

Business Intelligence & Data Analytics Program (BI/DA)

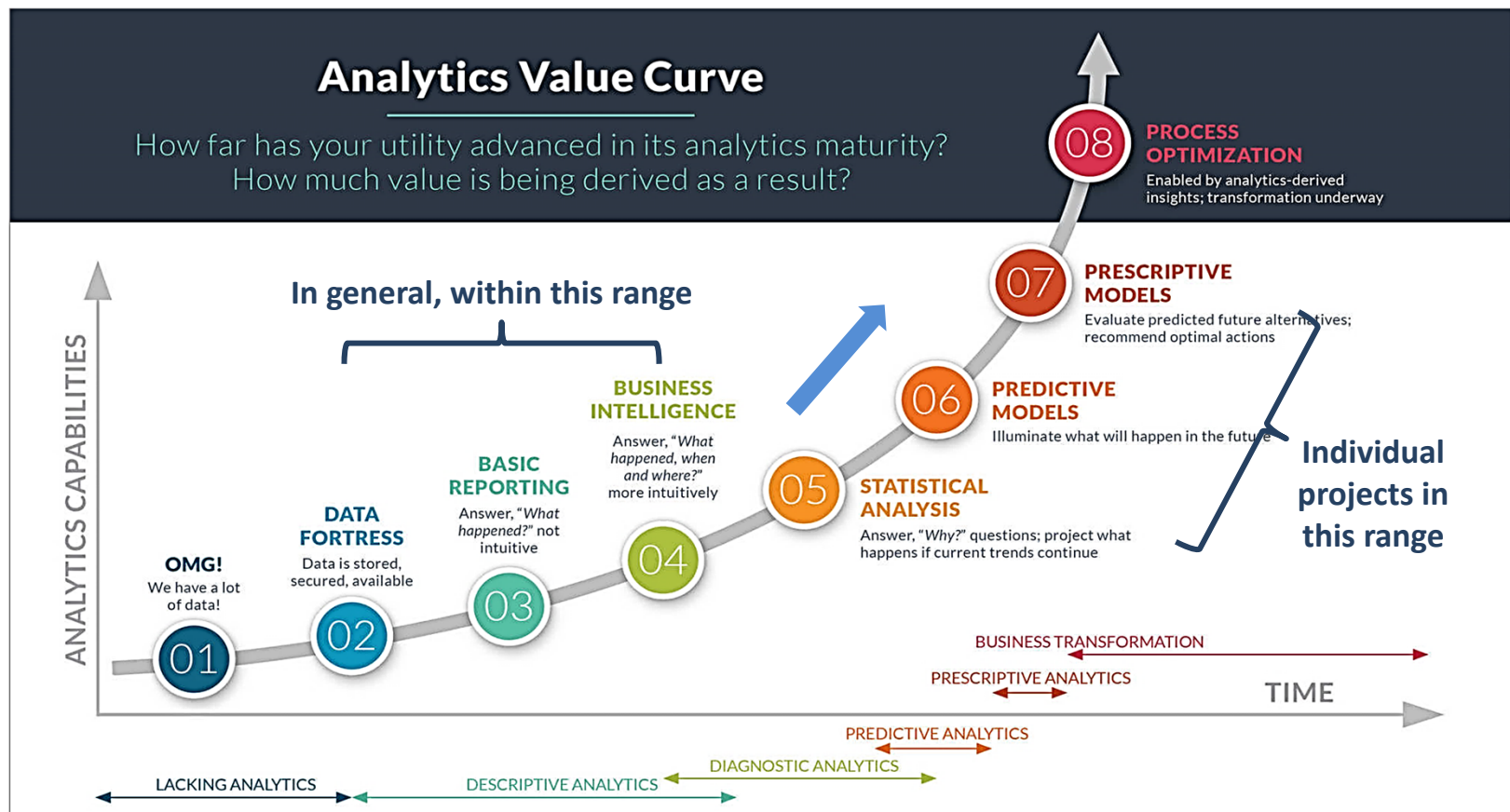
Enabling a Data Culture

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Agenda

- Growing our Analytics Maturity
- Examples:
 - Broadening Business Intelligence
 - Support of Independent Operations
 - River-mile Elevation Modeling
 - Predictive Analytics
 - Data-driven Action
- Continuing Forward

