DIGITAL TWIN READINESS SPECIALISTS

TWINTECH

BUILDINGS THAT THINK

twintech

WE BRIDGE THE GAP BETWEEN TRADITIONAL CONSTRUCTION AND INTELLIGENT BUILDINGS

TwinTech - Build Smarter with Data and Digital Twins

MOST COMPANIES AREN'T TWIN-READY. WE GET YOU READY.

HOW WE DO IT

SMART PROCUREMENT	→	Equipment specification and procurement ensures compatibility across systems.
READINESS CONSULTING	→	Preparing infrastructure for digital twin implementation.
DATA UNIFICATION	→	Transforming fragmented systems into unified dashboards.
DIGITALLY AUGMENTED MAINTENANCE	→	More data leads to better insights and improved decision-making over time.

MONEY TALKS...

*HTTPS://WWW.KBVRESEARCH.COM/DIGITAL-TWIN-MARKET

USD 195 B MARKET BY 2030*

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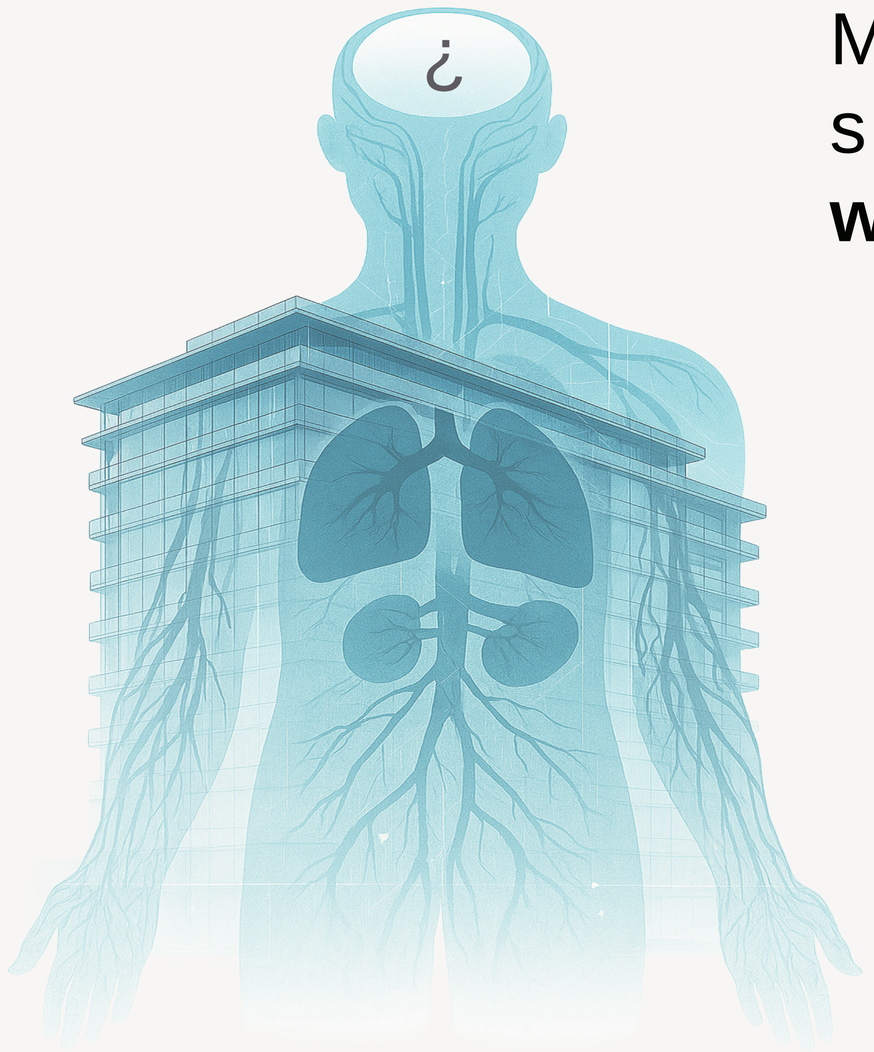
WE FORGOT THE BRAIN



Modern buildings are designed with skeletons, hearts & lungs but **without a brain**.

