, the timeframe that conditions would be tenable for are referred to as 'available' safe egress time, the 'required' safe egress time should be less than this, however, there are many human factors that need to be considered. Sensory and physical capabilities, age, occupancy type can all impact.

Human responses to cues of fire can be varied, we may smell burning, see smoke or flames, we might be told about a fire but more frequently the initiator for occupants is the audible cues from a system activation. People will respond differently dependant on many variable factors, their role within the environment will have a bearing, they may be in position of authority, a nominated marshal, a guest or even a member of the public. There are other considerations such as the culture within the organisation; the training; whether people are in group settings or isolated; they may be engaged in an important task that would be difficult to leave, eating food, or even asleep.

Human psychology has a bearing on response, previous experience will influence a decision to act or ignore. The moment the first cue is received to the point a person takes positive action we refer to as the 'start up' time. Positive action simply means they a person is now acting on this information this might be simply they are now moving to an exit, or they are engaged in initial actions prior to escape such

as switching machinery off, gathering personal belongings, getting dressed or commencing fire marshal duties.

When a person receives information about a potential fire event people will be asking themselves is it false or real? Does it apply to me? What are the expectations of me? Ultimately am I at risk? People will often base actions on what others are doing and can cause a collective behavioural inaction not wanting to act differently than others. If a fire alarm activates in a supermarket and an individual sees others continuing to shop they will be hard pressed to act differently. Contractors may choose to continue to work without additional information or the physicality of being asked to leave. Human behaviour in fire is huge area of study other influences are appropriate training, a brief for visitors. In places where public have access this would be impractical, and people may take action based on exposure to similar scenarios with an outcome. Occupants inside buildings may make assumptions of what they think is happening based on the first cue. At this point without the full information they will either consciously or unconsciously start to fill in the blanks with what they think is happening. This is sometimes known as confirmation bias. If the building has regular false alarms people can may start to ignore the sound.

People respond much more effectively to voiced alarms even if they are automated the receiving of an instruction will land differently to a continual bell or siren. If the first cue is a smell of burning or even visible smoke some will investigate rather than evacuate. If a fire is discovered people may watch the spectacle and spend time watching rather then moving to a place of safety. All these complex variables can cause start up to be protracted.

Modern cutting-edge technology has massively increased the effectiveness of Fire Marshals. Before automatic detection staff may only become aware of fire after it was unmanageable locally, the focus would be evacuation and a reliance on Fire Service intervention. Nowadays staff can be in the correct location at the outset, they are now in a position where they can deal with incidents in the incipient stages locally. On many occasions pyrolytic gasses that are released prior to ignition will trigger alarms providing a window of opportunity to staff. This can mean a Fire Marshal or Alarm Investigator may only need to carry out a simple act to avoid a fire, they may isolate a machine switch off a toaster.

A new concept

Steve Wilcock has been involved in the delivery of Fire Marshal training for many years running and growing his company, North West Fire Training Ltd, based in Greater Manchester.

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Steve Wilcock founder of Marshal Eye

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The importance of ensuring an effective response is in place is something he is passionate about advocating the importance of roles and tasks during any fire incident. However, in recent years he was increasingly being asked about possible solutions to the resilience problem from clients. In April 2023 he was invited to discuss this problem with one of his clients that had almost 60% of their workforce working remotely for some portion of the week. Steve felt there had to be an innovative way to find a solution for the modern world. Maybe the very thing that had facilitated remote working could also provide the answer. It might be that an app could be 'that' answer, and so he proceeded to write a blueprint for a concept. His idea would create a means for Marshals to access information via a phone or tablet to ensure resilience was maintained, the key aspect being an 'opt in' to a task at the point of a fire event, the premise being that once a role is adopted it would not be available to others creating accountability and ownership of tasks. It was also important that there was some means to provide live communication across the fire response team.

He developed a presentation which he pitched to a number of technology companies that he thought had the right skill set to develop and produce the idea. They needed to have the capability, the vision and share the same passion. There were many other benefits that were built into the concept and in mid-December 2023 he saw his idea come to life when Marshal Eye launched.

Introducing the app

It was important that Marshal Eye could be tailored to every different type of environment, so the decision to have an administrative platform that could be accessed by the one person who was responsible for the fire strategy was made. This would be through a secure website on a desktop computer. Once the roles and tasks had been created, they would feature on the app for the users (those staff designated with fire duties) to access. It was important that the user interface within the app was simple and intuitive. With anything that we are infrequently exposed to we are less likely to be practiced in it so the tool needed to be easy to use with little complexity.

