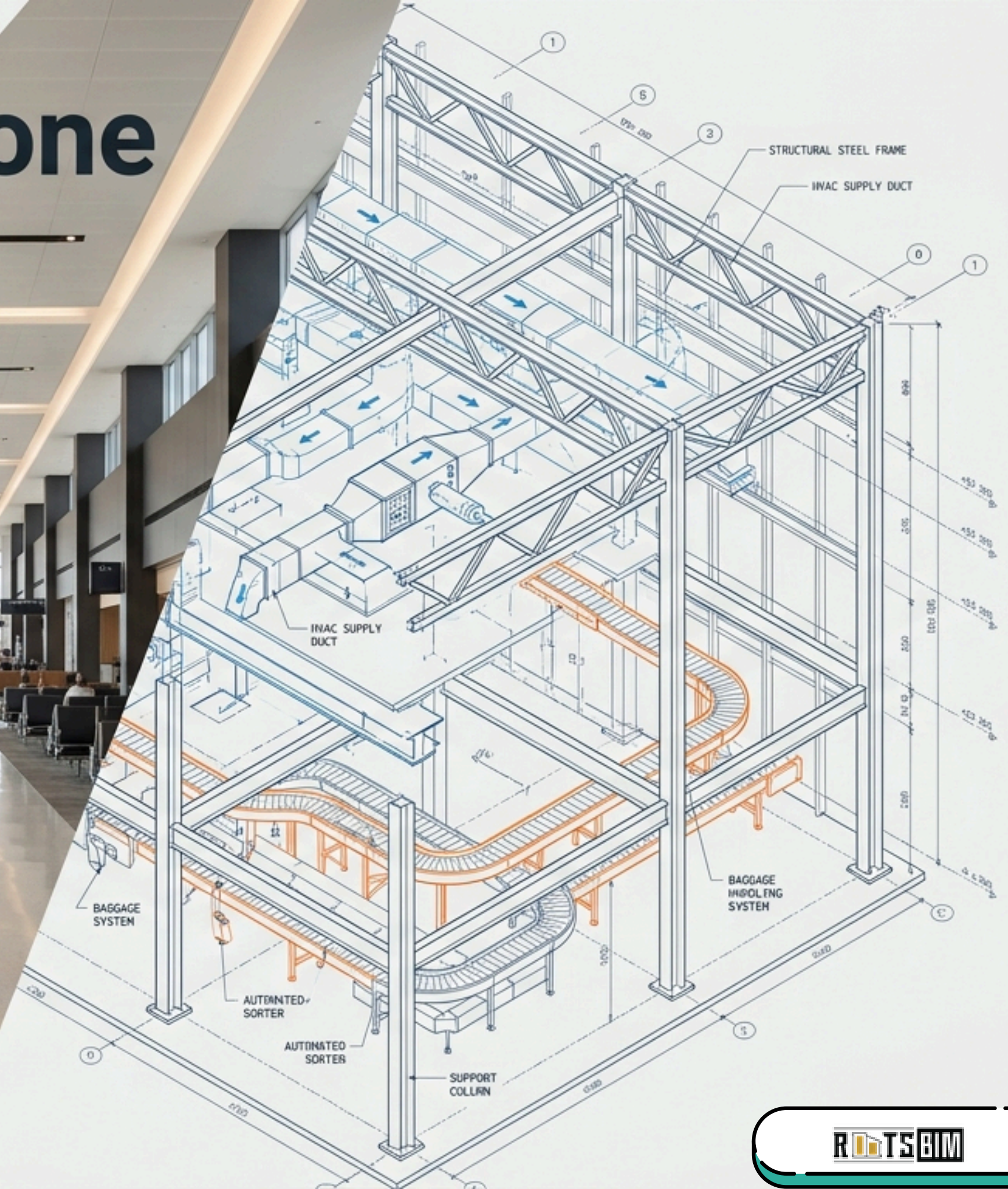


The Invisible Backbone of Aviation

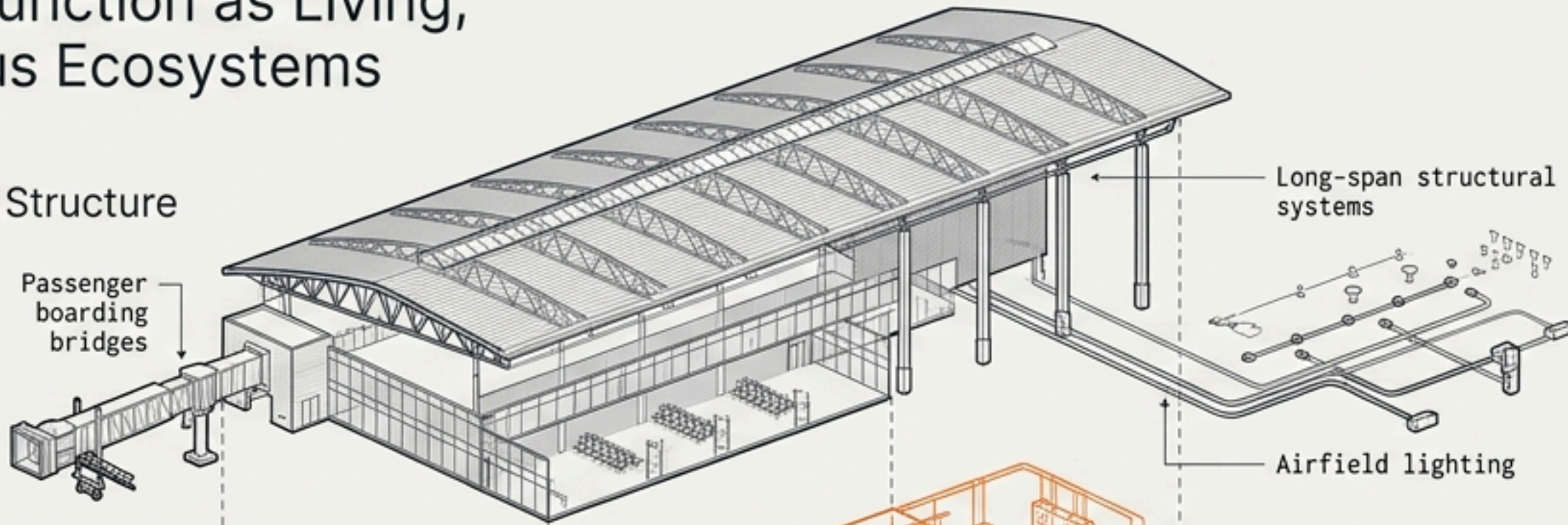
Aircraft may be the face of aviation, but airports are its backbone.

Every successful flight depends on an extraordinary amount of coordination that passengers never see. To travelers, the experience is effortless. To engineers, it is one of the most complex infrastructure ecosystems ever built.



