



IRSC 2025

**Advancing Railway Safety through
Innovations and Collaborations**

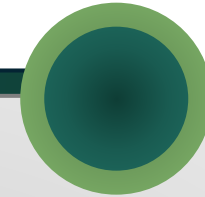
Hong Kong, China 25th - 30th November 2025

Beyond Compliance: Embedding Safety as a Belief

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The Industry Pattern: Rail safety has been treated as compliance.



Policies, audits,
and tick-boxes

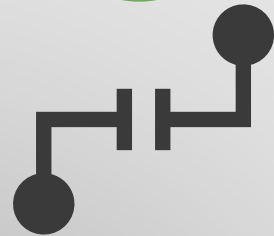


Sub-theme: Safety Culture

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The Industry Pattern: Rail safety has been treated as compliance.



Disconnected
from
Operations



Policies, audits,
and tick-boxes



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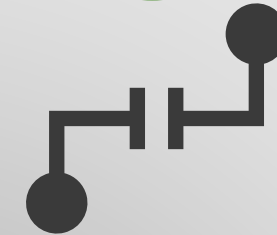
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The Industry Pattern: Rail safety has been treated as compliance.



Reactive, after
the fact



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Policies, audits,
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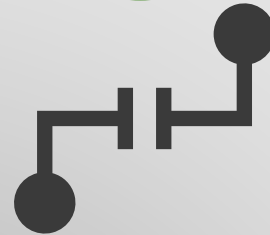
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Policies, audits,
and tick-boxes

Compliance is necessary, but insufficient



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At SAR, The Old Model Capped Impact

We weren't content with compliance. We wanted safety to be something people do without friction, every day.

To

From
**Enforce
and Report**



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At SAR, The Old Model Capped Impact

We weren't content with compliance. We wanted safety to be something people do without friction, every day.

To
**Anticipate
and Act**



From
**Enforce
and Report**



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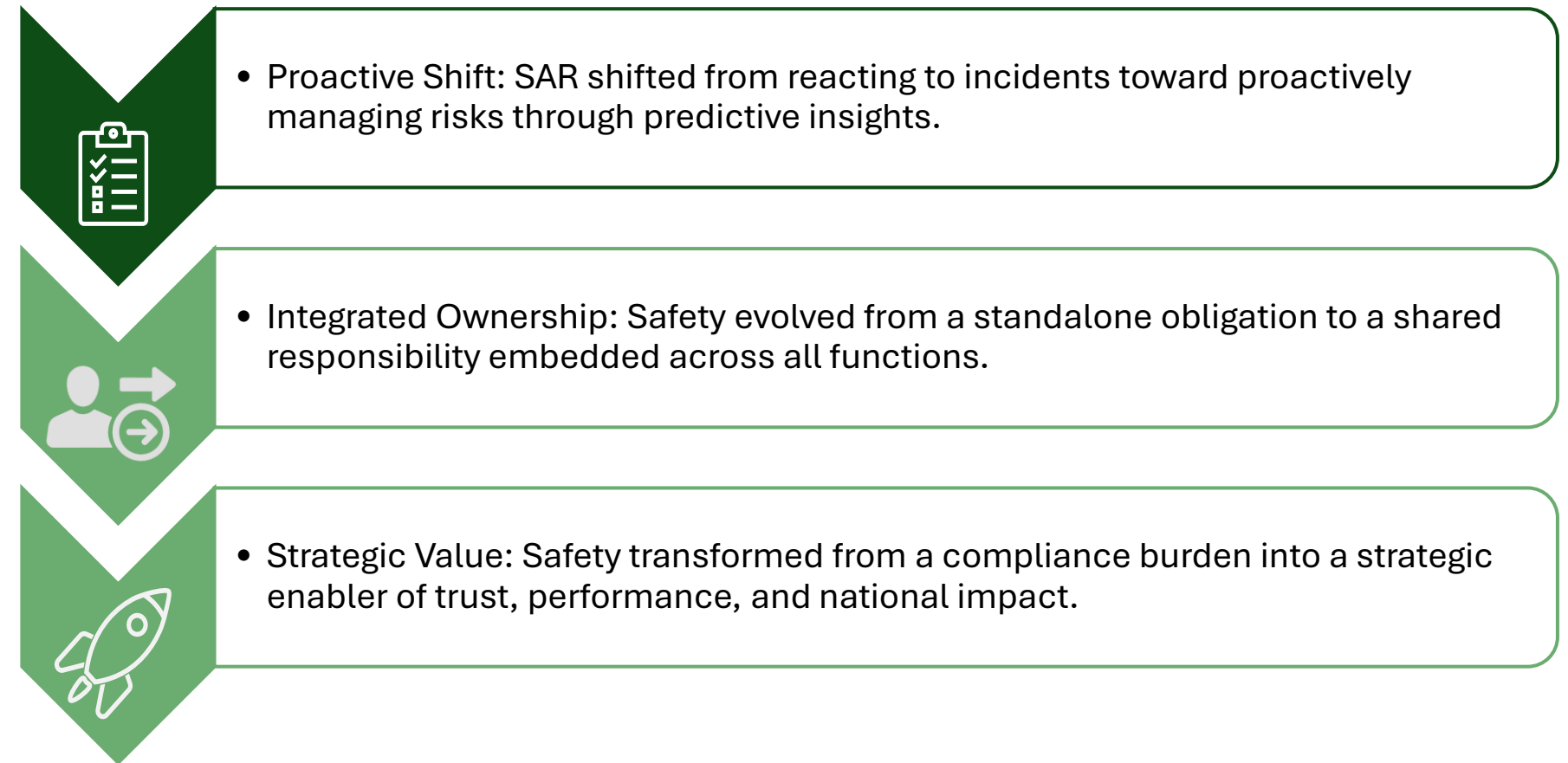


