



BLACK & VEATCH

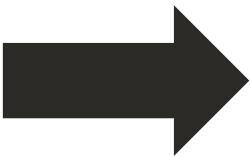
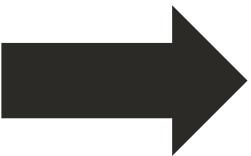
# Process Support: A Never-Ending Tale

Elaine Masters, PE  
Trinity River Authority

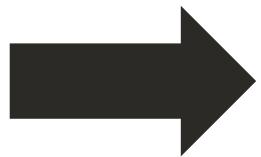
Caitlin Ruff, PE  
Black & Veatch

January 23, 2026

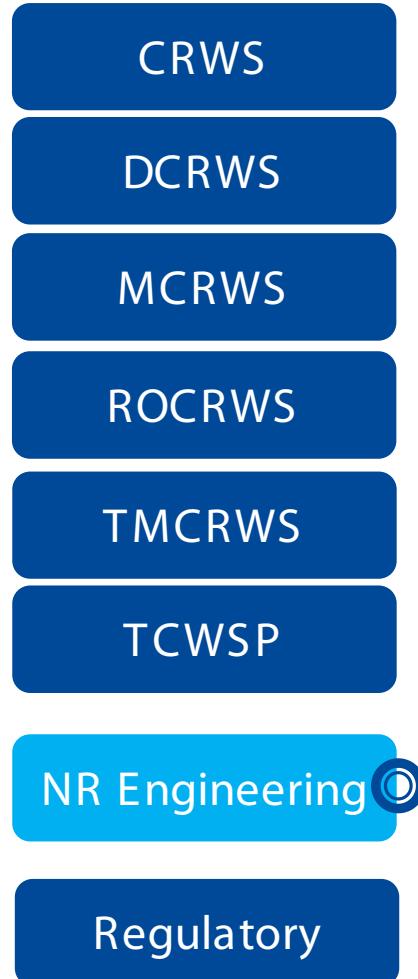
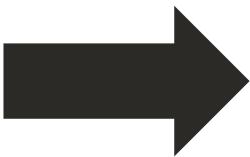
# Organization structure



# TRA contracts out process support engineering services



Northern  
Region

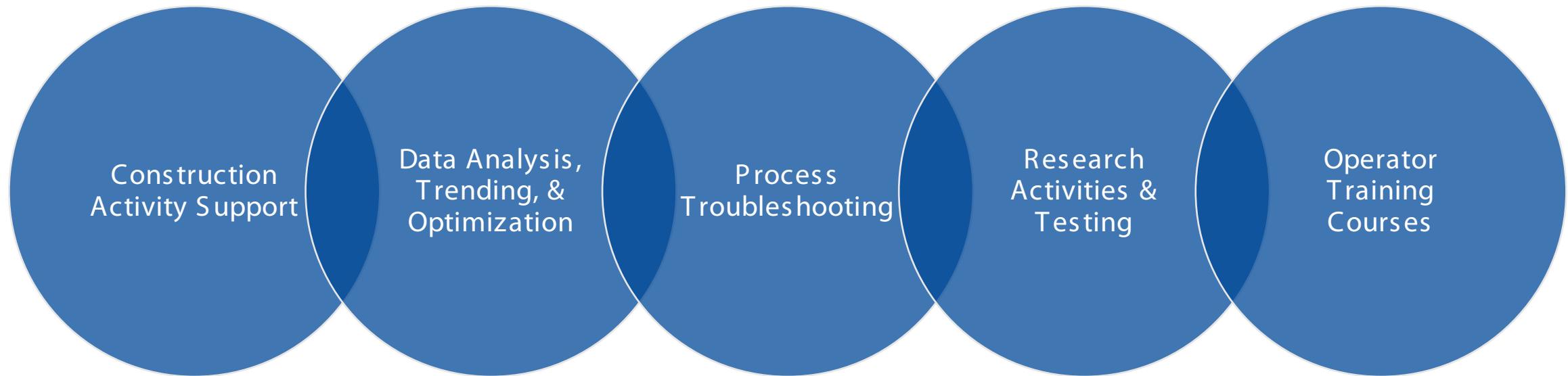


Process Support



# What is process engineering support services?

Providing support to related to process operations...



