Convegno Nazionale IPMA Italy

AI in the future of Project Management

Video Analytics for workplace safety

Milano I 14 marzo 2024

a cura di:

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Agenda

- Company profile
- Step up program
- Video Analytics process
- Case study_onshore EPC project
- Case study_offshore EPC project
- Other aspects

SAIPEM

WHO WE ARE

We are a global leader in the engineering and construction of major projects for the energy and infrastructure sectors, both offshore and onshore.

We are a “one company” with distinctive competences, technological innovation capabilities and high-tech assets, able of identifying and developing multiple solutions to meet our clients’ needs for a sustainable business.

MISSION

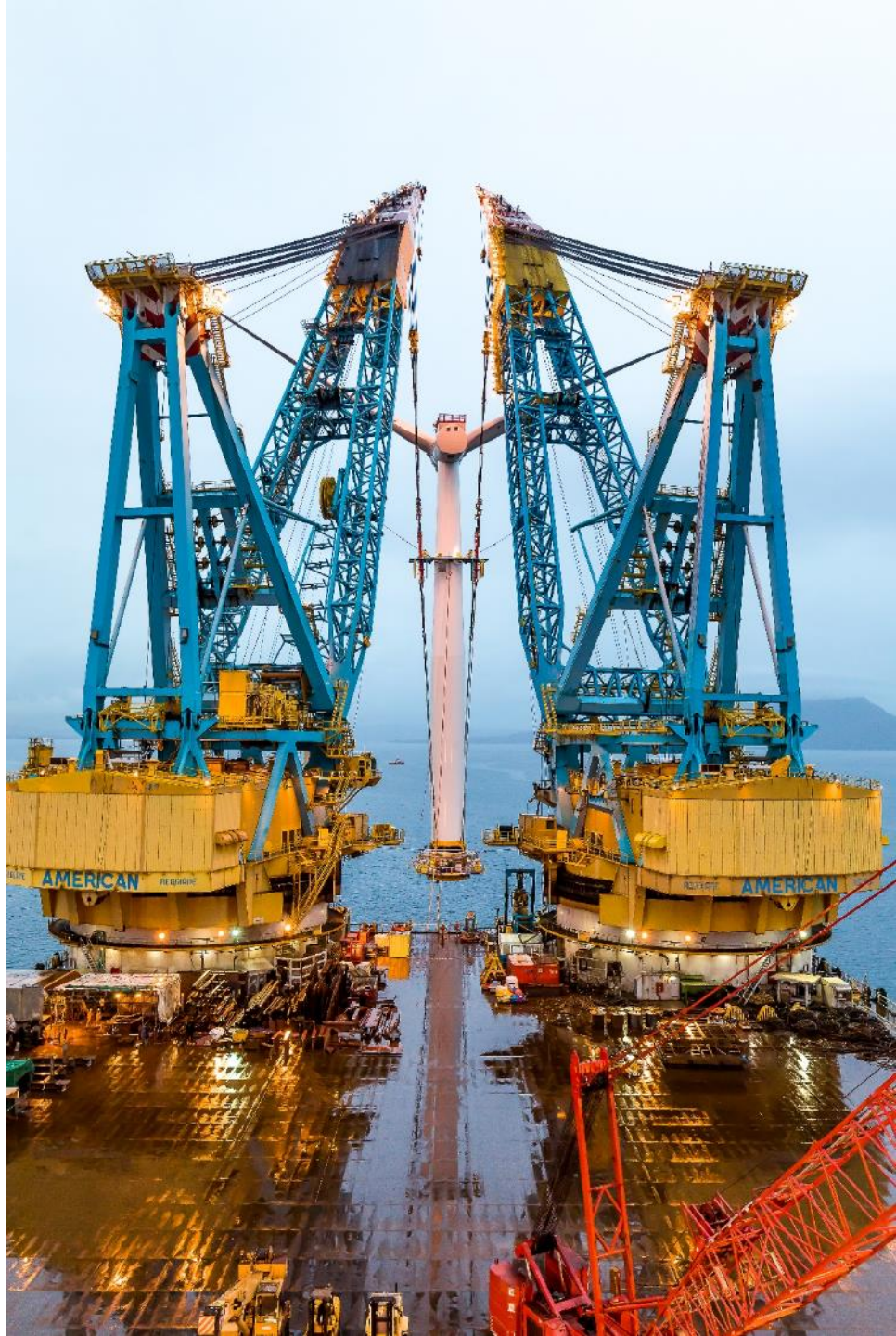
Transform our clients’ strategies and projects into competitive, safe and sustainable infrastructures, plants and processes, accompanying them on the energy transition pathway towards Net Zero.

PURPOSE

Always oriented towards technological innovation, our purpose is ENGINEERING FOR A SUSTAINABLE FUTURE.

VALUES

We value creative talent. We look after health and safety of our people, communities and the environment and are committed to building relationships of trust. We encourage an appreciation of diversity, and we promote inclusivity.



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ONE SAIPEM ORGANIZED INTO FIVE BUSINESS LINES

ASSET BASED SERVICES

OFFSHORE SOLUTIONS

Offshore E&C
- Shallow waters platforms, flowlines, EPCI & T&I
- SURF (Subsea, Umbilicals, Risers & Flowlines)

Offshore Drilling:
- Ultra deepwater vessels with dual derrick capacity
- Semi-submersible vessel for harsh environments
- Rejuvenated jack up fleet for shallow waters

ENERGY CARRIERS

PLANTS SOLUTIONS

Onshore
- Upstream
- Floaters & GBS
- LNG & Regas plants
- Gas monetization
- Biofuels
- CCUS Hubs
- O&M Services

OFFSHORE WIND

RENEWABLES ENERGY

Fixed Wind
- Foundations
- Offshore Substations
- Jackets Supply & Fabrication
- O&M and Robotics for Life of Field Services
- EPCI, T&I schemes

Floating Wind
- Foundation Technologies (Hexafloat, STAR-1)
- O&M and Robotics for Life of Field Services
- EPCI, T&I schemes

