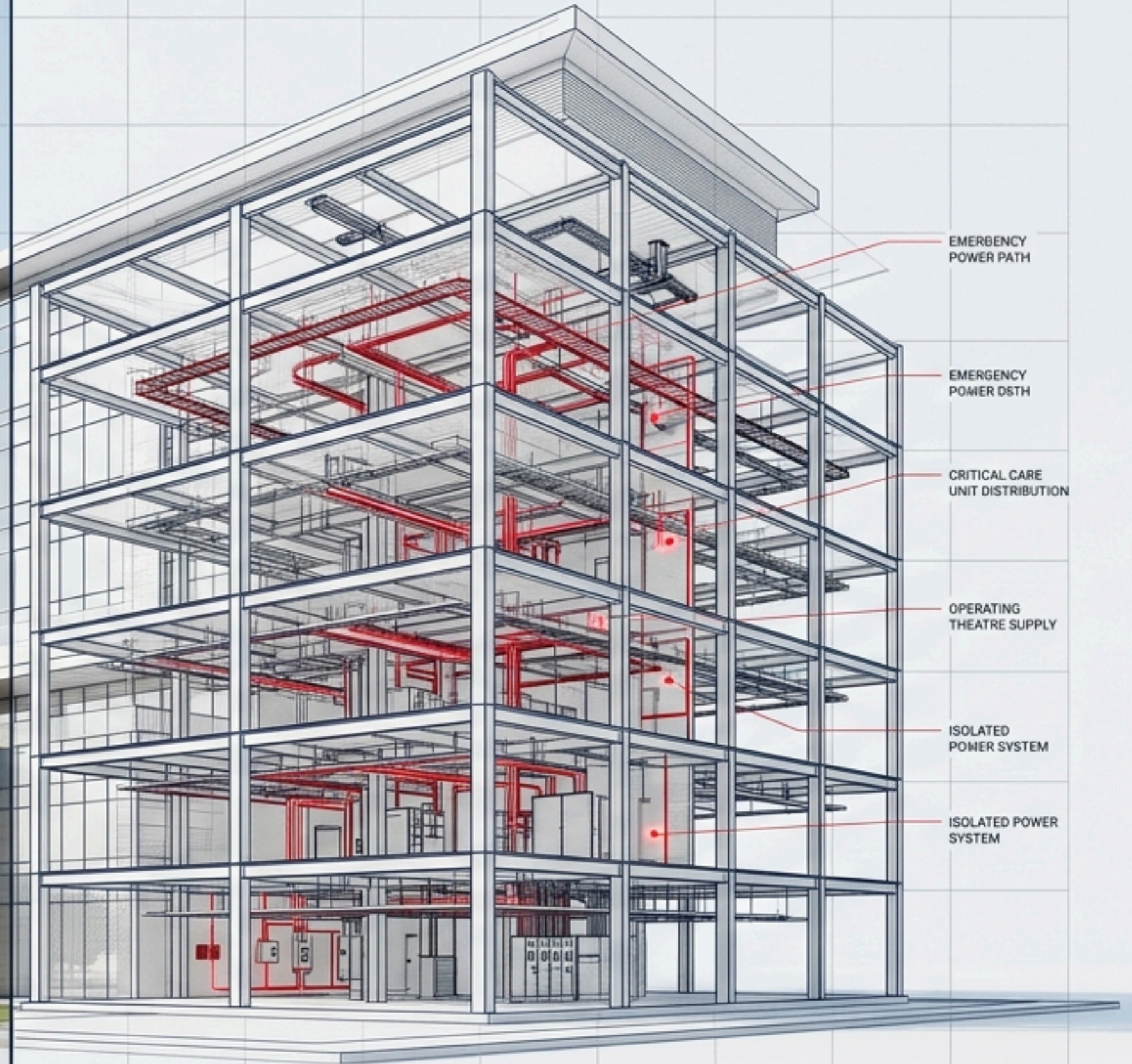


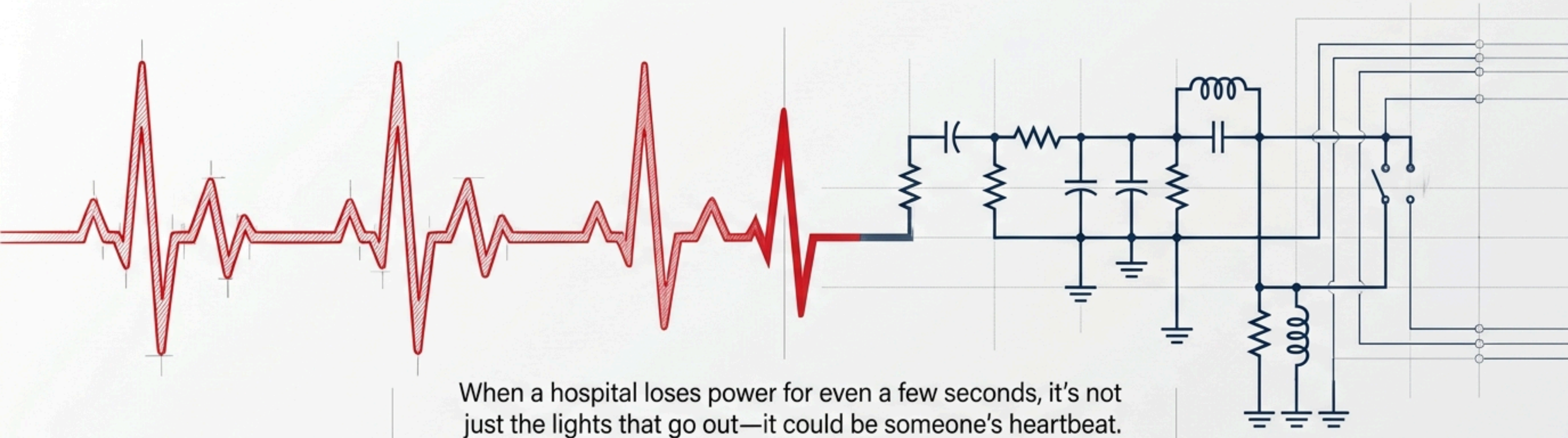
The Lifeline Behind Recovery

Electrical BIM Coordination for
Critical Healthcare Infrastructure



Roots BIM LLC

The Ultimate Stakes



When a hospital loses power for even a few seconds, it's not just the lights that go out—it could be someone's heartbeat.

