AVEVAWORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

Building the Digital Thread

Journey to Unified, Intelligent Project Execution

19 May 26

Neerav Mehta

Joint General Manager
Head – Digital & AI
L&T Energy Hydrocarbon
Larsen & Toubro Limited

L&T Energy Hydrocarbon

Larsen & Toubro Limited (L&T) - At a Glance

Founded in 1938 by two Danish engineers, H. Holck-Larsen & S. K. Toubro, Larsen & Toubro is India's largest E&C company with interests in Projects, Infrastructure Development, Manufacturing, IT & Financial Services

Established:
1938

FY 26 Revenues:
USD 32 Bn.

Market Cap:
USD 61 Bn.

As on 05th May'26

Order Book:
USD 82 Bn.

As on 05th May'26

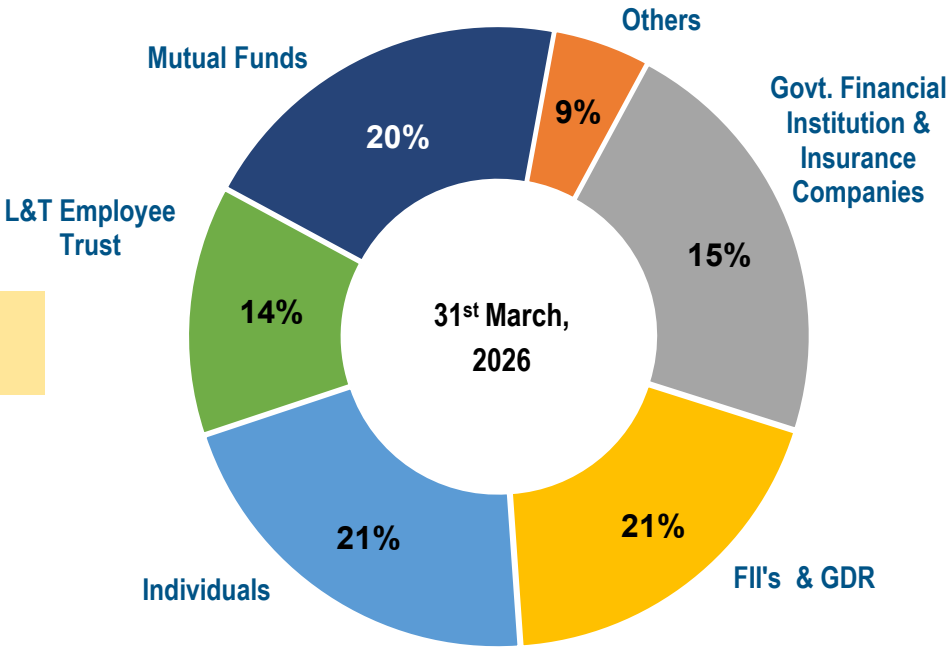
Professionally Managed Company

Credit Rating
CRISIL (S&P) & ICRA: **AAA**
S&P & Fitch: **BBB+**

Employees:
58,000+

Presence:
~ 50 Countries

L&T - Shareholding Pattern

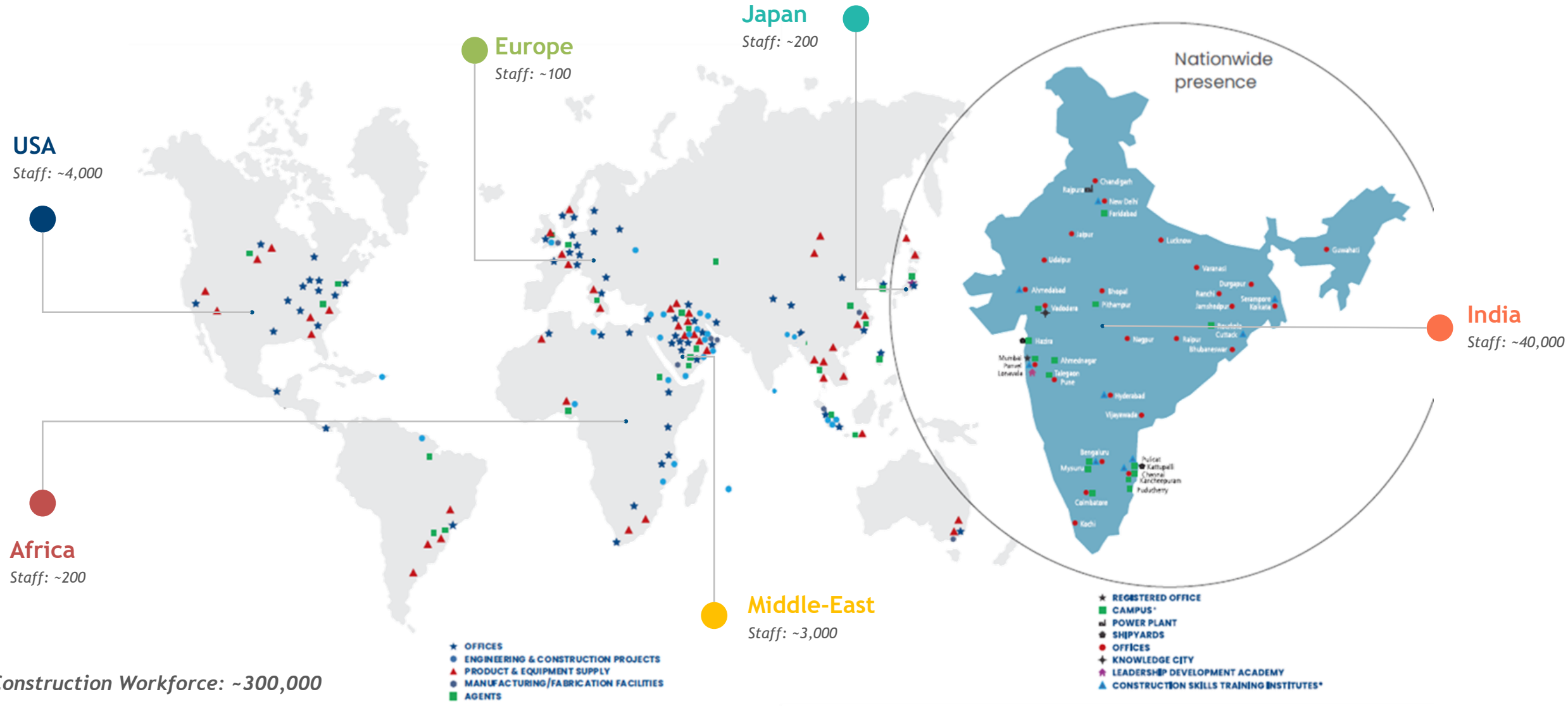


No promoter holding

Uninterrupted Dividend Payment Record since 1946

India's largest E&C company with interests in EPC Projects

L&T – Global Footprint



Construction Workforce: ~300,000

L&T Energy Hydrocarbon : Businesses

Onshore EPC

- Refining & Petrochemicals
- LNG & Cryogenic Infrastructure
- Pipelines & Terminals
- Gas Processing
- Fertilizers
- Energy Transition Projects

Offshore & Modular Fabrication

- Offshore Platforms
- Subsea Systems
- FPSO & Jack-up Rigs
- Modular Fabrication
- Brownfield & Upgradation
- Transportation & Installation

Asset Management

- Asset Management Consulting
- Asset Management Outsourcing
- Asset Integrity Services
- Asset Performance Improvement
- Specialized Services

