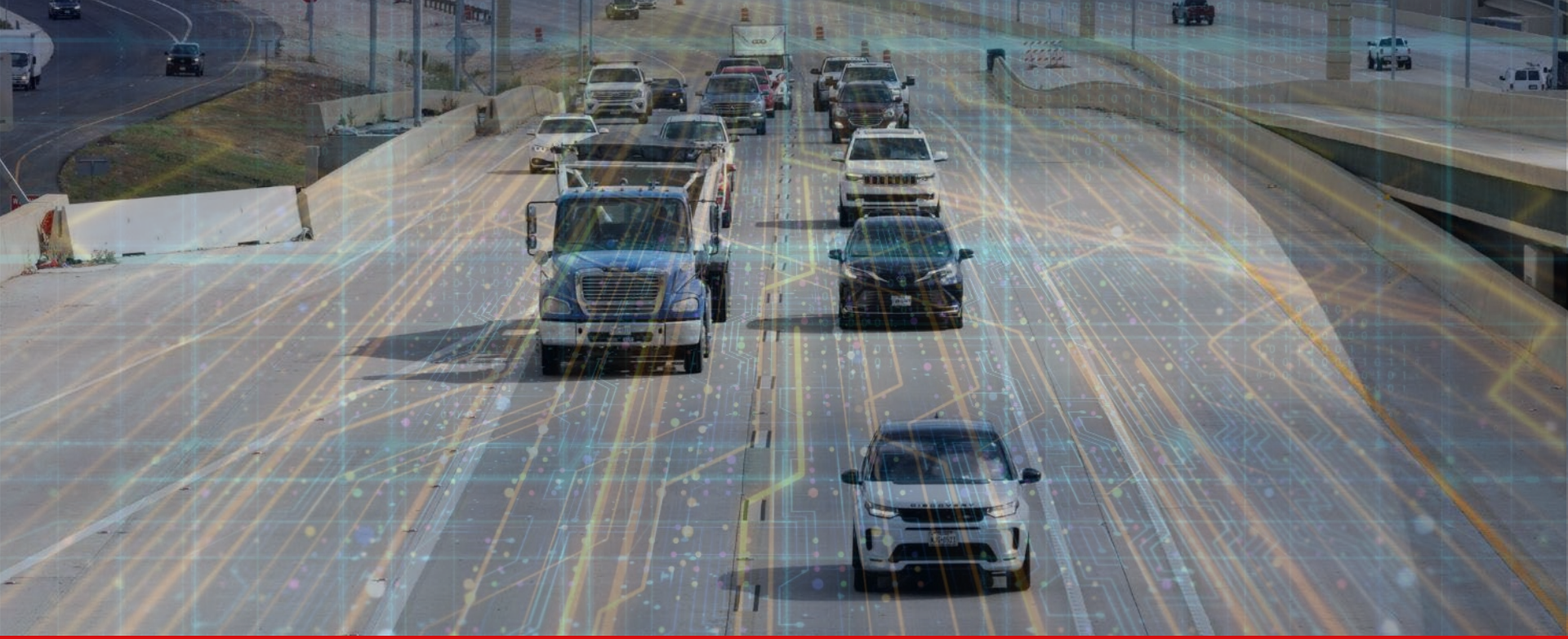

The AI Roundup: Policy, Risk, and Opportunities at TxDOT

Matt Sneed, P.E., PTOE

Texas Department of Transportation

November 25, 2025

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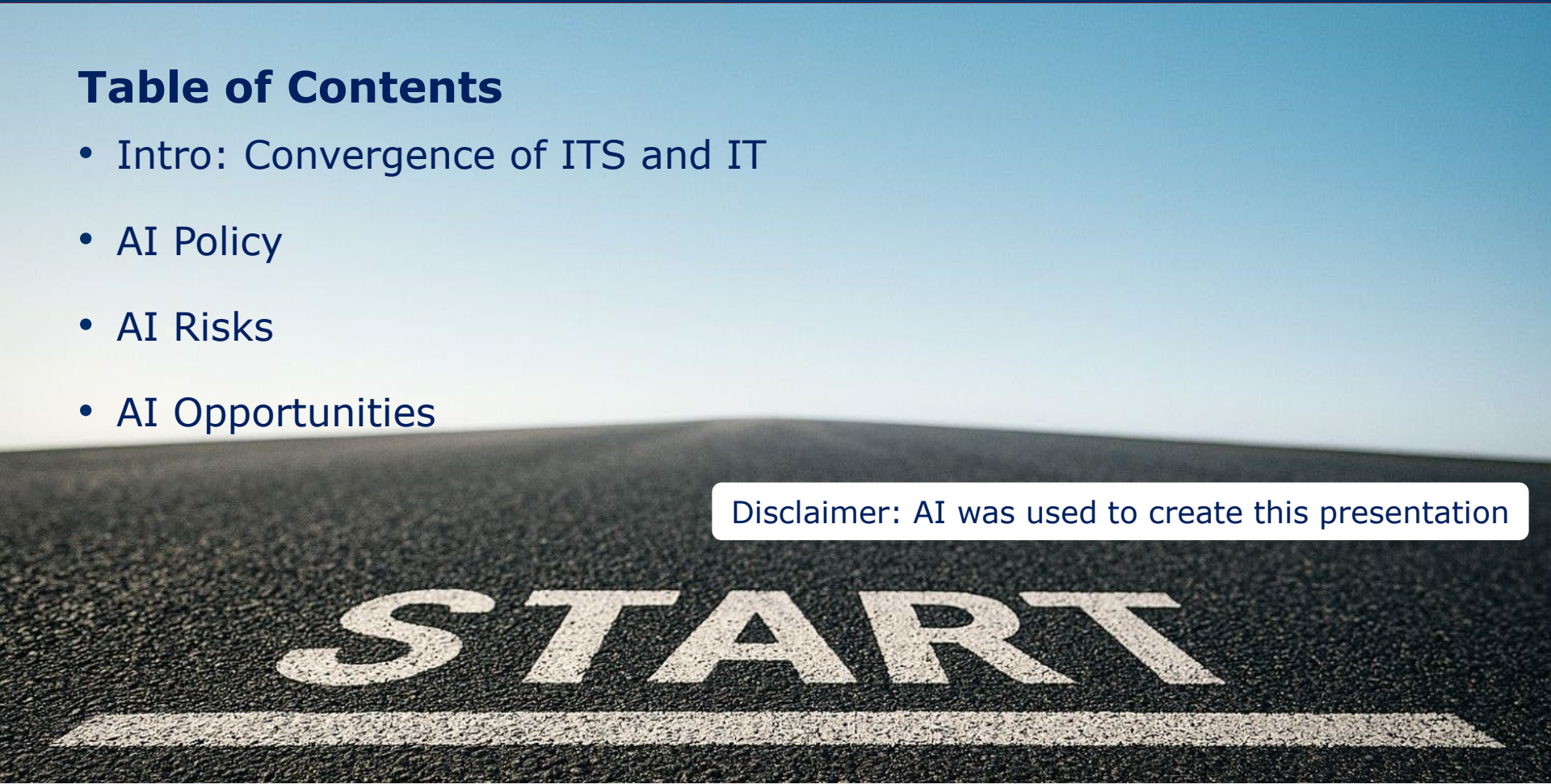
Disclaimer: AI was used to create this presentation



TxDOT's AI Foundation

AI GOVERNANCE

POLICY

All AI technology must follow ITD Governance Processes and abide by the guiding governance principals