Airports Function as Living, Continuous Ecosystems

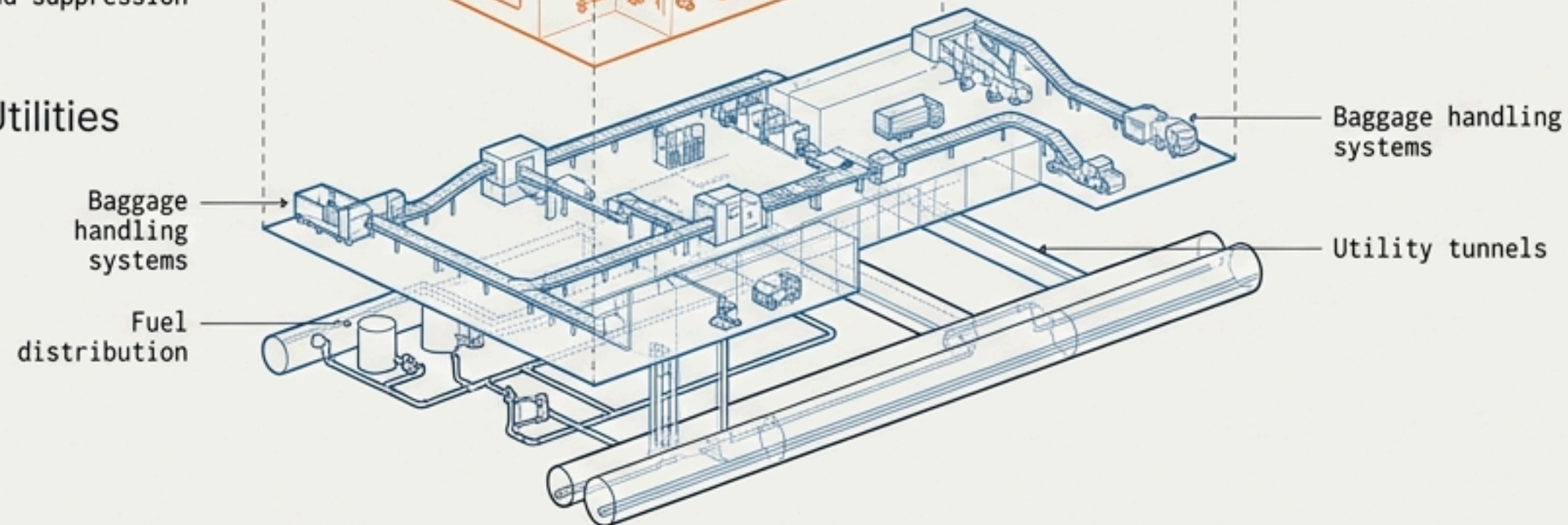
Architecture & Structure



MEP & Security



Logistics & Utilities



Almost Zero Tolerance for Failure.

Unlike conventional projects, airports cannot close for renovation. Every system must operate simultaneously.

Engineering Predictability into Complex Infrastructure

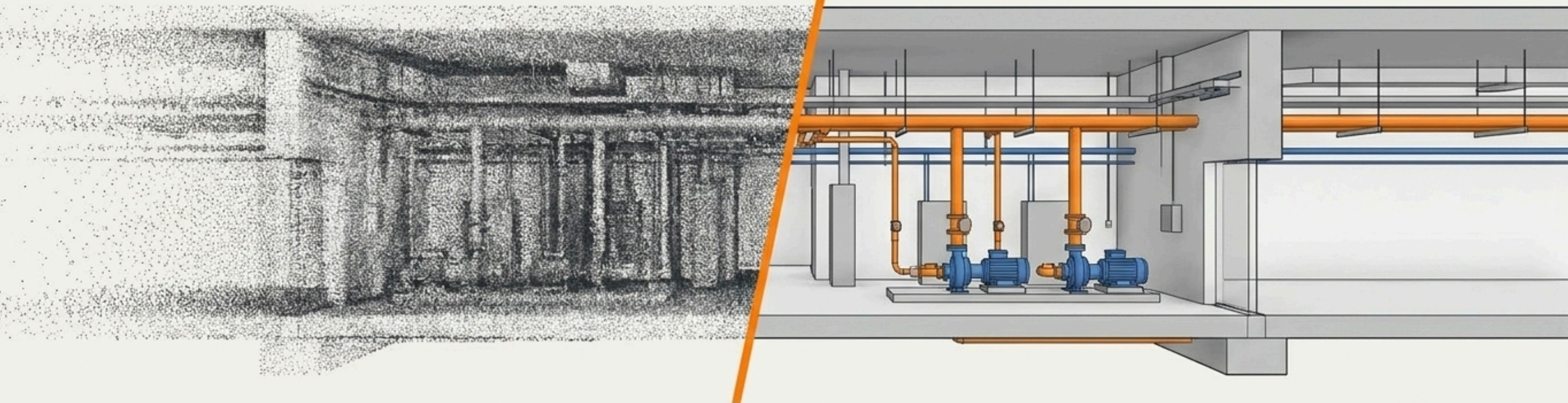
Dimension	Legacy 2D Era	Federated BIM Era
Coordination Method	Independent 2D Drawings (Architects, MEP, Baggage in silos)	Single Coordinated Information Model
Conflict Resolution	Reactive: Conflicts discovered on-site during installation	Proactive: Clashes resolved virtually before construction
Asset Data	Fragmented: Paper binders and scattered databases	Centralized: Accessible directly inside the digital model
Renovation Baseline	Outdated, inaccurate as-built drawings	High-density LiDAR point clouds