600+
PROJECTS DELIVERED

150+
INTERNATIONAL PROJECTS

3,600+
DESIGN ENGINEERS

12,000+
GLOBAL WORKFORCE

CHARTING A COURSE FOR SUSTAINABLE BUSINESS

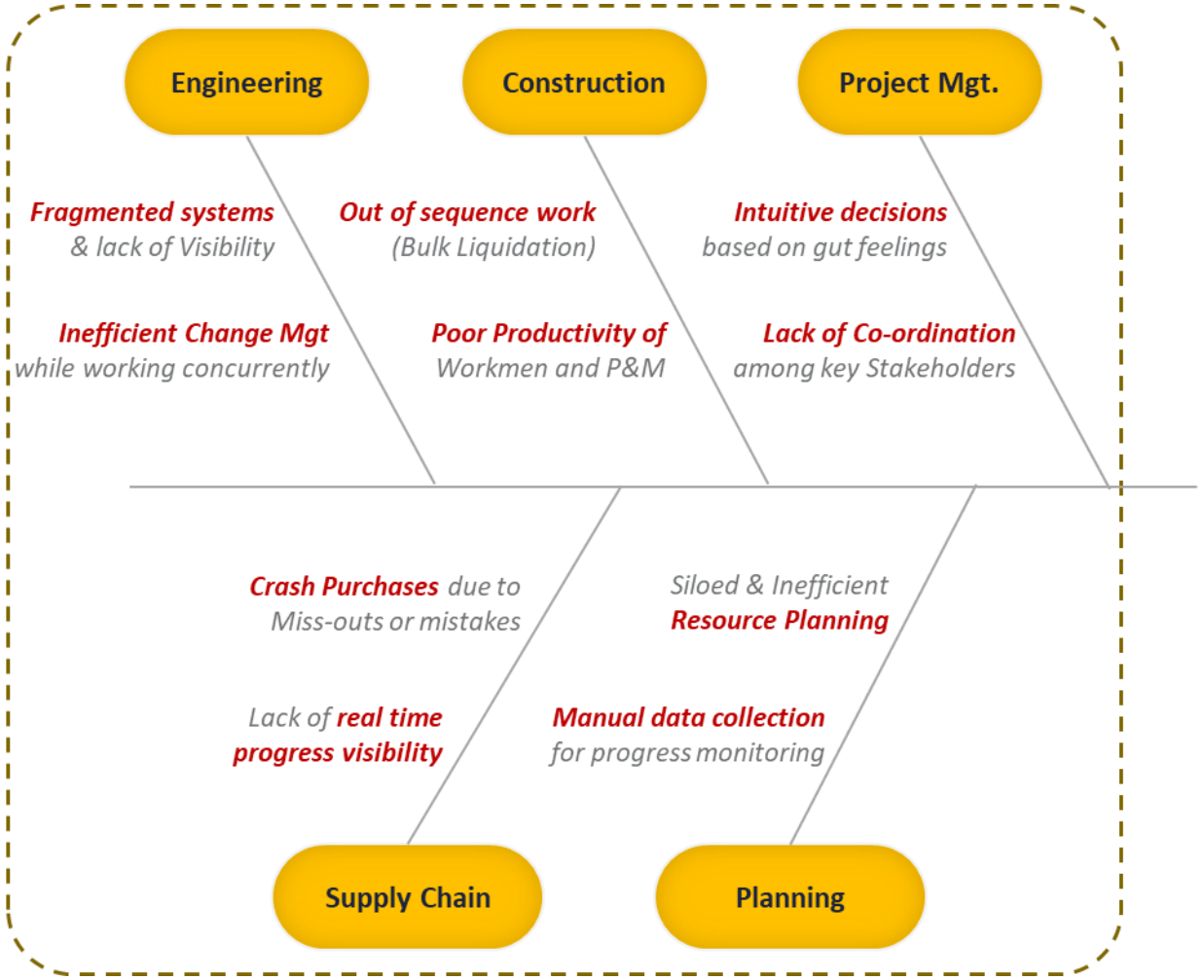
CHARTING A COURSE FOR SUSTAINABLE BUSINESS

Maximizing Operational Efficiency
Productivity

Effective Risk Management
Arrest Leakages

Driving Operational Excellence

CHARTING A COURSE FOR SUSTAINABLE BUSINESS



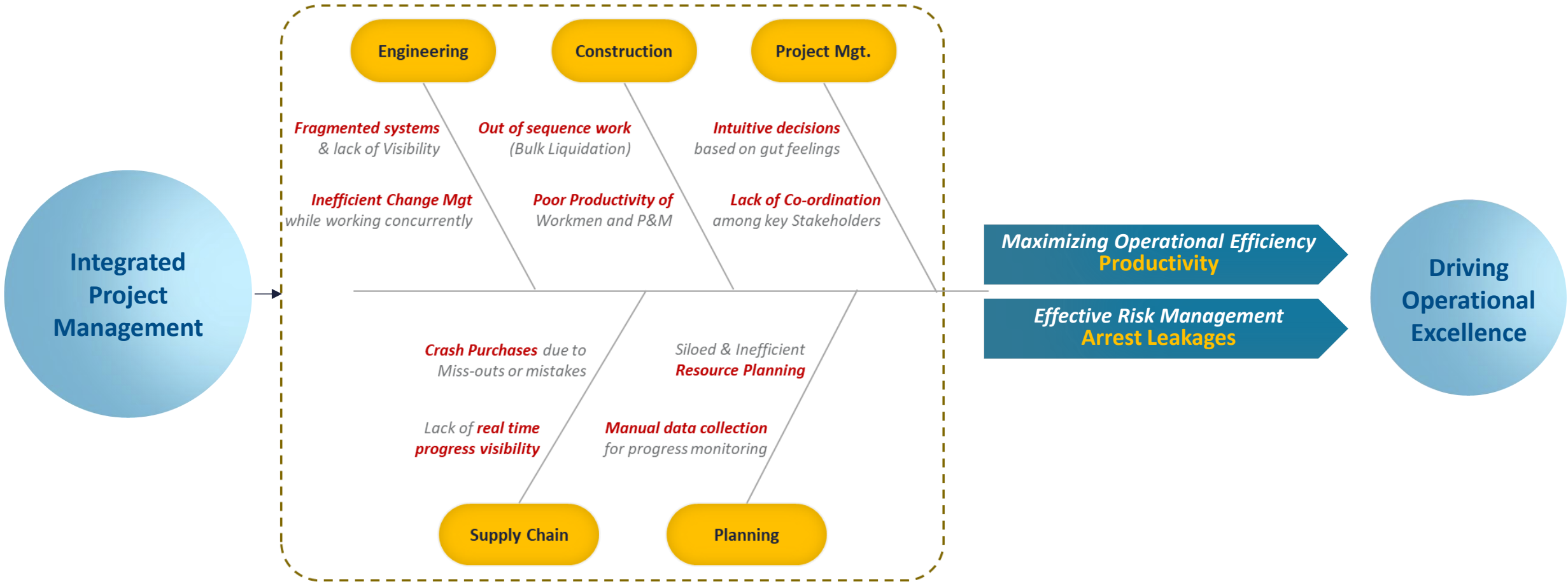
Maximizing Operational Efficiency
Productivity