ROBOTICS AND INDUSTRIALIZED PLANTS

INDUSTRIALIZED SOLUTIONS

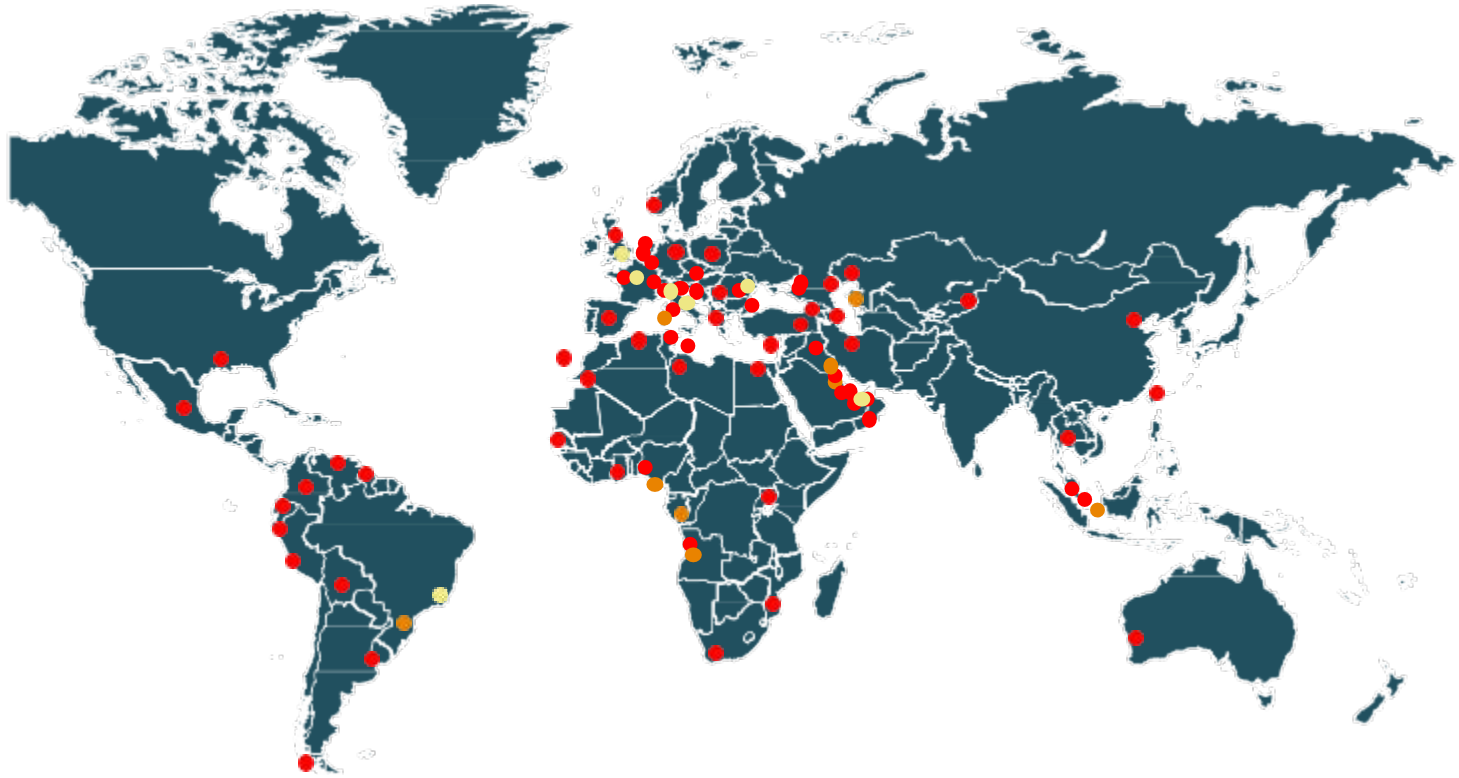
- CO2 Solutions
- Green hydrogen
- Green ammonia
- Plastic Recycling
- Underwater robotics
- Subsea Factory

SUSTAINABLE INFRASTRUCTURES

COMPLEX INFRASTRUCTURES

- HC/HS railways
- Subways and tramways
- High-end services for infrastructural works monitoring and efficiency improvement

SAIPEM IN THE WORLD



- Engineering centres
- Prefabrication yards
- Other relevant sites (headquarters, branches, etc.)

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KEY FIGURES

WE OPERATE IN **> 50** COUNTRIES

> 30,000
EMPLOYEES WORLDWIDE

> 120
DIFFERENT NATIONALITIES

8 PREFABRICATION YARDS
Arbatax (Italy), Guarujà (Brazil), Pointe Noire (Republic of the Congo), Ambriz (Angola), Dammam (Saudi Arabia), Karimun (Indonesia), Kuryk (Kazakhstan), Rumuolumeni (Nigeria)

7 ENGINEERING HUBS
Italy, France, UAE, India

38 VESSELS

593 M €
CAPITAL EXPENDITURE

2,508
ACTIVE PATENTS

N.B. data as of IH 2023

June 2023: Safety Step Up Program

Technologies

Asset integrity

Supply chain

Behaviour

HSE Data Analysis

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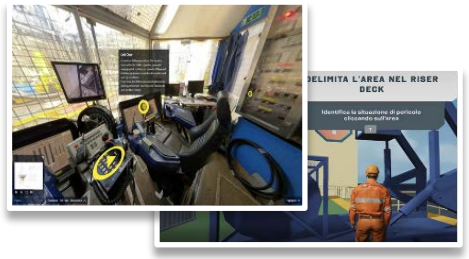
Technologies

Classified in three categories (P1-P2-P3) based on maturity level and effectiveness

(P1) Smart Cameras

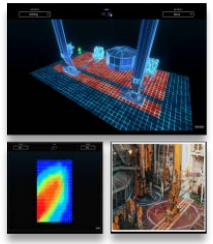
(P1) Anticollisiom System



(P2) Virtual reality (safety tours/training)

