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OPERATIONAL DIGITAL TWINS

SAN FRANCISCO TECH CONFERENCE

Agentic Intelligence for Buildings and Data Centers

How AI-powered infrastructure intelligence is replacing reactive operations

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Presentation Agenda

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| 01 | The Problem with Legacy Infrastructure | 06 | Smart Buildings & Sustainability |
| 02 | What is an Operational Digital Twin? | 07 | Technology Stack Deep Dive |
| 03 | Three-Layer Architecture | 08 | Measured Impact: Industry Evidence |
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The Problem with Legacy Infrastructure

AI workloads demand intelligence that legacy systems cannot deliver

THE CHALLENGE FOR INFRASTRUCTURE

- GPU clusters driving 10–100× power density spikes
- Cooling systems running blind to real-time AI load
- Operators reacting, not predicting
- Siloed BMS, DCIM, and GIS tools that don't talk

WHY EXISTING TOOLS FALL SHORT

- BMS reads sensors — cannot take autonomous action
- DCIM visualizes — cannot simulate what happens next
- No safe way to test changes before going live
- Scaling ops requires headcount, not intelligence

What is a Digital Twin?

➡ A Digital Replica of a Physical Space or Building

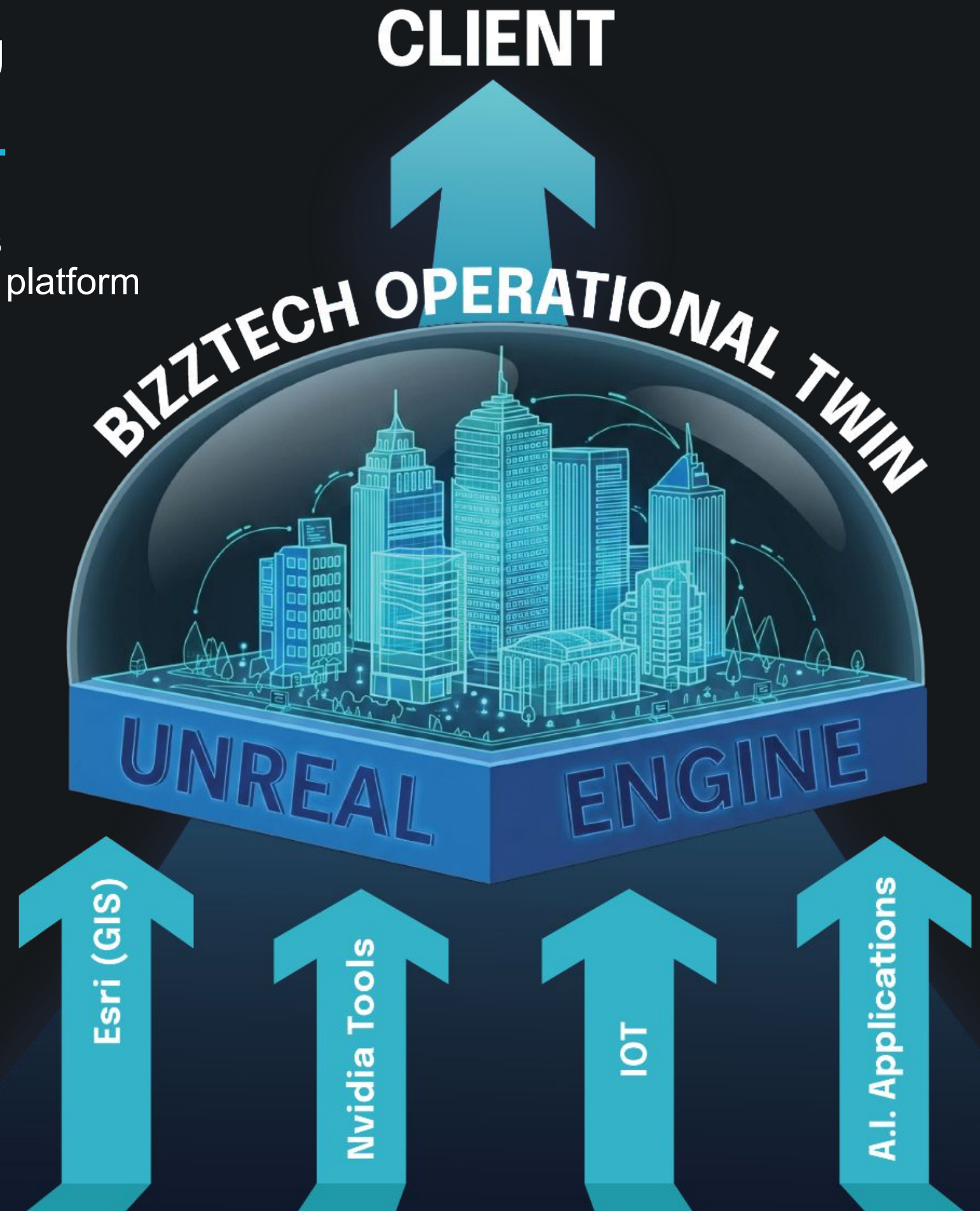
Why Data Center Digital Twins have value in 2026 +

- Create a real-time virtual representation of physical data center assets
- Monitor power, cooling, networking, and IT infrastructure from a single platform
- Detect anomalies before they impact critical operations
- Simulate infrastructure changes without disrupting live environments
- Improve capacity planning for AI, cloud, and high-density workloads
- Enable predictive maintenance to reduce unplanned downtime
- Optimize cooling strategies and airflow management
- Improve Power Usage Effectiveness (PUE) and energy efficiency
- Support sustainability initiatives by reducing carbon emissions
- Enhance disaster recovery planning through scenario modeling