TAKEAWAY: Problems that once appeared on-site now disappear during design

Designing Around Reality, Not Assumptions

Millions of Raw Spatial Data Points →

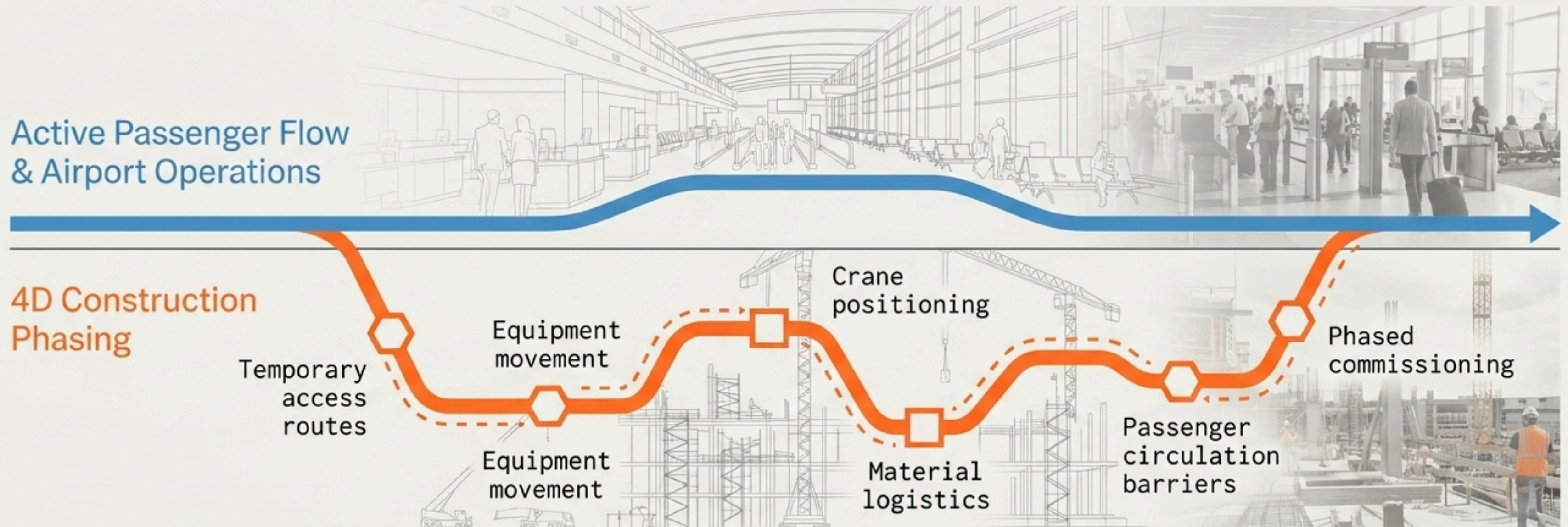
Intelligent 3D Digital Foundation



Original design drawings rarely reflect decades of modifications, rerouted utilities, and undocumented alterations.

