Nadhir
Safety & Intelligence

GOSHATHON
GLOBAL OCCUPATIONAL SAFETY & HEALTH HACKATHON
3rd Edition

Nadhir

Where Advanced Technology Meets Human Safety

The Problem

Occupational injuries remain a major challenge in industrial and construction sites.

Workers in hot climates, such as Saudi Arabia, face problems such as heat stress and fall-related accidents.

Delayed detection and slow emergency response often worsen outcomes, increasing medical costs and productivity losses.

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Why is this a serious issue?

Heat stress and sudden health incidents are a leading cause of injury and death among workers in hot environments, as high temperatures can rapidly impair the body’s ability to regulate heat, leading to heat exhaustion, heat stroke, and cardiovascular collapse.

Falls and delayed emergency response significantly increase the risk of severe injury or fatality, especially when workers operate alone or in hazardous sites, where unconsciousness or immobility may go unnoticed for critical minutes.

Lack of real-time health and safety monitoring which limits early intervention, meaning warning signs such as rising body temperature, abnormal heart rate, or prolonged immobility are often detected too late. Resulting in preventable injuries, productivity loss, and increased healthcare costs.

The Solution -Nadhir

Nadhir is a smart safety helmet designed to:

Continuously monitor worker’s vital signs (heart rate, SpO_2, body temperature)

Detect falls; if no movement occurs for 2 minutes, automatically alert emergency teams

Actively reduce head temperature using Peltier-based cooling modules when the body’s temperature rises

Send real-time alerts to a central dashboard for immediate action by on-site medical teams

How does Nadhir work ?

The vital signs and movement are tracked and monitored on the dashboard

In the case of changes in the vital signs or the absence of movement for 2 minutes , Nadhir will send an alert to the monitoring team

Medical team are alerted and assess the worker

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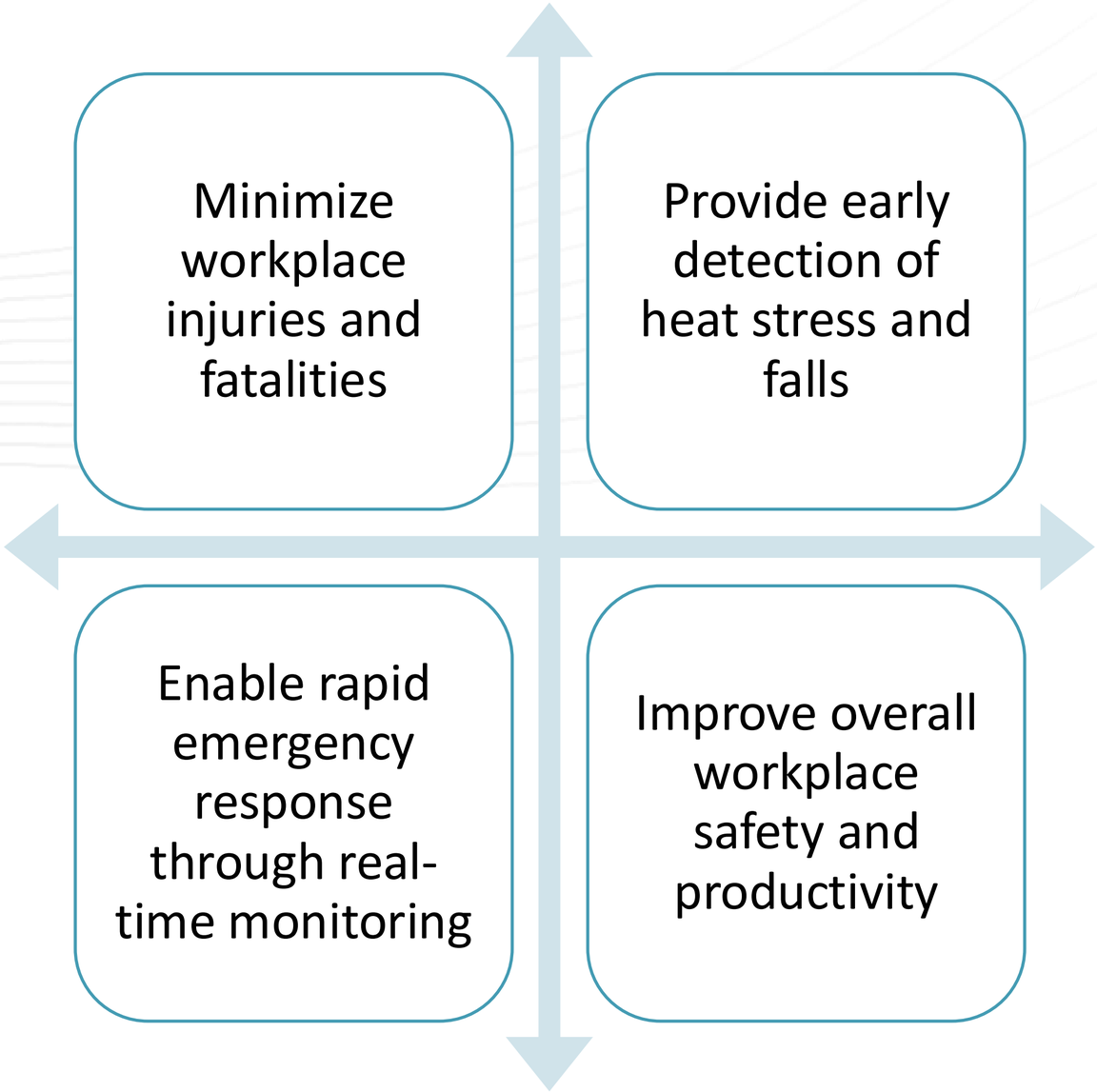
Key advantage: Prediction



