Use of AI & Change management when lowering HSE exposure

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AI

Nowadays AI is all around us and developing Fast.

This technology can be used to our benefit, e.g., in lowering HSE exposure.

If applied in our industry → What is required to
- Become successful?
- Create success in terms of change management?

We hope to provide some insights, using an example → RedZone system for **high risk, high activity work** when Drilling wells.

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AGENDA

- **Introduction**
  - The technology – What is a Red Zone system
  - Why needed
  - What does it do

- **Implementation**
  - Success
  - Implementation
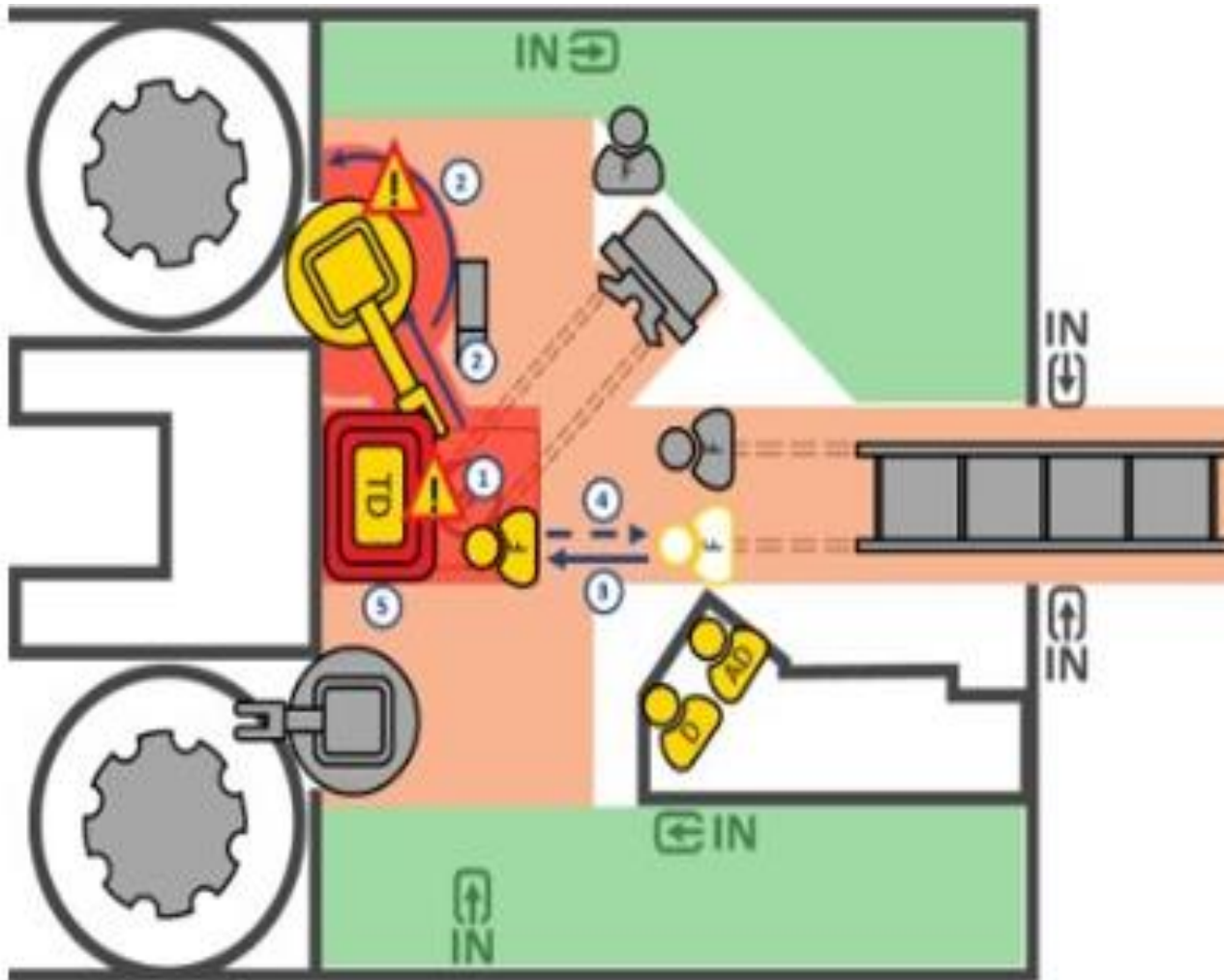 - Change management

- **Recap**

- **Questions**

Drilling of Wells
– An impression -

- An old industry
- High Risk Activities
- Manual and machine handling combined
- Usually, proven technology only
- HSE Improvements possible

Safe zone | Danger zone | Red Zone | Active | Inactive

What is a Redzone system?