Effective Risk Management
Arrest Leakages

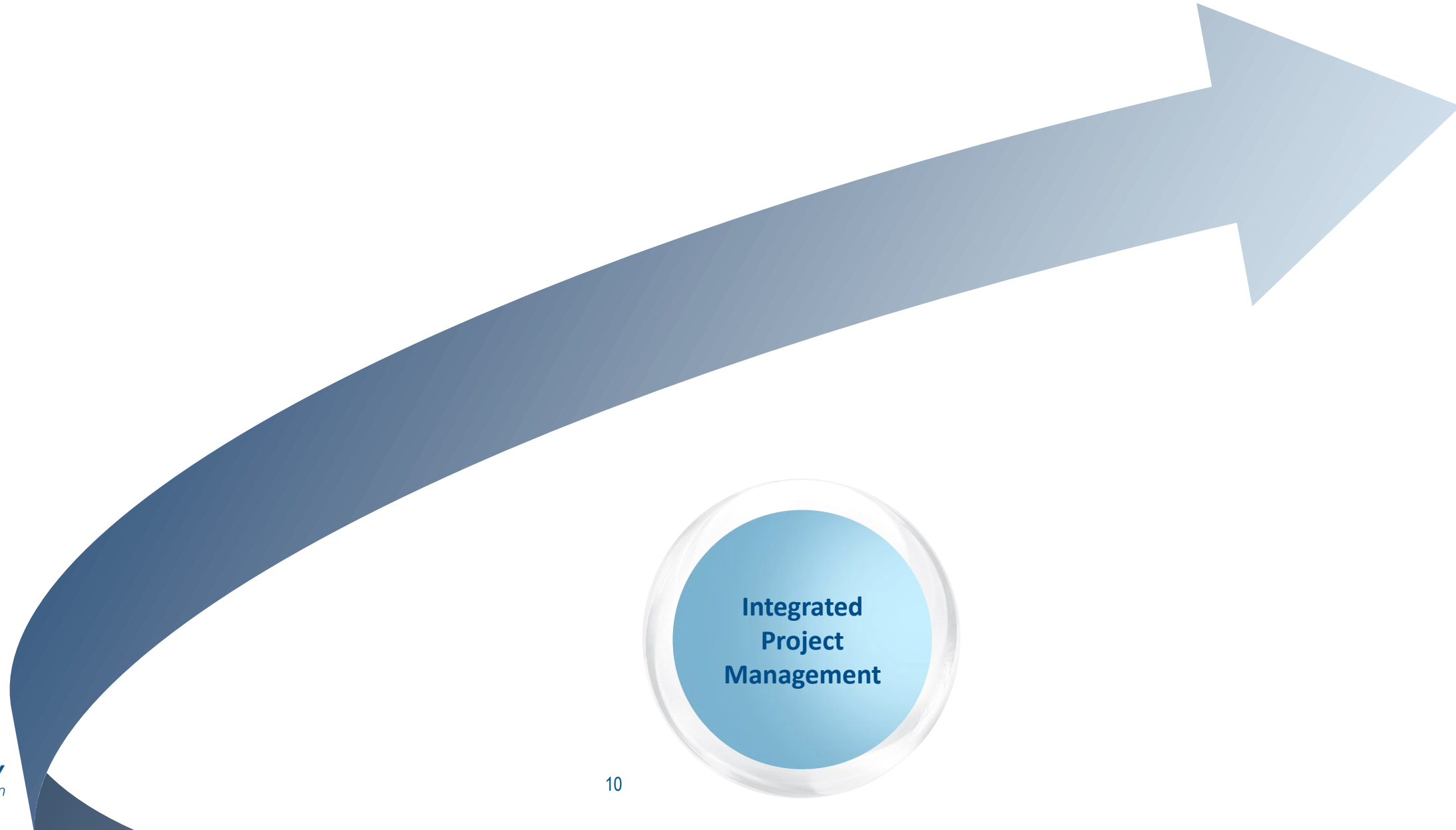
Driving Operational Excellence

L&T Energy Hydrocarbon

CHARTING A COURSE FOR SUSTAINABLE BUSINESS



SOLUTION



SOLUTION

01 *Building the Ecosystem*

Integrated Project Management

L&T Energy Hydrocarbon

01 Building the Ecosystem

Edge Technologies

- QR Codes
- RFID
- Drones
- Photo 360
- Lidar
- CCTV
- RPA

Transaction Systems

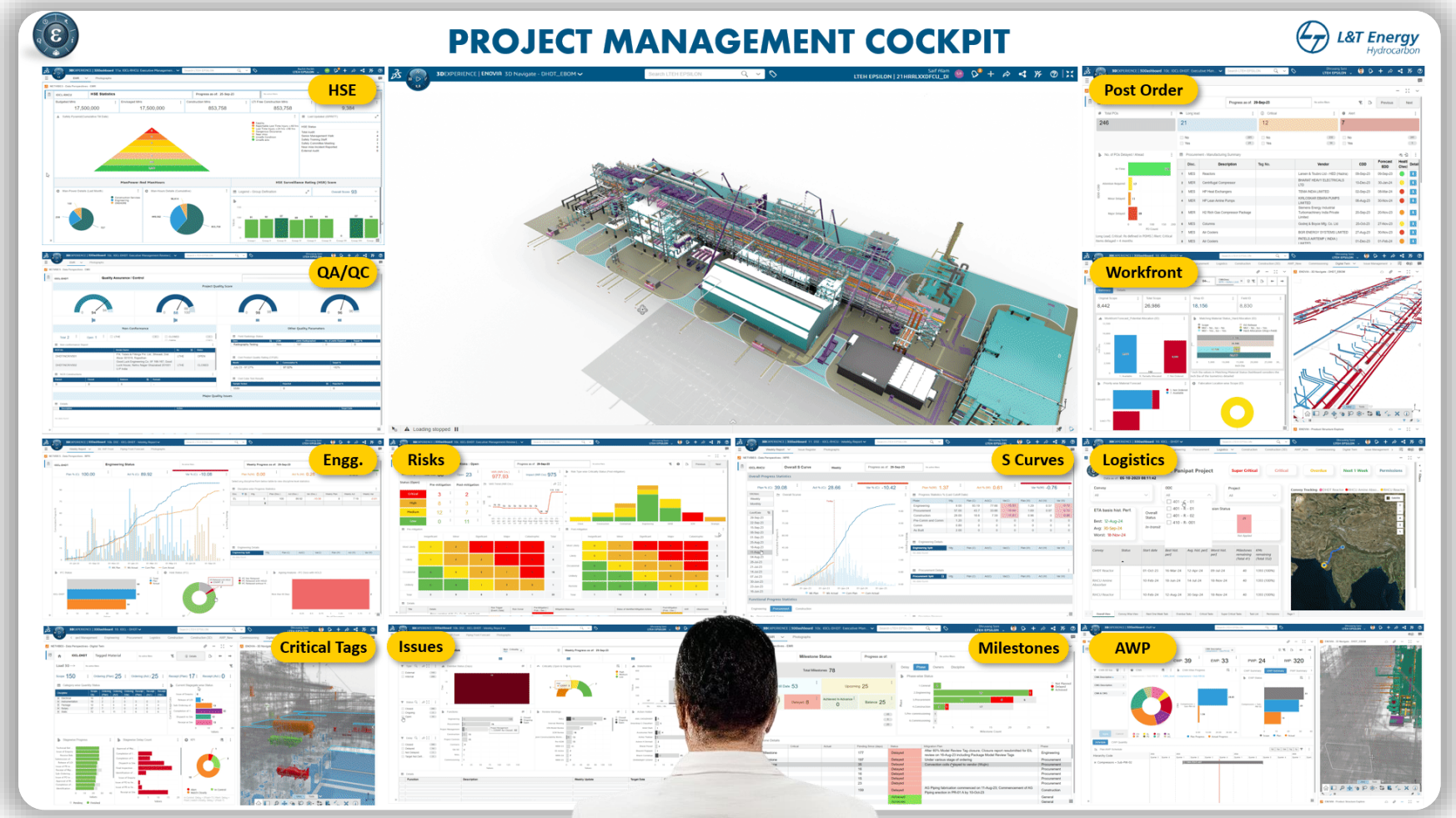
- 3D Model
- Document Management
- Material Management
- Construction Management
- Completions Management
- HSE
- Schedule
- Cost
- AWP

Semantic Unified Data Repository

01 Project Management Cockpit

Unified Data Intelligence

Deriving Business Insights for Decision Agility



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SOLUTION

01 *Building the Ecosystem*

- *Digitize*
- *Integrate*
- *Automate*

Complete Intelligence Suite

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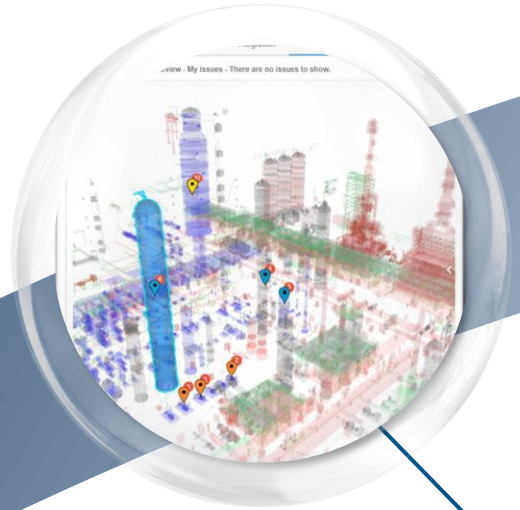
SOLUTION

02 *Digital Twin*



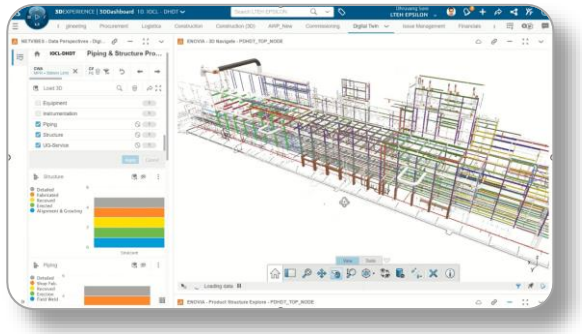
01 *Building the Ecosystem*

- *Digitize*
- *Integrate*
- *Automate*

Integrated Project Management

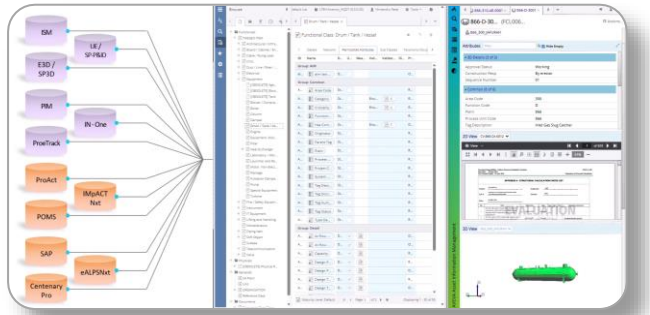
L&T Energy Hydrocarbon

02 Digital Twin

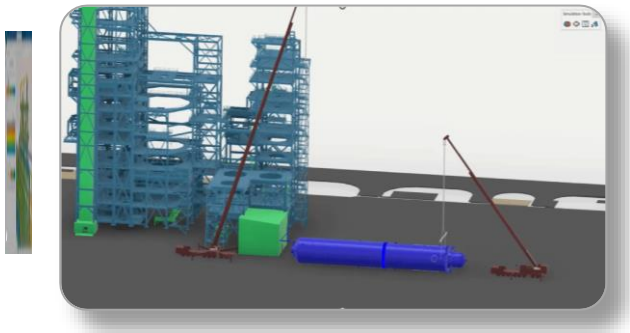


Poor Co-ordination
Collaborative Workspace

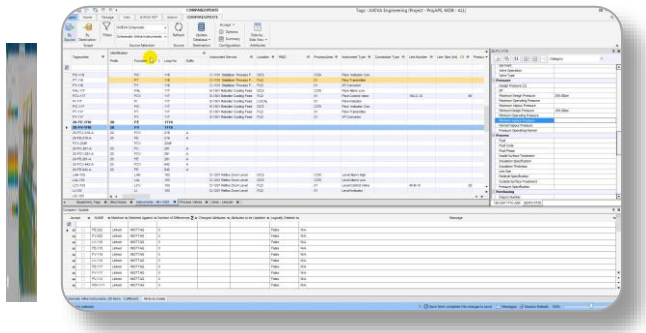
Redundant Handover Efforts
Well-organized Handover



