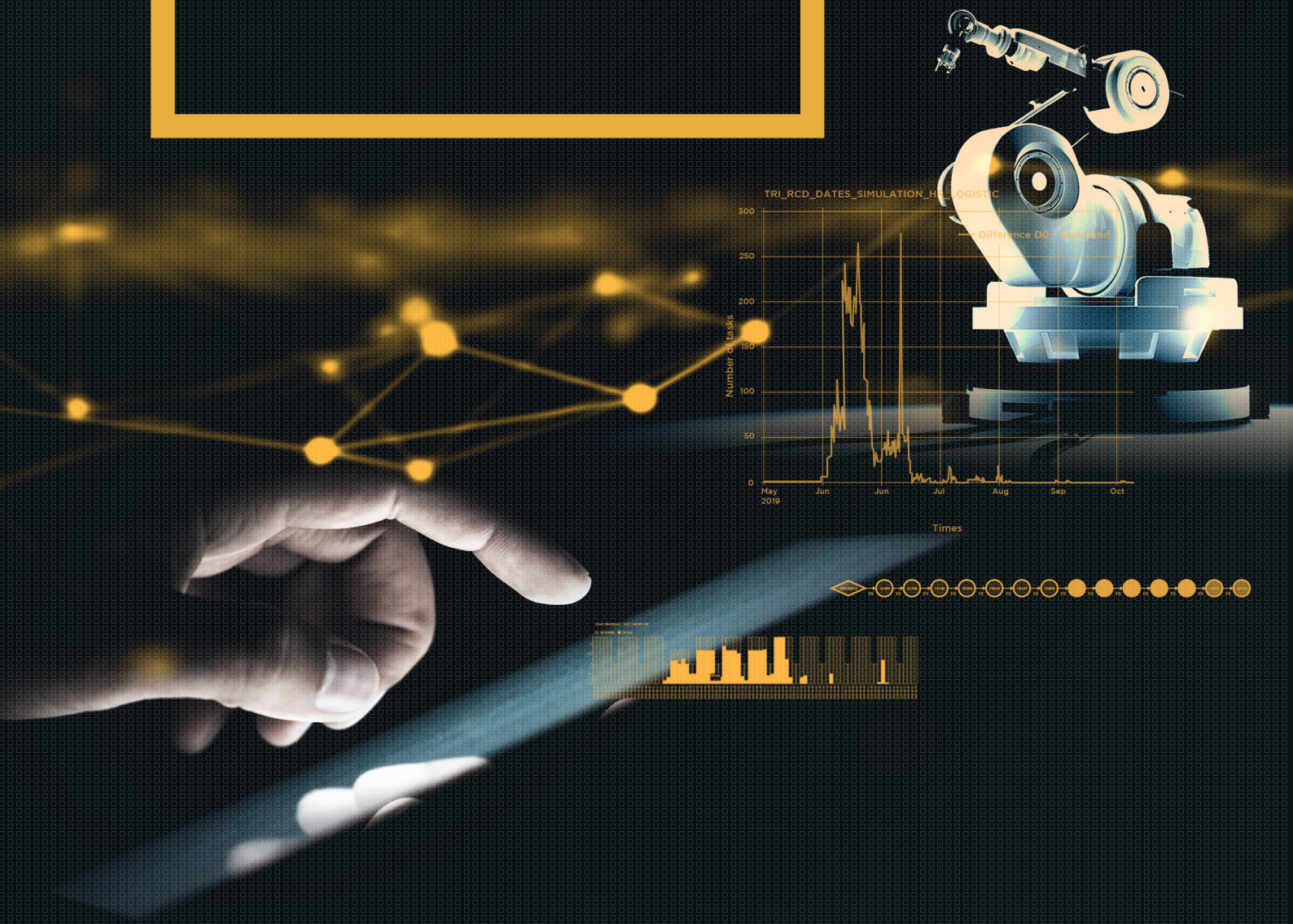
Smarter Asset Investment Planning Decisions

Balancing risk, cost, performance

360° SIMULATION DIGITAL TWIN PLATFORM



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Find Your Forward

LEAD THE FUTURE

The business landscape of 2023 is fundamentally different to what it was just a few years ago. In the wake of a global pandemic and with rising inflation and conflicts that have undermined trust and stability the world over, decision makers are tasked with making choices for a future that is increasingly uncertain.

For asset managers, those choices require balancing competing corporate and regulatory demands while optimizing the life and value of their asset fleet. Operating budgets for maintenance and strategic budgets for long-term investments must both be controlled, all while meeting corporate targets for performance, profitability, and sustainability.

