

Asset & Structural Health Monitoring

A PREMIUM OFFERING FROM HBK FOR MONITORING INFRASTRUCTURE & TRANSPORTATION ASSETS

SHM Premium

Key Capabilities

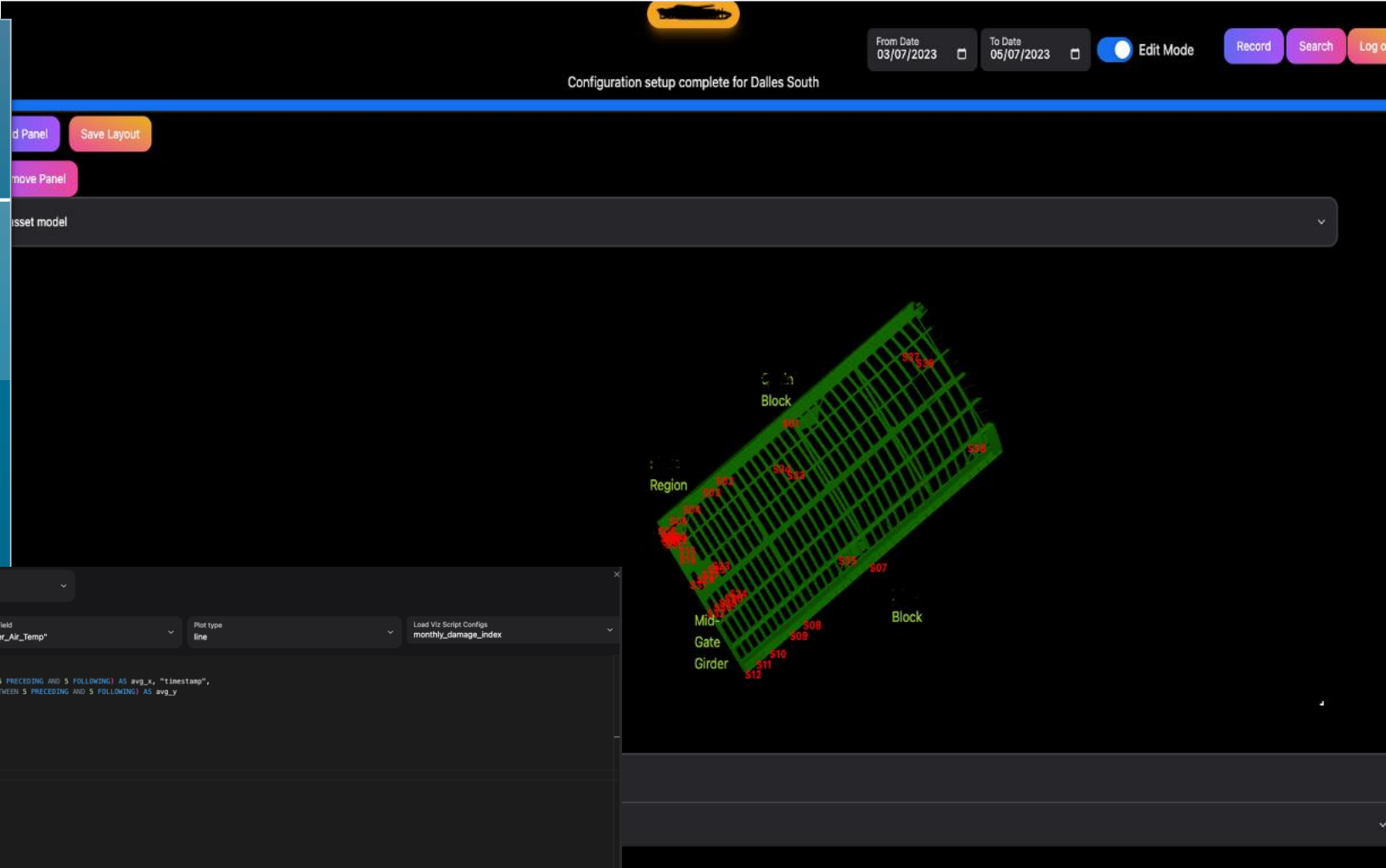


Visualizing Insights

Configurable displays across devices

Visualize 3D Models of assets with additional information overlay

Advanced client-side analytics for visualizing complex data with a configurable panel.



```
1 WITH moving_avg AS (SELECT "Logger_Air_Temp",
2                       AVG(epoch_ms("Timestamp")) OVER (ORDER BY "Logger_Air_Temp" ROWS BETWEEN 5 PRECEDING AND 5 FOLLOWING) AS avg_x, "Timestamp",
3                       AVG("Logger_Air_Temp") OVER (ORDER BY "Logger_Air_Temp" ROWS BETWEEN 5 PRECEDING AND 5 FOLLOWING) AS avg_y
4                       FROM timeseries.parquet)
5 SELECT *
6 FROM (SELECT ROW_NUMBER() OVER () AS row_num, "Logger_Air_Temp" as col_x,
7          "Timestamp" as col_y,
8          FROM moving_avg) AS numbered_rows
9 WHERE row_num % 10 = 0
10 ORDER BY col_x; -- Select every 10th row
11
12
```