We design walls, pipes and wires.
But without data intelligence, our buildings can't **sense, learn, improve** or **self-regulate.**

Included √	**Missing X**
Foundations & frame	Data layer
Electrical & HVAC	Real-time insights
Plumbing & cabling	Predictive analytics

DATA ENGINEERING COMPLETES YOUR BUILDING'S NEURAL NETWORK

LET YOUR **BUILDING** DO THE **TALKING**

Architechture layer drawing √
HVAC layer drawing √
Structural layer drawing √
Electrical layer drawing √
Fire safety layer drawing
Plumbing & cabling layer drawing √

NEW: Data intelligence layer drawing

Data is the **common denominator** that makes all **interlocking systems speak the same language**.

dashboard overviews update in real time.

Connects every sensor, system and space.

Database of building's long-term "memories".

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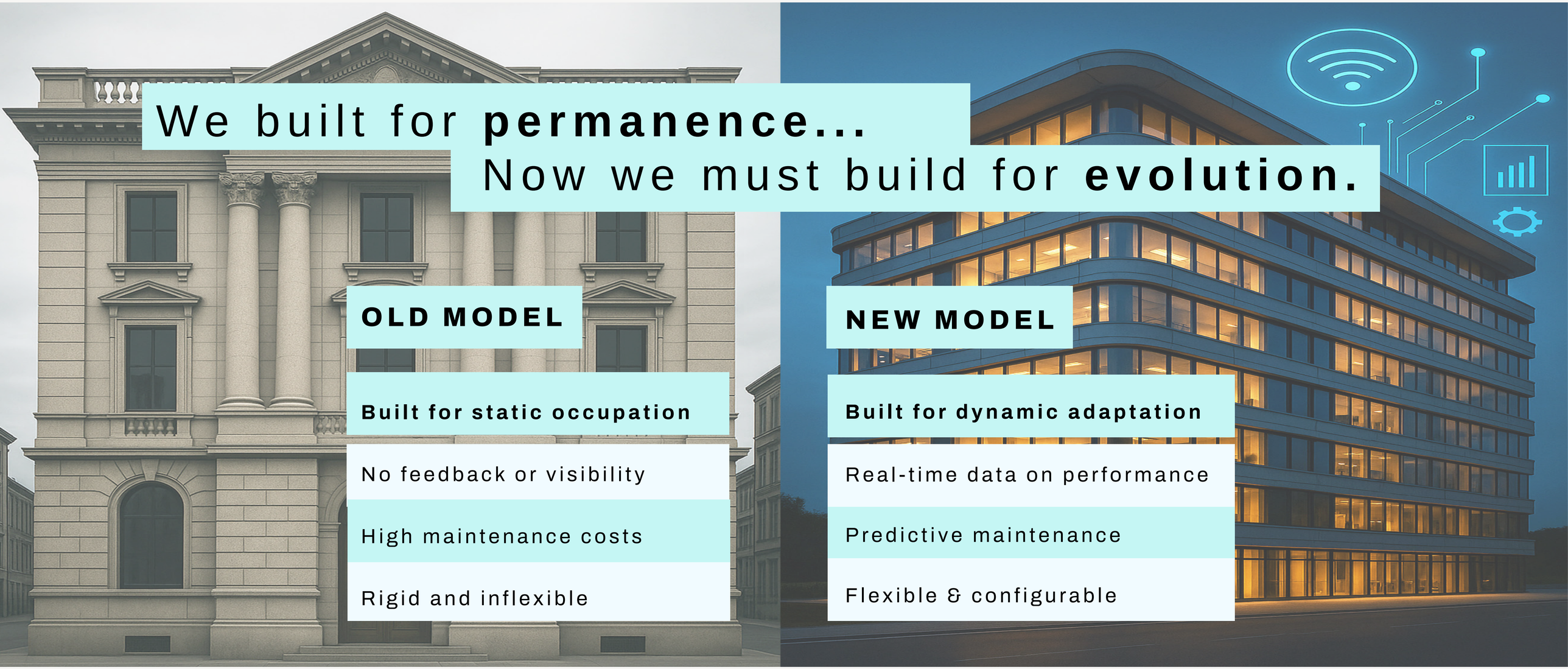
THE WORLD WE BUILT YESTERDAY



