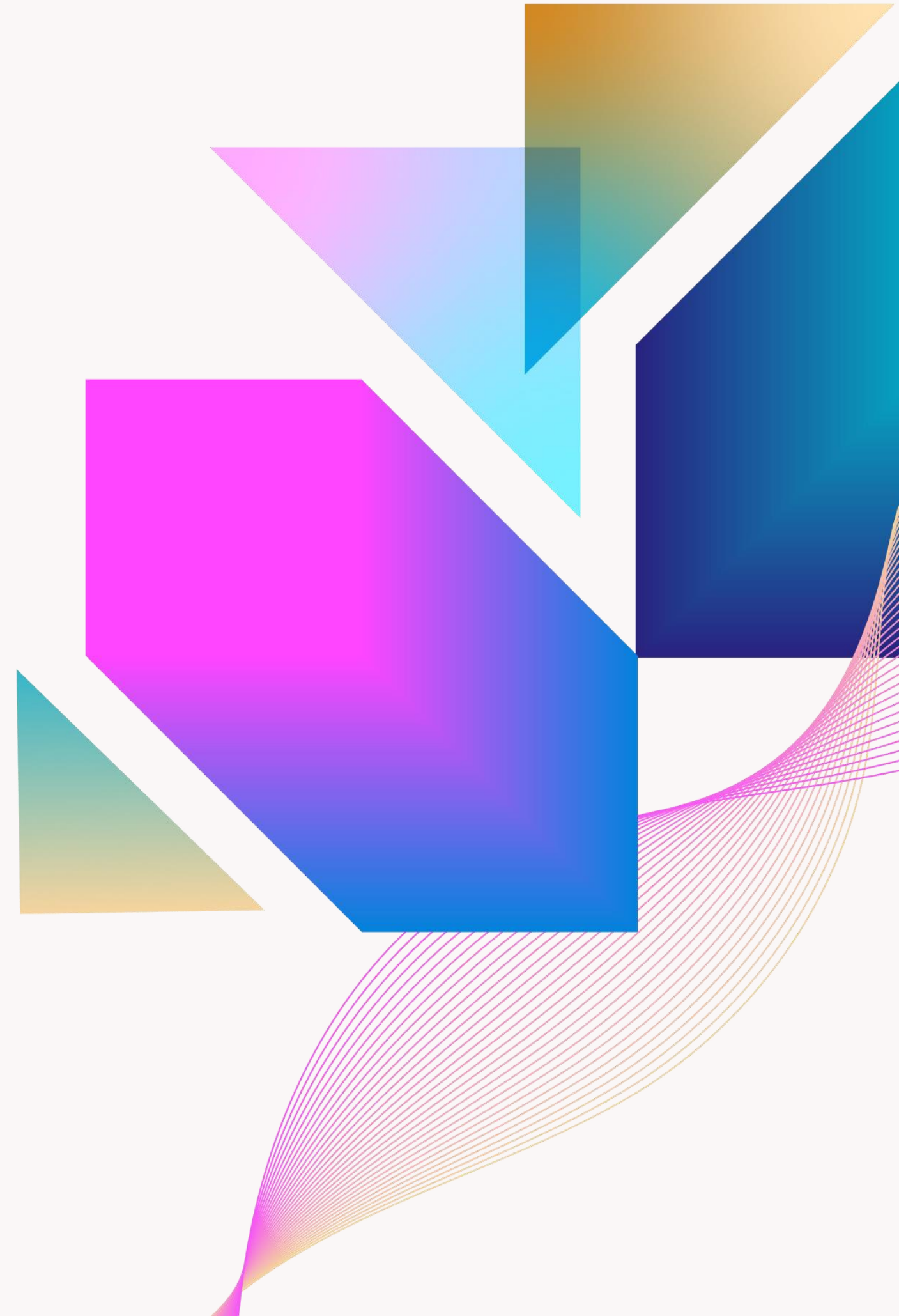




# Data Meets the Built World Operational Intelligence Through Digital Twins

Dr. Jimmy Abualdenien, Head of Digital Twin Product, Nemetschek Group



# NEMETSCHKE GROUP

## PLANNING +DESIGN

Precise, innovative, and open planning and design workflows

ALLPLAN

GRAPHISOFT

IRISA

SOLIBRI

VECTORWORKS

## BUILD +CONSTRUCT

Collaborative, efficient, and sustainable construction processes

BLUEBEAM

gocanvas

NEVARIS

## OPERATE +MANAGE

Smart, intelligent and comprehensive building management

CREMSOLUTIONS

SPACEWELL

## MEDIA +ENTERTAINMENT

Creative, intuitive and powerful 3D animation

MAXON

## DIGITAL TWIN business unit

dRofus

dTwin  
A NEMETSCHKE SOLUTION



# Challenges of AEC/O Industry

Across design, construction, and operations of assets

?

**No Transparency in  
available data**



**Outdated information**



**Disconnected systems  
– isolated information**



**Lots of Data – little  
analysis**

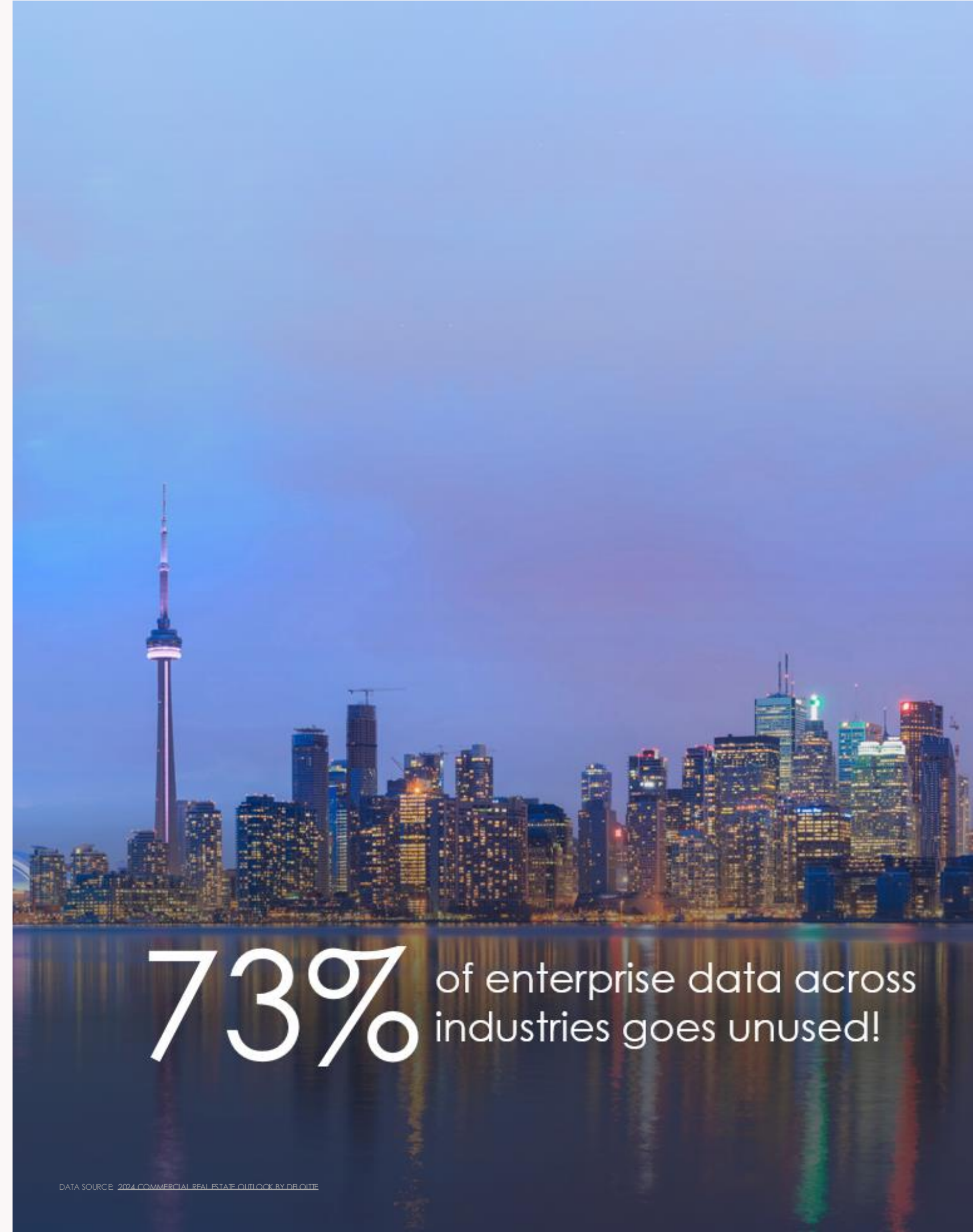
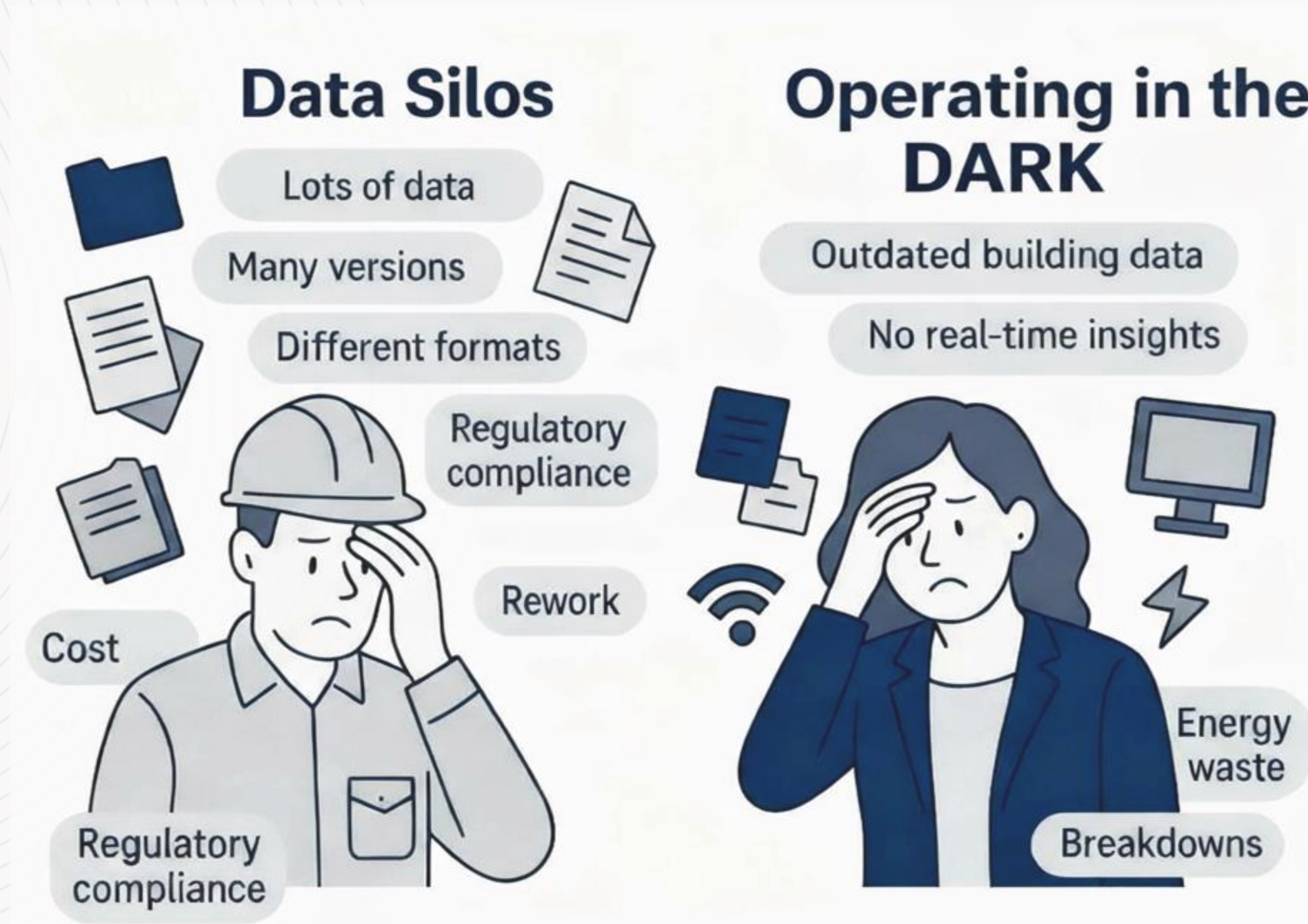