(P2) In-vehicle monitoring system

(P1&P2) Smart Safety Harness



(P1) Red zone monitoring

(P2) Robot

(P2) Smart Watch

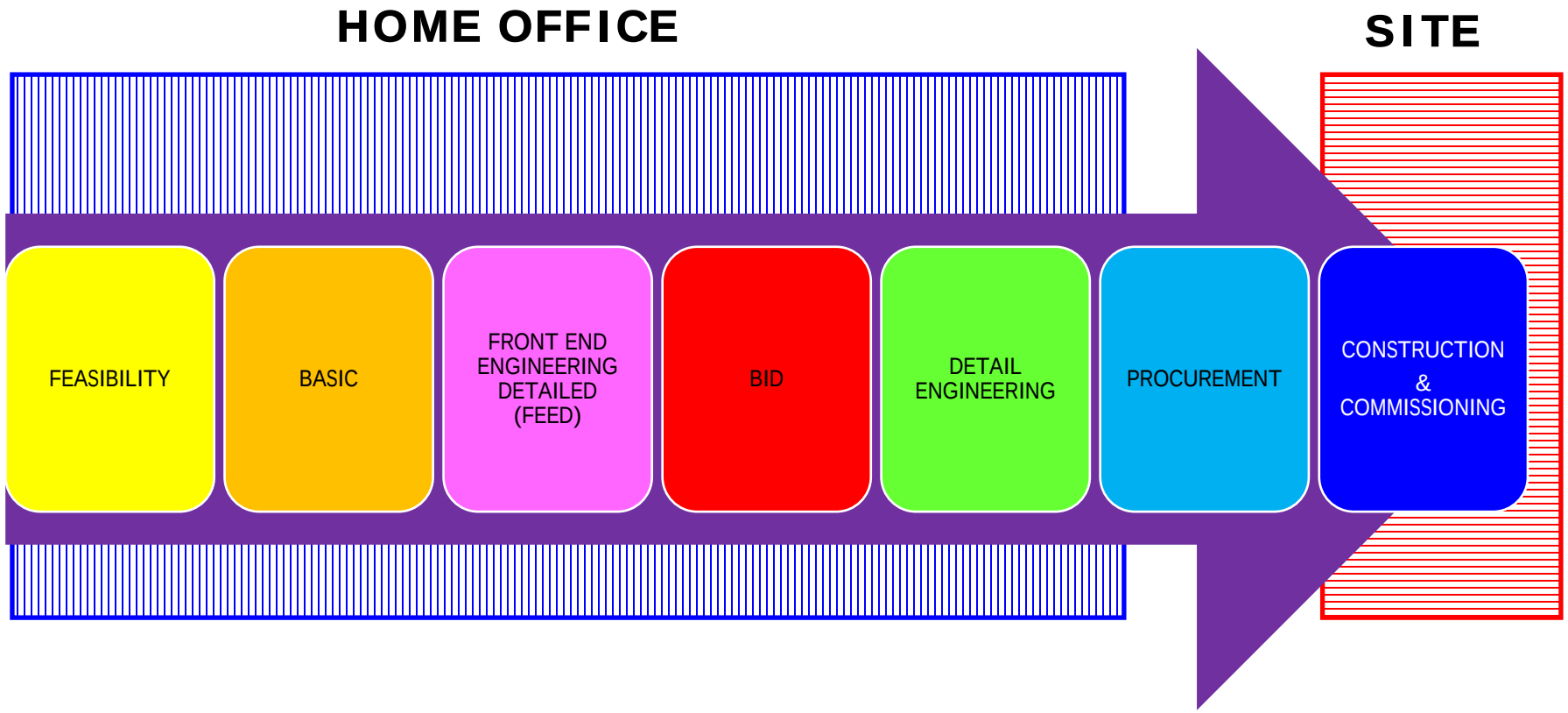
(P3) DROPS detection

(P3) Smart Gloves

(P3) Smart T-shirt

(P3) Smart Site

Project Life Cycle



SMART CAMERAS

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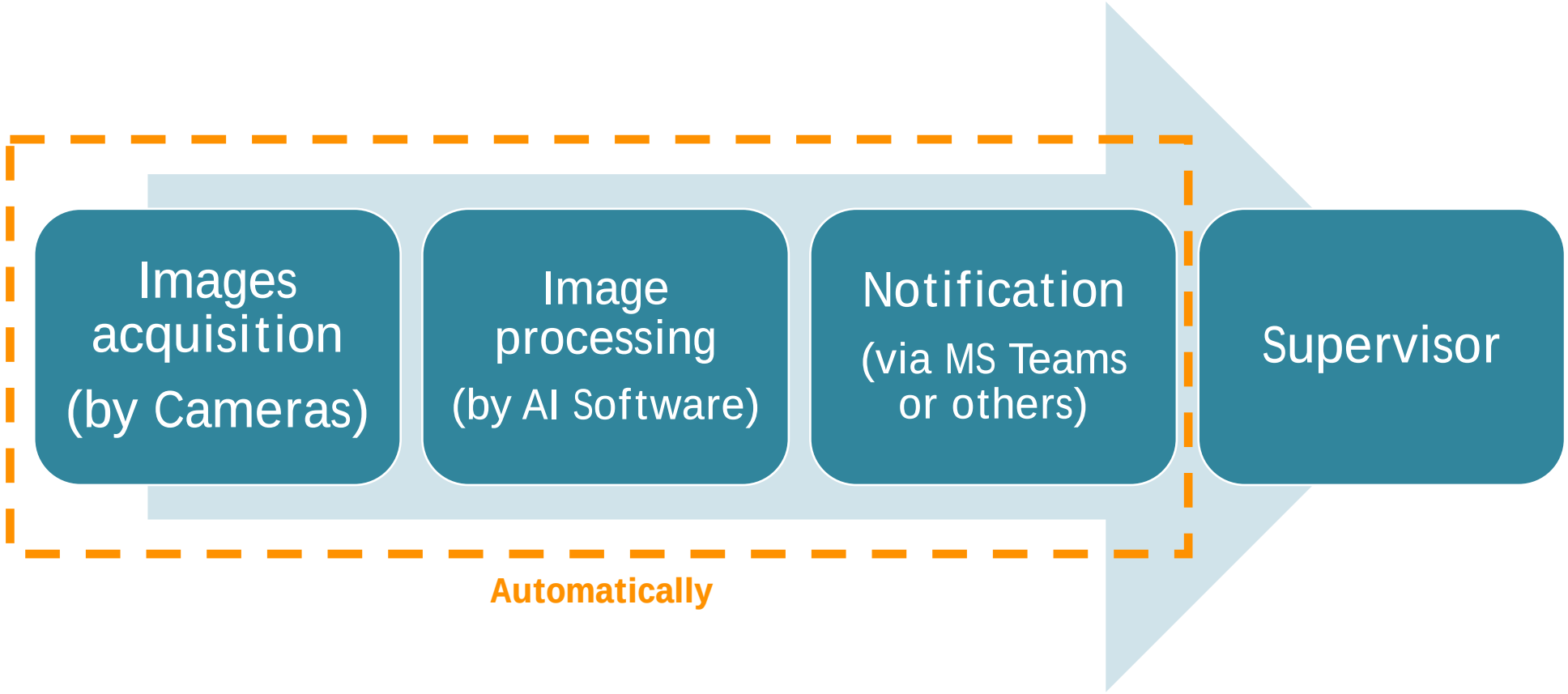
VIDEO ANALYTICS FOR WORKPLACE SAFETY

