The Role of Red Zone Manager in the NOV DROPS Prevention Program

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Industry Safety Principles

- Safety by design
- Hazard elimination and risk reduction
- Protection of personnel
- Minimizing exposure to hazardous operations
- Engineering controls before administrative controls
- Use of automation and technology to improve safety
- Continuous improvement and operational learning

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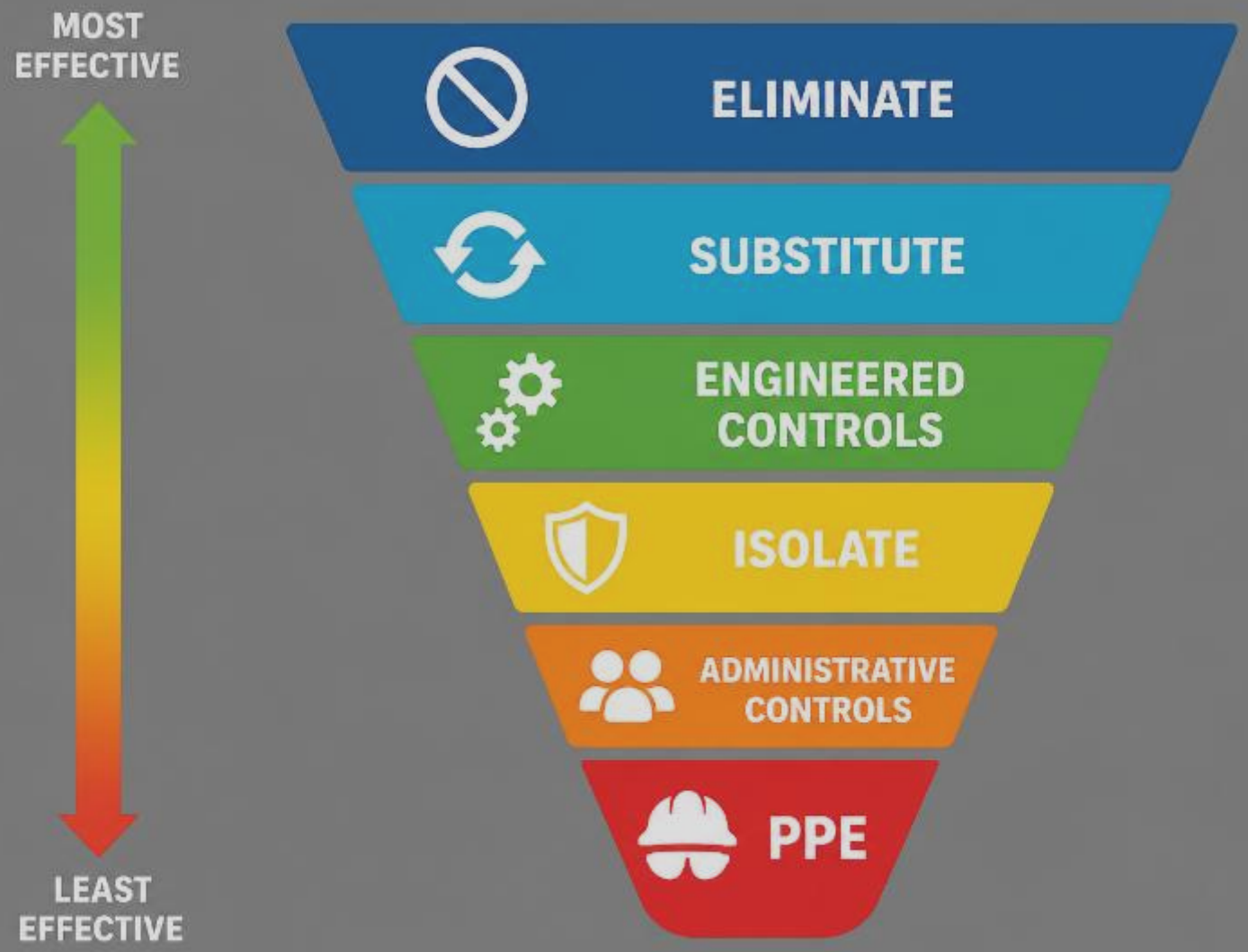
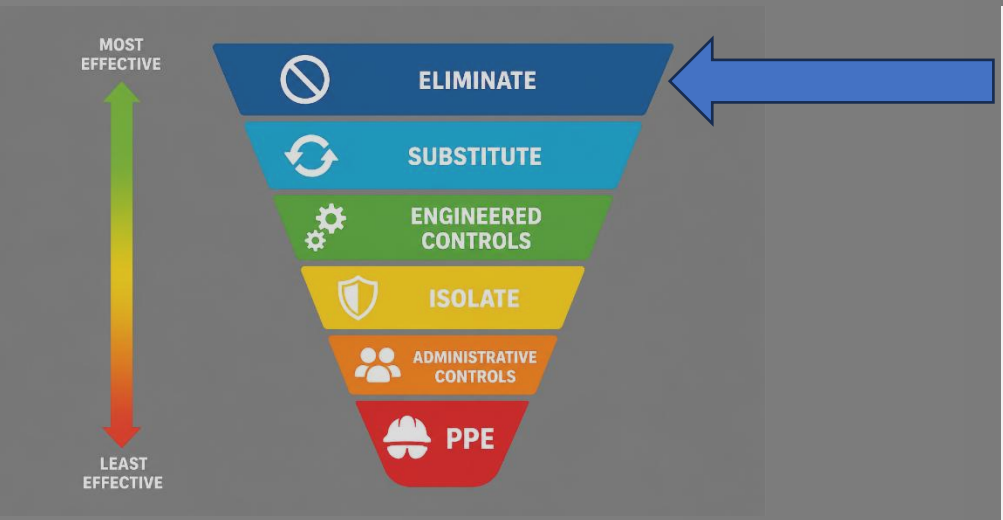
DROPS – hierarchy of controls



DROPS – hierarchy of controls - examples



Product Safety Alert

Date: 25 February 2020
Bulletin Number: 1000034532-SA **Revision:** 01

Top Drive

Subject:	Rubber bumpers on Retractable Dolly disintegrated and dropped to the drill floor – removal of bumpers recommended
Product Model:	HPS-03-650, HPS-03-750, HPS-03-1000, HPS-04-500, HPS-04-650, HPS-04-750
Effectivity:	All equipment of the above-mentioned product models delivered with Retractable Dolly
Affected Assemblies:	Retractable Dolly Assemblies

Solution

A recent evaluation of the Dolly design and the function of the bumper reveals that the bumpers can be removed.