**73%** of enterprise data across  
industries goes unused!



# Challenges of AEC/O Industry

Across design, construction, and operations of assets



# What is a Digital Twin?

Global consensus on the digital twin definition – interpretations still vary

## A Digital Twin ...

- 01 ... is a digital representation of a unique physical asset
- 02 ...connects & harmonizes data from dispersed sources
- 03 ... is updated with real-time information

## Lifecycle Intelligence

### PLANNING + DESIGN

Precise, innovative, and open planning and design workflows

### BUILD + CONSTRUCT

Collaborative, efficient, and sustainable construction processes

### OPERATE + MANAGE

Smart, intelligent and comprehensive building management

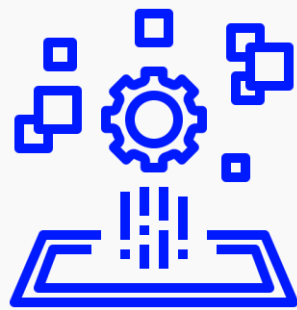


Lifecycle  
Data Management

Digital Twin for  
Operations

# dTwin connects the dots

One platform for all data across the lifecycle



**Unify your data in one platform**



**Maximize operational efficiency**

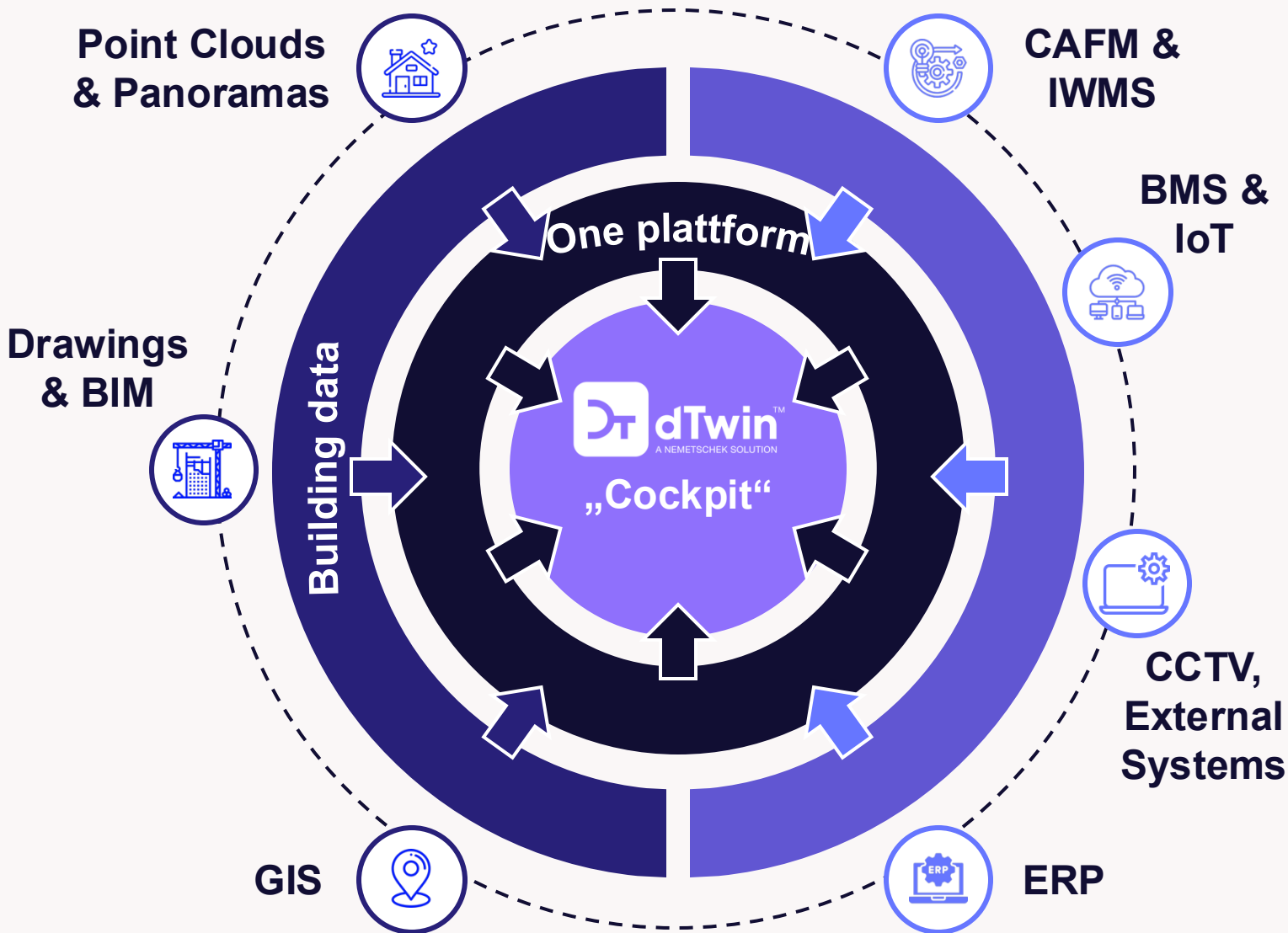


**Make smarter investment decisions**



# dTwin connects the dots

One platform for all data across the lifecycle



## New Building Data

Design and construction inputs like BIM, point clouds, and GIS data.

## Existing Building Data

Operational data from IoT, CAFM, BMS, ERP, and more.

## One Platform

All building data—past & present—consolidated in one place.

## dTwin Cockpit

A visual interface that turns data into insights and smart actions.



