

Data-driven Decisions using Artificial Intelligence/Machine Learning

Regulatory Information Conference
March 14, 2023

Rick Szoch, Senior Manager, Nuclear Innovation
Constellation Energy Generation

Vision for a Digital Generation Business



Automated Work Processes

Streamlined workforce



Smart Processes

Electronic procedures/work instructions



Decision making through analytics/AI

Faster, more accurate decisions by right level



Field workers instant access to information

No time wasted, improved HU



In-field training through virtual reality and video

More wrench time



Predictive plant performance

Zero transients/trips



Centralized information backbone

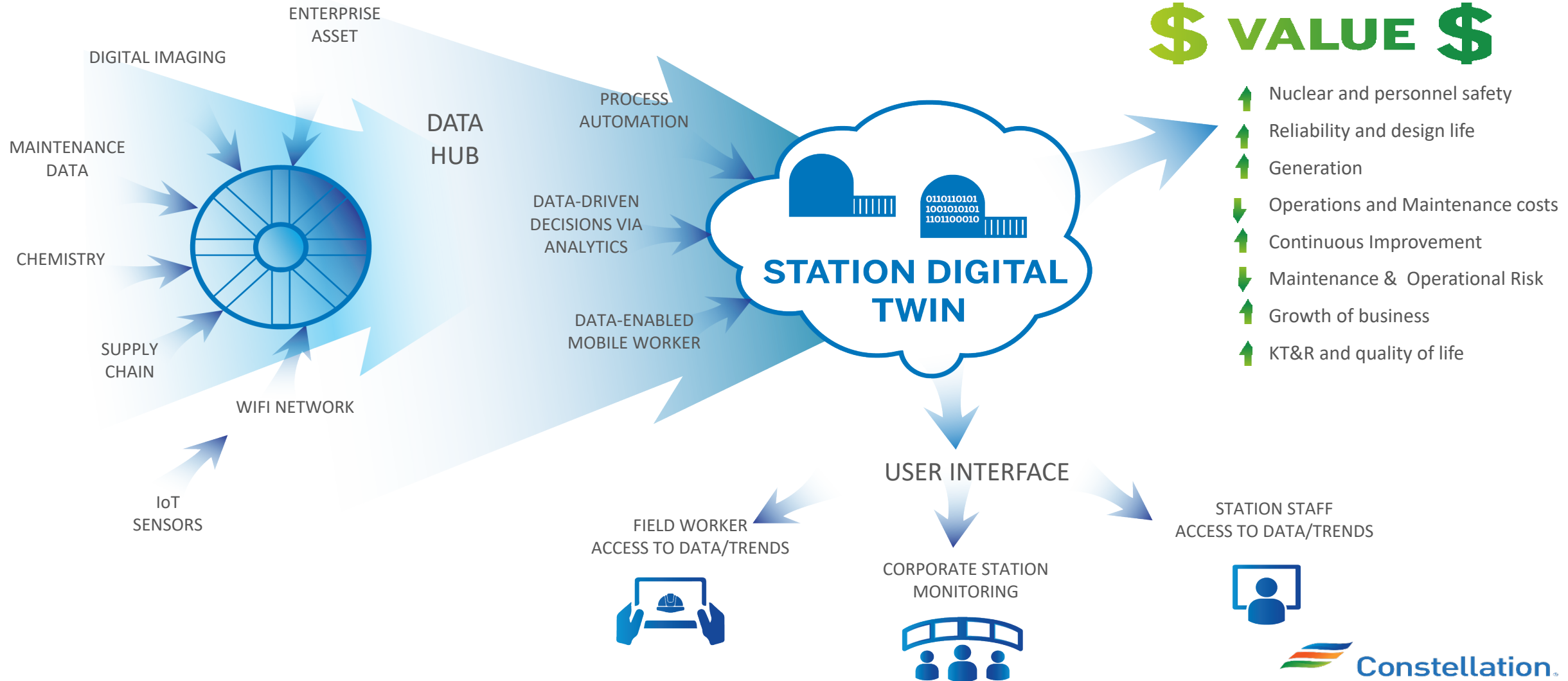
Ability to leverage additional technologies