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From Compliance to Strategic Enablement

“We didn’t set out to change a department. We set out to redefine how safety drives everything we do.” This is the story of how SAR transformed safety from a reactive obligation into a strategic engine that powers performance, trust, and national growth.



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From Philosophy to Action

Our Core Belief	What we did?	What changed?
Safety is a leadership responsibility	Repositioned under executive governance with CEO-led reviews	Safety became a boardroom agenda, not a compliance report
Everyone owns safety	Launched "Safety Belongs to Me" frontline program	3x increase in reporting, 60% resolved locally
Prevention must be intelligent	Deployed predictive analytics integrated with operations	Reduced repeat incidents by 40%



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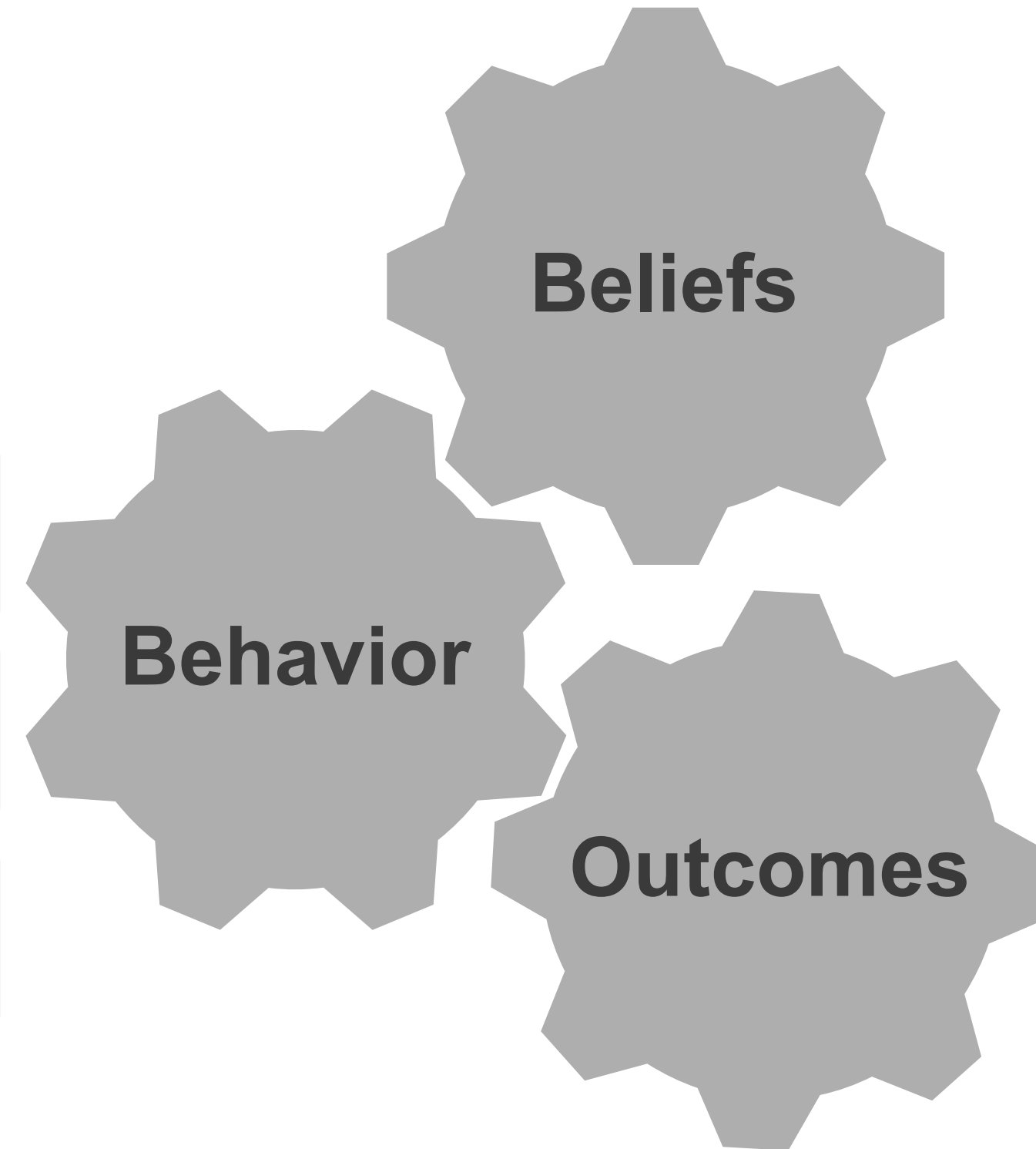


The Vision: Safety as a Belief, not a Check list

Governed centrally, owned locally

Accessible in the flow of work

Predictive by design



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Safety Belief Integration Model

Three integrated pillars: Belief-Driven Governance, AI-Enabled Accessibility, Predictive Assurance.

Belief-Driven Governance

Codified accountability,
self-assurance



AI-Enabled Accessibility

bilingual assistant, policy
QA, edge access



Predictive Assurance

models surfacing
precursors and early
warnings



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Pillar 1: Belief-Driven Governance

Three lines of defense and a center of excellence with 8 units.