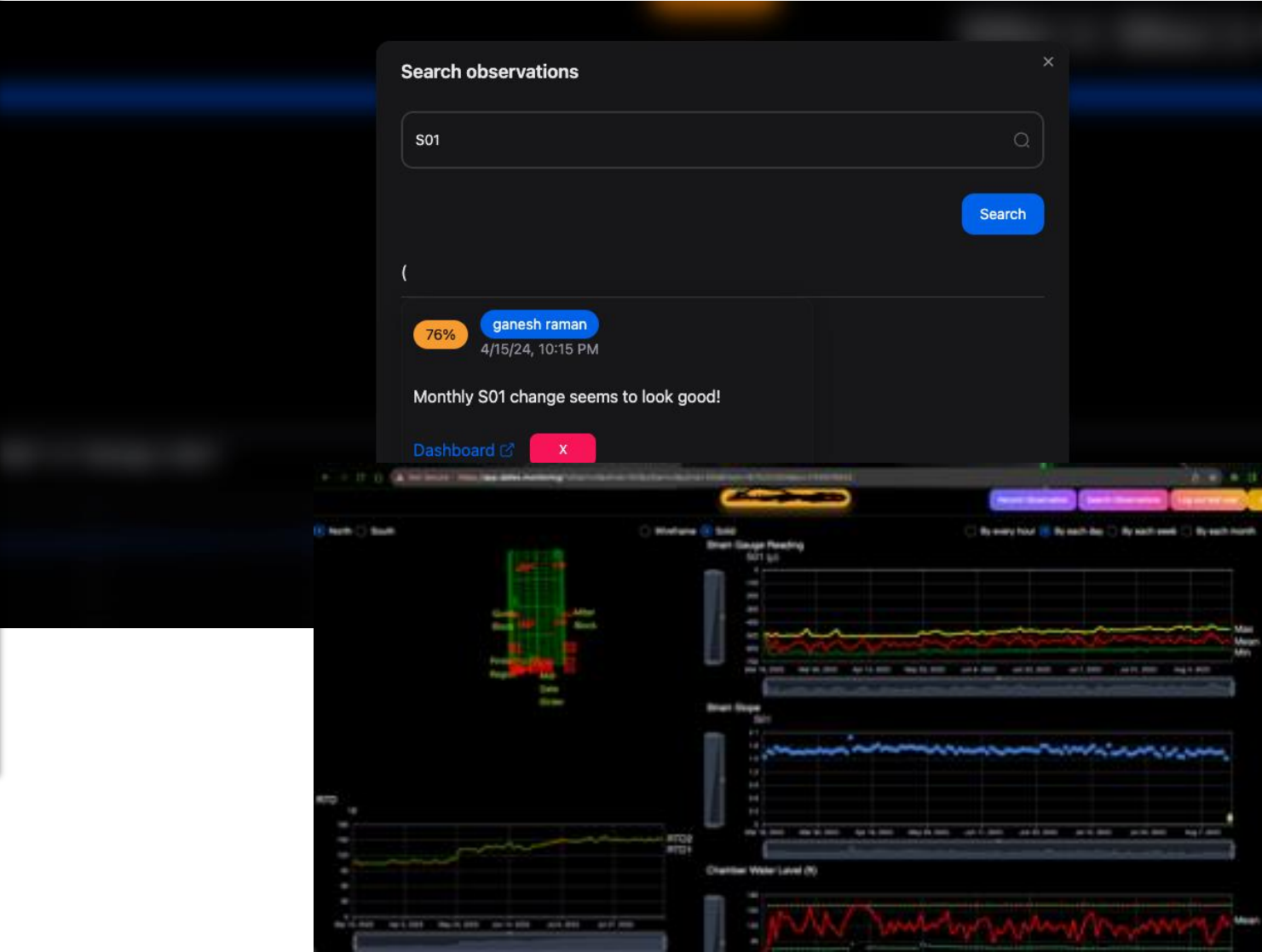
Actionable Insights with GenAI

Engineers ,Safety Inspectors,
Researchers recordable human
