

# Digital Twins: The Next Step in Digital Transformation

Cohesive

IBM

Platinum Partner



### The Background

Heavy industry has been embracing the power of digital transformation to elevate throughput, efficiency, reliability, and productivity.

Digital transformation has helped industries such as oil and gas, utilities, chemicals, mining, metals, and paper improve asset management capabilities to help them better understand and manage their manufacturing assets to reduce downtime and cut costs.

But despite great strides in efficiency and cost savings, heavy industry is still dealing with the fallout of unplanned downtime. Asset-intensive industries and critical infrastructure organizations simply can't afford to be out of commission when the pressure is on to keep producing.

And while progress has been made in optimizing processes, engineering, operations, and maintenance are still working in silos due to a lack of tools to share vital information. Communication between groups continues to be inconsistent, relying on emails, phone calls, and manual handoffs to collect basic information, plan projects, and get work done.





## Taking the Next Step Forward in Efficiency

**The good news is that the journey to manufacturing efficiency isn't over. Data that's being collected and analyzed today by asset management platforms such as IBM Maximo Application Suite can be further leveraged for more insight, innovation, and efficiency.**

Many companies have already started the process of digitally modeling entire plants to create digital twins of manufacturing facilities. Some have invested in lidar and photogrammetry with the goal of digitizing entire production facilities and campuses so engineering, operations, and maintenance teams can more easily and quickly share information to help them make better decisions faster.

The timing of these investments is good because the vendor community is now developing the tools and resources to help heavy industry turn asset data into a digital twin.

With a graphic representation of an entire plant, campus, or enterprise — a single source of asset truth across the entire company — departments can get quick answers to speed up the process of solving problems across the boundaries of design, the build phase, operations, or maintenance.

Imagine that instead of looking at Maximo data in a tabular view, you are looking at a 3D model of a manufacturing facility. Like navigating Google Earth, a digital twin lets employees fly through, walk through, and zoom in on any aspect of a plant and its equipment to evaluate plans and investigate issues. By clicking on an asset, you can see current pressure, temperature, and other real-time data that Maximo is capturing.

# Leverage Existing Data into More Efficient and Profitable Operations

**A digital twin stores digital information about inventory, assets, work history, asset performance and any other digital data about your manufacturing environment. This information is blended with digital spatial navigation to create a 3D representation of a plant and its equipment. Data pipelines keep the twin up to date by drawing real-time information from Maximo. As Maximo is updated, so is the twin, including monitoring and performance data.**

### Benefits of Digital Twins

Maximo has already helped heavy industry get ahead of maintenance issues to get more value from assets. Digital twins that draw on Maximo data take these accomplishments to the next level by enabling industrial companies to streamline cross-departmental workflows. With the same twins available to everyone, engineering, operations, and maintenance are on the same page regarding the current state of the plant and its assets.

This helps eliminate silos between engineering, operations, and maintenance departments because each can see what the other is doing. With a 3D digital twin, engineers and technicians can get most of the answers they need from a single pane of glass — the digital twin.

Digital twins give each department a way to learn from each other's information quickly and easily. Maintenance technicians can now see as-built engineering-approved drawings to help them understand what they can expect in the field. Engineers can see how their plans are working in the real world.

The ability for each department to see real-time IoT data helps everyone in the plant to make faster, more accurate decisions. Plant employees no longer need to spend significant time doing physical inspections to gather basic information, and emails, phone calls, and manual handoffs for the same purpose can be minimized or eliminated.

### An Unprecedented View

With your facility, campus, or multi-site locations mapped to a digital twin, companies will have an unprecedented view of asset and plant operations with up-to-the-minute information about what work has been completed, the health of assets, clear direction on next steps in planning and maintenance, and valuable information about safety and risk.

### Transformational Workflows that Support Efficiency and Innovation

Most importantly, having a single source of truth about plants and assets available to all stakeholders will enable companies to develop transformational cross-departmental workflows that will enable

speed and innovation for the future. For example, digital twins reduce the need to physically visit areas of the plant for employee training and project prework. This all can be done from an office with employees navigating the digital twin to gather information and learn. As an aid in planning, digital twins can help you know ahead of time whether the necessary tools and people will fit into the environment you're working in while knowing what's below them, above them, and what might be impacted by the work.

In addition, companies can simulate potential problems to ensure employees know the correct actions to take.

### Reduced Downtime and Spending

The efficiencies gained through having a digital twin of a plant or manufacturing campus available across departments can help companies make faster, better, and more accurate decisions, leading to more efficient operations and reduced unplanned downtime. This should reduce operating costs, increase production and enhance safety, leading to opportunities to optimize capex expenditure.