Golden thread of data



Break down of data silos



One integrated reporting tool

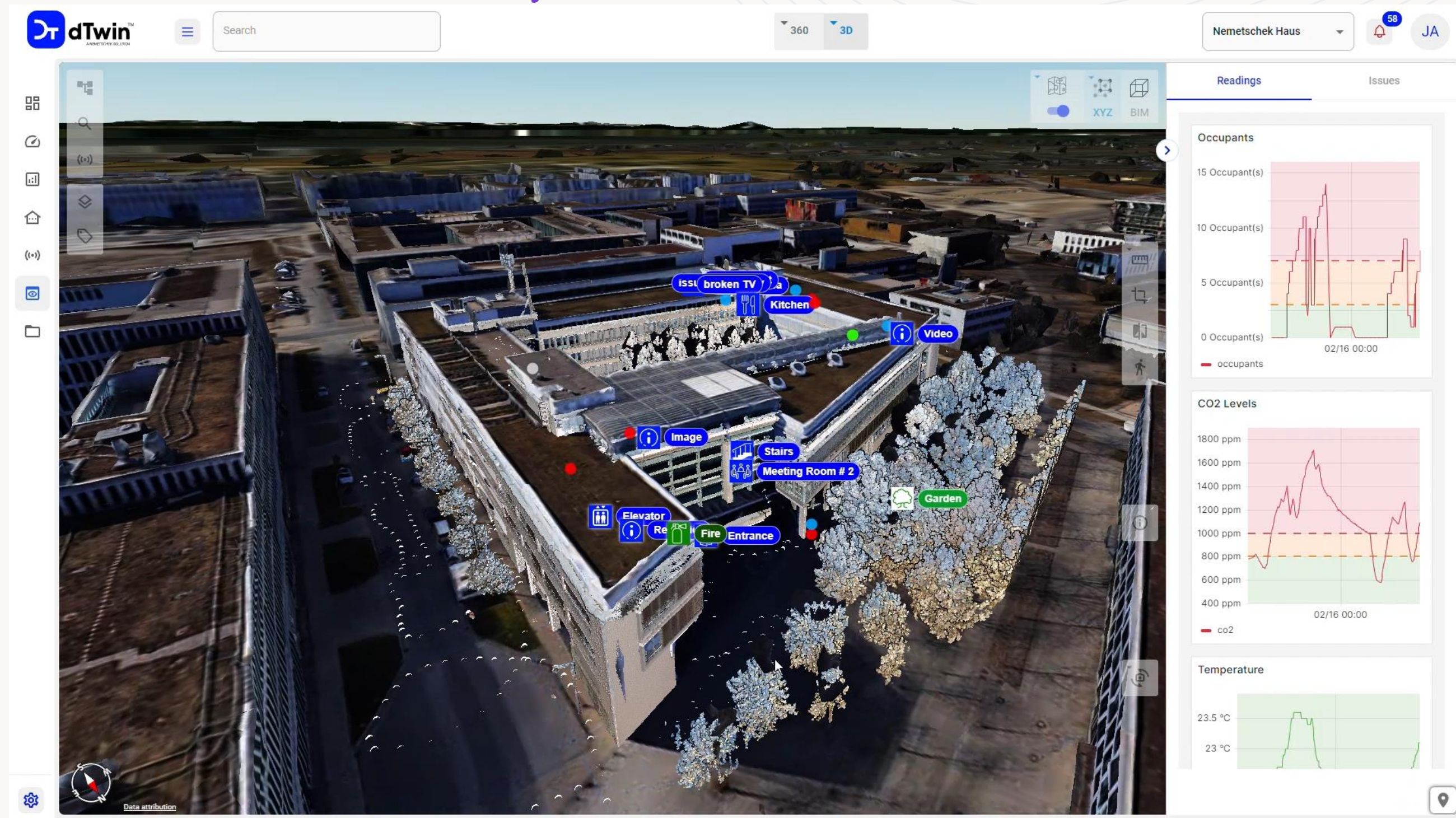


Holistic view on building performance & costs



# dTwin connects the dots

One platform for all data across the lifecycle



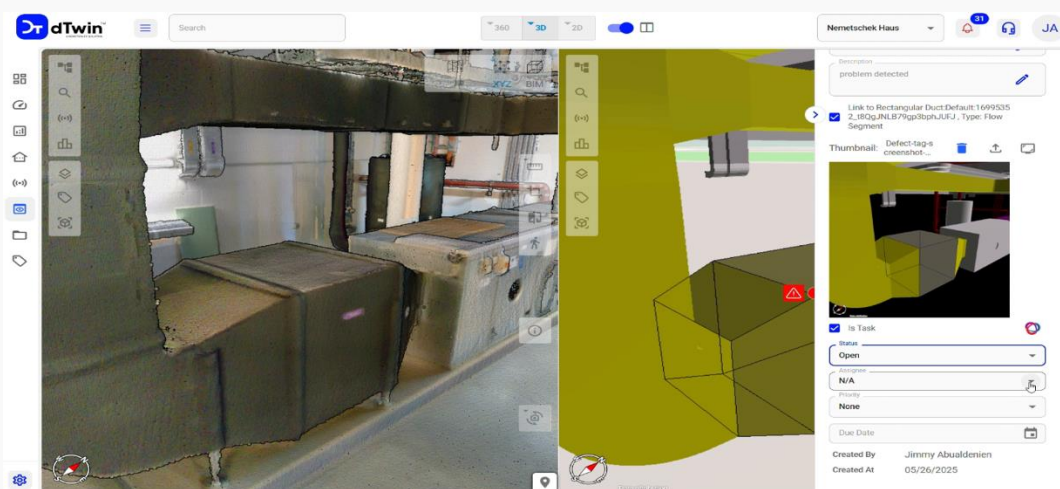


# Maximize operational efficiency

From reactive to predictive – turning inefficiencies into savings up to 30%

## Integrate

data management across all sources & workflows



Locate & manage assets

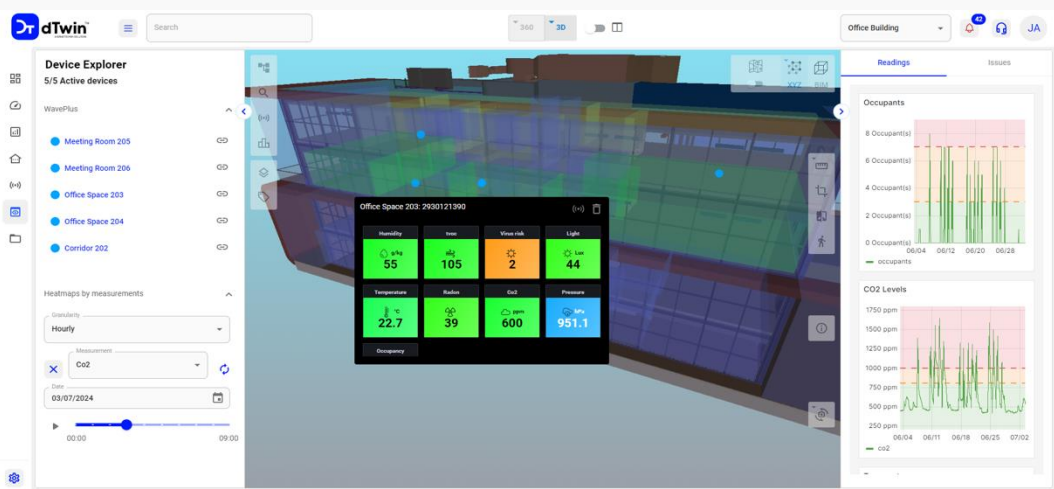
Simplified wayfinding

Visual analytics incl. heatmaps

Remote visual digital inspections

## Enhance

building operations with a holistic & real time FM



Structured handover incl. BIM2FM

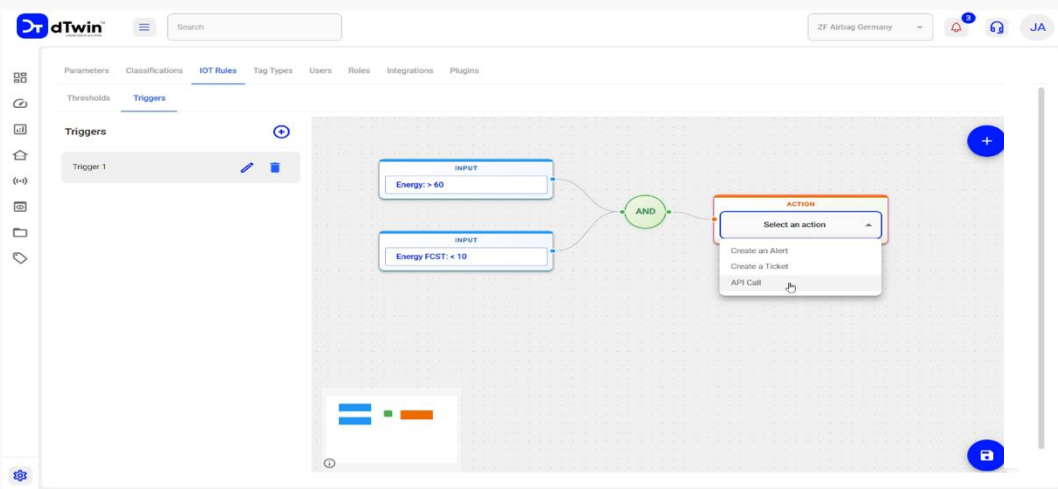
Optimize space utilization

Reduce energy consumption

