# Navigating the Future of Utility Networks: Autonomous Utility Telecom

## Real-Time Monitoring with Automatic AI-Enabled Command and Control

Enghouse Networks


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# Housekeeping items:

- All attendees will be muted.
- Submit your questions through the Q&A function.
- Complete the webinar evaluation form to receive a certificate of attendance.
- Earn 1 PDH for the webinar.
- Slides and recording will be available in NetWorks within a week.


# Today's presenter:

Tom Carroll

Director of Solutions Engineering,

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John Neely

Director of Business Development – Americas,

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# Today's Presenters

## Tom Carroll

*Director of Solutions Engineering, Enghouse Networks*

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*Tom Carroll has a BS degree in Electrical Engineering and has worked in information technology for 27 years. He specializes in presales for Telecommunications, Service Assurance, and Information Security systems and has worked at Enghouse since 2016 as the Director of Solutions Engineering for the Americas.*

Enghouse Networks

Enghouse Networks specializes in providing advanced telecommunications and information technology solutions for service providers, utilities, public safety, defense, plus state and local governments.

## John Neely

*Director of Business Development - Americas, Asentria*

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*John Neely is a technology leader with a strong background in IT and network security. At Asentria, he helps telecom and critical infrastructure clients improve site visibility and performance. With expertise in IT and AI-based monitoring, he supports secure, automated, resilient operations.*

Asentria®

Asentria specializes in providing site automation and remote management solutions for telecom operators, utilities, public safety, and critical infrastructure, enabling integrated control of power, security, and environmental systems at distributed locations.

# Agenda

- Utility Telecoms Ecosystem
- End-to-End Service Assurance Today
- Remote Site Monitoring
- Telecom Site Automation
- Enghouse and Asentria Alliance
- AI Business Context
- AI-Enhanced Service Assurance
- Autonomous Utility Networks
- Conclusions & Q/A

