

# Digital Twins

vs.

# Next-Gen Digital Twins

Next-Generation Digital Twins are at the core of your digital transformation

Digital twins are growing



Technology is now in a place when next-generation digital twins can and should be implemented



At BaseN, we believe the next-generation digital twins are no longer virtual replicas but the *virtual masters*

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Digital Twins  
vs.  
Next-Gen  
Digital Twins

## Digital Twins

### What is it?

A virtual replica of a physical object, offering insights into its behavior or performance

### What does it do?

Digital twins provide information about how the object operates, enabling better decision-making and optimization

### Best practices

Digital twins excel at analyzing data, identifying patterns, and optimizing performance based on the insights gained. They guide human decision-making and help improve the efficiency and effectiveness of the real-world objects.

### Applications, i.e. in manufacturing

Utilizing digital twins for error detection and performance optimization. Predictive maintenance and capacity planning through virtual monitoring.

## Next-Generation Digital Twins

### What is it?

A virtual master that possesses active control and influence over its real-world counterparts

### What does it do?

These virtual masters interact, optimize, and autonomously make decisions to enhance the performance of physical objects

### Best practices

Next-generation digital twins go further by leveraging AI or Machine Learning in dynamically adjusting the physical objects' behavior. This enables adaptability, operations' optimization in real-time, and proactive responses.

### Applications, i.e. in manufacturing

Applications of digital twins beyond virtual replicas. View them as the primary merchandise and source of actionable insights. Manufacturers will be both producers and service providers.

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# Digital Twins Use Cases and Applications



BaseN Platform has been the foundation for businesses' innovations and sustainability. BaseN has over 20 years of experience creating situational awareness for businesses with digital twins, placing us in a more unique position.

Digital Twins	Situational awareness
Distributed ICT Networks	<ul style="list-style-type: none"><li>• <b>Reliable Operations for Critical Tasks:</b> Telecom and ICT customers have a key mission to operate infrastructure that serves their customers, who often rely on it for critical tasks. The ability to monitor and manage this infrastructure with precision is crucial. BaseN recognizes the importance of transparency in delivering reliable operations to end customers. By leveraging digital twin technology, BaseN Platform empowers its customers with the ability to monitor the current and foreseeable status of the infrastructure.</li><li>• <b>Situational Awareness at Every Level:</b> BaseN Platform provides both internal and external transparency, offering a comprehensive view of the reliability and performance of ICT infrastructure. This encompasses various dimensions, including telecom networks, large company LANs, and public services. Situational awareness is achieved by collecting and analyzing data from multiple sources.</li></ul>

Digital Twins	Situational awareness
Distributed Public Infrastructure	<ul style="list-style-type: none"><li>• <b>Ensuring Availability and Usage Efficiency:</b> For infrastructure operators, it is paramount to ensure that the distributed infrastructure is available to potential users at all times. Users rely on the availability of services and assets, and any disruption can lead to frustration or even critical consequences. By employing digital twin technology, BaseN helps infrastructure providers maximize the utilization of their assets by effectively routing usage to available systems and avoiding outages.</li><li>• <b>Situational Awareness for Operational Efficiency:</b> BaseN Platform provides operators with situational awareness by offering real-time insights into the current status and usage of distributed public infrastructure. Through a highly available and resilient platform, operators can have a comprehensive view of the health and utilization of their distributed assets.</li><li>• <b>Informative Dashboards for User Transparency:</b> Transparency is key in maintaining trust and providing a positive user experience. BaseN Platform empowers operators to provide informative dashboards to their customers, offering real-time information on the availability of assets and alternative options when needed. This transparency enables users to plan their activities effectively, reducing frustration and enhancing their overall experience with the infrastructure.</li></ul>

