

Live ML solution for Network AI-Ops of Broadband Services

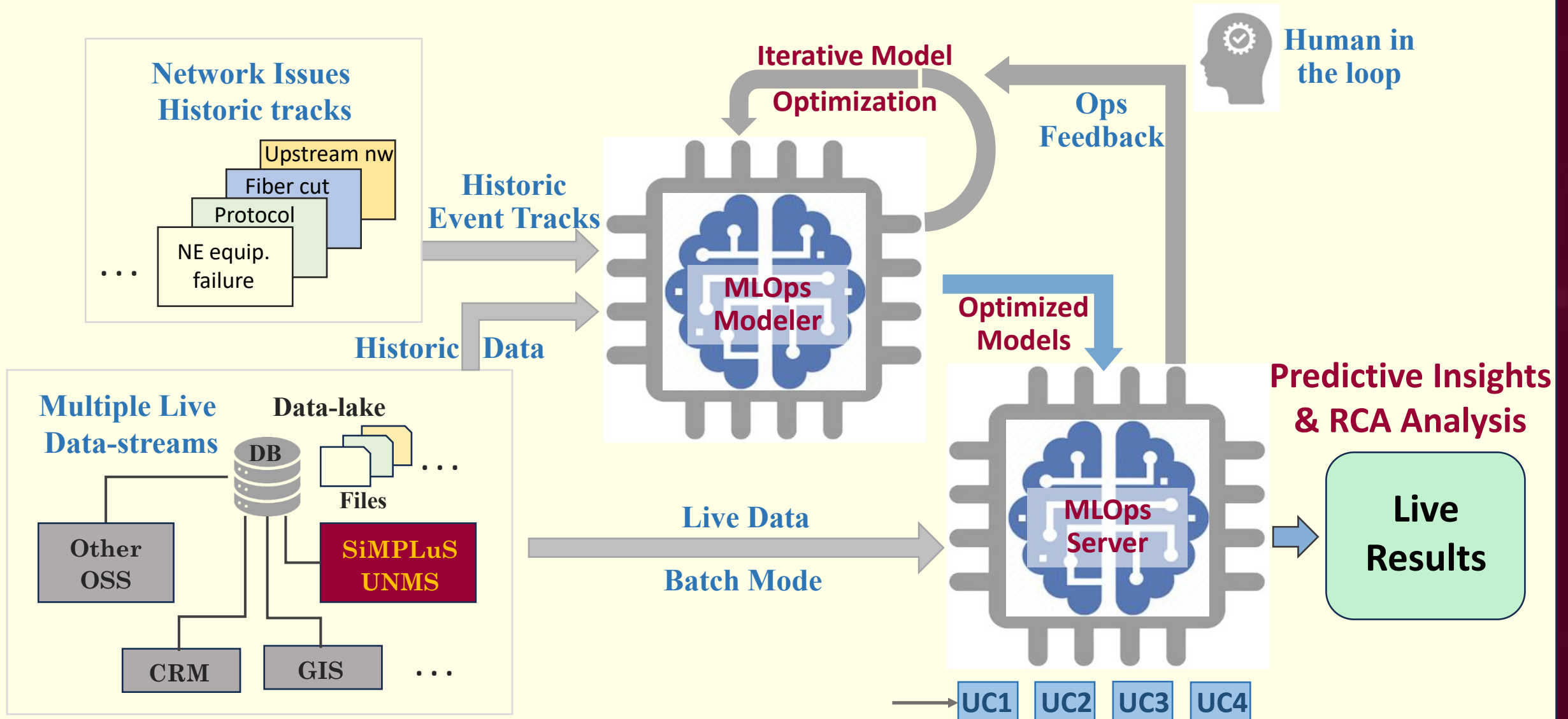
- Dr. Girish Saraph, CEO, Vegayan Systems

AI/ML Network Expert Solution

- With network & services **scaling by 10X+**, load of operations processes is ever increasing ...
- Expertise & roles of SME's are not scalable in terms of time, effort & money, **at the same time** ...
- Demand for **Network Responsiveness** is ever more acute, requiring quick & proactive decision-making
- Node & port down predictions enabling field teams to proactively locate issue & improve customer service
- Detect severe events in live network and prioritize SME resources for critical high-impact issues
- AI/ML based Network Expert acts as a booster to both proactive & predictive decision-making