# Why does TRA contract out process engineers?



Access to more than just  
TRA's plant experience



Tap into other SMEs



Accessibility to resources  
& tools

# Case Study 1: Operations Training

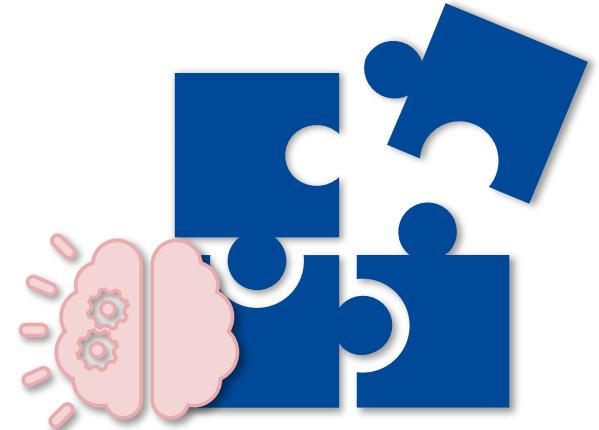
# Operations support activities capture knowledge from unique perspective with technical expertise

Construction Activity Support

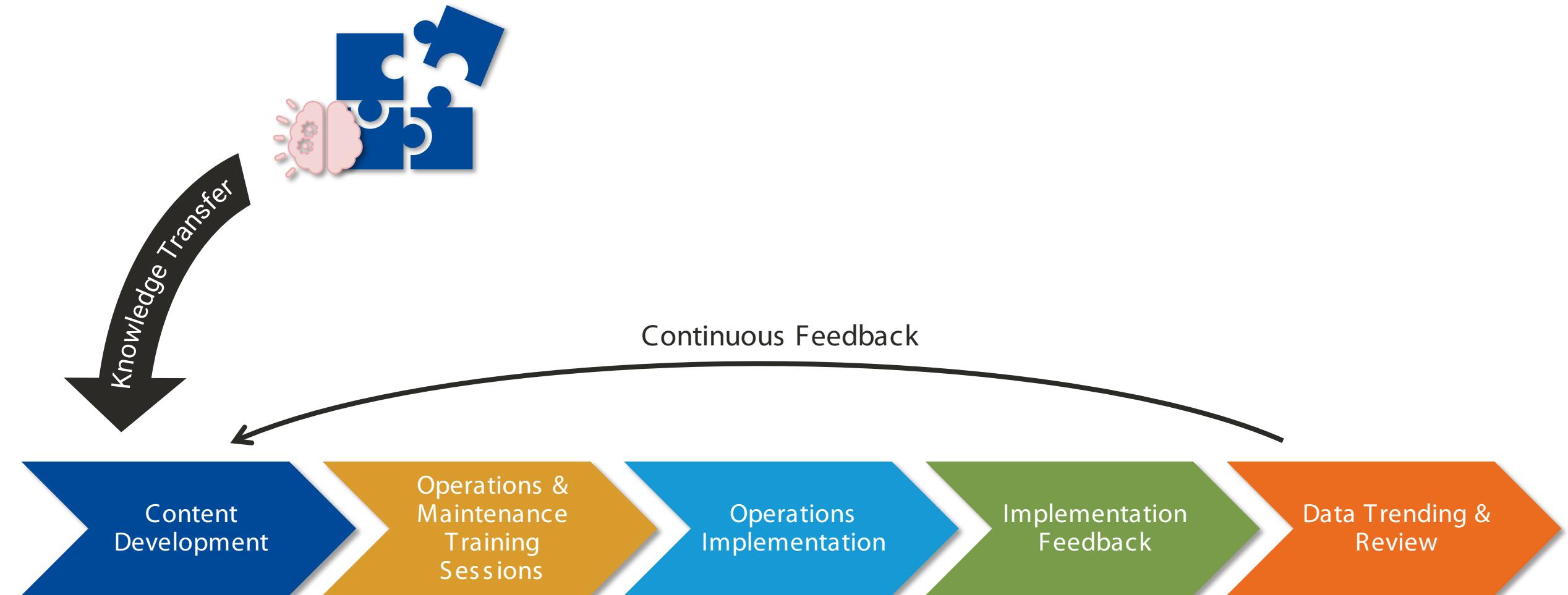
Data Analysis, Trending, & Optimization

Process Troubleshooting

Research Activities & Testing



# Then, transfer that knowledge & empower operators



# TCEQ Operator Training

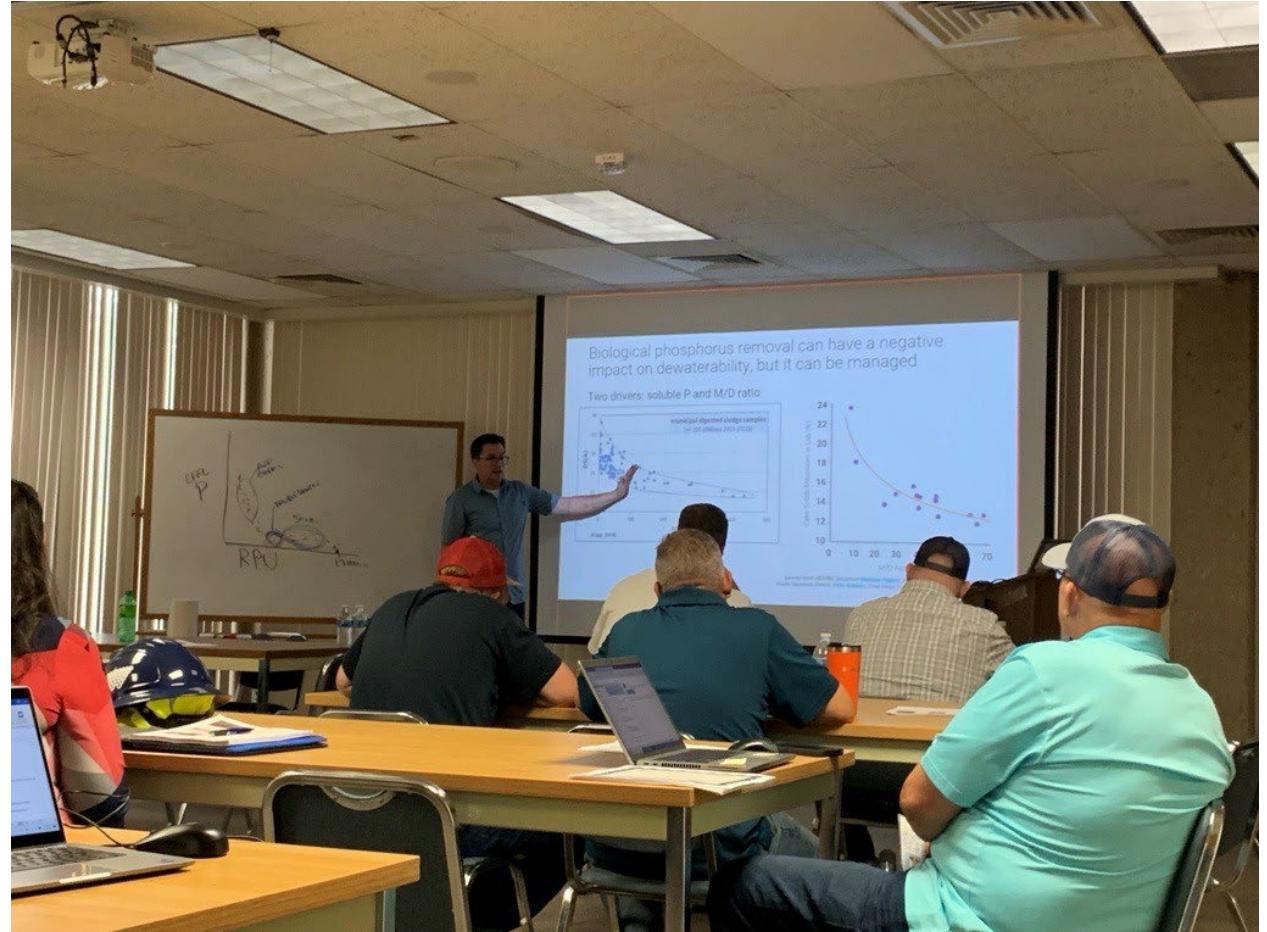
## Spring BNR Training (20-hr)



