



connect

ORLANDO JUNE 1-3, 2026



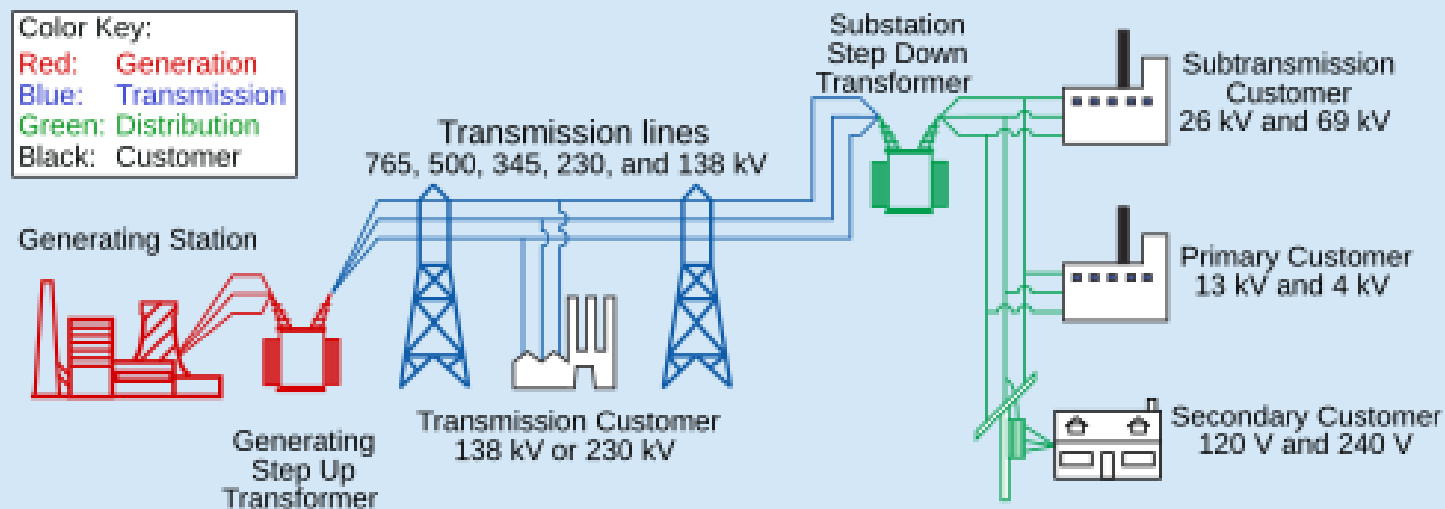
*Breaking Away from Legacy PI Applications
Utilizing Seeq Add-Ons*

SeeQ®

Josh Mellen
Akhila Pasunoori

Dominion Energy at a Glance

- We are a leading energy company providing clean, safe, and reliable energy to >3.6M customers across the US
- Our team is within the Transmission part of the organization, where we own and support applications such as PI, Seeq, and Predictive Grid
- We manage >5.6M tags with 10,000+ tags being created weekly