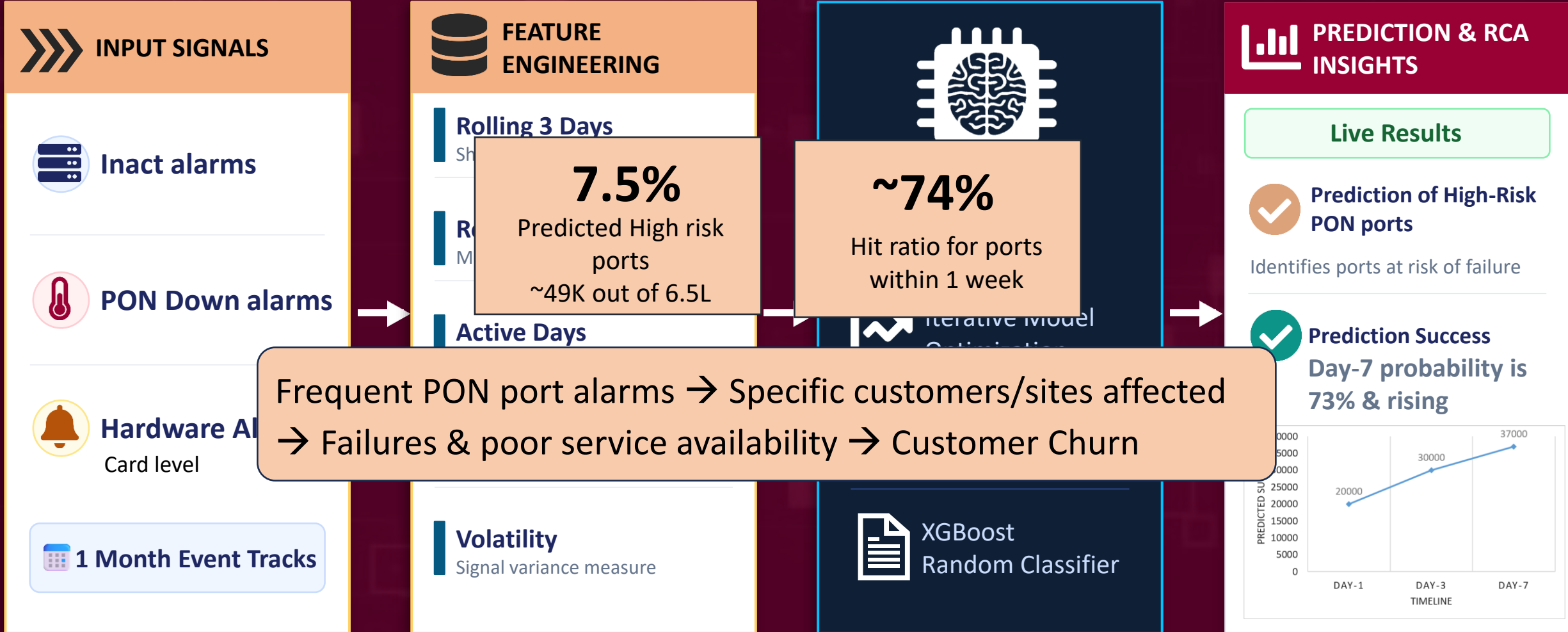


ML-Ops Working: Network Expert



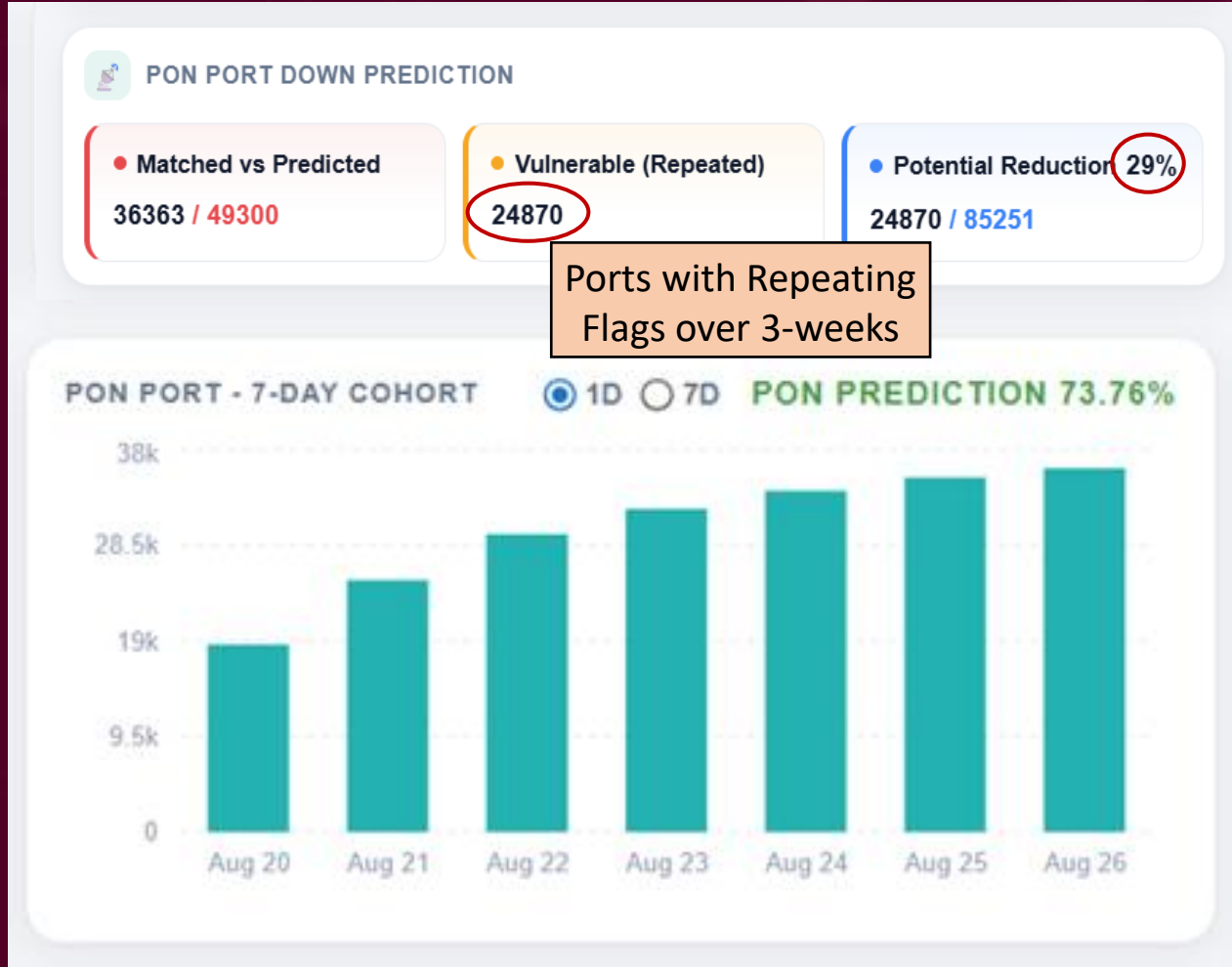
Use-case 1 – PON port service vulnerability prediction

Problem statement: Inability to proactively identify high-risk PON ports leads to unexpected tickets & service degradation



Use-case 1 – PON port service vulnerability prediction

Moving from 35% to 74% accuracy with refined criteria & optimized prediction logic.



Key outcomes



Weekly Prediction

Predicts 50K high-risk PON ports weekly to trigger proactive actions through reports and dashboards.



Impact Prioritization

Identify vulnerable ports predicted and down over the last two weeks, with next-week forecasts.



Prediction Insights

Visualizes daily prediction trends, affected regions, and failure patterns across the rolling 7-day forecast window.



Accuracy Tracking

Continuously correlates predicted port failures with actual outages to measure prediction effectiveness.