Our Data Analytics Opportunity



- Areas of organization are in different spots
- In general, lots of data and working toward:
 - clear organization
 - easy access
 - broad utilization
- Individual efforts in 6-7 range
- Striving for 8 in high-value areas to support:
 - Management of operations and assets
 - Reliability
 - Customer Service
 - Human Performance and Safety

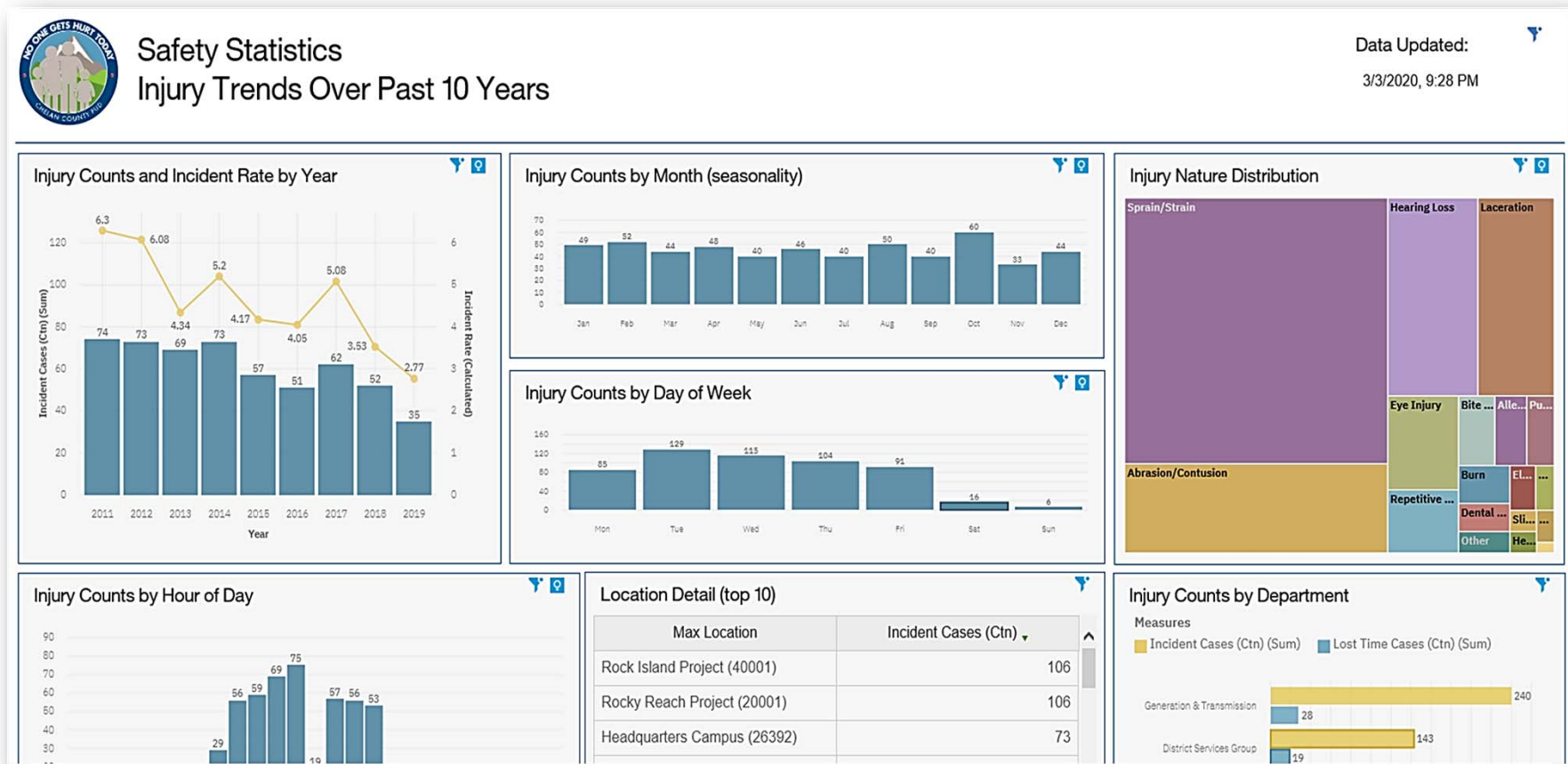
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Examples