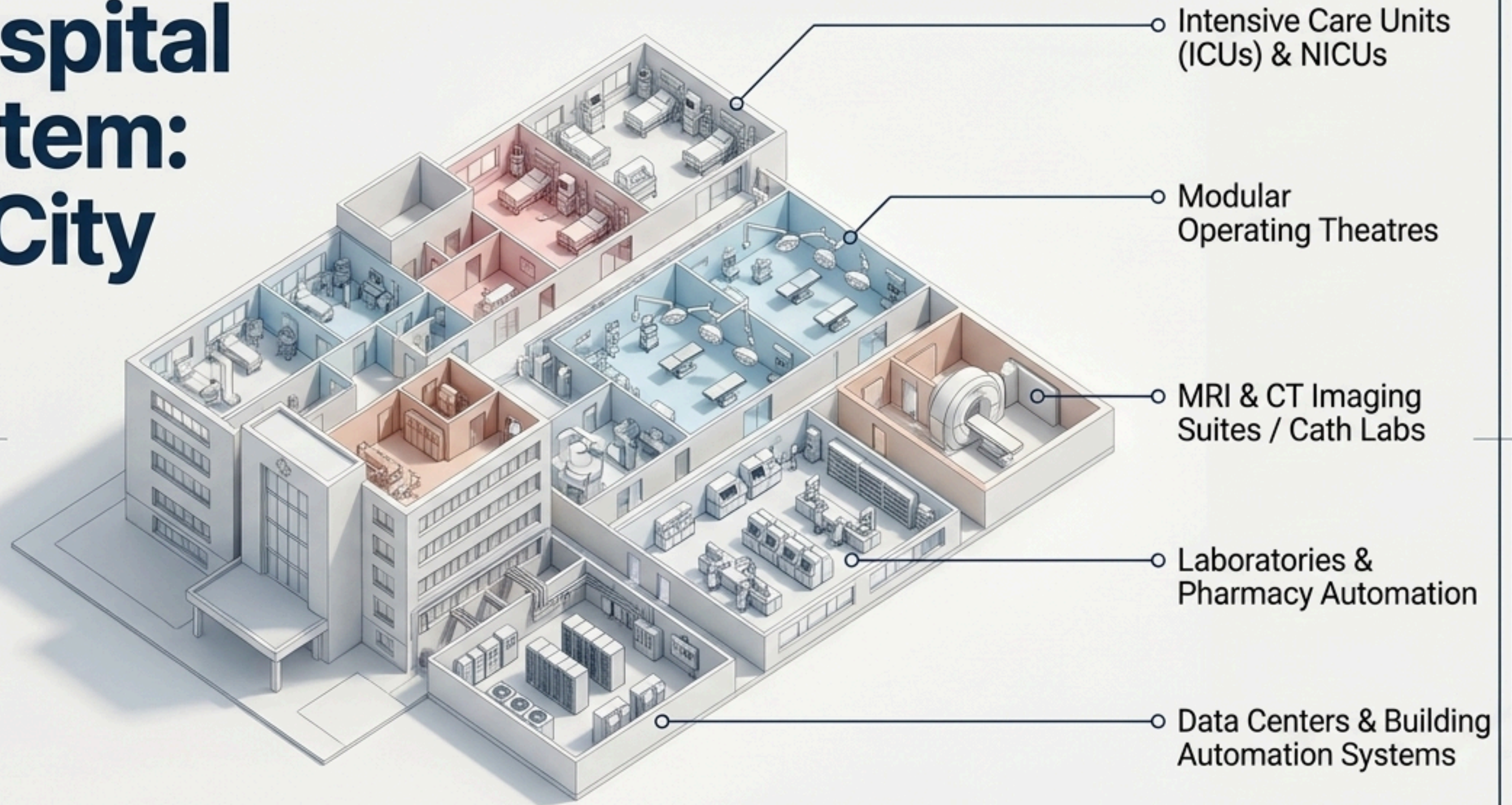
Commercial Buildings

Electrical failures interrupt business operations. Risk is financial.

Healthcare Environments

Directly connected to human life. MRIs, ventilators, ICU monitors, and emergency systems require uninterrupted flow. Every cable route protects a life.

The Hospital Ecosystem: A Tiny City



Each department demands unique electrical requirements—from electromagnetic shielding and isolated power systems to redundant feeders. Manual coordination is no longer practical.