Once the administrator has created the various roles, responsibilities and sweep areas, they would then simply add the people within the organisation that would be appointed as Marshal Eye users. The administrator would put a tick against each task or role that the user might be required to perform. The tasks could be claimed simply by scrolling and selecting and only tasks that have been allocated to that specific user would be available for selection.

Steve also knew that it would be important and a key feature to have some form of messaging included within the application. Once an incident was instigated the upper third of the screen would be occupied by the live messaging feed, this full narrative log displays all the tasks that are claimed and who adopted them, it timestamps each action to the second, it also displays all typed out messages from any user. For the first time staff are now in the information loop.

Marshal Eye seeks to banish the ambiguity of the first cue. Wherever the Fire Marshal is within the premises they can open up the app and will immediately be in touch. They can scroll through the message feed to ratify what is happening. They can now pass on to their colleagues what is happening with absolute conviction, this might be to simply confirm it is an air freshener two floors below and the alarm will be resetting in a few moments.

What to expect

Steve recommends having notifications turned off, the reason is Marshal Eye users would be prompted by the fire alarm itself to open the app. Only those that are in the building need to open the app and not the users who are away from their workplace. It might be that some H&S managers would want to be notified so they are aware of incidents.

Any user can click 'start an incident' and they will be prompted to select why they are starting it, and the location if known. This will open the interim screen. All the sweep areas and roles are displayed in grey and cannot be selected until the 'commence evacuation' button is pressed. The interim screen is important because it allows time for staff to assess and collaborate in the messaging window. Steve recognised that while Fire Marshals are essentially a team, they are separated out to achieve the geographical cover across the site. This separation means they are all independent of each other and isolated. Steve had always worked in a team-based environments both in the Royal Navy and in the Fire & Rescue Service, and it was important for him to ensure that the Fire Marshals were allowed the very same benefits collusion and discussion and ultimately to allow confident decisions to be made as a group. Marshal Eye brings them all together in a digital space.

Many fire incidents have escalated due to complexities of interacting with equipment or misinterpretation of information. As many of the readers of this article will be aware the infamous Notre Dame fire in Paris 2019 was given time to grow after the person interacting with the panel simply did not understand where the issue was. With this in mind, Steve wanted the ability for information to be presented for those claiming roles to ensure these issues did not surface. The administrator can add everything from a sweep map right through to how to operate the fire panel straight into the roles or tasks in addition functionality to add sub tasks (actions) to each role or sweep area such as picking up a rollcall, a fire service information pack or switching off machinery. Any additional actions or sub tasks are recorded by the user pressing a toggle within that screen to indicate that it was completed.