Innovative culture embedded

Workers continuously improving

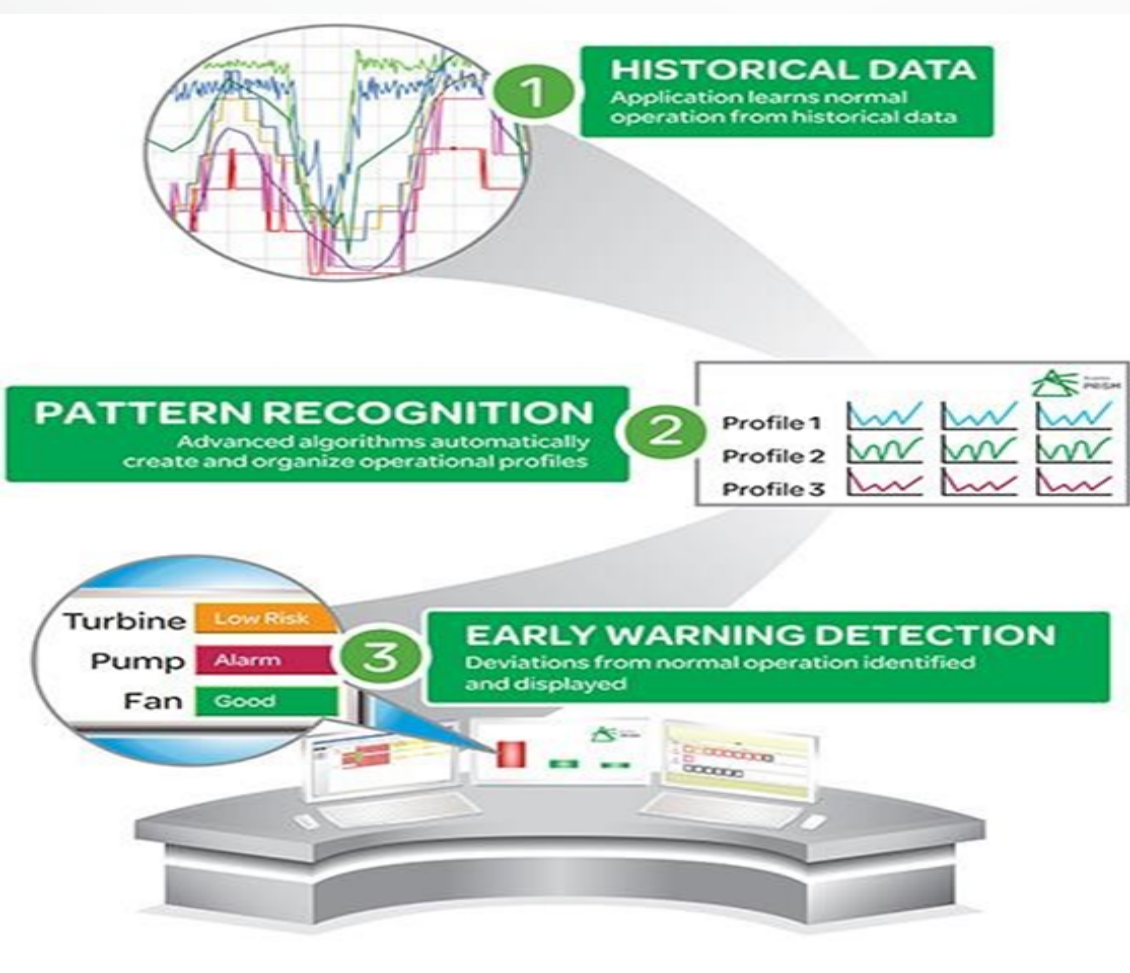
CONSTELLATION NUCLEAR DIGITAL TRANSFORMATION



