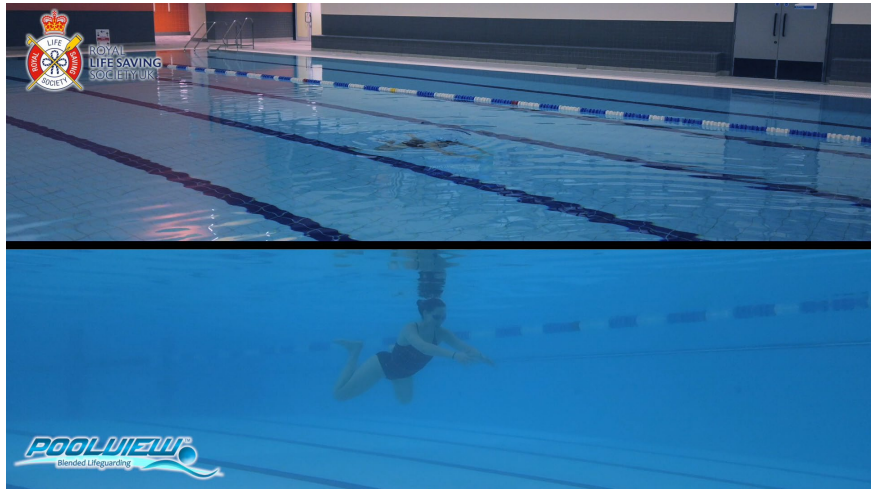
# Swimming Pool Technology

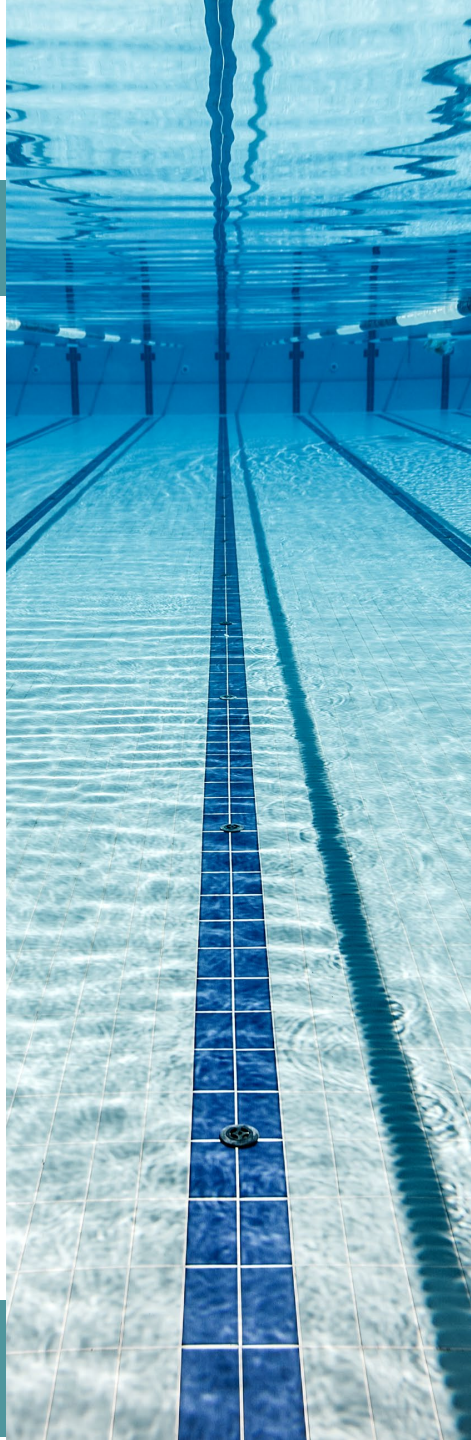
## Evolving the Industry

ROYAL LIFE SAVING SOCIETY UK

# WHY TECHNOLOGY?

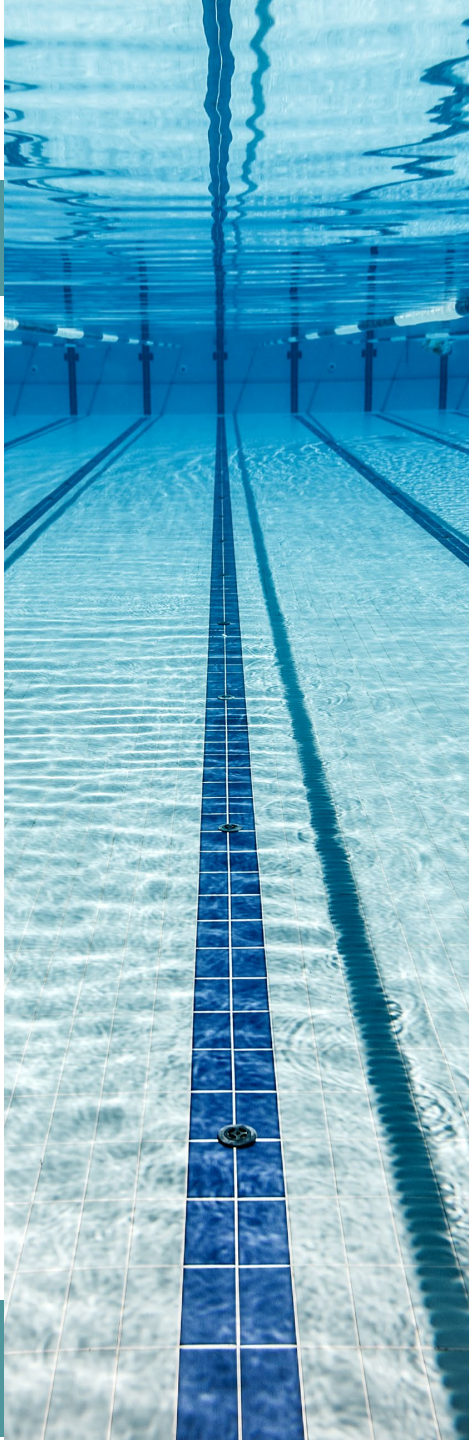
- Fatalities in swimming pools are thankfully rare
- Whilst people do drown, many incidents are medical
- Those in difficulty present very differently
- We now know more about the ability of lifeguards



# LIFEGUARDS' ABILITY

- Lifeguards are human
- The environment is sometimes very hot, noisy and humid
- Did you know that in many European airports, staff viewing the luggage scanners can only remain in one location for 20-30 minutes?
- RLSS UK is committed to research to support swimming pool operators and lifeguards but ultimately reduce drownings



