# Drilling Rig RedZone detection a Journey from edge to cloud

Martijn Handels

ROLLOOS

# RED-ZONE MONITORING

## ACTIVE SAFETY ON THE DRILL FLOOR

# CENTRALIZING KNOWLEDGE & EXPERIENCE

Offshore operations are like an airline. Remote operating assets are part of a bigger fleet. In order to optimize this fleet you have to centralize knowledge and experience.

## MISSION

To maximize safety and efficiency of offshore operations by centralizing their knowledge and experience.

### INNOVATIVE SERVICES

We offer dedicated end-to-end innovative services to common challenges for offshore industry.

## PROPOSITION

- CCTV & COMPUTER VISSION
- DATA ANALYTICS
- SMART COMMUNICATION

## MARKETS

- OFFSHORE OIL & GAS
- OFFSHORE WIND
- SPECIAL MARINE

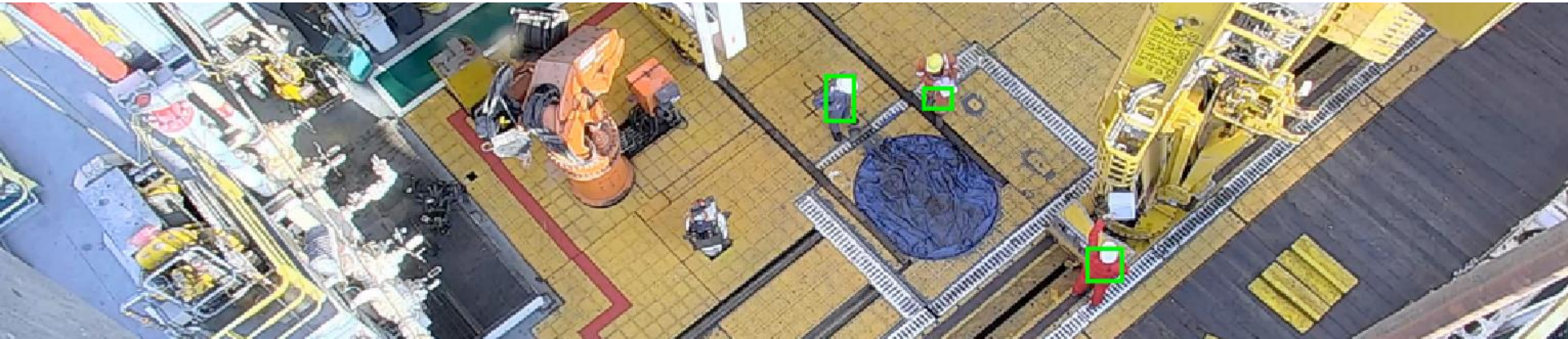
# RED ZONE TOOLBOX

# KEY CHALLENGE

## KEEPING PEOPLE SAFE ON THE DRILL FLOOR

Many people working in a small space surrounded by intermitted moving heavy equipment creates a hazardous working on the drilling floor.

- Crew needed on the drill floor for specific jobs; risk of being in the line of fire
- Moving heavy equipment; risk of getting caught in between
- Risk of potential dropping objects



# ROLLOOS' CONTRIBUTION

## GOING BEYOND WITH ROLLOOS RED ZONE APPLICATION

To assist **all parties** involved in drilling operations to deliver a well in a **safe, cost-effective** and **timely** manner

- Detect & Locate People
- Alert in case of red zone breaches
- Logbook of breaches
- Analyzing operations & procedures
- Identify hidden lost efficiency
- Remote access & analysis