observations

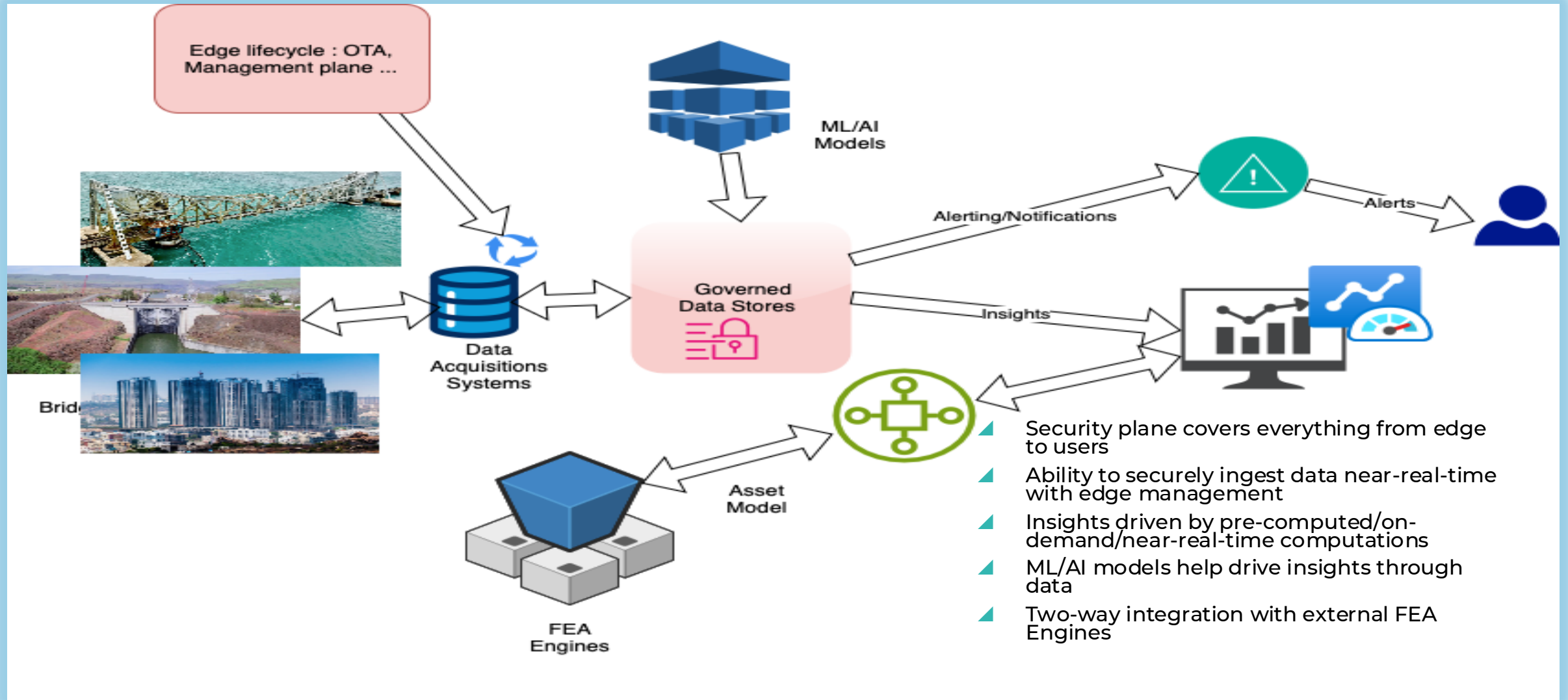
GenAI assisted semantic search
of Asset Observations