We built for **permanence...**
Now we must build for **evolution.**

OLD MODEL

Built for static occupation

- No feedback or visibility
- High maintenance costs
- Rigid and inflexible

NEW MODEL

Built for dynamic adaptation

- Real-time data on performance
- Predictive maintenance
- Flexible & configurable

WE’LL MEET YOU WHEREVER YOU ARE

HERE’S **HOW WE HELP YOU** ON YOUR DIGITAL TWIN JOURNEY

Specification & Procurement

Guide equipment selection for generators, chillers, and mechanical systems, ensuring REST API compatibility and smart meter integration.

Birds-eye view in your pocket

Pull all your data streams together into easy-to-use dashboards for insights on the go.

Unifying Medical, Equipment & Building Data

- A single, smart view of your entire hospital operation by merging building, equipment, and medical information systems, including **HL7 data**.
- Adopt a proactive approach to **compliance** and meet audit requirements with ease.
- Deliver clear, data-driven **reports** to management, stakeholders, and EXCO.

Infrastructure Twins: Deep Insights for Mission-Critical Facilities

Infrastructure Twins are designed for larger, multi-purpose buildings, logistics hubs, utilities, high-volume retail facilities and other mission-critrical operations.

- Deep integration of a vast array of data streams - inclusing (BMS), smart utility meters, IoT sensors, and maintenance systems - delivering significant economic returns over time.
- Powers long-term planning, predictive maintenance, and operational insight.
- A complete, dynamic replica of your most critical assets.

BIM TO DIGITAL TWIN TRANSFORMATION

ALREADY HAVE **BIM** MODELS?

*While BIM (Building Information Modeling) focuses on the design and construction phases, **digital twins** encompass the entire lifecycle of an asset, including operations and maintenance.

BIM is a static, collaborative model used for design and construction, whereas a **digital twin** is a dynamic, real-time replica used for operational insights.

We use your existing datastreams to create your digital dollhouse: a virtual twin that co-evolves with your building.

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INVEST NOW IN YOR DIGITAL FUTURE

*THE DIGITAL TWIN INDUSTRY REPORT, HEXAGON SURVEY

ALMOST THREE QUARTERS OF EXECUTIVES EXPECT TO INCREASE THEIR INVESTMENT IN DIGITAL TWINS OVER THE NEXT YEAR*.

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ENTER THE DATA ENGINEERS

QS, Architects, Structural, Electrical...
Data engineers complete the **modern project team**.

DATA ENGINEERS
ARE AN
INTEGRAL
PART OF
FUTURE-READY
CONSTRUCTION
& DEVELOPMENT
PROJECTS

DATA
ENGINEERING

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WHAT THE DATA ENGINEER BRINGS TO THE TABLE

Data engineers connect the dots between **physical** and **digital systems**, unlocking the **full value** of your building...

Function	Impact
Integrates sensor & BIM data	Unified “single source of truth”
Builds live data pipelines	Dashboards in seconds, not days
Trains predictive-maintenance models	Up to 30% lower repair costs
Optimises energy via twin feedback	20% energy savings (typical case)
Curates lifecycle data for owners	Higher resale & rental valuations

TWINNING IS WINNING

HTTPS://HEXAGON.COM/RESOURCES/INSIGHTS/DIGITAL-TWIN/STATISTICS

35% BOOST IN OPERATIONAL EFFICIENCY WITH DIGITAL TWINS.

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DIGITAL TWIN INTEGRATION FRAMEWORK -

Digital Twin Platform

DIGITAL TWIN

SUBSYSTEMS: PLATFORMS & DATA STREAMS SOURCED FROM VARIOUS INSTALLED EQUIPMENT.