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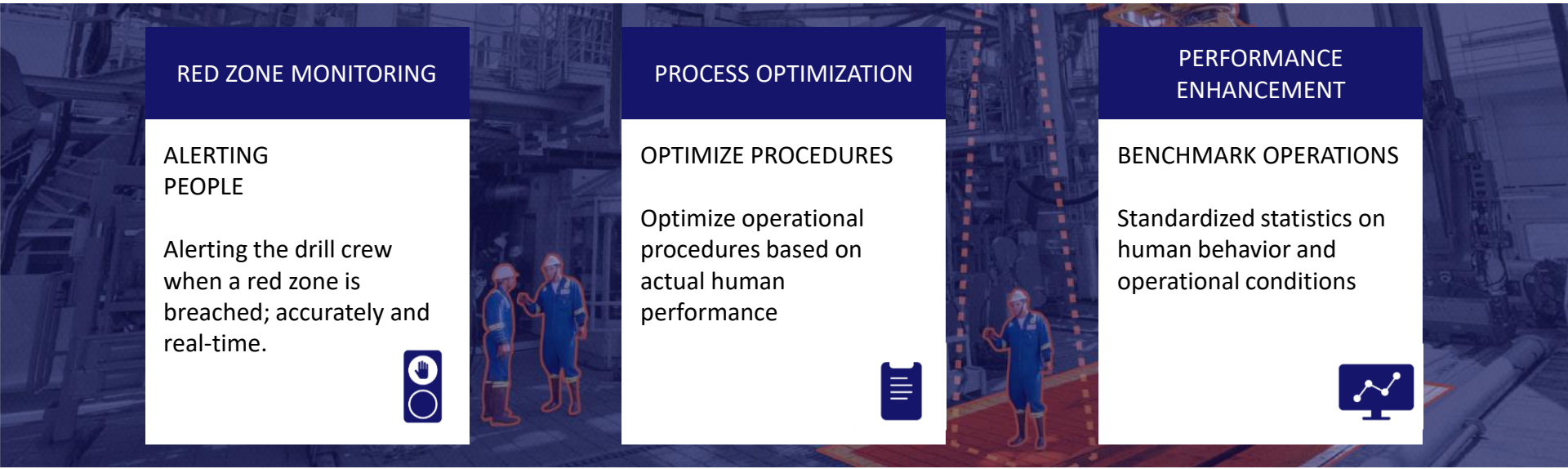
# RED ZONE MANAGEMENT TOOLBOX

## OPTIMIZING SAFETY & EFFICIENCY

Rolloos' initial "red zone monitoring" system has evolved into **a toolbox** of applications that supports the drilling operations to deliver a well in a **safe, cost-effective and timely manner**.



### RED ZONE MONITORING

ALERTING PEOPLE

Alerting the drill crew when a red zone is breached; accurately and real-time.