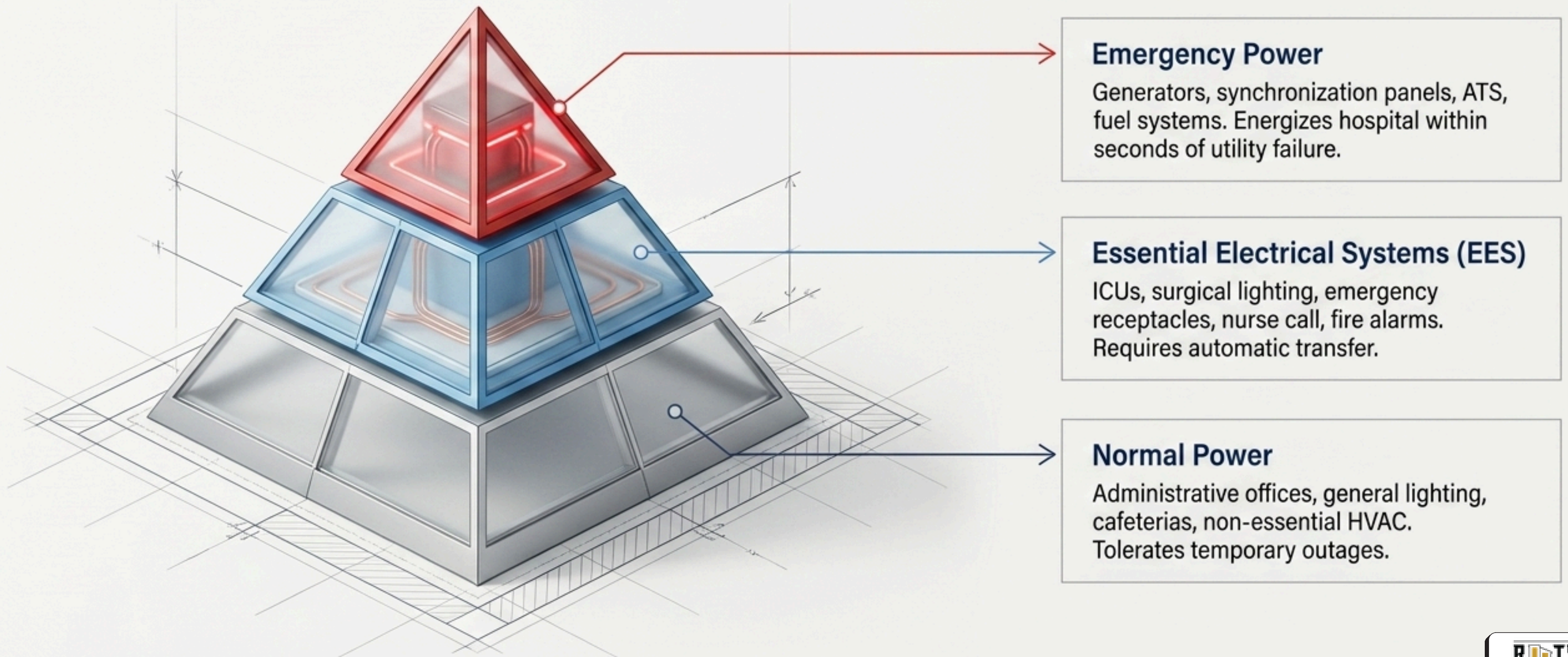
Hospitals contain thousands of interconnected, highly regulated systems. 2D documentation can no longer manage this data density safely.

[illegible]

This 3D cutaway diagram illustrates the internal layout of a mechanical and electrical (M&E) plant room. The room is enclosed by a concrete structure with vertical pillars and horizontal beams. The floor is a thick, light-colored slab. The ceiling is a complex network of ducts and pipes. The diagram shows a large, dark blue U-shaped duct system running along the top. Below this, there are several horizontal and vertical pipes, some colored blue and others copper. A large, light blue rectangular duct is visible on the right side. The diagram is annotated with eight numbered circles (1-8) pointing to specific components: 1 points to a vertical pipe on the left; 2 points to a horizontal pipe on the left; 3 points to a horizontal pipe on the right; 4 points to a vertical pipe on the right; 5 points to a horizontal pipe on the right; 6 points to a horizontal pipe on the right; 7 points to a horizontal pipe on the right; and 8 points to a horizontal pipe on the right.

The Critical Power Hierarchy

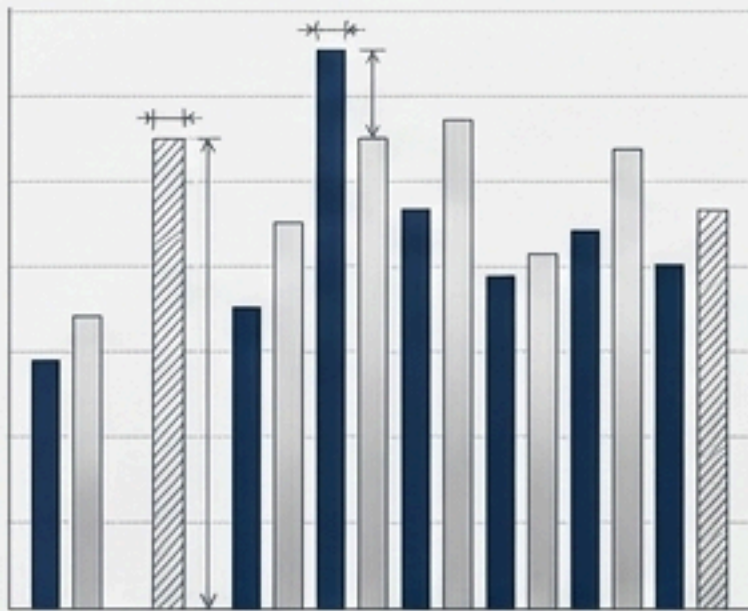
Electricity inside hospitals isn't 'on' or 'off'—it is digitally modeled by criticality. BIM validates circuit separation, cable routing, and redundancy before installation.



Intelligent Load Analysis: Simulating the Future

Hospitals continuously expand. BIM integrates complex electrical calculations directly with real-world geometry, enabling smart infrastructure planning and preventing overloaded panels.