Given the complexity and scope of asset-intensive enterprises, choosing the right option from a pool of thousands of options is a challenge that every asset investment planner lives with daily. And with Cosmo Tech Simulation Digital Twin technology, decision makers in the world's most asset-intensive industries are meeting that challenge head-on.

With our 360° Simulation Digital Twins asset managers can simulate thousands of future scenarios, testing the impact of their decisions on their OPEX and CAPEX targets and choosing the optimal strategy to deliver maximum value. Different operational and strategic choices can be weighed against each other, and the best adopted so that targets are met, leading to increased operational efficiencies and KPIs exceeded.

Simulation Digital Twin technology doesn't replace the expertise of asset managers. Instead, it augments that expertise, offering them a means to adapt their operational and strategic choices in real-time in response to the shifting sands of an uncertain world.

Leveraging simulation to test every possible future scenario – including scenarios that have never occurred before – elevates asset investment planning to the next level and eventually leads to enormous value creation and establishes asset managers as true leaders of change .

Hugues de Bantel

Co-Founder & CEO,
Cosmo Tech

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CONTENT

TOP 3

Digital Twins are one of the Top 3 Strategic Technology Trends to watch in 2023.

Source: Accenture

$73,5B

The digital Twin Market is expected to reach $73.5 Billion by 2027.

Source: MarketsandMarket 2022 Report

13%

The driving demand for AIP software is forecasted to grow at CAGR OF 13% BY 2026.

Source: Verdantix

LESSONS LEARNED
IN THE LAST FIVE YEARS

Who could have predicted the world of 2023 just five years ago? In only a handful of years the world has seen political upheavals, a global health crisis, unanticipated supply chain disruptions, a land war in Eastern Europe, and an acceleration in the long-term climate crisis.

Decision makers are challenged daily to accurately predict the short-term and long-term future of some of the most complex industrial systems. The operational and strategic choices they make in an uncertain world have a deep and lasting impact on their organizations. Whether decade-long capital investments in manufacturing sites or setting asset-purchasing priorities for the fiscal quarter ahead, choosing the best option from a sea of millions of options is essential for the profitability and sustainability of the business.

Amidst this rising complexity, increasing uncertainty, and consistent unpredictability, reactive approaches are far from optimal. Asset investment planners on the technological cutting-edge know that the only way to navigate the unpredicted and unpredictable disruptions is to adopt a deliberately proactive stance.

In today's uncertain world, proactive capital planning means adopting an agile approach focused on resilience. The very best asset investment planners:

- **Set clear priorities for their asset management programs that consider all constraints**
- **Adopt a truly 360° perspective to weigh all relevant factors before deploying capital**
- **Reconcile competing business objectives to establish optimal trade-offs**
- **Align stakeholders across different business divisions and corporate functions**
- **Challenge their own plans and adjust when objectives and priorities evolve**

These shifts in objectives and priorities are increasingly common in a world that is subject to systemic shocks. An asset investment planner at a major manufacturer and Cosmo Tech client, for example, spent much of the first decade of the 2000s with financial performance front of mind. Controlling debt and generating a return on capital investments were prioritized, yet by 2020 the key concerns for corporate stakeholders were sustainability, customer satisfaction, and reducing **the corporate carbon footprint.**

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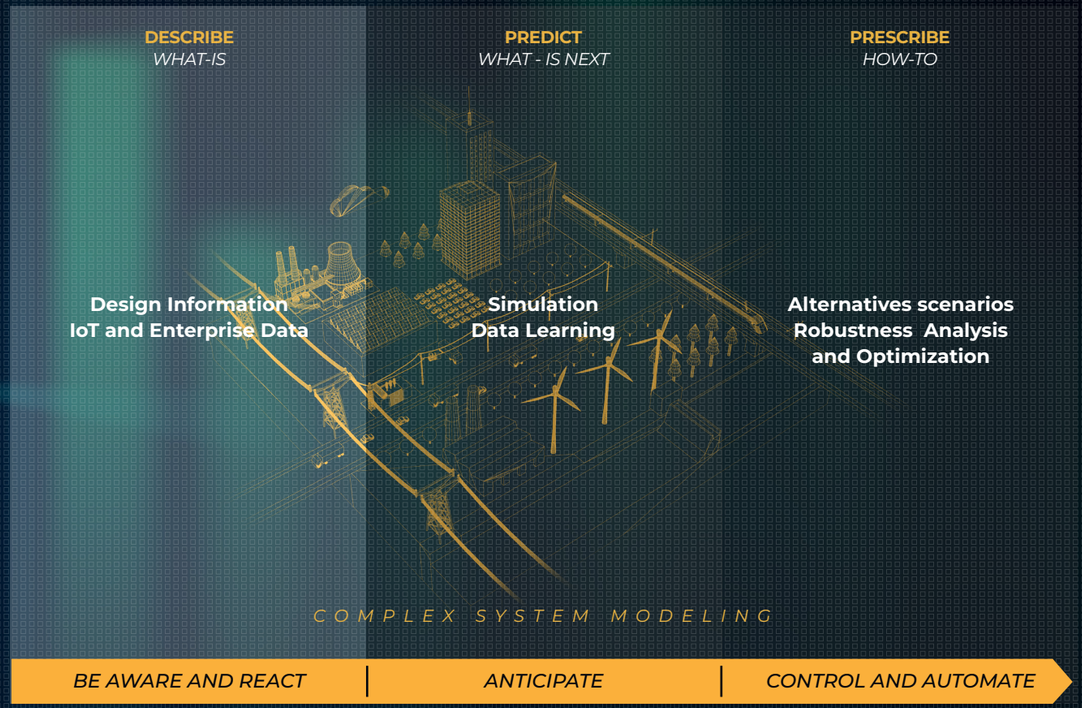
The combination of a complex and uncertain world and the shifting objectives that asset investment planners must navigate demand smarter decision making. Choices need to be holistic, planning needs to be both short and long-term, information needs to be accurate, relevant, unified, and correlated, and all stakeholder views need to be reconciled in a single, optimal strategy.