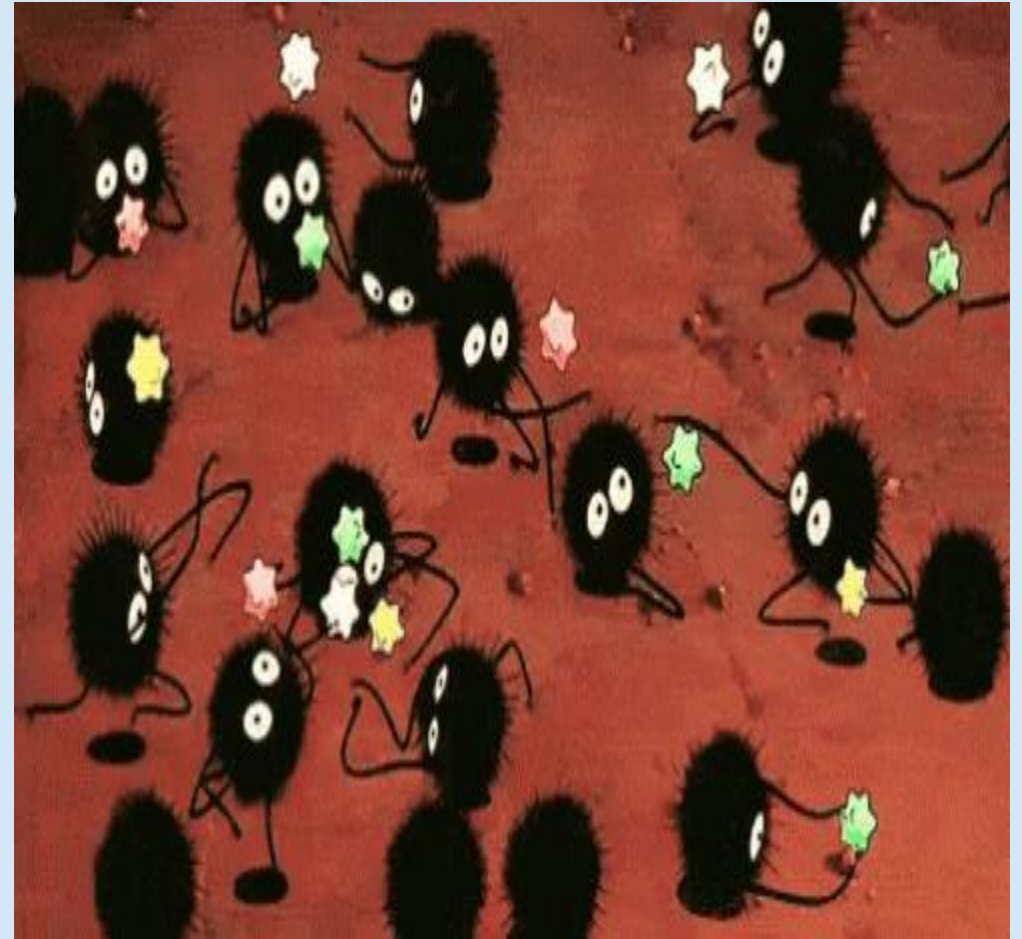
Life of PI



- Homegrown time-series data historian (FM) collected data from in-house DMS system and Alstom EMS
- OSIsoft PI Migration
 - PI Portal (2016-2026)
 - Asset Framework (2020+)
 - Seeq (2023+)

Ownership – IT or Business

- Since FM's inception, most of our tools have been largely IT owned
- Over the years, teams have developed their own applications that have become critical to how we do business
- In 2017, Citizen Dev(eloper) program was started to collaborate with IT to minimize shadow tech, improve reliability, and increase speed



Citizen Developer Program

What is Citizen Developer Program?

- Organizes business-side individuals with proven operational maturity and special technology related skillsets
- Leverages these special skillsets to create business-related products
- Collaborates with our partners in IT to create a degree of operational transparency
- Reduces risk and identifies opportunities

Submit

Assets/Tags (5 Tags)

Tags Assets

Data Source: EMS ADMS NON OPS

Data Types: Analog Digital ACTNCT

☐ Return Retired Points

Search for tags (use * for wildcard)

Available Tags (0 highlighted tag(s)):

+ - x

Selected Tags:

HAILMARY.TANK1.ASTROPHAGE.PPM
HAILMARY.TANK2.ASTROPHAGE.PPM
HAILMARY.TANK3.ASTROPHAGE.PPM
HAILMARY.TANK4.ASTROPHAGE.PPM
HAILMARY.TANK5.ASTROPHAGE.PPM

Date/Time Range

Date/Time Range:
Past week

Interval

Report Type: SUMMARY INTERPOLATED RAW

Interval:
1 Hour(s)

