



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.

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.

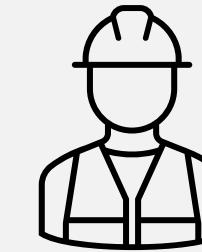
Lack of real-time health and safety monitoring which limits early intervention, meaning warning signs such as rising body temperature, abnormal heart rate, or prolonged immobility are often detected too late. Resulting in preventable injuries, productivity loss, and increased healthcare costs.

The Solution -Nadhir

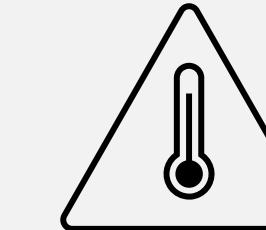
Nadhir is a smart safety helmet designed to:



Continuously monitor worker's vital signs (heart rate, SpO₂, 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

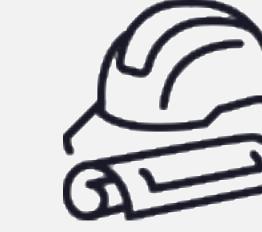
— How does Nadhir work ?



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

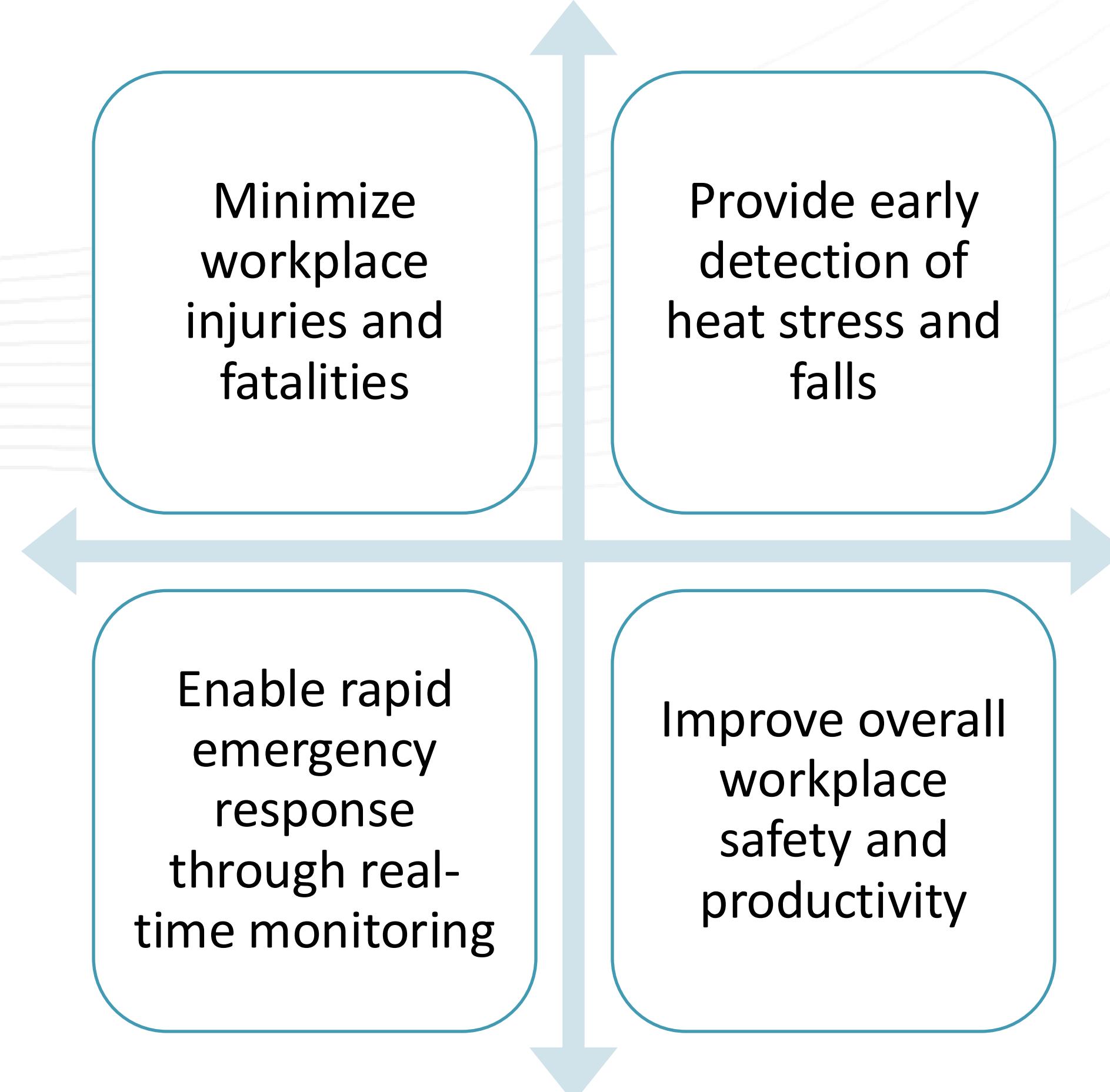


In the case of changes in the vital signs or the absence of movement for 2 minutes , Nadhir will send an alert to the monitoring team