# RESEARCH: LIFEGUARD – THE FUTURE

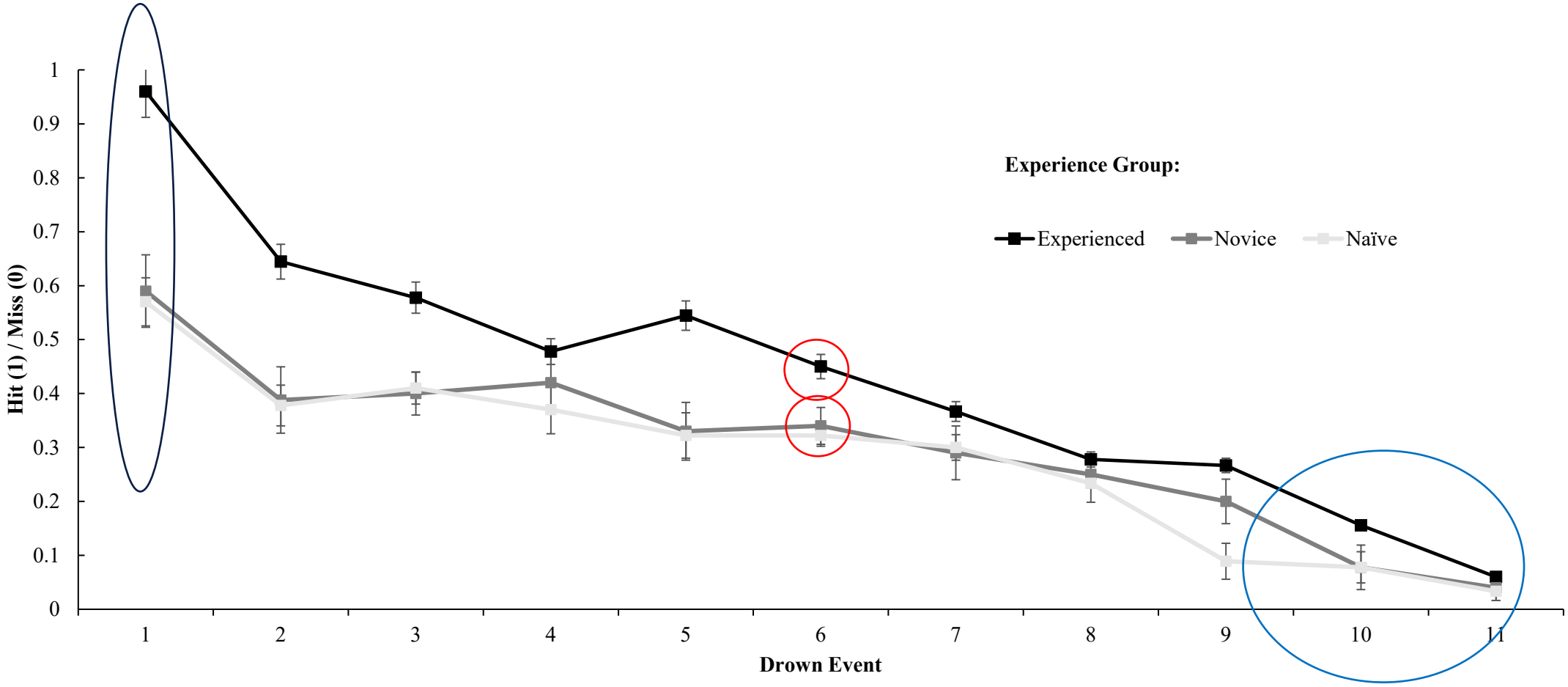
UNIVERSITY OF CHICHESTER

KING'S College LONDON

Jo Talbot
Nick Grazier
Prof Marcus Smith
Prof Steve Williams

Jenny Smith
Ben Sharpe
James Bryant
Emmanuel Obine

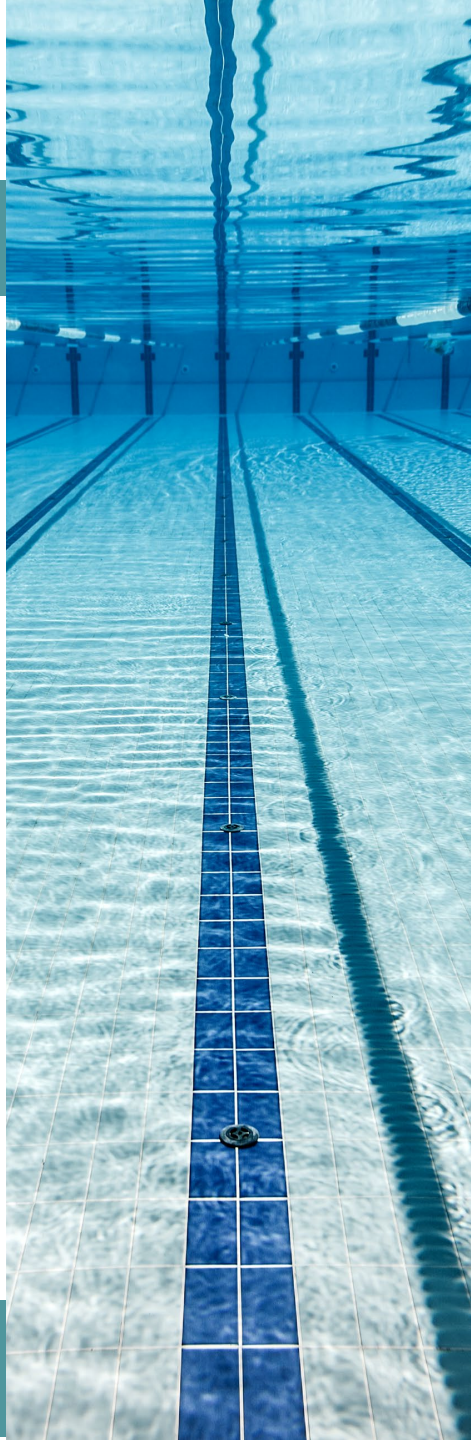
# **Study 2:** Lifeguard Vigilance & the Associated Challenges



# LIFEGUARDS

Lifeguards are imperative to:

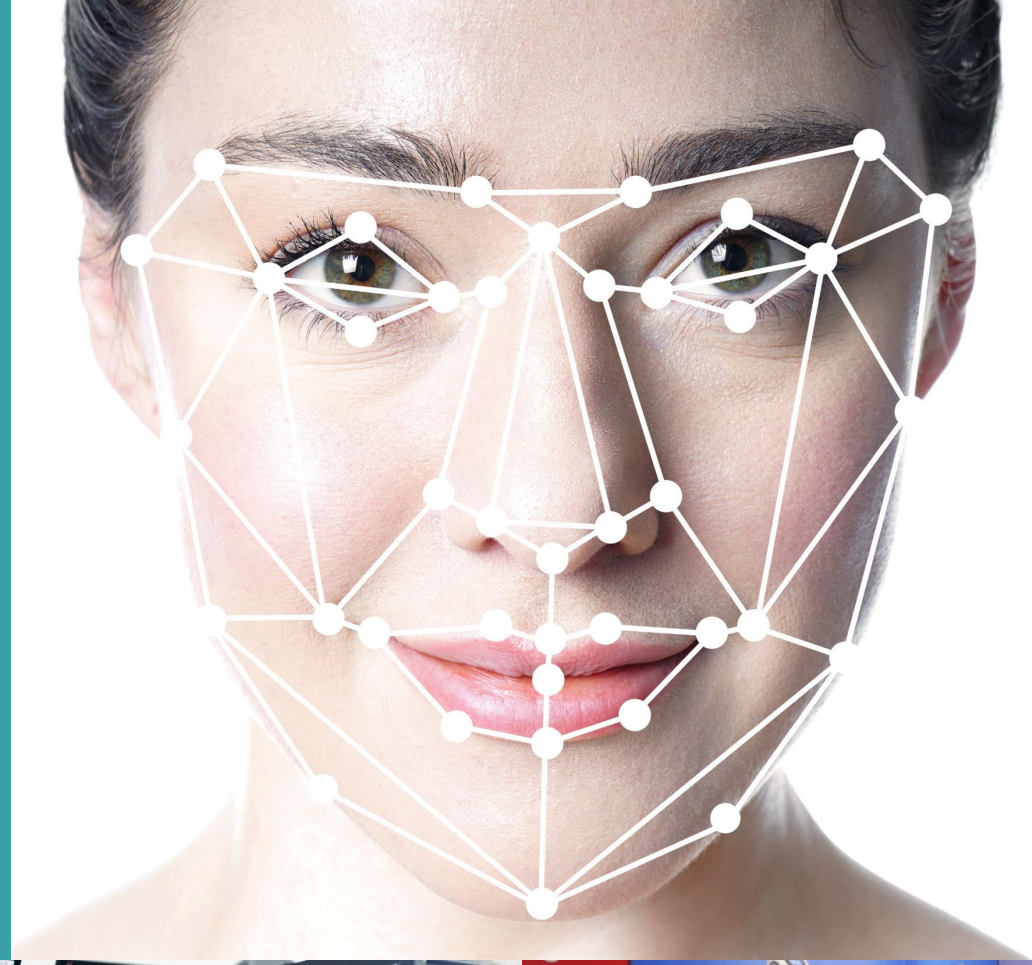
- Identify hazards
- Prevent accidents
- Educate pool users
- React
- Rescue
- Recover
- Resuscitate

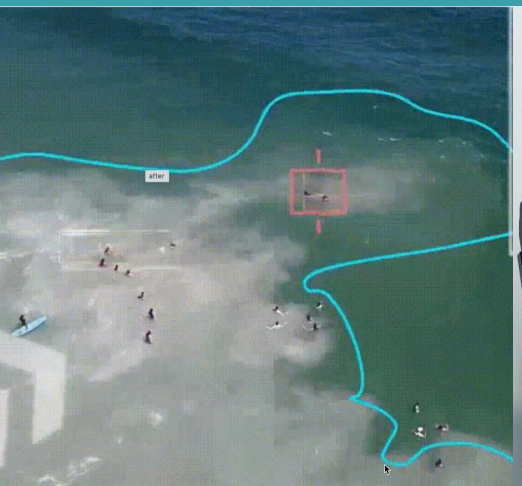


# Technology

Everywhere we look, technology is a part of everyday life.

Is it time for our industry to embrace technology?





# HISTORY

**1999**

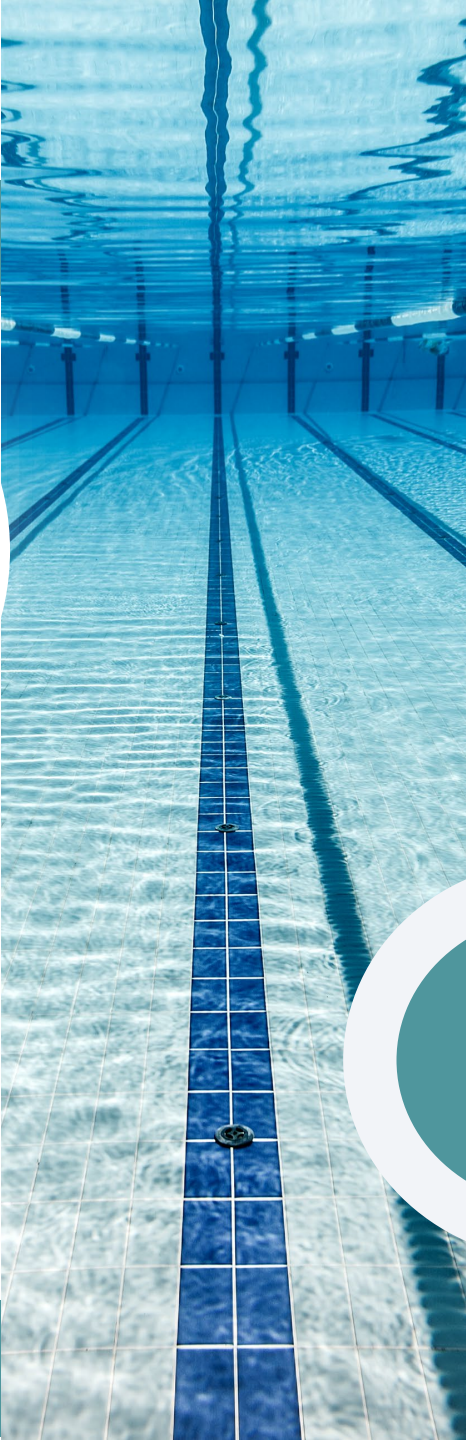
*Detection of a stationary object on the bottom of the pool*

**2023**

*Systems that track swimmers, learn behaviour patterns, and detect abnormal behaviour*