NOV recommends that the bumpers and their fasteners are removed from the Dolly Main Frame.

The removal can be done in the field by the client.

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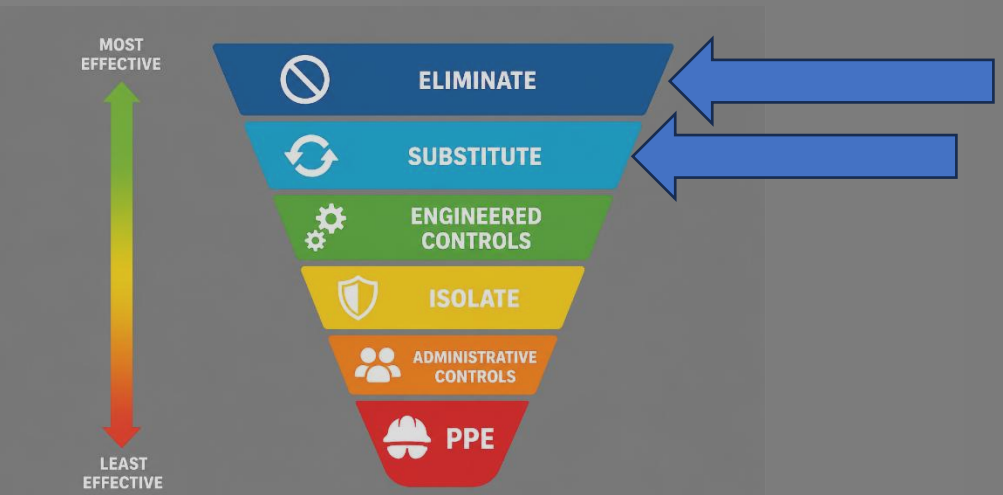