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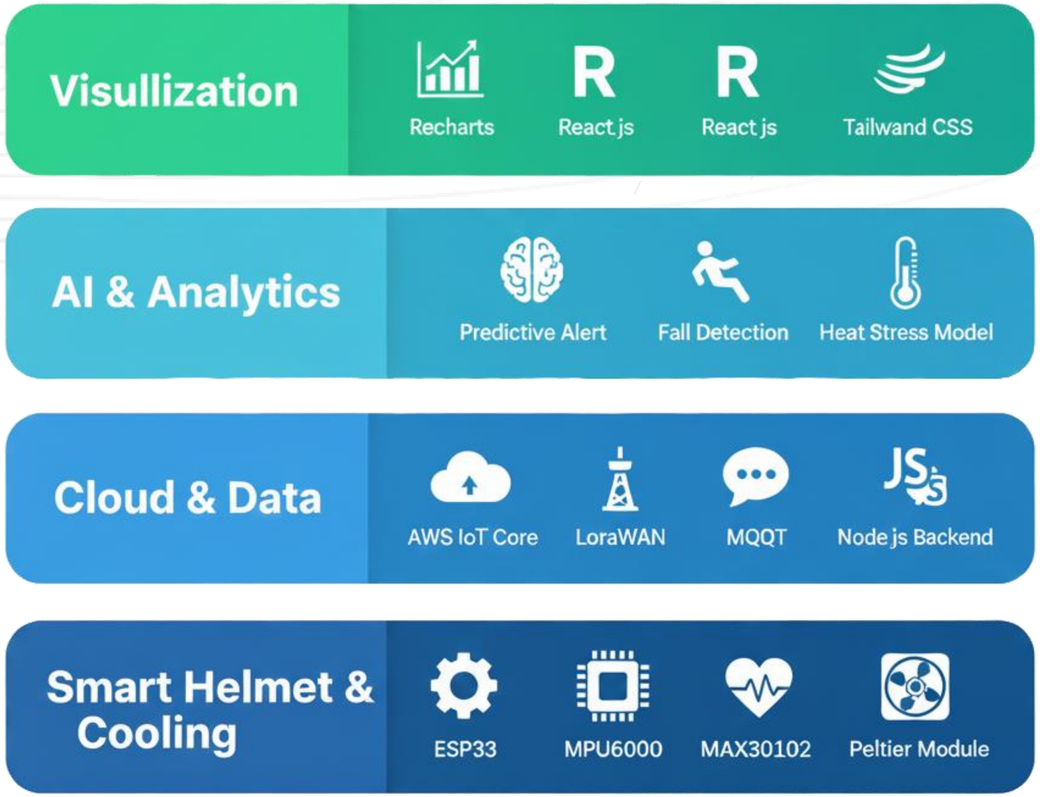