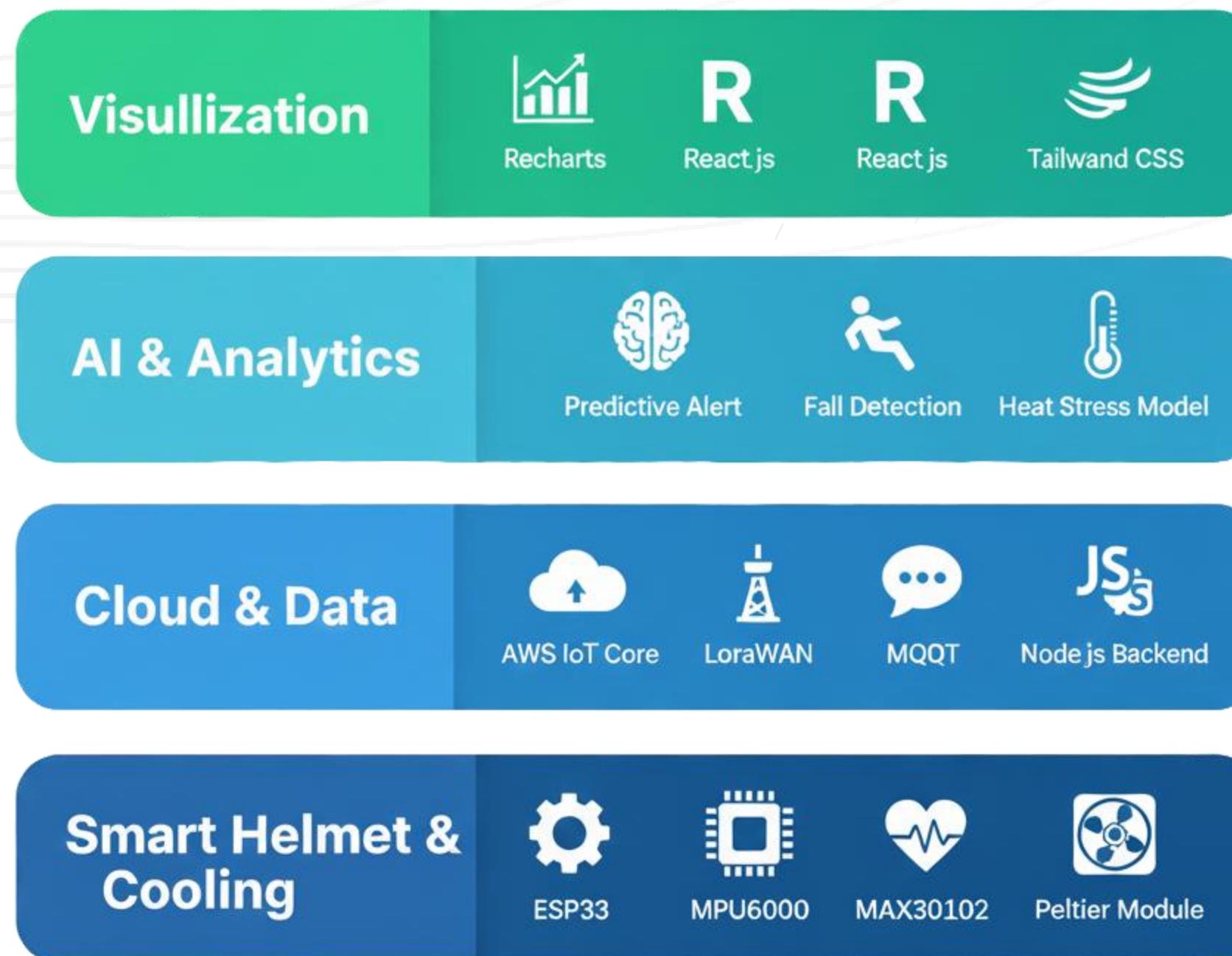


Medical team are alerted and assess the worker

