




Simplifying Enterprise Applications Integrations



Driving Digital Transformation in the Energy Industry through Data Cohesion

Nexus Case Study

vdR Group Case Study - Q1 2021



Nexus is an enterprise connectivity solution that has been designed from the ground up to meet the unique needs of companies engaged in engineering and manufacturing. By seamlessly connecting digital assets across disparate silos of data, Nexus has helped Caltex Oil Tools meet delivery commitments, lower the cost of quality, and achieve profit margin goals in the highly competitive oil and gas industry.

“If I tell a customer that they’ve got full access to the manufacturing data for a product that we developed for them, that’s going to blow their mind.”

- Chris Mancini-Managing Director, Caltex`

COMPANY BACKGROUND

Caltex Oil Tools is a product and services company with over 30 years of experience in the onshore and offshore oil and gas industry. Recently, the company underwent an ownership and leadership change that led to a strategic shift toward a focus on highly specialized engineering capabilities and solutions specifically for equipment used between the water line and mud line in the deep-water space. A typical engagement might involve oil well ‘production enhancement,’ where specialized equipment is used to make a well more productive. This involves developing machinery that gives the field team access to the well bore to deliver chemical packages that increase oil production.

*“If I tell a customer that they’ve got full access to the manufacturing data for a product that we developed for them, that’s going to blow their mind. That’s going to set us apart from our competitors and it’s going to boost our productivity while lowering our costs of quality.” - Chris Mancini
Managing Director, Caltex*



CHALLENGE TO BE ADDRESSED

Caltex Oil Tools needed to achieve digital transformation through an affordable Product Lifecycle Management (PLM) solution with the capabilities to unify data across enterprise applications. Moreover, the solution must be flexible enough to adjust to the inevitable changes of the industry.

SOLUTION

- Employ PLM capabilities to support the management of parts, bills of materials (BOMs), documents, drawings, and change management

“Well production enhancement of 360%, as opposed to the industry standard of 100%. And a 65% reduction in cost due to the significantly shorter project timeline.”

- Implement Nexus to support seamless integration between the engineering activities and enterprise resource planning (ERP)

Future plans include:

- Extend the digital thread and create and manage digital twin configurations across the key functional areas of manufacturing and maintenance, repair, and operations (MRO)
- In conjunction with vdR Group, develop a supplier and customer portal that would allow direct access to complete and current manufacturing data, operations and maintenance manuals, and quality documentation for their Caltex equipment

Since the PLM and Nexus Implementation, Caltex customers achieved:

- boosted well production by 360%, as opposed to the industry standard of 100%
- accelerated time to delivery--reducing the project timeline from 24 months to 4 months
- reduced project cost by 65% due to the significantly shorter timeline



MEETING CHANGES AND CHALLENGES

A key reason that Caltex leads their competition is the ability to quickly respond to the unique complexities and timelines of each engagement. Recently, they were tasked with ‘killing’ an oil well in an operationally remote part of the Gulf of Mexico. This required quickly fabricating and deploying equipment to pump in fluids with a very high specific gravity—20,000 standard cubic feet of helium in this case—to smother and kill a well in 7,200 feet of water. But this was just another job for Chris Mancini, Caltex’s Managing Director, and his team. As Chris put it, their ability to generate solutions faster, more efficiently, and with better

quality is based on a “...foundation where we’re able to collect our data, keep track of it... [and] capture the value out of our information with high integrity.”

Chris’ maverick view of the importance of business processes and data management are grounded in a common pattern he’s observed in their industry. Too often, small innovative companies struggle to scale and react quickly to change—whether regulatory, supply chain, or nature. Chris attributes this to an industry-wide culture of viewing industrial technology

“Caltex was able to accelerate the typical time to delivery by 84%, taking the project timeline from 24 months to 4 months.”

“breakthroughs” as the key drivers of competitiveness, while overlooking the role of “back office” processes, data management, and business intelligence.