### PROCESS OPTIMIZATION

OPTIMIZE PROCEDURES

Optimize operational procedures based on actual human performance

### PERFORMANCE ENHANCEMENT

BENCHMARK OPERATIONS

Standardized statistics on human behavior and operational conditions



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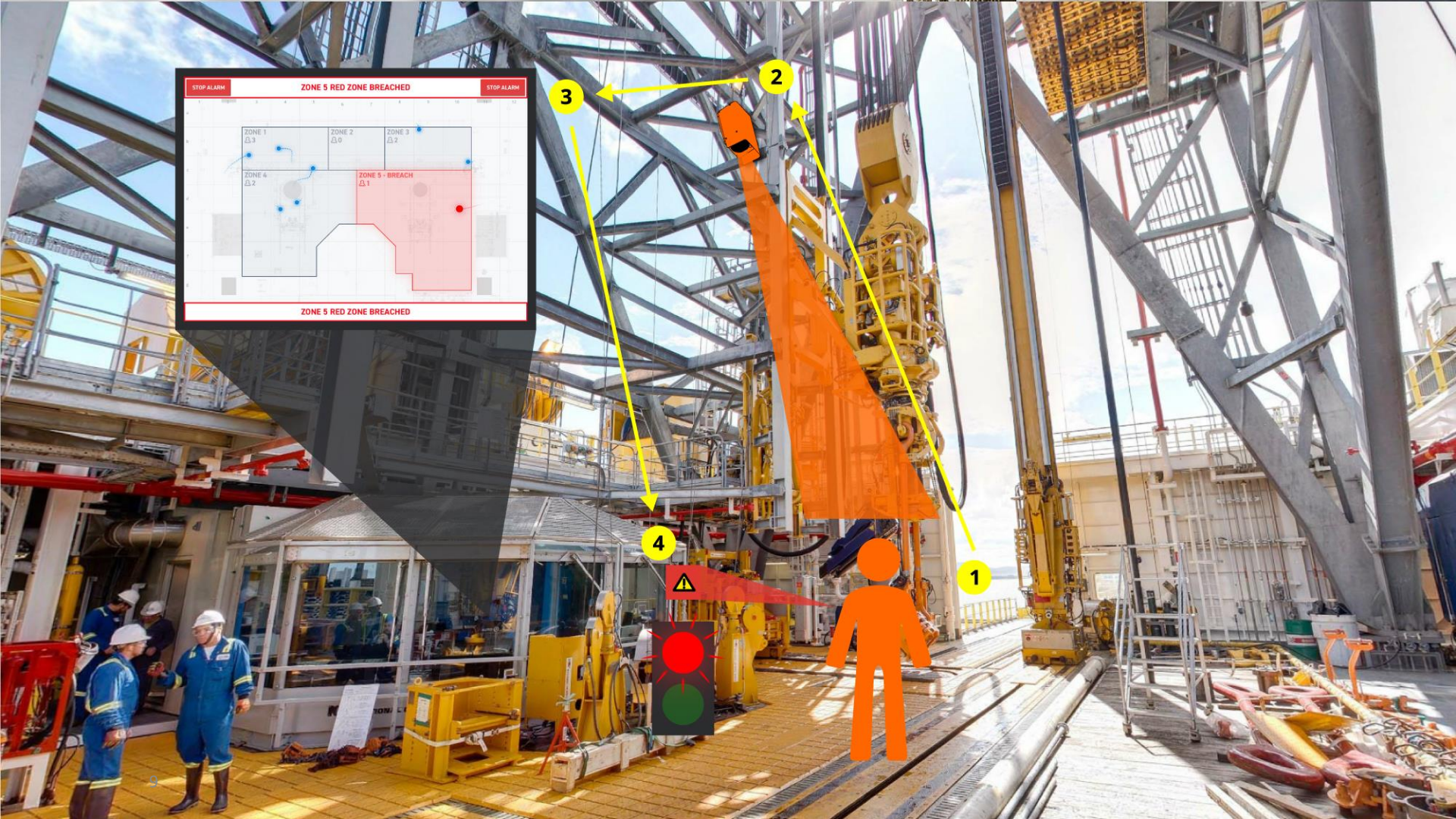
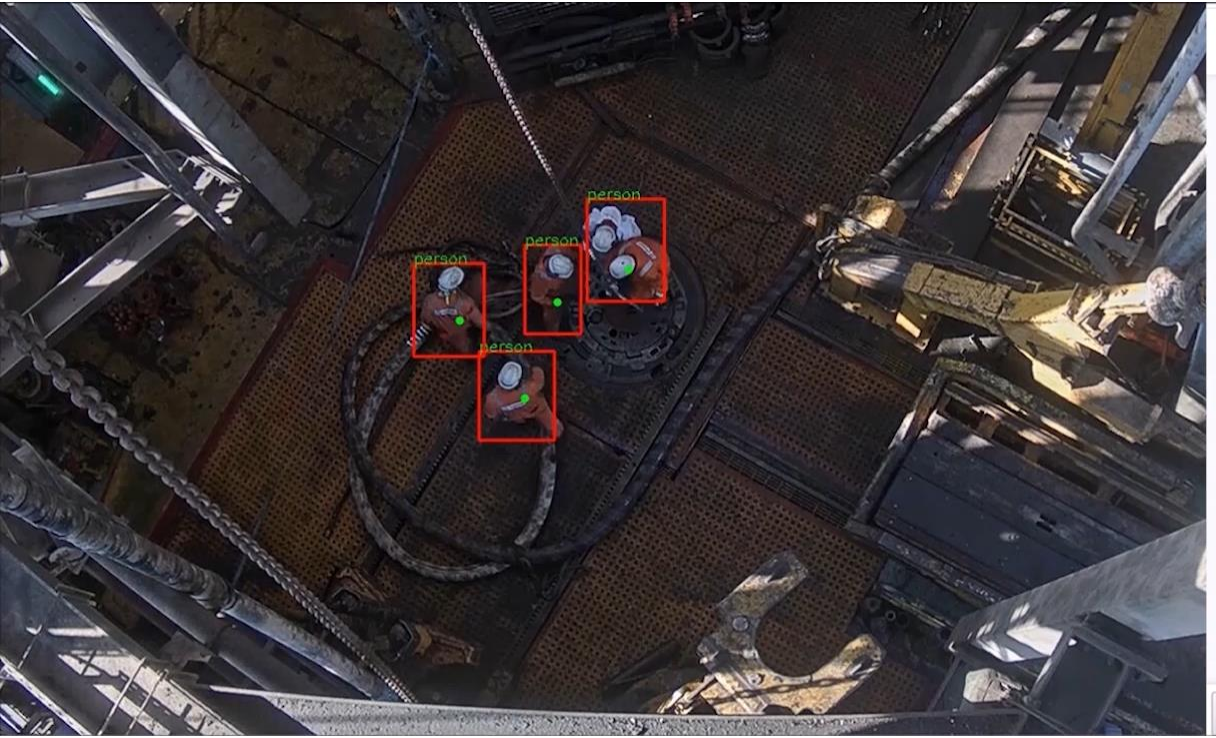
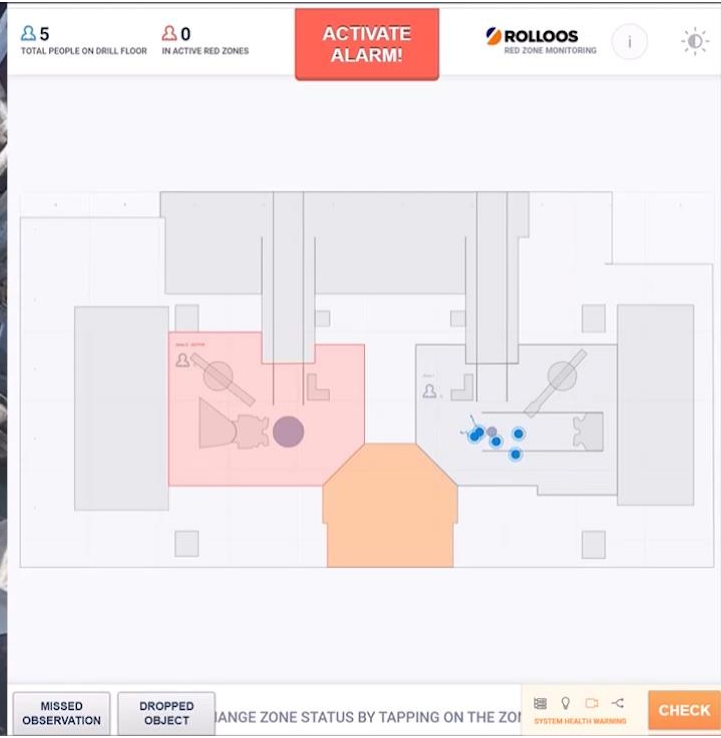