Integrated issue & task management

## Optimize

building performance with automated workflows



AI-based anomaly detection

Real-time notifications

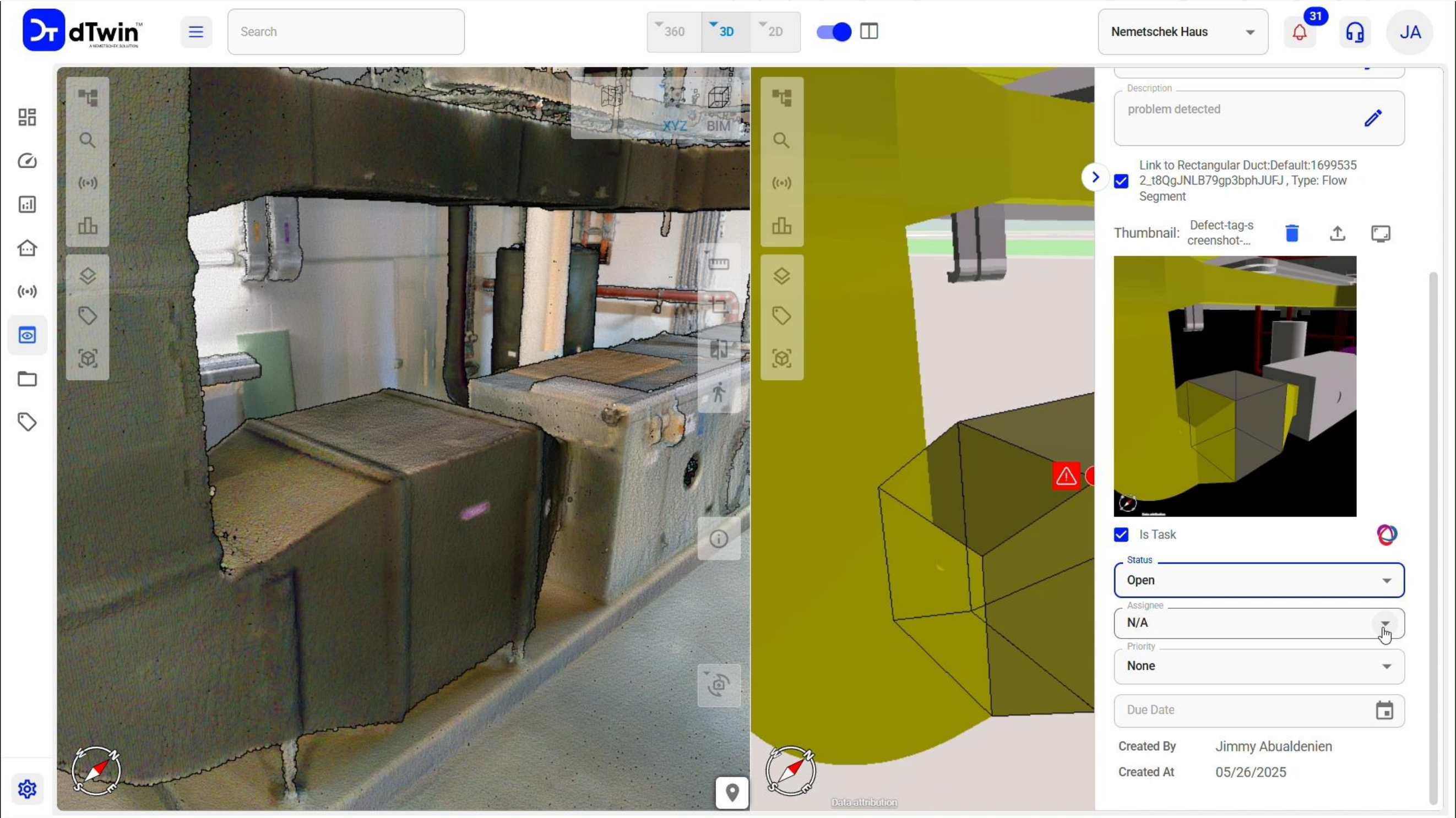
Predictive alarms

Automated trigger actions



# Maximize operational efficiency

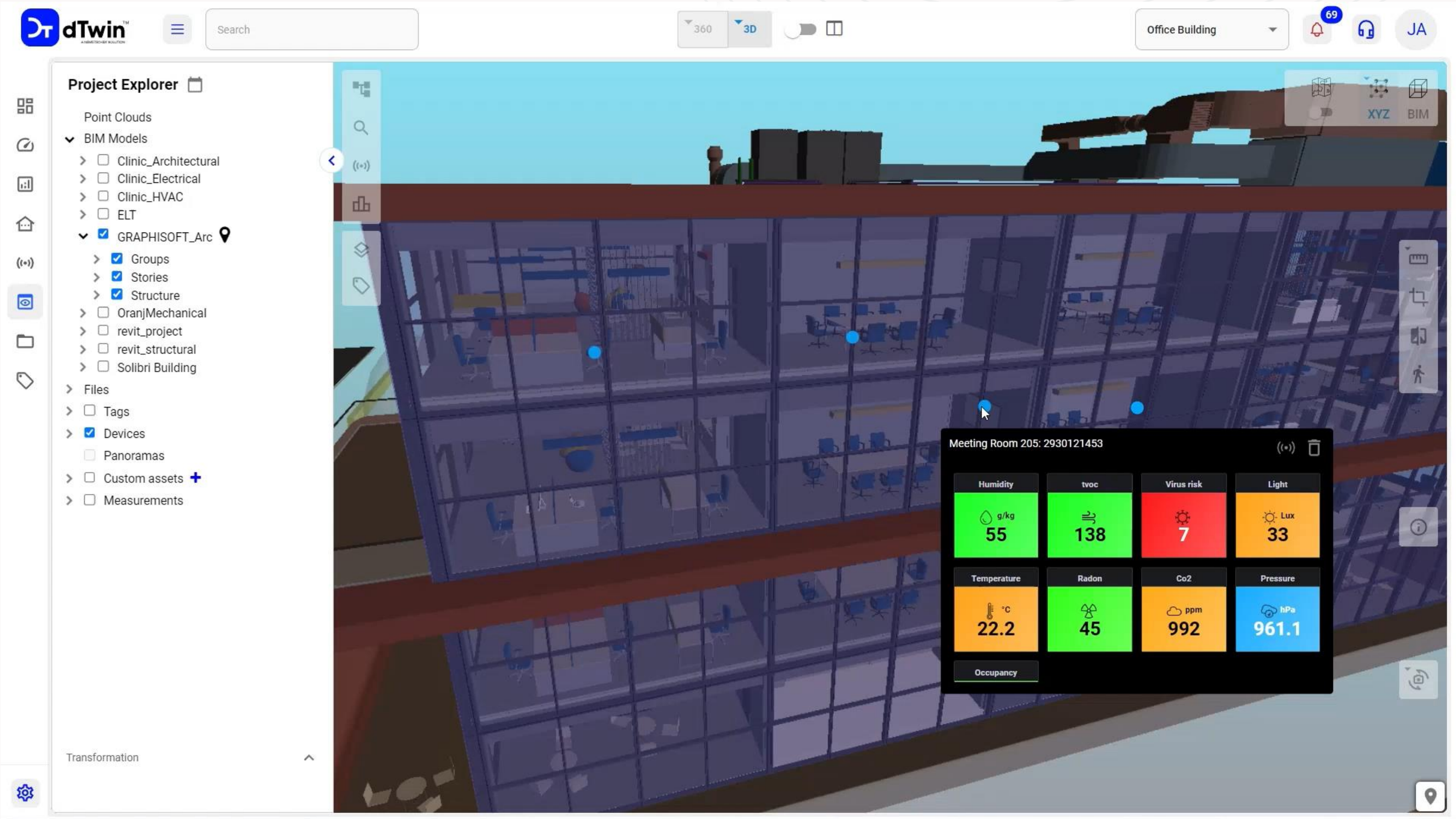
Simplify building operations with visual digital inspections & maintenance processes





# Maximize operational efficiency

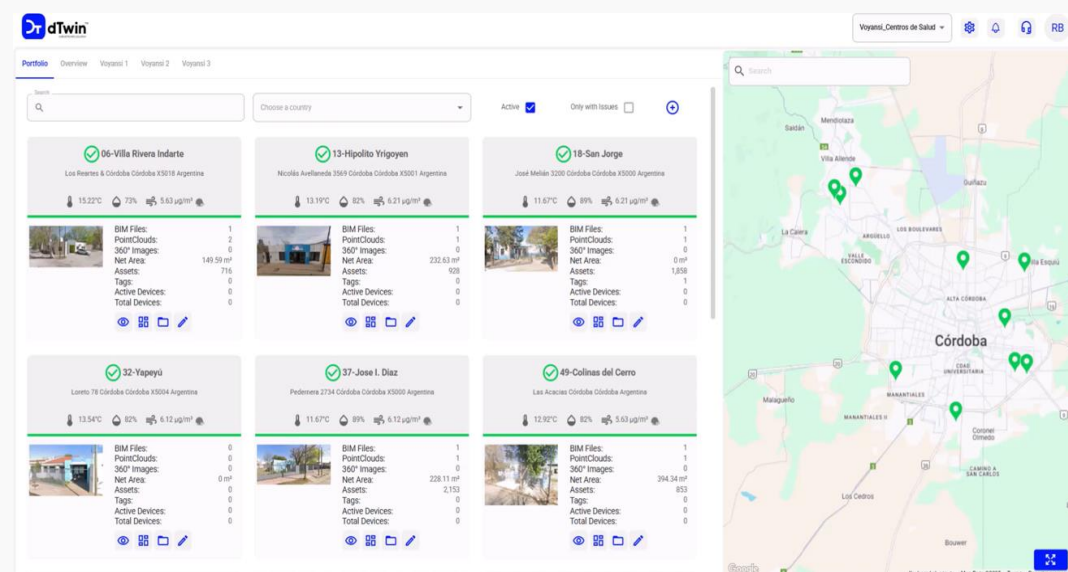
Connect your data across systems – in real time



# Make data-driven decisions

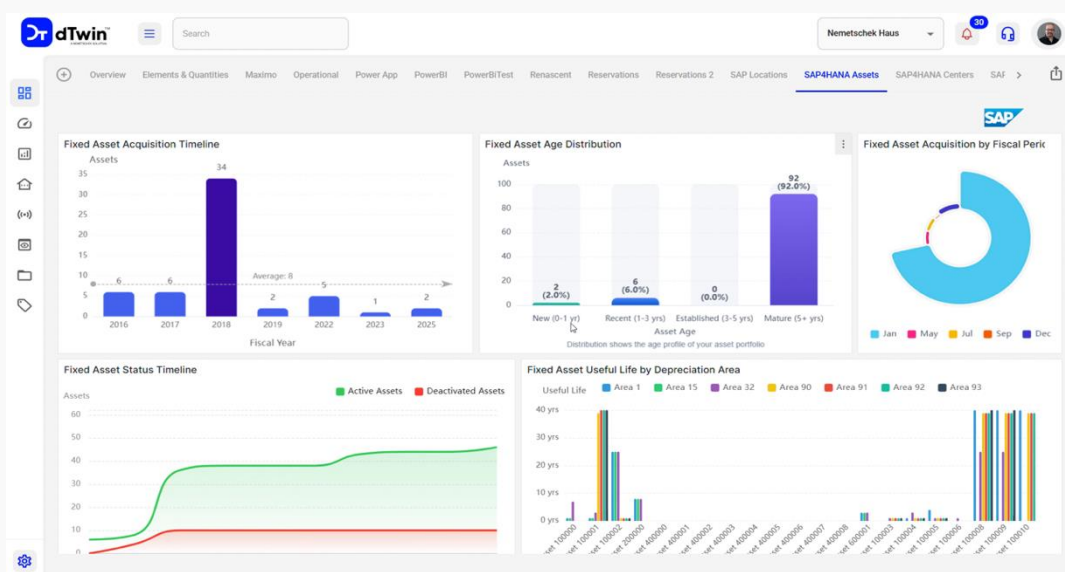
Save 2\$ per m<sup>2</sup> annually based on appropriate access to accurate information

One integrated reporting tool  
on portfolio level



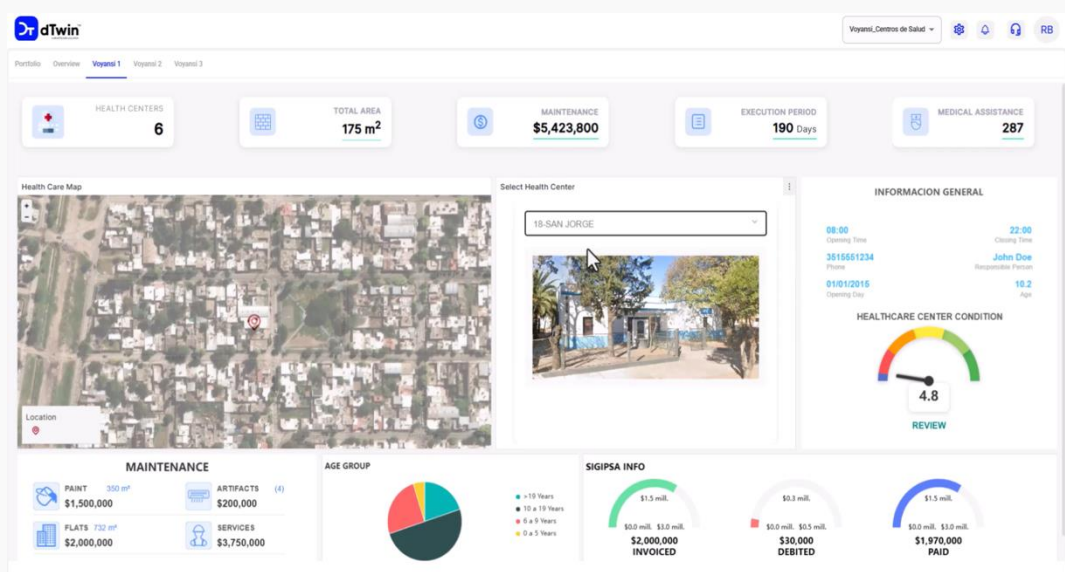
Gain insights that help reduce  
OPEX and maximize ROI