Digital Twins	Situational awareness
Distributed Site Management	<ul style="list-style-type: none"><li>• <b>Enhancing Safety and Efficiency:</b> For site operators, knowing the whereabouts of individuals, whether they are objects or people, is vital to increase utilization, optimize throughput, and prevent accidents by addressing bottlenecks early on. In critical situations, having precise information about the location of individuals and assets and understanding the necessary actions to be taken is of utmost importance.</li><li>• <b>Real-time Situational Awareness:</b> BaseN Platform provides operators with real-time transparency on the presence and movement of individuals within and around the premises. By accurately tracking and optimizing key performance indicators such as the count and localization of individuals, flows, and occupancy of locations and storage areas, operators can gain valuable insights into site operations. This real-time situational awareness empowers operators to make informed decisions and take proactive measures to optimize flows and address potential issues promptly.</li><li>• <b>Optimizing Flows and Operations:</b> With full insight into the development of the situation, operators can dynamically optimize flows in real-time. By leveraging the data collected through the digital twin, operators can identify areas of congestion or inefficiencies and implement appropriate measures to optimize site operations. This proactive approach helps to enhance throughput, reduce delays, and improve overall operational efficiency.</li></ul>



Digital Twins	Situational awareness
Distributed Industrial Assets	<ul style="list-style-type: none"><li>• <b>Delivering to Expectations:</b> When your customer's operations depend on your assets (i.e. products, equipment, machinery, etc.), meeting their expectations becomes a critical mission. BaseN Platform empowers you to gather the necessary data and insights to ensure your assets operates optimally within your customer's specific context. By proactively providing the required support, you can build trust, enhance customer satisfaction, and strengthen long-term relationships.</li><li>• <b>Situational Awareness for Effective Asset Management:</b> BaseN Platform enables you to collect and analyze a wide range of measurements that provide valuable information about the health and performance of your assets. By monitoring key parameters, such as environmental conditions and asset location, you can contextualize the equipment data and gain a holistic understanding of its operational status. This situational awareness equips you with the knowledge to configure and optimize asset performance, as well as streamline your customer's processes surrounding the asset.</li><li>• <b>Proactive Support and Optimization:</b> By leveraging the power of digital twins, BaseN Platform enables you to take a proactive approach to asset management. Real-time data and insights help you identify potential issues before they escalate, allowing you to provide timely support and prevent costly downtime. Additionally, by analyzing historical data and trends, you can optimize asset performance, anticipate maintenance needs, and implement predictive maintenance strategies, resulting in increased efficiency and cost savings.</li></ul>

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Real business | on Base<sup>n</sup>





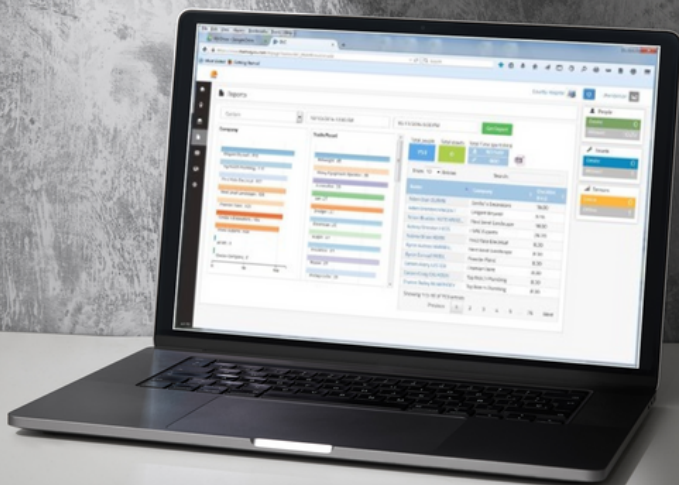
## Real business|on Base<sup>n</sup>

Since 2007, T-Mobile relies on BaseN for performance monitoring of data services and customer care levels, including related non-telco devices. BaseN Platform provides situational awareness and enables fast deployment, replacing various large environments. Offering real-time and historical data, the platform empowers T-Mobile engineers and end customers with easily understandable graphs. BaseN Platform further covers environmental data, service metrics, energy supply, and integration with other systems.



## Real business|on Base<sup>n</sup>

BaseN enables InterControl to have full situational awareness of their EV-Chargers Network distributed all over Finland. The collected data (quality, endurance, usage) is furthermore used for R&D improvements. The digital twin concept of each charging station also allows for optimized energy management and the offering of preventive maintenance plans, enabling InterControl to offer advanced Service Learning Agreements (SLAs) to their customers.