AI deployments and operational systems must be overseen by a human

PRINCIPLES

Security
Transparency
Accuracy
Accountability
Trustworthy
Privacy
Safety

RISK ASSESSMENT

Cross-divisional

Assess risks in potential AI initiatives

Categorizes and scores using NIST framework

COMMUNITY OF PRACTICE

Foster collaboration, learning, innovation

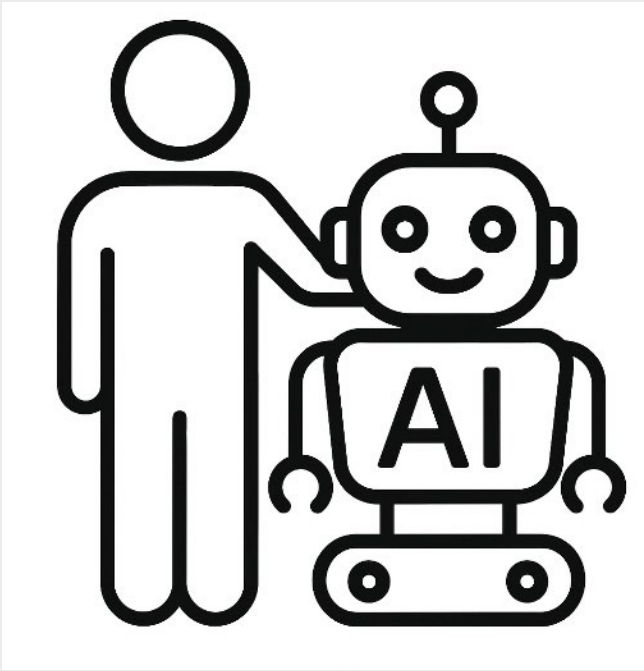
Crowd source ideas and organizational opportunities

Grow resource expertise

RESPONSIBLE INNOVATION

TxDOT AI Policy

- *Acceptable Use of Artificial Intelligence* (Oct 11, 2024)
- "…Use AI in a secure manner that protects systems and users while also maintaining human engagement with actions and decisions."
- Human-in-the-loop (HITL) decision making involves a human decision-maker working in tandem with AI to improve decision making outcomes.
  - AI system: provides input, recommendations, or predictions
  - The human decision-maker evaluates and approves or rejects.



TxDOT AI PRINCIPLES

Security

Safeguard TxDOT data and critically evaluate the threats & risks of any tool.

Transparency

Apps must provide insights into how decisions & outcomes are produced.

Accuracy

Apps must produce verifiable results & users must clearly communicate uncertainties and take appropriate measures to rectify inaccurate data

Accountability

TxDOT must establish governance, oversight, and monitoring of AI systems to ensure they do not cause unintended harm.

Trustworthy

Apps must include methods to ensure results are unbiased

Privacy

Data usage must follow agreed upon terms and be compliant with TxDOT's privacy policies and applicable state-federal requirements

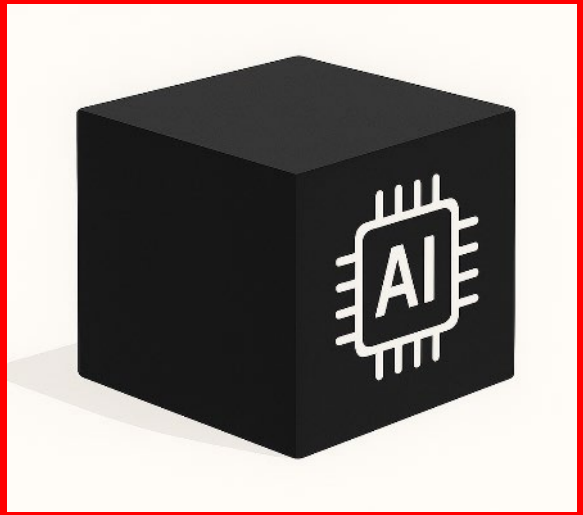
Safety

TxDOT will prioritize the well-being of the pblic, partners, and employees through trustworthy AI technologies that enhance infrastructure integrity

GOOD

References to the output sources
Access to data used for model training
User control of data and restrictions
Ability for user to perform additional training as needed
AI “training” occurs in the lab, then model is operated in the field devices

BAD



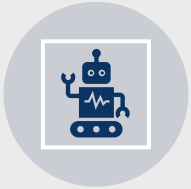
Third-Party System Risk Matrix (Traffic Signals)

- Use standard cybersecurity risk assessment: data, operation, and public safety
- Risk matrix developed for traffic signals, but framework can be applied to other ITS devices

Risk Level	Description	TxDOT's System Visibility	TxDOT Oversight
Low	Vendor reads signal controller data No vendor input to signal controller	TxDOT can access and monitor vendor system TxDOT can make changes to vendor system	Minimum oversight by ITD
Moderate	Vendor reads signal controller data Vendor has limited input to signal controller	TxDOT can access and monitor vendor system TxDOT can make changes to vendor system	Minimum to Moderate oversight by ITD depending on system information
High	Vendor reads signal controller data Vendor has full input to signal controller	TxDOT has limited to or no access or ability to monitor vendor system Vendor system has full control over traffic signal	Requires ITD to work with District to implement oversight and monitoring