Summary Type: Deselect All

AVG RANGE SD MIN MAX

☐ Remove Duplicates

		HAILMARY.TANK1.ASTROPHAGE.PPM			HAILMARY.TANK2.ASTROPHAGE.PPM			HAILMARY.TANK3.ASTROPHAGE.PPM			HAILMARY.TANK4.ASTROPHAGE.PPM
Start Timestamp (Eastern)	End Timestamp (Eastern)	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
04/26/2026 15:07:12	04/26/2026 16:07:12	0.000	0.000	0.000	5.679	5.500	5.800	11.470	11.200	11.800	0.000
04/26/2026 16:07:12	04/26/2026 17:07:12	0.000	0.000	0.000	5.787	5.600	6.000	11.844	11.500	12.300	0.000
04/26/2026 17:07:12	04/26/2026 18:07:12	0.000	0.000	0.000	5.999	5.900	6.200	11.880	11.600	12.200	0.000
04/26/2026 18:07:12	04/26/2026 19:07:12	0.000	0.000	0.000	6.062	5.900	6.200	12.002	11.700	12.300	0.000
04/26/2026 19:07:12	04/26/2026 20:07:12	0.000	0.000	0.000	6.122	5.900	6.249	12.022	11.500	12.400	0.000
04/26/2026 20:07:12	04/26/2026 21:07:12	0.000	0.000	0.000	6.222	6.000	6.400	12.005	11.500	12.400	0.000
04/26/2026 21:07:12	04/26/2026 22:07:12	0.000	0.000	0.000	5.890	5.500	6.200	11.332	10.900	11.700	0.000
04/26/2026 22:07:12	04/26/2026 23:07:12	0.000	0.000	0.000	5.381	5.000	5.700	10.745	10.300	11.200	0.000
04/26/2026 23:07:12	04/27/2026 00:07:12	0.000	0.000	0.000	4.796	4.600	5.009	10.093	9.700	10.400	0.000
04/27/2026 00:07:12	04/27/2026 01:07:12	0.000	0.000	0.000	4.556	4.300	4.700	9.794	9.600	10.100	0.000
04/27/2026 01:07:12	04/27/2026 02:07:12	0.000	0.000	0.000	4.427	4.300	4.500	9.780	9.600	10.100	0.000
04/27/2026 02:07:12	04/27/2026 03:07:12	0.000	0.000	0.000	4.350	4.300	4.400	9.824	9.600	10.100	0.000
04/27/2026 03:07:12	04/27/2026 04:07:12	0.000	0.000	0.000	4.382	4.300	4.500	10.022	9.800	10.300	0.000
04/27/2026 04:07:12	04/27/2026 05:07:12	0.000	0.000	0.000	4.505	4.400	4.700	10.291	9.900	10.700	0.000
04/27/2026 05:07:12	04/27/2026 06:07:12	0.000	0.000	0.000	4.797	4.600	5.000	11.151	10.500	11.800	0.000
04/27/2026 06:07:12	04/27/2026 07:07:12	0.000	0.000	0.000	5.381	4.970	5.900	12.259	11.500	13.200	0.000
04/27/2026 07:07:12	04/27/2026 08:07:12	0.000	0.000	0.000	6.024	5.700	6.200	13.476	13.100	14.000	0.000
04/27/2026 08:07:12	04/27/2026 09:07:12	0.000	0.000	0.000	6.262	6.000	6.500	13.655	13.300	14.100	0.000
04/27/2026 09:07:12	04/27/2026 10:07:12	0.000	0.000	0.000	6.099	5.900	6.400	13.522	13.100	14.000	0.000
04/27/2026 10:07:12	04/27/2026 11:07:12	0.000	0.000	0.000	6.131	6.000	6.300	13.427	13.100	13.900	0.000
04/27/2026 11:07:12	04/27/2026 12:07:12	0.000	0.000	0.000	6.142	6.000	6.300	13.271	12.900	13.600	0.000
04/27/2026 12:07:12	04/27/2026 13:07:12	0.000	0.000	0.000	6.175	5.900	6.400	13.177	12.700	13.800	0.000
04/27/2026 13:07:12	04/27/2026 14:07:12	0.000	0.000	0.000	6.192	6.000	6.400	13.022	12.700	13.400	0.000
04/27/2026 14:07:12	04/27/2026 15:07:12	0.000	0.000	0.000	6.170	6.000	6.300	12.989	12.700	13.400	0.000
04/27/2026 15:07:12	04/27/2026 16:07:12	0.000	0.000	0.000	6.189	6.000	6.300	13.097	12.800	13.500	0.000
04/27/2026 16:07:12	04/27/2026 17:07:12	0.000	0.000	0.000	6.171	6.000	6.400	13.196	12.900	13.700	0.000
04/27/2026 17:07:12	04/27/2026 18:07:12	0.000	0.000	0.000	6.335	6.200	6.600	13.222	12.900	13.600	0.000
04/27/2026 18:07:12	04/27/2026 19:07:12	0.000	0.000	0.000	6.593	6.200	6.900	13.290	13.000	13.600	0.000
04/27/2026 19:07:12	04/27/2026 20:07:12	0.000	0.000	0.000	6.494	6.300	6.700	13.088	12.800	13.400	0.000
04/27/2026 20:07:12	04/27/2026 21:07:12	0.000	0.000	0.000	6.461	6.300	6.600	12.887	12.500	13.300	0.000
04/27/2026 21:07:12	04/27/2026 22:07:12	0.000	0.000	0.000	6.012	5.800	6.400	12.217	11.700	12.700	0.000

