End-to-End Dx of **Naphtha Cracking Complex Operations**

Fortune 500 Petrochemical Major Case Study
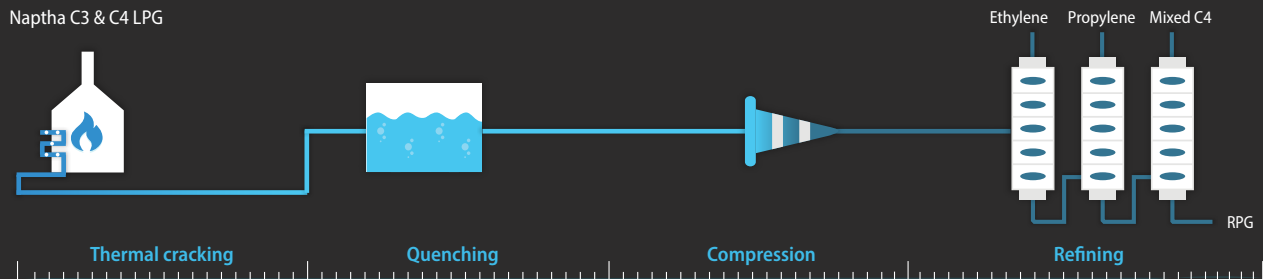
Problem Statement

While being their biggest asset, data was the customer's biggest bane when it came to performance oversight and analytical insight.

A confluence of 25+ IT/OT data streams, such as 141,000 time-series tags and numerous applications such as SAP, ASPEN APS, LIMS, etc., supported their day to day operations. The manual & fragmented process of extracting performance oversight and insight within the opportunity window was a huge bottleneck.

They had minimal cross-functional visibility across plant and business operations that resulted in production losses, operational inefficiencies, higher energy cost, downtime, idle inventory, accidents, and near-misses.

Solution

UNLSH addressed this critical issue by cohesively blending all of the IT & OT data, and the analytics into real-time Operations Digital Twins (ODTs). The ODTs, which are contextualized cyber replicas of the customer's entire manufacturing operations, now delivered cross-functional intelligence through their visualization layer. With UNLSH's no-code workbenches, this major data leveraging, analyzing, and contextualizing endeavor was completed within 14 weeks.
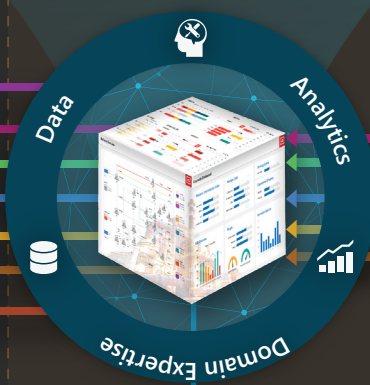

Naptha C3 & C4 LPG

Ethylene Propylene Mixed C4

RPG

| Thermal cracking | Quenching | Compression | Refining |

Disparate Data

http, XML

Triple Point CXL, Bulldog, etc.

SAP (R/3, ECC 6, HANA)

RDBMS (SQL, Oracle, Tibero, etc.)

Historian (PI, PHD, IP21, etc.)

OPC DA/HDA

OPC UA

MQTT

Ingest

Harmonize, Homogenize, Contextualize
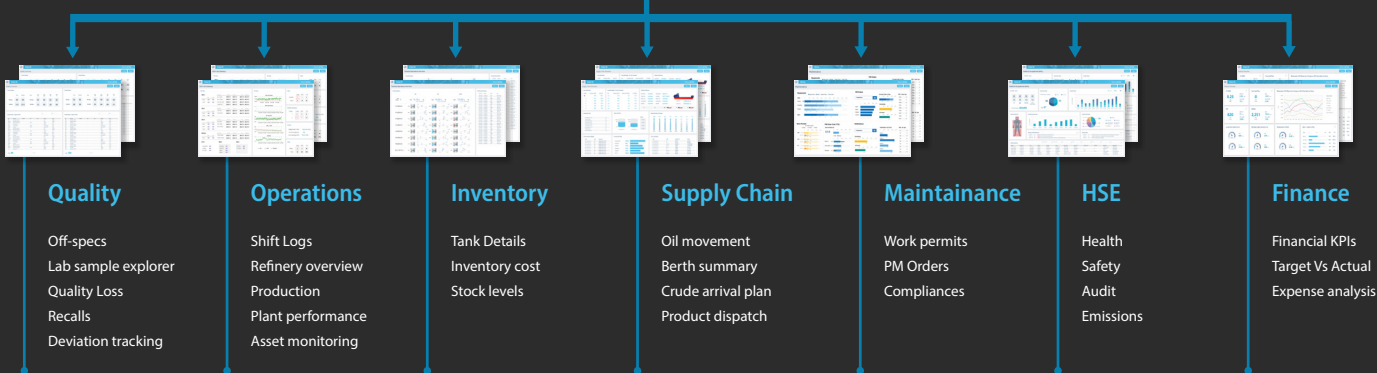
Serve

Data | Analytics | Domain Expertise

Typical Consumers

Meaningful data, Contextualized in terms of Business Objects through Industry Standard API

Dashboards — Power BI, XHQ, Tableau

Reports

Cloud — Azure, aws, Google Cloud

3rd Party Digital Twin — Azure, OSI PI AF

Application — 3rd party Optimization, Simulation, AI solutions, etc.

Quality
- Off-specs
- Lab sample explorer
- Quality Loss
- Recalls
- Deviation tracking

Operations
- Shift Logs
- Refinery overview
- Production
- Plant performance
- Asset monitoring

Inventory
- Tank Details
- Inventory cost
- Stock levels

Supply Chain
- Oil movement
- Berth summary
- Crude arrival plan
- Product dispatch

Maintainance
- Work permits
- PM Orders
- Compliances

HSE
- Health
- Safety
- Audit
- Emissions

Finance
- Financial KPIs
- Target Vs Actual
- Expense analysis

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Impact

Unprecedented data-driven oversight, insight, and foresight leading to reduced production loss, downtime, accidents, near-misses, non-compliances, and elimination of delayed manual reporting, non-harmonized Excel-based performance metrics, functional miscoordination, etc.

1%

Estimated Impact of Improvement in Operations Cost

USD 50M-75M

Contact

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for UNLSH PoC/Evaluation License

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