Broadening Business Intelligence

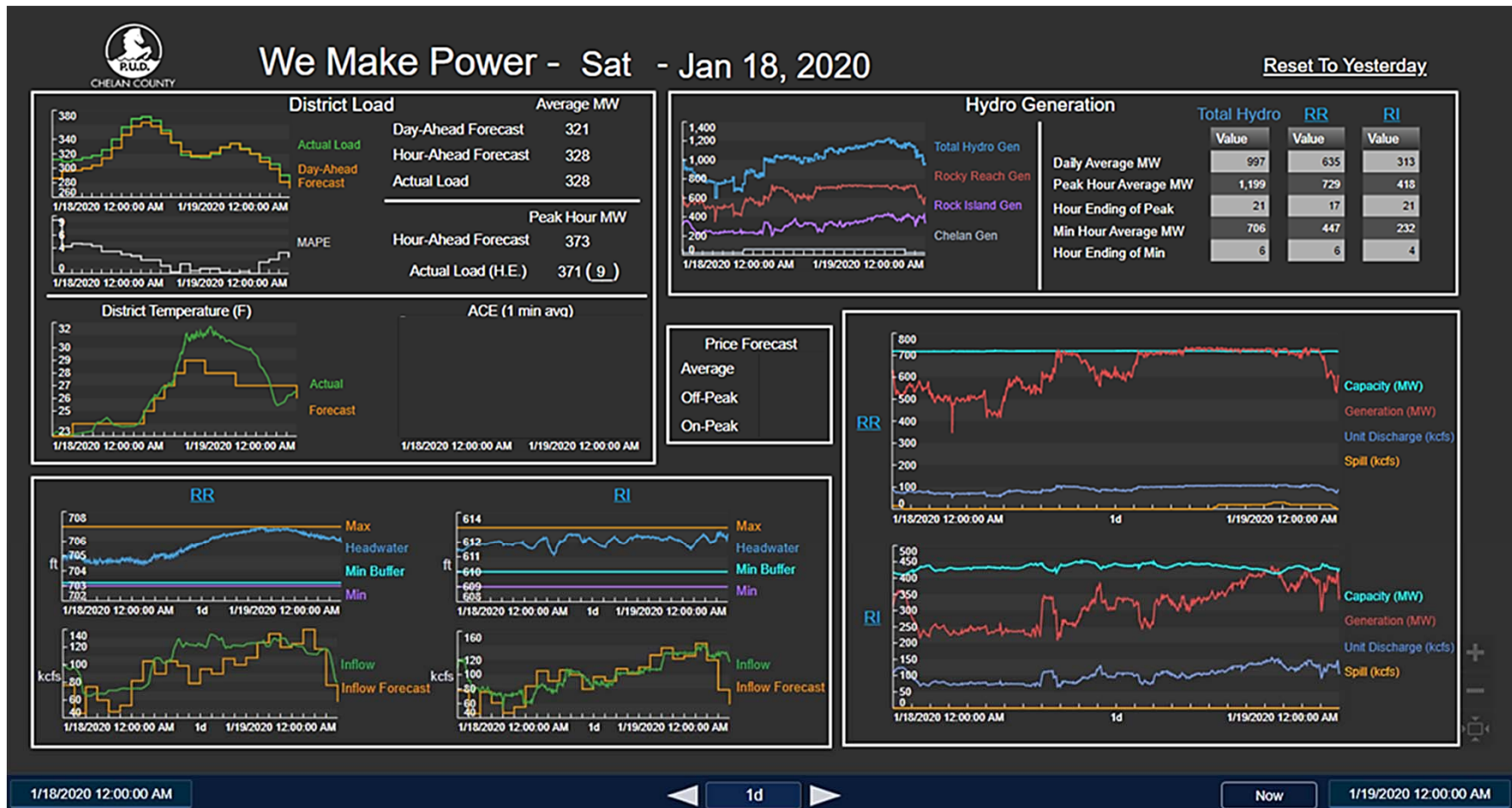
Building Reusable Data Models

- Descriptive and manual diagnostic analytics are the foundation of a data culture
- Moving from a focus on point solutions to multi-use data models