Backward-facing decisions that are based on historical data are no longer effective in an unpredictable business climate. When the future state of the asset investment planning landscape is almost certain to differ from the past, relying on data from the past is certain to lead to poor choices. So, too, a strategy of embracing budget cuts and postponing investments to save cash in the short-term without understanding the true impact of such savings for the years to come when it might in fact cost more.

Asset investment planning leaders need to find new ways to make the right choices that work in the reality of the present, and all the possible realities of the uncertain future to come.

SYSTEMIC APPROACH TO ASSET MANAGEMENT



THE EVOLUTION OF ASSET MANAGEMENT

THE RISE OF DATA ANALYTICS

In the last decade the practice of asset management has evolved to leverage new digital technologies. The Industrial Internet of Things (IIoT), the cloud, big data and all the associated analytics have changed the way that asset managers work, plan, and invest. Increasingly, asset intensive organizations have invested in enterprise asset management (EAM) and asset performance management (APM) tools to improve asset performance, reduce operating costs, enhance maintenance planning, and meet business goals. Such analytical tools help asset managers to make better choices that are informed by real-time data about the state of their asset stock.

BENEFITS OF AIP

More recently a new approach to asset management has emerged, the latest evolution in the pan-industry shift towards analytics and data-based decision making. **Asset investment planning**, or **AIP**, allows organizations to step away from traditional, largely reactive approaches to asset maintenance and management. Instead, they adopt a more longer-term outlook towards their operational and strategic asset spends. This proactive approach leads to better understanding of which investments deliver maximum value while empowering decision makers to balance financial costs, risk levels, and asset performance in an optimal way. Beyond simple analytics based on historical data or even the here-and-now, an AIP approach leverages powerful analytics for both today and tomorrow.