## Fall Solids Training (16-hr)

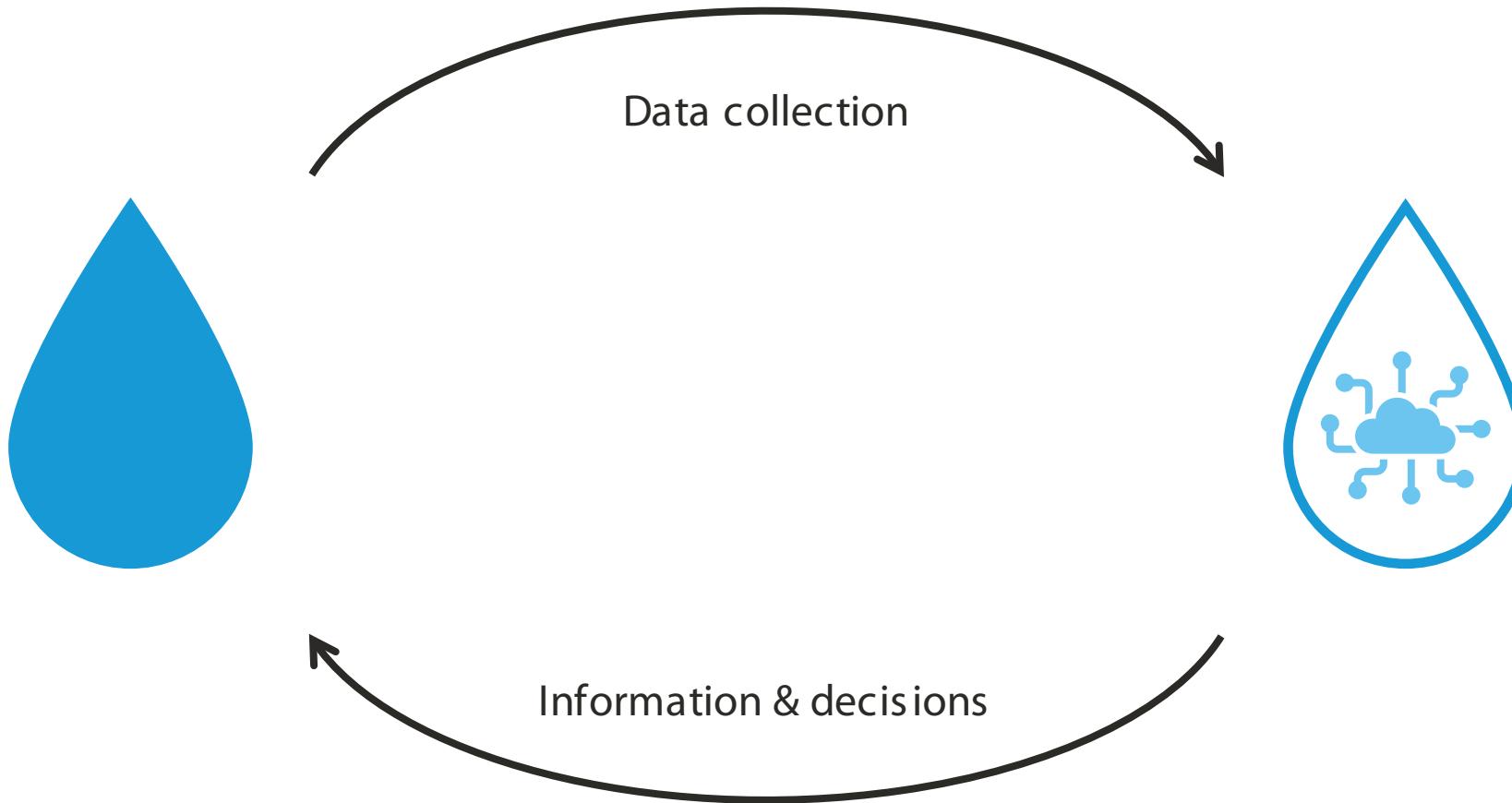


# TCEQ Operator Training: BNR and Solids

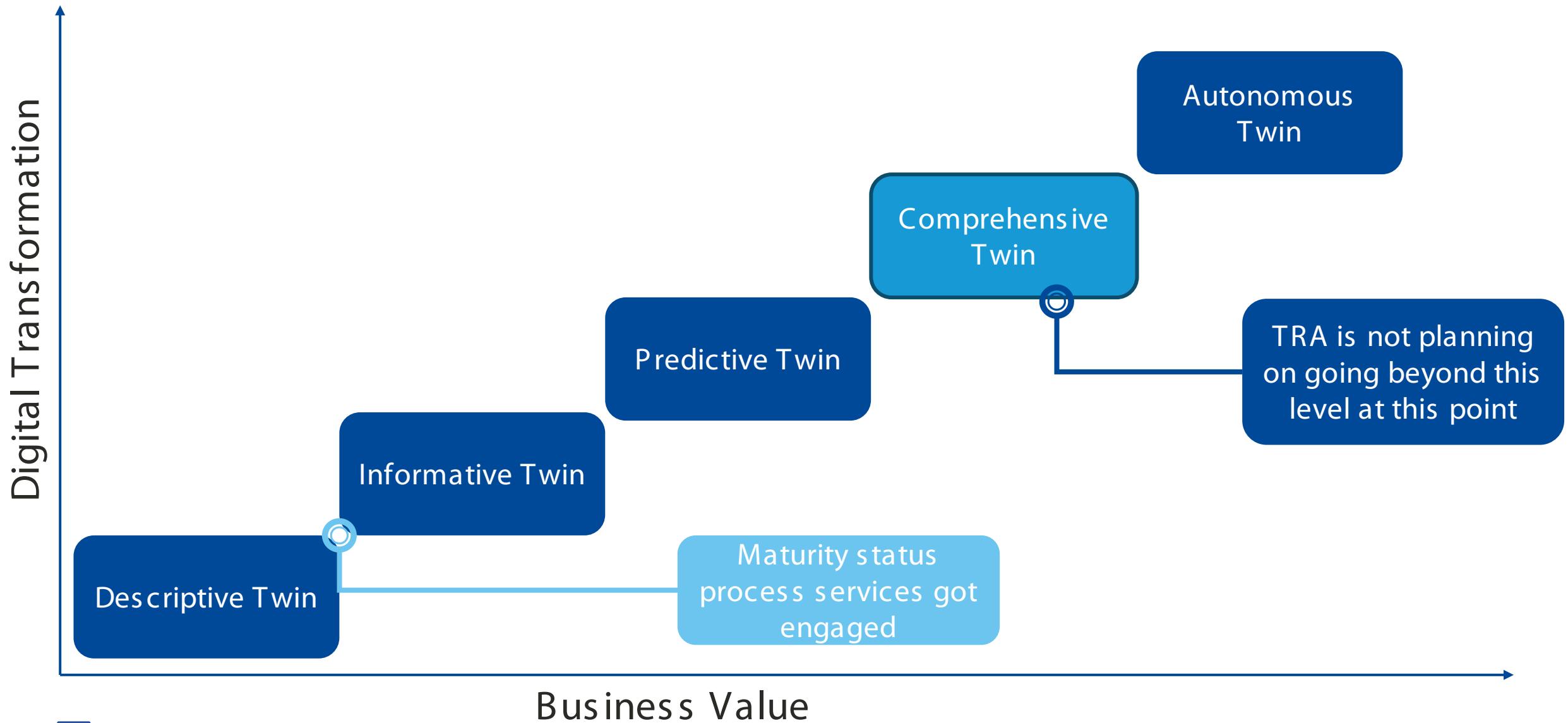