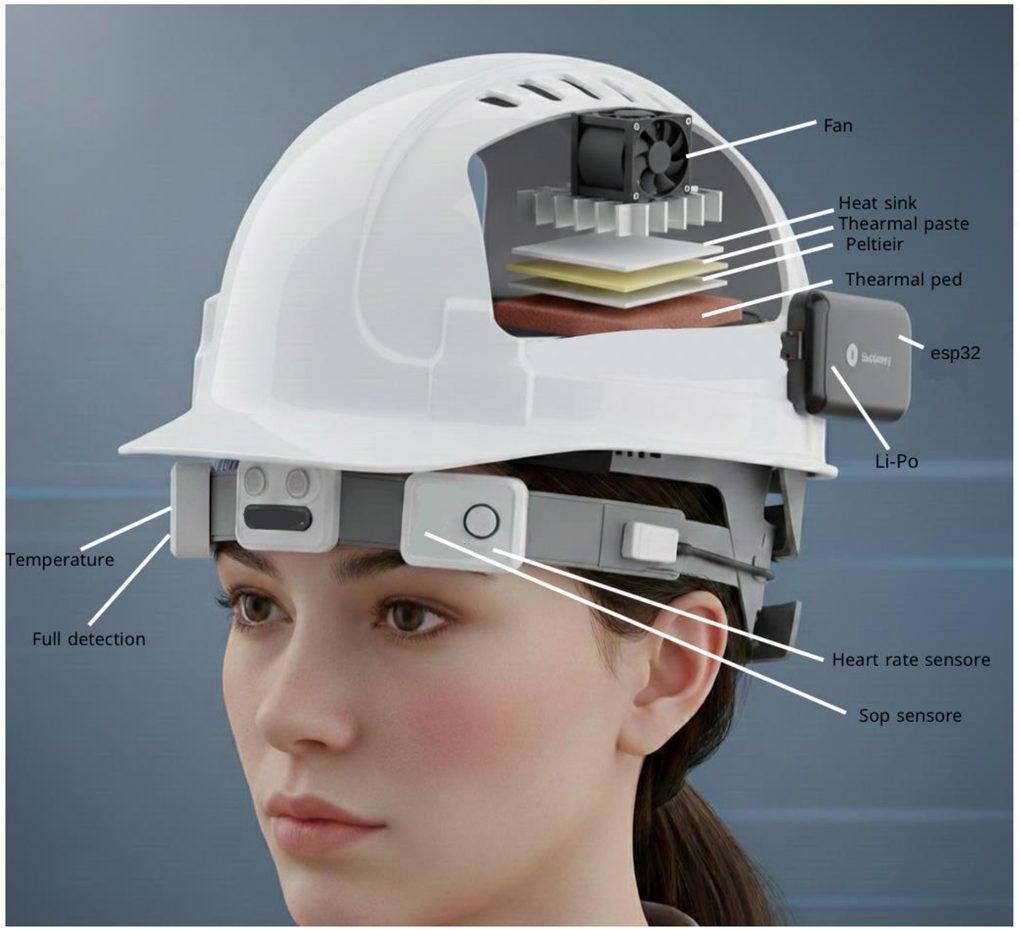
Technology Used :