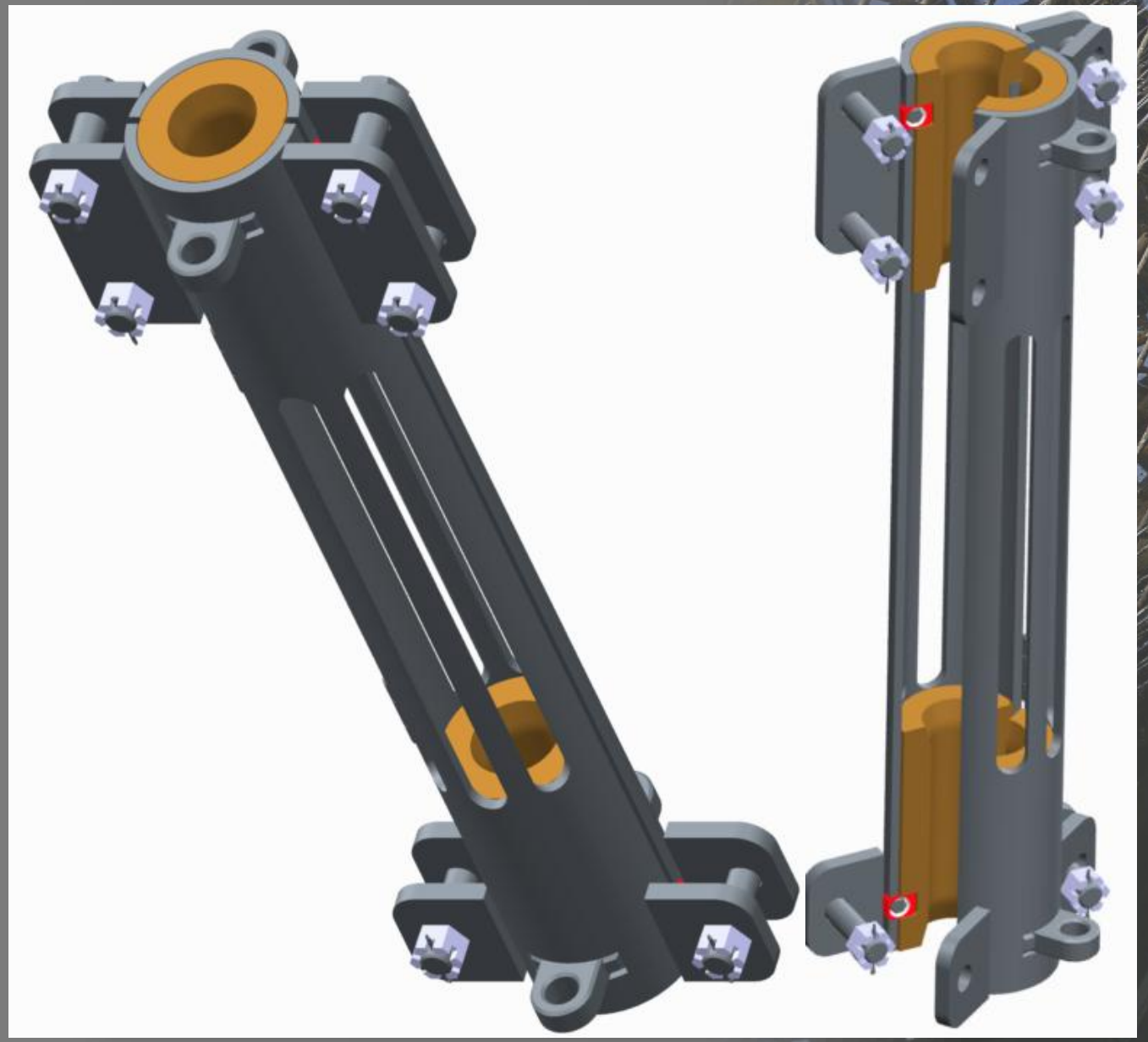

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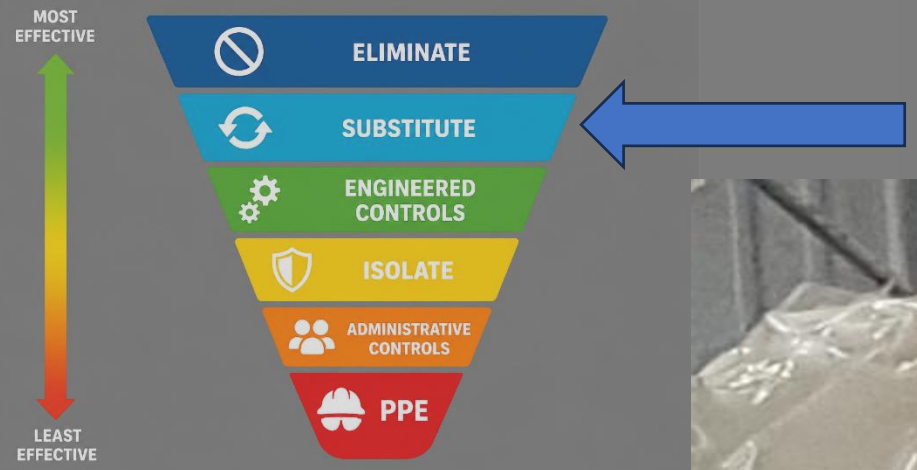