**2025**

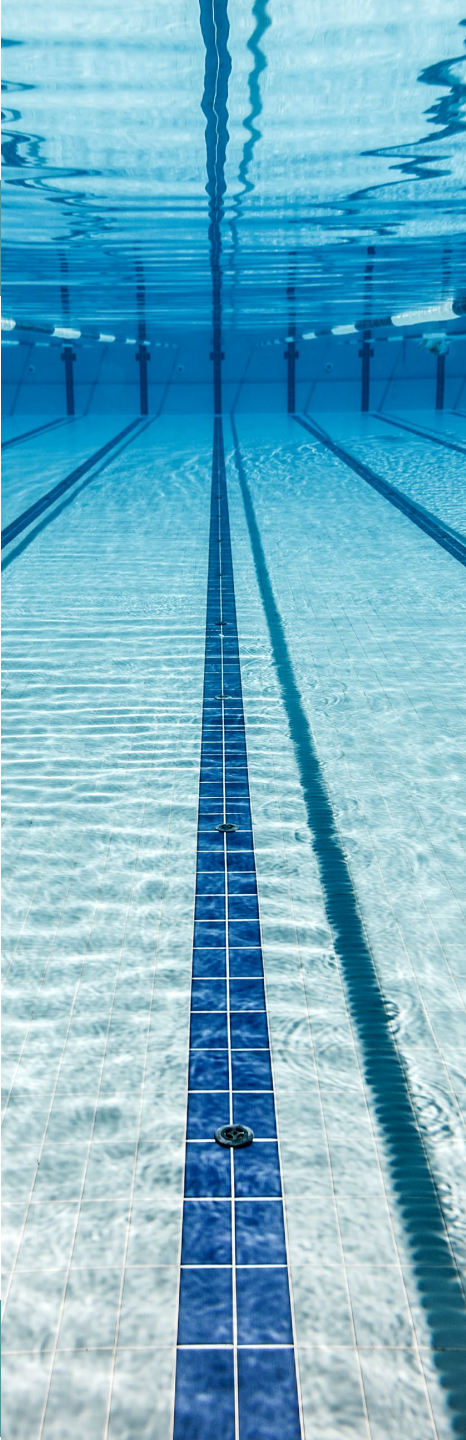
*Systems detect from surface to pool floor and collect data on pool use*



# TODAY

We now have some great technology to:

- Support lifeguards
- Enhance safety in swimming pools
- Provide swimming pool operators with the following:
  - solutions to manage blind spots and design challenges
  - data on swimming pool use
  - opportunity to manage overhead costs



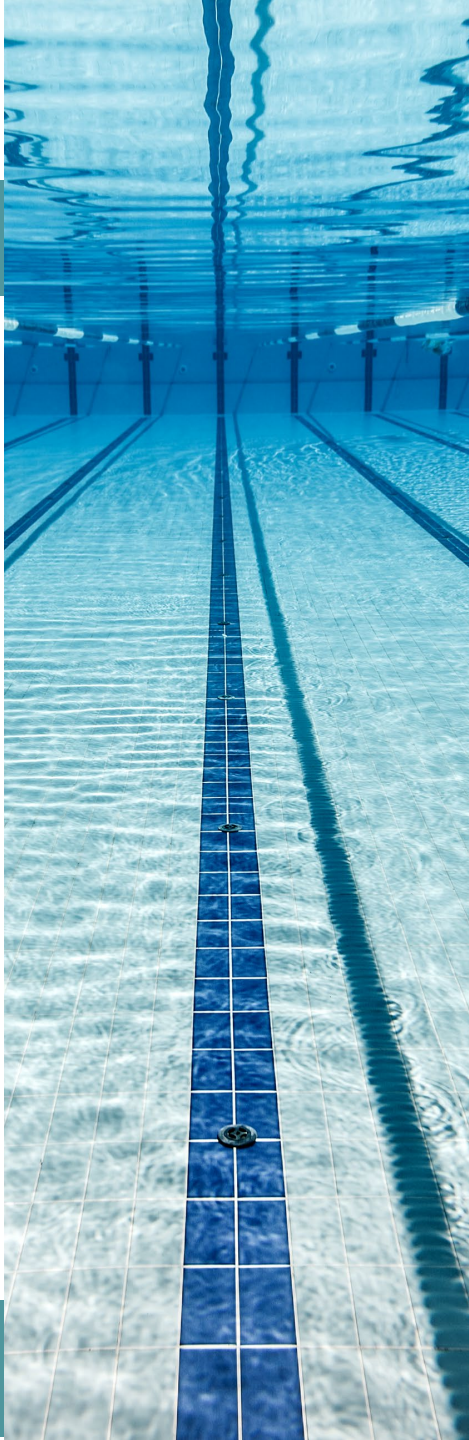
# SYSTEMS

AngelEye

lynxight

POOLVIEW
Safer Swimming Systems

Poséidon
by maytronics



Swimming Pool Supervision Technology ING01

# Guidance for Automated Monitoring and Detection Systems

To provide an additional layer of safety in swimming pools to save lives.