# Everyone Has a Plan… Until They Get Hit

## 2004:

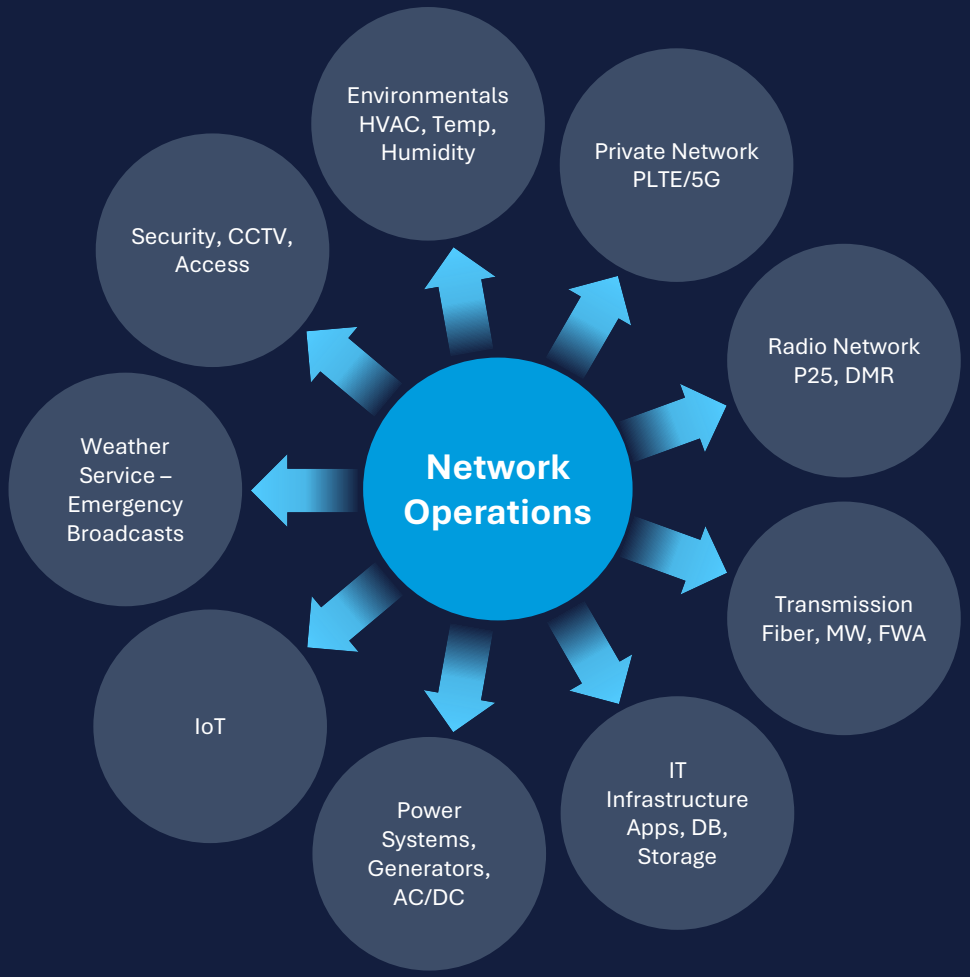
Four hurricanes hit Florida in 43 days


## 2024:

California wildfires

# Utility Communications Ecosystem

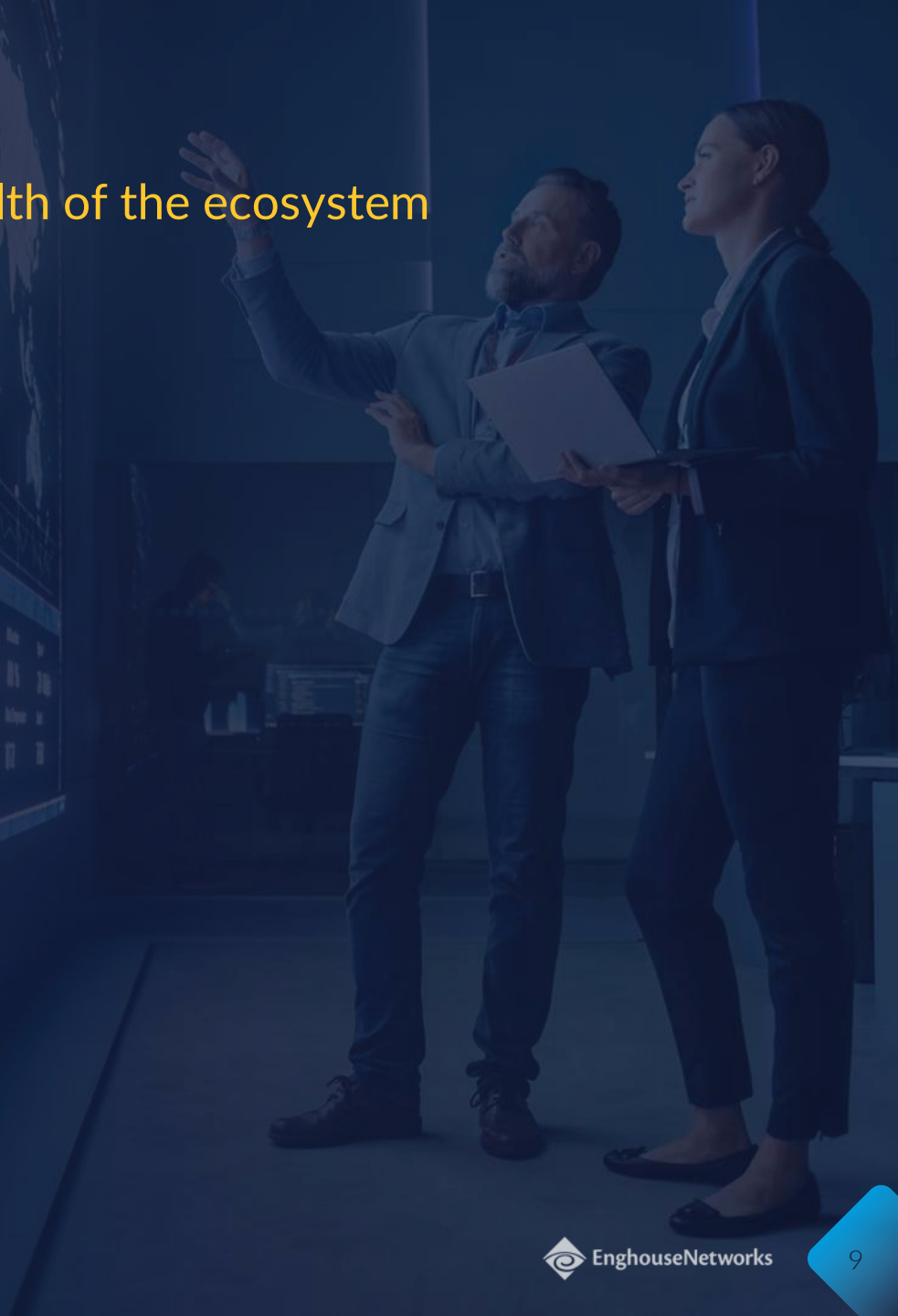
## Complex, Integrated and resilient group of systems