Key advantage: Prediction



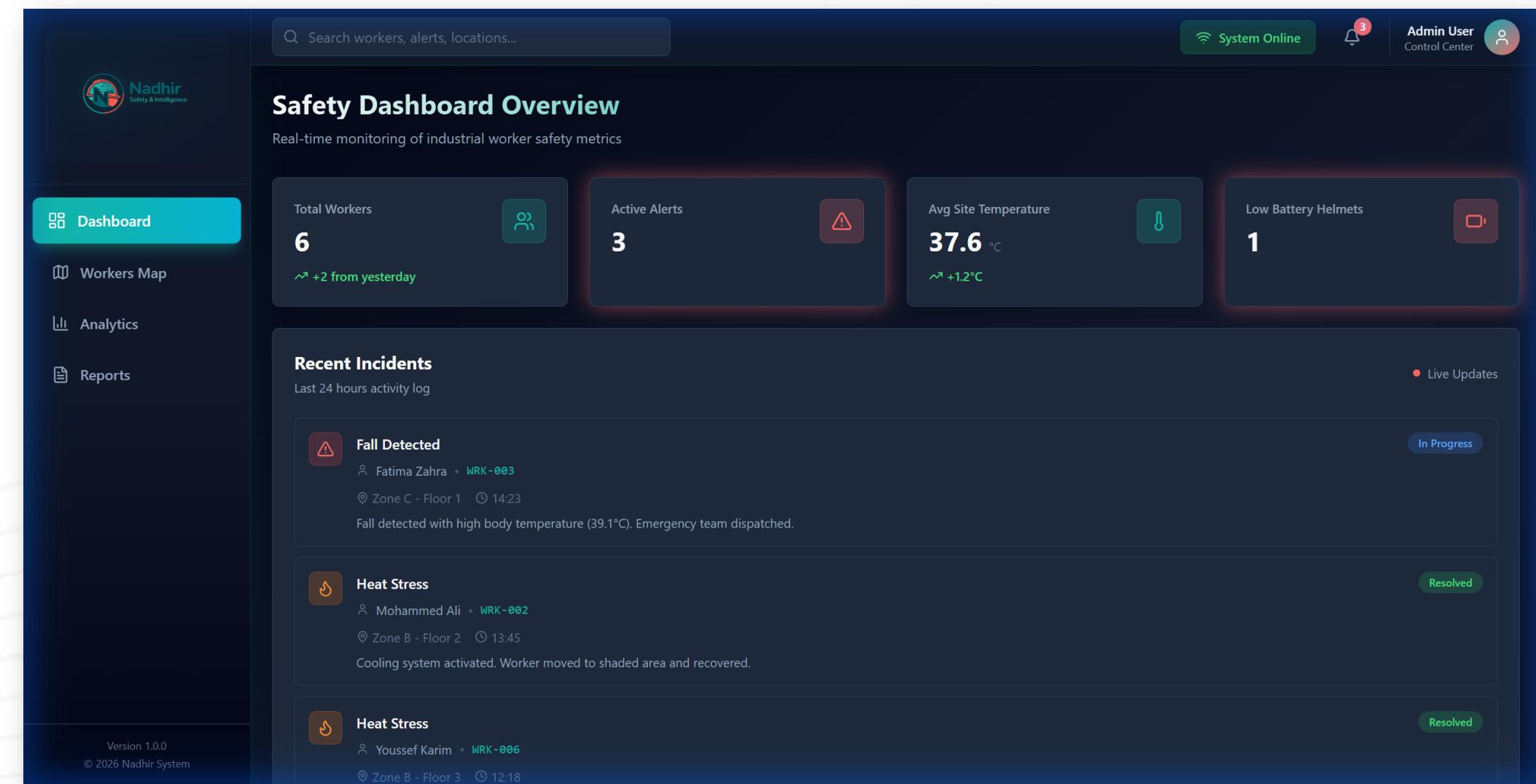
— Technology Used :



