

AVEVA PI WORLD

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# The Enterprise PI Journey and Power System Data Centralization at SRP

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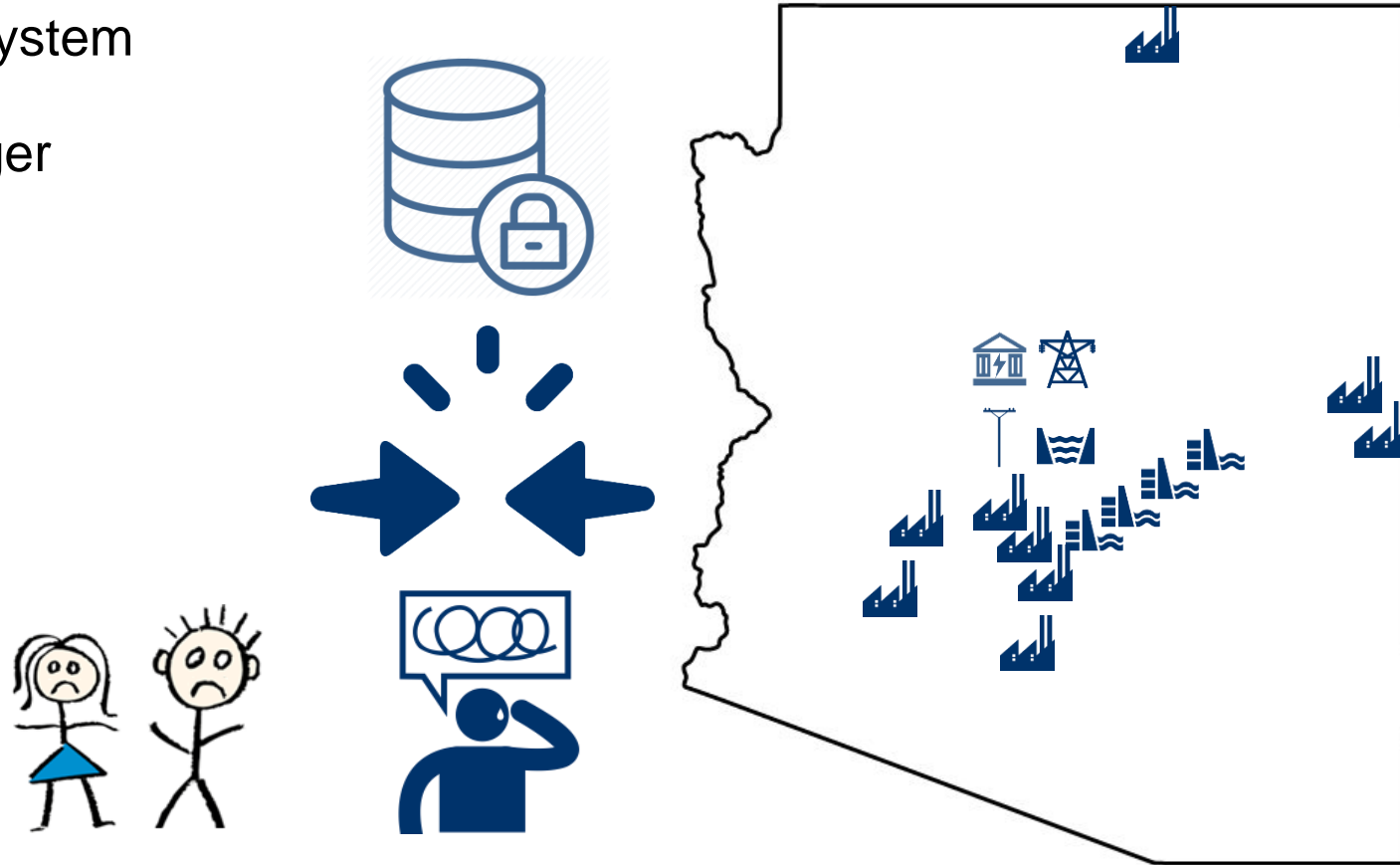
# About SRP