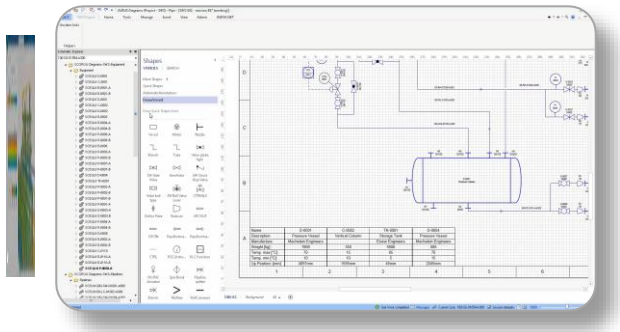
Rework at Later Stage
Proactive C-O-M Simulations



Silo-ed Information
Unified Engineering



Engineering Leakages
Design Integrity



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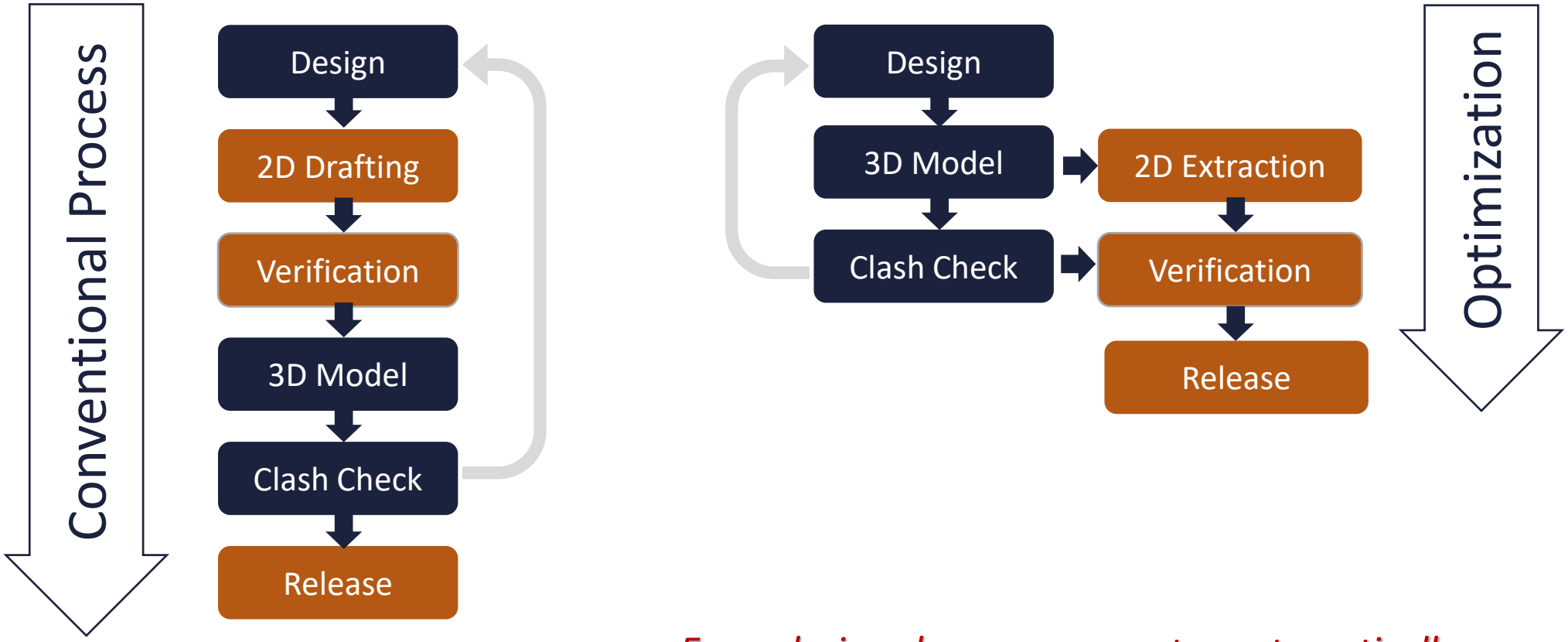
AVEVA E3D

- *Eliminates siloed engineering*
- *Reduces coordination delays*
- *Enables concurrent engineering*
- *Minimizes design inconsistencies across disciplines*
- ***Openness for cross platform collaboration***



Every design change propagates automatically — making the 3D model a live, always-accurate asset.

Foundation Design Suite 2025R2

APP SETTINGS | HELP | HOMEPAGE | VERSION 25.2.6403.506

welcome foundation3d mat3d shaft3d ds-tank3d

Close

Foundation3D Premium 2021R2

201-D-1001

Analysis Design

Workspace Commands

Footings

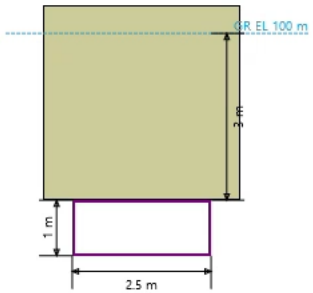
nputs
- WORKSPACE SETTINGS
- EQUIPMENT GEOMETRY
- CODE OPTIONS
- FOOTING GEOMETRY
- PIER GEOMETRY
- LOAD CASES
- LOAD COMBINATIONS
- ANCHOR BOLTS

Footing Outputs
- CALCULATION RESULTS
- LOAD VALUES
- LOAD TOTALS
- SOIL ANALYSIS
- ULTIMATE SOIL ANALYSIS
- MOMENTS
- REINFORCEMENT
- CRACK CONTROL
- BEAM SHEARS
- PUNCHING SHEARS
- MATERIALS
- PLAN/ELEVATION SKETCHES

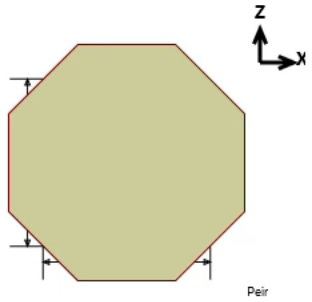
Pier Outputs
- REINFORCEMENT
- CONCRETE CAPACITY
- TIEBARS
- ANCHOR BOLTS
- SKETCHES

FOOTING

Elevation View



Plan View



Footing Geometry

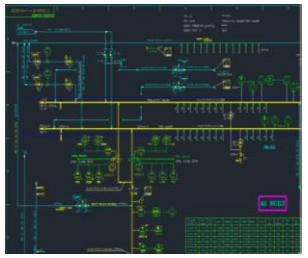
GENERAL RESIZE USER DATA

Footing Name	Footing
Support Type	Soil Supported
Shape	Square
Final Grade Elevation (m)	100
Natural Grade Elevation (m)	100
Size in X Direction (m)	2.5
Thickness (m)	1
Footing depth below grade (m)	4
Soil Cover (m)	3
Offset in X Direction (m)	0
Offset in Z Direction (m)	0
Rotation Angle	0

☐ Override calculated allowable net bearing pressure

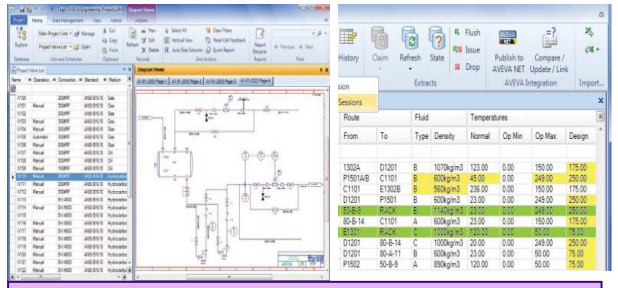
Allowable Net Bearing Pressure (kN/sq m) 250