# End-to-End Service Assurance Today

## Service Assurance (without AI) provides visibility into the health of the ecosystem

- Real-time Fault Management
  - Multi-protocol, multi-vendor, multi-domain
  - Event Normalization across vendors and technologies
  - Alarm Enrichment & Filtering
- Performance and Service Quality Management
  - Proactive network & application monitoring
  - Automatic baselining, trending, thresholding for performance metrics
- Event Correlations
  - Basic service impact analysis and root cause analysis
  - Programmed notifications and actions
- Trouble, Configuration and Workflow Management
  - Centralized trouble ticketing and defined workflows across response teams
  - Managing configurations and change within the network
- Comprehensive Reporting and Dashboards
  - Measuring key performance indicators
  - Providing transparency into the health of the business



# Remote Site Monitoring

## Where we work

- Mobile Switching Centers (MSC)
- Distributed Antenna Systems (DAS)
- Macro Cell Sites
- Micro Cell Sites
- Mobile Cell Sites (COWS)
- C-RAN

# Remote Site Monitoring Details

## What we monitor

- Power Systems
  - Fuel monitoring – wide range of options for all types of tanks and fuel
  - Generator control – remotely start generator, control exercising schedule, flatten generator data, telemetry data
  - Connect to new “smart” genset controllers
  - AC and DC power monitoring – wide range of options from 3 phase power monitoring to go/no go sensors
- Security and Access Controls
  - IPTV Cameras
  - Connect door open/closed and motion detectors
  - Site Security Integration with controls and alerting functions
  - Indoor/Outdoor Door sensors, IR Motion and Vibration Sensors
- Environmentals
  - Integrate with Smart HVAC Controllers for granular control remotely, flatten data
  - Use HVAC card to use SiteBoss® as wall thermostat, no need for separate smart controller
  - Monitor real time values and long term trends in temperature, humidity, water, smoke, etc…
  - Carbon monoxide, hydrogen, tower lights, and airflow combined with outside weather conditions

# Telecom Site Automation Today

## How we do it

- Start/Stop Control of Generators and ATS
  - On a schedule or on-demand
- Load Shedding
  - Shut off low priority power circuits to extend site life when power is lost
- DC and AC Reboot
  - Integration to PDUs to control and reset devices
- HVAC ‘Economizer’ – Energy Conservation
  - Activate vent to intelligently bring in cooler air from outside
- Remote site access control
  - Disarm sites or multiple security zones