- **AI driven Technology** to prevent people entering Red zones.

- Providing **overview of the positions** of all crew members, even in blind spots.

RED ZONE SYSTEM - Why is it needed?

- Drilling Operations:
  - Still require people being present on the Drill floor, despite machines and technology used
  - Maximum amount of people presence for every activity based on Risk Assessments
  - Limit/lower HSE exposure → no unnecessary people present in red zone areas

- It is not always easy to comply – Why?
  - Dynamic environment
  - People are moving
  - Equipment is moving
  - Resistance – always done like that

- Large Energy companies drive this to become ALARP

RED ZONE SYSTEM - What does it do?

1. PROCESS OPTIMIZATION
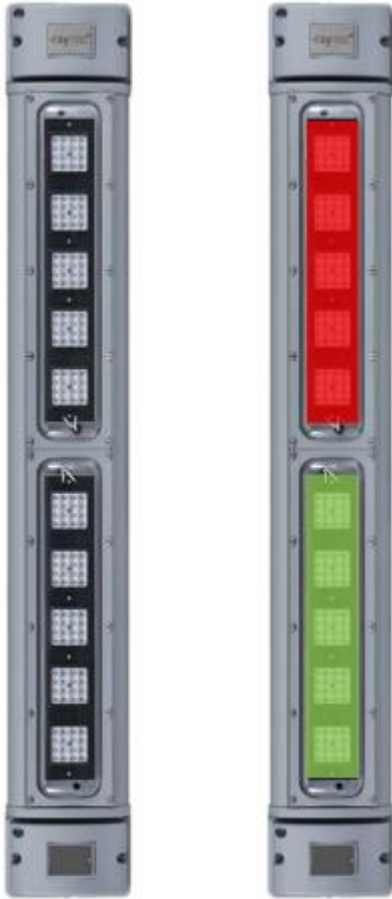

2. RED ZONE MONITORING

3. PERFORMANCE ENHANCEMENT

- Maximise number of people allowed in a Red Zone during any given operation
- Detect specific operations based on machine motions
- Conditional redzones → Dropped objects
- Provides intrusion alarms and overview
- Less exposure time and a more efficient way of working

HOW?