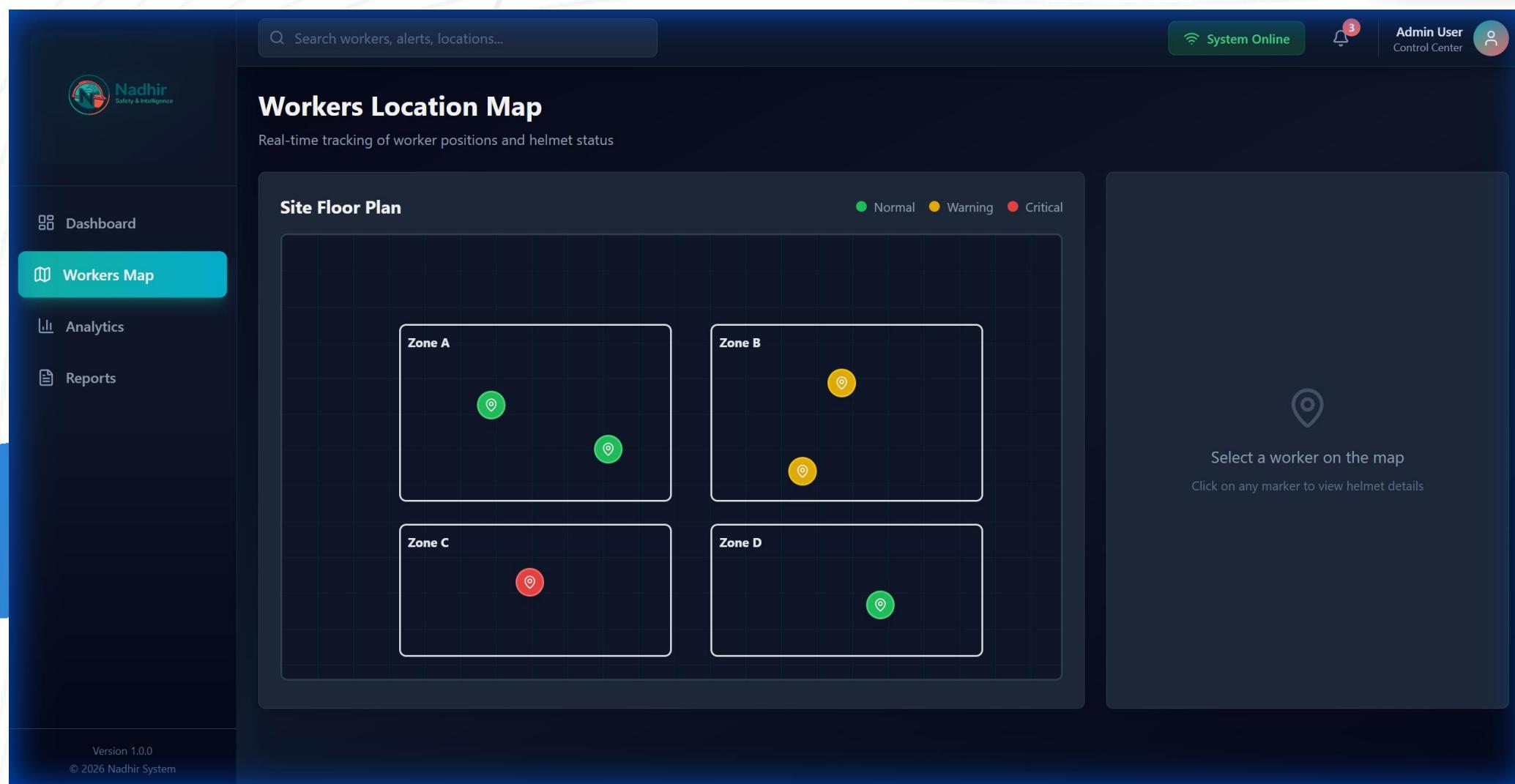
— Prototype



— Prototype



The Safety Dashboard Overview page displays real-time monitoring of industrial worker safety metrics. Key statistics include 6 Total Workers (with a note of +2 from yesterday), 3 Active Alerts (one marked as In Progress), and environmental data like Avg Site Temperature at 37.6 °C (+1.2°C). The dashboard also tracks Low Battery Helmets at 1. A sidebar on the left provides navigation to Dashboard, Workers Map, Analytics, and Reports. The bottom right corner indicates 'Live Updates'.



The Workers Location Map page shows the real-time tracking of worker positions and helmet status across four zones: Zone A, Zone B, Zone C, and Zone D. The map uses a grid system with location markers. A legend indicates three levels of status: Normal (green), Warning (yellow), and Critical (red). A callout box on the right instructs users to "Select a worker on the map" and "Click on any marker to view helmet details". The sidebar on the left includes links for Dashboard, Workers Map (selected), Analytics, and Reports. The bottom right corner features the GOSHATHON logo and text: "GLOBAL OCCUPATIONAL SAFETY & HEALTH HACKATHON 3rd Edition".

— Prototype

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Workers Location Map

Real-time tracking of worker positions and helmet status

Site Floor Plan

- Zone A: 2 green dots (Normal)
- Zone B: 3 yellow dots (Warning)
- Zone C: 1 red dot (Critical)
- Zone D: 1 green dot (Normal)

Connected

- Cooling System: ACTIVE
- Battery Level: 45%

Vital Signs

- Heart Rate: 145 BPM
- SpO2: 88%
- Body Temp: 39.1°C

Fall Detection: ▲ FALL DETECTED

Overall Status: CRITICAL

Version 1.0.0
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Workers Location Map

Real-time tracking of worker positions and helmet status

Site Floor Plan

- Zone A: 1 green dot (Normal)
- Zone B: 2 yellow dots (Warning)
- Zone C: 1 red dot (Critical)
- Zone D: 1 green dot (Normal)