Shareable insights from
observations through web-link

AI Ops capability with plug-n-
play models across scenarios



Technical Capabilities



- ▲ Security plane covers everything from edge to users
- ▲ Ability to securely ingest data near-real-time with edge management
- ▲ Insights driven by pre-computed/on-demand/near-real-time computations
- ▲ ML/AI models help drive insights through data
- ▲ Two-way integration with external FEA Engines

Monitoring Railways Assets

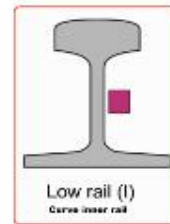
Rendering summary stats

Track 1 Reports Track 2 Reports **Track 1 Low Rail** Track 1 High Rail Track 2 Low Rail Track 2 High Rail

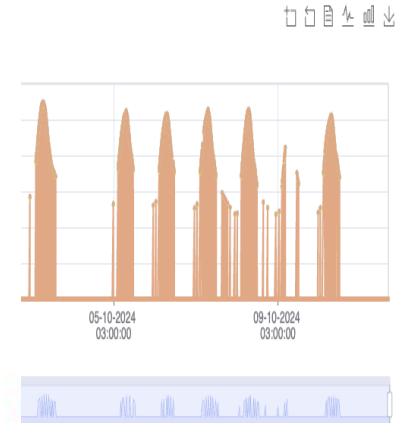
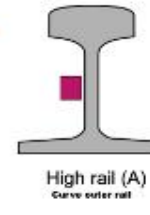
Located on low rail (A) of Track-1 at km1.34km.

Track picture.

Each of the directions in triaxial accelerometers are labelled as X,Y,Z.



coordinate system



Summary report of minimum and maximum values of temperature and accelerometer measurements for Track 1

date	Track	Rail	Min Temperature(°C)	1 Max Acc (Low-Rail)g	1 Min Acc (Low-Rail)g	1 Max Acc (High-Rail)g	1 Min Acc (High-Rail)g	2 Max Acc (Low-Rail)g	2 Min Acc (Low-Rail)g	2 Max Temperature(°C)	2 Min Acc (High-Rail)g
05-10-2024	1	107	60.55	21.07	15.76	76.25	25.04	57.66	40.34	30.33	-21.33
05-10-2024	1	26	56.90	15.45	15.16	45.17	16.63	41.52	36.66	27.24	-26.57
05-10-2024	1	0	-	-	-	-	-	-	-	-	-
05-10-2024	1	107	56.90	22.20	16.17	66.97	22.24	57.71	36.71	27.11	-21.48
05-10-2024	1	112	60.46	20.94	17.75	75.94	25.40	59.76	42.50	29.33	-24.34
05-10-2024	1	86	60.68	20.20	16.17	73.38	22.18	61.53	38.20	29.50	-23.77



<https://production.shm.platform.hbkworld.com/>