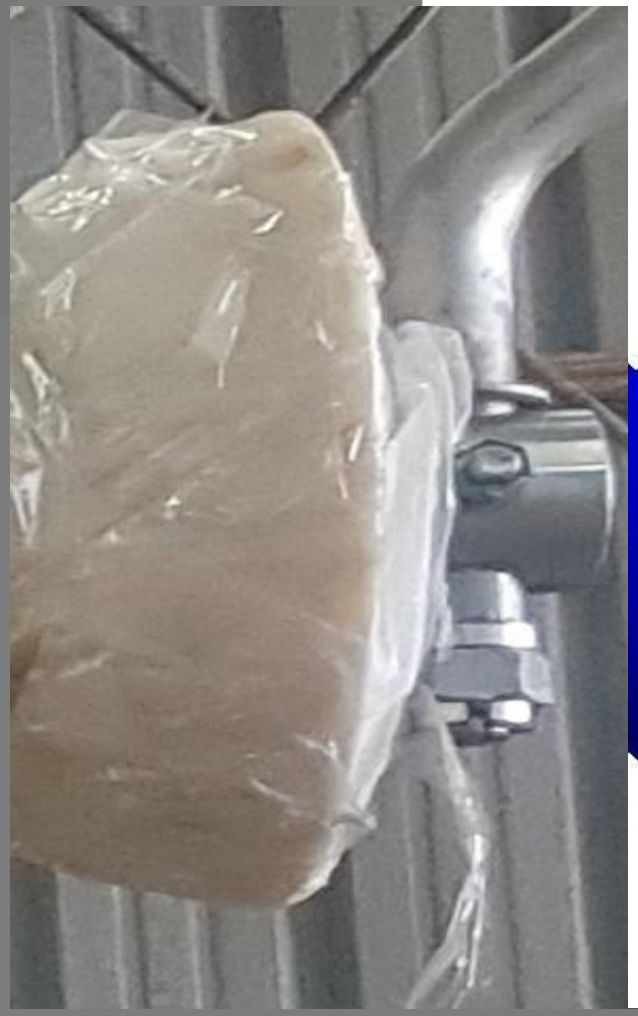

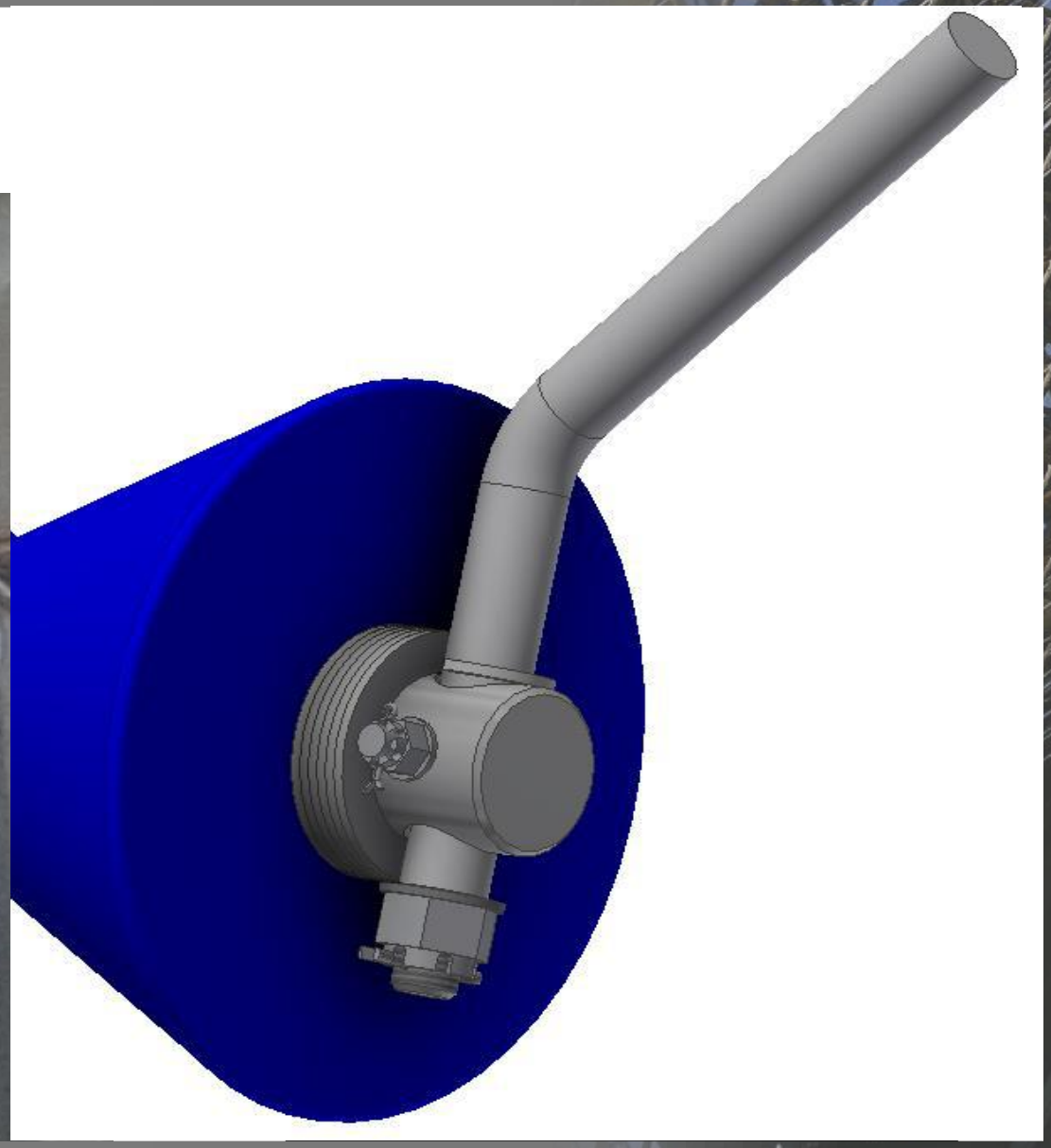

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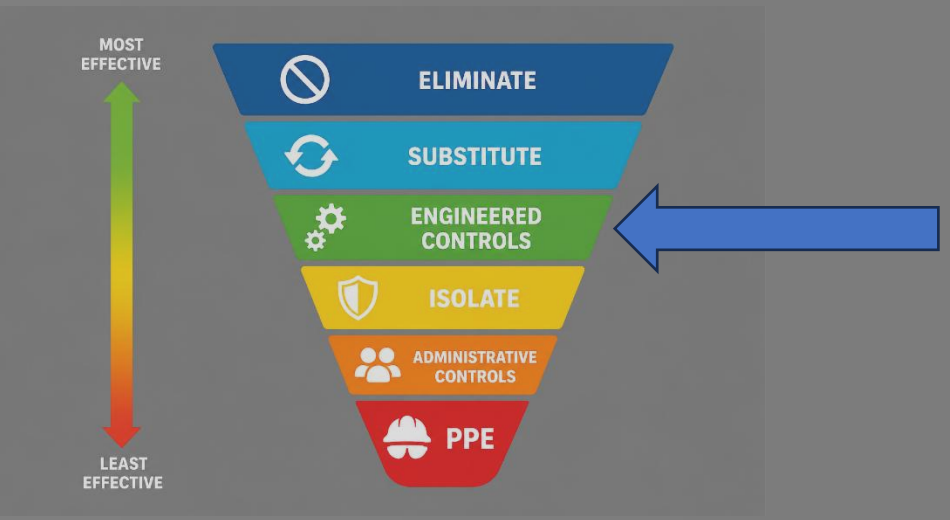

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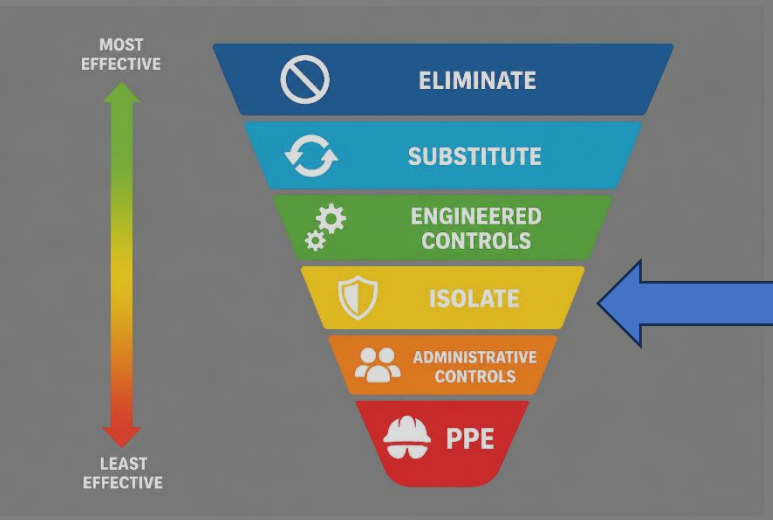