Management & Environmental Data

Utilities Diesel and Gas Data
Source: Afrox Gas sensors or BMS

Utilities (Water , Elec)
Source: Smart Water and Electricity meters with Billing Platform

IOT Sensors Data (Temp, Humidity, PM2.5, noise)
Source: IOT Platform with IOT Sensors & BMS

Finance Data
Source: SAP, JDE, Sage, Quickbooks, Xero

HR Staff & Time Man.
Source: Sage, SAP, JDE, Sage, Quickbooks, Xero

Procurement Data
Source: Sage, SAP, JDE, Sage, Quickbooks, Xero

Equipment & Asset Data

Asset Configuration
Source: CMMS

Planned Maintenance, Breakdown Maintenance Data
Source: CMMS

BMS Data
Temp, alarm, humidity, air quality
Source: BMS Platform

Workflow data
Source: ERP Platform

Process Flow data
Source: ERP Platform

Facility's Spacial Data

360 Degree scans of interior spaces
Source: Matterport Scan

3D Models
Source:
BIM, Revit Models; Architectural drawings

DIGITAL TWIN INTEGRATION FRAMEWORK (CONTINUED)

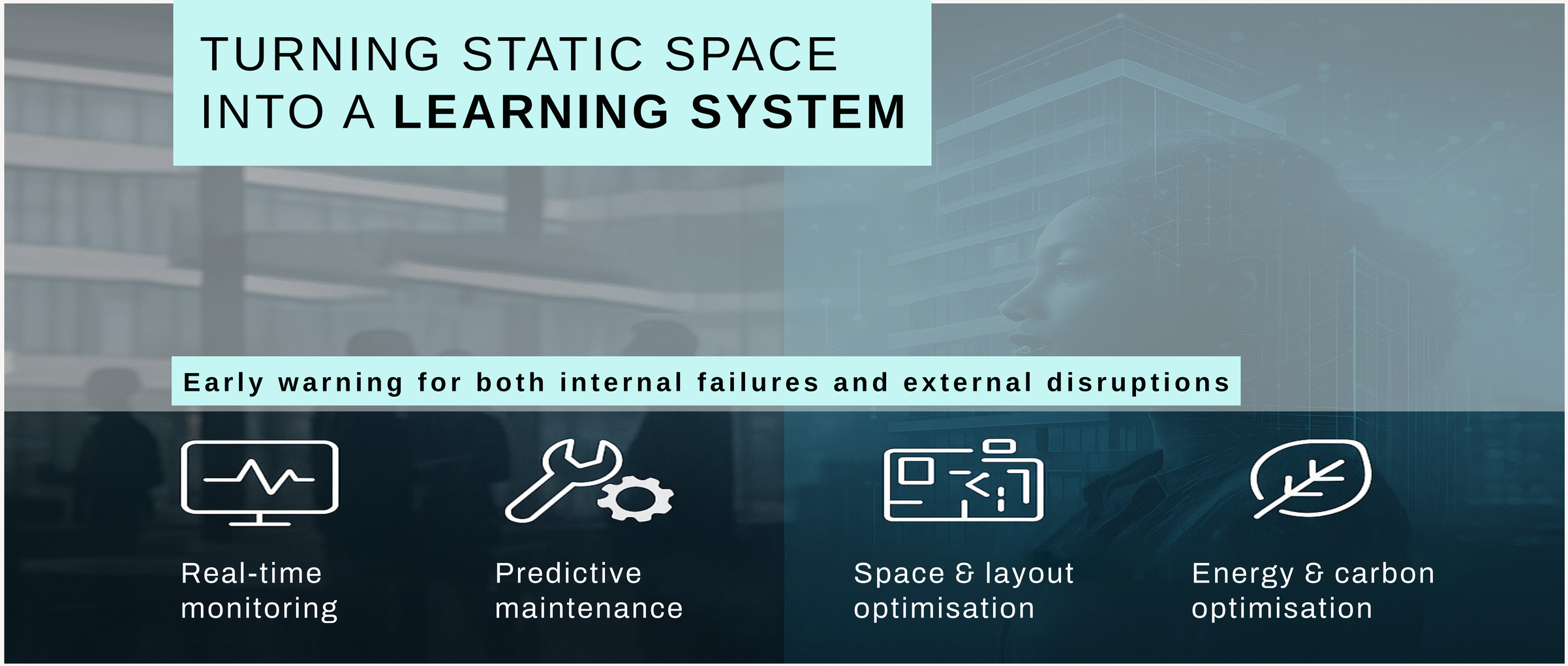
Digital Twin Platform

Here's how it helps you:

- Audits and Compliance Tracking (with proactive alerts)
- Management Decision Making
- Process Optimisation
- VR Space "Doll House" with data overlay
- Report Generation
- Multi Index Search
- Artificial Intelligence (AI)
- Dashboards tracking parameters
- EXCO Reporting
- PDF exports of various reports
- Building and Scenario Simulation
- BCM

FROM SILENCE TO INTELLIGENCE

TURNING STATIC SPACE INTO A **LEARNING SYSTEM**



Early warning for both internal failures and external disruptions

Real-time monitoring

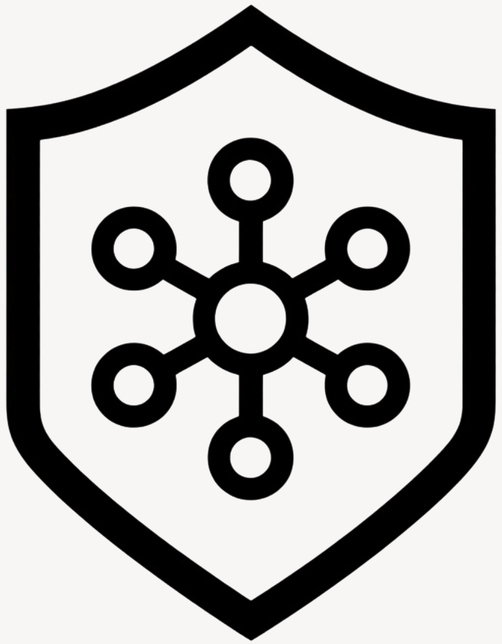
Predictive maintenance

Space & layout optimisation

Energy & carbon optimisation

SECURE BY DESIGN. YOUR DATA STAYS YOURS

Data-backed Intelligence. Built on a foundation of trust & accountability.



At twintech we believe data security and ownership are integral, not optional.