STOP ALARM
ZONE 5 RED ZONE BREACHED
STOP ALARM
ZONE 1
3
ZONE 2
0
ZONE 3
2
ZONE 4
2
ZONE 5 - BREACH
1
ZONE 5 RED ZONE BREACHED
1
2
3
4

# RED ZONE MONITORING SINGLE CAMERA



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# PEOPLE & EQUIPMENT DETECTION

**PEOPLE DETECTION**

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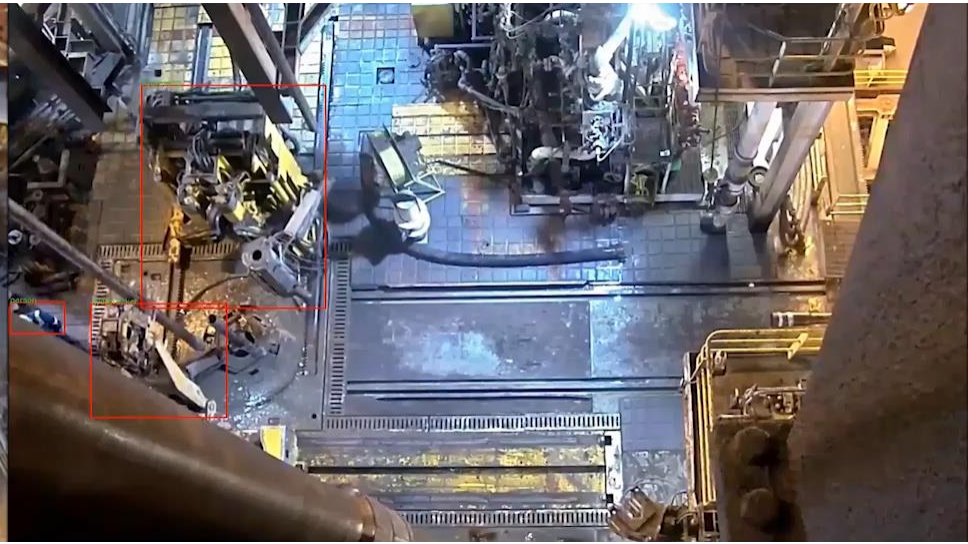



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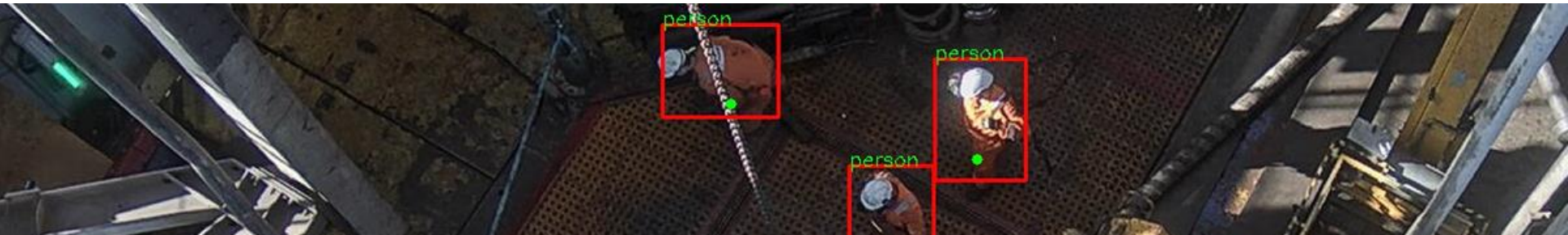
# USE THE HUMAN FACTOR TO OPTIMIZE