Demand Load & Diversity Factors

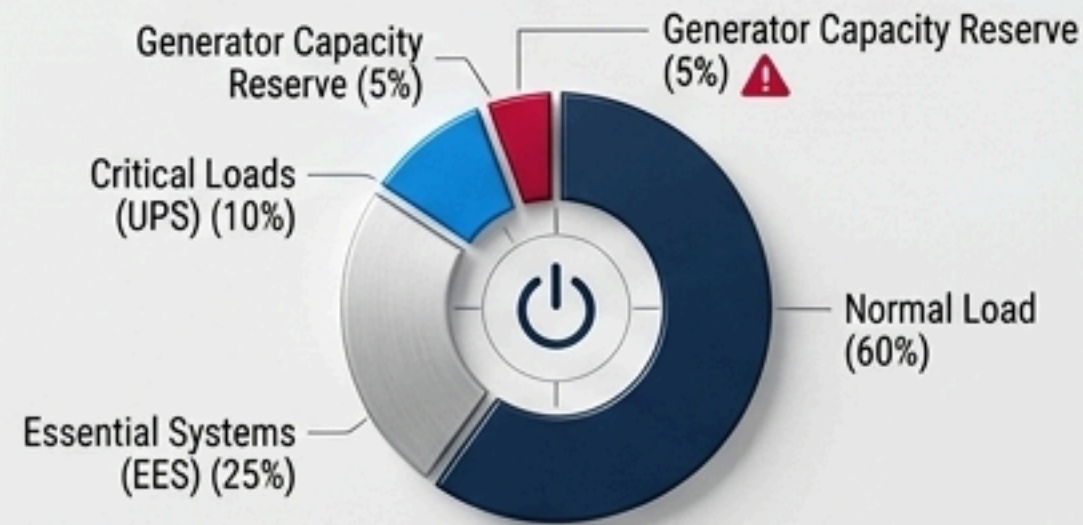


Optimized panel sizing, accounting for non-coincident peak loads. Applying NEC diversity factors.



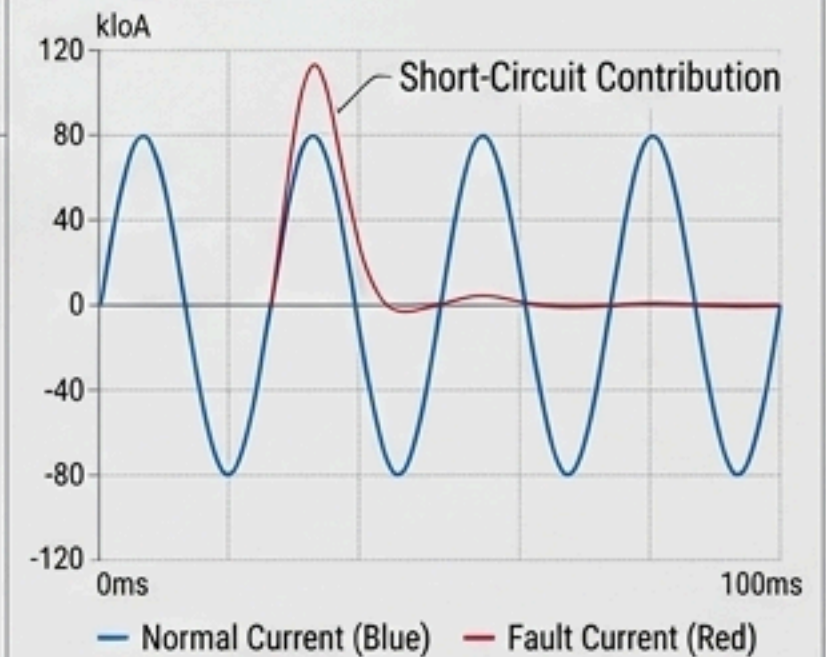
Real-time BIM Calculation / Predictive Modeling for 10-Year Growth

UPS Loading & Generator Utilization



Balancing runtime requirements and backup capacity for uninterruptible power.