# Poll Question

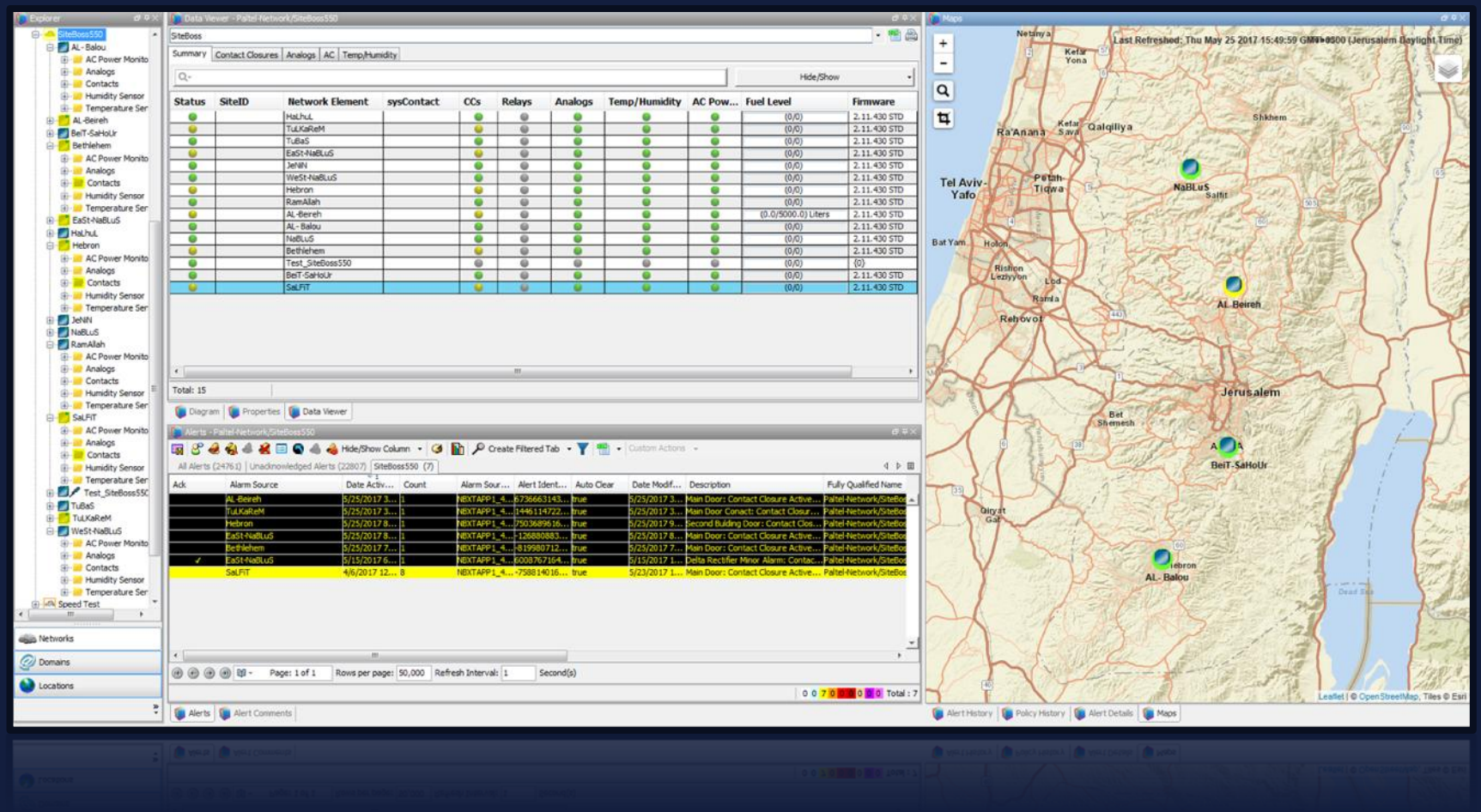
**Have you implemented end-to-end real time remote site monitoring?**

- ☐ Yes
- ☐ Sort of…not 100%
- ☐ In the planning phase
- ☐ No

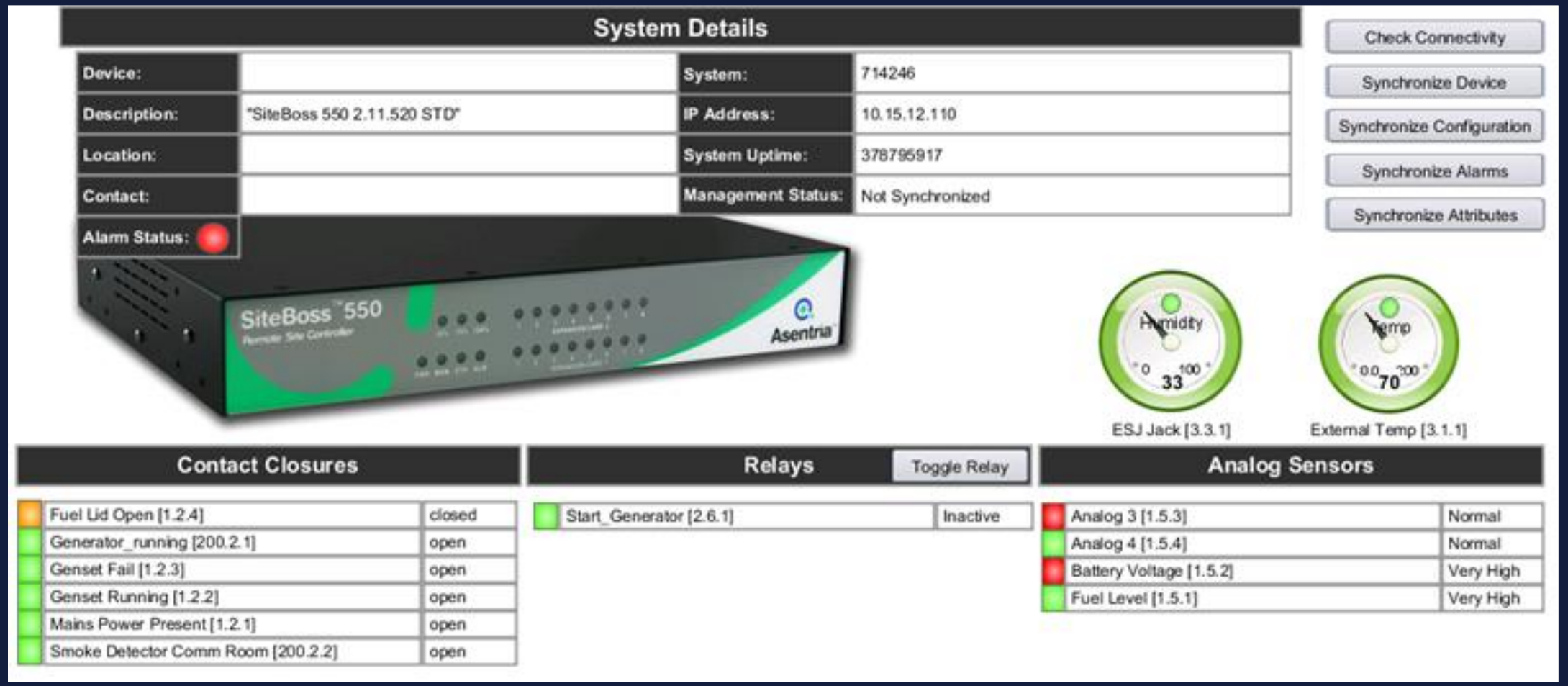
# Asentria + Enghouse Integrated Solutions