Marshal Eye employs a traffic light system so that visually it would be easy to see all unclaimed tasks displayed in red, amber would mean 'in progress' and green after completion. This would provide a comprehensive overview for all Fire Marshals, once a role is claimed it would not be available for anyone else, this avoids duplication. This also removes ambiguity during shift changes where it might not be clear who should be taking on the tasks. A Fire Marshal on a busy sales floor or invigilating an examination or even conducting
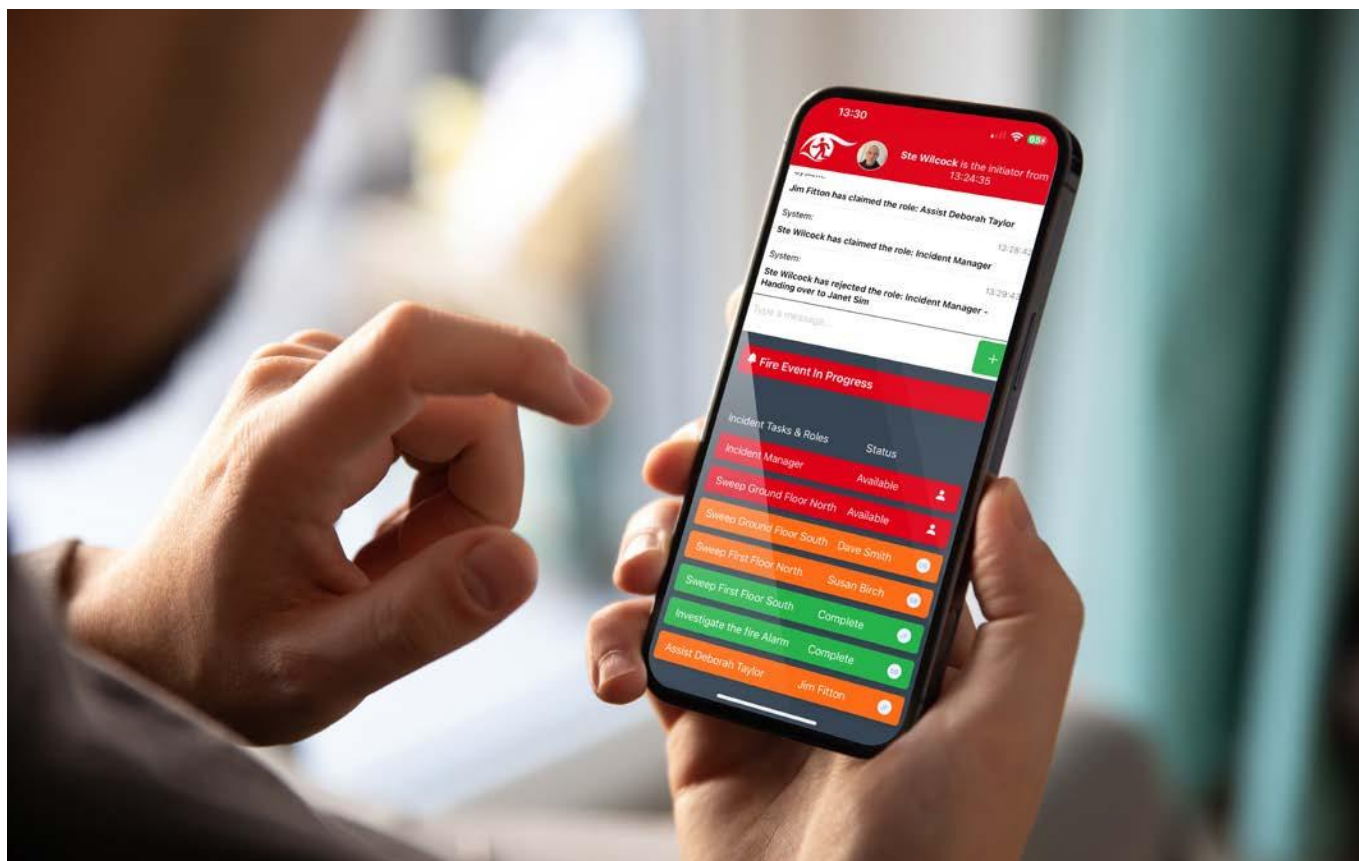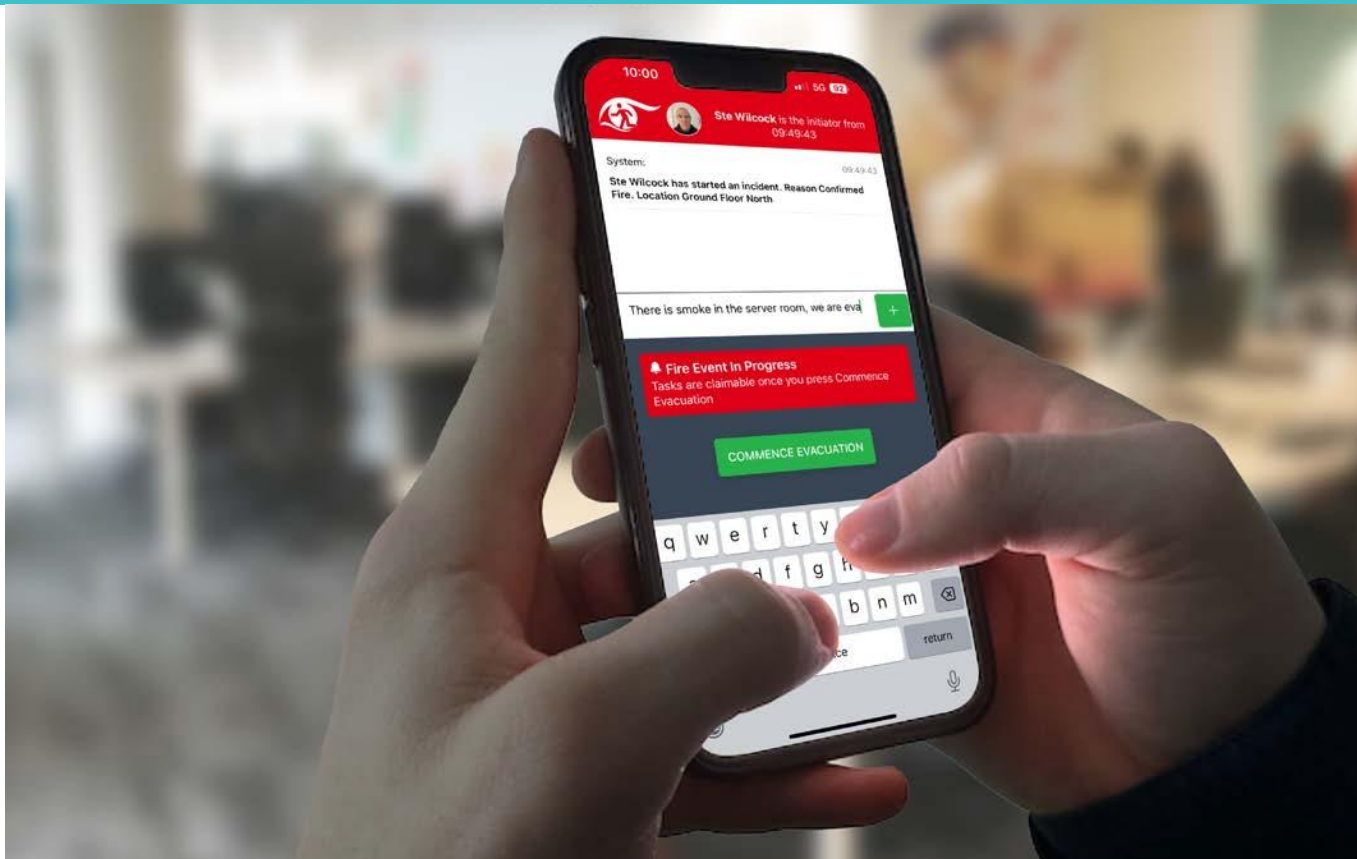
an operation in a hospital will in moments find out why the alarm is ringing as through the app, this information has never been available before in such an instantaneous way.

