Strategic partnerships across the oil & gas industry
Case study: Strategic engagement for leading oil field services company

Applications in scope

Plant Engineering: Aveva – PDMS, S3D, PDS, E3D, Isogen, Caesar – II, AVEVA -ELEC, ISM, NET, Dialux, MAT 3D, Tekla, AutoCAD, STAAD Pro., PV ELITE, SMART PID, e-TANK, custom applications, PDM: Teamcenter, 3DX, SAP

Engagement highlights

- Strong relationship of 12+ years starting from 2009
- Instrumental in moving work from multiple locations in US/Europe to BCC, helping in savings of $2.5Mn/year
- HCLTech engaged as an extended engineering team / R&D partner across all services
- Over 250+ FTEs supporting all global locations
- Transitioned multiple projects from traditional T&M model to Fixed Bid/Work Package Model
- Developed multiple Productivity Enhancement tools for automating engineering activities

Key engineering areas

Product Engineering
- Product design and Development
- Requisition Engineering
- Cost Engineering and VAVE
- Drill bit Design automation
- Hardware Engineering
- Embedded Application development and Testing

Plant Engineering
- Process and System Engineering
- Piping Engineering
- Structural, Civil and Building Design
- Electrical and Instrumentation
- Package Design and Equipment – Rotary and Dynamic Equipment selection (sizing)
Strategic partnerships across the oil & gas industry

Application enhancement & development

- Strain and Corrosion application development; Field data collection (Radiography Device)
- Pressure sensors calibration application Development
- Customized Drill bit design software built in Creo to automate 3D model creation
- Automated General Arrangement Drawing creation tool in AutoCAD for Control Valves
- Quality checking tool using OCR technique to check drawing dimension with input specification

Application maintenance

- Dedicated IT infrastructure support
- L1 app support for Oil & Gas Well Applications
- Tekla, PDMS-E3D, AutoCAD and other applications
- Customer License configuration
- Ticket based support
- Project standard configuration and Library file setup
- Data management
- Global team Dashboard support
- Server monitoring and alerts

Data

Determine data to be generated

- Where is it? Insights & alerts raised by the service desks & IoT platforms capturing information from the connected devices & sensors
- What is it? Incident insights with constant visibility of the connected ecosystem
- How is it? Enabling proactive monitoring & management of the connected ecosystem

Case study: Use cases implemented for an Oil & Gas major in US

Process

Change processes to take action on insights

- Automated inspections and round the clock surveillance
- Improved regulatory compliances, thus introducing safety and cost efficiencies
- Reduce asset downtimes and restoration times – improving end customer experience

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<th>Coordinated decision making</th>
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<td>Complete visibility of connected assets</td>
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<td>Improved safety &amp; reliability</td>
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Industry value stream transformation – upstream, midstream and downstream

- Asset & Product Engineering integration
- Value stream focus to deliver optimization of Operations
- Asset Repository accessible and maintained at all sites
- Automated processes and Deployments
- Asset hierarchy and lineage established through Tools
- Enable quick resolution through real-time monitoring

Case study: Multi-continent, multi-geo BIM integration
for a Leading Japanese Construction Company

Design

- Architect
- Structural Engineer
- MEP Engineer

Base Model/2D Drawing
HCL develops 3D models

- Model for Construction
- Detail Part Model
- Model for Shop Drawing
- MEP Model
- Architectural Model

Construction

- Steel Structure Planning
- Construction Step model
- Estimation
- Clash Check
- Perspective Drawing
- 2D Shop Drawing
- Structural Model
- Integrate Model
- Clash Check

- Monitoring actual status of construction using drone image and imposition on 3D design
- Help multiple geo / multiple continent design co-ordination and integration live with global BIM platform
- Status monitoring also helps on payment release to vendor on actual construction progress with quantities & volumes

Strategic partnerships across the oil & gas industry
Global BIM integration support 2 continents – 5 countries

Case study: Multi-dimensional engagement with an O&G Super Major

**Scope**
- 110,000+ end users across 74 countries
- 160,000+ Monthly Contacts
- 10 Languages Support from 3 delivery centres

**Onsite Support**
- Dedicated and Dispatch Model across 74 sites
- Remote Support at the remote locations
- Break fix
- IMAC’s
- Printer Support

**Global Service Desk**
- Global Service Desk delivered from 3 key delivery centers
- POD based Model
- Remote Desktop Support
- Identity & Access Mgmt.
- Workplace Automation/Innovation