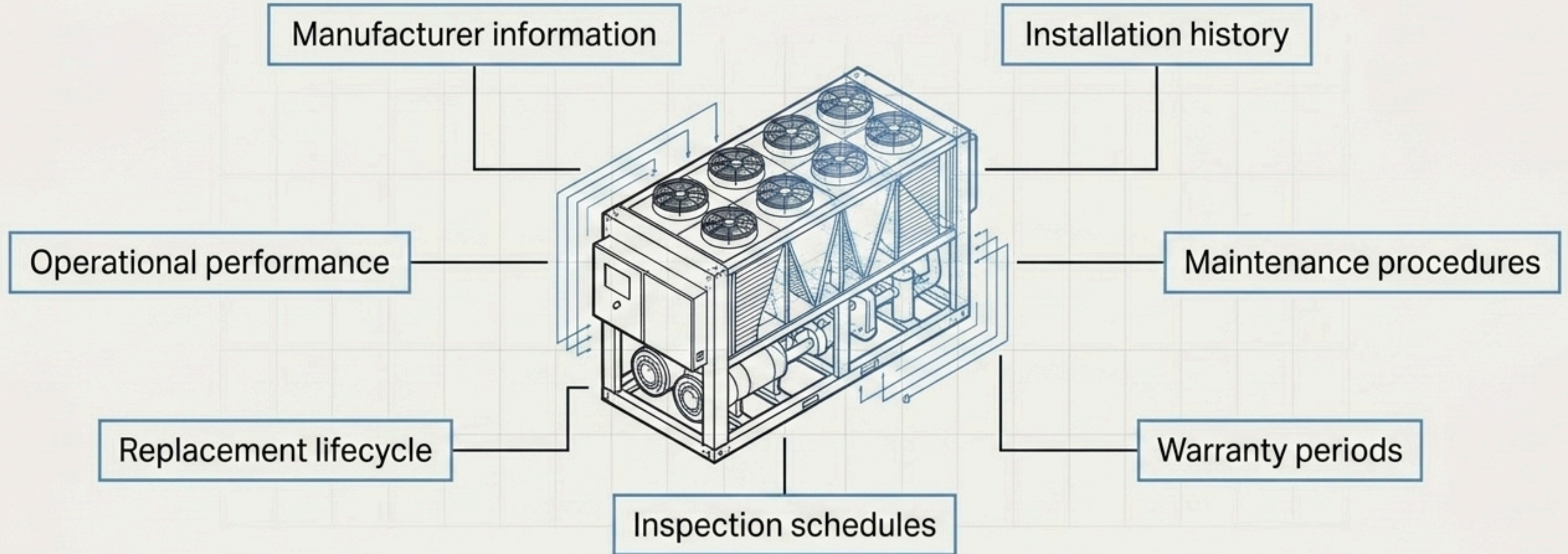
Scan-to-BIM bridges the gap between old and new, providing a reliable digital foundation for expansion through laser scanning and photogrammetry.

Expanding Infrastructure Without Interrupting Operations



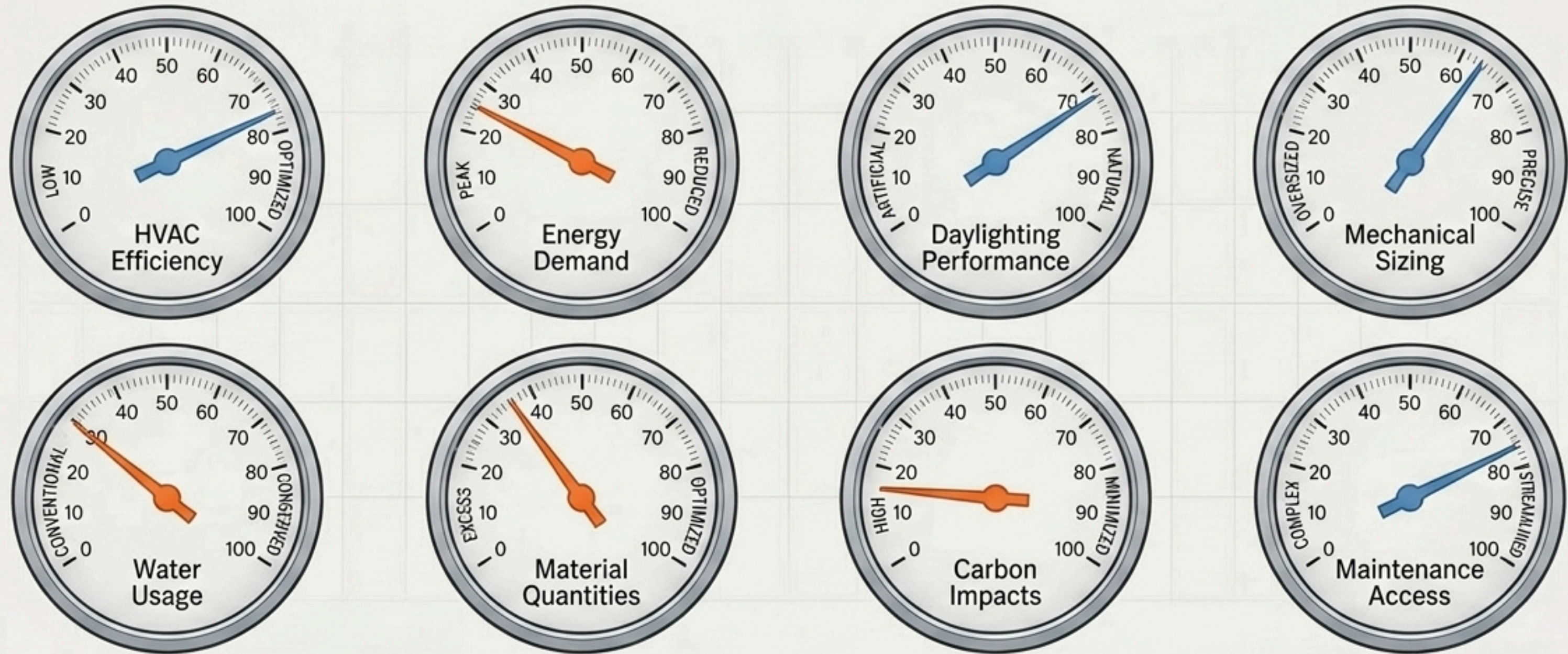
Engineers use 4D BIM to simulate sequences before work begins. Rather than reacting to field conditions, teams proactively optimize logistics to ensure runway support and terminal operations never stop.