Prototype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Heat sink
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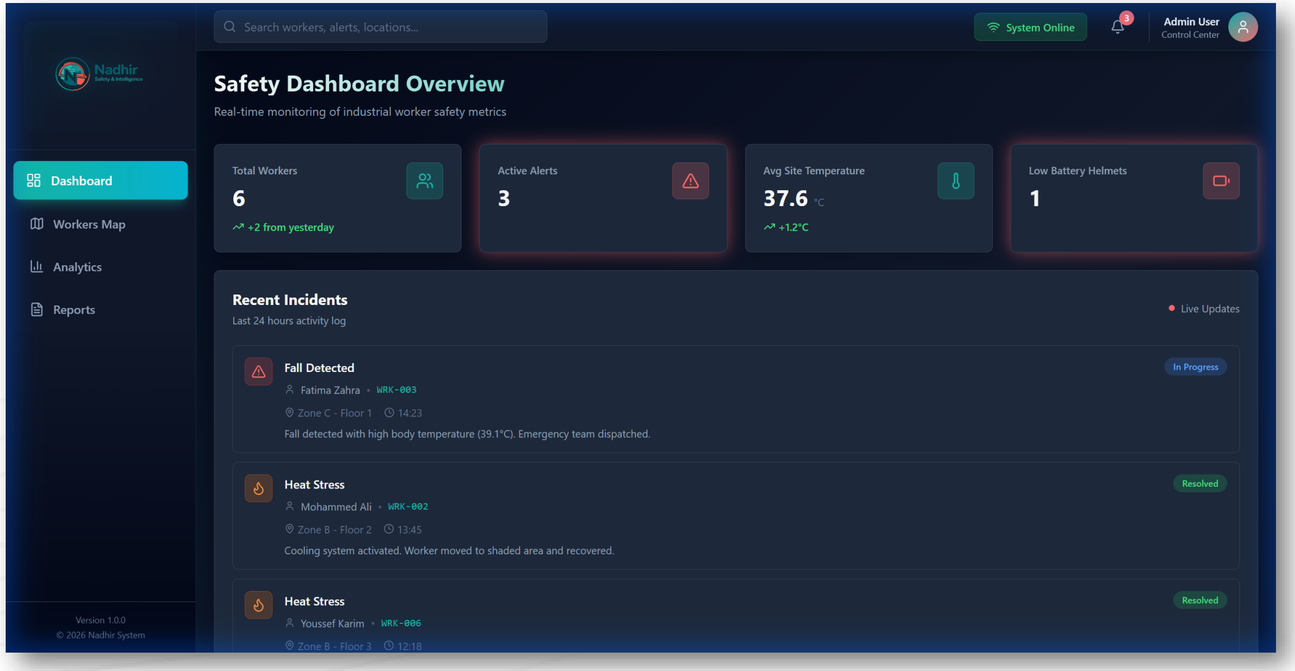
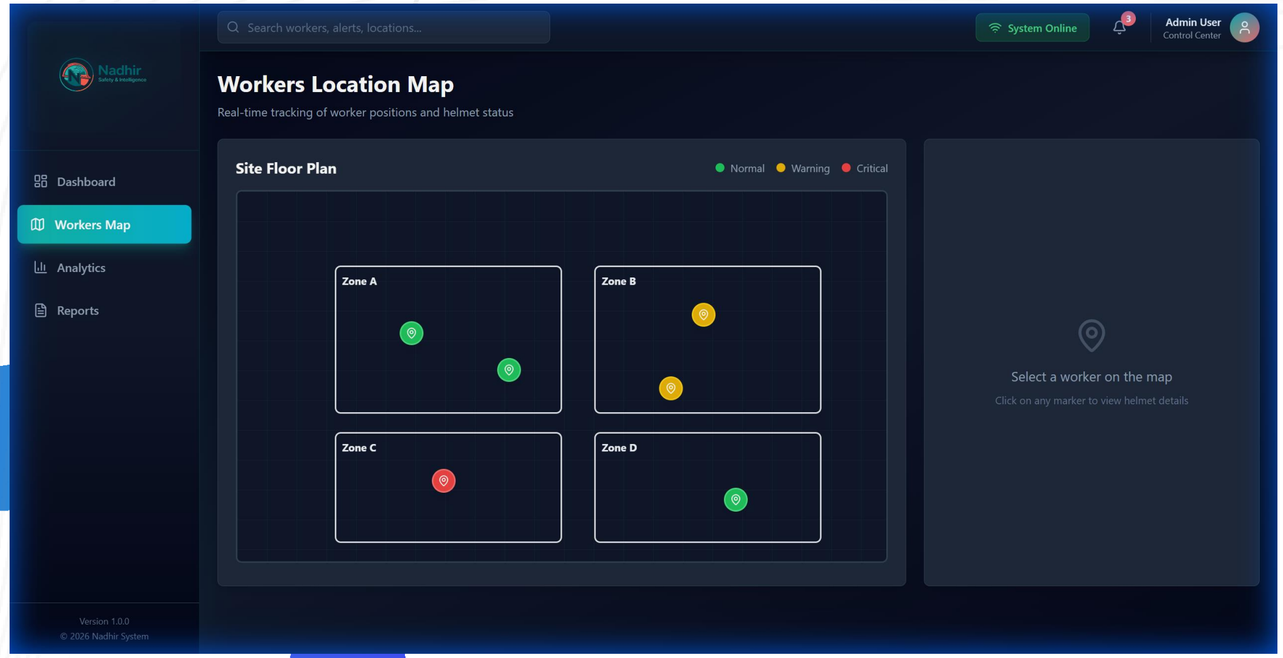
esp32
Li-Po
Temperature
Full detection
Heart rate sensore
Sop sensore