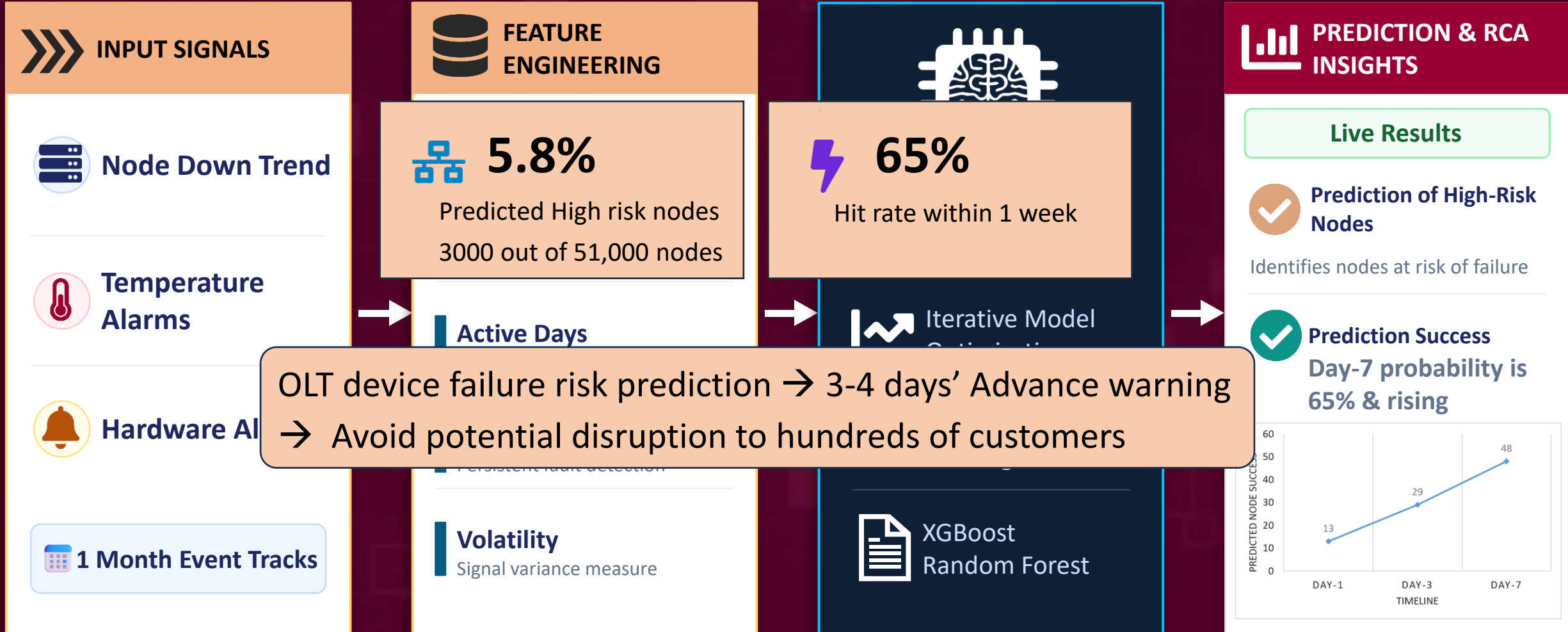


Model Evolution

Automatically retrains prediction models using historical outcomes to continuously improve forecasting precision.

Use-case 2 – Node vulnerability prediction

Problem statement: Reactive fault handling due to lack of predictive insights keeps affecting large number of customers



Use-case 2 – Node vulnerability prediction

Moving from 25% to 65% accuracy with refined criteria & optimized prediction logic.

NODE DOWN PREDICTION

● Matched vs Predicted

1960 / 3000

● Vulnerable (Repeated)

1346

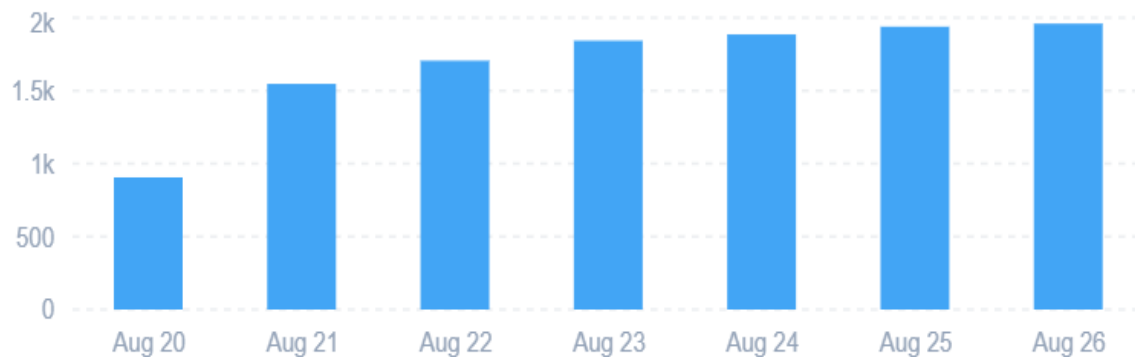
Nodes with Repeating
Flags over 3-weeks

● Potential Reduction 20%

1346 / 6702

NODE - 7-DAY COHORT

☒ 1D ☐ 7D **NODE_PRED 65.33%**



Key outcomes



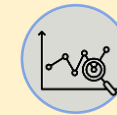
Weekly Prediction

Predicts 3000 high-risk nodes weekly to trigger proactive actions through reports and dashboards.