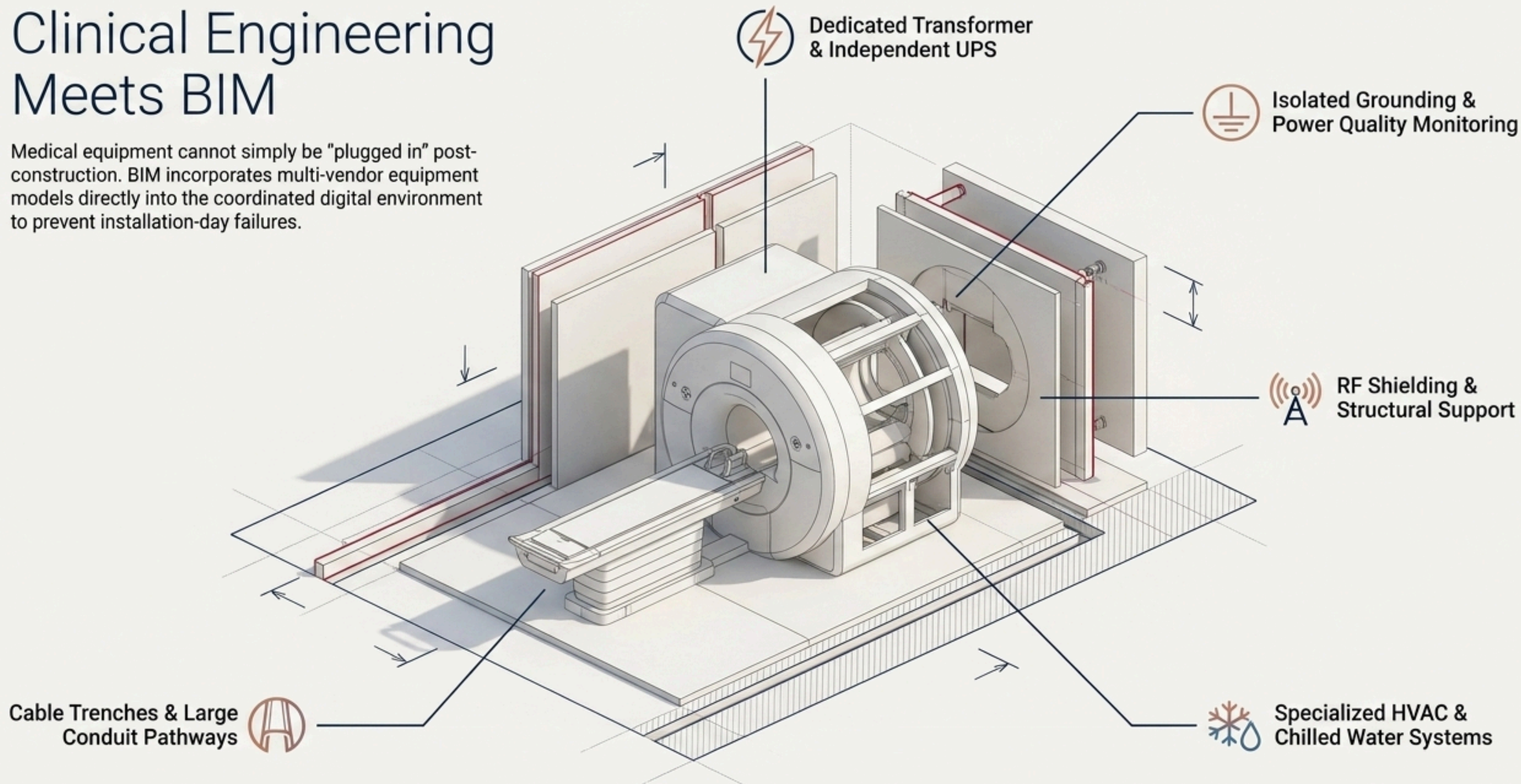
Fault Current Analysis



Verifying breaker interrupting ratings with calculated prospective fault levels.

Clinical Engineering Meets BIM

Medical equipment cannot simply be "plugged in" post-construction. BIM incorporates multi-vendor equipment models directly into the coordinated digital environment to prevent installation-day failures.

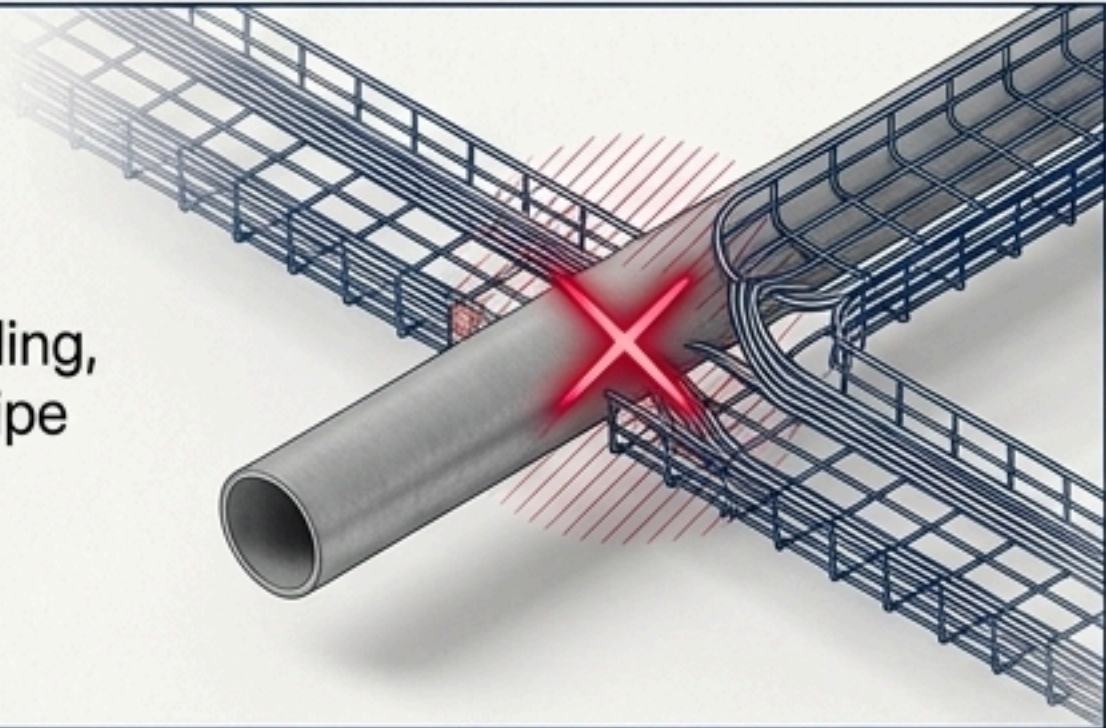


Rethinking Clash Detection

Every clash resolved digitally in the model prevents expensive, high-risk field modifications.

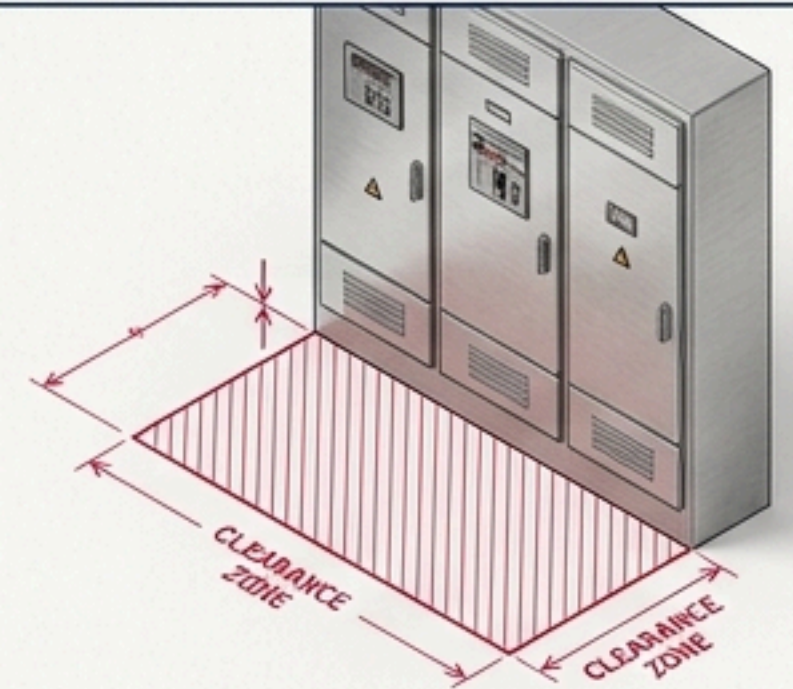
Physical Collisions

Cable tray overcrowding, ceiling congestion, pipe hits duct.