Process



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VIDEO ANALYTICS FOR WORKPLACE SAFETY

Machine Learning process

= Human activity

Algorythm Identifies HSE violation?

YES

notification

Dismissal

Aknowledgement

NO

Scans Ahead

Observation

Image processing

Machine learning

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CASE STUDY

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KSA_ONSHORE EPC PROJECT

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Case Study

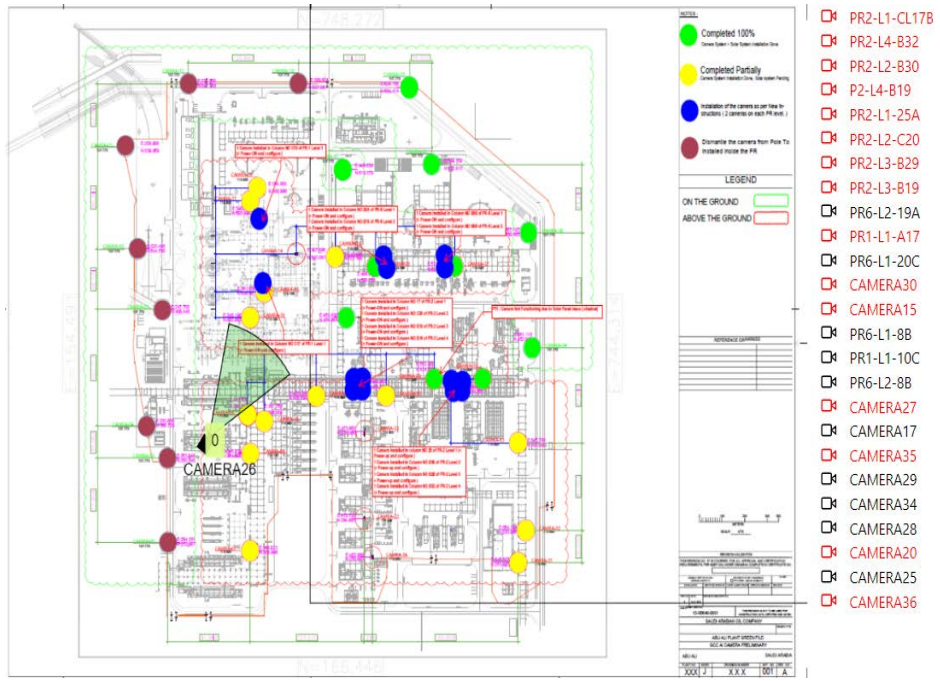
Saipem onshore construction Site - KSA

N° of events notified