Support of Two-Dam Independent Operations

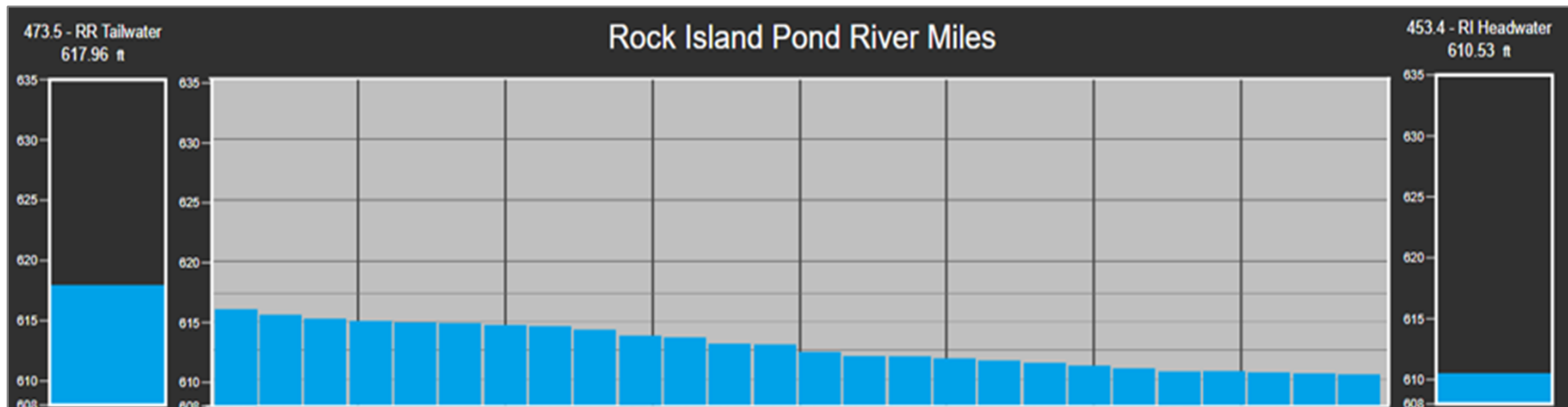
- Descriptive analysis to grow awareness and maturity around our operational data
- Combines data from multiple systems to analyze prior day's activity
- Starting point for longer-term analysis of pre/post independent operations



River-mile Elevation Modeling

Combines real-time sensor data with reference tables to calculate river elevation estimates

- Leverages mathematical analysis to digitize paper models
- Estimates every mile between projects
- Highlights points of interest (i.e. parks and boat launches)