**Platform Services**
- Software Asset Management
- Application Packaging
- Messaging & Collaboration
- Application Delivery Solution

**Digital Transformation**
- Managed Application Services for plant operations
- Production Operations
- Quality & Lab
- Maintenance Planning
- Maintenance Execution
- 50+ sites

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Solution highlights

- 300+ Application Packages being supported every month
- IAM for 110K+ users spread across 56 countries
- SAM - Servicing 7000+ requests month
- Messaging & Collaboration – Supporting 130K+ user mailboxes & 100K+ SharePoint My Sites
- Application Delivery Solutions – Including 3000+ VDI instances & 1800+ Citrix Servers
- Workplace Automation/Innovation – EVA, IT Assist, IT Chat & IT Password

The following Service Enhancements have been delivered in existing Service Desk operations

- Complex applications landscape being supported with techno-functional skilled team
- Production Management, Historians, Production Accounting & Reconciliation
- Lab Information Management
- Maintenance Planning & Scheduling
- Maintenance Execution

Value adds

- Implemented OHS & Live Station on HA with BMC Remedy for Auto Ticket creation with VIP Smart routing
- Identified and Segregate the Users based on Profiles
- Gain understanding of application usage pattern, identification of most critical users in the organization
- Identification of users facing the most problems with respect to IT
- Conducted User Experience Assessment & Analysis with HCLTech’s WorkBlaze real time end user analytics & proactive monitoring of end devices
- Developed and implemented Enterprise Virtual Assistant on IBM Bluemix Cloud platform
- Standardization of solutions across Multiple Global Delivery Centers
- Reduced Human Error at IT SD due to KEDB Automation
- Increased L0 Self Service resolvable, Reduced MTTR
- Next Gen User Experience & Productivity by 9000+ Hrs. and Reduced Business Downtime
- Average effectiveness of Win Desktop OS automations around 98%
- Conversion of voice/email based incidents to non-voice chat
- Increase in Chat Adoption rate from 18% to 50% in last 12 months
- Applications & Interfaces Monitoring for proactive incident management
- Problem management through RCA & Defect reduction
- Supporting migration & upgrades
Remote monitoring, control & maintenance solution for a Wind Turbine Company

**Business need**
Remote diagnostics & maintenance for global wind farm installation

**HCLTech approach**
IT-OT integration of wind farm equipment to maintenance and ERP systems with remote software updates
- Consolidated As Built BOM for 400+ global wind farm installations
- Connected Services (Devices / Product in Field)
- Developed analytics engine to track runtime performance and control when out of bound
- Prevented damage in adverse condition by controlling turbine operations

**Business benefits**
- Reduced cost of maintenance by ~5% & minimized need for physical presence onsite
- Improved efficiency of power generation by ~7%

Condition Monitoring of Centrifugal Pumps

**Business challenge**
Detect centrifugal Pump defects like Impeller Fault, Ball Bearing defects and Seal defects

**HCLTech approach**
Vibration data from Healthy Pump and with pump with faulty components are captured. Fault simulated were Cavitation, Inner ring race fault, Outer ring race fault, Seal Fault and impeller Fault. Random Forest algorithm was used to create the model

**Value delivered (impact on efficiency)**
- Achieved 95% accuracy in classifying faults
- Were able to extract unique pattern signature for each defect type
- Can be used for condition monitoring of most of rotating equipment

AR based Maintenance Solution for a leading Hi-Tech company

**Business challenge**
Client vision is to develop a platform to optimize maintenance planning of plant line/equipment to reduce down time. (Improve OEE)

**HCLTech approach**
HCLTech signed up for a product engineering partnership with client for platform development.
- Platform utilizes advanced analytics by processing multitude of data from manufacturing IT/OT system to provide intelligence in asset maintenance life cycle.
- Worker can interact with the system using AR/VR for superior experience

**Business benefits**
- 20% decrease in MTBF / MTTR
- Improved 15% maintenance technician productivity
HCLTech is a global technology company, home to more than 223,400 people across 60 countries, delivering industry-leading capabilities centered around digital, engineering, cloud and AI, powered by a broad portfolio of technology services and products. We work with clients across all major verticals, providing industry solutions for Financial Services, Manufacturing, Life Sciences and Healthcare, Technology and Services, Telecom and Media, Retail and CPG, and Public Services. Consolidated revenues as of 12 months ending June 2023 totaled $12.8 billion. To learn how we can supercharge progress for you, visit hcltech.com.