# Case Study 2: Digital Twins

# What is a digital twin?

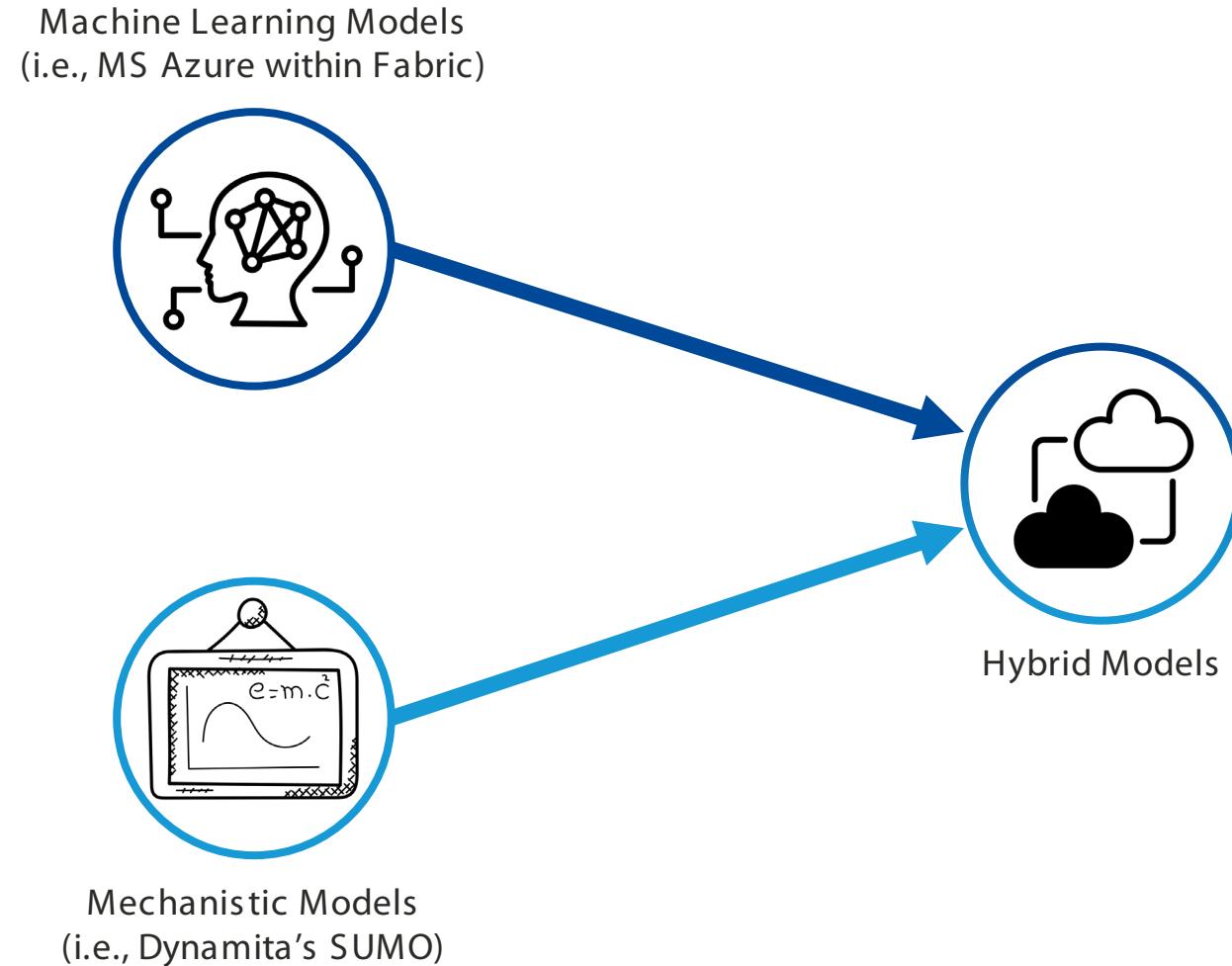


# Where is TRA going with Digital Twins?

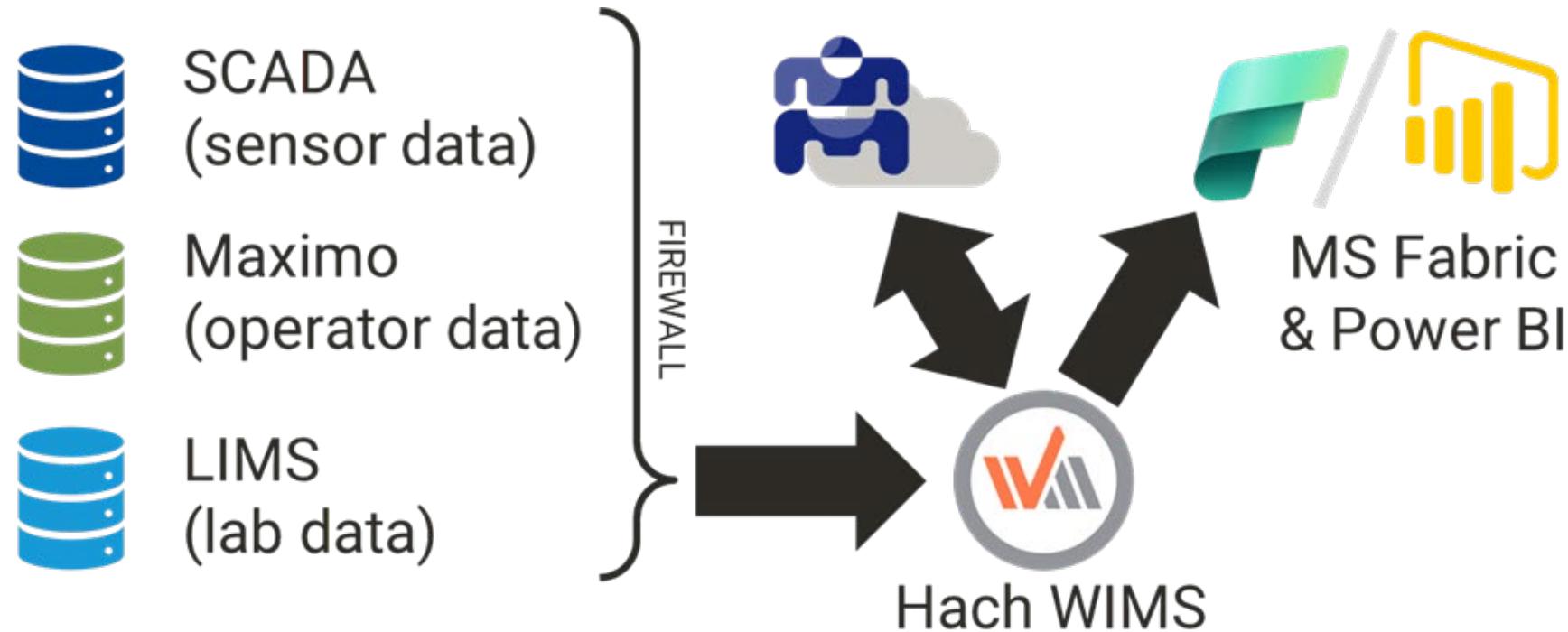


# How are we going about this?

Combining mechanistic models and machine learning models to create a hybrid model approach to utilize advantages of both