Most risky location

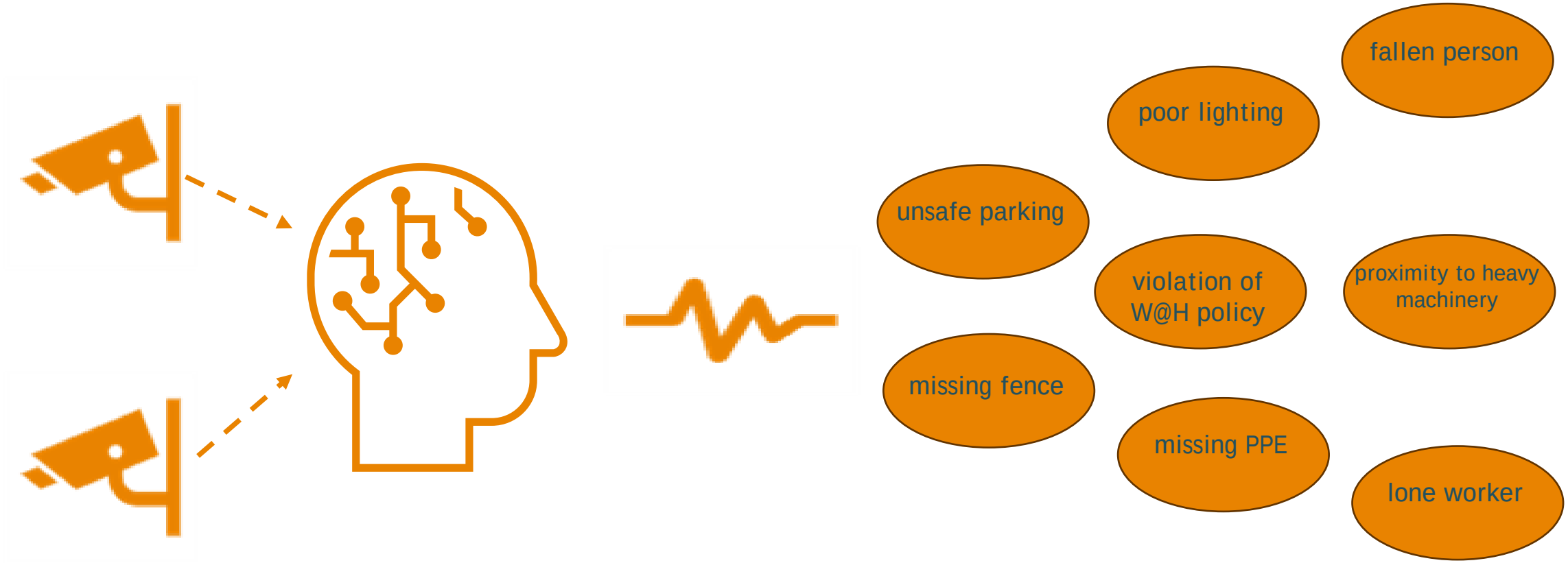
Most common incident

Working cameras x/y



VIDEO ANALYTICS FOR WORKPLACE SAFETY

unsfe act / unsafe conditions



Case Study

Saipem onshore construction Site - KSA

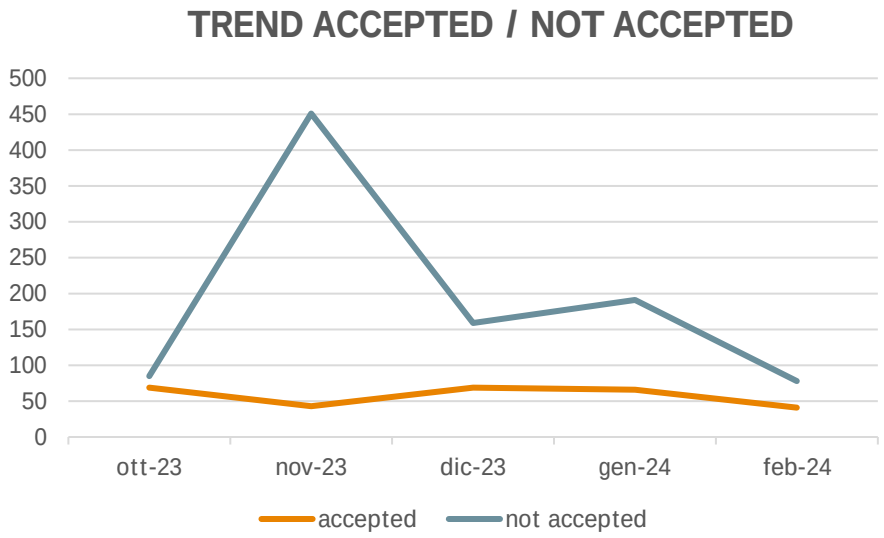
ITEM	DETAIL
Observation period	Oct ‘23 – Feb ‘24
Total events	1237
Top Location	Camera xy
1° Top violation type	PPE non compliance
2° Top violation time	Proximity to heavy machinery
3° Top violation type	Work at height

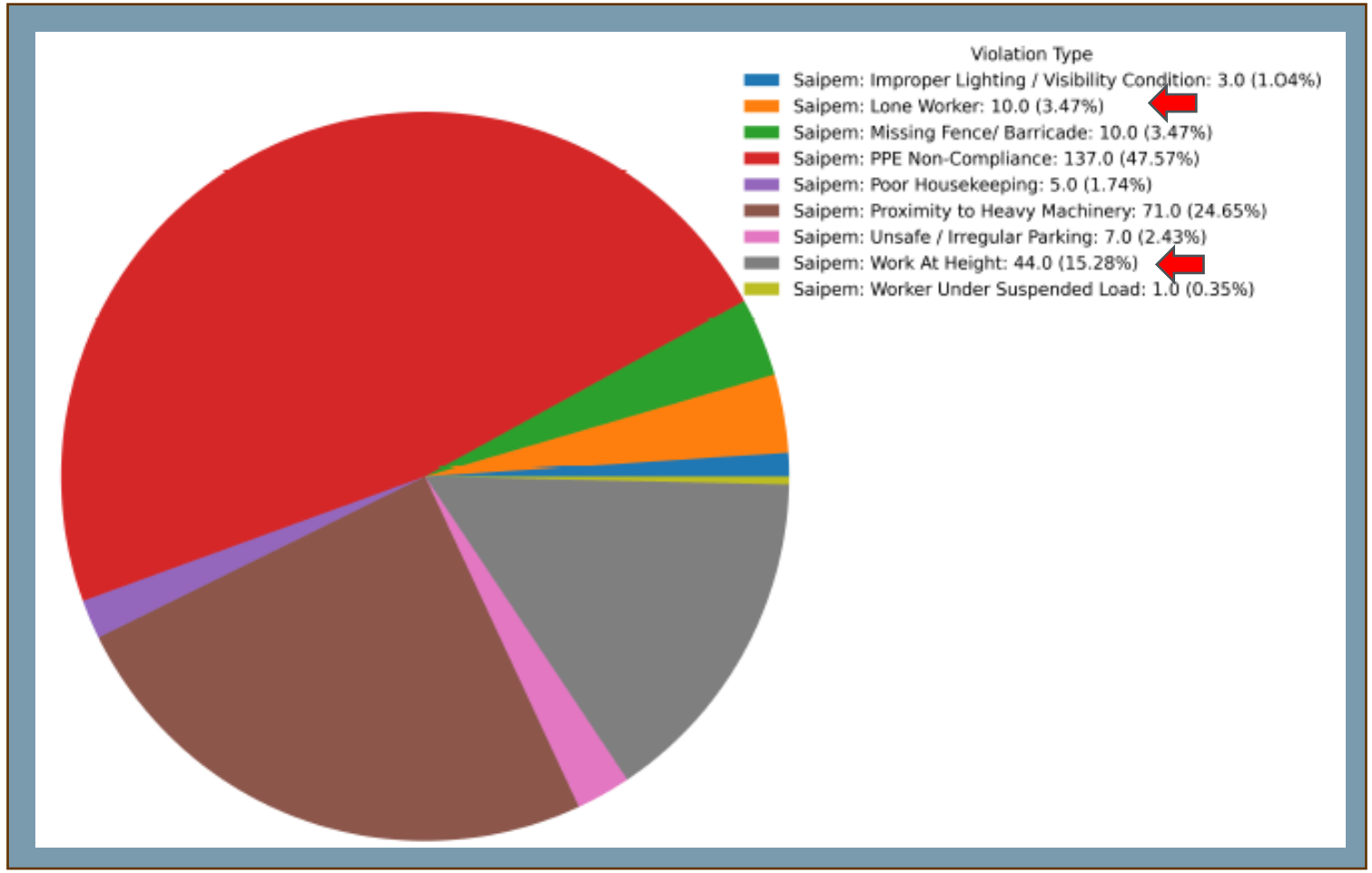
HSE violation identified through Video Analytics for workplace safety

