

# PLANNING, MONITORING AND SYNCHRONIZATION OF PROCESSES FOR COMPLEX EPC PROJECTS WITH NETVIBES

### Challenge:

The company is one of the leading providers of engineering, procurement and construction services for the energy industry. It manages thousands of micro processes to deliver complex, multidisciplinary projects on tight schedules. It needed a way to synchronize and enable efficient collaboration for the many different teams and individuals involved in every project. But working across multiple IT systems and data silos was putting obstacles in the way.

### Solution:

The company uses Dassault Systèmes' **3DEXPERIENCE**® platform to integrate various project systems, track progress of multiple projects and improve operational efficiency. It leveraged NETVIBES Capital Project Intelligence, part of the Capital Facilities Information Excellence portfolio, to provide a collaborative virtual twin environment that connects the end-to-end EPC value chain.

### Benefits:

Bringing its data together on one platform enables the company to plan, monitor and synchronize all the processes involved in complex EPC projects. A multi-dimensional virtual twin with powerful analytics provides users with NETVIBES dashboards where they can track and visualize progress against planned baselines. Results are being seen across the value chain, from improvements in productivity and collaboration to the creation of extra value for customers.

## MANAGING COMPLEXITY AT SCALE

Thriving in today's oil and gas industry requires unprecedented productivity, quality and efficiency – and it starts with the companies that build the infrastructure. To stay ahead, oil and gas companies need huge, complex capital facilities delivered not only to the highest quality, but also to increasingly aggressive budgets and schedules. In projects of this scale, even the smallest hitch in the engineering, procurement and construction (EPC) process can cause major delays and budget overspend.

The company is one of the leaders in delivering those EPC projects. To balance quality and safety requirements, schedule and budget, it must synchronize thousands of processes and disciplines across each project. From design to engineering, procurement and even paying suppliers, it's crucial to get things right first time, manage changes and ensure quality every step of the way. But working across different IT systems was putting obstacles in its path.

"We handle very complex projects using different types of software for design, procurement, implementation, and so on, each with its own silo of data," said the company's vice president, Digital & IT. "There was no single digital thread running across our operations. We had individual digital solutions, but any orchestration between various aspects of the business had to be done manually. That meant a lot of hard work, juggling multiple balls in the air and not knowing which ball would fall and cause a problem."

It needed a way for its systems to talk to each other and give stakeholders a single view of the status of its projects. It adopted Dassault Systèmes' **3DEXPERIENCE** platform and leveraged NETVIBES Capital Project Intelligence – part of the Capital Facilities Information Excellence portfolio – to power its virtual twin integrated project management program.

## IMPLEMENTING THE PROJECT

The project involves the five key project dimensions with virtual twin technology: collaboration across teams, enhanced quality, adherence to schedules, delivery within budget, and information management.

Putting that into practice would mean bringing together data from disparate systems on a single platform to enable further authoring, navigation and downstream processes. A key requirement was to deliver data that was accurate and easy to visualize in real time, enabling all users to make right-first-time decisions in the platform.

"The company needed to optimize the delivery of complex capital projects by consolidating and synchronizing the project master schedule, with all its underlying project levels, in real time," said Ratish Rao, industry process consultant senior manager at Dassault Systèmes NETVIBES. "Digital continuity was essential, along with actionable insights to make informed and efficient decisions."

It was also an ideal moment for the company to adopt the **3DEXPERIENCE** platform on the cloud. "Moving onto the cloud was in my mind from the beginning," said the vice president. This is a traditionally conservative industry and in the past, customers have been cautious about putting their data in the cloud. But the pandemic has created a different type of paradigm. It's caused many to realize how important the cloud is to business. In the cloud there is no need to worry about technology updates because the cloud service provider takes care of them for you. All you need to concern yourself with is the experience you want at the speed you need."

Implementation started in 2021 with the integration of schedules, issue management and the creation of KPI-based dashboards. Then through 2022, the company added more capabilities including multi-dimensional dashboards and built-in indicators to provide advanced notice of any potential problems. In addition, it harnessed the advanced visualization capabilities of the **3DEXPERIENCE** platform to provide immersive virtual reality reviews for customers, enabling them to "walk" through the model and check for clearances and issues.

## MULTI-DIMENSIONAL SYNCHRONIZATION

The **3DEXPERIENCE** platform's advanced visualization and analytics capabilities enable stakeholders to see all the dimensions of a project collaborating around a 3D virtual twin.

3D model data is imported from the company's CAD authoring tools to provide a single source of truth for activities across the company and its supply chain. This data can then be viewed in a single dashboard, providing a contextualized virtual twin that incorporates much more than three dimensions.

"Every project we do includes multiple dimensions and we have added them to our virtual twin," said the vice president. "We started by adding time to create a 4D experience. Then we added budget as a fifth dimension. Other critical dimensions such as safety, quality and collaboration followed so we can visualize, measure and predict progress in each of these dimensions. We call it a multi-D twin."

As a result, the company's virtual twin represents much more than a collection of assets. "This is not an asset twin, it is a project twin because the base of it is the schedule," explained the vice president. "We import the schedule, and then add all our operational transaction systems such as manufacturing, supply chain and costing. All of these feed into the virtual twin model and we see everything in a 3D context, with dashboards to show progress."