Prototype





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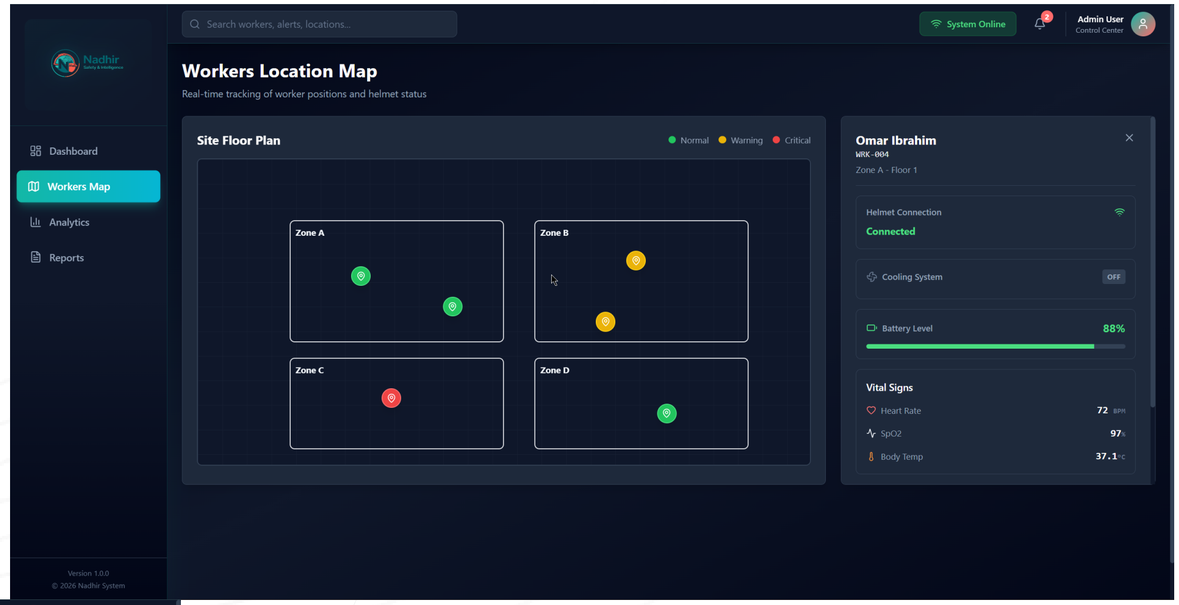
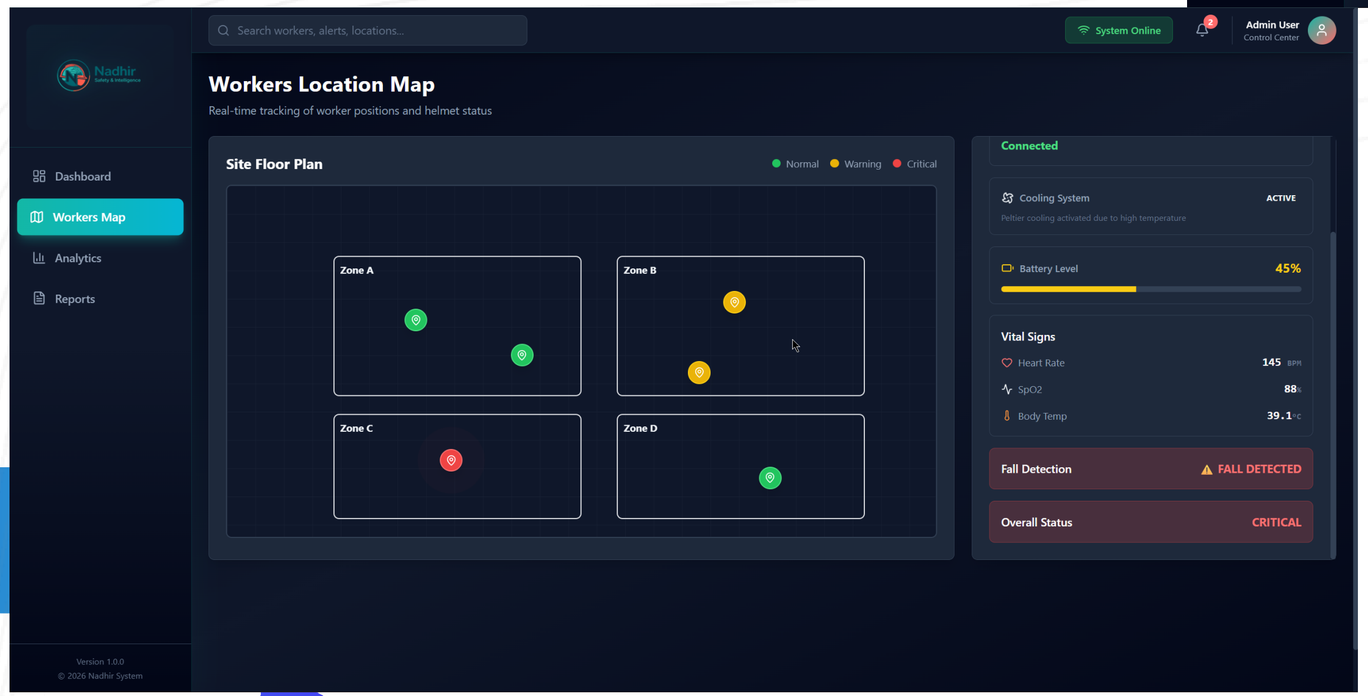
Prototype