Smart Prioritization

Identify vulnerable nodes predicted and down over the last two weeks, with next-week forecasts.



Trend Intelligence

Visualizes weekly prediction outcomes enabling daily tracking of forecasted nodes across the 7-day window.



Actual Vs. Predicted

Automatically correlates predicted failures with actual outages to quantify forecasting accuracy.

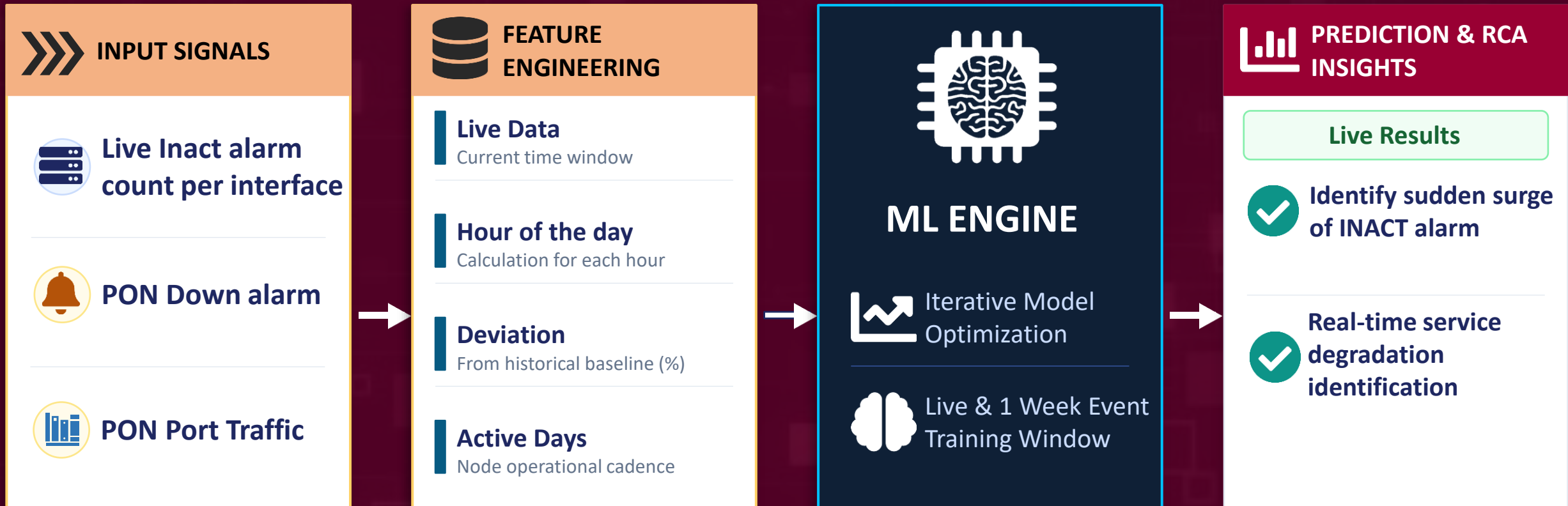


Close-loop Learning

Self-improves prediction models by automatically learning from false positives and missed failures over time.