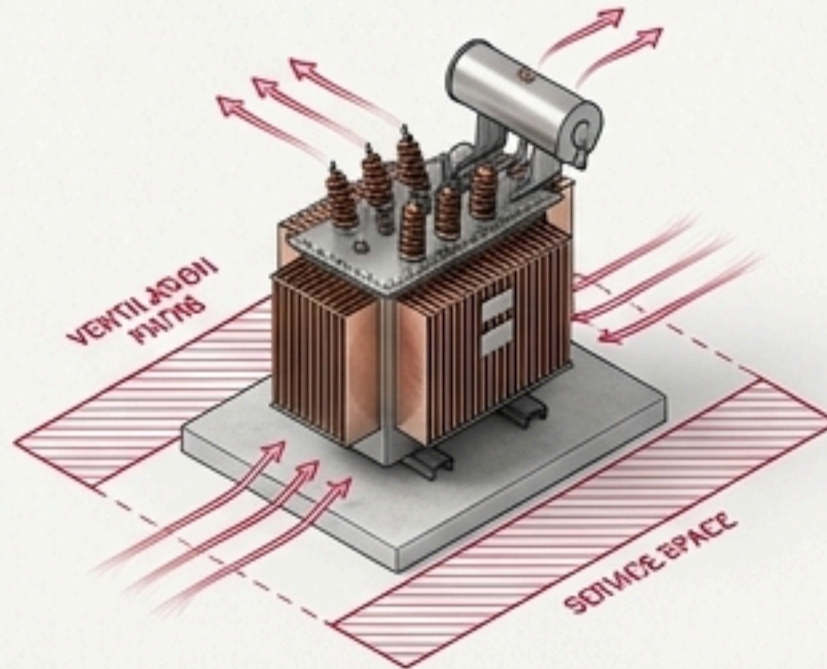
Maintenance Access

Switchboard access violations, equipment clearance conflicts.



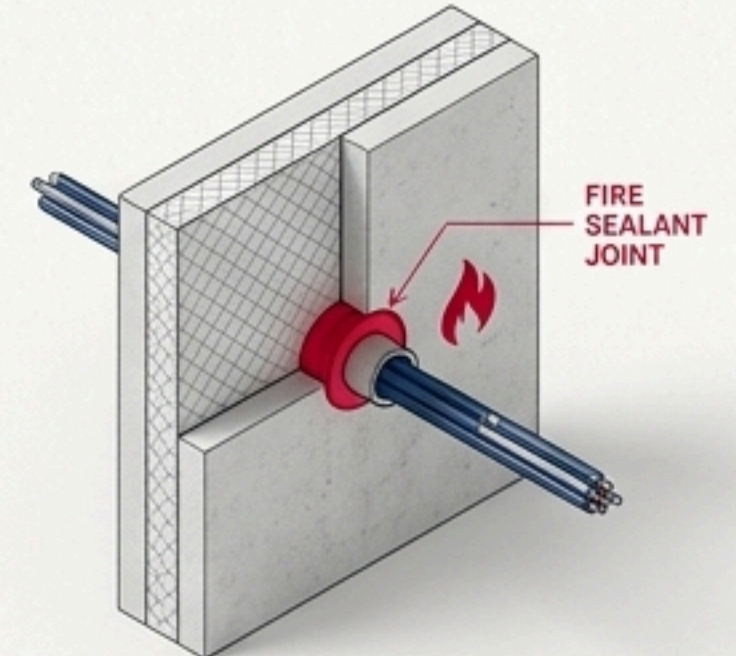
Operational Integrity

Transformer ventilation issues, generator service space.



Safety & Compliance

Fire compartment penetrations, isolation room requirements.