AI/Innovation Opportunity Areas for Traffic Technology

LARGE DATASETS: USE AI FOR ANALYZING, INSIGHTS, ANOMALIES, TRENDS



MANUAL TASKS: USE AI AGENTS AND/OR BOTS TO REPLACE MANUAL TASKS

SENSORS: USE AI TO ENHANCE ROADWAY SENSOR'S RELIABILITY & OUTPUTS

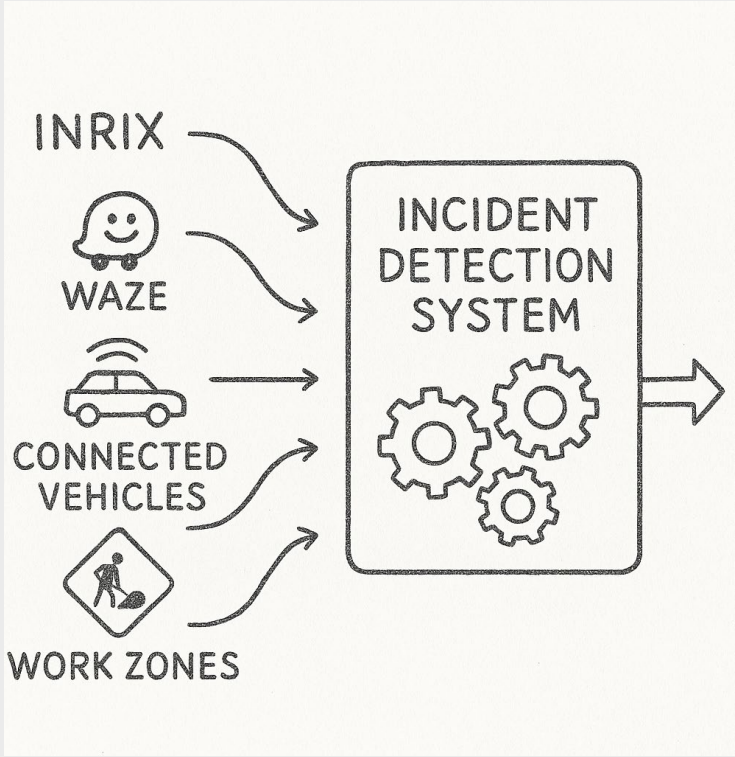
AUDITING: USE AI TO AUDIT VENDORS, DATA QUALITY, TICKETING

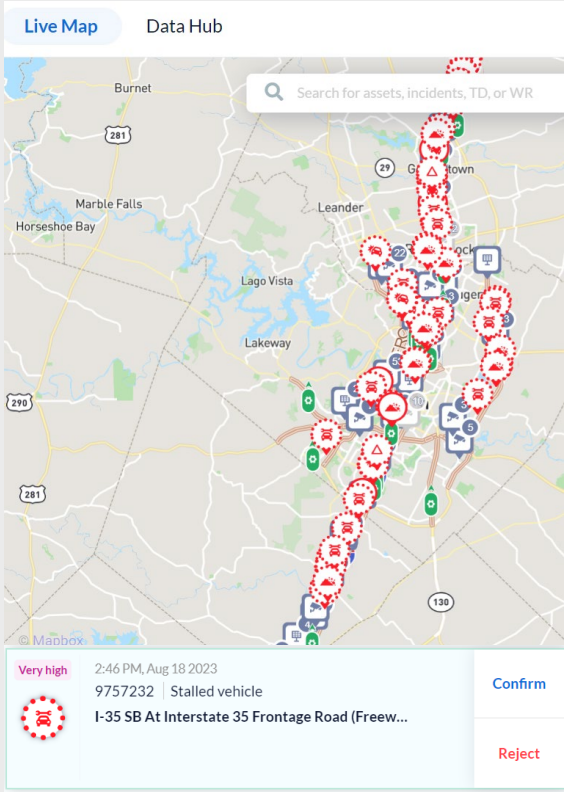
ITS OPERATIONS: USE AI FOR SUPPORTING DECISIONS AND OPTIMIZING OPERATIONS

AI Incident Detection System

FACTS

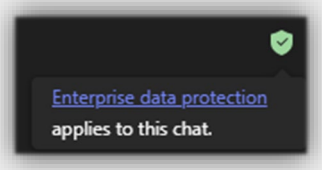
- Austin District 2023
- Consumes multiple real-time data feeds
- Improves incident notification time
- Improves incident coverage area





Current and Upcoming AI Resources

Copilot



Tips for better outcomes!