## STAYING AHEAD OF THE CURVE

The company can count on the multi-dimensional management dashboard capabilities of NETVIBES on the **3DEXPERIENCE** platform to support accurate planning and monitoring across all phases of its projects. At the start of each project, the company's planners model the dashboard experience and define the data needed to provide a clear view of the various dimensions that will be reviewed. Data then feeds into the platform automatically to enable real-time reviews of key project areas. As a result, planners can identify potential issues early on and act on them before they deteriorate.

"It is like a solar system, with this project virtual twin at the center and all our systems as satellites around it," said the vice president.

One vital capability is being able to generate S-curves to describe, visualize and predict the performance of functions like engineering, procurement, construction and manufacturing over time. On a single dashboard, users can filter in critical aspects to get a clear view of key milestones as well as any delays or other issues, what is causing them and the actions they can take.

**"Delivery is consistently on schedule and within budget because we have better control over our projects."**

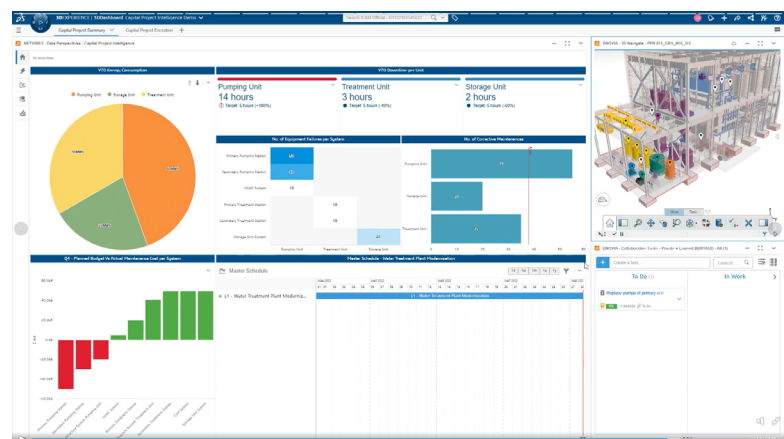
— Vice President  
Digital & IT

## A COLLABORATIVE SUPPLY CHAIN

The company is using NETVIBES to synchronize even the most complex activities, such as the vast supply chains involved in its projects. Stakeholders can drill down into specific areas such as cost, materials and scheduling, for example, and track actual progress versus planned baselines with 3D progress reports and analytics. This enables a collaborative, 360-degree view of parts and materials from procurement to site installation.

"3D project dashboards can pinpoint supplier performance with key performance indicators," said the vice president. "For instance, we can use 3D visualization to show which pieces of equipment are delayed, which parts of the project are constructed, tested and ready and which parts are pending or overdue."

As well as providing a clear picture of potential issues and what's causing them, the platform also provides a single source of truth on the actions that need to be taken. The users can collaborate with others across the supply chain in the virtual twin, with the entire context they need in one place, to resolve or avoid them.



NETVIBES dashboards combine the virtual twin with powerful analytics to connect the full value chain

## END-TO-END VALUE

NETVIBES and the **3DEXPERIENCE** platform also empower the company to deliver extra value to customers once an EPC project is completed. By providing a 3D virtual twin that is linked to all the metadata and documents such as drawings, operation and maintenance manuals, the company can furnish its customers with a valuable resource that they can use to optimize their operations.

"The **3DEXPERIENCE** platform enables us to deliver end-to-end value, from proposal through schedule integration and project management, work front forecasting, collaborative issue management, commissioning and beyond," said the vice president. "We believe we are one of the first EPC companies to have connected the full value chain on a virtual twin."



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## BUILDING ON STRONG FOUNDATIONS

NETVIBES on **3DEXPERIENCE** platform is already delivering value as part of the company's mission to boost productivity and drive sustainable business.

"The project, enabled by the **3DEXPERIENCE** platform and NETVIBES, is still underway, but we are already seeing benefits," said the vice president. "For example, planners and project managers are spending much less time waiting or searching for what they need. Delivery is consistently on schedule and within budget because we have better control over our projects."

But this is just the start of the journey. Currently the **3DEXPERIENCE** platform automatically picks up approximately 80% of the data from the company's various systems. As that percentage increases, the company can look forward to ever more powerful capabilities. The vice president, Digital & IT explains that the company's immediate plans include harnessing predictive analytics to analyze the data that is being collected on the cloud, which will allow it to build a collective corporate memory so it can make increasingly accurate predictions and capitalize on its knowledge and experience in future projects. He is also keen for the company to do more with mixed reality.

"Enhancing productivity is the way to drive sustainable use of resources, time and budget – and virtual twin technology is the way to enhance productivity," he said. "Whatever we can imagine, virtual twins can help us to convert it into reality much faster, better and in a way that brings value to end users. This is how we will achieve sustainable growth, with collaboration between customers, suppliers, our own management, project and IT teams and the team at Dassault Systèmes. Together we succeed."

## Our **3DEXPERIENCE**® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 300,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit [www.3ds.com](http://www.3ds.com).



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