Teams self-assess routine controls, leaders see variance weekly



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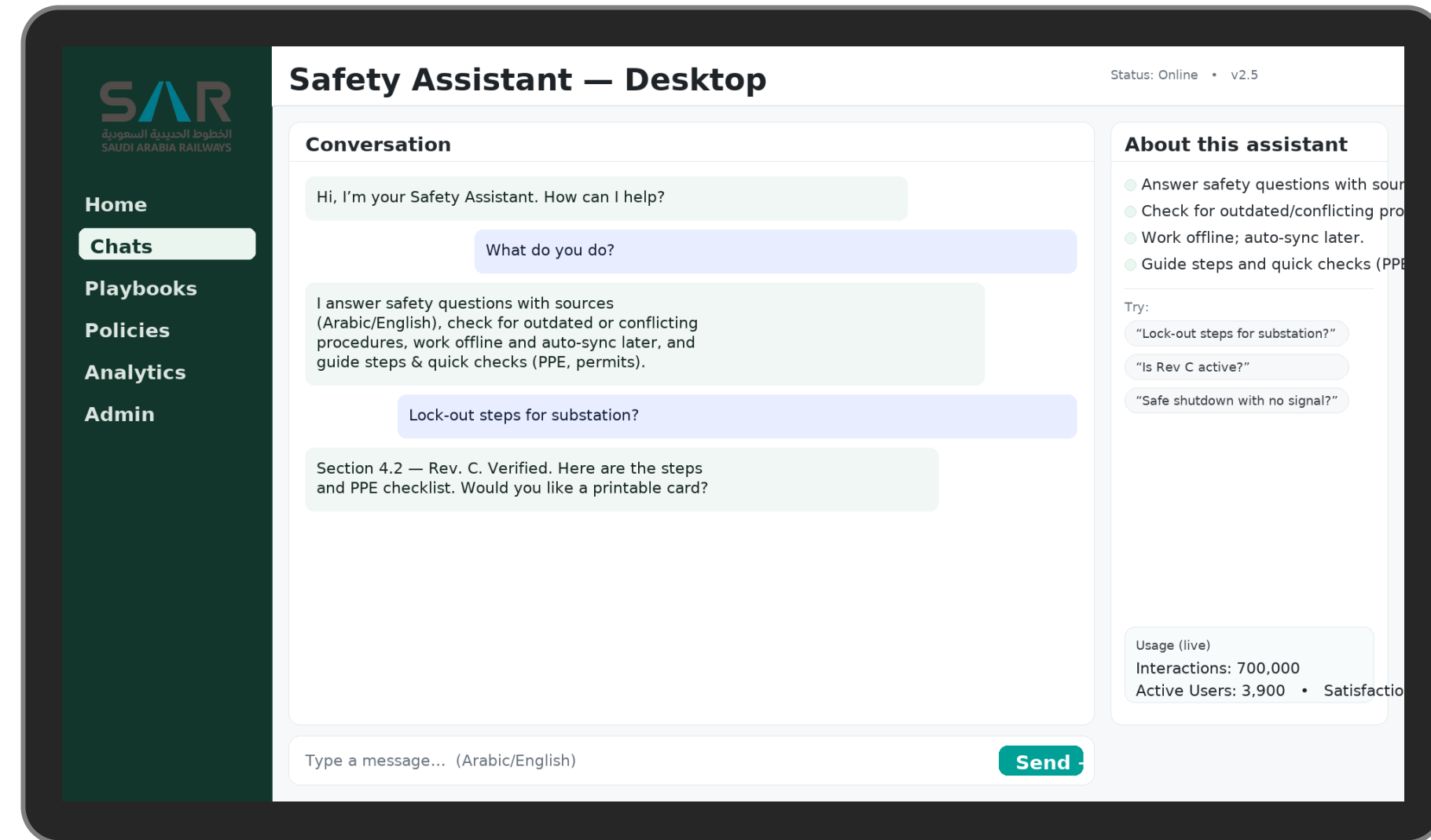


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Pillar 2: AI-Enabled Accessibility

Bilingual, offline-tolerant safety chat in the flow of work; live policy QA.