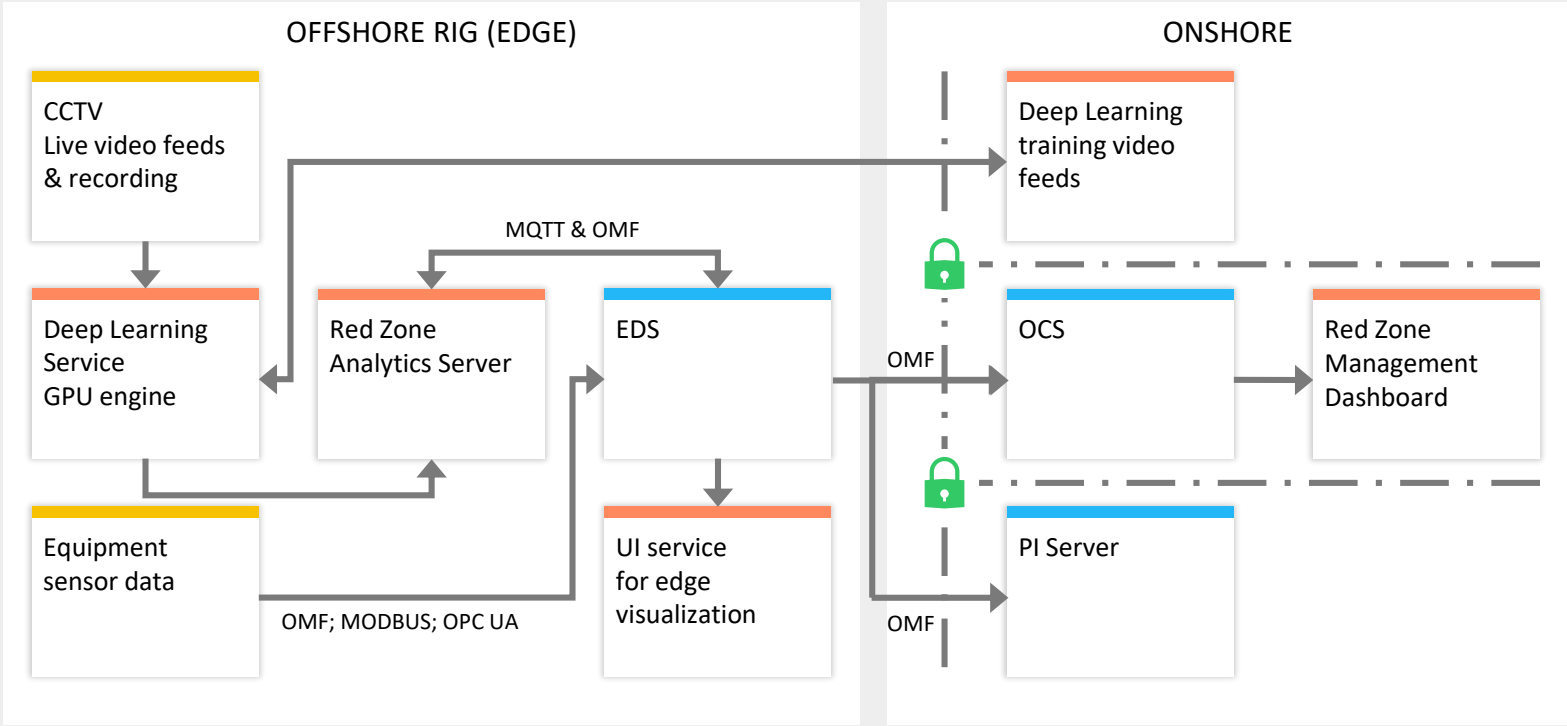
## INTEGRATION OF HUMAN BEHAVIOR & MACHINE DATA

Identification of hidden efficiency and safety improvements with an integrated data-driven approach.

- Conditional activation of red zones based on position and motion of equipment
- Automatic reporting on operational performance
- Analyzing human motion patterns based on operational state/mode
- Automatic detection of incidents and/or unwanted behavior
- Identification of inefficiencies based on synchronization of motion of people and equipment