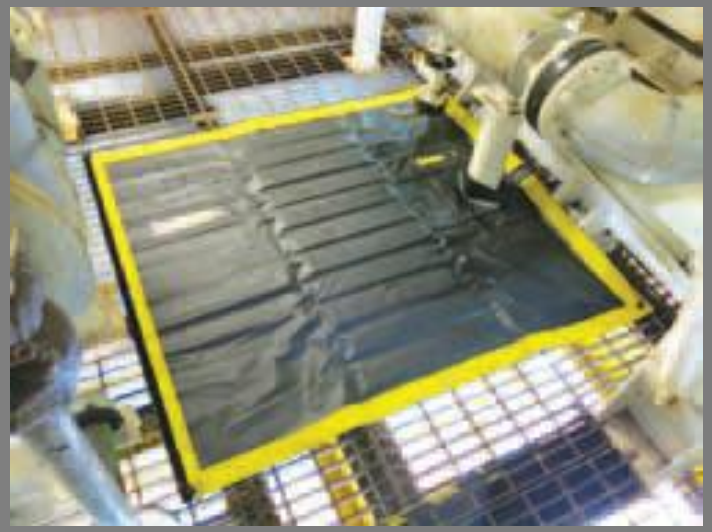

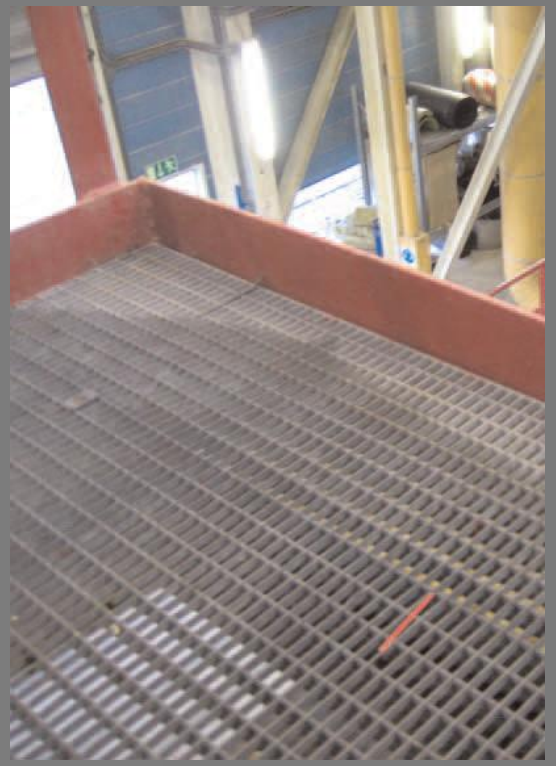

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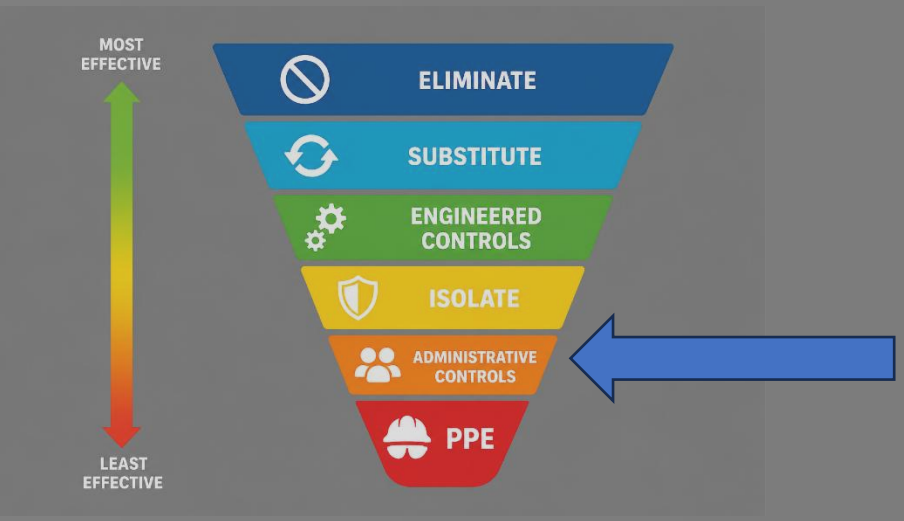