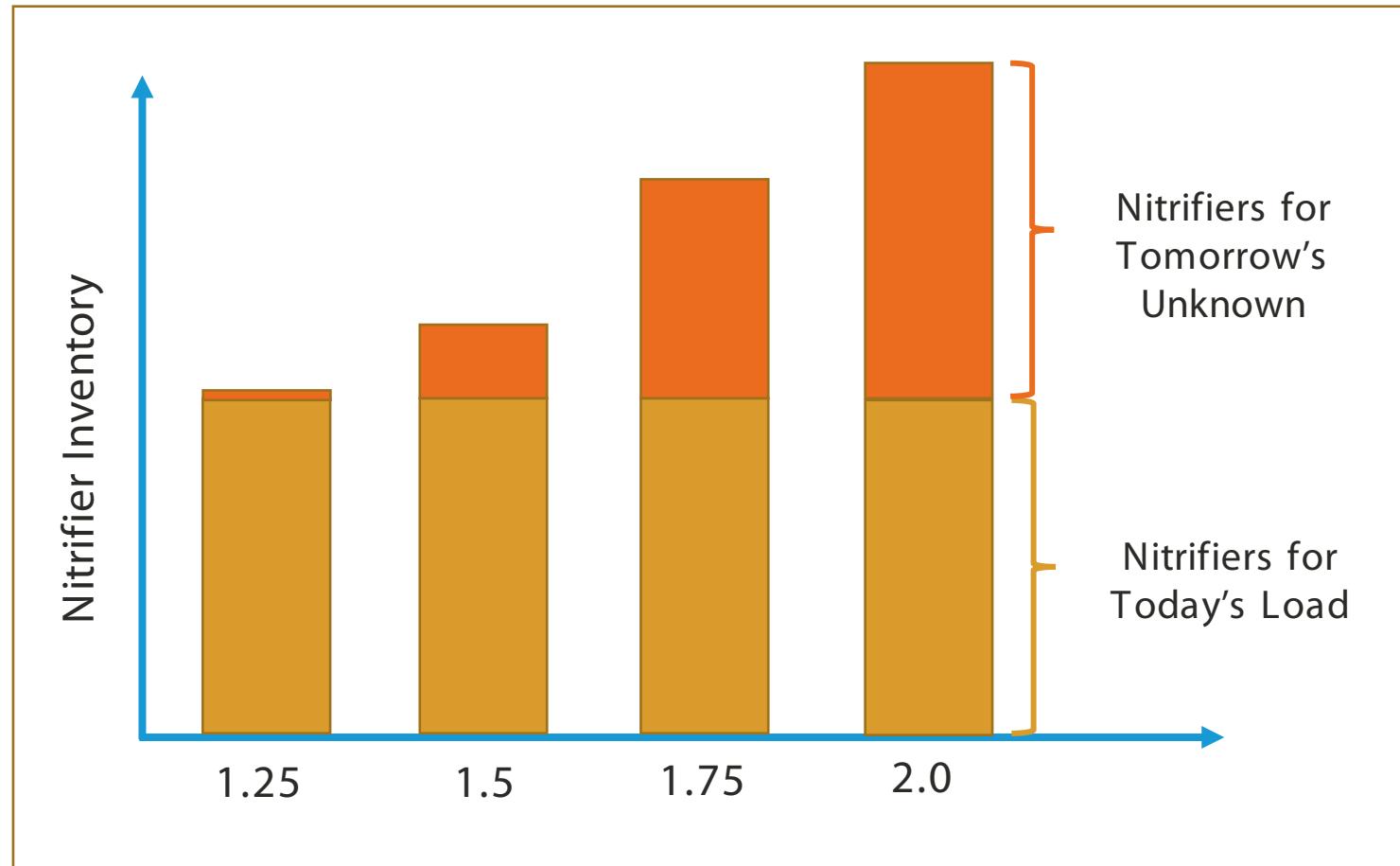
# So what does that look like?