THE HARDWARE

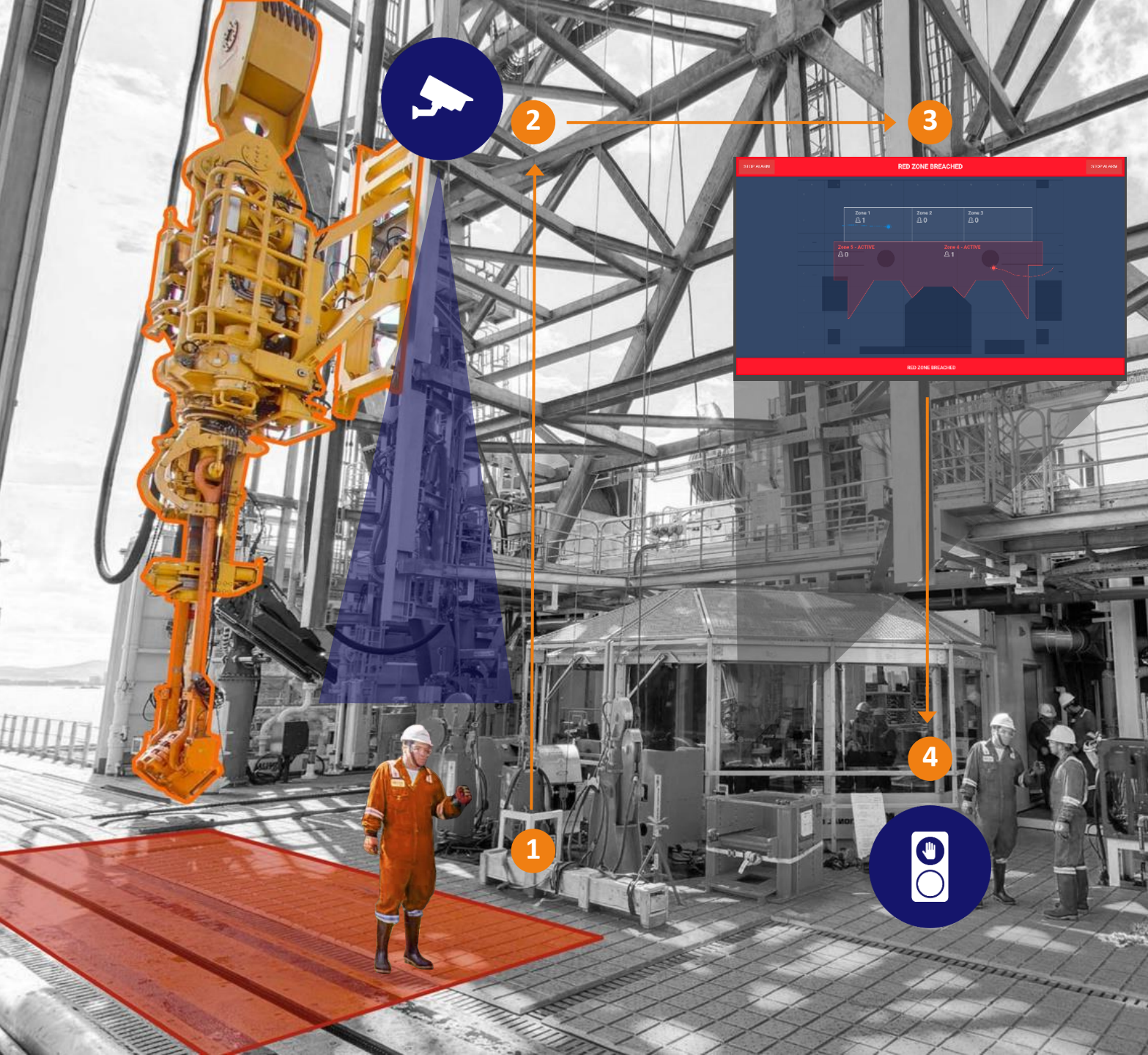**THE INDICATOR LIGHTS**

THE CAMERA

THE MONITOR

Overview positions of all crew members, even in blind spots

Extra pair of eyes to keep people safe, while **maintaining privacy**

MONITORING CONDITIONAL RED ZONES

THE PROCESS

1. Person on the drill floor

2. Dedicated CCTV camera and AI determine x,y-position of the person

3. People are indicated as blue dots on the driller's HMI. When a blue dot enters an active red zone, both the driller and the people on the drill floor are alerted by a red-light signal

4. An indicator light indicates if a conditional red zone is active (red), inactive (green/orange), or if there is an alert (flashing red)

5. Stopping equipment based on events

DEMO: MONITORING SINGLE CAMERA
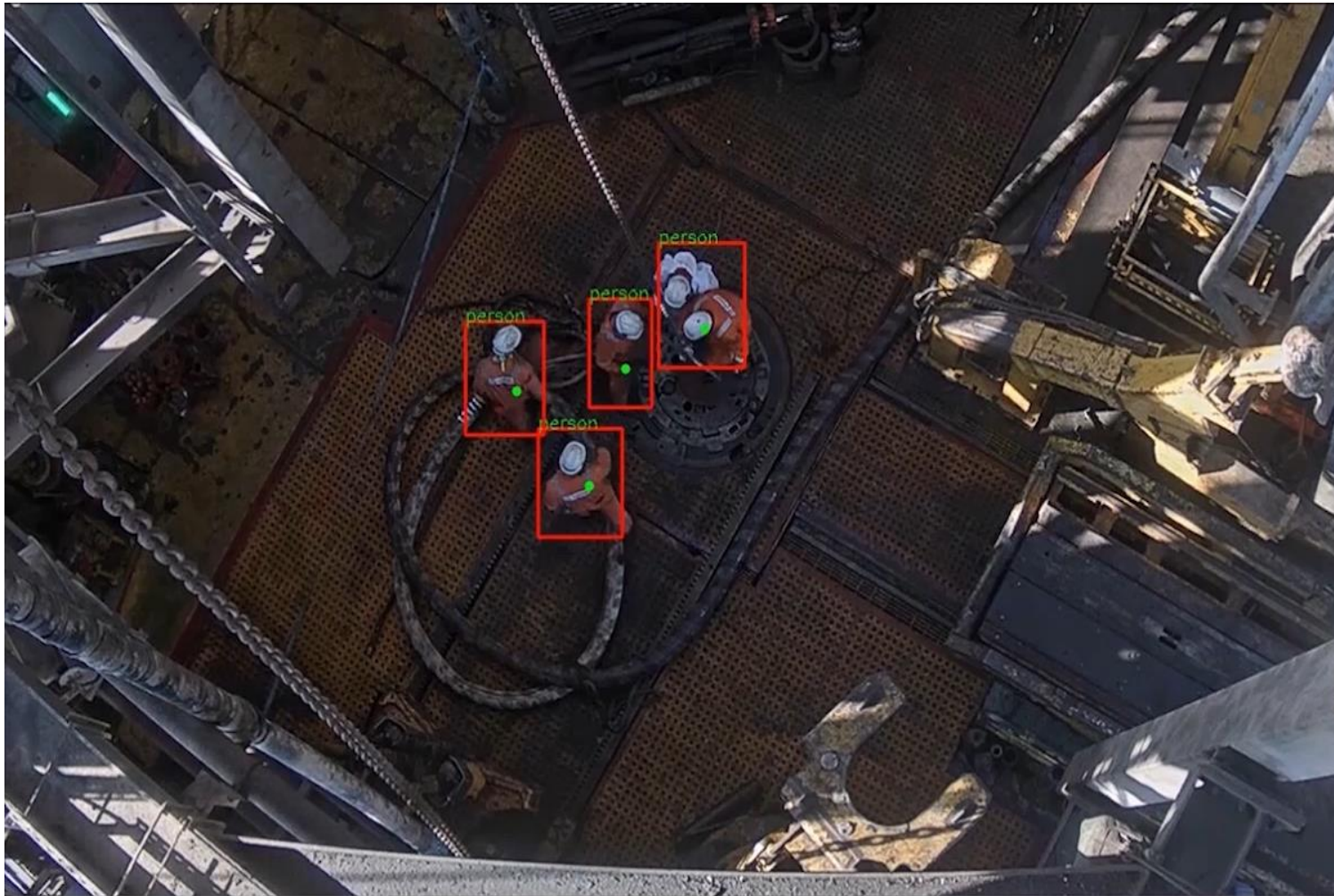
IMPLEMENTATION GOAL → SUCCESS

