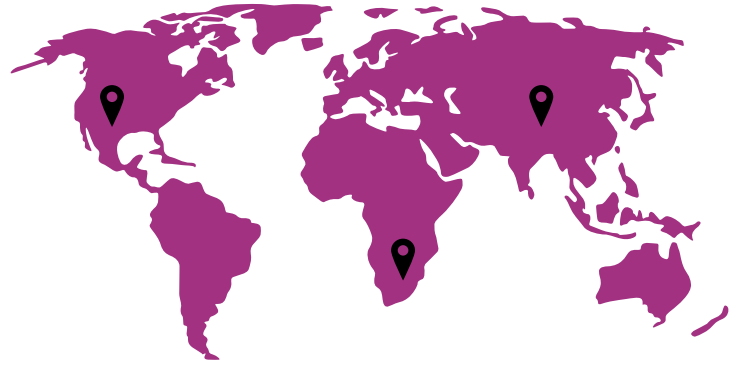# Next-Generation Digital Twins

Digital Twins: virtual replicas of physical objects
Next-Gen Digital Twins: virtual master objects that can control and influence their real-world counterparts

1960S - 1970S

The earliest mention of digital twins

NASA needed a test environment for all the equipment. They initially built a full physical replica of any space probe, but eventually decided to create digital twins in the 70s instead, as it costed less.

Digital twins are growing

Many companies still look at digital twins in the original virtual replica sense merely used as support systems for existing physical products. However, technology is now in a place when next generation digital twins can and should be implemented.
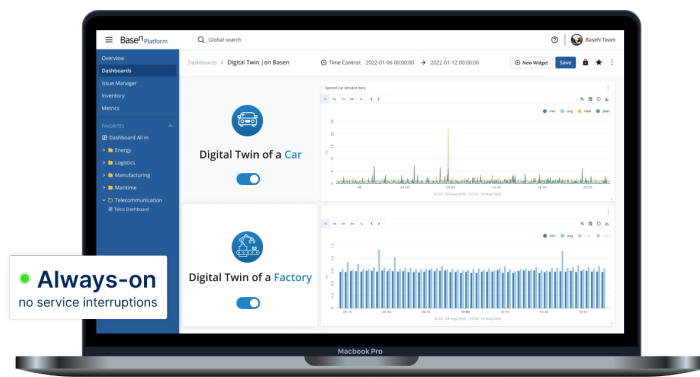
THE NEXT GENERATION DIGITAL TWINS

At BaseN, we see that the next generation digital twins are no longer virtual replicas but *the virtual masters*. They possess active control and influence over their real-world counterparts. These virtual masters interact, optimize, and autonomously make decisions to enhance the performance of physical objects. They can receive real-time data from sensors, process it, and send instructions back to the real-world objects. Next-generation digital twins can go further by leveraging artificial intelligence or machine learning in dynamically adjusting the physical objects' behaviors. This enables adaptability to changing conditions, operations' optimization in real-time, and proactive responses.

BENEFITS OF NEXT-GEN DIGITAL TWINS
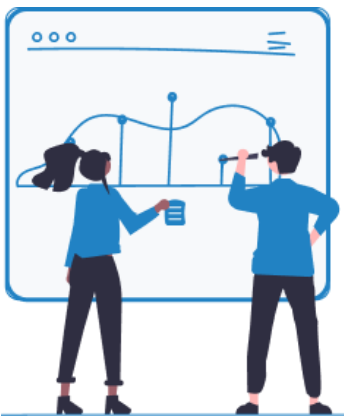
DESIGN OPTIMIZATION

Accelerated time-to-market, continuous product & system enhancements, and significant cost savings

PREDICTIVE MAINTENANCE

Reduce downtime, extend the life of products and systems, and improve overall reliability

SITUATIONAL AWARENESS

By having digital twins of every business aspect, businesses obtain a helicopter view on their operations, to identify potential vulnerabilities, and drive towards having a full situational awareness - a holistic understanding of the business.

Situational awareness is beneficial for a business' proactive decision-making process, risk management, competitive advantage, resource allocation, and crisis management.

PERFORMANCE MONITORING

Better product performance, reduce energy consumption, and improve safety