The True Value of BIM Begins After Handover



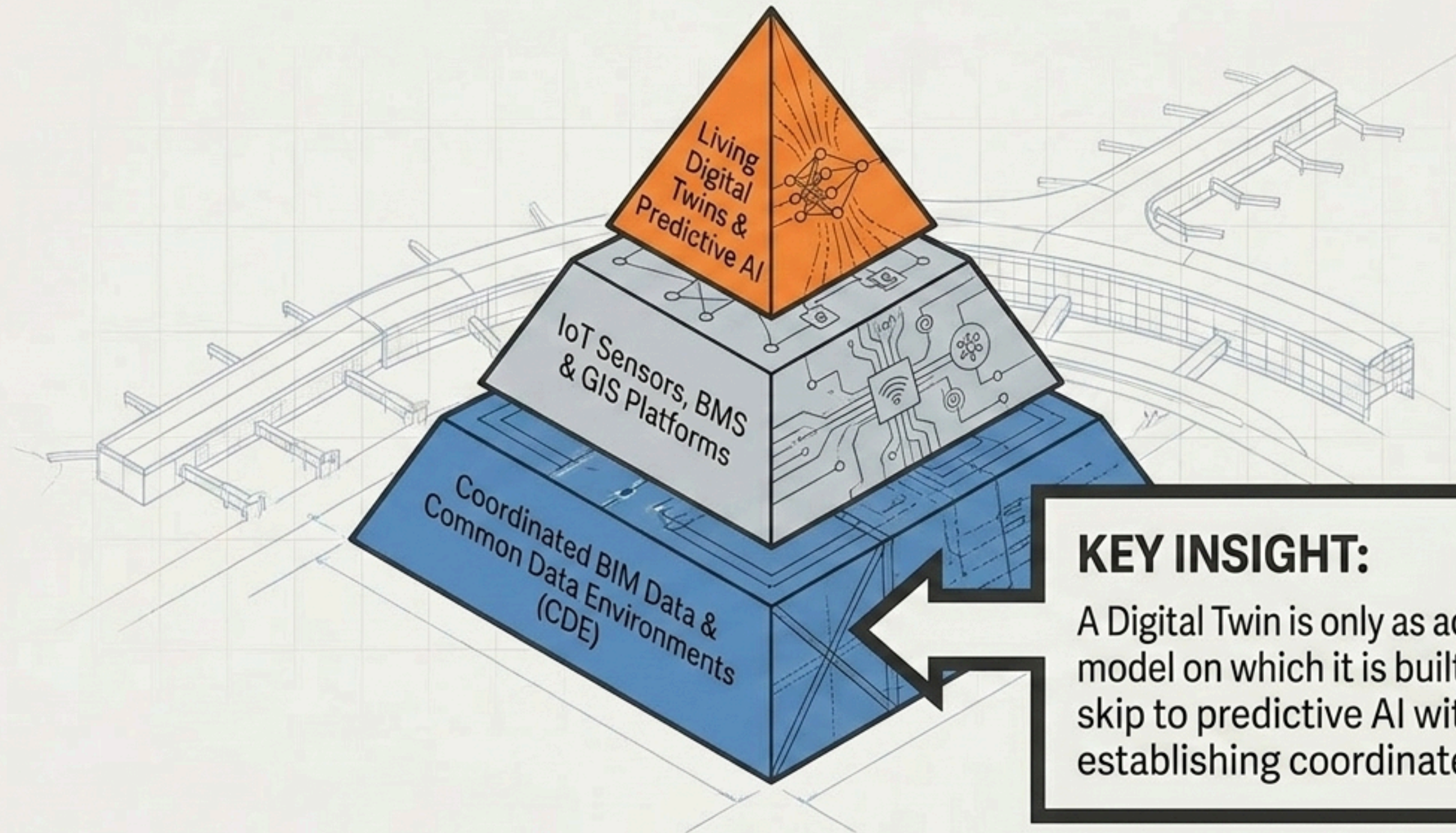
Airports manage hundreds of thousands of physical assets. In a BIM-enabled facility, managers no longer search through binders. Maintenance becomes proactive. Downtime decreases. Reliability improves.