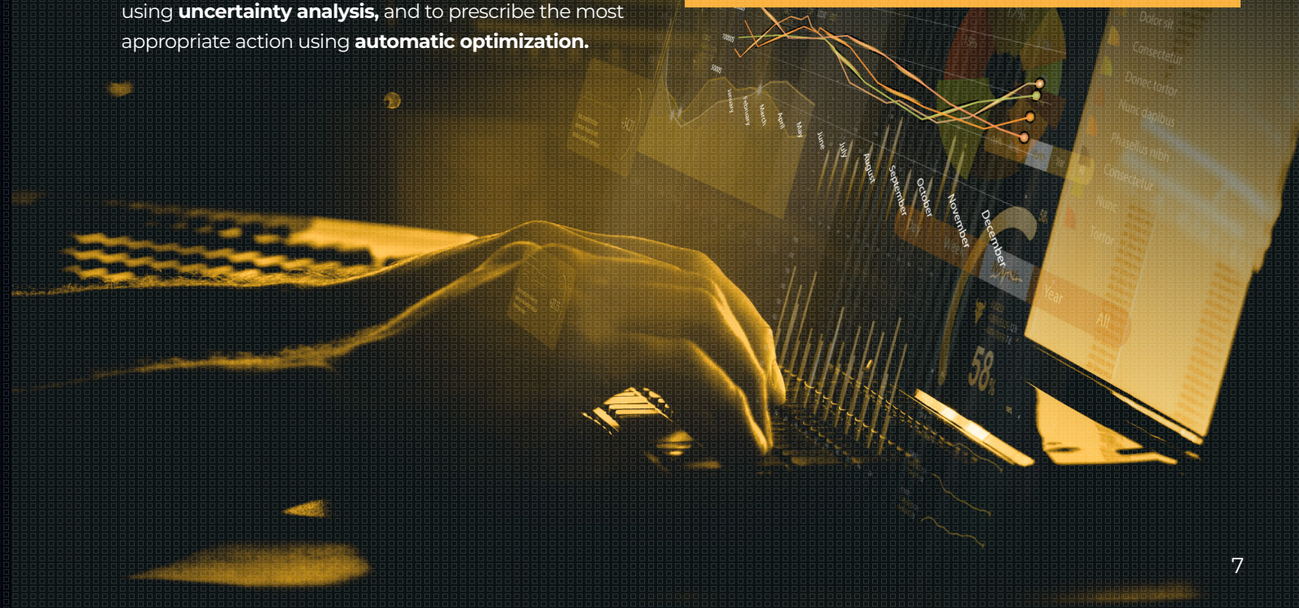
SOFTWARE INVESTMENT INEFFICIENCIES

The primary limitation of traditional approaches is that they provide only a static depiction of the state of a system of assets.

Yet even with new tools, organizations continue to struggle to make their most important asset investment decisions. The complex problems that all asset managers encounter are no easier to understand even if streams of data give the impression of being better informed. Auditing decisions based on historical data and traditional methods are error prone and are often rigid and lack the capacity to evolve even when the context of the business is uncertain.

Artificial intelligence (AI) based tools can help parse these lakes of data, particularly when addressing simple and well-defined asset management problems. In the broader context of a long-term and complex decision-making process, however, such tools often fail to provide the capabilities that asset investment planners need: the opportunity to identify the most critical elements in a system using **sensitivity analysis,** to assess and weigh the risk of any choice using **uncertainty analysis,** and to prescribe the most appropriate action using **automatic optimization.**

- **360° VIEW OF ASSET OPERATIONS**
- **ACCURATE PREDICTION OF THE PLANNED AND UNPLANNED COSTS OF ASSET FAILURES**
- **VISIBILITY ON THE TOTAL COST OF OWNERSHIP OF EVERY ASSET AND ITS COMPONENTS**
- **ASSET LIFETIME OPTIMIZATION (ALO) ASSESSMENT**
- **CONFIGURABLE VALUE FRAMEWORKS**
- **ALTERNATIVE STRATEGIES AND THE CAPACITY TO TEST THESE**
- **ACTIONABLE LONG-TERM CONTINGENCY AND INVESTMENT PLANS**
- **ABILITY TO RECONCILE MULTIPLE STAKEHOLDER VIEWS AND BUSINESS OBJECTIVES**



MAKING THE MOST OF DATA ANALYTICS AND AI

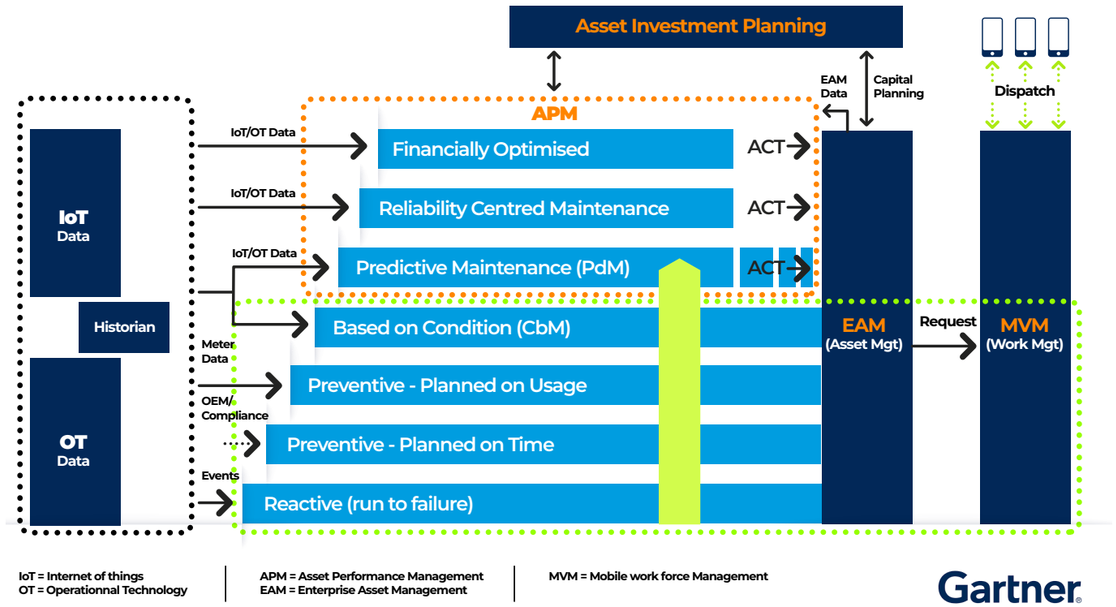
Simulation digital twin technology is the next step forward in the evolution of strategic asset management tools. This technology provides the capabilities that fundamentally change the way that asset managers assess the condition and performance of their asset fleets.