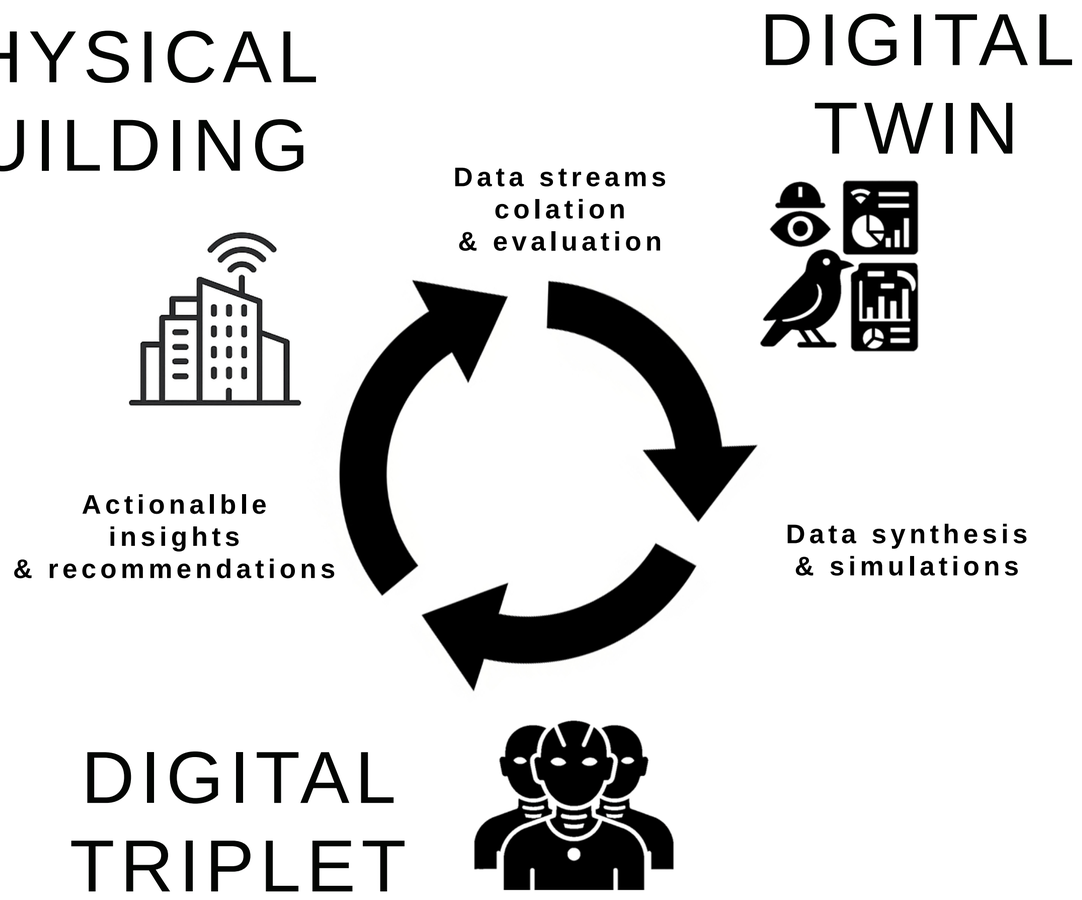
- Our systems use a smart, secure integration architecture to protect your data.
- Built for 100% compliance with existing data and ecommerce frameworks.
- You always maintain full ownership of your data as well as any insights, intelligence or IP it creates.

TAKING THE CONCEPT EVEN FURTHER...

DIGITAL TRIPLETS

Moving beyond dashboards, **digital triplets** are the next-gen GUI for your building's data streams; LLM-powered avatars you can query your data directly using natural langauge.

Digital triplets deliver dynamic, predictive insights in an intuitive way.



SMART MONEY'S ON SMART BUILDINGS FOR A CLEANER FUTURE

The **economics** of digital **evolution**

Without twin	**With twin***
Reactive fixes	Predictive maintenance savings
No insights about use of space	Substantial space-use gain
Energy wastage: more bills	Energy savings
Depreciating asset	Premium valuations, ESG credits

https://www.toobler.com/blog/digital-twin-for-buildings-benefits || https://www.sciencedirect.com/science/article/pii/S0378778824012672

*https://www.twinview.com/insights/predictive-maintenance-and-beyond-how-digital-twins-are-redefining-building-operations

INTELLIGENT BUILDINGS FOR SAVINGS & SUSTAINABILITY

DIGITAL TWINS CUT
OPERATING COSTS
BY **19 %**
& **CARBON EMISSIONS**
BY **15 %***

*Hexagon Digital Twin Industry Report 2024

https://hexagon.com/resources/insights/digital-twin/report

TwinTech - Build Smarter with Data and Digital Twins

YOUR DIGITAL TWIN BEGINS ON THE ARCHITECT'S TABLE

Digital **intelligence** needs a foundation too.
We don't just install tech. **We embed it from day one**.

We work closely with your architects, engineers and project team during planning and design to:

- **Strategically plan** the overall building operation.
- **Source** future-ready, interoperable tech; smart sensors, meters and other data infrastructure.
- **Oversee** installation and commissioning of data systems.
- **Ensure clean data flow** for real-time dashboards and twin readiness.