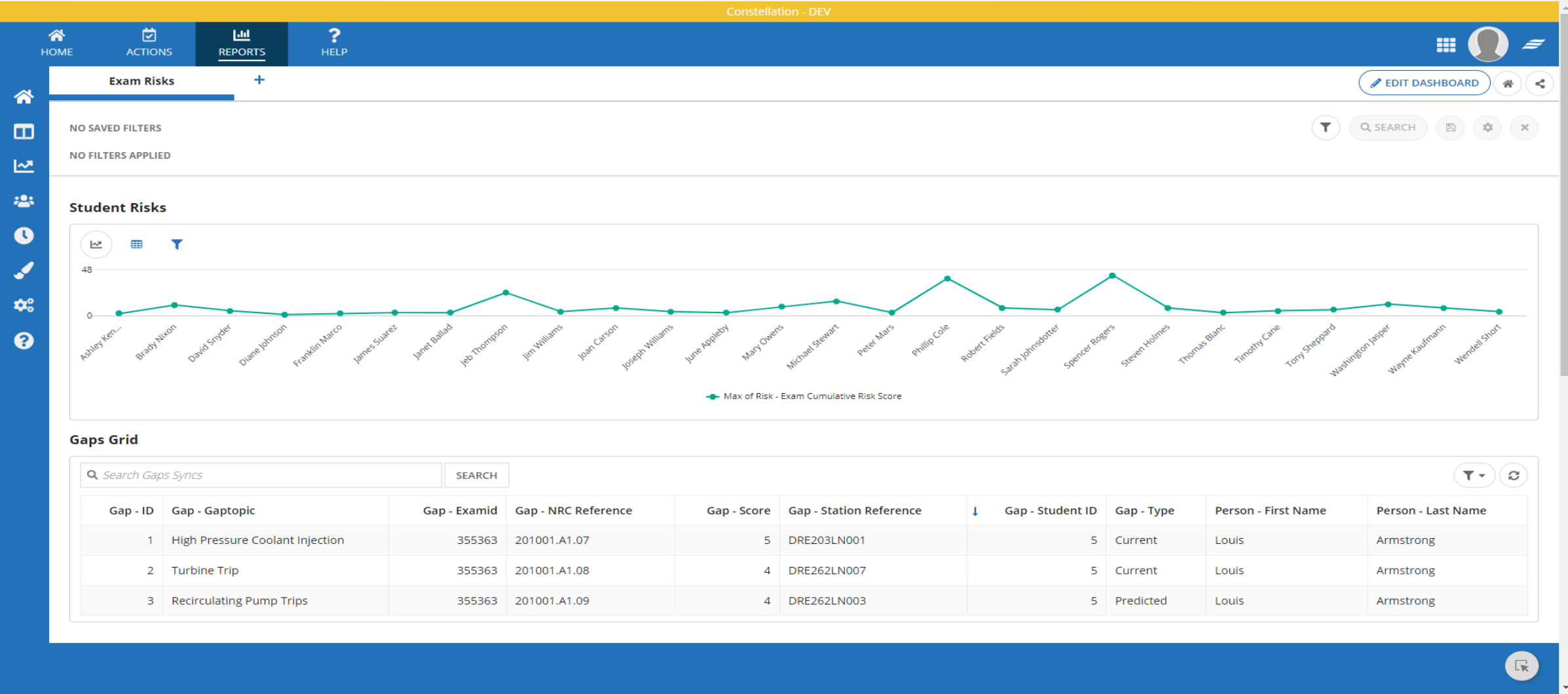
Current Analytics Examples

- Advance Pattern Recognition (APR) – *averts equipment failures*
- Initial License Training analytic – *improves student pass rates*
- Maintenance Rule Functional Failure analytic – *streamlines categorization*
- New Work Screening analytic – *streamlines condition report screening*
- License Extension reviews – *automates data collection*
- Preventive Maintenance Optimization – *optimizes maintenance frequencies*
- Work Order optimization – *automates work order process*