A simulation digital twin is a dynamic digital replica of an operational system, accounting for all its resources, constraints, processes, and data. Decision-makers can virtually test operational plans by running “what-if” scenarios and “how-to” optimizations, determining the robustness of their asset management plans and defining the optimal strategies for achieving their investment planning goals.

SIMULATION-DRIVEN ASSET MANAGEMENT

Cosmo Tech Asset is an AI Simulation-Driven digital twin solution that provides three levels of understanding: the description of what exists and what is happening, the prediction of possible futures, and finally the prescription of optimization and action paths. By combining these levels, Cosmo Tech Asset helps asset-intensive organizations to move from reaction to anticipation with a unique predictive and prescriptive solution for complex, long-term strategic asset investment planning.

ASSET MANAGEMENT



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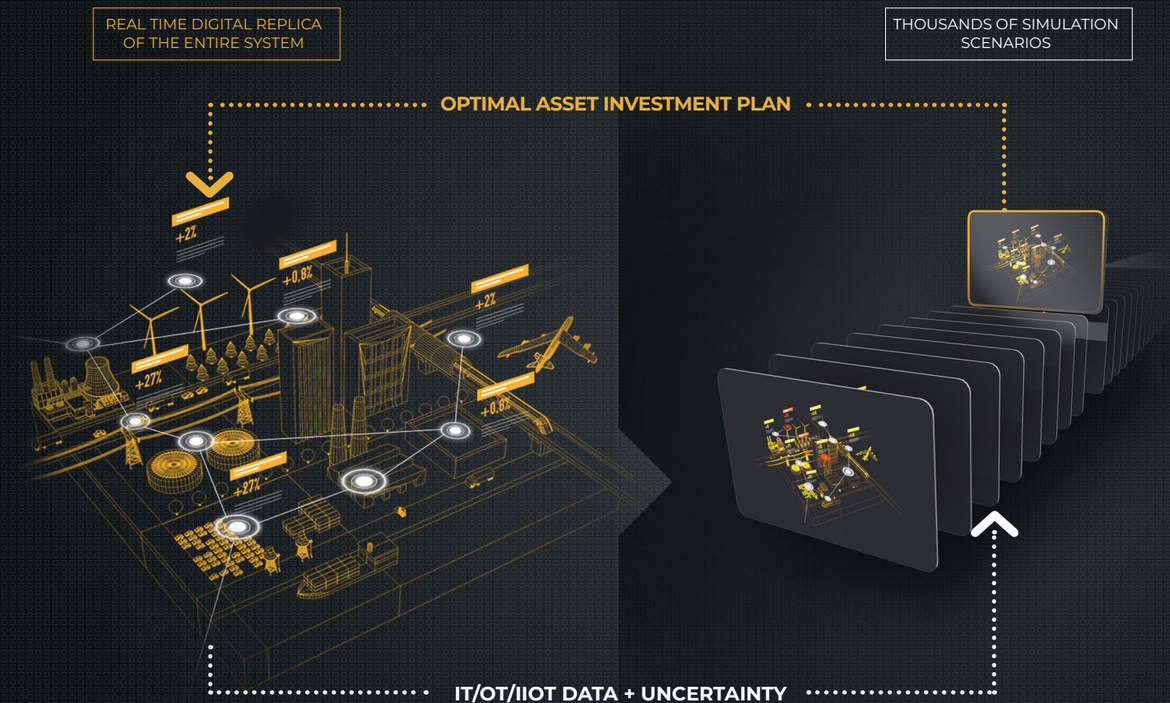
HOW SIMULATION DIGITAL TWINS SUPPORT SMARTER DECISION-MAKING

By running unlimited scenarios to anticipate all possible situations, detecting new ways to achieve objectives and automatically obtaining the best plan to reach the goals set, organizations can **optimize capital expenditures, improve operational efficiency, reduce total asset management costs** all in accordance with decision-making policies and processes that are sensitive to uncertain real-world conditions.

By extracting data from asset management systems and leveraging enterprise analytics, **simulation** provides organizations with a credible and highly accurate framework for infrastructure investment. This helps organizations **justify planned capital expenditures (CAPEX), reduce human errors, and avoid bias** in significant capital investment decisions.