PI Portal: Look



Issues

IT not familiar with business processes or the data behind it
Utilized old and unmaintained Asset Framework database
Web app utilized caches updated daily to display tag lists, leading to missing tags on database load days



Business-Owned Solutions

Python WebAPI Custom Application
C# AFSDK Custom Application
Seeq Add-Ons



Seeq Add-On Benefits

Simplifies datasource scaling
Centralized Datasources
Less reliance on IT resources

How Reports Solves the Problem

- Web-based reporting application built using Seeq add-on environment
- Enables asset-based and tag-based reporting workflows
- Centralized reporting experiences across multiple data sources
- Built to leverage Seeq as the analytics and data access platform
- Reduced IT dependency



Implementation

- Built as a native Seeq Add-On
- Uses SPy module
 - spy.search → dynamic discovery
 - spy.pull → efficient data retrieval
- Runs within Seeq Data Lab + Workbench
- Leverages Seeq for:
 - Data access abstraction
 - Asset context
 - Authentication & permissions

Reports [Have questions or need support?](#) [Contact us](#)

Assets Tags

Search Assets:

Filter assets...

- Astrophage
- Lifesupport_interface Array
- AstraPrime
- NovaCore
- Mission Atlas
- CosmosDrive
- PhotonMission
- OrbitalCore
- AstroGenesis
- ProjectAurora
- DeepSpace01

Applied Assets:

Date/Time Range:

Start 05/07/2026 00 : 00 : 00

End 05/08/2026 00 : 00 : 00

Interval:

Every 1 Minutes

Report Type:

Summary Interpolated Raw

Summary Report

Calculations

Calculations: AVG MIN MAX

Deployment & Operational Benefits



Deployment

Configure as Add-On Tool (name, icon, URL)

Access via Workbench → Tools → Add-ons → Reports

Controlled through Seeq permissions



Operational benefits

No standalone app → lower maintenance

Centralized platform → easy scaling

Built-in governance → secure access

Reduced IT effort → faster adoption

Tag Search:

▼ Select datasources

☒ All

☐ None

Selected: ADMS PRD, EMS PROD

HAILMARY

Tip: Use * as a wildcard (e.g., `HAILMARY*`).

Apply

Applied Tags:

HAILMARY.TANK_01.ASTROPHAGE.PPM
HAILMARY.TANK_02.ASTROPHAGE.PPM
HAILMARY.TANK_03.ASTROPHAGE.PPM
HAILMARY.TANK_04.ASTROPHAGE.PPM
HAILMARY.TANK_05.ASTROPHAGE.PPM
HAILMARY.TANK_06.ASTROPHAGE.PPM
HAILMARY.TANK_07.ASTROPHAGE.PPM

Remove

Clear

Date/Time Range:

Start

04/26/2026

15

▼

:

00

▼

:

00

▼

End

05/03/2026

15

▼

:

00

▼

:

00

▼

Interval:

Every

1

▼

Hours

▼

Report Type:

Summary

Interpolated

Raw

Summary Report

Calculations

Calculations:

AVG

MIN

MAX

Submit & Generate Report

Start Timestamp	End Timestamp	ASTROPHAGE TANK_01			ASTROPHAGE TANK_02			ASTROPHAGE TANK_03			ASTROPHAGE TANK_04			ASTROPHAGE TANK_05			ASTROPHAGE TANK_06			ASTROPHAGE TANK_07		
		AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN
2026-04-26 15:00:00	2026-04-26 16:00:00	0.0	0.0	0.0	5.670	5.8	5.5	11.456	11.8	11.2	0.0	0.0	0.0	31.103	31.6	30.6	0.0	0.0	0.0	-5.670	-5.5	-5.8
2026-04-26 16:00:00	2026-04-26 17:00:00	0.0	0.0	0.0	5.756	5.9	5.6	11.835	12.3	11.5	0.0	0.0	0.0	31.262	31.7	30.8	0.0	0.0	0.0	-5.756	-5.6	-5.9
2026-04-26 17:00:00	2026-04-26 18:00:00	0.0	0.0	0.0	5.974	6.2	5.8	11.854	12.1	11.6	0.0	0.0	0.0	31.473	32.1	31.0	0.0	0.0	0.0	-5.974	-5.8	-6.2
2026-04-26 18:00:00	2026-04-26 19:00:00	0.0	0.0	0.0	6.058	6.2	5.9	12.028	12.3	11.7	0.0	0.0	0.0	31.998	32.5	31.5	0.0	0.0	0.0	-6.058	-5.9	-6.2
2026-04-26 19:00:00	2026-04-26 20:00:00	0.0	0.0	0.0	6.103	6.2	5.9	11.982	12.4	11.5	0.0	0.0	0.0	32.017	32.5	31.6	0.0	0.0	0.0	-6.103	-5.9	-6.2
2026-04-26 20:00:00	2026-04-26 21:00:00	0.0	0.0	0.0	6.237	6.4	6.1	12.045	12.4	11.6	0.0	0.0	0.0	31.948	32.8	31.0	0.0	0.0	0.0	-6.237	-6.1	-6.4
2026-04-26 21:00:00	2026-04-26 22:00:00	0.0	0.0	0.0	5.954	6.2	5.7	11.350	11.8	11.0	0.0	0.0	0.0	30.770	31.5	29.8	0.0	0.0	0.0	-5.954	-5.7	-6.2
2026-04-26 22:00:00	2026-04-26 23:00:00	0.0	0.0	0.0	5.387	5.7	5.0	10.827	11.3	10.4	0.0	0.0	0.0	29.169	30.3	28.1	0.0	0.0	0.0	-5.387	-5.0	-5.7
2026-04-26 23:00:00	2026-04-27 00:00:00	0.0	0.0	0.0	4.828	5.1	4.6	10.134	10.6	9.7	0.0	0.0	0.0	27.407	28.2	26.5	0.0	0.0	0.0	-4.828	-4.6	-5.1
2026-04-27 00:00:00	2026-04-27 01:00:00	0.0	0.0	0.0	4.568	4.7	4.4	9.823	10.1	9.6	0.0	0.0	0.0	26.040	26.8	25.3	0.0	0.0	0.0	-4.568	-4.4	-4.7
2026-04-27 01:00:00	2026-04-27 02:00:00	0.0	0.0	0.0	4.432	4.5	4.3	9.777	10.1	9.6	0.0	0.0	0.0	25.420	25.9	25.0	0.0	0.0	0.0	-4.432	-4.3	-4.5
2026-04-27 02:00:00	2026-04-27 03:00:00	0.0	0.0	0.0	4.346	4.4	4.3	9.837	10.1	9.6	0.0	0.0	0.0	25.399	25.8	25.1	0.0	0.0	0.0	-4.346	-4.3	-4.4
2026-04-27 03:00:00	2026-04-27 04:00:00	0.0	0.0	0.0	4.380	4.5	4.3	9.995	10.3	9.8	0.0	0.0	0.0	25.429	25.9	25.0	0.0	0.0	0.0	-4.380	-4.3	-4.5