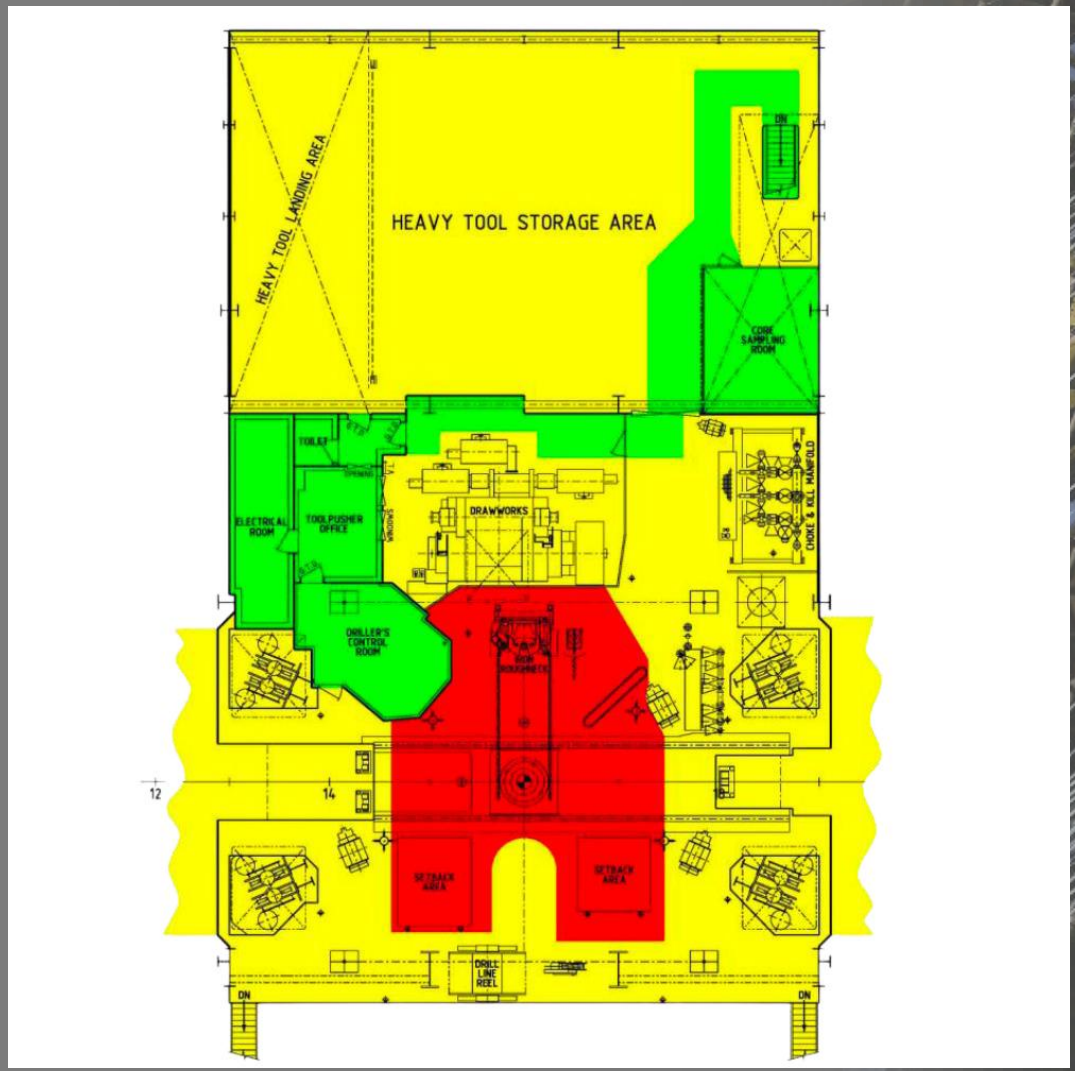

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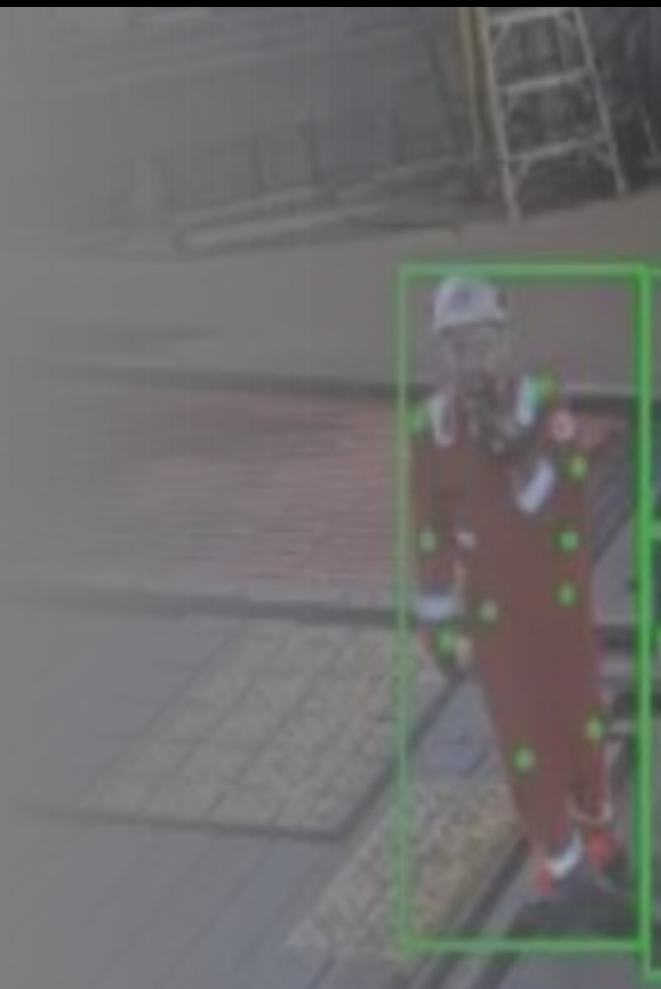
Industry Expectations for Red Zone Manager

- Exposure reduction
- Governance and Area Authority
- Task based entry control
- Continuous Monitoring
- Technology integration
- Safety Enforcement
- Dynamic and Temporary zone management
- Data collection and analytics



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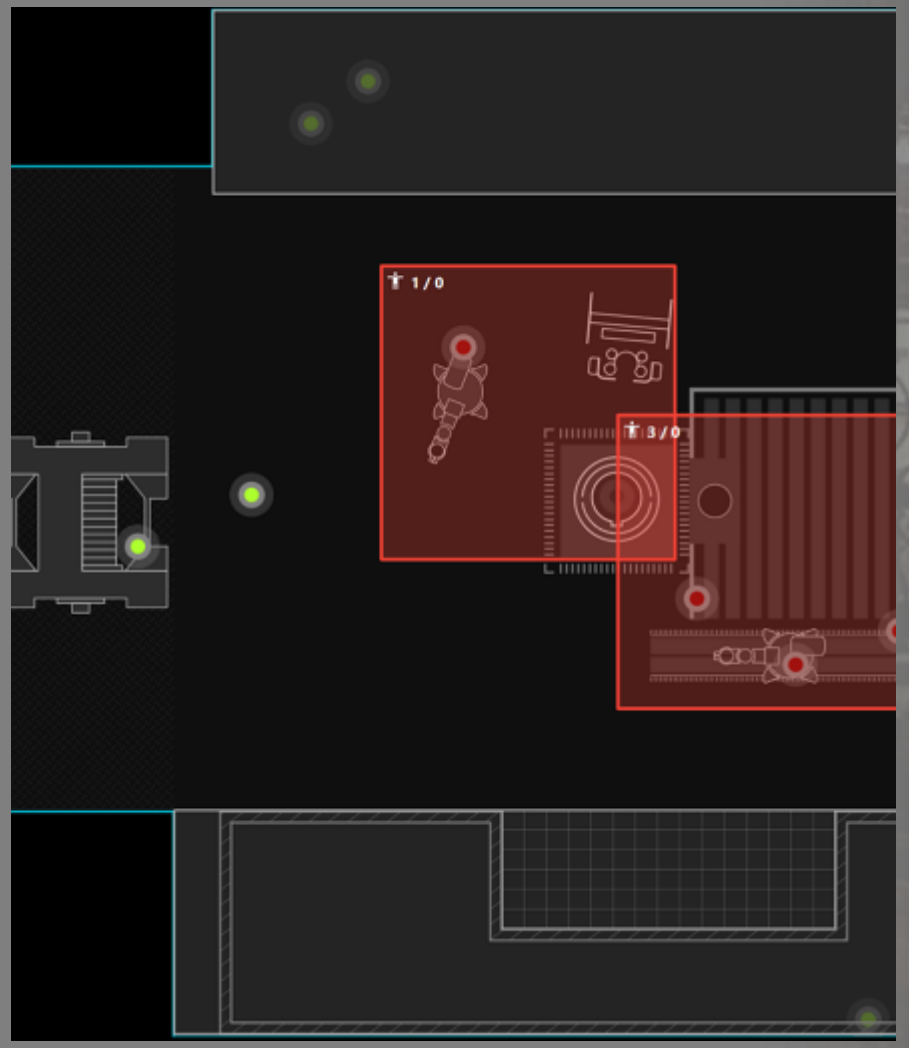
Personnel Tracking and Zone Monitoring