This approach to asset management structures the decision-making policies and processes to provide knowledge and information that is useful both vertically for a wide range of stakeholders, as well as horizontally across a variety of departments in an organization. Decisions are **smarter** and are made with **greater confidence** thanks to the **predictive and prescriptive power of complex systems simulation.**

SIMULATION DIGITAL TWIN



USING
SIMULATION DIGITAL TWINS

COSMO TECH ASSET KEY FEATURES

TEST UNLIMITED WHAT-IF SCENARIOS

Design and simulate scenarios to predict the impact of strategic decisions on a single asset, a network of assets, or an entire organization.

EXTRACT HOW-TO OPTIMIZATION PLANS

Prescribe the optimal asset maintenance and operations plan for the short-term, and an optimal asset investment strategy for the long-term.

ASSET HEALTH SCORE MONITORING

Set asset health check priorities, perform automated health checks, and monitor every asset for the impact of asset management choices over any timescale.

MANAGE RISK

Track, measure, and optimize risk profiles across the asset network to maintain financial, infrastructure, and employee safety within pre-defined boundaries.

FINANCIAL ANALYSIS

Leverage the power of simulation to understand the entire costs of assets, justify planned capital expenditures and make informed long term investment-planning decisions.

TRACK AND TARGET CO2 EMISSIONS

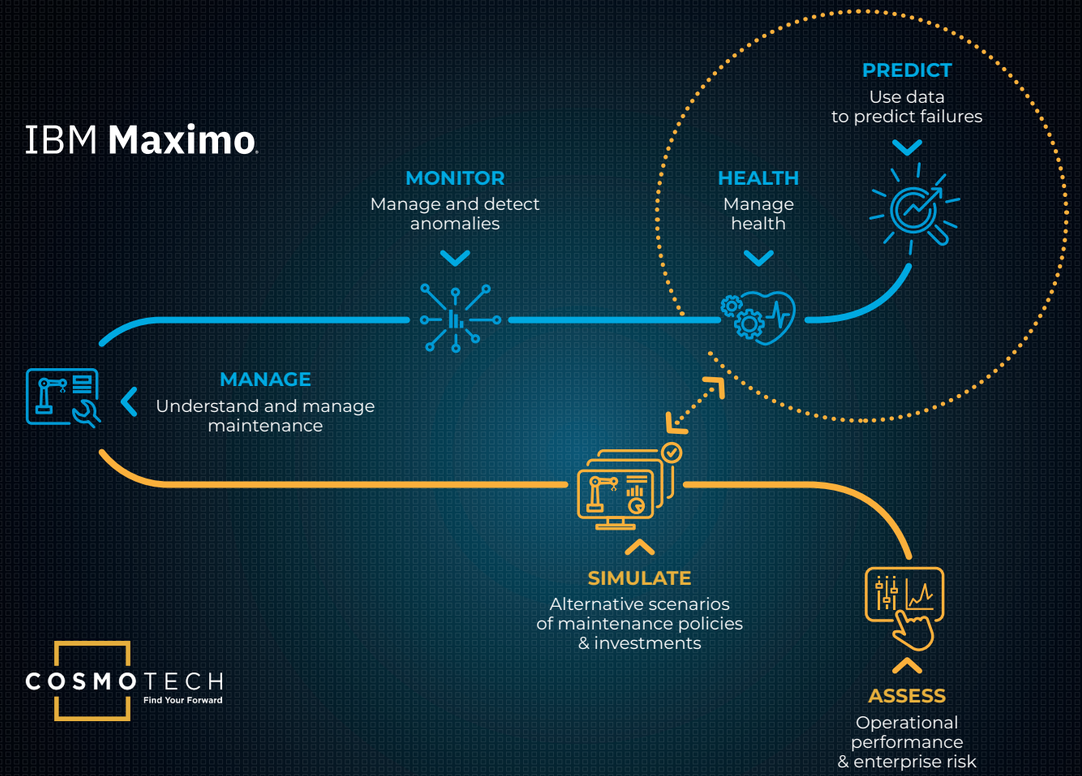
Implement strategies that will lead to long-term sustainability and achieve future net-zero targets while continuing to deliver a return on asset investment.

COSMO TECH & IBM® MAXIMO® LINK
ASSET STRATEGY & PLANNING TO EXECUTION

The Cosmo Tech Simulation Digital Twin platform connects to asset information from the IBM® Maximo® Application Suite. Through this integration, asset managers can simulate the complete physical and financial life cycle of their asset network.

Simulation provides capabilities that change the traditional way of how the condition and performance of assets are assessed. It enables a new generation of advanced predictive and prescriptive simulation and provides a 360° view of the dynamic behavior of the most complex organizations. With Cosmo Tech and IBM® Maximo® asset managers can model systems consisting of hundreds of individual assets, processes, and resources, to simulate business strategies, even under conditions that have never occurred before.