Real-time reports &  
customized dashboards



Fully customizable interface with  
AI powered business analytics

Efficient project &  
progress tracking

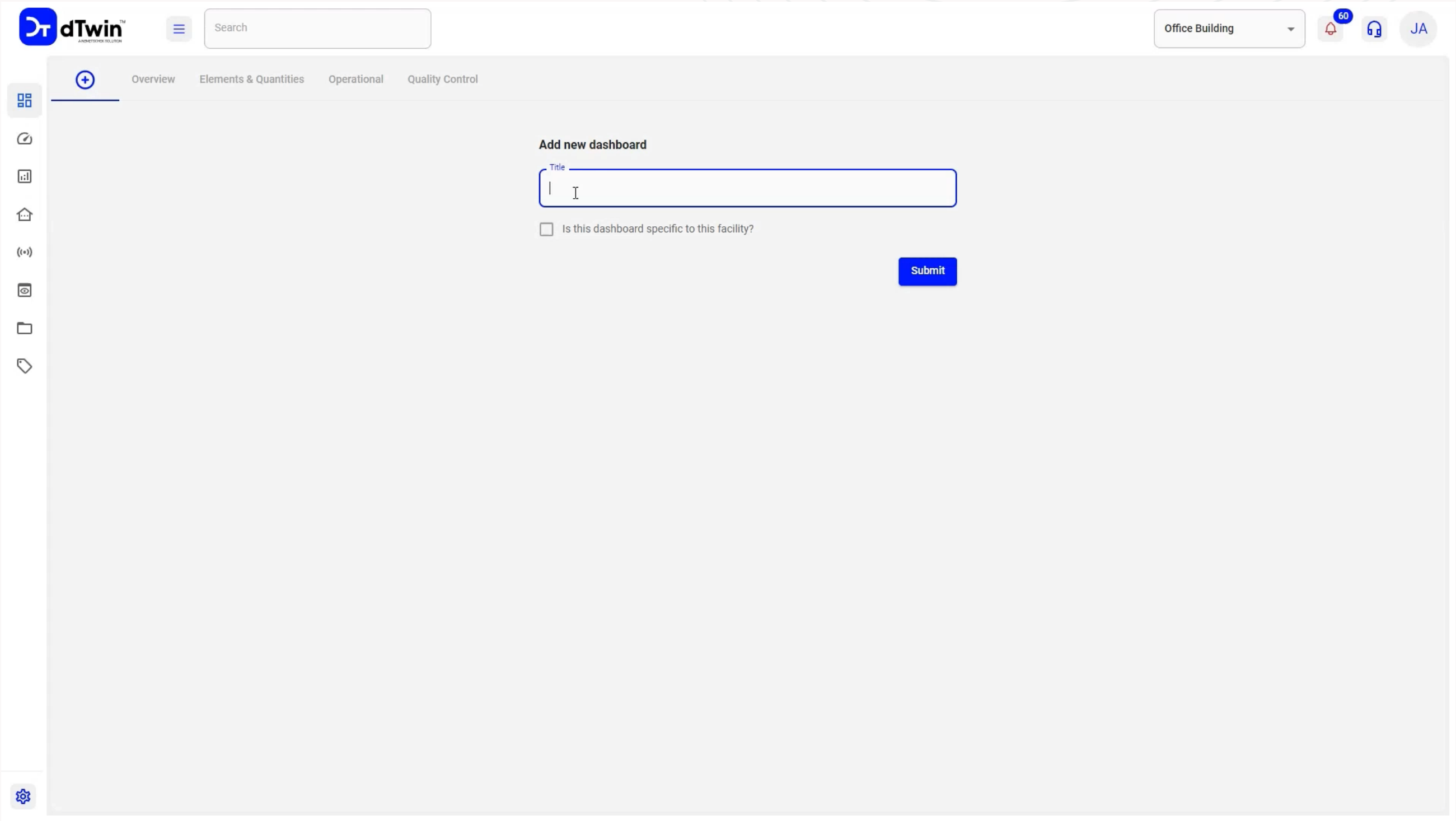


Efficiently track ongoing  
projects to ensure ROI



# Make data-driven decisions

Dynamic & customizable data analytics correlating building and real-time information



# Aeropuertos Argentina

## Airport Operations Excellence

### Challenge

**Integrated lifecycle workflows across construction & operation systems**

- Heterogeneous state of digitization of airport buildings, terminals, and landside operations
- Numerous siloed systems used during operations
- Tedious process to consolidate information for decision making

### Realized Value

**Unified data-lake of building data semantically linked across systems**

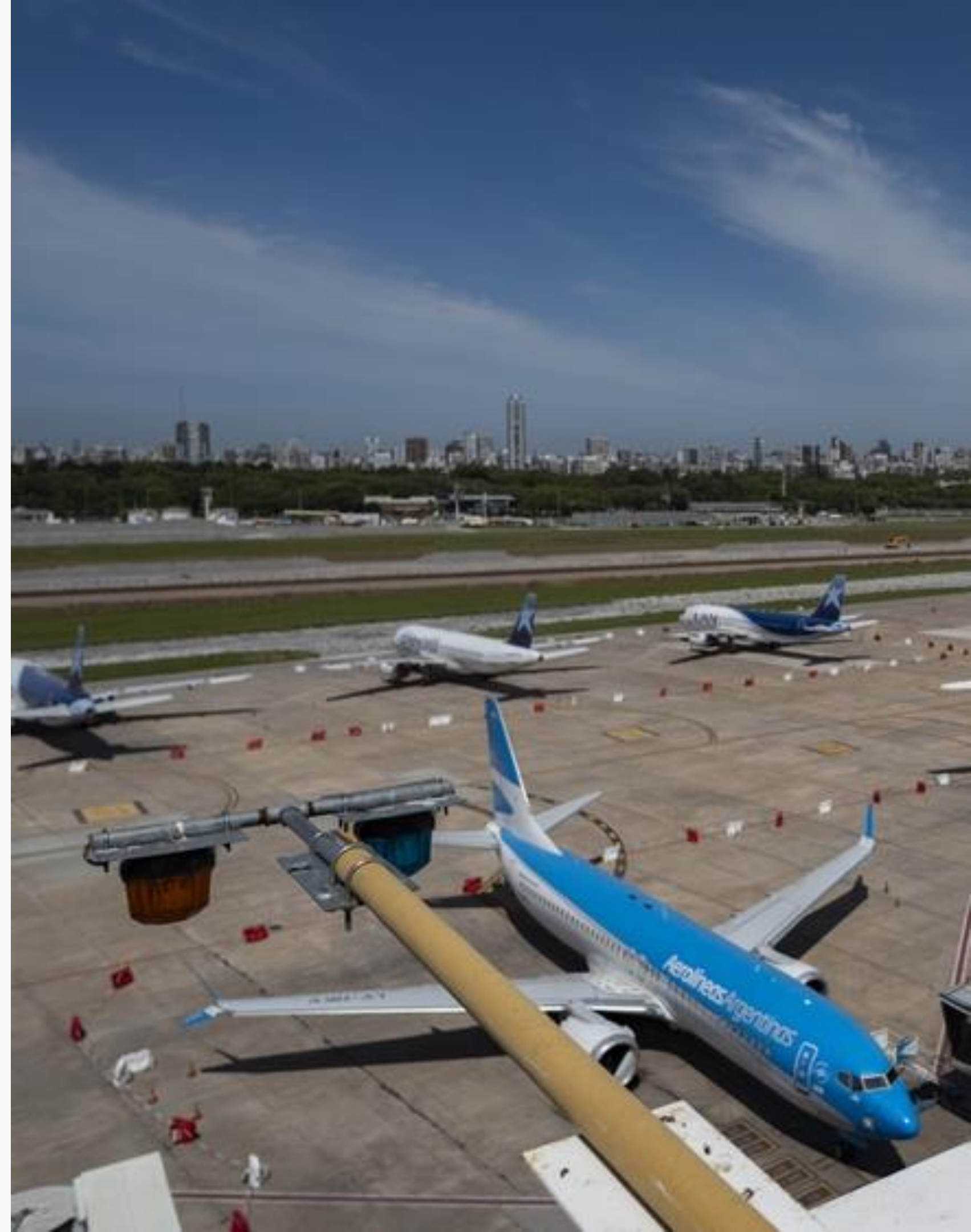
- Unified and searchable representation of buildings, terminals, and infrastructure
- Single platform to access all relevant information across all systems

**Smart workflow automation & facility management workflows**

- Context-aware workorders management and analysis
- Automated workflows for efficient operations (e.g., cleaning orders, heating and cooling)