- Tracking personnel position
- Zone breach alarm



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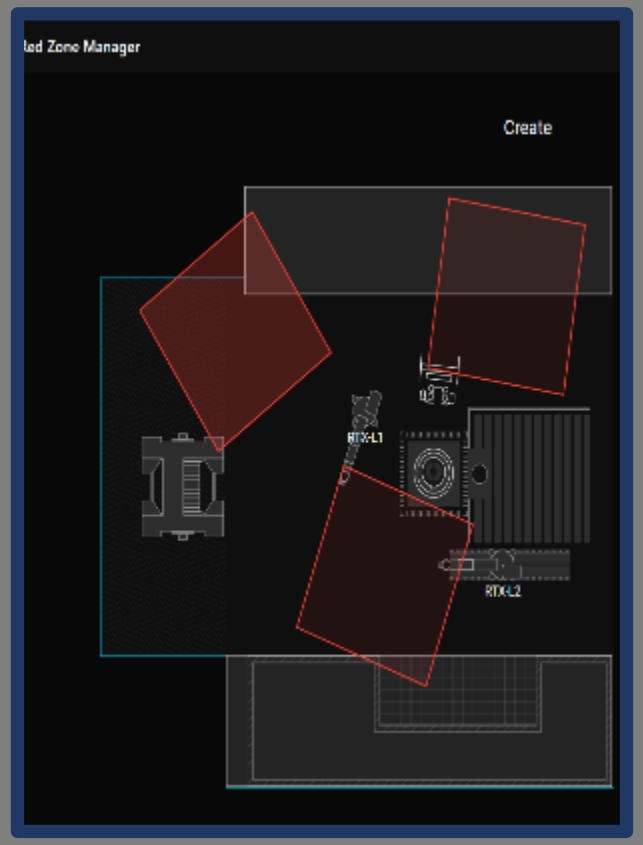
NOV - Red Zone Manager – Core features

- Configurable and customizable zone
- Dynamic zones moving with machinery



NOV - Red Zone Manager – Core features

- Stop machines
- Integrate with Rig Control System
- Analytics and metrics
- Scalable beyond drill Floor

You can't control people, you can control machines

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NOV - Red Zone Manager

Movie IADC RZM Vid

System Integration and Barrier Logic

People Detection

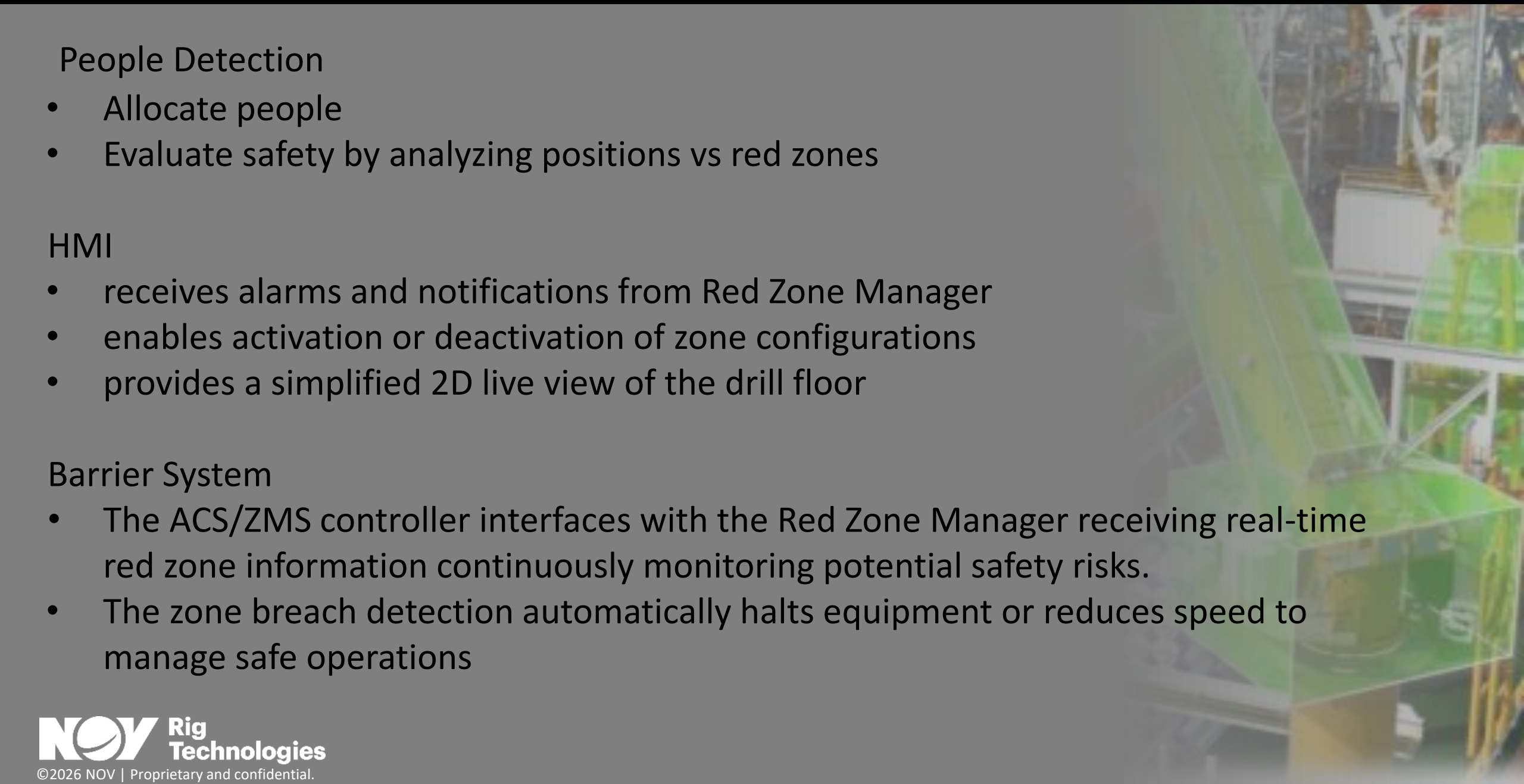
- Allocate people
- Evaluate safety by analyzing positions vs red zones