Sustainability Requires Engineering Precision



Airports are among the highest energy-consuming facilities in the built environment. Better coordination leads to better-performing, environmentally resilient infrastructure throughout the building's entire lifecycle.

The Digital Dependency Stack

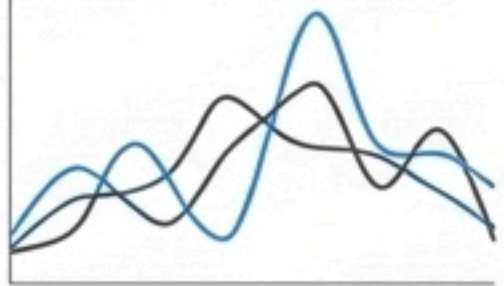


KEY INSIGHT:

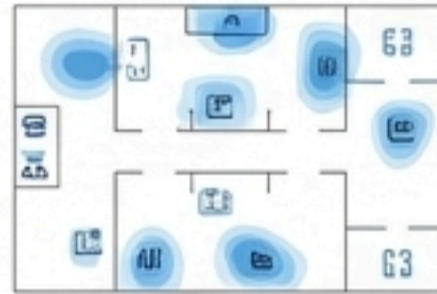
A Digital Twin is only as accurate as the model on which it is built. You cannot skip to predictive AI without first establishing coordinated BIM data.

Real-Time Operational Intelligence

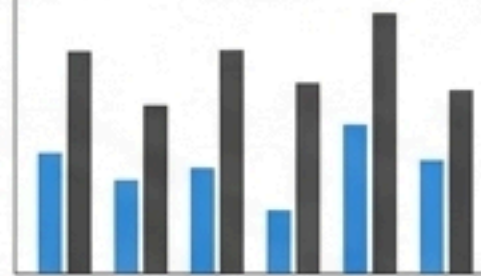
The aviation industry is transforming airports from static facilities into intelligent, data-driven infrastructure capable of instantly adapting to changing operational demands.



Live HVAC Performance
& Air Quality



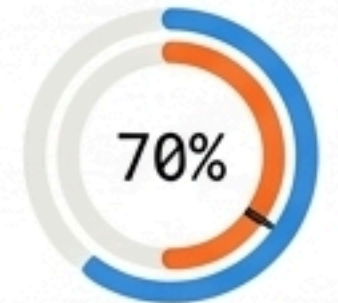
Real-time
Passenger Occupancy



Active Energy
Consumption Tracking



Predictive Equipment
Health Alerts



Dynamic Space
Utilization Metrics



Engineering the Future of Flight

Today's engineering pioneers are transforming the infrastructure that supports every takeoff and landing. At Roots BIM LLC, we believe aviation infrastructure deserves the same precision as aviation itself.

We help airport owners, architects, and contractors coordinate complex systems to create intelligent digital assets. Because success isn't measured only by the aircraft in the sky—it's measured by the invisible engineering that keeps everything on the ground running flawlessly.

Roots BIM LLC