OUTCOMES FROM THE SYSTEM SINCE OCTOBER 2023

TOTAL OF NOTIFICATIONS ACCEPTED : **273** → BREAK DOWN PER VIOLATION TYPE

POSITIVE: 15
UNSAFE ACTS: 239
UNSAFE CONDITIONS: 19





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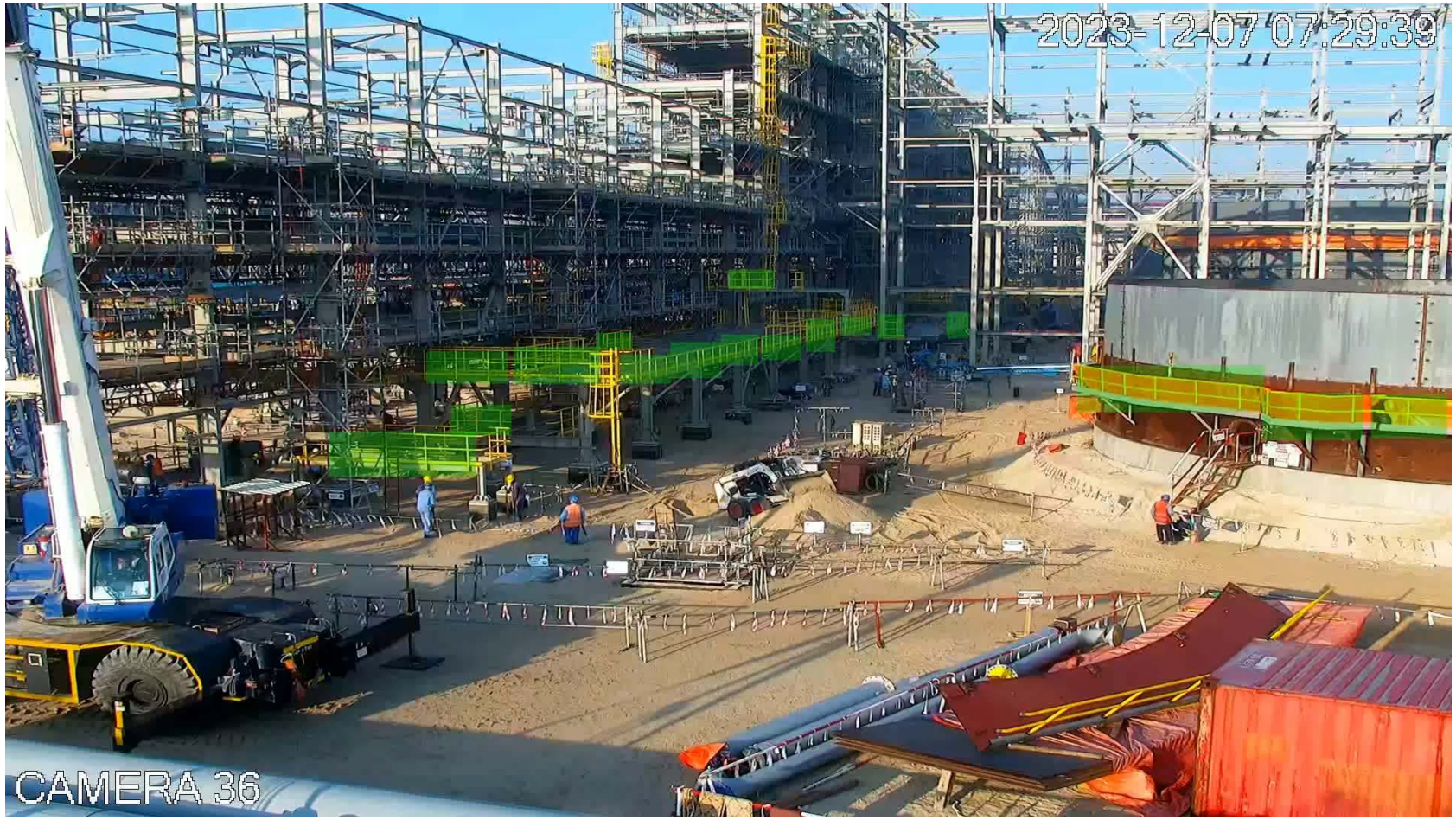
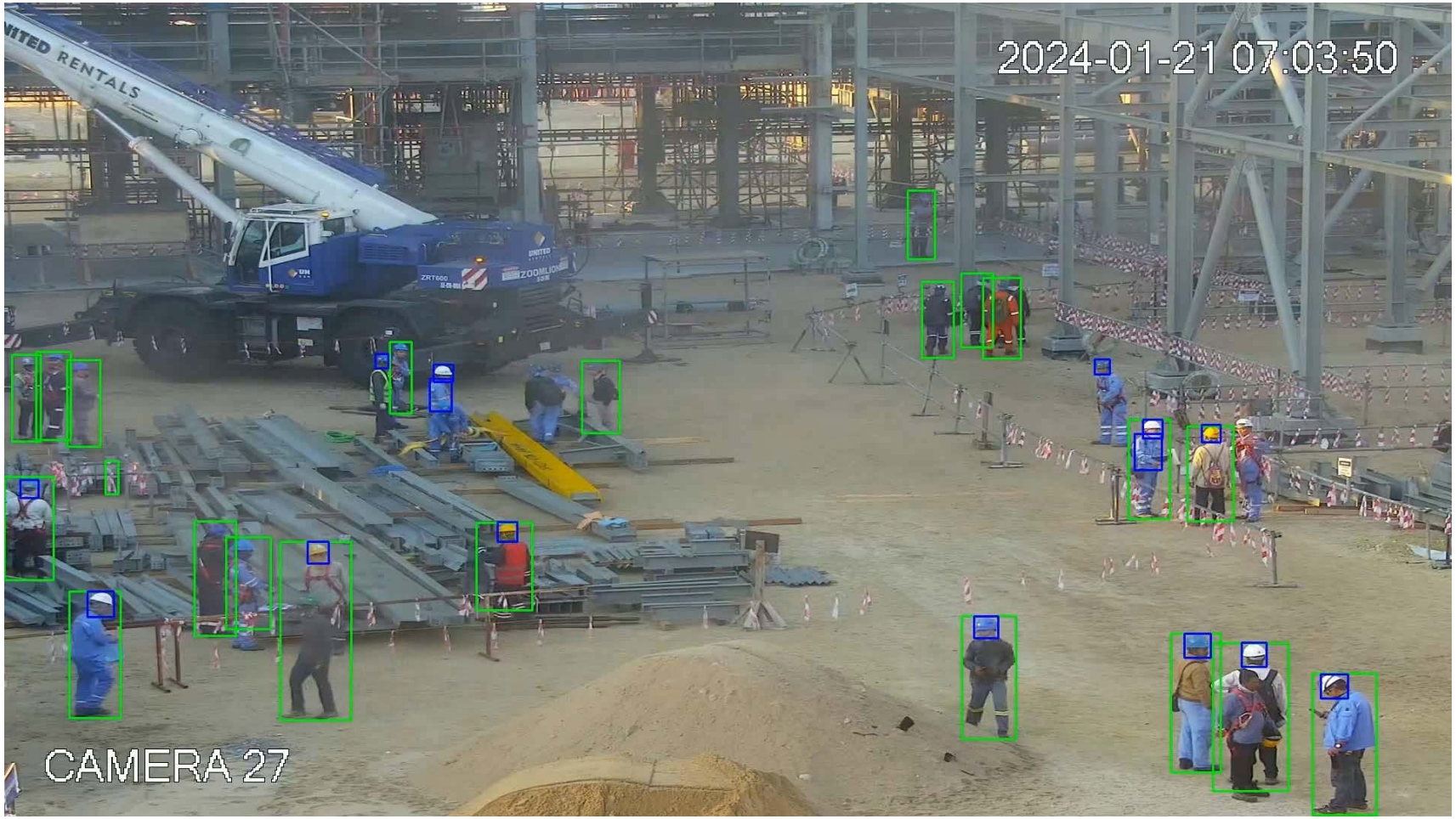
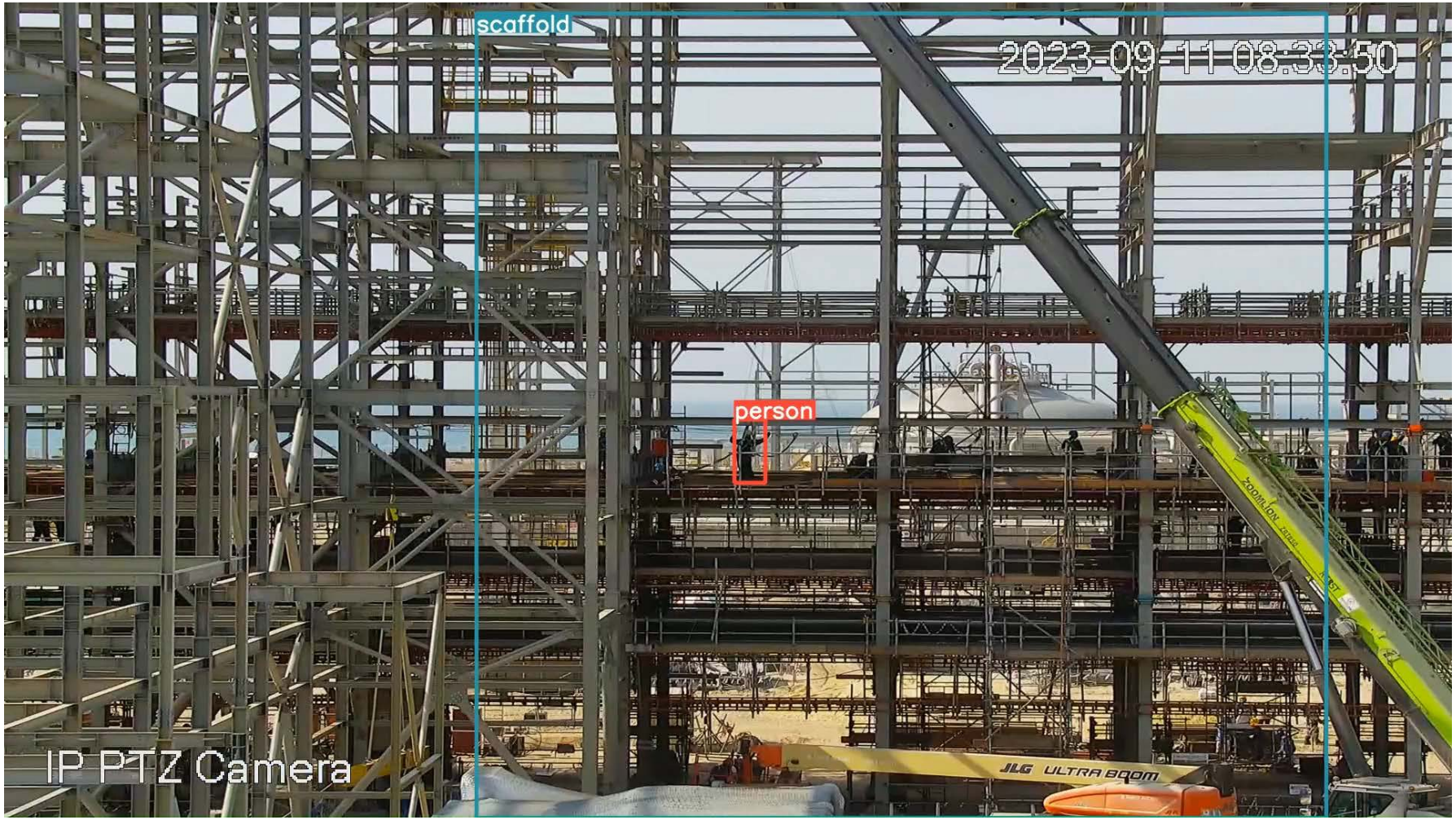
Demonstrating video_missing barricade