Aveva Unified Engineering - Workflow



Intelligent P&I D
AVEVA Diagrams

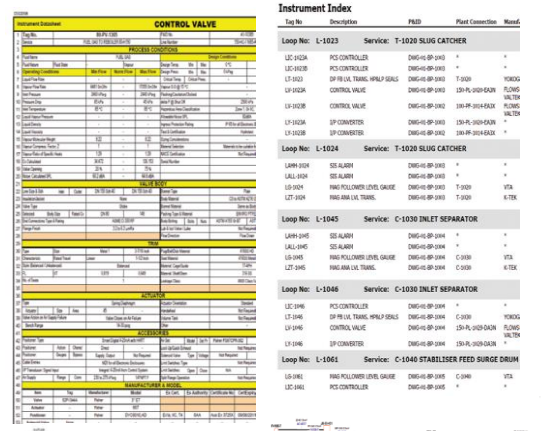
Compare
Update



P & I D Data & Engg. (Process, Mech, Inst & Piping)Data
AVEVA ENGINEERING

Process,
Mech &
Piping
Legacy
Data

Compare
Update

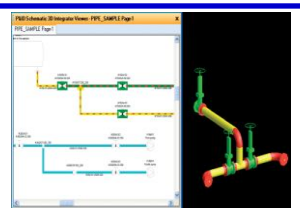


Inst. Data sheets, Hook ups, Loop schematics
AVEVA Electrical and Instrumentation

Excel
Import

Inst.
Legacy
Data

Compare
Update



Compare / Update
3D INTEGERATOR

Compare
Update

3D Model using
AVEVA E3D

As-built documents
(XLS, DOC, DWG & PDF)

L&T Energy
Hydrocarbon

Aveva Unified Engineering – Benefits

Single Integrated Environment

Brings process, mechanical, electrical, instrumentation, piping, and 3D design into one unified platform — eliminating data silos.

- One platform across all disciplines
- Eliminates disconnected tools
- Single source of truth

Faster Project Execution

Parallel engineering workflows allow multiple disciplines to work simultaneously, reducing cycle time and accelerating delivery.

- Concurrent multidisciplinary work
- Shorter engineering cycles
- Predictable schedules

Data Quality & Standardization

Standard templates, catalogs, engineering rules, and reusable design libraries improve consistency across projects.

- Reusable libraries & templates
- Corporate standardization
- Consistent engineering quality

Reduced Rework & Errors

Automatic data synchronization across documents, tags, and models — changes made once are reflected everywhere consistently.

- Auto-sync across all deliverables
- No late-stage clashes
- Fewer field modifications

Strong Digital Thread

Maintains traceable engineering data from FEED through detailed engineering, construction, commissioning, and operations.

- End-to-end traceability
- Simplified owner-operator handover
- Digital twin foundation

Better Change Management

Centralized revision tracking and auditability improves governance and enables controlled management of design changes.

- Centralized revision control
- Full audit trail
- Faster change approvals

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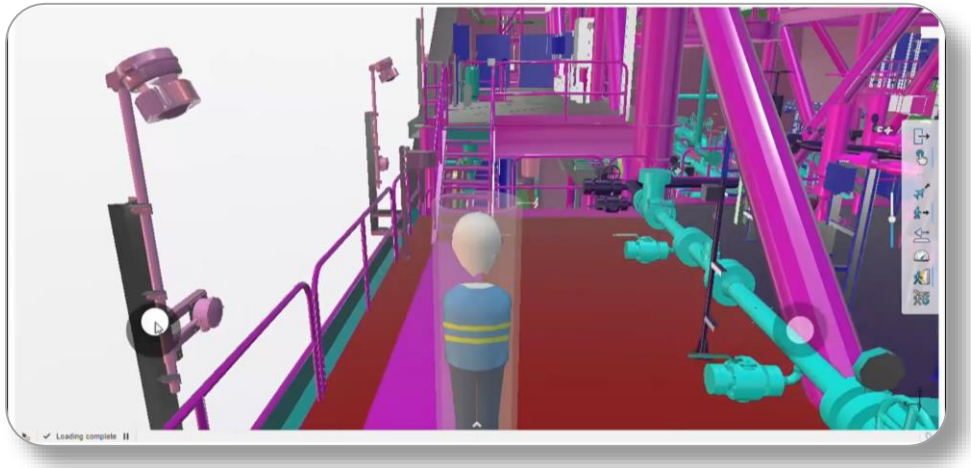
02 Digital Twin