Equipment Reliability – Advanced Pattern Recognition to Avert Failure



Initial License Training Student Performance



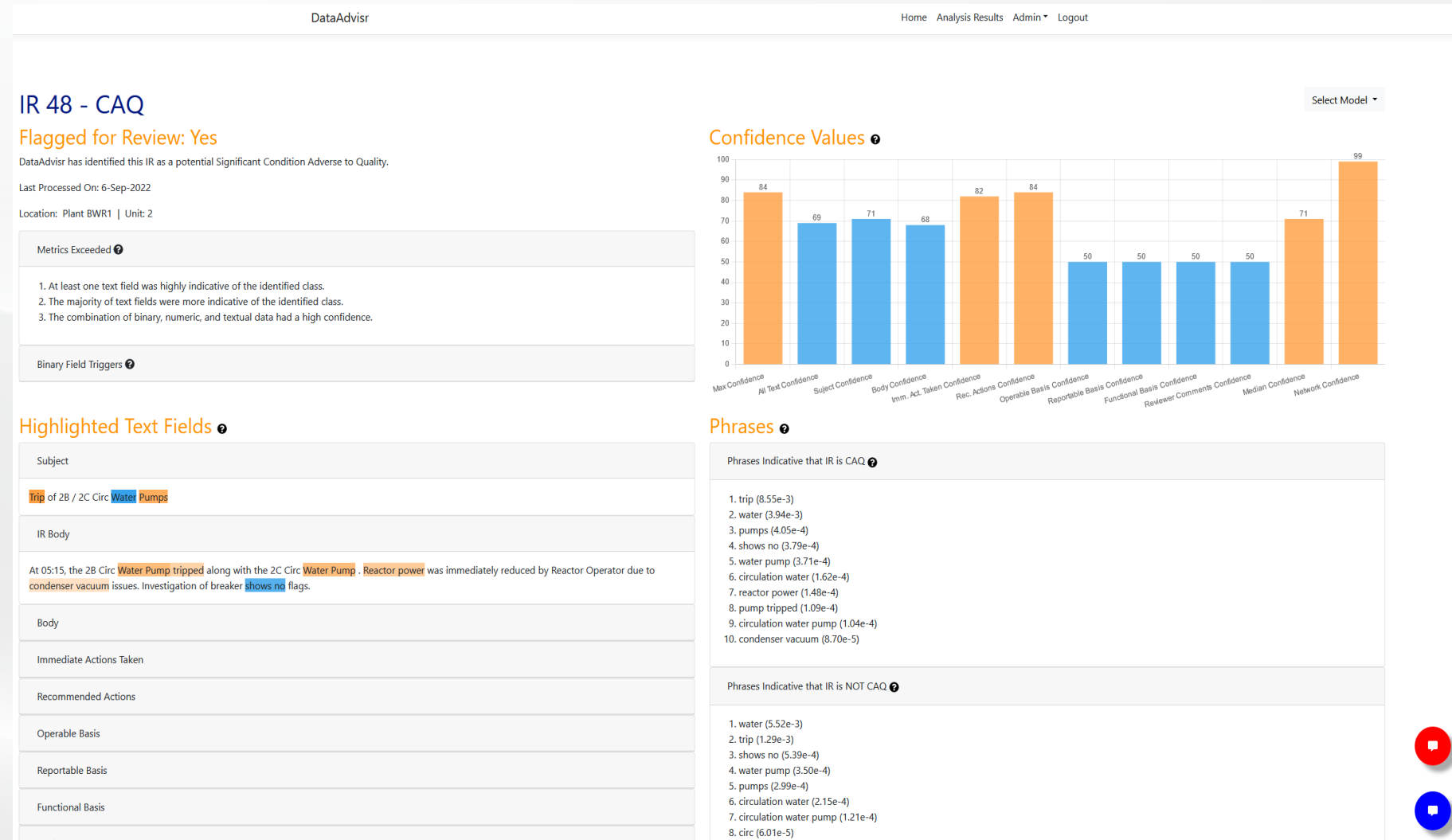
Maintenance Rule Functional Failure Analyzer

- **In place successfully for two years**
- **The software is *not* making failure determinations ... it is pre-screening/flagging potential functional failure CR's for human review**
- **Biased towards high safety-significant component failures**
- **Equipment monitoring still occurs (i.e., human element backstopped)**
- **Confidence in results is gained through continuous feedback**

Issue Report Screening Analytic

Displays the “why”

- Summarize data for user review
- Provide users detailed insights into how the predictions were made
- Indicate potentially similar IRs to the one being reviewed
- Orange means over the threshold for review; blue wouldn't trigger the need for a review



Future Analytics

- **Predictive analytics – *Work Order generation***
- **Corrective Action Program – *Predictive trending to avert operational challenges***
- **Advanced equipment performance analytics – *avert equipment failure and operational risk***
- **Outage schedule predictions – *improve outage schedule adherence***
- **No intent to apply artificial intelligence to control the plant**

Summary

- **Constellation continues to explore and deploy artificial intelligence (AI) that can improve or streamline business processes and data-driven decision-making**
- **Constellation considers AI to be useful as a decision support tool, not as a replacement for human judgment**
- **Constellation AI applications are designed to keep subject matter experts fully engaged in the decision-making process**
- **Current projects are giving Constellation experience with AI to inform future decisions on the potential value of AI in other areas**