1. Learn what it's good / bad at.
2. Include context in the prompt.
3. Have a conversation with it.

AWS SageMaker

- Automate routine / manual efforts
- Bring your own TxDOT Data
- Create and train custom AI models for specific use cases

AI/Innovation: Use Cases

- **AI Video Analytics**: Using AI vision-learning to identify crashes, roadway debris, pedestrians, wrong-way drivers.
- **Crash Data Interpretation**: Use AI to "read" and interpret crash report data.
- **Traffic Signal Optimization**: Use AI/ML to optimize traffic signals.

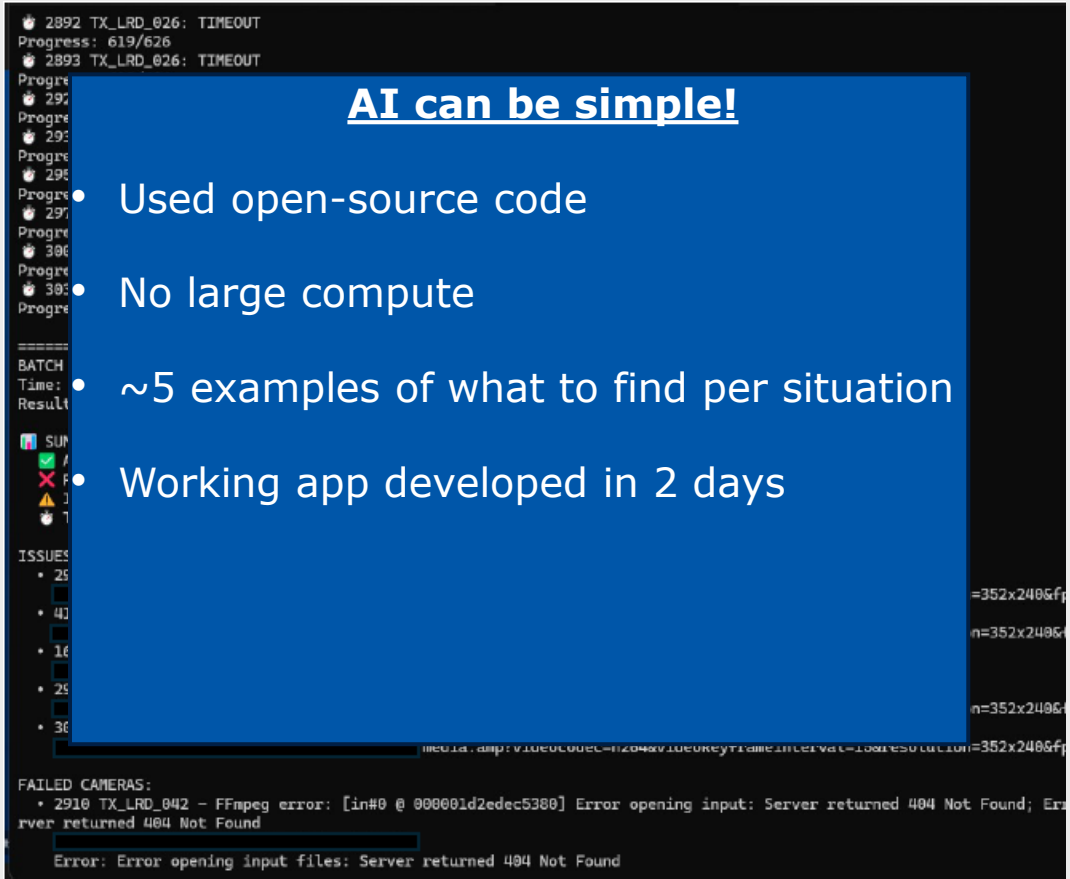
AI/Innovation: Use Cases

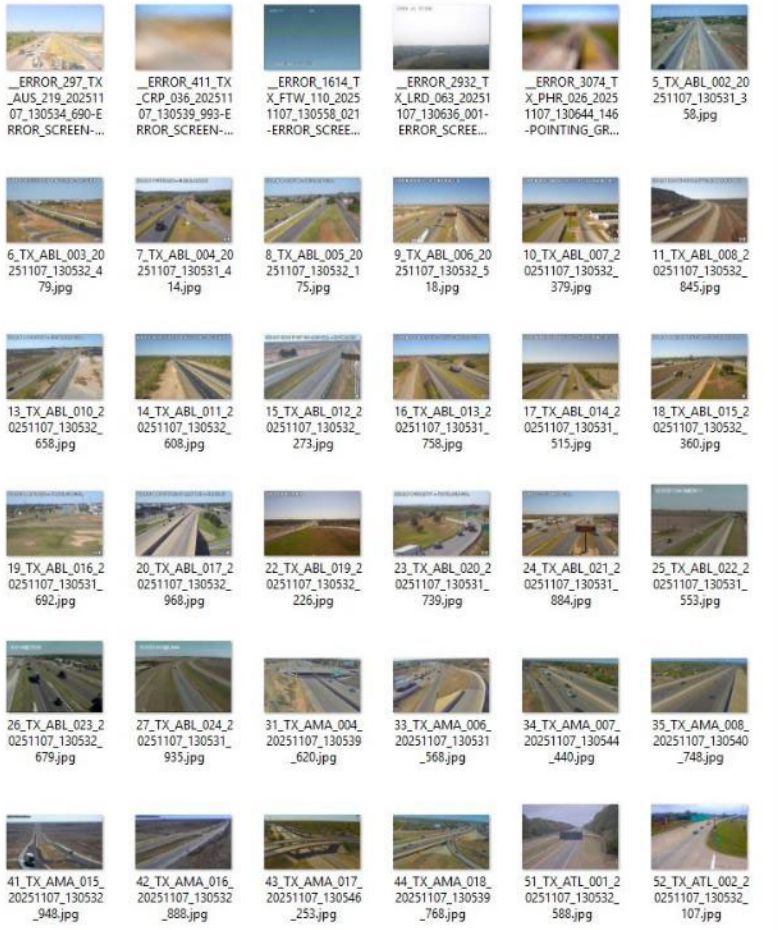
- **Advanced Traffic Signal Performance Measures**: Explore AI enhancements for users to easily detect malfunctions, anomalies, and poor operations
- **Video Quality Audits**: Explore AI capabilities to continuously monitor traffic camera stream quality to identify malfunctions & ensure operations during weather events

AI Video Quality POC

AI can be simple!