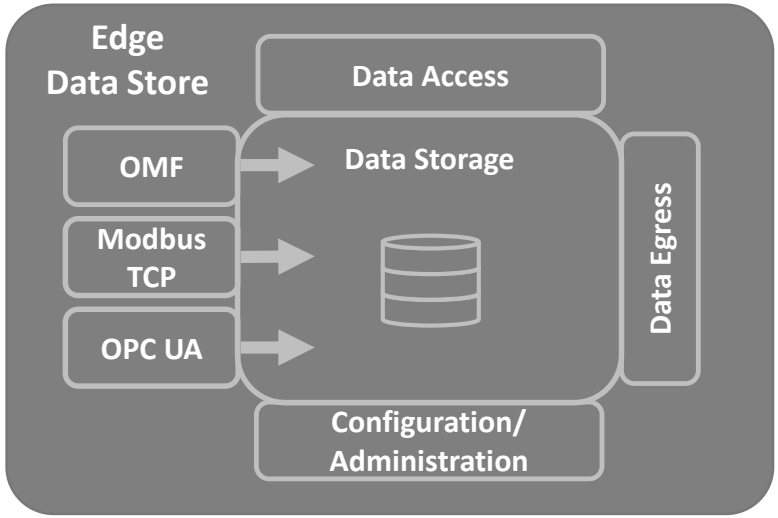


# RED ZONE ARCHITECTURE



# WHY EDS

- Lightweight flexible but powerful edge historian
- OS independent
- OSIsoft Message Format Ready
- Scripted Configuration for remote management
- Time synchronization of two separate back end systems
- Micro service architecture
- API Access on edge and cloud



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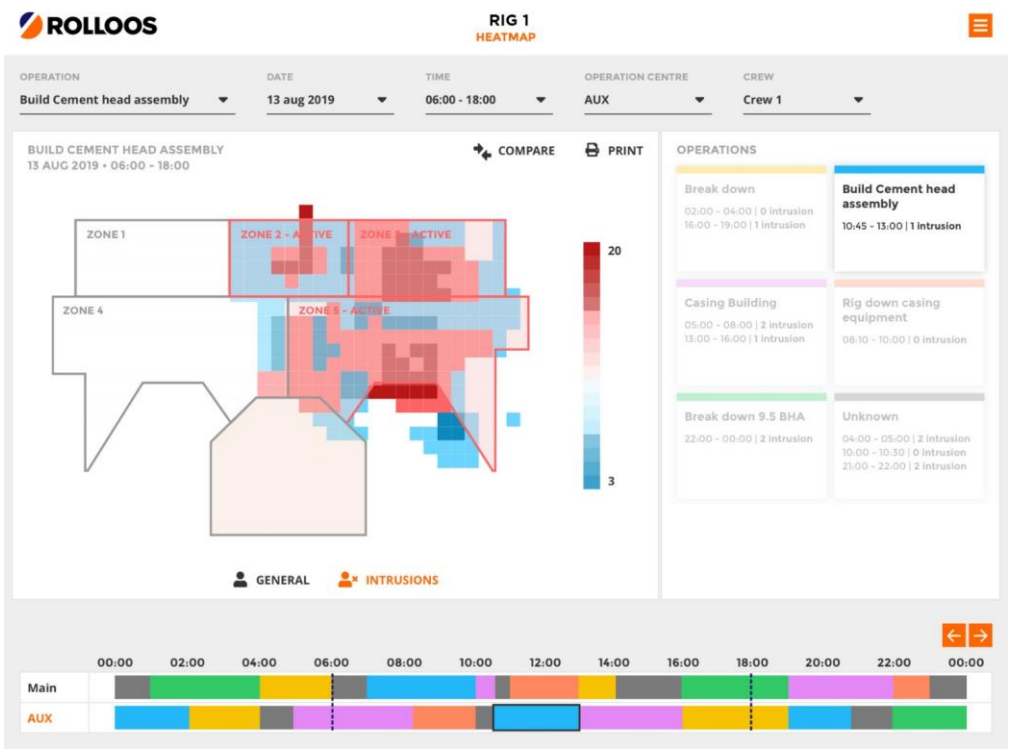
# ROLLOOS RED ZONE DASHBOARD

## CENTRALIZING INSIGHTS

- Operation dependent heatmaps to visualize human movements
- Time synchronization of two separate back end systems
- Large amounts of time series data
- Micro service architecture
- API Access on edge and cloud



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# SPEAKER DETAILS

- Martijn Handels
- Director Product Development
- Rolloos
- martijn.handels@rolloos.com

# Questions?

Please wait for the **microphone**

State your **name & company**

# Please remember to…

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