- US Bureau of Reclamation Project
- Supply water & power to the Salt River Valley and large portions of the Phoenix Metropolitan area
- SRP facts per end of FY21
  - 1,093,265 electric customers
  - Peak system load: 7615 MW
  - Available MW resources: >8800 MW
- Generation Resources
  - Gas, coal, nuclear, hydro, solar, biomass, wind & geothermal



# Historians across SRP

- Energy Management System
- Substation Data Manager
- Relay Synchrophasers
- Generation
- Water

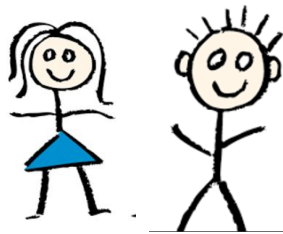


# PI Systems at SRP

- 15 Generating Sites
- PMC – Performance Monitoring Center
- EMS – Transmission & Distribution
- SDM – Substation Automation



# Enterprise PI System



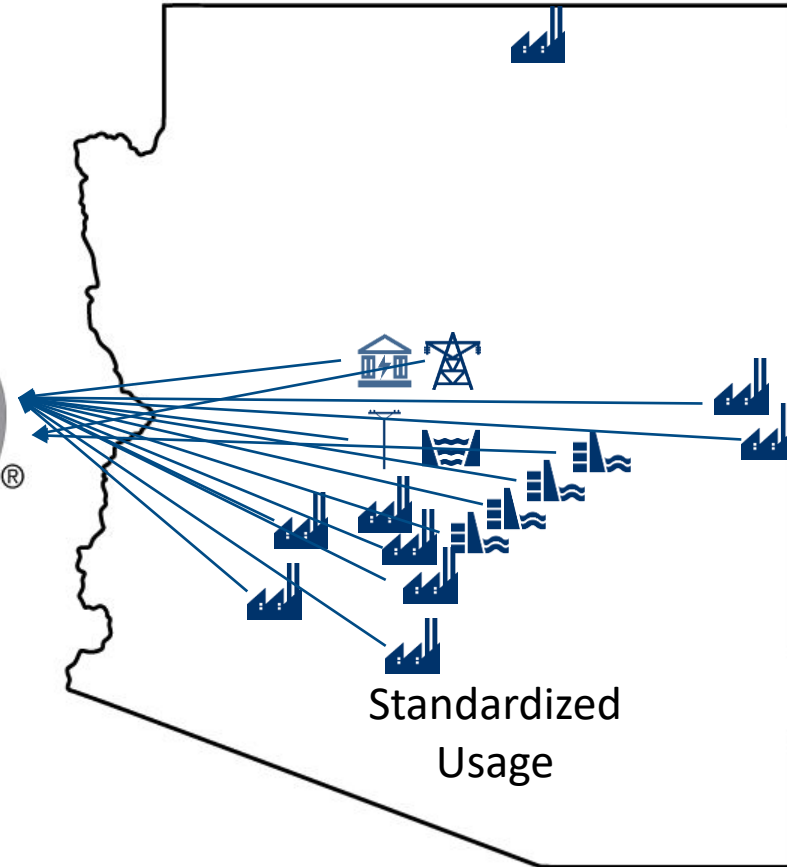
Productive  
Employees



Enterprise  
Metamodel



Centralized  
Data

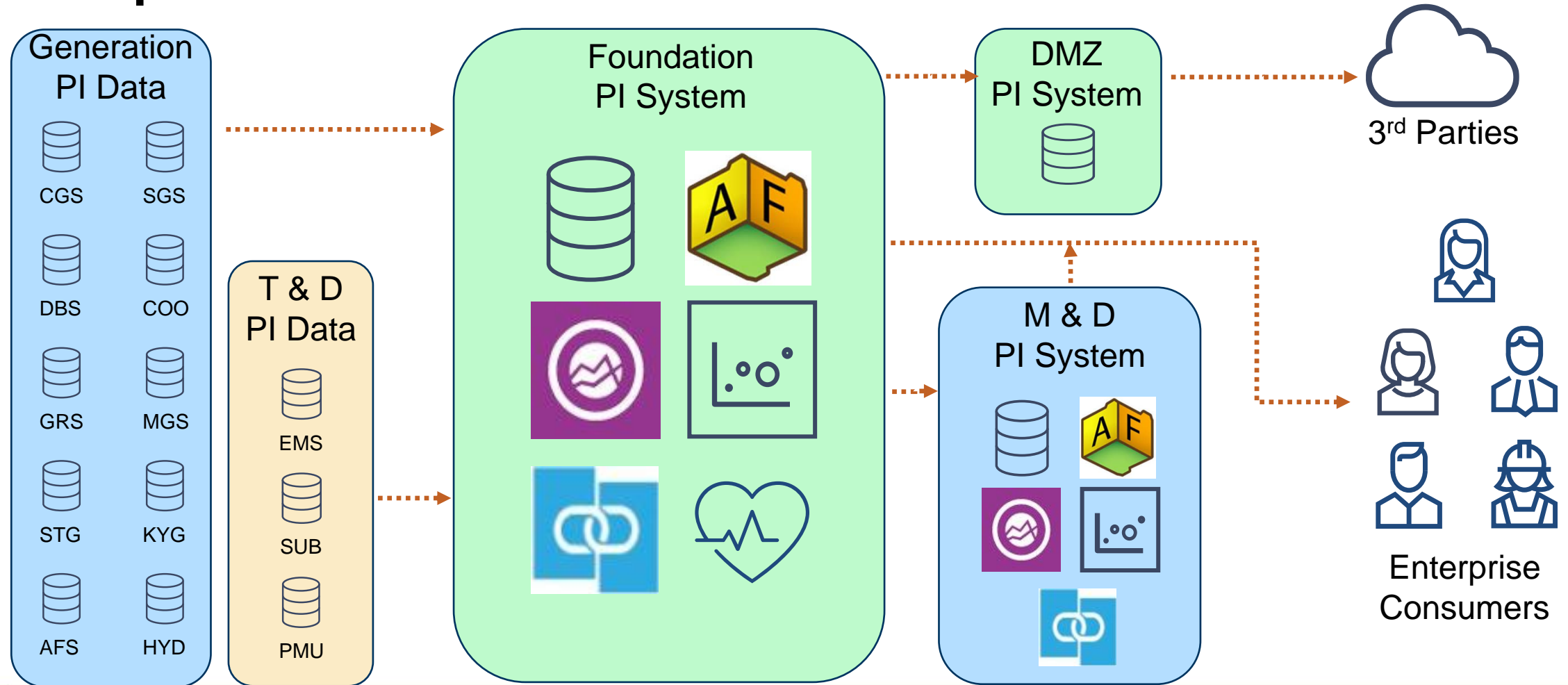


# Enterprise PI Infrastructure at SRP

- Serves as a “**Real Time Data Infrastructure**”
- Pulling data together from diverse sources, Generation and T&D
- Multiple applications & business units have access to same data
- Infrastructure essential to Daily Operations
- Foundation PI to centralize PI Data for Enterprise access



