

The Digital Twin

Operating **without a digital twin** is like navigating a cross-country car journey with only a paper map.



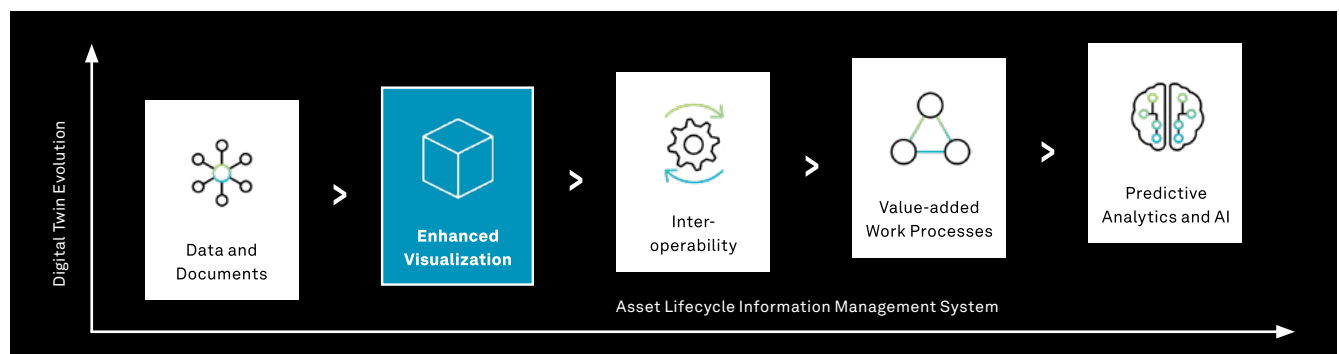
Limited access to the most up-to-date information **exposes inefficient enterprises to increased operational risk!**

In 2013, SINTEF — one of Europe’s largest research organisations — reported that **90% of the world’s data had been generated over the last two years**. In 2014, IDC predicted that the digital universe would grow by a factor of 10, **from 4.4 ZB in 2013 to 44 ZB in 2020** and in 2018 IDC also predicted this would rise to an incredible **175 ZB by 2025!** To manage this overwhelming amount of data in the context of asset operations and maintenance, companies are investing in a Digital Twin.

Gartner (2019) defines a Digital Twin as “a software design pattern that represents a physical object with the objective of understanding the asset’s state, responding to changes, improving business operations and adding value.” For those operating in the manufacturing and the process industries, quick access to the most up-to-date

information in a Digital Twin from the plant floor to the boardroom enables better decisions, improved business processes, enhanced productivity and the reduction of operational risk.

To help companies achieve these Digital Twin benefits, Hexagon provides the integrated Project Twin, Operational Twin and Situational Awareness solutions. The overall Digital Twin is the glue that connects these enterprise solutions and their data on one platform, enabling the “**single version of the truth**” concept. To prevent barriers to adoption, a Digital Twin can be built gradually using Hexagon solutions in different stages. The extent of Digital Twin maturity required is based on the level of digitalization already in place at an organization.





Connect

A Digital Twin is a dynamic digital depiction comprised of physical entity information. It is the single version of truth unique to a user's perspective for a point in the lifecycle with many digital levels.



Think

Data is diffused seamlessly between the digital depiction and physical entity to enable co-existence. Then advanced technologies bring data, algorithms and context together.



Do

With this comes understanding, prediction and optimization for the physical entity to drive improved business outcomes.

Companies in the manufacturing and process industries are at various stages of digital maturity. Hexagon understands this and is providing Digital Twin solutions for all digital maturity stages across the asset lifecycle.

The **first stage** of a Digital Twin starts with a basic set of structured data and documents defining the facility configuration, designed by engineering teams in the Project Twin. For companies near the beginning of their digital transformation roadmap, this is an excellent start, empowering better decision making from more intelligent data and improving engineering-to-operations handover processes.

The **second stage** of connecting this intelligent data to 2D schematics, 3D models or laser scans allows for more intuitive viewing and navigation and begins to unlock the benefits of weaving engineering, operations and maintenance information in an Operational Twin.

The **third stage** further enhances the Operational Twin with increased interoperability by exchanging information and providing links to other information sources in the operations landscape, such as asset performance, data historian, maintenance management and real-time data solutions.

The **fourth stage** is where the major digital transformation business benefits will be realized, as the asset owners and operators can leverage a Digital Twin to manage value added work processes, such as human

procedures, inspections, integrated safe systems of work and management of change. This ongoing stage of value addition can also include advanced analytics, artificial intelligence, machine learning and predictive and prescriptive analytics to reduce downtime.

When a comprehensive Digital Twin is deployed, the associated data needs to be efficiently dissected to understand it and to also transform this into actionable information. To help achieve this, the Hexagon Situational Awareness solution allows personnel to clearly see what's happened, what's happening, what could happen, what should happen and what's scheduled to happen in a high-level operational dashboard that includes all the visual elements of a Digital Twin.

Overall, **the goal of any Digital Twin is to increase asset efficiency** and offer a digital representation of current and historic plant configurations, along with related performance information. Enlightened, data-driven decision making becomes the norm, and the easy sharing of Digital Twin data with multiple departments increases collaboration and reduces operational risk. Hexagon solutions help people design, engineer, construct, operate and maintain industrial assets, and the Project Twin, Operational Twin and Situational Awareness solutions allow asset owners and operators to build and maintain a Digital Twin ecosystem throughout the asset lifecycle, allowing for a continuous journey of operational excellence.

Unite O&M, safety, engineering and real-time data with a Digital Twin!

About Hexagon

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.9bn EUR. Learn more at [hexagon.com](https://www.hexagon.com) and follow us @HexagonAB.