2026-04-27 04:00:00	2026-04-27 05:00:00	0.0	0.0	0.0	4.467	4.6	4.4	10.217	10.7	9.9	0.0	0.0	0.0	27.012	27.8	26.0	0.0	0.0	0.0	-4.467	-4.4	-4.6
2026-04-27 05:00:00	2026-04-27 06:00:00	0.0	0.0	0.0	4.775	5.0	4.6	11.027	11.5	10.4	0.0	0.0	0.0	28.805	30.1	27.4	0.0	0.0	0.0	-4.775	-4.6	-5.0
2026-04-27 06:00:00	2026-04-27 07:00:00	0.0	0.0	0.0	5.251	5.7	4.8	12.176	13.0	11.5	0.0	0.0	0.0	31.440	33.0	30.0	0.0	0.0	0.0	-5.251	-4.8	-5.7
2026-04-27 07:00:00	2026-04-27 08:00:00	0.0	0.0	0.0	5.993	6.2	5.7	13.385	13.8	12.8	0.0	0.0	0.0	33.623	34.7	32.8	0.0	0.0	0.0	-5.993	-5.7	-6.2
2026-04-27 08:00:00	2026-04-27 09:00:00	0.0	0.0	0.0	6.216	6.5	6.0	13.684	14.1	13.3	0.0	0.0	0.0	34.352	34.7	33.9	0.0	0.0	0.0	-6.216	-6.0	-6.5
2026-04-27 09:00:00	2026-04-27 10:00:00	0.0	0.0	0.0	6.089	6.4	5.9	13.538	14.0	13.1	0.0	0.0	0.0	34.495	35.0	34.1	0.0	0.0	0.0	-6.089	-5.9	-6.4
2026-04-27 10:00:00	2026-04-27 11:00:00	0.0	0.0	0.0	6.157	6.3	6.0	13.469	13.9	13.1	0.0	0.0	0.0	34.705	35.3	34.1	0.0	0.0	0.0	-6.157	-6.0	-6.3
2026-04-27 11:00:00	2026-04-27 12:00:00	0.0	0.0	0.0	6.147	6.3	6.0	13.246	13.6	12.9	0.0	0.0	0.0	34.617	35.5	33.9	0.0	0.0	0.0	-6.147	-6.0	-6.3
2026-04-27 12:00:00	2026-04-27 13:00:00	0.0	0.0	0.0	6.179	6.4	5.9	13.222	13.8	12.7	0.0	0.0	0.0	34.812	35.3	34.4	0.0	0.0	0.0	-6.179	-5.9	-6.4
2026-04-27 13:00:00	2026-04-27 14:00:00	0.0	0.0	0.0	6.203	6.4	6.0	13.066	13.4	12.7	0.0	0.0	0.0	34.744	35.3	34.1	0.0	0.0	0.0	-6.203	-6.0	-6.4
2026-04-27 14:00:00	2026-04-27 15:00:00	0.0	0.0	0.0	6.176	6.3	6.0	12.998	13.4	12.7	0.0	0.0	0.0	34.628	35.2	34.1	0.0	0.0	0.0	-6.176	-6.0	-6.3
2026-04-27 15:00:00	2026-04-27 16:00:00	0.0	0.0	0.0	6.157	6.3	6.0	13.071	13.5	12.8	0.0	0.0	0.0	34.600	35.2	34.1	0.0	0.0	0.0	-6.157	-6.0	-6.3
2026-04-27 16:00:00	2026-04-27 17:00:00	0.0	0.0	0.0	6.161	6.3	6.0	13.235	13.7	12.9	0.0	0.0	0.0	34.775	35.5	34.3	0.0	0.0	0.0	-6.161	-6.0	-6.3
2026-04-27 17:00:00	2026-04-27 18:00:00	0.0	0.0	0.0	6.327	6.5	6.2	13.212	13.6	12.9	0.0	0.0	0.0	35.316	35.9	34.6	0.0	0.0	0.0	-6.327	-6.2	-6.5
2026-04-27 18:00:00	2026-04-27 19:00:00	0.0	0.0	0.0	6.524	6.9	6.2	13.304	13.6	13.0	0.0	0.0	0.0	35.207	35.7	34.7	0.0	0.0	0.0	-6.524	-6.2	-6.9