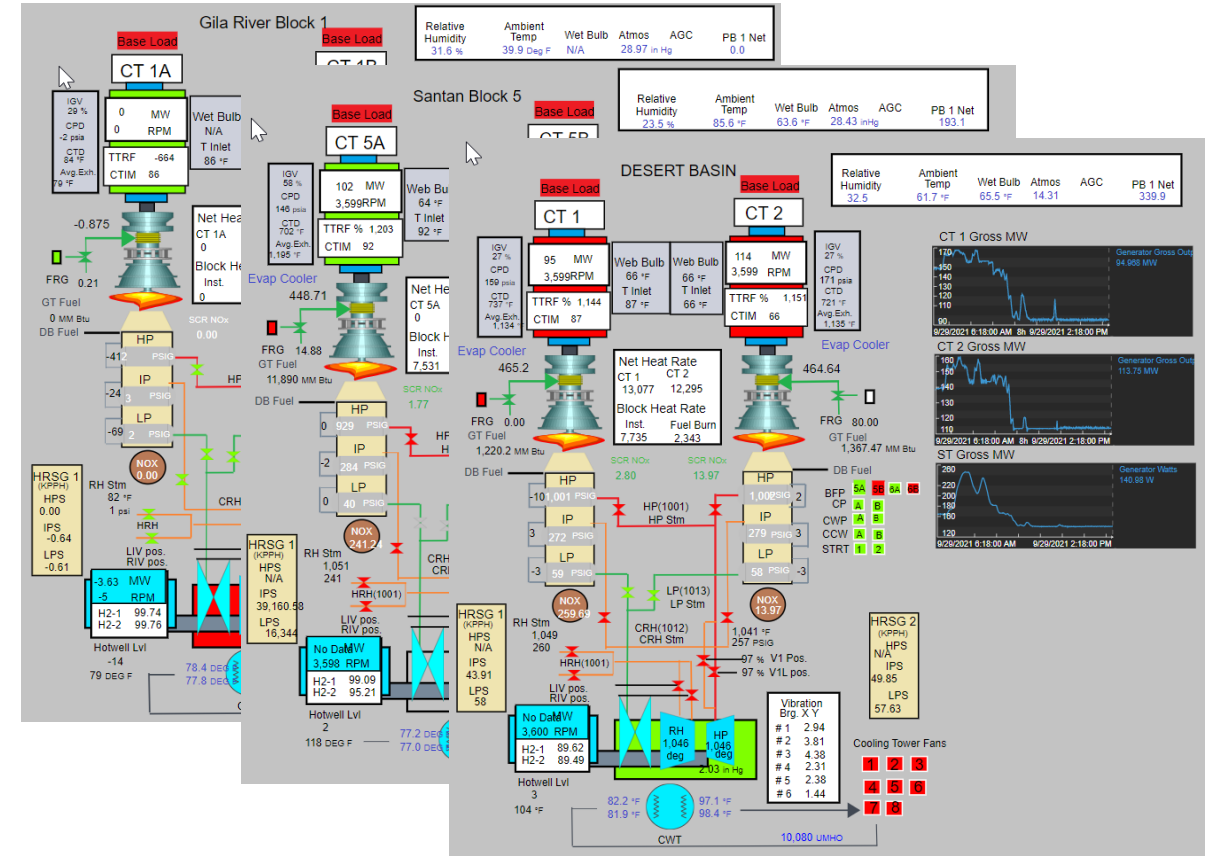
# Enterprise PI Architecture



# PI AF Templates Enable Fleetwide Monitoring

The screenshot shows the PI AF Elements browser on the left, listing various plant components like Desert Basin, Common, Plant Name, UNIT 1, BFP A, BFP B, Comb Turbine, CT GENERATOR, FLASHBACKS\_CT1, GT MW Monitor, HRSG 1, UNIT 2, UNIT 3, Gila River Block 1, Gila River Block 4, Unit 1, Unit 2, Unit 3, Kyrene Block 7, Mesquite Block 1, Santan Block 5, and Santan Block 6. The right pane displays the 'CT GENERATOR' template, which includes tabs for General, Child Elements, Attributes, Ports, Analyses, and Notification Rules. The 'General' tab is active, showing a list of PI tags categorized by 'Generator' and 'PI Tags'. The 'Generator' category includes 'CT Gen BKR-52G'. The 'PI Tags' category lists various temperature and current tags, such as 'AIR\_COOLER\_CE\_COLD\_AIR\_TEMP\_1', 'AIR\_COOLER\_CE\_HOT\_AIR\_TEMP', 'AIR\_COOLER\_COOLING\_WATER\_TEMP', 'AIR\_COOLER\_TE\_COLD\_AIR\_TEMP\_1', 'AIR\_COOLER\_TE\_COLD\_AIR\_TEMP\_2', 'AIR\_COOLER\_TE\_HOT\_AIR\_TEMP', 'AMBIENT\_AIR\_TEMP', 'COLLECTOR\_COOLING\_AIR\_INLET\_TEMP', 'COLLECTOR\_COOLING\_AIR\_OUTLET\_TEMP', 'FIELD\_CURRENT', and 'FIELD\_GROUND\_RESISTANCE'.