HMI

- receives alarms and notifications from Red Zone Manager
- enables activation or deactivation of zone configurations
- provides a simplified 2D live view of the drill floor

Barrier System

- The ACS/ZMS controller interfaces with the Red Zone Manager receiving real-time red zone information continuously monitoring potential safety risks.
- The zone breach detection automatically halts equipment or reduces speed to manage safe operations



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Red Zone Manager – Impact on Dropped Object Mitigation

- Reduce personnel exposure to hazards
- Converts Red Zones to Active Protection
- Improves Situational Awareness
- Moves Drops Mitigation Higher in Hierarchy of Controls
- Enables Operational Learning & Continuous Improvement

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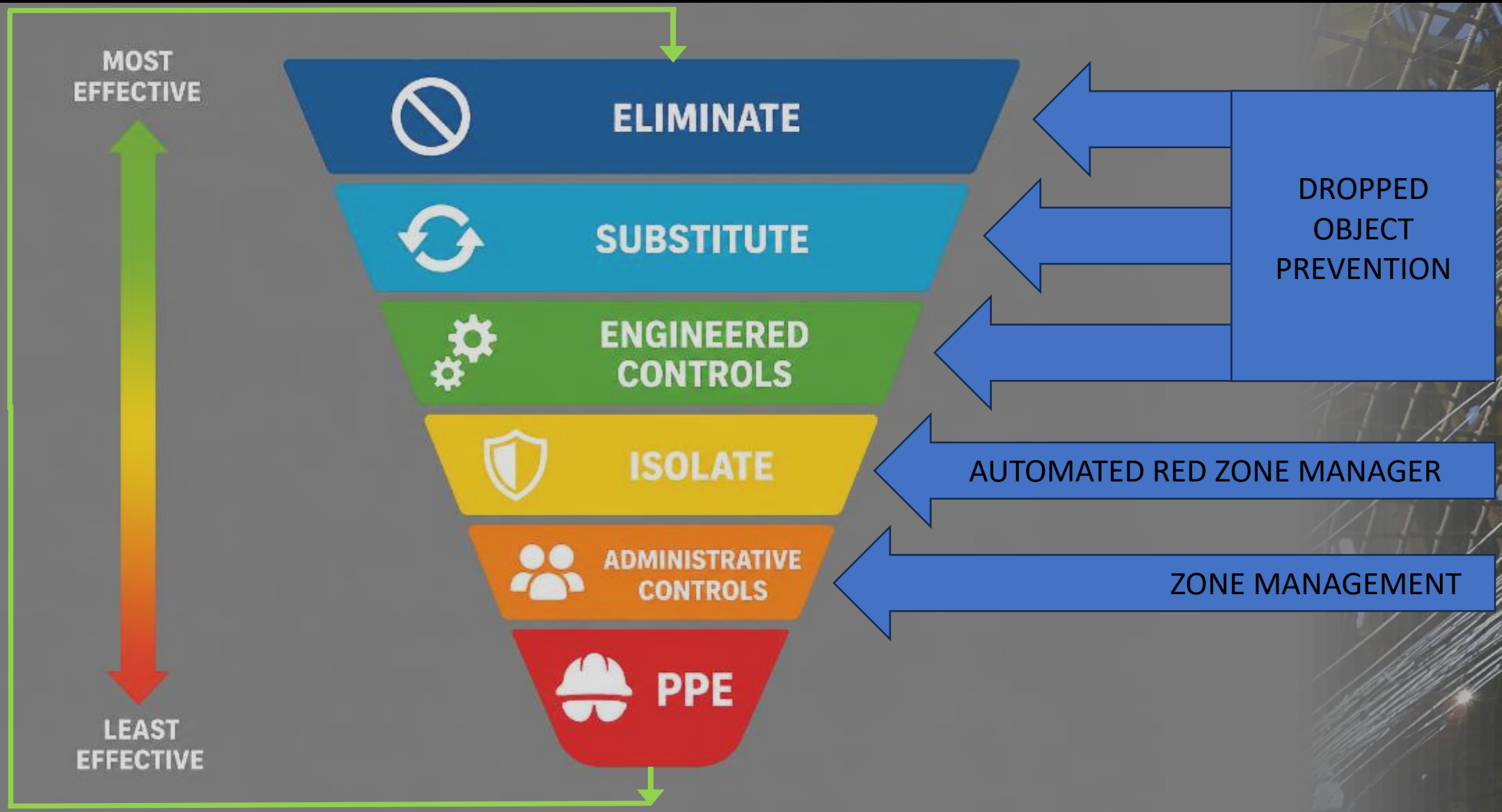

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Why DROPS Prevention and Consequence management Matters

REDUCE THE RISK and CONSEQUENCE OF DROPPED OBJECTS

Prevent object from falling

Dropped Object Prevention

Keep people away in case object falls

Red Zone Management

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