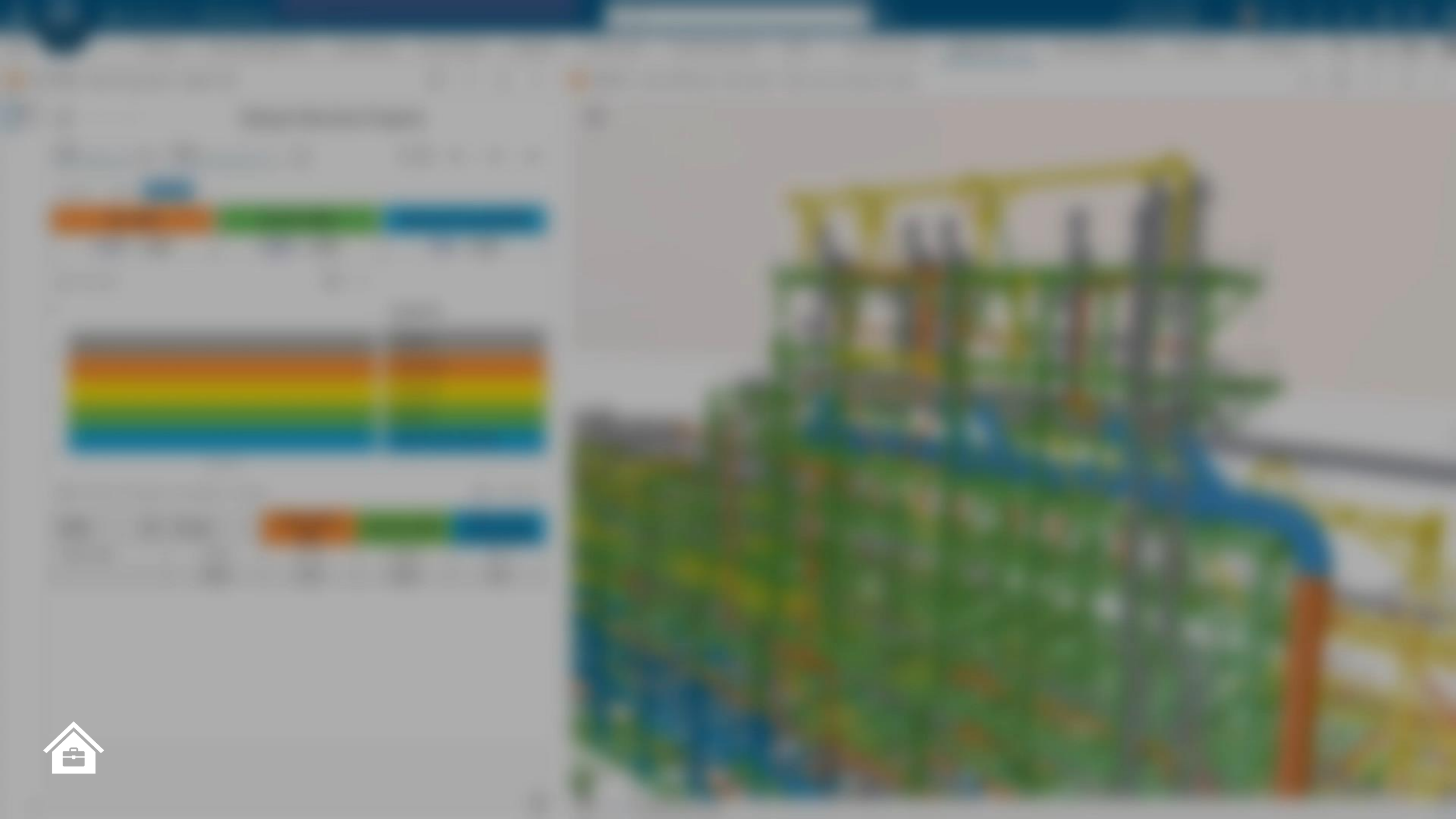
C-O-M Simulations



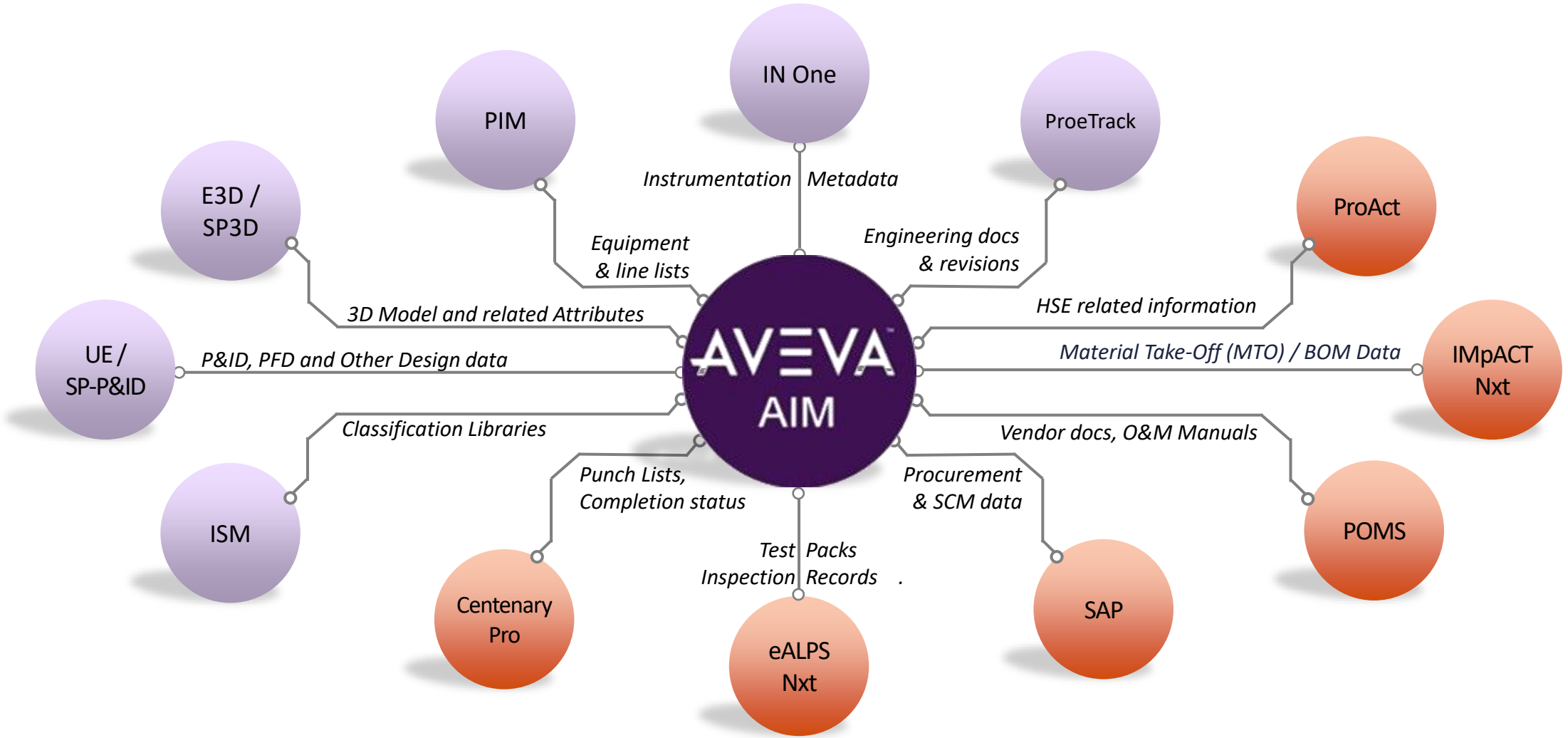
Operability

Maintainability

Constructability



“All EPC data” → Engineering + 3D + Documents + SCM + Construction



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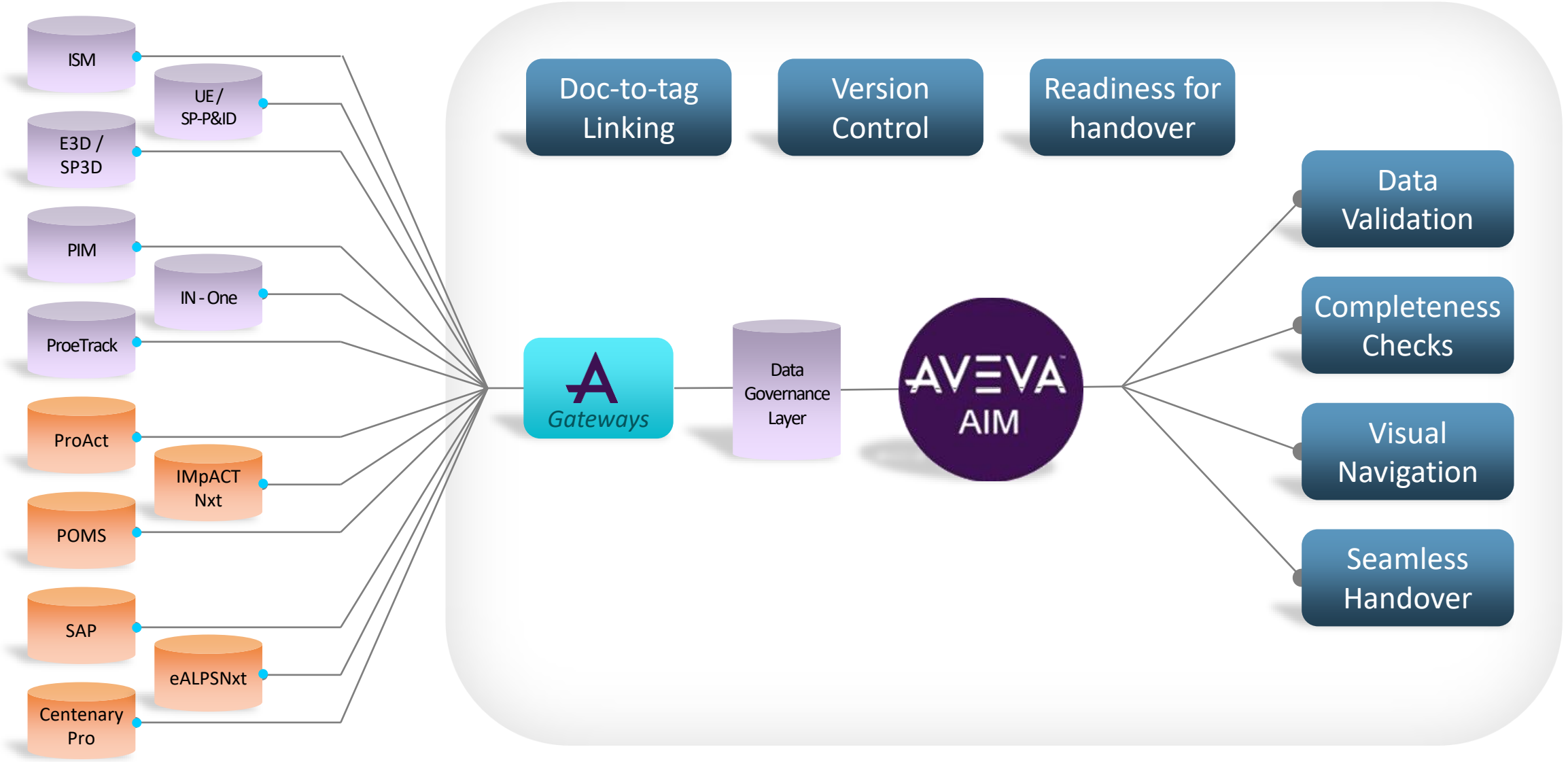
Data from Engineering Applications