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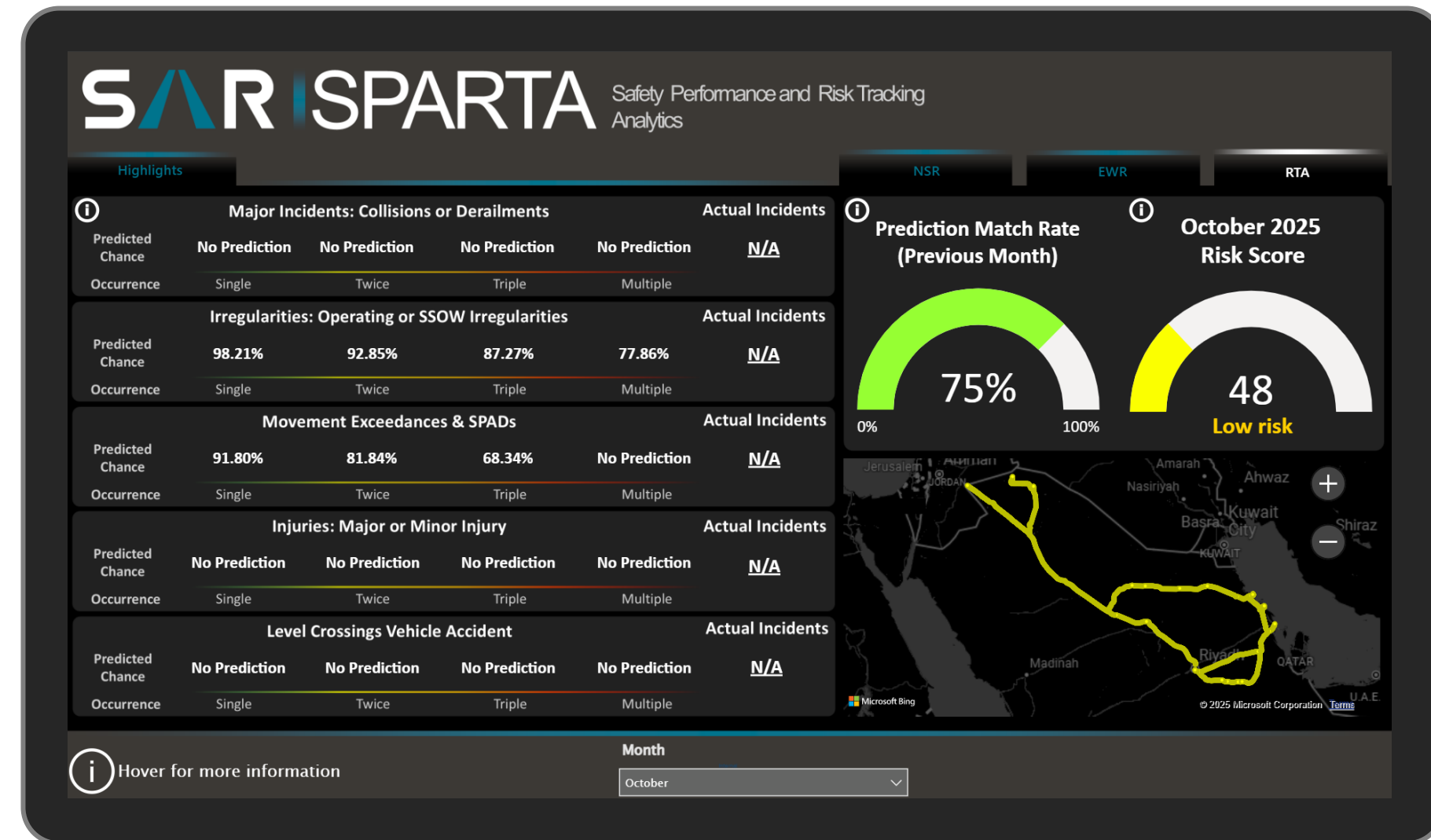


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Pillar 3: Predictive Assurance

Random-Forest-based early warnings on derailment/collision/infrastructure risk precursors; integrated into dashboards.



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System Architecture (High Leve)

DATA



Incidents



Sensors



Operations



Weather



Documents

PLATFORM

RAG layer

Retrieves the most relevant rulebook passages and cites them, ensuring answers use the latest source.

Model training/scoring:

Learns risk patterns from historical data and outputs current risk scores for each context.