Demonstrating video_PPE noncompliance



Demonstration video_work@height



Demonstration video_proximity to dangerous machinery

CASE STUDY

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KSA_JACK UP VESSEL

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Red Zone Monitoring

Perro Negro Rigs in KSA

- Use case definition
- Camera location and cabling
- Study of notification flow
- Authorization Matrix review

Ongoing development for Drilling Rigs

Red Zone Monitoring

Offshore Drilling Rig technologies are continuing to develop and evolve in response to increased industry demand for safer and more efficient systems

Onboard rigs personnel and assets are exposed to significant risk on DRILL FLOOR: during operations, it may happen that not allowed personnel is standing or passing on forbidden areas, creating a hazard & high risk of injuries to their selves, colleagues and Saipem Assets during operations

It might be required a system which monitors and provides advanced warning of potential risks in the Drill Floor Red Zone

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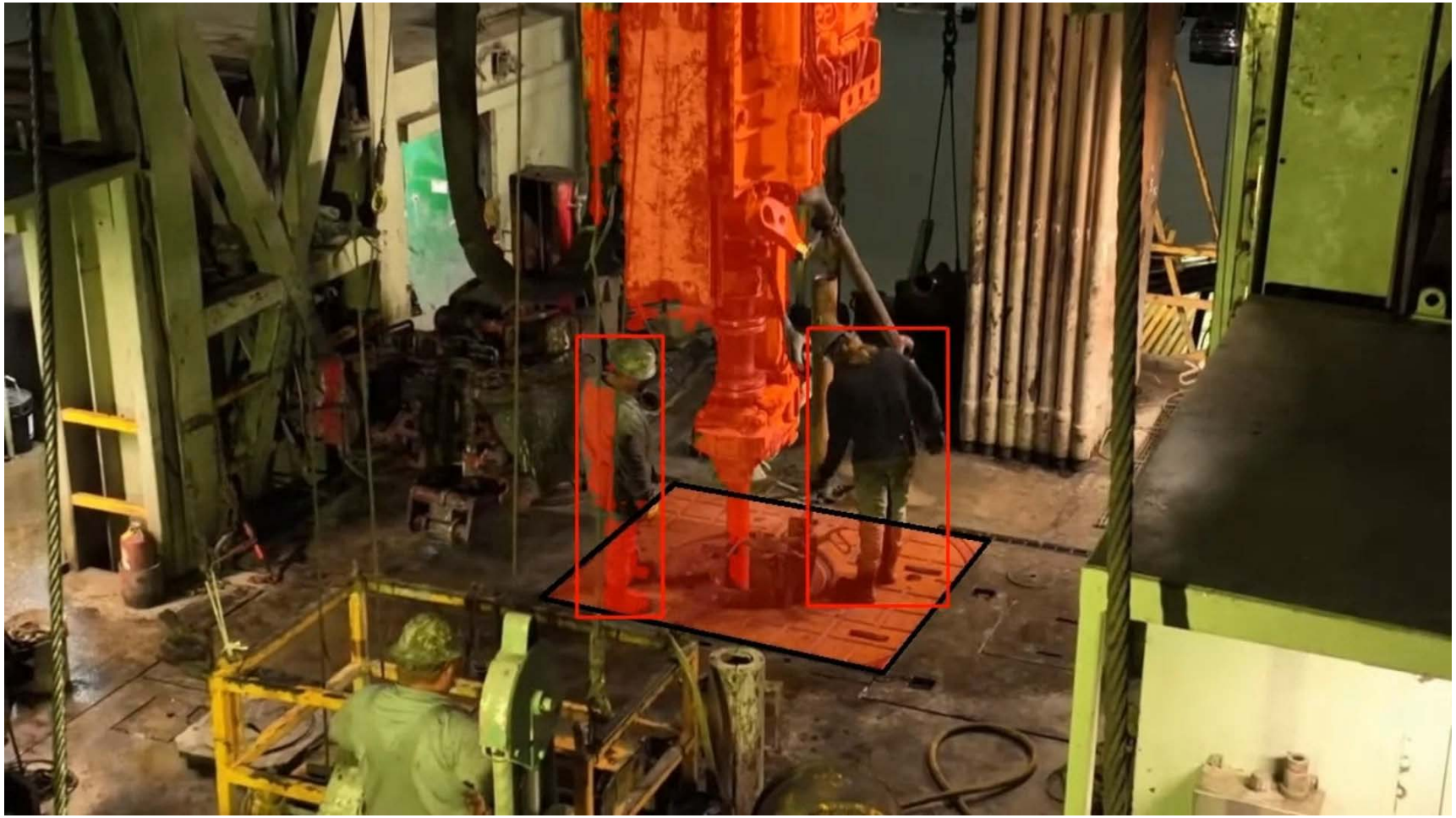
Red Zone Monitoring

Demonstration video



Cyber security, Privacy and HR aspects

Main actions taken

The IT Architecture of the solution has been reviewed and endorsed by Saipem **cyber security team** to meet Security by Design spec.

Privacy aspects (image storage, notification flow, treatment of personal data) reviewed by **Privacy team** to meet GDPR requirements

HR team introduced the initiative to the Unions to reach a **joint agreement** for the implementation on Saipem projects and sites

ANY QUESTIONS?

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