From strategy to planning to execution, businesses can develop a dynamic model of their operational system and find the optimal balance between business goals and operational constraints.



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THE ROI FOR SIMULATION DIGITAL TWINS

The benefits of adopting a Simulation Digital Twin to build an optimal asset investment planning strategy are varied and clear. They include:

→ Adopt a holistic approach to asset management decisions

Consider the organization's entire asset stock and all their interconnections and interdependencies when setting strategy and operational policy.

→ Monitor and understand complex processes through predictive analysis

The outcomes of changes in processes, technology and budgets, and the risks and costs of adopting any strategy can be determined.

→ Optimize OPEX and CAPEX spend

Analyze competing strategic approaches and make confident, accurate decisions about asset maintenance and asset investment policies.

→ Make better, more informed, and highly accurate long-term asset investment choices

Explain to all stakeholders why an investment strategy is optimal and why alternatives were rejected.

→ Justify proposed capital expenditures to internal and external stakeholders

Demonstrate why the prescribed asset investment plan is superior and how it contributes to long-term resiliency.

→ Explore different revenue opportunities for a product, service, or business unit

The capacity to simulate unlimited scenarios and compare results offers a chance to improve across the organization.

→ Better prioritize renewal and maintenance activities

Make the right choices when deploying human and financial resources across an asset fleet to maximize short and long-term returns on investment.

→ Improve synchronization across multiple projects, objectives, and resources

Balance competing corporate targets and constraints in a single asset management strategy that delivers on concurrent business objectives.

KEY RESULTS

"When we started working with Cosmo Tech, we had no global visibility on the impact of the decisions we were making when developing our strategic plans while facing CAPEX constraints."

Expert Leader Industrial System 4.0 at **Renault**

"The exploration with Cosmo Tech software shows good potential to allow us to confidently meet our network reliability challenges, taking into account the changes in our environment and the incorporation of future digitization into the business. The simulations showed us the potential of reduction of operational risks by 12%, keeping the same resource allocation."

Asset Strategist at **TenneT**

"With Simulation Digital Twin technology, we are able to mobilize and engage our teams to visualize their combined reality, to simulate environmental financial impact of operational decisions and to make sure that behind the climate targets, there is a clear and shared action plan tracked internally, and continuously updated."

VP Sustainability at **Nexans**

IN PRACTICE

CUSTOMER IN THE MANUFACTURING INDUSTRY

Client

One of the world's leading aircraft and space vehicle manufacturers with facilities in more than two-dozen countries.

Challenges

Assembly machines in the client's final major plant are strategic assets worth several million dollars each and the failure of any individual machine can jeopardize the delivery of the final aircraft. The client seeks to maximize the useful lifetime of the assembly machines while reducing their total expenditure on the assets.

The Approach

The client leveraged a Cosmo Tech Simulation Digital Twin that allowed them to identify the optimal maintenance and replacement strategy for the assembly machines. They could perform sensitivity analysis to determine the most critical elements in their strategy and explain to key stakeholders how it created opportunities for the future.

Results

The client used their Simulation Digital Twin to identify the best replacement scenario and have demonstrated the opportunity of 15% reduction of its overall asset costs.

15%
TOTEX reduction

IN PRACTICE

CUSTOMER IN THE ENERGY INDUSTRY

Client

A leading northwest European electricity grid operator investing in national and cross-border land and sea grid infrastructure.

Challenges

The client needed to optimize the maintenance and life cycle of 23,500km of high and extra-high voltage lines and more than 12,000 towers. They needed a single tool that could integrate knowledge of the state of the tower life cycles, availability of dozens of different subcontractors, all in conjunction with the use of new technologies and the impact on the environment.

The Approach

The client adopted Cosmo Tech Asset to integrate all of the resources, processes, and mission-critical factors in a single Simulation Digital Twin. Armed with this twin, they could adopt a 360° perspective on their tower maintenance and asset investment planning activities.

Results

The client identified new ways to optimize maintenance and augment the robustness of its operations in the face of unexpected equipment failures. The client realized a 12% increase in the security of its network supply with a constant workforce.

-12%
MW hours at risk

OPTIMIZED
CAPEX/OPEX

DATA APPLICATIONS
ROI
IMPLEMENTATION
TIMING
CONFIGURATION
USE
SUSTAINABILITY

FAQ

FREQUENTLY ASKED QUESTIONS SIMULATION DIGITAL TWINS

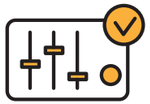
When faced with a transformative technology like Simulation Digital Twins, many business owners and operational efficiency experts find themselves in uncertain territory. Questions about data requirements, implementation and ROI abound – so what is the truth about this innovative technology?