EPC Project Mgt Data Through EPSILON

AVEVA AIM – Integrated Data Environment



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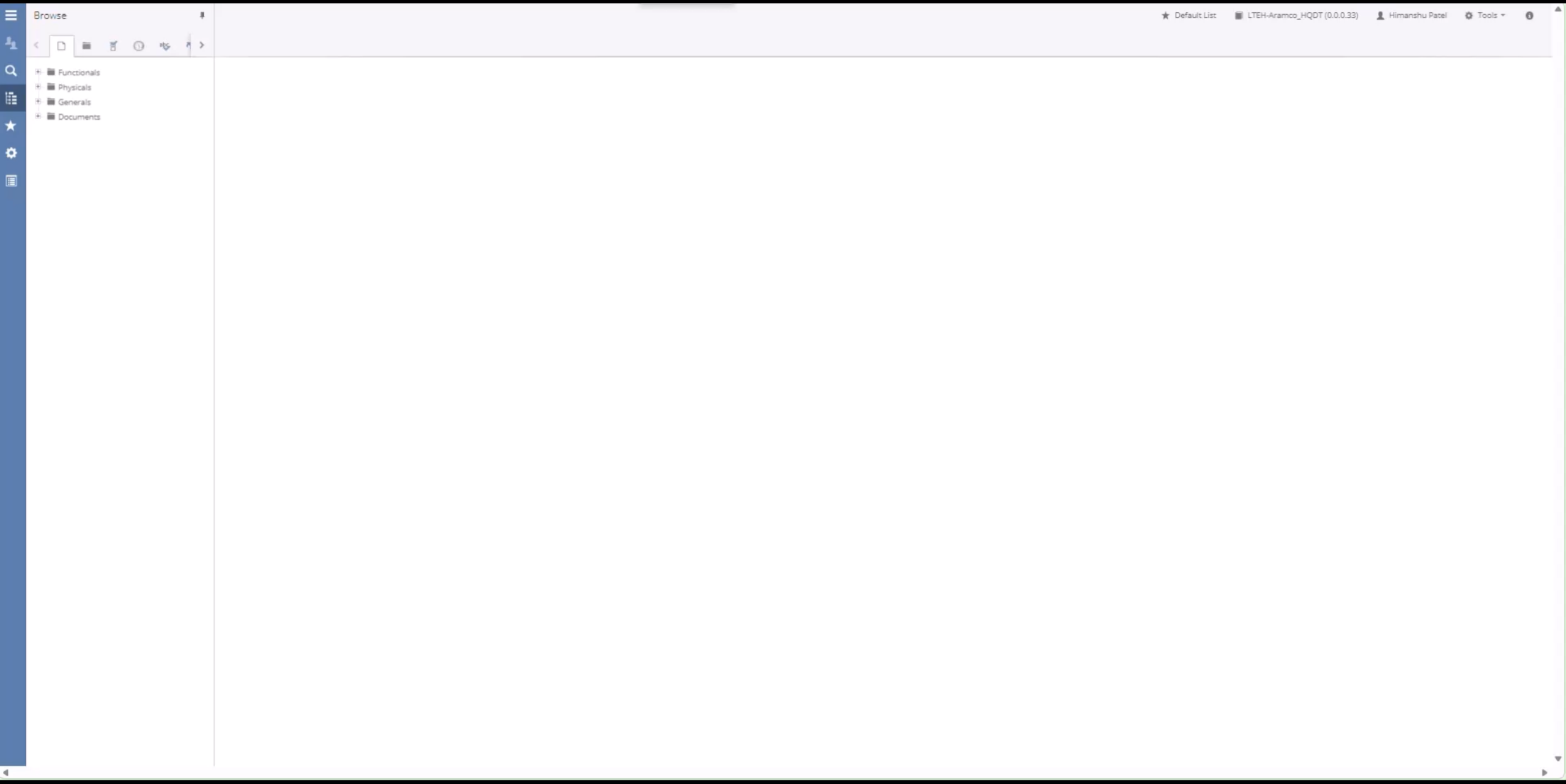
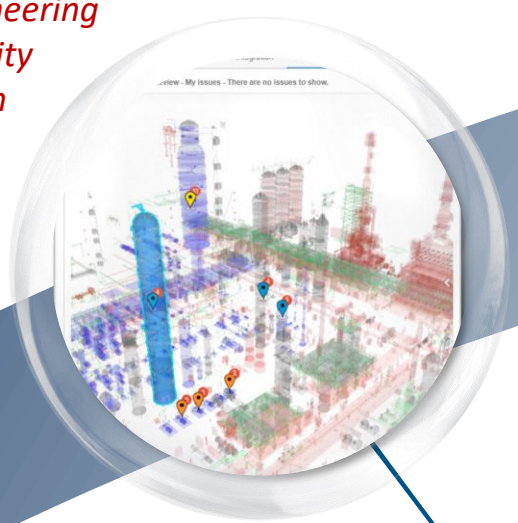

Browse
Default List
LTEH-Aramco_HQDT (0.0.0.33)
Himanshu Patel
Tools
Functionals
Physicals
Generals
Documents