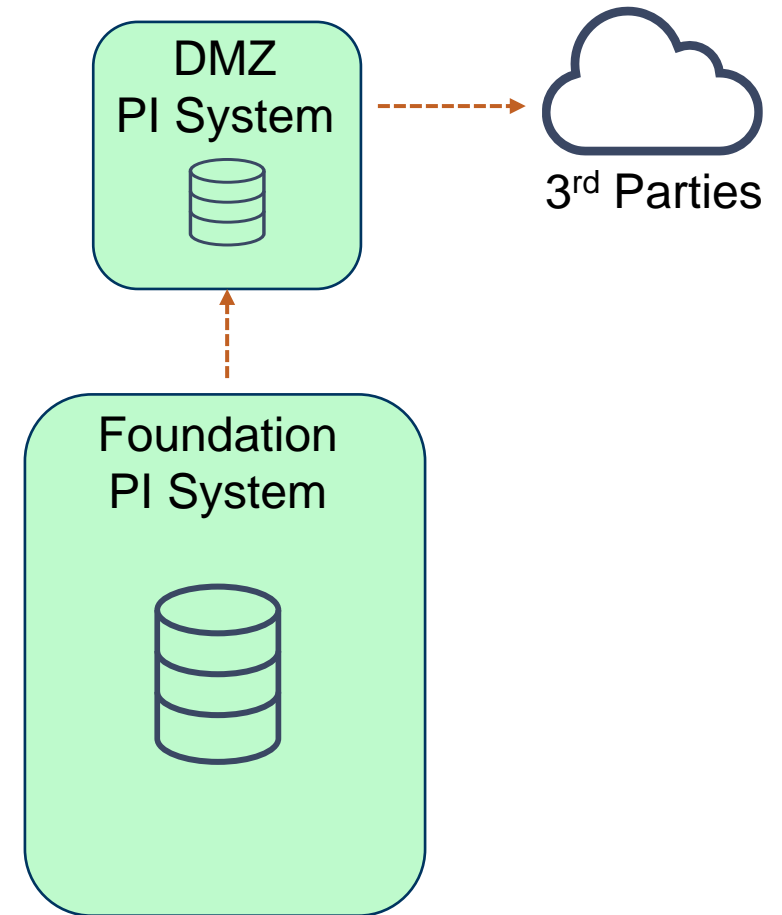
Category	PI Tag
Generator	CT Gen BKR-52G
PI Tags	AIR_COOLER_CE_COLD_AIR_TEMP_1
PI Tags	AIR_COOLER_CE_COLD_AIR_TEMP_2
PI Tags	AIR_COOLER_CE_HOT_AIR_TEMP
PI Tags	AIR_COOLER_COOLING_WATER_TEMP
PI Tags	AIR_COOLER_TE_COLD_AIR_TEMP_1
PI Tags	AIR_COOLER_TE_COLD_AIR_TEMP_2
PI Tags	AIR_COOLER_TE_HOT_AIR_TEMP
PI Tags	AMBIENT_AIR_TEMP
PI Tags	COLLECTOR_COOLING_AIR_INLET_TEMP
PI Tags	COLLECTOR_COOLING_AIR_OUTLET_TEMP
PI Tags	FIELD_CURRENT
PI Tags	FIELD_GROUND_RESISTANCE