Other benefits Steve wanted to create was a sense of empowerment and ownership for tasks or roles, the app will confirm to the person claiming a role that they are now the accountable person having accepted and adopted that function. This accountability and ownership was inspired by the effectiveness of the Incident Command System during Fire Service incidents, where firefighters would wear tabards to identify as a functional officer.

If someone had specific needs, these could easily be incorporated into the strategy, for example if there was a wheelchair user that required assisting to a refuge point, this role would be created in the admin to ensure someone picked up that function. The role would have notes on the person's location and their name could be included. In addition there is reliance on refuge intercom systems which might not be staffed. Marshal Eye will provide updates and ensure all persons in refuges know exactly what is happening in real time.

The app now allows staff the freedom to roam the site and move to different areas; this might be hot-desking, attending meetings or even visiting the staff canteen due to the opt in model.

Once an Incident Manager wishes to conclude an incident they simply click 'Close Incident' and they have the option to type in the outcome or the reason. This will appear on all other user's apps letting them know too. Sometimes people are in the dark as to why a fire alarm has suddenly stopped ringing, they may never even find out why. These events can undermine strategy and create an apathy, however the information is now cascaded throughout the entire organisation via the marshal.

As soon as the incident is closed, Marshal Eye will send out a report to designated people via email. It includes a full chronology of the incident, which will assist massively for debriefing and feeding into improvements in the future. It will be the perfect audit trail for practice evacuation drills and analysis of time frames for completion can be made.

Steve wanted to build flexibility to account for as many different scenarios as possible. One aspect was the ability to reject a role. This might be because it needed to be handed over to someone else so the user would log the reason and it would be listed in the narrative log. An Incident Manager can simply hand over to someone senior or just to someone on the next shift. Administrators can create different incidents such as bomb alerts, gas leaks, lock downs for schools or it might be a certain incident type specific to a site.

"Any reported issues are also emailed from the system to designated people that can be selected in the admin screen to receive them. This will create great evidence of diligence amongst the workforce."

There are proactive elements to Marshal Eye such as the facility to report a fire safety issue where a typed message can be sent to the admin, and they can also upload an image. Any reported issues are also emailed from the system to designated people that can be selected in the admin screen to receive them. This will create great evidence of diligence amongst the workforce. Fire Team documents can be accessed through the app also.

At the time of writing, Marshal Eye is entering trials with selected clients. Steve will be attending the Fire Safety Event 2024 at the NEC in Birmingham where he will be showcasing the app to delegates.

Visit www.marshal-eye.com to find out more.