BUILDING SMART FROM THE GROUND UP

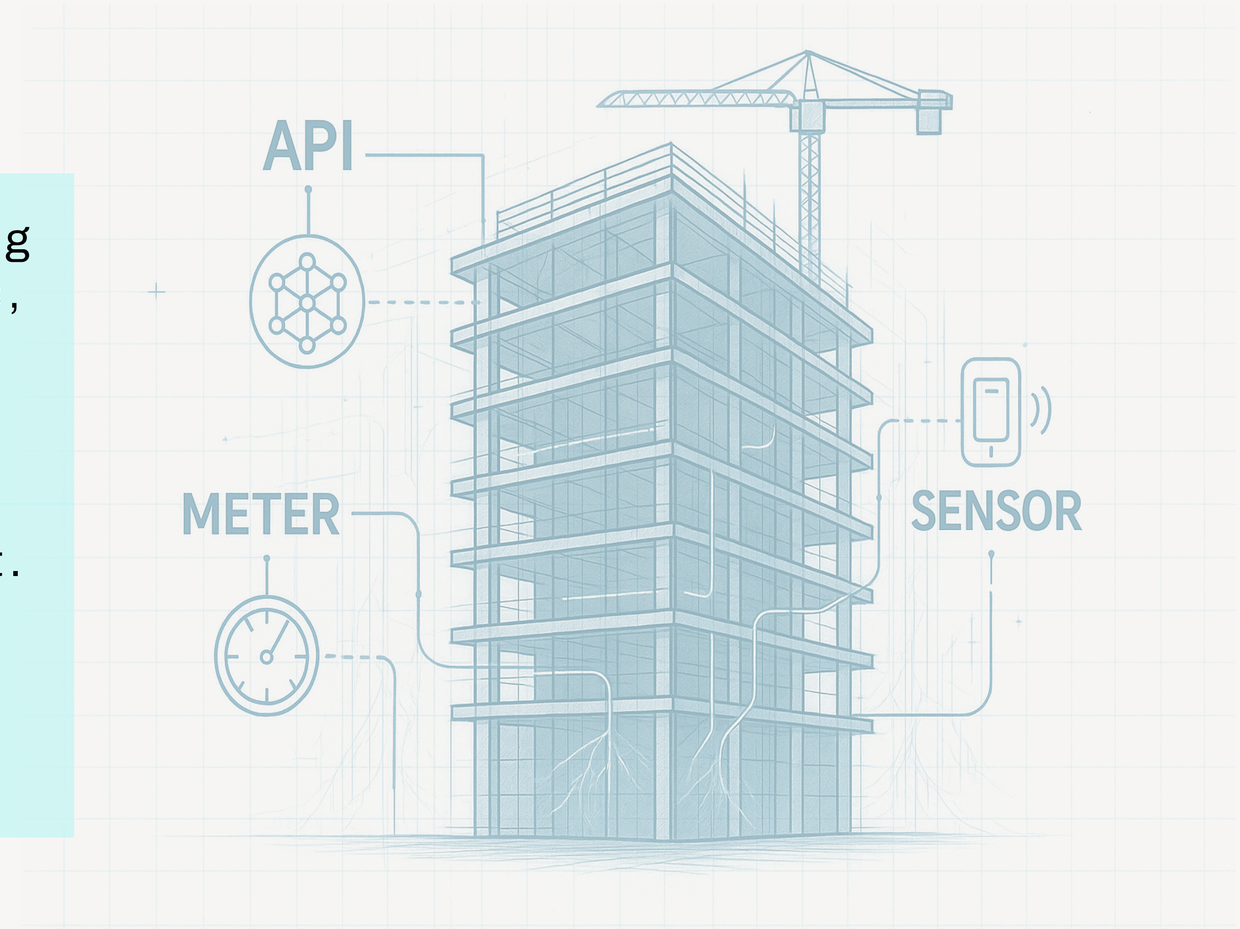
Integrating smart technologies during construction for **seamless operation and future readiness.**
We source:

REST APIs: The connective tissue powering real-time data exchange across all systems, enabling communication between buildings and external applications.

Smart Meters: Provide real-time energy consumption data for efficient management.

IoT Sensors: Monitor environmental conditions, occupancy, and equipment performance.