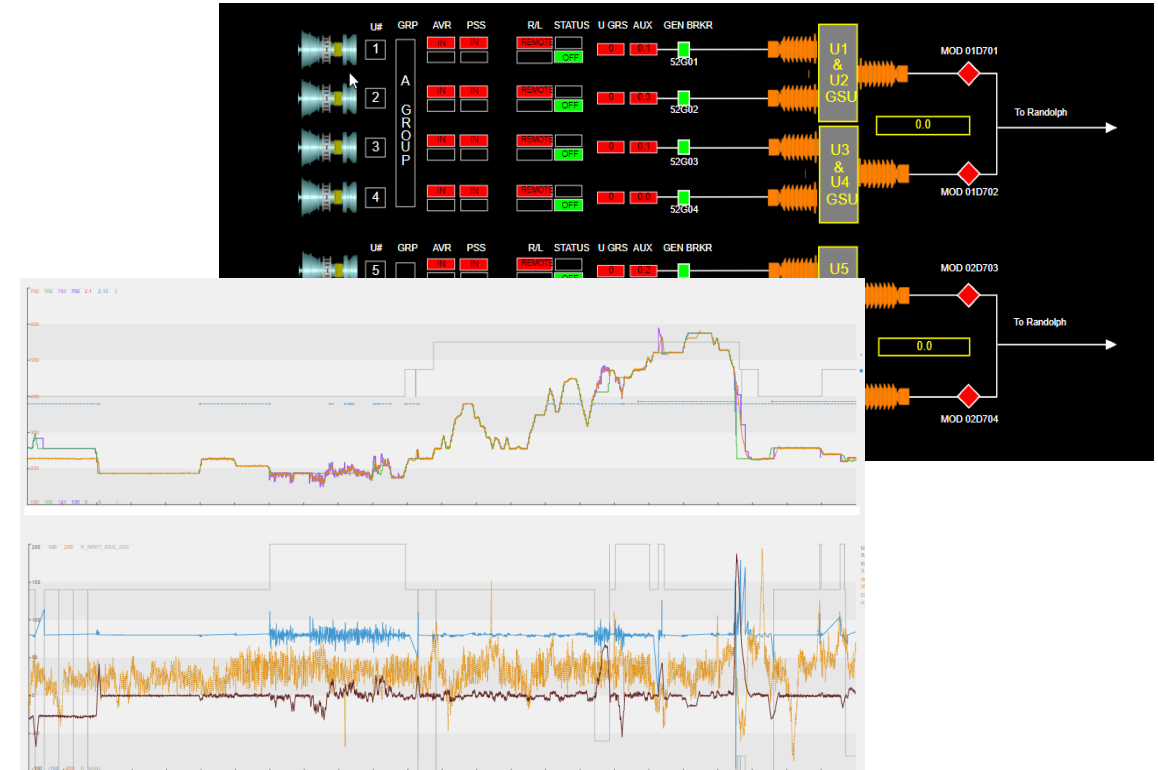
# External Party Access to PI Data

- Vendor Access
  - **Before:** VPN Tunnel into control network
  - **Now:** One PI System in DMZ connected to outside
- Participant Owner Access
  - **Before:** Access to plant data on a Citrix connected desktop with PI Vision in Kiosk mode
  - **Now:** PI to PI to owner from DMZ PI System



# Centralized Reporting and Analytics

- PI Vision
- PI DataLink
- PI Integrator for Business Analytics
  - Power BI
  - Tableau
  - Hadoop



# Centralization of Power System Data



Delivering water and power®

## Challenge

Taking data that is stored at many individual sites, in disparate systems, with different standards, and making that data consistently available to the entire enterprise via one standardized, central platform for use in analytics, reporting, monitoring and engineering.

## Solution

Implemented a centralized enterprise level PI System on the SRP network enabling access to fleetwide operational data by the business via PI tools such as PI AF, PI Vision, and PI DataLink, while standardizing individual site PI Systems across the company. “One stop shopping”

## Benefits

Enabling the business to more efficiently locate and access the operational data they really need via “one stop shopping”, they can focus more on information and less on technology, thus improving productivity and inherently reducing costs.



# Dag Reppen

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