Future Proofing

- AI-driven autonomous data center operations
- Integration with generative AI for intelligent decision support
- Digital twins for liquid cooling infrastructure
- Autonomous energy optimization
- Multi-cloud and hybrid data center visualization
- Carbon-aware infrastructure management
- Advanced 3D immersive monitoring using AR/VR
- Digital twins for edge and modular data centers

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The Operational Digital Twin

Passive vs. Agentic — The Architectural Breakthrough

TRADITIONAL DIGITAL TWIN — PASSIVE

- Displays sensor and telemetry data
- Sends alerts when thresholds are crossed
- Requires a human to decide and act
- Static after initial configuration

BIZZTECH OPERATIONAL TWIN — AGENTIC

- Connected to live systems — observes and acts
- Executes autonomous corrective actions
- Runs What-If simulations before acting
- Continuously synced, fully governed and audited



Three-Layer Architecture

Browser-native intelligence from sensors and IoT to autonomous action

LAYER 1

Visual Engine

Unreal Engine 5 pixel-streamed to any browser. Photorealistic 3D — zero install, zero client GPU.

LAYER 2

Data Fabric

Live telemetry sync across legacy BMS, DCIM, IoT edge, and cloud — one continuously updated model.

LAYER 3

HALØ Orchestrator

The AI brain. Converts live data into governed autonomous action — executes fixes, runs What-If scenarios, logs every decision.

HALØ: Agentic AI Orchestration

Hierarchical multi-agent automation with built-in guardrails



HALØ

BOSS AGENT

Receives the goal, builds the plan, enforces policy guardrails.

DOMAIN AGENTS

Specialist AI workers — design, QA, data analysis, validation.

LEAF AGENTS

Execute real UI and API actions on live systems — actual control.

WORKFLOW PERSONAS

Reusable no-code playbooks — shareable, versionable, testable.

ENTERPRISE CONTROLS

Policy guardrails

Role-based approvals

Versioned workflows

Full audit & rollback

Data Centers: Built for the AI Era

Managing GPU-dense, power-critical infrastructure at scale



Physics & Thermal Simulation

Model airflow and heat for GPU clusters in real time — prevent hotspots before they throttle workloads.



Real-Time Telemetry Tracking

Live power draw, cooling load, and network utilization across all racks in one browser workspace.



Dynamic Failover Sandboxing

Simulate full power and network failure scenarios virtually — validate fallbacks without touching production.

Smart Buildings: From Reactive to Autonomous

AI-driven facility intelligence for SF's sustainability ambitions



CAPABILITIES

- Real-time energy optimization & HVAC predictive maintenance
- Occupancy-based automation and multi-tenant load management
- Retrofit and upgrade simulation before capital spend

SUSTAINABILITY & ESG IN FOCUS

- Live carbon tracking mapped to real-time grid intensity
- Benchmark Ordinance & LEED reporting from live data, not spreadsheets
- Autonomous demand flexibility during grid peak events

REFERENCE

Digital Twin Technology Stack

Eight layers, from IoT sensors at the edge to visualization and simulation at the top — every component a recognized industry leader.



Technology Stack Deep Dive

Best-in-class partners — an integration platform, not a replacement platform

VISUALIZATION & SIMULATION

NVIDIA Omniverse · Unreal Engine 5 via Cloud Pixel Streaming

GIS & SPATIAL

Esri ArcGIS · Cesium 3D — geo-aware operations

CLOUD INFRASTRUCTURE

AWS · Google Cloud · HPE — multi-cloud, no single vendor

IOT SENSORS & EDGE

Siemens · NVIDIA · CircuitMeter · Halo Edge IP

DIGITAL TWIN PLATFORMS

Siemens MindSphere · Bentley iTwin · Akila

AI & ADVANCED ANALYTICS

Atlas Platform · NVIDIA · BizzTech AI Agent Engine



What Operational Digital Twins Deliver

Published, third-party results — sources linked below

25–40%

HVAC energy savings in buildings

RL-controlled building digital twins,
review of 51 studies — MDPI
Buildings, 2026

Up to 30%

Energy savings across industries

Systematic review of 50
peer-reviewed studies — MDPI
Sustainability, 2025

27.8%

Deployable cooling energy savings

Validated digital twin of ORNL
Frontier supercomputer cooling —
arXiv, 2026

CASE STUDY — THÉSÉE DATACENTER, FRANCE

France's first Tier IV-certified colocation facility runs a digital twin in live operations — optimizing power, cooling, and capacity.

SOURCES:

► [Thésée — cadence.com](#)

► [Buildings review — mdpi.com](#)

► [50-study review — mdpi.com](#)

► [Frontier twin — arxiv.org](#)

The 12-Week Pilot Program

Low-risk, high-signal — run BizzTech alongside your existing stack

WEEKS 1–2

Discovery & scoping

Map 2–3 high-value workflows, set KPI baselines, identify integrations.

WEEKS 3–5

Integration build

Connect Data Fabric to live systems; configure RBAC, governance, approvals.

WEEKS 6–8

Workflow development

Build and test agentic workflows sandboxed; UAT side-by-side with current process.

WEEKS 9–12

Go-live & scale

Production deployment with rollback; KPI measurement and ROI documentation.

25% off

First-year platform fee, rollout services & workflow development — for conference attendees who start a pilot within 60 days.

Why BizzTech

Agentic

Autonomous by design

Not a dashboard — a governed control plane for physical infrastructure.

AI-native

Built for AI-era workloads

Designed for GPU-dense, high-power, dynamic environments.

Open

No lock-in, no rip-and-replace

Integrates with Siemens, NVIDIA, Esri, AWS, and your existing stack.

NEXT STEPS FOR ATTENDEES →

30-min
discovery call

Live HALØ
demo

Free pilot
scoping workshop

25% conference code
— 60 days