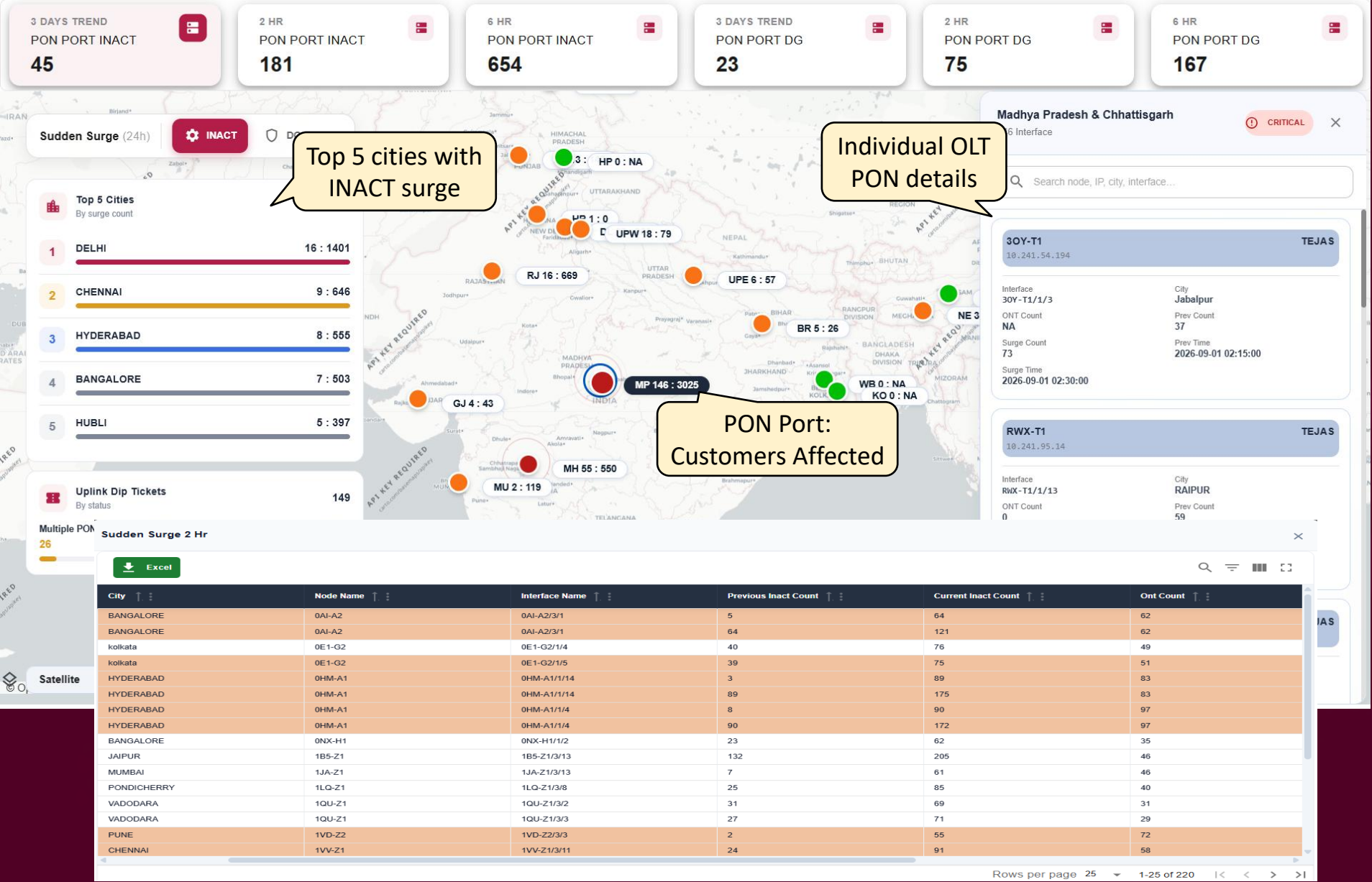
Use-case 3 – Live Impact Analysis (Severity Measure)

Problem statement: Limited visibility into degraded service & impacted customer services



Consolidating EVENT with multiple alarms & traffic dip and assigning Priority based on network/customer impact

Use-case 3 – Live Impact Analysis (Severity Measure)



Trend Analysis

Showcase sudden surge of INACT alarms trend for 2 hours, 6 hours, 3 days



Geographical View

Showcase areas with alarm trend on GIS map & highlight Top 5 cities



Drill-down Analysis

Provides location info & interface details, & customer affected details

AI/ML Network Expert: Value Proposition



1

Predictive insights

Detect faults & network anomalies before impacting customer services

2

Accelerated Operations

Automated drill-down analysis for the issue identification & resolution

3

Network Stability

Adaptive-learning models to refine decisions making & avoid recurring issues

4

Future-Proof Intelligence

Models evolving with new technologies, patterns, & priorities across services



Building
Knowledge-base



Predictive
Analysis



Trigger
Actions



Smart
Network

Thank You!