CIMSPA

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Swim England

UK active

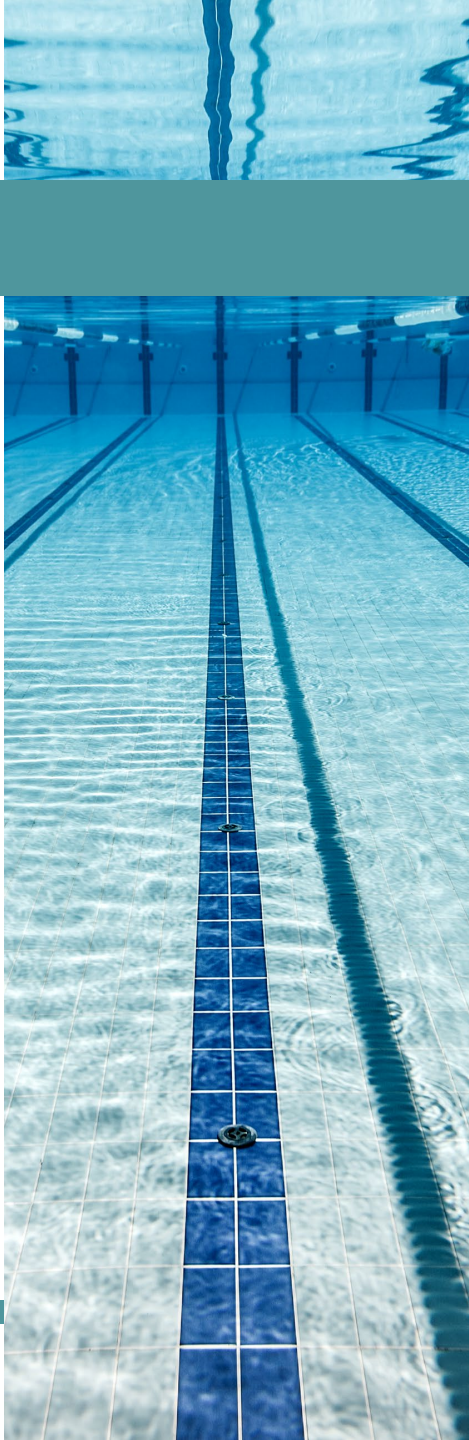
More people
More active
More often

# LIFEGUARDED POOLS

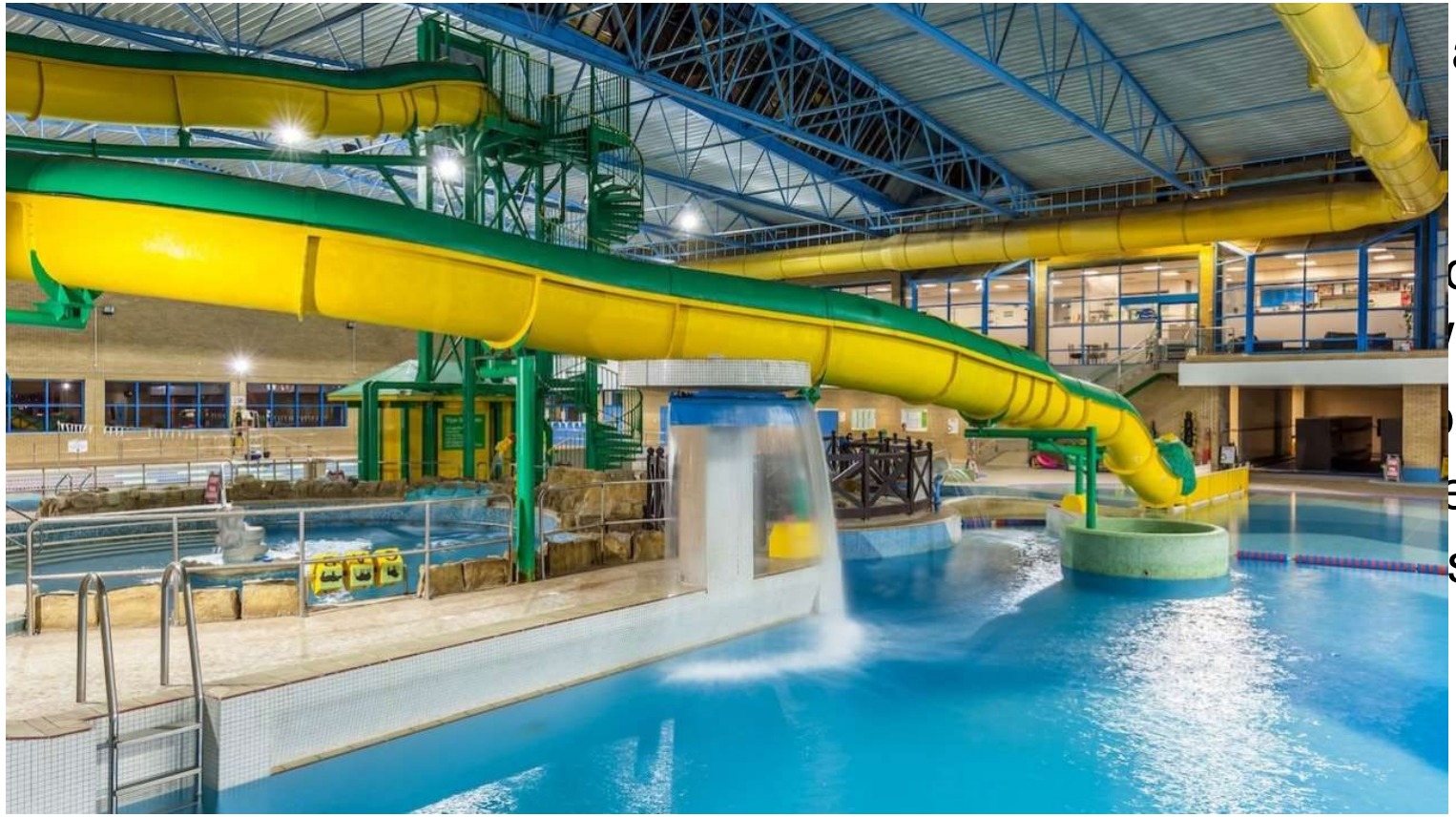
Primary function - to support and alert lifeguards to identify and respond to a developing emergency promptly

Automated monitoring and detection systems **may** be used to help fulfil the guidance in HSG179, which requires 100% visibility of the pool (full volume of water from the surface to the pool basin floor). However, careful consideration must be given to the system's limitations, e.g. coverage.

Lifeguard Zone Visibility Tests (LZVTs) will need to be completed to ensure the lifeguard and the system, can achieve 100% together.



# LIFEGUARDED POOLS



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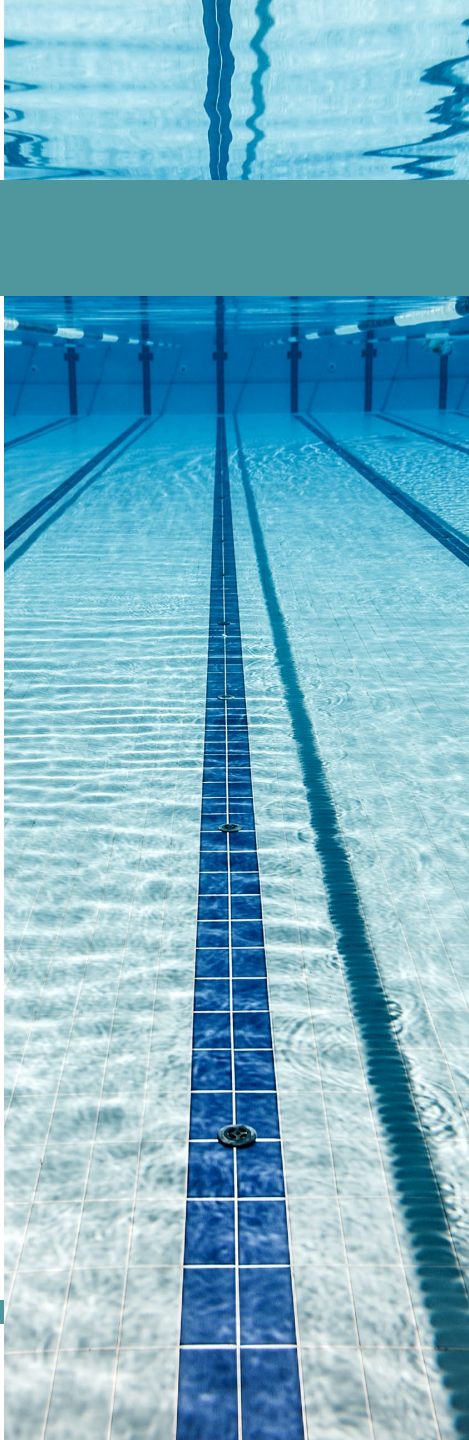
# NON- LIFEGUARDED POOLS

Where a swimming pool operator does not deem it necessary (through risk assessment and guidance) to have lifeguards present to supervise the swimming pool, an operator may choose to use an automated monitoring and detection system to enhance safety and provide surveillance for the swimming pool.

In these circumstances, operators should carefully consider who will respond in an emergency, what skills they will require, and how they will get notified of an emergency.