Report Types



SUMMARY

Aggregated insights (AVG, MIN, MAX)

Spot trends & compare performance

Best for: Quick insights, summary reporting



INTERPOLATED

Time-aligned data (fixed intervals)

Consistent trending & comparisons

Best for: Trend analysis, dashboards

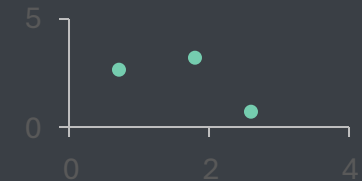


RAW

Exact recorded values

Full precision & traceability

Best for: Audits, investigations



Future Scope



User tracking & adoption insights



Governed access for extended data pulls

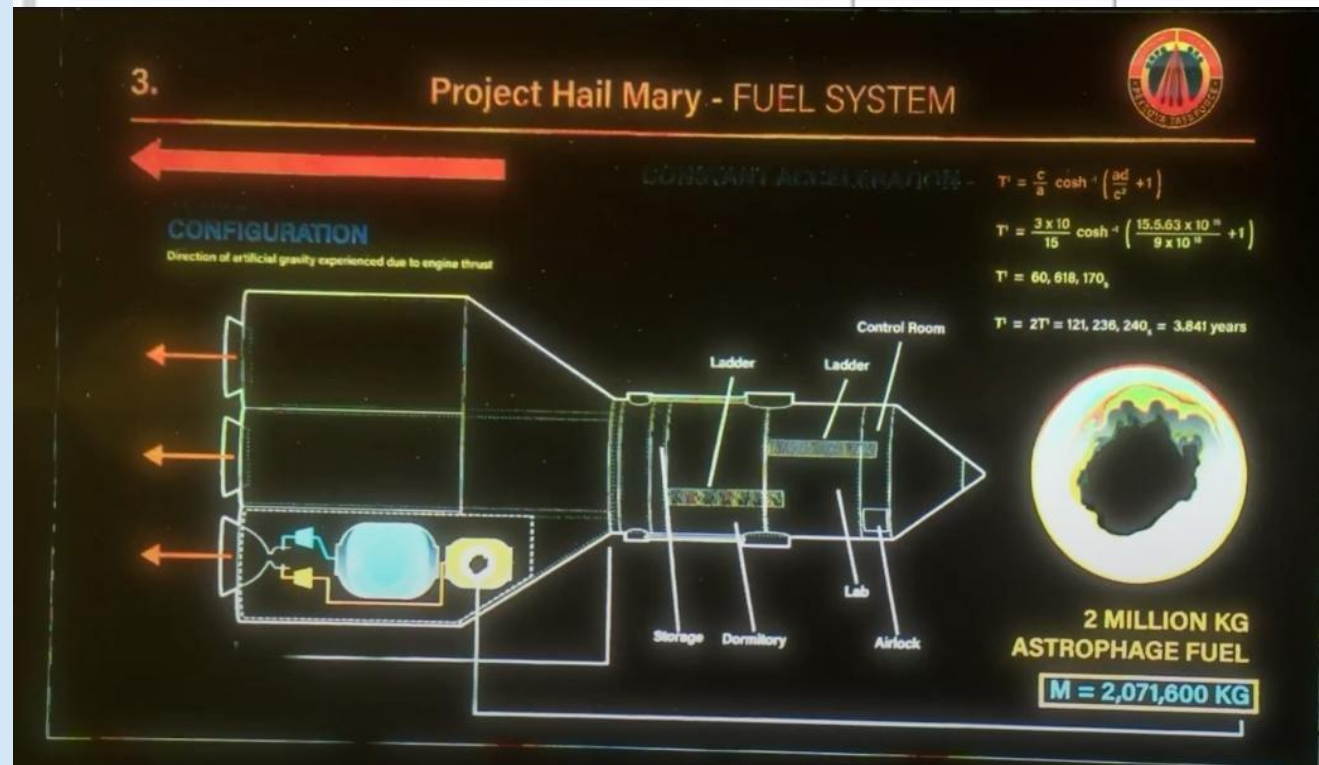


Administrative visibility on large data requests

Summary

- Ownership shift from IT to Citizen Developer
- Reducing dependency on custom application tech stacks (*PI Portal -> Seeq*)
- Bringing new users to Seeq

Start Timestamp	End Timestamp	ASTROPHAGE TANK_01			ASTROPHAGE TANK_02			ASTROPHAGE TANK_03		
		AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN
2026-04-26 15:00:00	2026-04-26 16:00:00	0.0	0.0	0.0	5.670	5.8	5.5	11.456	11.8	11.2
2026-04-26 16:00:00	2026-04-26 17:00:00	0.0	0.0	0.0	5.756	5.9	5.6	11.835	12.3	11.5
2026-04-26 17:00:00	2026-04-26 18:00:00	0.0	0.0	0.0	5.974	6.2	5.8	11.854	12.1	11.6
2026-04-26 18:00:00	2026-04-26 19:00:00	0.0	0.0	0.0	6.058	6.2	5.9	12.028	12.3	11.7
2026-04-26 19:00:00	2026-04-26 20:00:00	0.0	0.0	0.0	6.103	6.2	5.9	11.982	12.4	11.5
2026-04-26 20:00:00	2026-04-26 21:00:00	0.0	0.0	0.0	6.237	6.4	6.1	12.045	12.4	11.6
2026-04-26 21:00:00	2026-04-26 22:00:00	0.0	0.0	0.0	5.954	6.2	5.7	11.350	11.8	11.0
2026-04-26 22:00:00	2026-04-26 23:00:00	0.0	0.0	0.0	5.387	5.7	5.0	10.827	11.3	10.4
2026-04-26 23:00:00	2026-04-27 00:00:00	0.0	0.0	0.0	4.828	5.1	4.6	10.134	10.6	9.7
2026-04-27 00:00:00	2026-04-27 01:00:00	0.0	0.0	0.0	4.568	4.7	4.4	9.823	10.1	9.6





Josh Mellen

Lead Data Engineer

✉ joshua.m.mellen@dominionenergy.com



Akhila Pasunoori

Data Engineer

✉ akhila.pasunoori@dominionenergy.com