## Over 15 years of End-to-End Real-time Monitoring and Control of the Utility Network

- Combine network, power, HVAC and security into a single pane of glass
- Pre-integrated, preprogrammed actions, flexible and customizable
- Drill-down to details and controls



# NetBoss + SiteBoss Manage Remote Sites Easily



# Poll Question

**Do you have automated actions for remote sites to handle common recurring tasks?**

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Planning
- ☐ Other

# AI Business Context

## AI is transforming our day to day lives

- While AI and ML have been around for decades, the recent velocity and ubiquity of AI is astounding and honestly unnerving
- AI is expected to bring $15.7 Trillion to the economy by 2030
- 72% of businesses have adopted AI for at least one business function
- Quickly becoming a commodity of sorts
- Smaller, purpose-built AI models are here today

# AI-Enhanced Service Assurance

- Predictive Fault Management with Prioritized Response
  - Alarm Prediction based on historical analysis
  - Auto-prioritization of response on criticality of network devices and the service impact
- Service Optimization with Anomaly Detection
  - Trend detection with auto-tuning for optimal performance
  - Identifying network parameters are outside of normal operating ranges
- Closed Loop Automation and Self-Healing Networks
  - Root cause analysis with auto-correction and fine-tuning
  - Drive toward autonomous networks – AI Ops
- Trouble Orchestration with Workflow Management
  - Chatbots and virtual assistance for Incident response management
  - Integrated troubleshooting information linked to Knowledge management
- Remote site AI-based Analytics with Risk Assessment
  - What if Analytics and auto-scoring your risk posture of each site
  - Granular inspection of site data trends and automated responses

# AI-Enhanced Preventative Solutions

- Computer Image Analysis
  - Integrity analysis of critical infrastructure including buildings, poles, bridges, towers and remote sites
  - Drones capture hard to reach images for AI analysis
  - Satellite imagery used to identify potential threats to service
- AI-generated Digital Twins
  - Network Design analysis
  - Create virtual replicas of the network via traffic data and log files
  - Auto-device classification, relationship and topology mapping
  - Single point of failure analysis and identification of rogue devices
- Predictive Remote Site Maintenance and Risk Assessment
  - Significantly reduce downtime with proactive recommendations based on past actions and repairs of each remote site
  - Compare AC/DC outages to weather patterns leading to failures
  - Perform simulations of configuration changes and corresponding service impacts