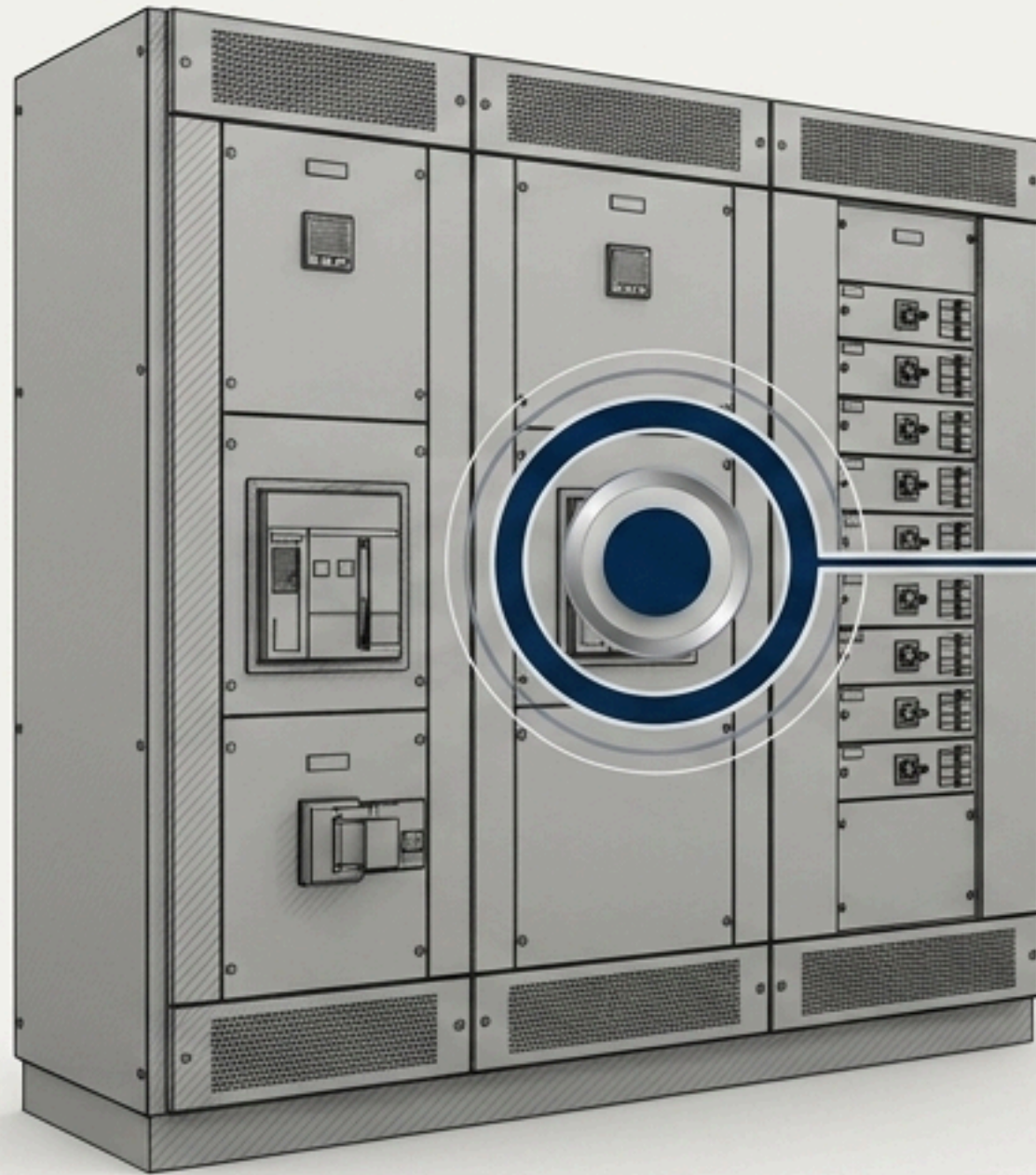


Hospitals are governed by stringent standards. BIM embeds these regulatory requirements into the coordinated design process before construction, radically reducing risk and improving design quality.



The Lifecycle Asset: BIM in Facility Management

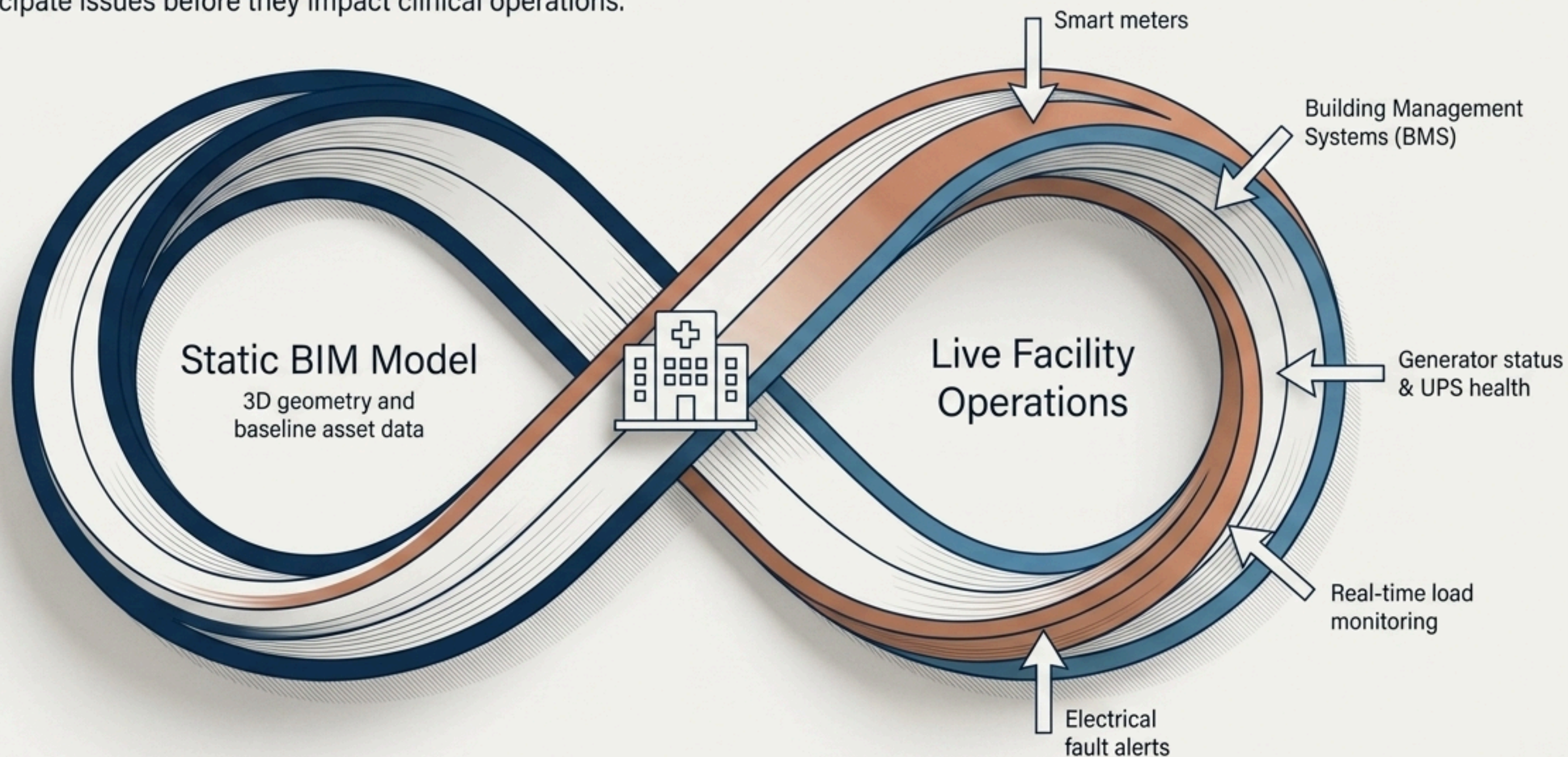
Hospitals operate for decades. When integrated with a Computerized Maintenance Management System (CMMS), the BIM model provides facility teams with the exact digital intelligence needed to plan preventive maintenance.