**Optimization for better passenger experience**

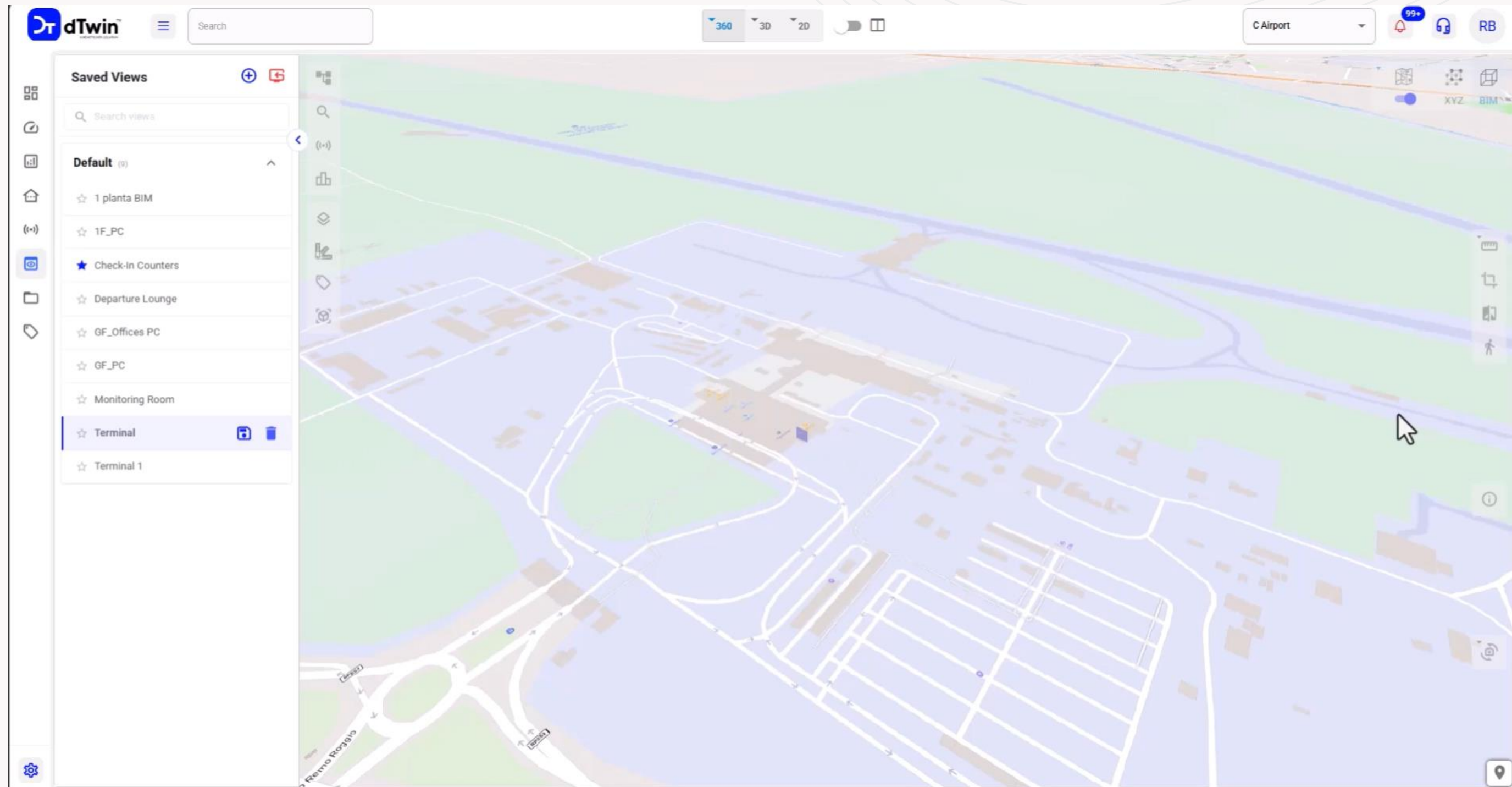
- Streamlined correlation of real-time operations (parking, baggage..etc), energy consumption, and flights boarding and deboarding
- Data-driven renovation planning through insights on asset utilization and performance





# Airport Operations Excellence

Comprehensive information accessibility, real-time workflow automation, informed optimizations





# John Sisk & Son Ltd.

## Empowering Smart Offices Through Digital Twins

### Challenge

#### Retrofitting new headquarter & transforming it into a smart building

- Integrating various data sources and systems to manage and link documentation, certificates, and maintenance information
- Gain a comprehensive overview of building usage and energy consumption

### Realized Value

#### Optimized building performance

- Real-time insights into the usage and occupancy of workstations, meeting rooms, and communal areas
- Visual analytics of building utilization

#### Smarter energy management

- Optimization of energy consumption by linking occupancy and energy data, allowing targeted adjustments

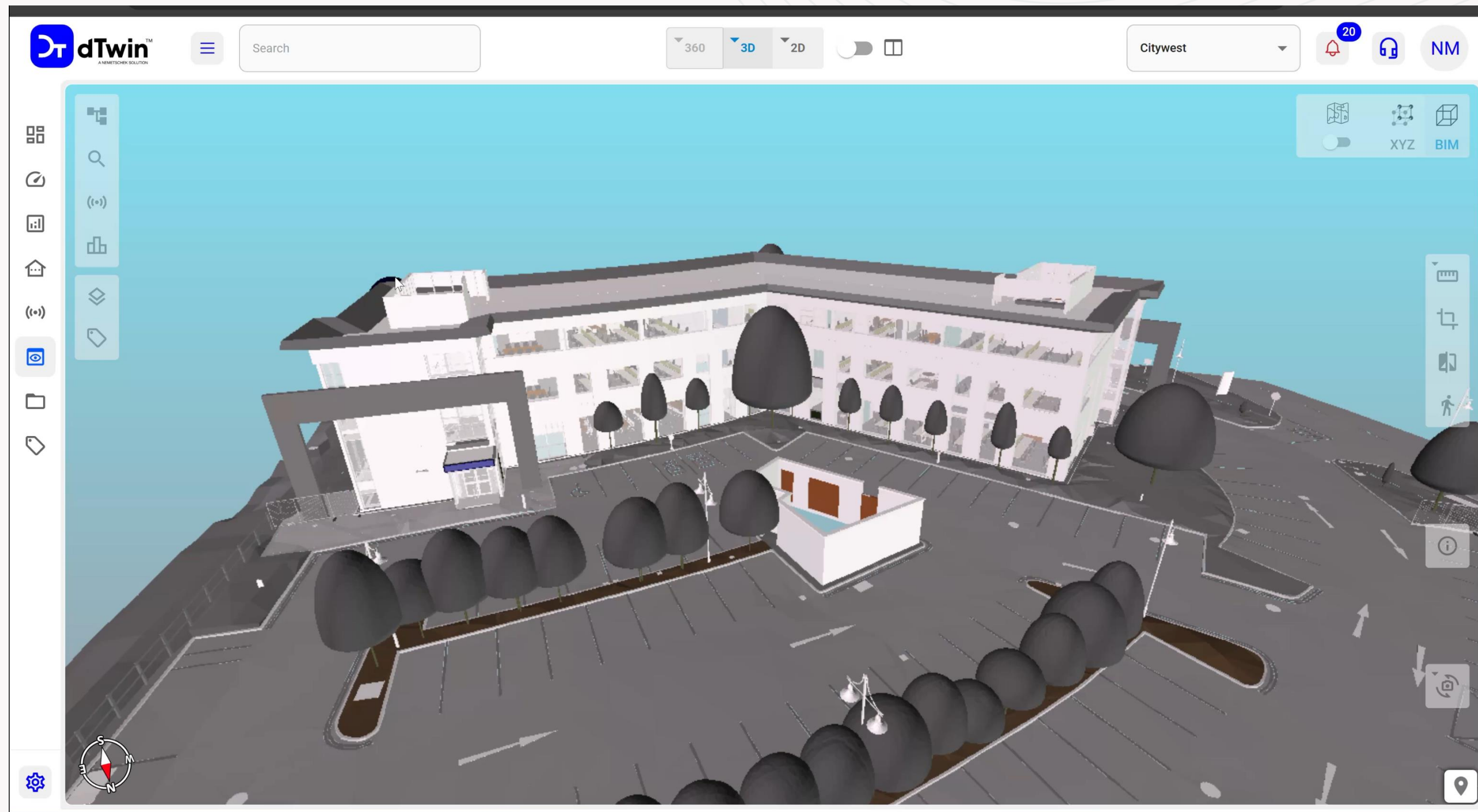
#### Data-driven investment decisions

- Improved decision-making and strategic planning for future office spaces and work environments
- Efficiently track retrofitting projects to ensure ROI





# Empowering Smart Offices Through Digital Twins





# UMEX S.A.

## Pioneering Innovations in Port Operations

### Challenge

#### Enhance energy efficiency and cargo productivity

- Many complex and rapidly shifting activities happening simultaneously
- Need of a clear understanding of multiple data-driven metrics
- Monitoring the use to capacity of the cargo halls

### Realized Value

#### Increased safety & productivity in cargo operations

- Tracking of the entire operational flow from vessel discharging to loading trucks, trains, and barges
- Real-time issue detection, notifications and trigger actions

#### Enhanced cost transparency

- Better understanding of costs-drivers
- Better solutions and tariffs for clients

#### Full visibility on energy drivers

- Real time monitoring & linkage of energy consumers & producers
- AI-based anomaly detections