Designing for **intelligence** from **the planning phase.**



NEED TO RETROFIT? WE’VE GOT YOU COVERED

TURNKEY SERVICE

Our seamless plug’n’play service retrofits existing buildings with digital twin capabilities; quickly, cleanly, and cost-effectively.

Whether you’re starting from scratch or retrofitting an existing facility, let us align your build with long-term intelligence and operational efficiency.

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DON’T GET LEFT BEHIND!

INVEST NOW IN YOUR DIGITAL FUTURE...

JOIN US IS A **SHARED COMMITMENT** TO **BUILDING SMART**.

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APPENDICES

TwinTech - Build Smarter with Data and Digital Twins

PROCESS FLOW:

1) Planning and Requirements Gathering

Define Objectives:
Understand what the digital twin is meant to achieve (e.g: energy efficiency, real-time monitoring, predictive maintenance, retail).

Stakeholder Input:
Involve owners, architects, engineers, building developers. contractors, and facility managers in the user requirements specification for the Digital Twin.

Data Requirements:
Identify what data is needed and how it will be collected and managed (e.g., BIM data, IoT sensors).

Share your standard list
of digital twin sensor icons with the team.

Design the data engineer specification
and share with the engineers to incorporate into their tender specifications for the HVAC system , lift systems, tender for the BMS, tender for the smart utility metering to ensure the different systems in the buildings come with the correct data API, cloud storage and data points as per the data engineering specification that was developed.

PROCESS FLOW:

2) Design Phase

Interact with the architect and engineers
as they design the building to provide you with a detailed digital model of the building, including architectural, structural, MEP systems in 3D Revit or similar packages.

Scan the model
with a LIDAR Camera system to obtain a model of the building AKA a “360º scan”.

Data Integration Planning:
Prepare the 3D model for integration with real-time data sources by compiling the analytics translation specification to be sent out the digital twin vendors, and handle the suppliers of the different systems in the building e.g the generators, HVAC, specialist equipment suppliers, parking equipment, smart water and electricity meter vendors. Ensure they provide the correct API and hardware on their equipment to transfer data to the digital twin platform.

PROCESS FLOW:

3) Development of Digital Twin Platform

Platform Selection:
Choose from a vendor or develop a digital twin platform capable of handling large datasets, real-time analytics, and 3D visualisation.

Integration Architecture:
Set up architecture for integrating 3D Model in the digital twin platform with the with live data.

Sensor & IoT Planning:
Plan placement and type of sensors for construction monitoring and later operational phases.

Develop data engineering layouts to place the sensors.

Ensure BMS, smart metering and other suppliers
send the correct data to the integration layout of the digital twin.

PROCESS FLOW:

4) Construction Phase

Construction monitoring: Use IoT devices to feed real-time progress into the digital twin.

Model updates: Continuously update the Digital Twin platform to reflect as-built conditions.

Setup all the dashboards for the client.

Overlay and annotate the data at the correct point of interest in the visual digital twin model.

Issue tracking: Use the DT to detect deviations, monitor maintenance, monitor trends, monitor cost, monitor machinery data and report on deviations.

Monitor compliance data and setup alarms.

Continually refine: Continue to work closely withg you to improve and finetune the digital twin platform model over time.

Look for other opportunities to integrate more data sources.

PROCESS FLOW:

5) Commissioning & Handover

Validation: Ensure the digital twin matches the physical building.

Data Handover:
Deliver a fully integrated Digital twin including sensor data, api data, 3D virtual model, documentation, and maintenance info.

Training:
Train facility managers , asset managers, digital building managers and operators on how to use the digital twin.

PROCESS FLOW:

6) Operation & Maintenance

Real-Time Monitoring:
Use the digital twin to track systems in real-time.

Predictive Maintenance:
Apply analytics to predict equipment failures.

Lifecycle Management:
Use the digital twin for ongoing renovations, expansions, or retrofits.

Monitoring
of retail sales.

Real-time monitoring of and correction
of any errors.

PROCESS FLOW:

7) Feedback Loop

Performance Analysis:
Continuously analyze building performance and user interaction.

Optimisation:
Feed insights back into design processes for future projects..