HOW MUCH DOES IT TAKE TO IMPLEMENT A SIMULATION DIGITAL TWIN?

Developed to tackle the challenges of asset investment planning, Simulation Digital Twins are ready-to-deploy and can easily be configured and customized to relevant use cases without any significant mobilization of client resources. The platform provides a very high level of modeling flexibility to adapt to new requirements or changes without starting over from scratch. As a result, you can start small to meet an initial business challenge with an 8-week implementation, and over time easily adapt and quickly expand the scope of the Simulation Digital Twin when adoption is approved by stakeholders.

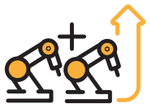
HOW MUCH DATA IS REQUIRED FOR A RELIABLE SIMULATION?

Simulation Digital Twins don't require the exhaustive data that based data technologies demand to produce a reliable simulation of the replicated organization. Modeling embeds only the data that is necessary to complement the structure of the dynamics. This requires far less time to be invested compared to solutions that require data exhaustivity. Simulation Digital Twins can also identify the critical data that have the most impact on the organization, giving directions to complement simulation.



ARE THE DASHBOARDS EASILY CONFIGURABLE AND CUSTOMIZABLE?

Asset Investment Planning dashboards arrive out-of-the-box with common asset management “what-if” scenarios and “how-to” optimizations pre-configured. The software is user-friendly and personalized components and entire dashboards can be easily and rapidly deployed with just a few clicks of a mouse. While a Simulation Digital Twin can have thousands of different parameters and constraints, dashboards are easily configured to present the key parameters that make launching custom simulations and optimizations simple.



CAN YOU OPTIMIZE MULTIPLE HIGH-VOLUME ASSET TYPES AT ONCE?

Cosmo Tech’s Simulation Digital Twins are capable of modeling and simulating any asset intensive industrial environment in all its real-world complexity. Different asset types and classes, no matter whether representing a single asset or hundreds of individual assets, are replicated in the digital twin. Unlimited simulations of the impact of any decision on a specific asset, class of asset, or the entire organization can be run concurrently with a click, and “how-to” optimizations executed to meet business goals for multiple high-volume asset classes simultaneously.

WHAT CAPABILITIES DO YOU HAVE TO SUPPORT SUSTAINABILITY PERFORMANCE?

Simulation Digital Twins are designed to optimize an organization’s operational and strategic performance to meet multiple goals across different timescales simultaneously. Cosmo Tech clients have already applied this technology to select optimal tactics and strategies that guarantee a future that is carbon neutral and environmentally sustainable. What’s more, this sustainable future is achieved while also meeting corporate targets for resilience, robustness, and profitability. The power of complex simulation informs decisions that result in a more robust, more resilient, and more sustainable future.

WHO WE ARE ?

Cosmo Tech designs Simulation Digital Twin software to solve the most complex industrial problems and lead enterprise decision making.

This next-gen knowledge-based AI technology provides 360° simulation that predicts the evolution of an organization in uncertain environments to better understand the impact of decisions and to optimize all levels of enterprise decision making. With this 360° view of their organization, decision makers can run unlimited scenarios to anticipate all possible futures even under conditions that have never occurred before.

Leading companies from the manufacturing, automotive, energy, and transport sectors rely on Cosmo Tech scalable solutions to ensure a future that is robust, resilient, and sustainable.

360° simulation

Our digital twins offer a 360° forward-looking view of even the most complex systems. We provide holistic simulation of the organization including any external constraints.

Reliable prediction in the face of uncertainty

Our technology models the dynamic behavior of an organization meaning we can detect emerging behaviors and predict results even under conditions that have never occurred before.

Unlimited scenarios and optimized action plans

Our software runs unlimited scenarios to understand the causes that lead to a result, anticipate all possible situations, and automatically obtain robust plans to reach the goals set.

Modular and scalable platform

Our Simulation Digital Twins are adaptable with a large capacity to evolve according to your needs. You can start small, then easily adapt, or quickly expand the scope of your Simulation Digital Twin.

Microsoft Solutions Partner
Infrastructure
Azure

MEMBER digital twin CONSORTIUM Member since 2020

Gartner

2020: Sample Vendor for Digital Supply Chain Twin Technology in Supply Chain

2019: representative Vendor of Digital Twin of an Organization

$27 million
Series A and B venture capital funding

2010
Cosmo Tech founded

FIND YOUR FORWARD.

"Asset managers not only need to transform their present performance but they must also plan for a range of future scenarios. We believe the industry's ultimate winners will be those firms that can navigate an increasingly complex and fluid world to create long-term value."

Mark Wightman, EY

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Find Your Forward

Interested in learning more?
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