# Why pilot at DCRWS?

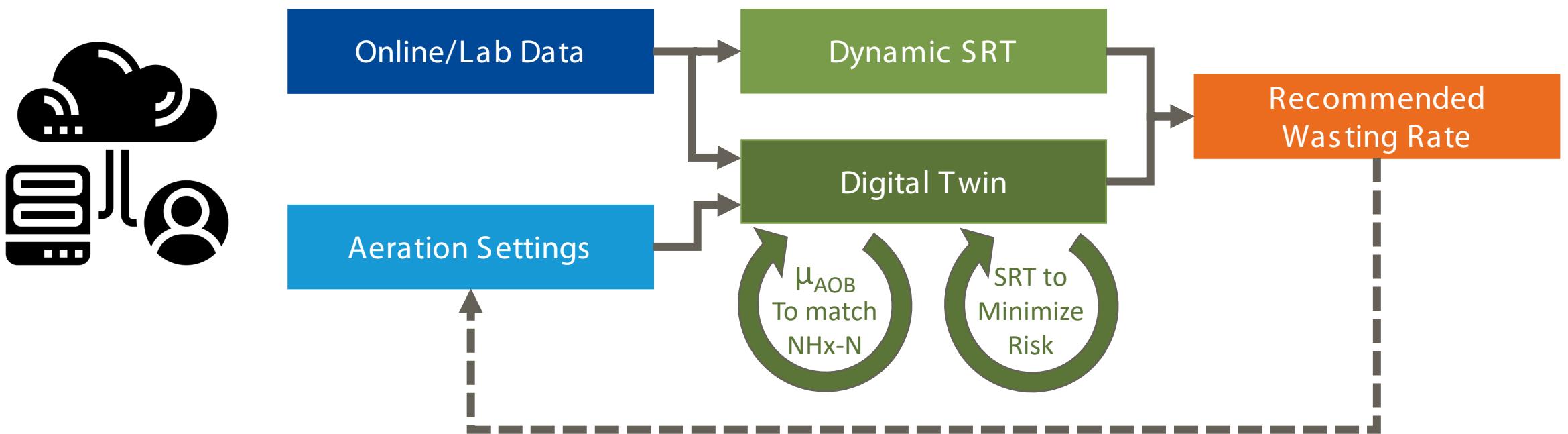


# Risk can be tied to the nitrifier safety factor



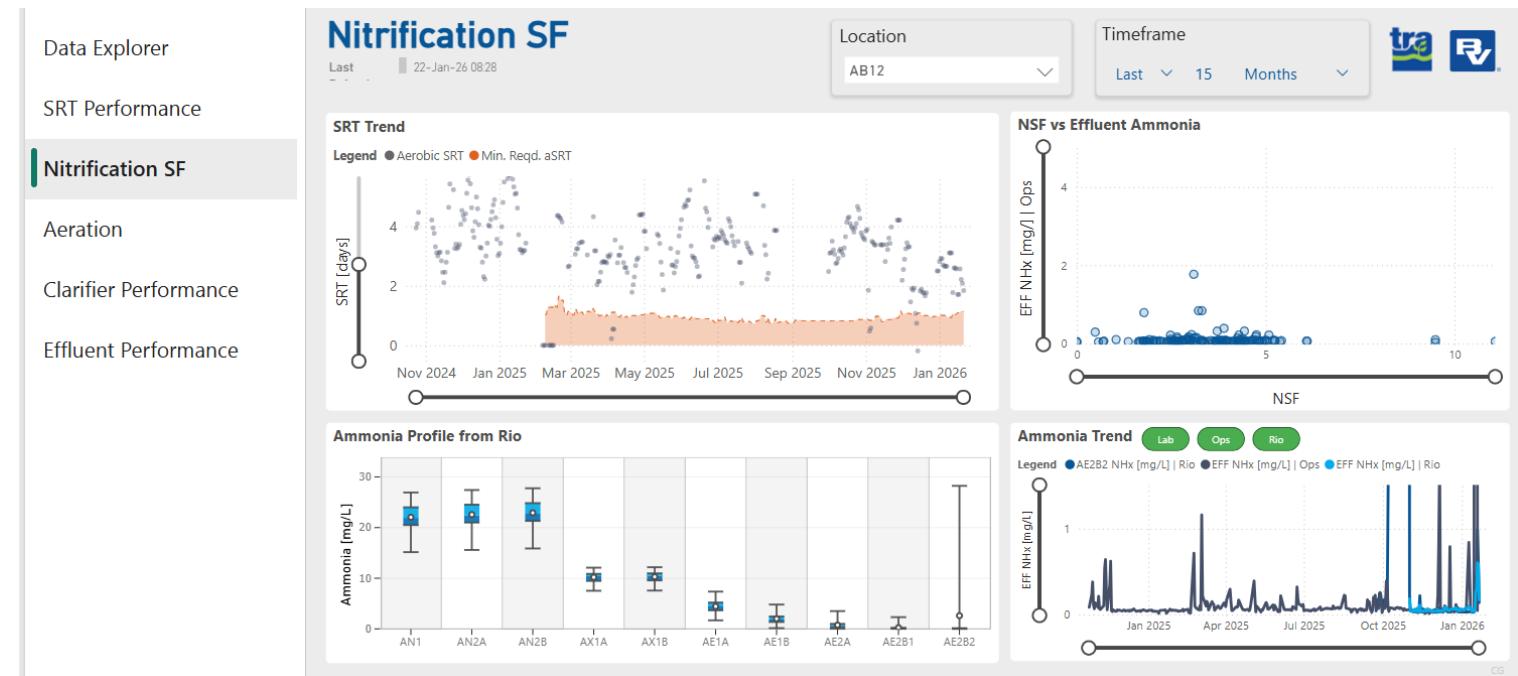
As loads increase, the same MLSS drives the safety factor lower, and water quality permit could be violated

# Digital Twin to optimize SRT control



# Where are we today?

- Currently in beta test with a platform
- Data connected and models are running
  - Ongoing calibration efforts
- Dashboard development to synthesize modeled data for use by managers/operations



# Contact Us

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