UMEX



View full video  
case study





**UMEX**

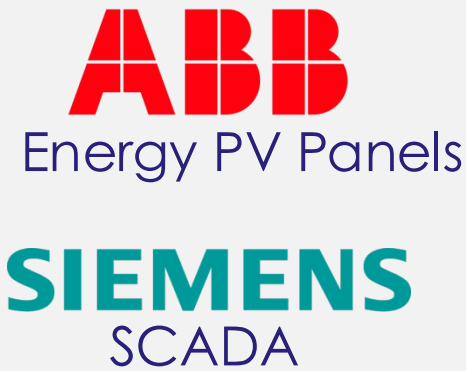




+ dTwin™

Pioneering Innovations in Port Operations

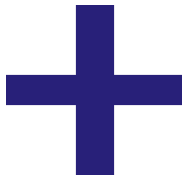
Realtime Streams



Sixense  
Compartments  
Displacement



Operational Crane



DT Foundation



2D & 3D City  
Models



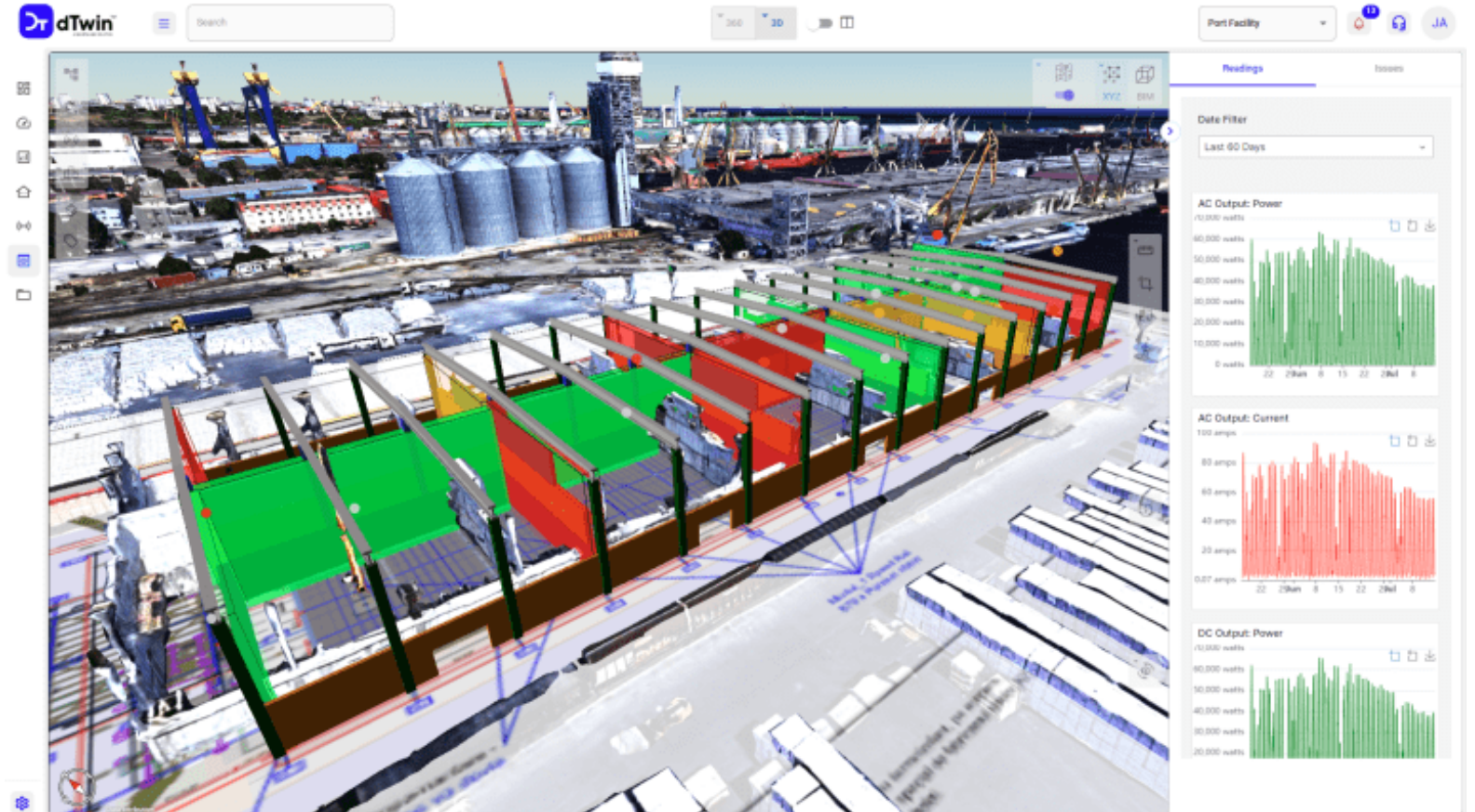
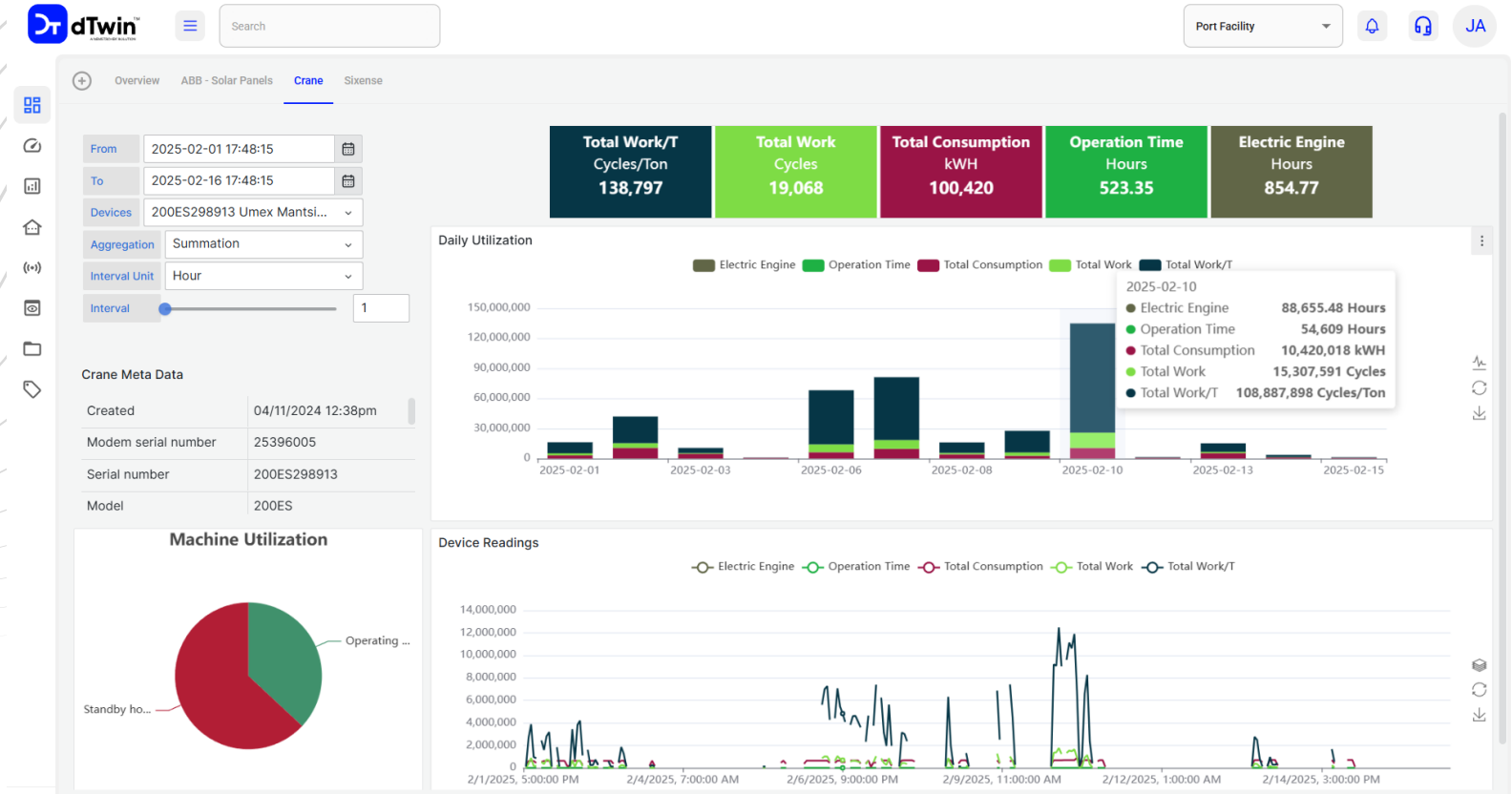
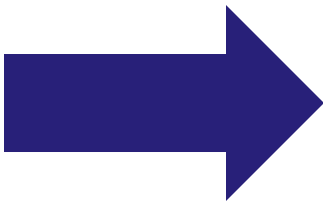
3D BIM Model



2D Drawings



Cost Information





# BENO Group

## More efficiency & sustainability portfolio

### Challenge

#### Digitizing of portfolio to understand facility status & optimization potentials

- Management of dispersed properties, most of which were built in the last century
- Inefficiencies in maintenance, conversions & new letting workflows
- On-site appointments cost a lot of time and money

### Realized Value

#### Comprehensive up-to-date portfolio representation

- Access to contextual information, asset information, documentation and real-time insights
- Easy tracking & management of building changes (e.g., renovation)

#### Transparency on portfolio level

- Holistic view on operational tasks, building performance & cost drivers
- Alerts & real time notifications ensure prompt issue management

#### Remote maintenance workflows

- Visual inspections, digital fire safety checks and maintenance planning
- Easily locate & manage assets in 3D in their spatial context.

**BENO**

### SAVINGS (PER ASSET/YEAR):



**288**

Working hours



**30k €**

Travel costs & expenses



**28k km**

Driven distance



**5,8k kg**

CO2 emissions



# Efficiency & Sustainable Portfolio Digital Twin

NEMETSCHKEK  
GROUP

dTwin™

BENO



**Altenstadt**  
Usable Area: 7.000 m<sup>2</sup>  
Net Annual Rent: 406 TEUR<sup>7</sup>  
Market Value: 6,8 Mio. EUR<sup>7</sup>  
WALT: 6,95



**Dortmund - Fränkischer Friedhof**  
Usable Area: 5.000 m<sup>2</sup>  
Net Annual Rent: 264 TEUR  
Market Value: 3,4 Mio. EUR  
WALT: 7,5



**Dortmund - Planetenfeldstraße**  
Usable Area: 17.000 m<sup>2</sup>  
Net Annual Rent: 884 TEUR  
Market Value: 10,1 Mio. EUR  
WALT: 0,00



**Fröndenberg**  
Usable Area: 16.000 m<sup>2</sup>  
Net Annual Rent: 472 TEUR  
Market Value: 6,6 Mio. EUR  
WALT: 5,87



**Geretsried**  
Usable Area: 8.000 m<sup>2</sup>  
Net Annual Rent: 529 TEUR  
Market Value: 7,0 Mio. EUR  
WALT: 3,25



**Gernsheim**  
Usable Area: 7.500 m<sup>2</sup>  
Net Annual Rent: 530 TEUR  
Market Value: 7,6 Mio. EUR  
WALT: 4,09



**Grünhain**  
Usable Area: 23.000 m<sup>2</sup>  
Net Annual Rent: 537 TEUR  
Market Value: 4,5 Mio. EUR  
WALT: 6,24



**Kempen**  
Usable Area: 6.000 m<sup>2</sup>  
Net Annual Rent: 280 TEUR  
Market Value: 3,5 Mio. EUR  
WALT: 2,67



**Möckmühl**  
Usable Area: 2.000 m<sup>2</sup>  
Net Annual Rent: 340 TEUR<sup>6</sup>  
Market Value: 0,9 Mio. EUR  
WALT: 0



**Nottuln**  
Usable Area: 11.000 m<sup>2</sup>  
Net Annual Rent: 294 TEUR  
Market Value: 4,6 Mio. EUR  
WALT: 7,96



**Spaichingen**  
Usable Area: 27.000 m<sup>2</sup>  
Net Annual Rent: 1.354 TEUR  
Market Value: 12,2 Mio. EUR  
WALT: 2,33




**Weinsberg**  
Usable Area: 22.000 m<sup>2</sup>  
Net Annual Rent: 1.094 TEUR  
Market Value: 13,00 Mio. EUR  
WALT: 5,36