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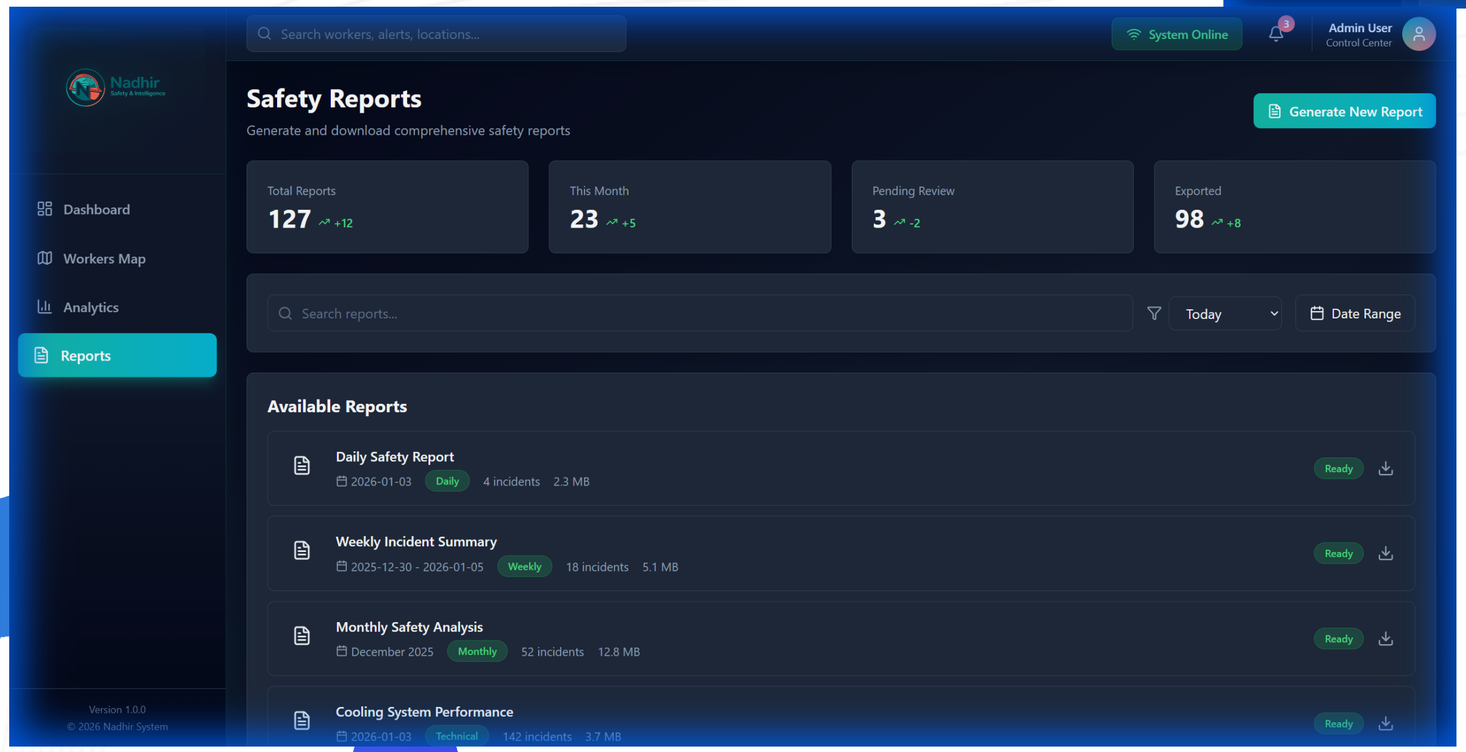
Prototype