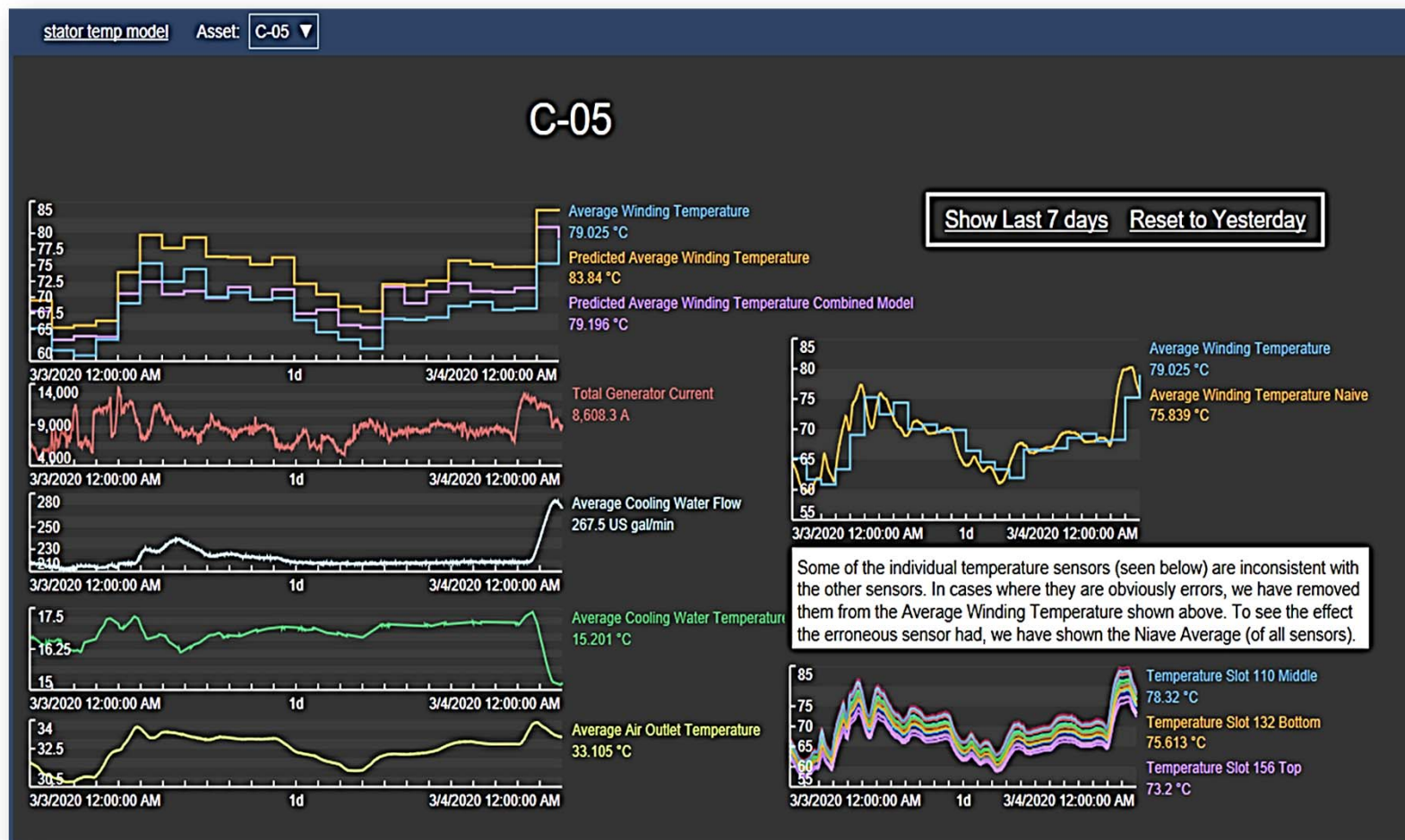


[River Mile Simulator](#)

Predictive Analytics for Stator Winding Temperature

Operationalize Predictive Model to Test Against Actuals

- Data from sensors on units
- Trained on years of data using Random Forest algorithm
- Runs every morning using yesterday's data
- Iterate on training the model with additional data and different methods to increase predictability and accuracy



Automated Feeder Breaker Trip Notification

Simple prescriptive analysis using data to drive action

- Critical substation feeder breaker needed monitoring
- Dispatched crew every two weeks to check status
- Utilized remote sensor data to indicate when breaker tripped
- Automated notification and creation of service request in Work Management system
- Service request reviewed and crew dispatched as necessary
- Moved from time-based maintenance to condition-based maintenance, saving labor costs
- Built technical and data foundation for additional automated workflow

The screenshot displays a software interface for a Work Management system. At the top, there are navigation tabs: 'List', 'Service Request', 'Related Records', 'Log', and 'Map'. The 'Service Request' tab is active. Below the tabs, there are several input fields and sections:

- Service Request:** 113821
- Work Group:** DSE
- Work Group:** Distribution System Engineering
- Status:** ASGN
- Status Date:** 12/23/2019 9:37 AM
- Reported By:** 32134
- Reported Date:** 12/23/2019 7:44 AM
- Internal Priority:** (empty)
- WO Class:** WORKORDER
- Changed Date:** 12/23/2019 11:05 AM
- Changed By:** 060884
- Create WO Options:** MULTI
- Summary:** Feeder Breaker 3-231 at Walla Walla is OPEN. (This section is circled in red)
- Location:** SERV BUILD >> Wenatchee HQ-Service Building
- Asset:** 71556 >> Bay & Control, Circuit Breaker: 3-231, WWS

At the bottom, there is a rich text editor toolbar with various icons for text formatting (bold, italic, underline, strikethrough, link, unlink, bulleted list, numbered list, indent, outdent, decrease indent, increase indent, text color, background color, font size, font face, undo, redo, print, help) and a dropdown menu set to 'None'.

Continuing Forward

- Scale the insights to grow organizational maturity
- Support our Technology & Innovation Roadmap
- Stay aligned with our Mission, Vision and Values

Questions?