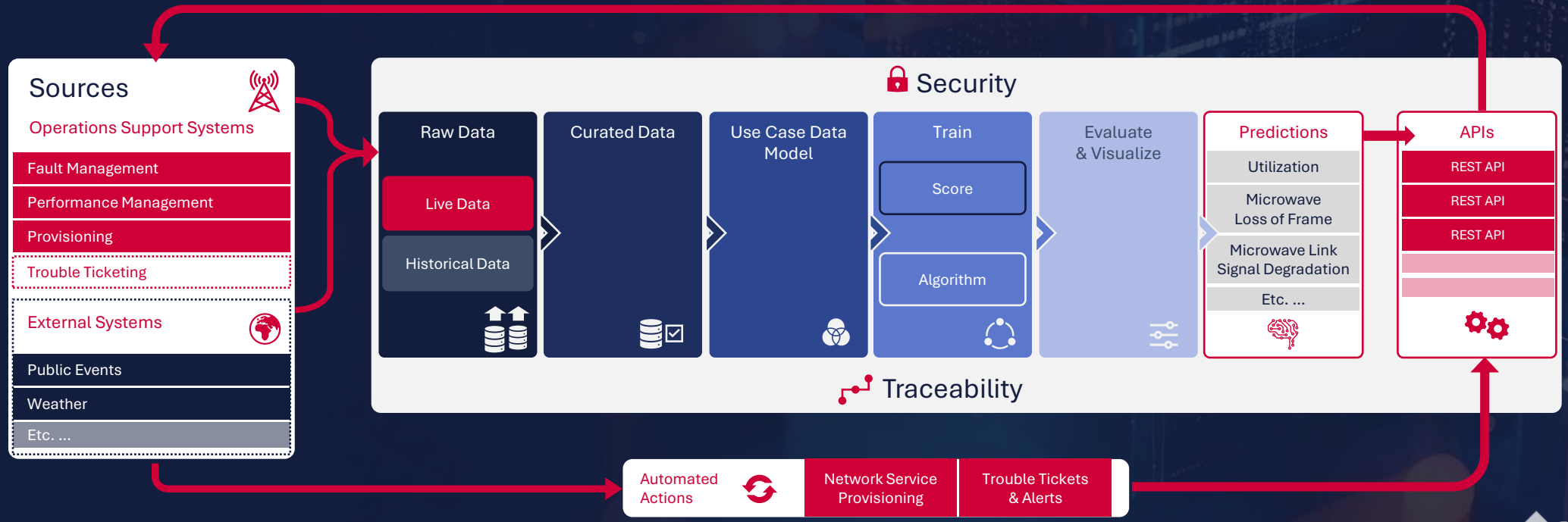
# Poll Question

**Are you using or planning on using AI/ML to automate common tasks or prevent service outages?**

- ☐ Yes
- ☐ No
- ☐ Planning in the future
- ☐ Researching Now
- ☐ Other

# Enghouse TM Forum AI/ML Catalyst Projects 2017-2025

- Enghouse Catalyst projects utilize artificial intelligence and machine learning, predictive analysis, anomaly detection, best practices and knowledge-based self-learning for zero-touch, automated Service Assurance.
- OmniBOSS is the name of our 2025 AI project that learns, enforces and optimizes telecom workflows, alarm correlations, KPI management, configuration compliance and more.
  - Guides inexperienced users, reminds others of approved procedures and documents everything along the way



# Autonomous Utility Networks

- AI-Native Networks
  - Communicating autonomously to lighten the processing load downstream
  - Agentic AI for common telecom tasks and guidance on troubleshooting
- Well defined and purpose-built AI Model for Utilities
  - Enable real-time monitoring, anomaly and trend detection, forecasting, enhanced security, power savings and predictive actions across the utility network
  - Small, affordable, commoditized
- End-to-end Monitoring and Control Possibilities at each site and across the business
  - Grid, networks, telemetry, SCADA, access, transmission, weather, grid, flow systems, control outputs
  - Alarm, configuration, performance, security, redundancy
- Self-configuring, self-healing, self-documenting and self-protecting networks
  - AI driven optimization for performance and energy consumption
  - Context aware reasoning engine that collaborates with humans on actions, documentation and best practices

# Conclusions

- As utility networks continue to grow in both size and complexity, AI is inevitable
- AI is a powerful tool for preventative assurance, optimizing services, predicting issues and implementing automation.
- End-to-end monitoring and control is essential to keep networks and services running
- AI is here to enhance the workforce, not to replace it.
- Data quality is a primary factor in the success or failure of AI projects

# Questions?

# Bonus Material

## Exclusive Resources


EBOOK

**From Outages to Automation:**
**5 Ways to Redefine Service Assurance**


# Thank You