Legend: ● Normal ● Warning ● Critical

Omar Ibrahim

WRK-004
Zone A - Floor 1

Helmet Connection: Connected

Cooling System: OFF

Battery Level: 88%

Vital Signs

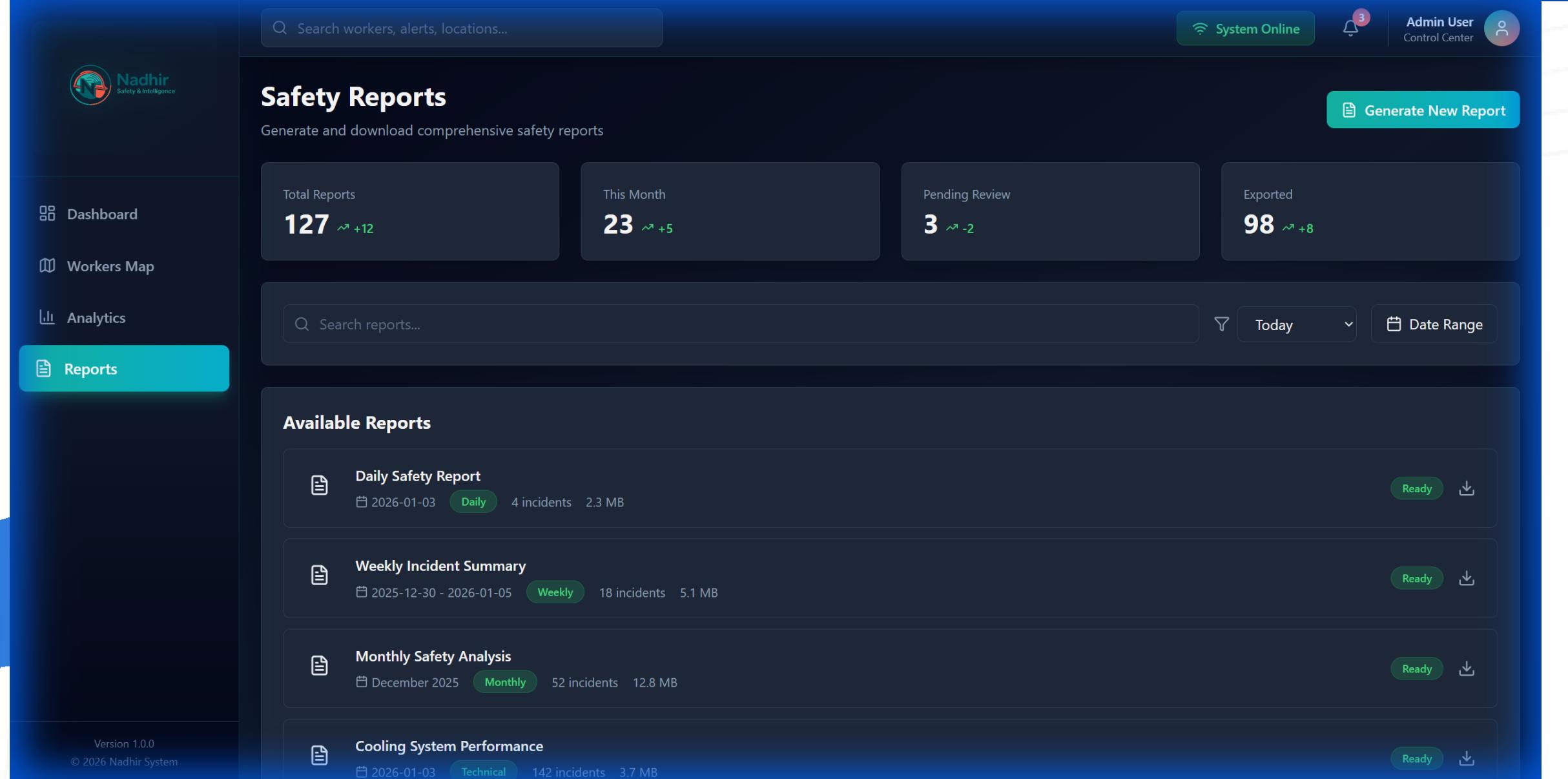
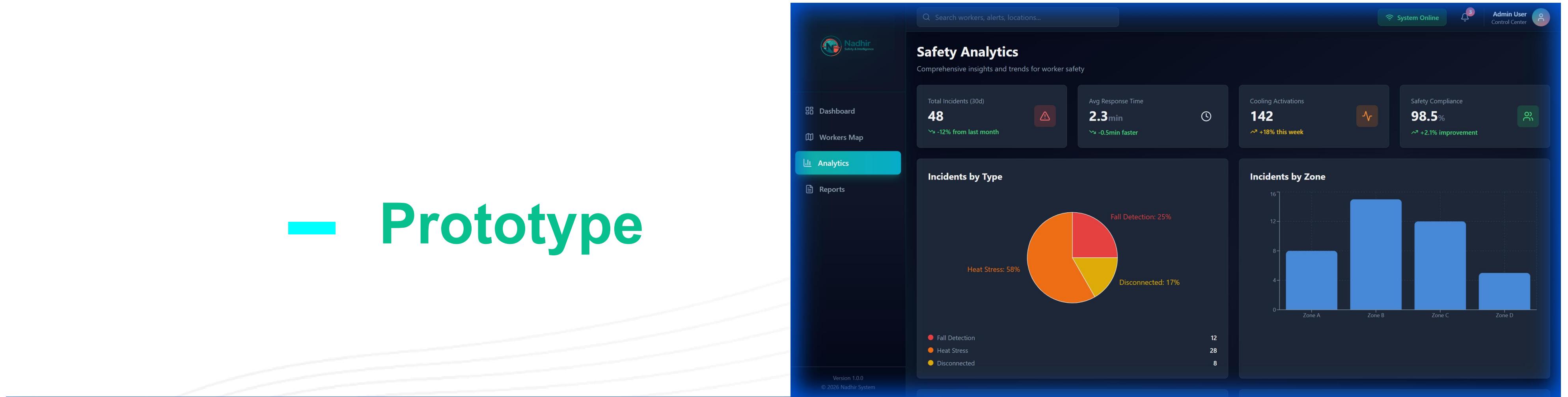
- Heart Rate: 72 BPM
- SpO2: 97%
- Body Temp: 37.1°C