## How Cohesive Helps Organizations Construct Digital Twins

To visualize plant and asset data as an interactive 3D model, Cohesive uses the Bentley iTwin Platform, which is the most open and most enterprise-ready digital twin platform on the market. That means that iTwin can accept your company's drawings, lidar outputs and photogrammetry imagery to create a digital twin of a manufacturing plant. As your digital twin initiative matures, iTwin can digitally model an entire multi-site organization in a map view.

### Capture the Whole Plant as a 3D Twin

For organizations that don't have comprehensive drawings or 3D models of facilities, Cohesive uses advanced imaging techniques for input into iTwin. By flying a drone in and around the facility, Cohesive can help manufacturers capture the plant layout in detail using lidar or photogrammetry. For photogrammetry, we use a tool called Context Capture, which takes at least three photos of every aspect of your plant and stitches the results together to show exceptional detail of the equipment, even down to the nameplate data. Context Capture removes "noise" such as trucks and technicians moving around and focuses on equipment detail.

### Maximo Integrations and Document Management

Cohesive has developed several integrations with Maximo to make the process of developing a digital twin faster and easier.

Our Asset Lifecycle Information Management (ALIM) tool centrally stores drawings, manuals, schematics, and other important documents. This means that employees will no longer need to manually search through hundreds of file cabinets and folders to find specific documentation. ALIM makes your documentation available to the digital twin, so when you inspect an asset on the twin, the documentation for that asset is immediately available across departments. ALIM also manages document changes so you can clearly track a document's history from design through the revision process to as-built.

Cohesive also has tools to convert P&IDs and other documents into data that the digital twin can use. In addition, we provide integrations that bridge Maximo with your digital twin, including real-time performance data.



### Working with Cohesive

**As one of the world's largest Maximo consulting companies, Cohesive may be the most experienced in working with Maximo for asset reliability and building digital twins for heavy industry.**

Because of our extensive experience, we understand what Maximo data is most important for building and using a digital twin. We're also highly experienced in how to aggregate disparate data to build a successful digital twin where employees across the enterprise can access the same asset information from a single pane of glass.

#### Planning the Digital Twin

Combining the Bentley iTwin platform with our proprietary tools, we make the process of developing digital twins as easy as possible and practical from a time and cost perspective.

We also provide a path to success by incrementally demonstrating increased value as twins are developed. We show customers, for example, how easy it is to consume digital twin information to make better decisions about planning, scheduling, shutdowns, and other common activities.

#### Workshops and Proof of Concept

We start by conducting workshops with customers to learn about the specific use cases that are driving the need for digital twins and

reviewing the elements of your operation that you want to capture. Using our experience with open, enterprise-ready toolsets, we then develop a proof of concept so customers can quickly experience the benefits of a digital twin in their unique environment. This gives us early feedback on how to proceed with the next steps.

Once value is demonstrated through the proof of concept, we work with customers to expand the scope over time until the project objectives are fulfilled.

#### Strategy for Keeping Digital Twins Up to Date

The care and feeding of digital twins is important. It's easy to overdo or underdo digital twin maintenance. We can help you develop a standardized digital twin maintenance program to ensure that changing physical environments are reflected accurately in the digital twin. That includes finding the best balance and right level of detail required to keep digital twin data current and relevant.





## About Cohesive

**Cohesive brings you the world's leading digital transformation, enterprise asset management, asset delivery, and asset service performance optimization capabilities. We use the power of data, digital twins, and artificial intelligence, and capitalize on innovative technology to optimize and automate operations. We build digital talents and cultures for improved and sustainable results.**

Cohesive was created by the amalgamation of industry-leading brands. The businesses have been selected by Bentley Systems to provide a blend of industry experts and lifecycle capabilities enabling us to support the most complex projects anywhere in the world.

We have 900 skilled engineers, data scientists, change and asset management experts, researchers, writers, and people coaches with unparalleled expertise and experience. They push boundaries and think in fresh ways to achieve better outcomes and deliver a highperforming, sustainable, and digital future.

To complement our team, we have an extensive ecosystem of industry partners who bring the best possible technology, thinking, and delivery needed to help bring transformational outcomes to your estate, network, or assets and the service you provide your customers.

© Cohesive 2024. All rights reserved. All trademarks, logos, and brand names are the property of their respective owners. All company, product, and service names used in this document are for identification purposes only. Use of these names, trademarks, and brands does not imply endorsement.

Find out more at [cohesivegroup.com](https://cohesivegroup.com)  
Or contact us at [hello@cohesivegroup.com](mailto:hello@cohesivegroup.com)

**Cohesive**



Cohesive



Platinum Partner