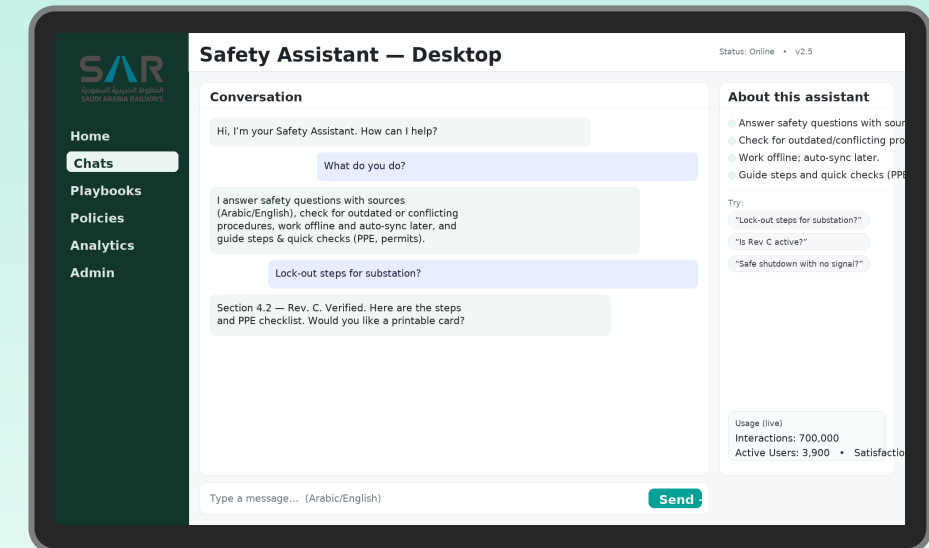
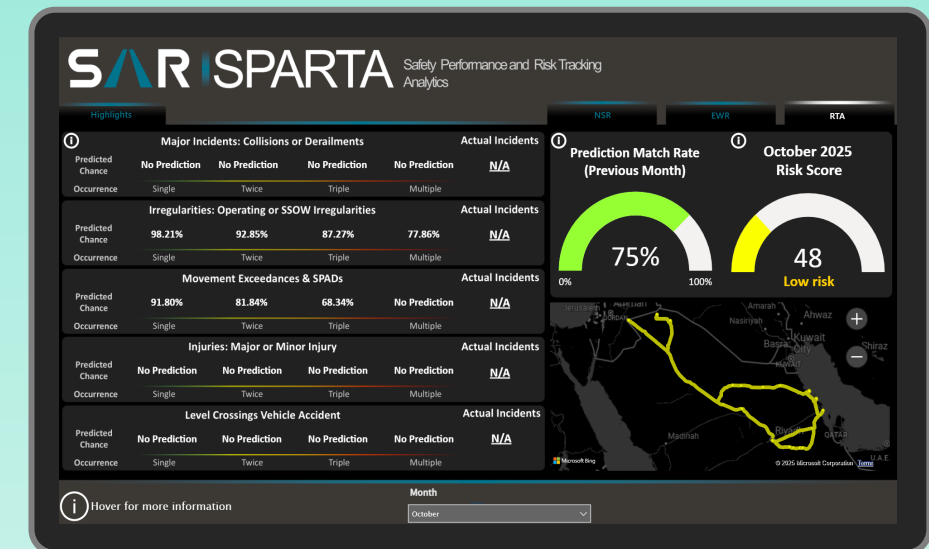
Rules engine:

Applies governance logic to answers and alerts to enforce standards.

Telemetry:

Tracks usage, accuracy, and outcomes to spot gaps, monitor drift, and drive continuous improvement

EXPERIENCE



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Outcomes in First Year

Safety Delays

In minutes per train

Was 0.39

Now 0.11

72%↓

Compliance

Deviations per Quarter

Was 17.25

Now 13.25

23%↓

Engagements

Was 88%

Now 93%

6%↑

Predictions

Match Rate

71%



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Thank you

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