A FOCUS ON DIGITAL TRANSFORMATION

While engineering innovation is a prerequisite in the oil and gas industry, Caltex has chosen to also focus on the impact that digital transformation can have on the economics of their solutions. As a company with industry recognized engineering expertise, Chris and his team knew that improving engineering processes starts with PLM. Admittedly, they were jaded from previous experiences with legacy product data management (PDM), PLM, and disconnected silos of data. Outdated technology, costly upgrades, and poor connectivity to other systems were par for the course. Caltex needed an affordable PLM solution while at the same time being careful to not create “yet another data silo.” Ensuring that critical “digital assets” can be seamlessly shared would be essential to growing the business, while staying flexible enough to adjust to the invariable changes of the industry.

IMPLEMENTATION

Caltex had previously decided to use Microsoft’s Dynamics 365, Business Central (D365) to support for their ERP needs. Following Caltex’s initial implementation of their PLM and ERP applications, their next goal was to connect the two so critical ERP data, such as customer POs, sourcing information, and manufacturing data could help inform everything from engineering to MRO (maintenance, repair & operations). However, Chris wanted more than just a point-to-point integration between the solutions. Rather, he envisioned a connector service that could synchronize, normalize, and map data to and from other applications that Caltex



“... linking the digital thread back to a particular item we’ve built so we can increase efficiency, not only for us, but also for our vendors and customers.”

might use as they grow. So, after researching various service-oriented connectors, Nexus, from vdR Group, was selected. Once implemented, Nexus had an immediate impact on operations by allowing engineering to interact with ERP-related data natively in PLM and creating a foundation to ensure Caltex can easily incorporate future data sources. The initial integration layer has been activated to support the ability push parts and BOMs from PLM to D365 and establish “federated” links to return item master properties such as inventory levels, pricing, and units of measure from D365 back to PLM.



Since the implementation, Caltex has continued to improve key metrics on recent projects—including a customer that achieved a well production enhancement of 360%, which sharply contrasts with the industry standard of 100%. Moreover, Caltex was able to accelerate the typical time to delivery by 84%, taking the project timeline from 24 months to 4 months. This corresponded with a 65% reduction in cost as compared to their competitors.