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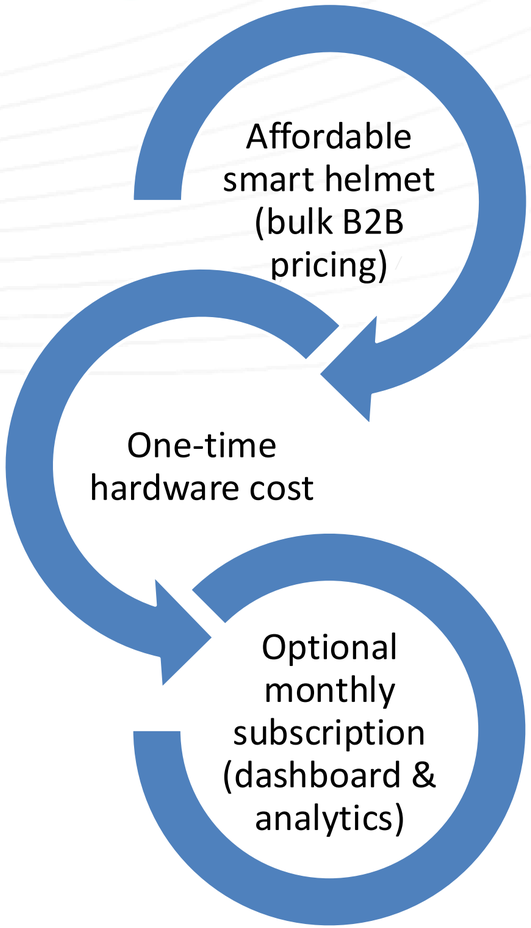
Impact & Market

- Reduce heat stress, falls, and workplace
- Faster emergency response → fewer fatalities
- Target sectors: Construction, Oil & Gas, Industrial sites
- Strong demand in Saudi Arabia & GCC (hot climate + mega projects)

Cost & Pricing Model



Sustainability & Long term value

- Protects worker’s health and lives
- Reduces medical and compensation costs
- Scalable across sites and projects
- Long-term safety data for better decision-making

Implementation plan

Phase 1: Prototype & sensor integration
Phase 2: Pilot testing (on site)
Phase 3: Full deployment & training
Phase 4: Scale & add AI analytics

Why Nadhir ?

Proactive safety solution
Designed for hot environments
Automatic alerts (no worker action needed)
Cost-effective & scalable
Supports Vision 2030 safety goals

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THANK YOU

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