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vision
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# Types of Technology

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Swimmer behaviour analysis and casualty recognition systems

Submersion detection systems

Personal wearable submersion detection systems

Underwater and overhead CCTV cameras

# Assisted Lifeguard Technology (ALT)

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RLSS UK supports the use of technology to **assist lifeguards** in monitoring and supervising swimming pool users, to **intercept** incidents of swimmers' ill health, and ultimately **prevent drownings**.

# How does Lynxight work?

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Lynxight has 3 main components:

Cameras that collect the data from the pool

Computer server/cloud that analyses the data

A smart watch to alert the lifeguard of a potential emergency

# How does Lynxight work?

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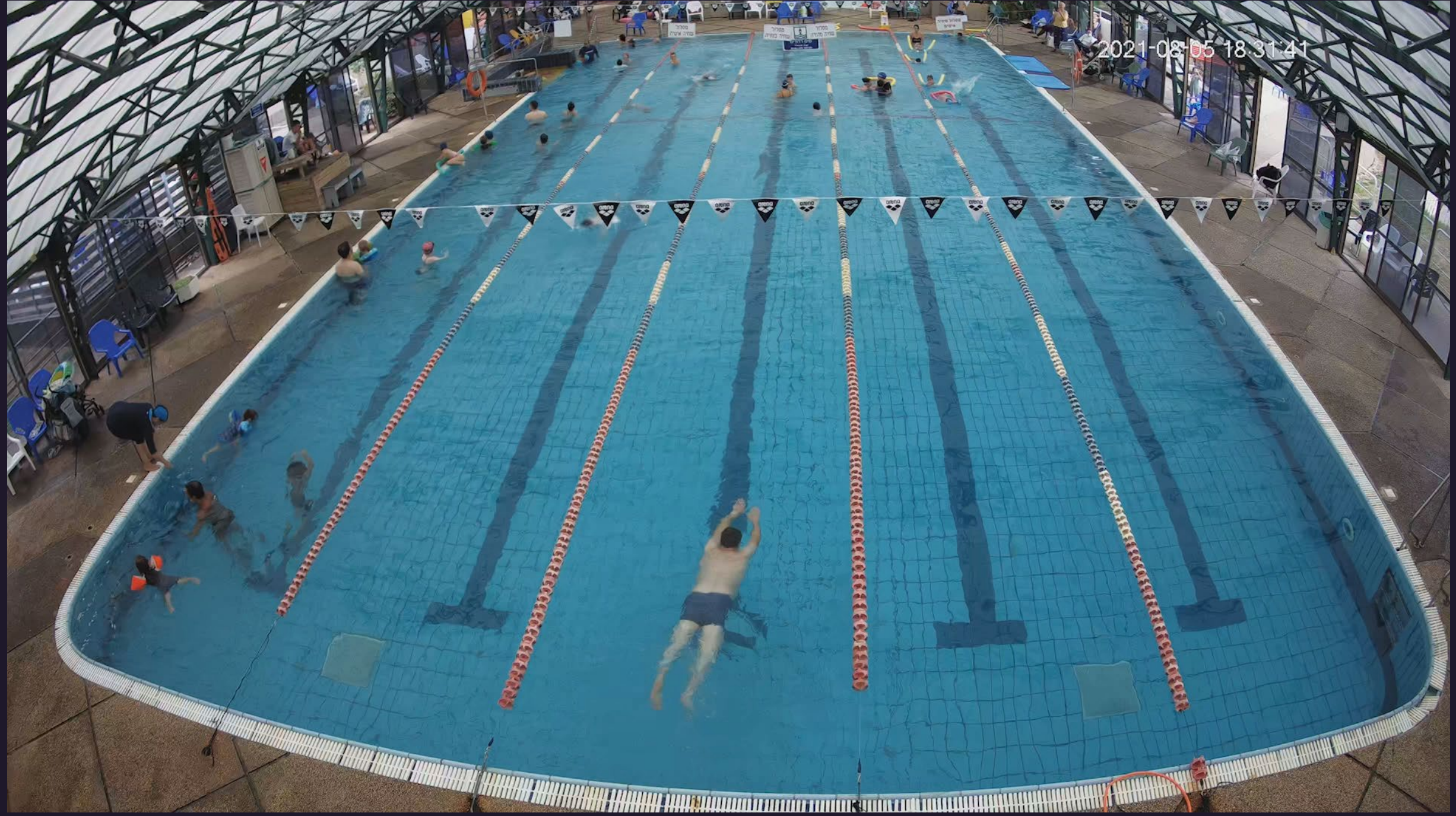
- **Artificial Intelligence (AI)** monitors swimming pool users and detects potential swimmer distress.
- **Image reconstruction** is used to correct footage through ripples and splashes to ensure everyone can be monitored.
- **Swimming behaviour algorithms** help the system detect those that need help.

The video up next shows how the system monitors pool users….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# What do the responders see?

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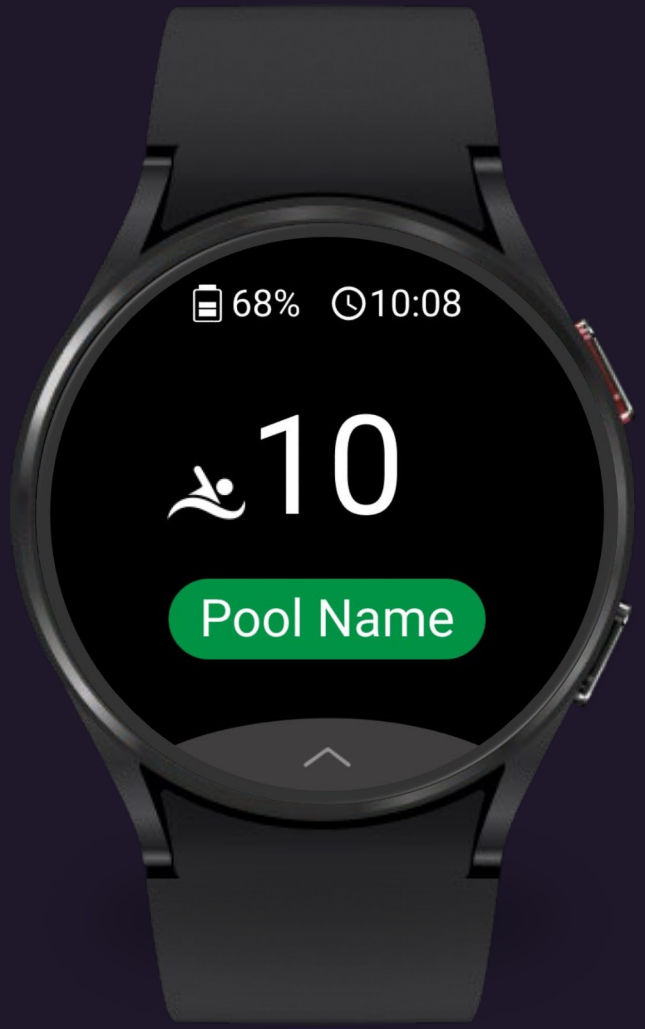


The watch's home screen displays information for the full system. Swipe right or left to move between pools.