System Online

Admin User Control Center

Version 1.0.0
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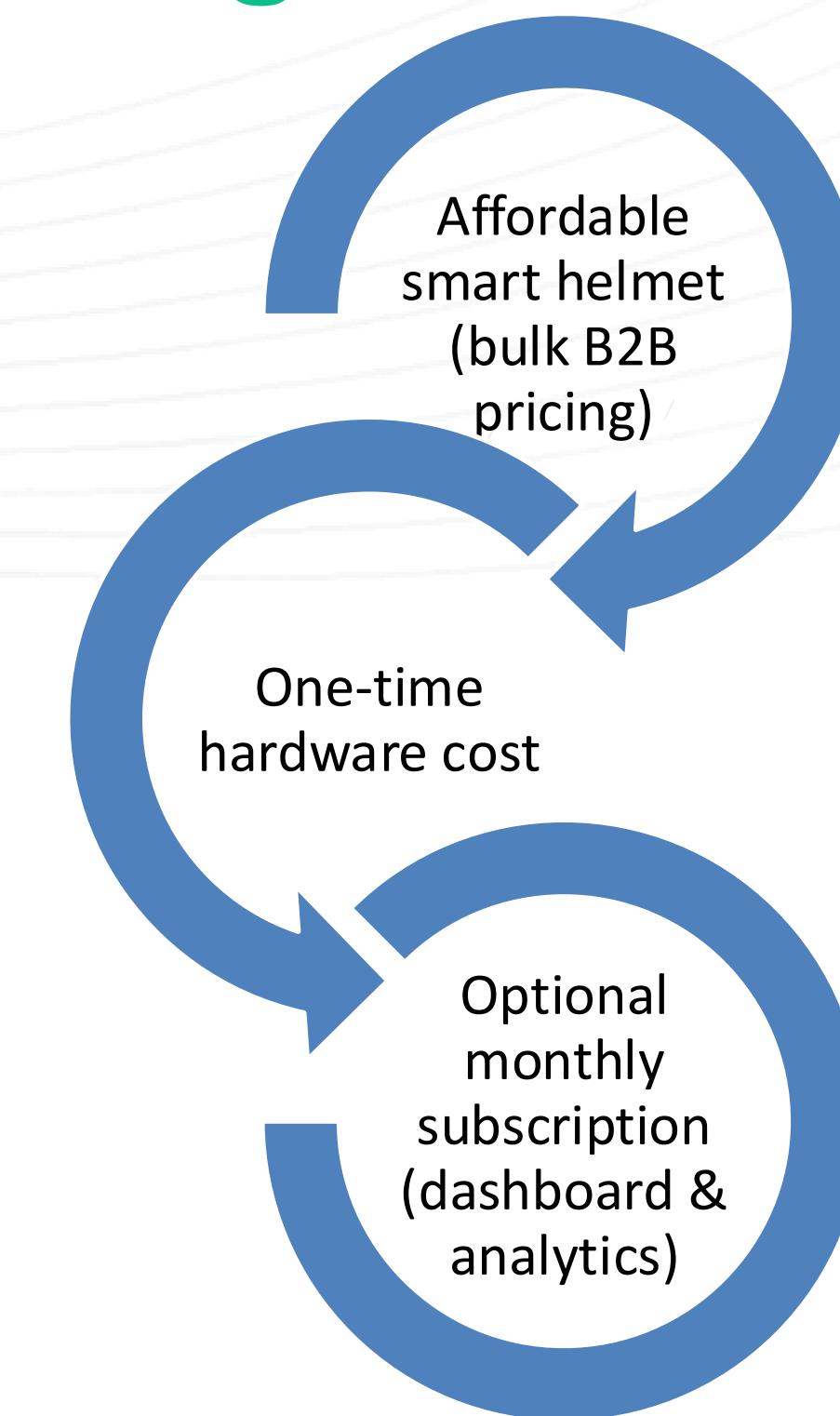
— Prototype



— 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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