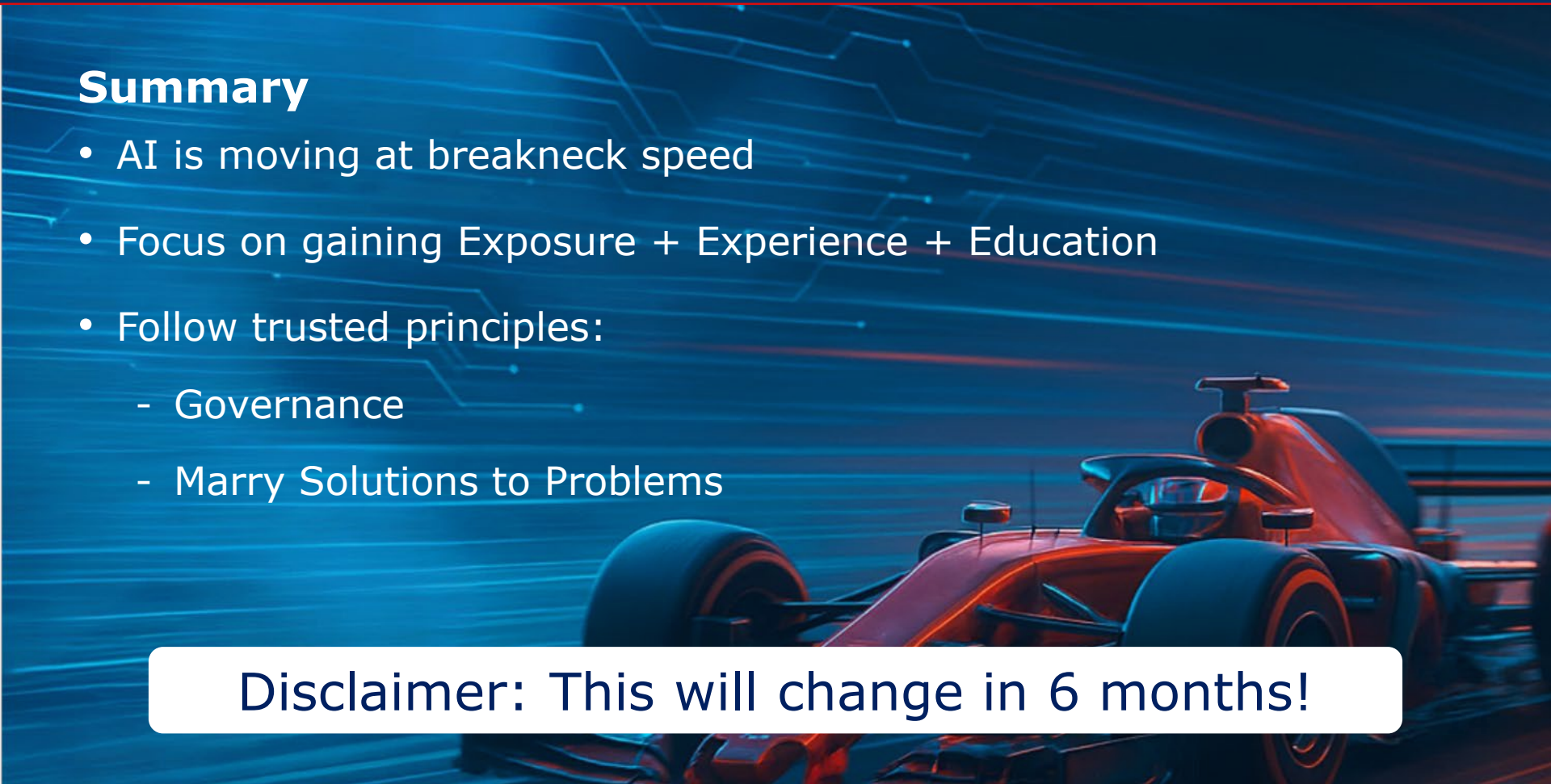
- Used open-source code
- No large compute
- ~5 examples of what to find per situation
- Working app developed in 2 days





Summary

- AI is moving at breakneck speed
- Focus on gaining Exposure + Experience + Education
- Follow trusted principles:
  - Governance
  - Marry Solutions to Problems



Disclaimer: This will change in 6 months!

Questions?

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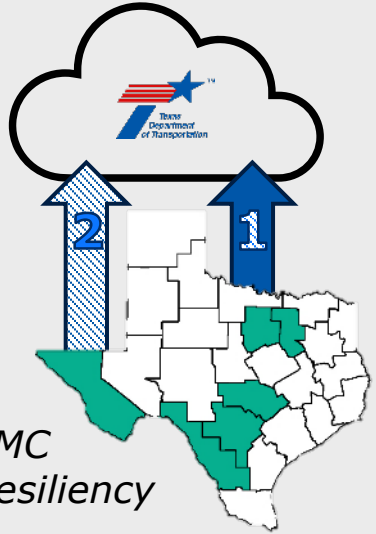
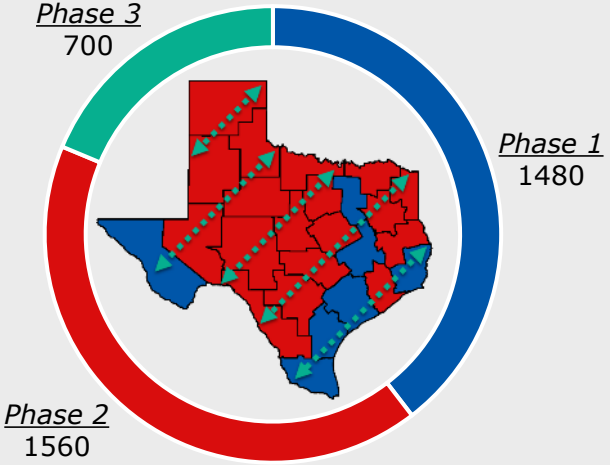


TMC Resiliency

Cell Routers Deployed



New Traffic Field Area Networks