$$S = Q \times A$$

S   Success

Q   Quality of the Solution

A   Acceptance

IMPLEMENTATION & CHANGE MANAGEMENT

Set-up	Buy-in	Adoption	Ownership
Knowledge transfer	Kick off	Product training	Champion training
Attendees • Maintenance Engineers / Technicians	**Attendees** • Rig manager • HSE reps. • Onshore reps.	**Attendees** • Drill crew • Drillers • Champions*	**Attendees** • Champions • Maintenance Engineers / Technicians
Technical handover	**RedZone introduction**	**Redzone training**	**RedZone deep-dive**
The «How»	The «Why & How»	The «How»	The «What if»
The focus is on handing over the RedZone installation to ensure the rig can maintain it as intended.	The focus is on communicating how RedZone will help this group to achieve its safety targets.	The focus is on giving practical tips on how RedZone makes their daily operations easier.	The focus is on how to optimise RedZone use and troubleshoot it if something goes wrong.

IMPLEMENTATION & CHANGE MANAGEMENT

- **Psychological effect**
  - Do not underestimate this effect on people → Big Brother is watching you?

- **Implementation coaches** support the crews, to:
  - Raise awareness
  - Encourage responsibility
  - Facilitate a sustainable positive implementation of the Redzone Safety system

- **Champion/change agent**
  - In each crew - expectations
  - Crewmember with HSE passion and standing within the crew
  - Support day to day implementation
  - Work instructions aligned with way of working

IMPLEMENTATION & CHANGE MANAGEMENT

- **Leadership**
  - Appoint people
  - Share results
  - Celebrate success
  - Take away blockers
  - Communicate
  - Find trends and improve safety & performance

- **The crew working with the system** – What's in it for me?
  - Safer, more reliable operations
  - Personal Safety (not a productivity improvement tool)
  - Safety for others
  - Fewer emergencies, less overtime
  - Dropped Object warning – Conditional redzone

RECAP

- SMART Technology
  - **Extra pair of eyes**
  - **Overview of the peoples whereabouts**, even in blind spots
  - Detection of **(un)expected machine movements**
  - **Fast detection** of Red Zone intrusions
  - **Collecting data** about human behavior, exposure and efficiency for analysis and improvement
- People learn how to use, accept and own the system – change management is required →
  S = Q x A

- The Red Zone system results in less exposure time of crewmembers

- **What applications do you see for other industries? (process industry, warehouses, etc.)**

QUESTIONS ?

Versatec Energy BV

Porthos project
CO₂ reduction through storage beneath the North Sea

Rotterdam CCUS
Porthos project

One Dyas N05 project
CO2 reduction by using renewable power from Riffgat

Versatec current projects/clients (subset)

gasunie

ebn

Port of Rotterdam

NGT

one dyas

Chevron

Shell

PETROGAS

Gate terminal
Gas Access To Europe

BIOENERGY
COEVORDEN

Delivering operations assurance support.
Since 1993.