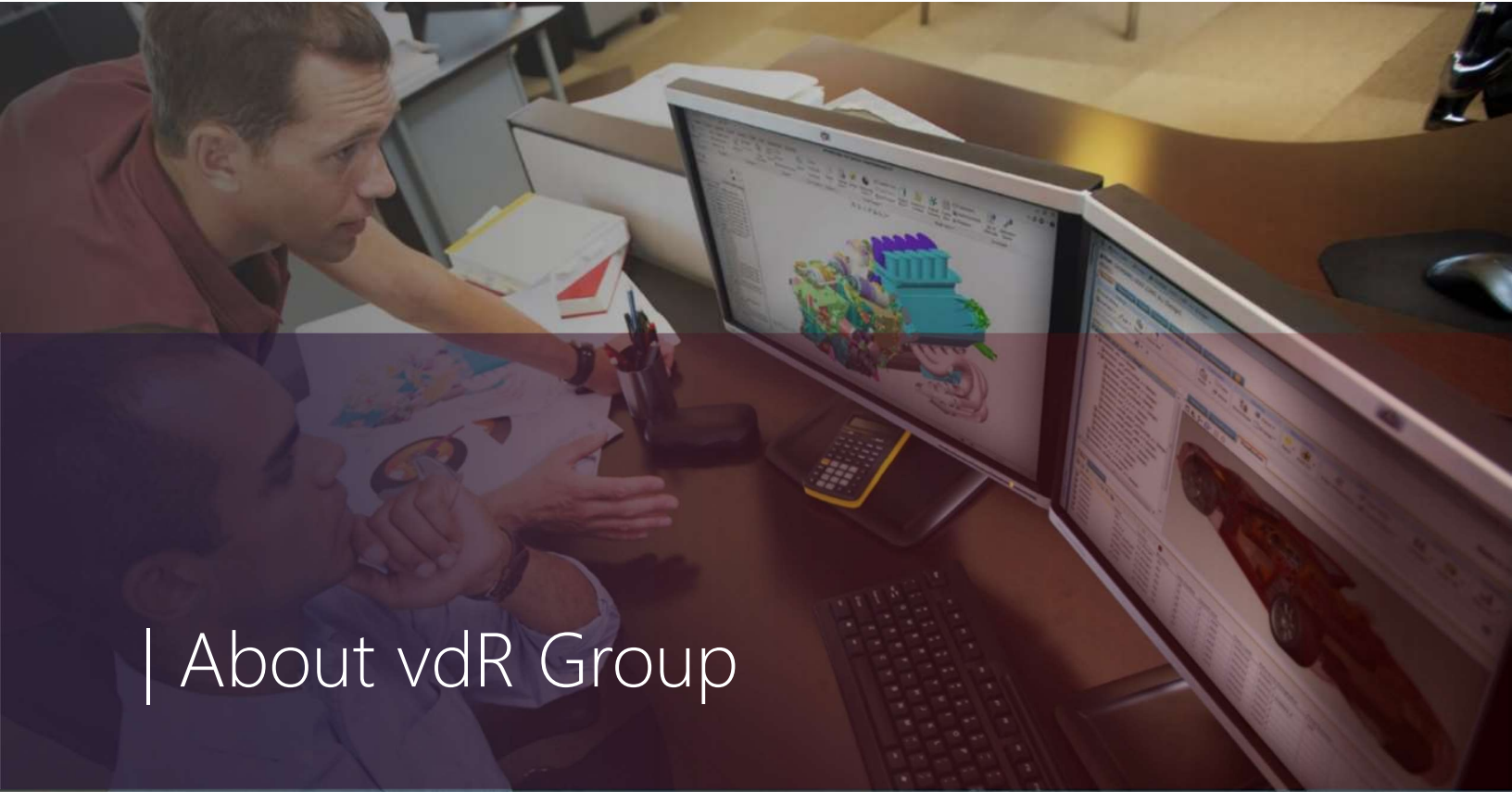
DIGITAL THREAD, DIGITAL TWIN, AND BEYOND

The “digital transformation” Caltex is underway. The stage has now been set to extend the digital thread and create and manage digital twin configurations across the key functional areas of manufacturing and maintenance, repair, and operations.

Since Caltex not only engineers and sells equipment for products to their customers, but also builds and operates their own equipment, extending the product data from both PLM and ERP for MRO will be a major initiative in the future. According to Chris, “Some of these are very high-spec, well-controlled devices, and we have a requirement to maintain every nut and bolt that’s been replaced or torqued, every seal, every inspection that’s done. We need to have a record of that, and we need to be able to present that to regulators and to our customers as a matter of course.”

“Ensuring that critical digital assets can be seamlessly shared would be essential to growing the business.”

In addition to adding MRO, another top priority for Caltex is developing, in conjunction with vdR Group, a portal for their vendors and customers that would allow direct access to complete, up-to-date manufacturing data, operations and maintenance manuals, and quality documentation for their Caltex equipment. Says Chris, “We want to eliminate the paper transactions, paper data entry, and we want to have a convenient way for our vendors, for example, to deliver documentation to us, material certifications, quality documents, et cetera, into a portal that delivers data right into the product database and links that digital thread back to that particular item we’ve built, purchased, or developed so that we can increase efficiency not only for us but also for our vendors and our customers.” Using this portal, Caltex customers will be able to see into Caltex’s MRO system to audit and validate the condition of well control equipment. They also intend to provide industry regulators with a portal so they can see the data and get access to the information they need.



| About vdR Group

Nexus is a product of vdR Group. Over the last three decades, vdR Group has emerged as a leading engineering, manufacturing, and AEC solutions provider with a focus on driving digital transformation through product lifecycle management, enterprise application integration and search-based application technologies. This have been done via a consultative and solutions-based approach that includes strategic consulting, end-to-end implementations, and application integrations. vdR Group has helped 100s of companies ranging from Global Fortune 500 manufactures to cutting-edge start-ups. Today, it is estimated that over 220,000 users leverage vdR Group’s solutions.

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