SOLUTION

02 *Digital Twin*

- *Unified Engineering*
- *Decision Agility*
- *Collaboration*



01 *Building the Ecosystem*

- *Digitize*
- *Integrate*
- *Automate*

Integrated Project Management

L&T Energy Hydrocarbon

SOLUTION

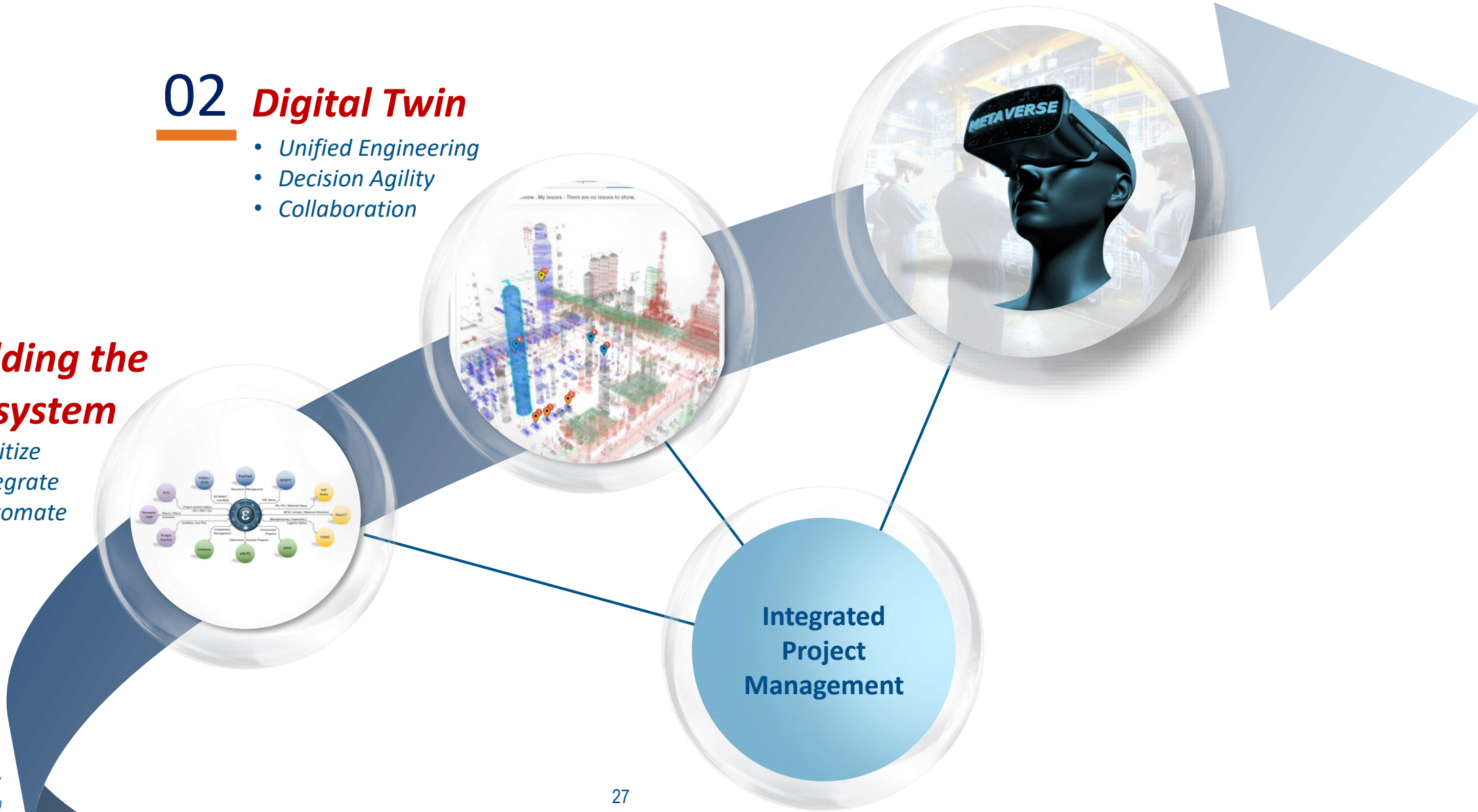
03 *Generative Experiences*

02 *Digital Twin*

- *Unified Engineering*
- *Decision Agility*
- *Collaboration*

01 *Building the Ecosystem*

- *Digitize*
- *Integrate*
- *Automate*



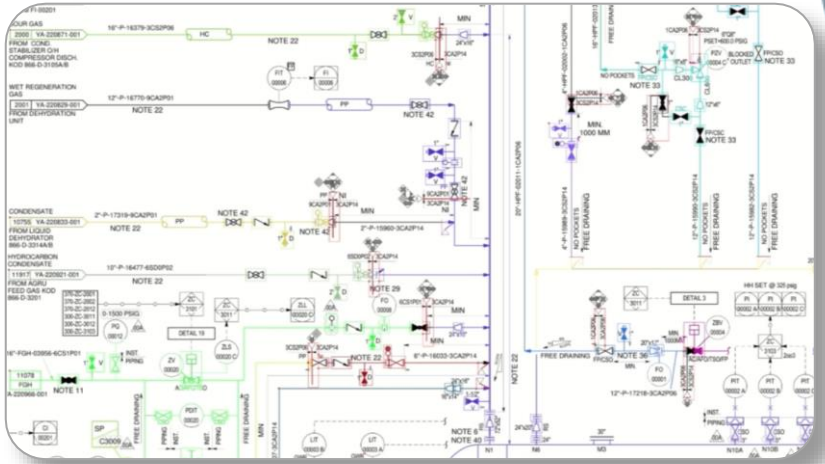
L&T Energy Hydrocarbon

03 Generative Experiences

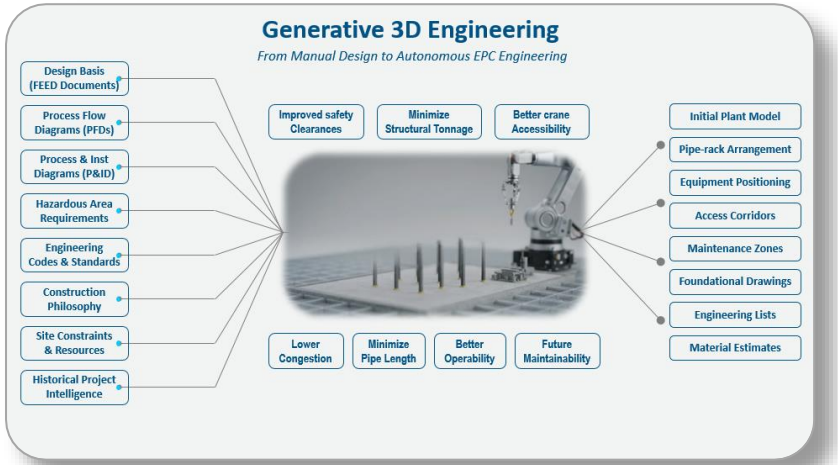
Transform Workflows

Automate Execution

Automated Compliance Check



Generative 3D Engineering



L&T Energy Hydrocarbon

Generative 3D Engineering

From Manual Design to Autonomous EPC Engineering

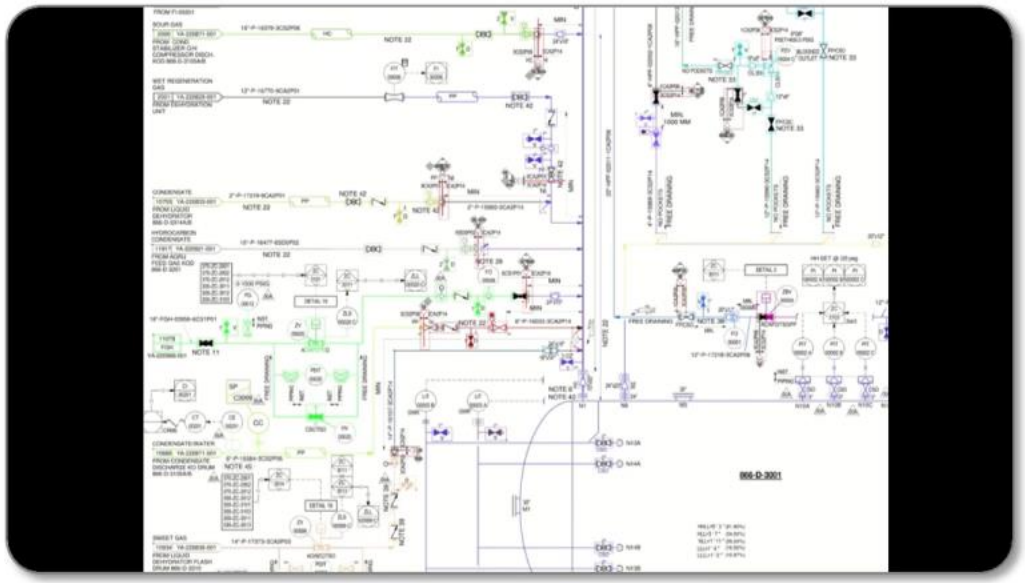
- Design Basis (FEED Documents)
- Process Flow Diagrams (PFDs)
- Process & Inst Diagrams (P&ID)
- Hazardous Area Requirements
- Engineering Codes & Standards
- Construction Philosophy
- Site Constraints & Resources
- Historical Project Intelligence

- Improved safety Clearances
- Minimize Structural Tonnage
- Better crane Accessibility

- Lower Congestion
- Minimize Pipe Length
- Better Operability
- Future Maintainability

- Initial Plant Model
- Pipe-rack Arrangement
- Equipment Positioning
- Access Corridors
- Maintenance Zones
- Foundational Drawings
- Engineering Lists
- Material Estimates

Generative Experiences | Automated Compliance Check

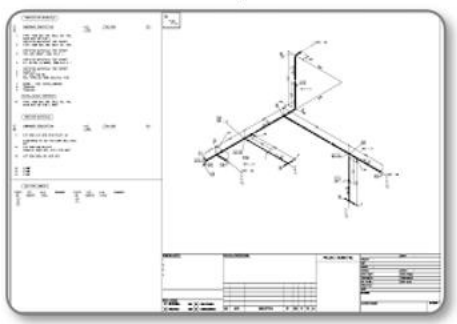


3D Model

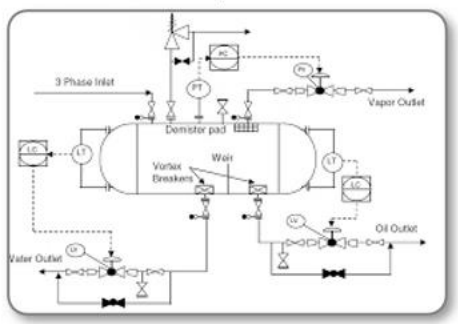
- Missing components
- Line sizes
- Valve types
- Instrument ranges

Point Cloud / Photo 360

- Pipe routing changes
- Relocated equipment
- Missing insulation
- Installed instruments



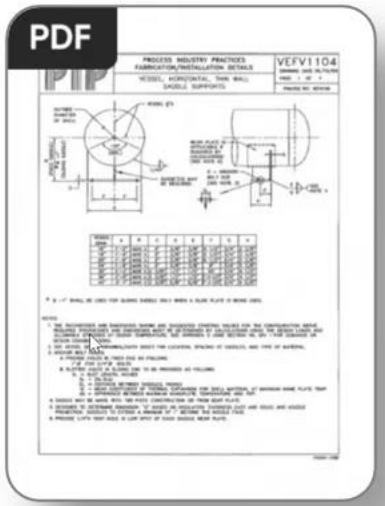
Piping Isometrics



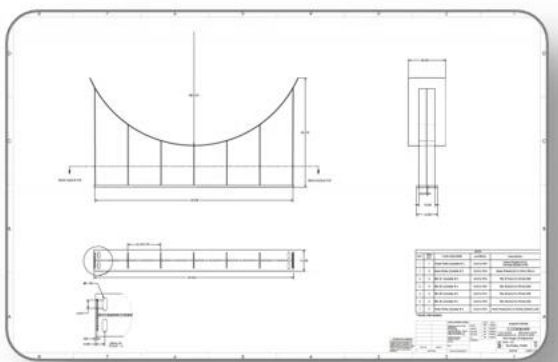
Vendor Drawings

Check Compliance with respect to Codes, Standards and Project Specifications

L&T Energy Hydrocarbon



- *Engineering Design*
- *Design for Weldability*
- *Automated Path Planning*
- *Digital Simulation*
- *Adaptive Welding*



L&T Energy Hydrocarbon

SOLUTION

01 Building the Ecosystem

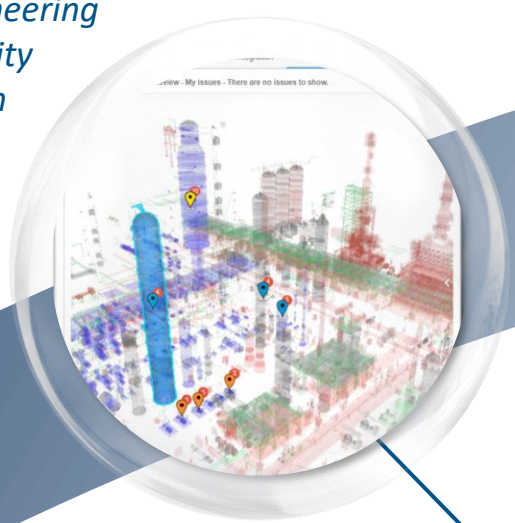
- *Digitize*
- *Integrate*
- *Automate*

02 Digital Twin

- *Unified Engineering*
- *Decision Agility*
- *Collaboration*

03 Generative Experiences

- *Generative 3D Engineering*
- *Integrity Assurance*
- *Autonomous Execution*



Integrated Project Management

CONCLUSION

Integrated Project Intelligence

01 ***Building the Ecosystem***

- *Digitize*
- *Integrate*
- *Automate*

02 ***Digital Twin***

- *Unified Engineering*
- *Decision Agility*
- *Collaboration*

03 ***Generative Experiences***

- *Generative 3D Engineering*
- *Integrity Assurance*
- *Autonomous Execution*

Eliminate Risks & Delays

Avoid Omissions & Errors

Minimizes Costly Rework

Streamlines Operations

Foster Collaboration

Maximizing Operational Efficiency **Productivity**

Effective Risk Management **Arrest Leakages**

Driving Operational Excellence

Thanks