**Witten**  
Usable Area: 8.000 m<sup>2</sup>  
Net Annual Rent: 387 TEUR  
Market Value: 3,37 Mio. EUR  
WALT: 2,39





BIM Files:0

PointClouds:0

360° Images:0





Net Area:0 m<sup>2</sup>


Assets:346

Tags:0

Active Devices:0

Total Devices:0





BIM Files:0

PointClouds:0

360° Images:0





Net Area:0 m<sup>2</sup>


Assets:0

Tags:0

Active Devices:0

Total Devices:0





BIM Files:1

PointClouds:4

360° Images:931





Net Area:99,806.825 m<sup>2</sup>


Assets:3,058

Tags:379


Active Devices:2


Total Devices:19





BENO Fröndenberg


Ardeyer Straße 15 Fröndenberg/Ruhr Nordrhein-Westfalen 58730 Germany

15.13°C

85%

1.35 µg/m<sup>3</sup>





BIM Files:0

PointClouds:3

360° Images:782





Net Area:0 m<sup>2</sup>


Assets:0

Tags:0


Active Devices:0


Total Devices:0





BENO Geretsried


Königsdorfer Weg 6 Geretsried Bayern 82538 Germany

16.08°C

74%

0.61 µg/m<sup>3</sup>





BIM Files:0

PointClouds:2

360° Images:681





Net Area:0 m<sup>2</sup>


Assets:0

Tags:0


Active Devices:0


Total Devices:0





BENO Gernsheim


Robert-Bunsen-Straße 50 Gernsheim Hessen 64579 Germany

15.95°C

95%

1.11 µg/m<sup>3</sup>





BIM Files:0

PointClouds:2

360° Images:966





Net Area:0 m<sup>2</sup>


Assets:0


Tags:0


Active Devices:0

Total Devices:0

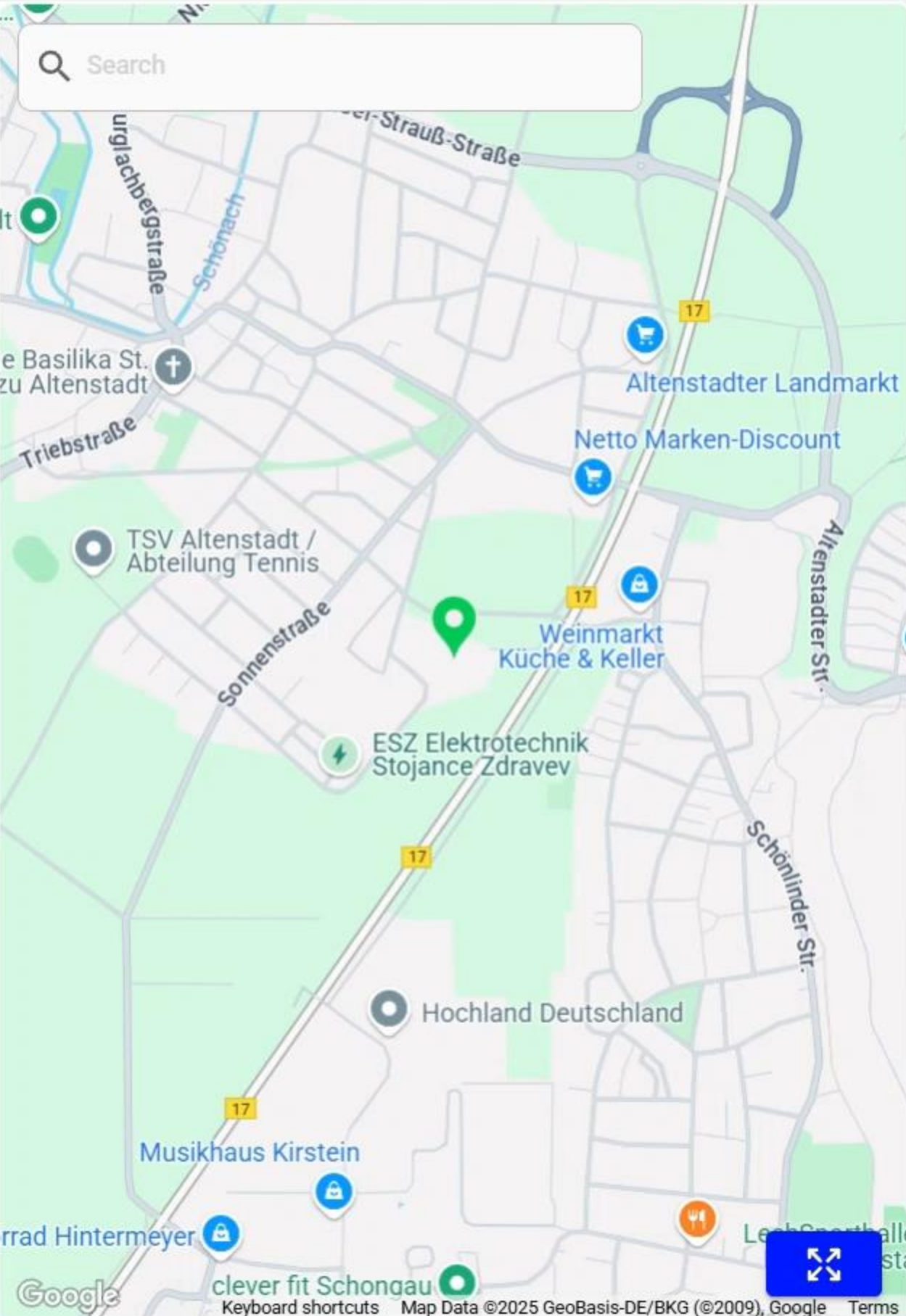



BENO Grünhain-Beierfeld

BENO Kempen

BENO Möckmühl

Search





Google

Keyboard shortcuts

Map Data ©2025 GeoBasis-DE/BKG (©2009), Google

Terms

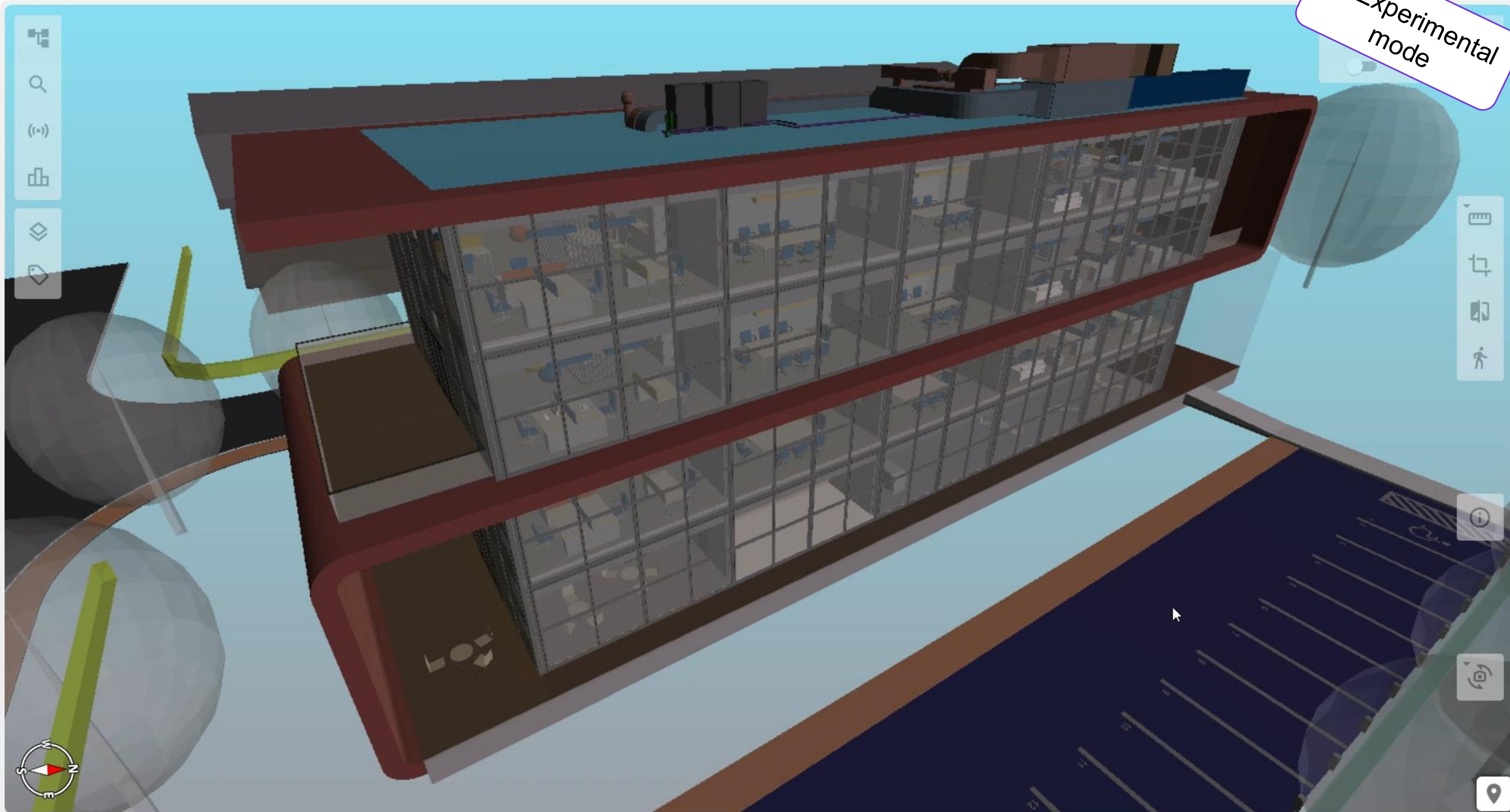
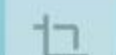


In Experimental mode





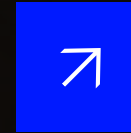
In Experimental mode







## Common digital twin solution



## dTwin

- *Closed solution only supporting no/few open standards.*
- *BIM is mandatory.*
- *Digital twin implementation consultant-driven & cumbersome project.*
- *Missing spatial context.*
- *Just showing stats and graphs.*

- ✓ **Truly open** platform with many integrations from NGroup & 3rd parties.
- ✓ Start with **2D drawings, reality capture** or **GIS** for **building visualization**.
- ✓ **Get started in a matter of days** by using the data source of your choice.
- ✓ **GIS integration** gives full 2D & 3D spatial context.
- ✓ **Visualized actionable insights** for data-driven decision making.

What  
is different  
about the  
Digital Twin  
of dTwin?



# NEMETSCHEK GROUP

# dTwin™

Unlock the potential  
of your data!



Start with dTwin today!

[www.nemetschek-dTwin.com](http://www.nemetschek-dTwin.com)