On the home screen, you will see:

- The number of pool users
- Pool Name
- % of battery
- Time

# Smartwatch alerts

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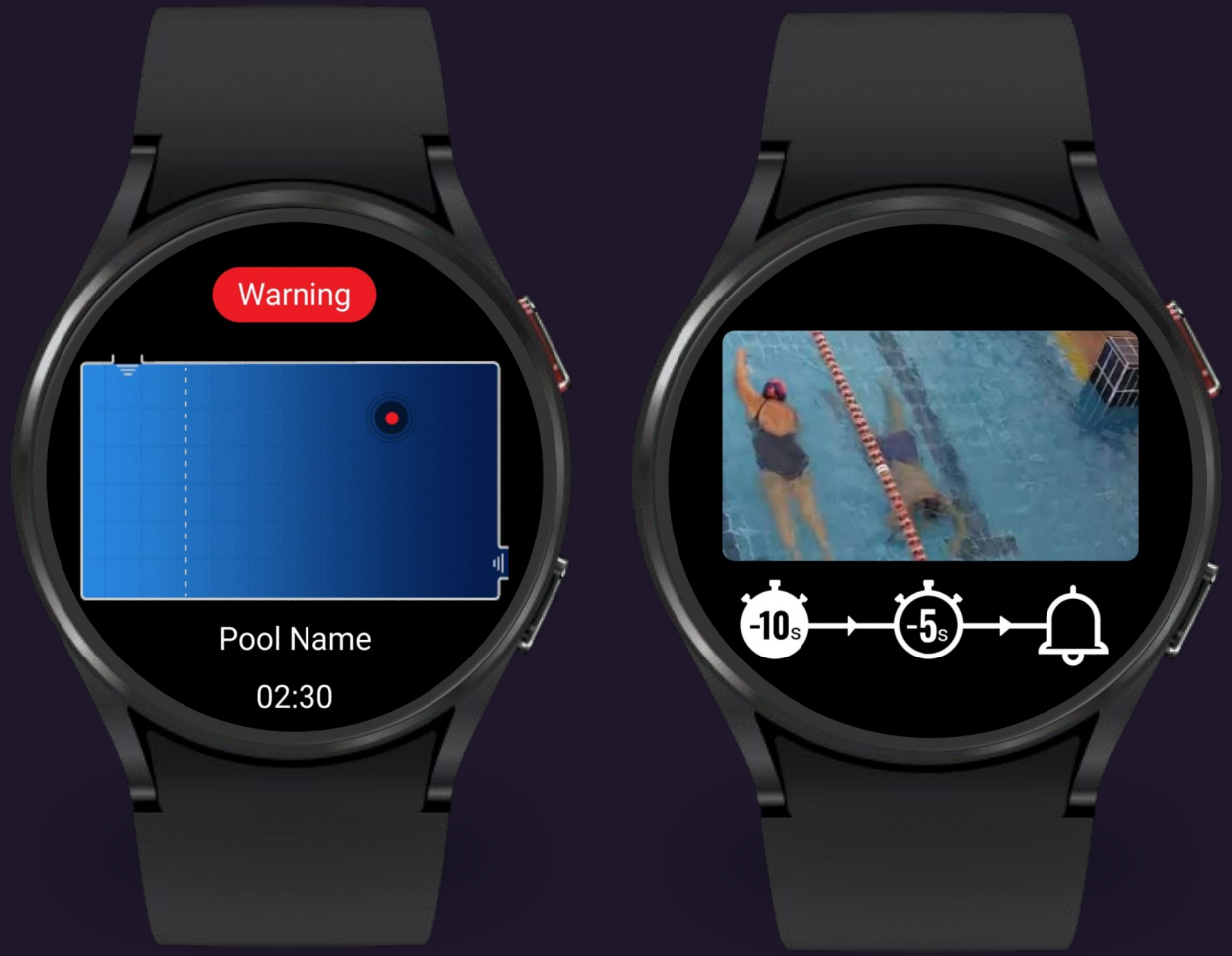
When the system identifies an incident, the watch will:

- Vibrate
- Sound an alarm
- The location of the incident will appear on your watch
- The time since the start of the incident will also appear



# Smart watch alerts

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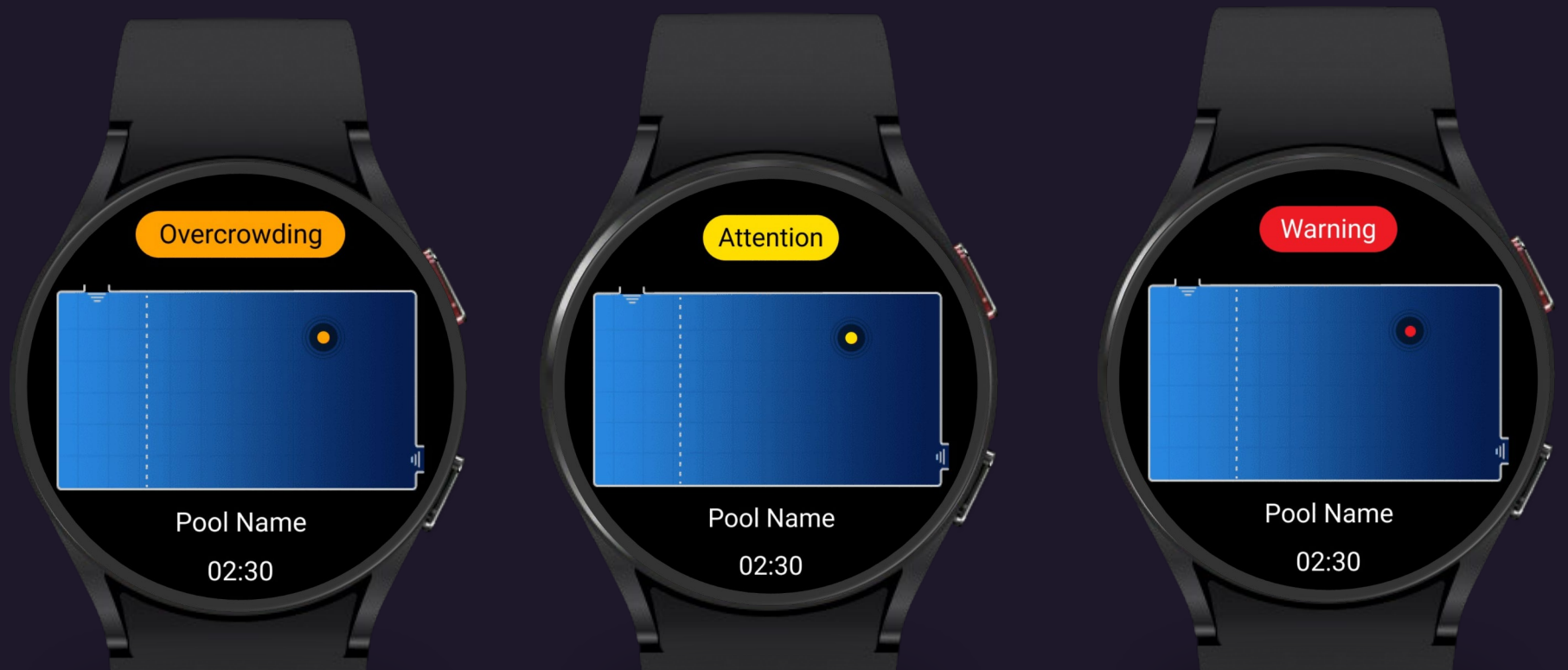
- **Orange alerts** – advisory (for example overcrowding)
- **Yellow alerts** – possible pool user in distress
- **Red alerts** – dangerous submersion