## Real business|on Base<sup>n</sup>

In 2016, CrewSight, the first full digital twin of a construction site was enabled on BaseN platform. It offers real-time visibility and insights into construction sites, unifying data streams from various sources. Each construction site thereby is managed as dynamic digital entity, providing real-time visibility & control. Multiple sites can be accessed from a single portal. BaseN ensures fault tolerance and mission-critical reliability for construction projects. BaseN's flexible and scalable system further ensures easy deployment and management of the solution.



## Real business|on Base<sup>n</sup>

Norsepower relies on BaseN Platform and powerful analytics for monitoring complex parameters of the rotor sails on large vessels, reducing fuel consumption by between 10 to 25%. The data collected in the digital twin can continuously be analyzed for performance optimization and design improvement.

Norsepower and BaseN showcase a significant milestone in sustainable innovation for sail technology. By implementing digital twins of Norsepower's rotor sails on BaseN Platform, large ships can achieve greater resource efficiency, sustainability, and environmental friendliness.



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# Next-Generation Digital Twins

## **SHIFTING PERCEPTION: DIGITAL TWINS AS MAIN MERCHANDISE**

At BaseN, we believe that the true power of digital twins lies in their ability to serve as master objects, encompassing all programming and information needed to build and operate their physical counterparts. By incorporating AI and adaptive algorithms, we unlock the potential of next-generation digital twins.

Consider purchasing a car. Currently, we receive digital assets to accompany the physical vehicle. However, BaseN envisions a future where establishing long-lasting customer relationships and sustainable businesses rely on digital twins.

Imagine having a digital twin of your car, containing data on your driving habits, service history, and personalized information that reflects your real needs. Augmented with AI, this digital twin becomes the foundation for a tailored physical twin that perfectly aligns with your driving requirements.



## THE FUTURE: MEETING CUSTOMER NEEDS THROUGH THE INTEGRATION OF DIGITAL TWINS AND PHYSICAL PRODUCTS

Imagine a future where every product is predominantly digital, supported by a next-generation digital twin that evolves throughout the entire customer relationship. This paradigm has far-reaching implications for various business functions, particularly sales and marketing. These departments will undergo a transformation, becoming highly specialized consultants closely aligned with production and technology.

The implications of this digital revolution are profound. The digital platform hosting these next-generation digital twins will soon surpass the importance of raw materials and logistics in any industry.

However, it may take some time for this realization to permeate the minds of CEOs and top-level executives. Encouragingly, certain industry leaders, such as crane and elevator companies, have already embraced this vision. They understand the value of a reliable, future-proof digital engine that provides real-time access to each and every customer.

## **Next-Generation Digital Twins are at the core of your digital transformation.**

- Embrace structured data that evolves, providing real-time insights.
- Gain full situational awareness to make informed decisions.
- Implement predictive maintenance to prevent costly breakdowns.
- Enable remote monitoring and control for increased efficiency.
- Continuously optimize resources and foster innovation.
- Track and trace assets for improved supply chain management.
- Automate processes and receive alerts and alarms for proactive actions.
- Leverage advanced analytics for data-driven decision-making.
- Tailor insights for different stakeholders' specific needs.
- Enhance customer experience through personalized solutions.
- Drive both financial and planetary sustainability.



## Wisdom from our CEO, Mr. Pasi Hurri:

In this rapidly evolving landscape, businesses that embrace digital twins and leverage the data and insights they provide will gain a significant competitive advantage. By harnessing real-time access to customer information, companies can personalize their products, optimize sales approaches, and deliver exceptional value. The transition to a digital twin-driven future requires a forward-thinking mindset and an investment in robust digital infrastructure.

As the business world moves toward the next frontier of digitalization and digital transformation, it's crucial for industry leaders to recognize the transformative potential of next-generation digital twins. By embracing this technology, companies can stay ahead of the curve, drive innovation, and unlock new opportunities for growth.



Base<sup>n</sup>

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eBook

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