All Pools | Sport Pool | Teaching Pool | Adventure Pool

## Live

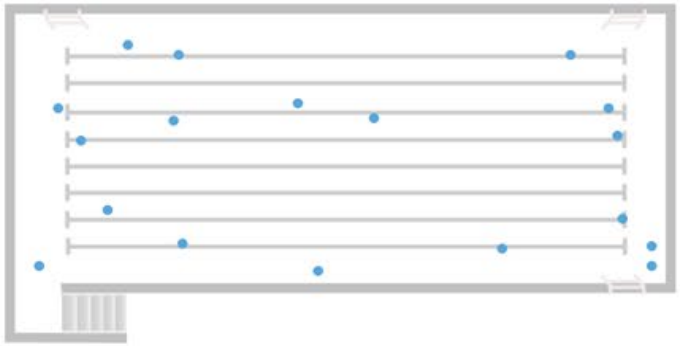
### Risk Level

Medium Risk

### Swimmers Location

18
Swimmers

| | |
|---|---|
| Lane 1 | 3 |
| Lane 2 | 0 |
| Lane 3 | 5 |
| Lane 4 | 2 |
| Lane 5 | 0 |
| Lane 6 | 0 |
| Lane 7 | 2 |
| Lane 8 | 6 |

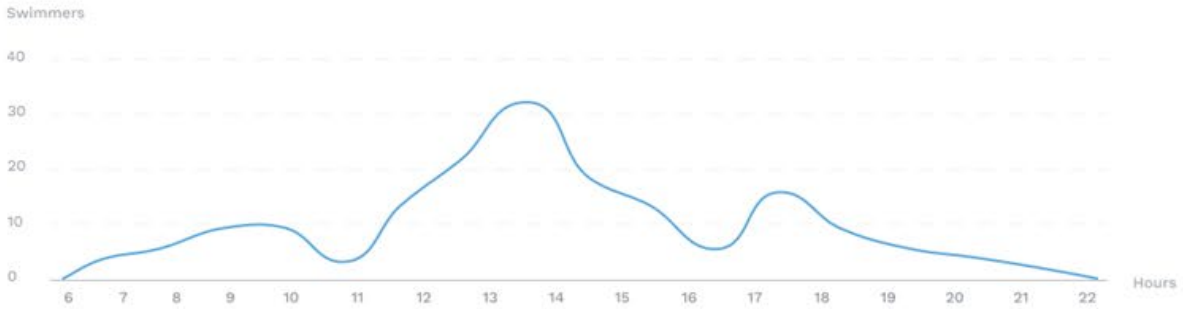


### Connected Watches

- AD:66
- ED:16
- E3:22
- D2:A3

## History

### Swimmer Count




### Safety Events

| | |
|---|---|
| Warning | 6 |
| Attention | 11 |
| Overcrowding | 2 |

↑ 3% more than last month

### Lifeguard Reports

26
Reports

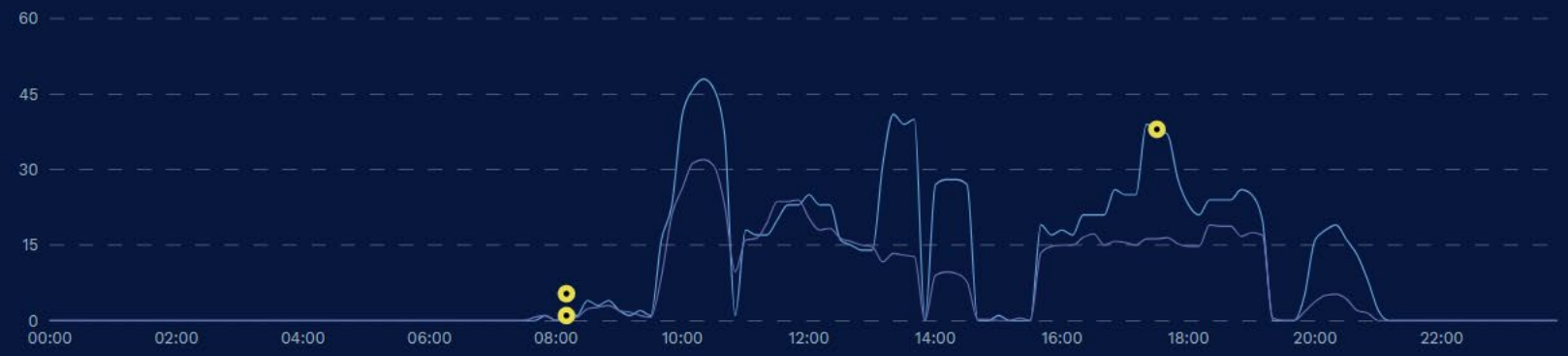
↓ 2% less than last month

## Teaching Indoor Pool

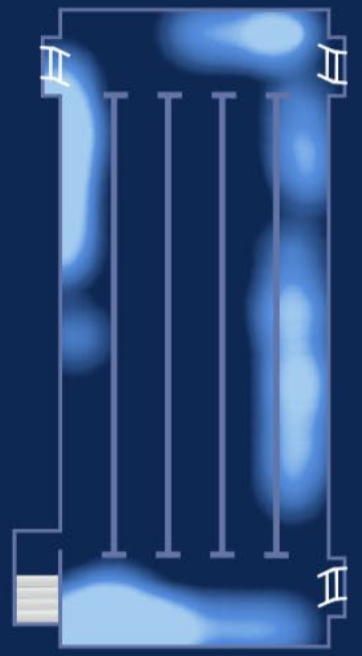
### Swimmer Count

Day Monday Jan 29

Jan 29 Last 4 Weeks average




### Swimmers Heatmap



Low High

Attention 08:18

Attention

Thank you for listening.

Any questions?