Manufacturer:	[Asset Data]
Model Number:	[Asset Data]
Installation Date:	[Asset Data]
Warranty Information:	[Asset Data]
Spare Parts:	[Asset Data]
Maintenance Schedule:	[Asset Data]
Circuit References:	[Asset Data]
Load Data:	[Asset Data]
Testing Records:	[Asset Data]

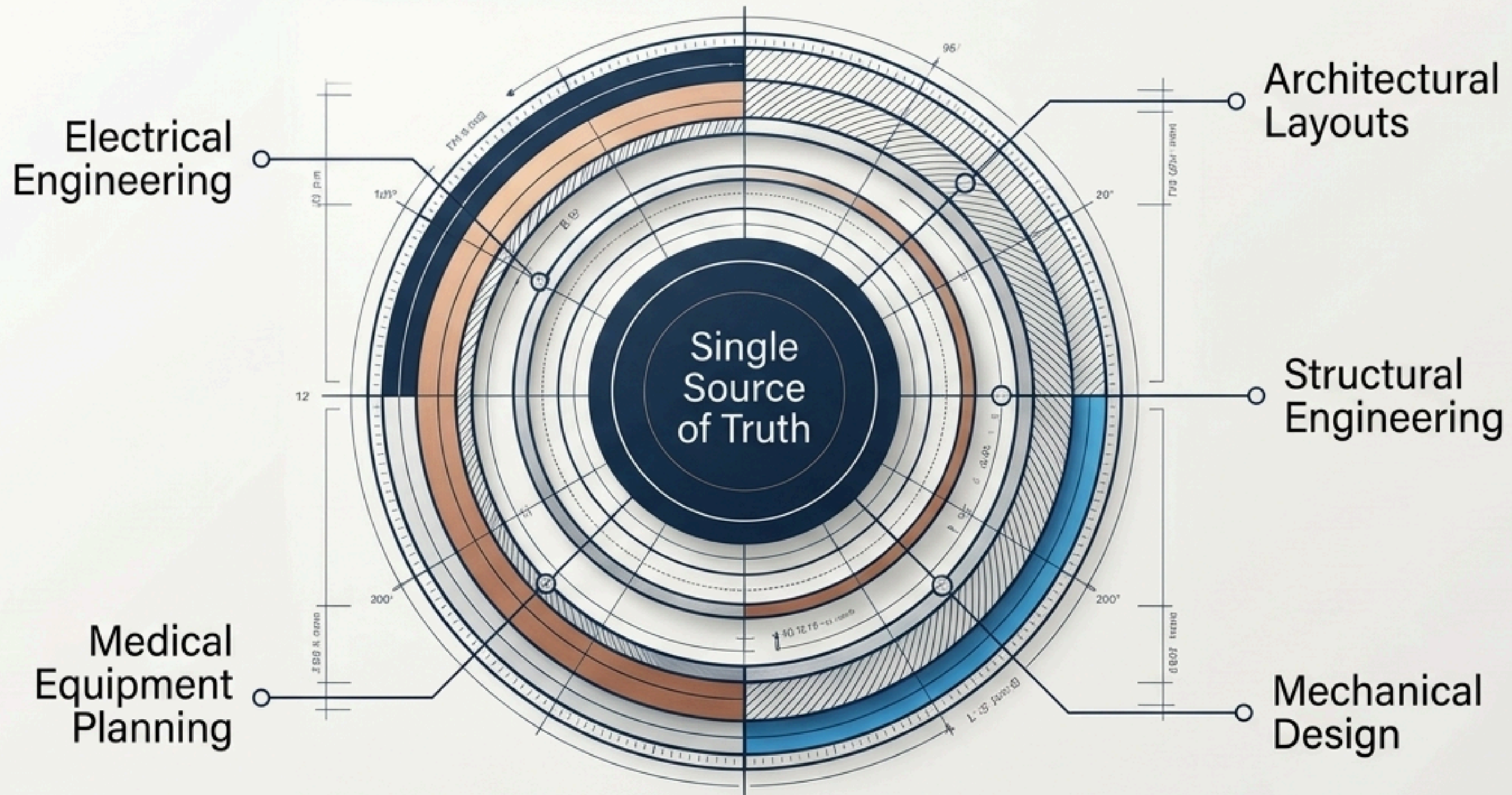
The Future State: Digital Twins

The model evolves into a living Digital Twin, granting facility managers continuous visibility to anticipate issues before they impact clinical operations.



The Coordinated Digital Environment

By unifying all disciplines within a single coordinated BIM model, project teams eliminate communication silos and ensure every system aligns perfectly with the electrical infrastructure.



Why Roots BIM LLC?

Engineering resilience where failure is not an option.



Critical power
distribution
strategies



Intelligent medical
equipment
integration



Clash-free
multidisciplinary
coordination



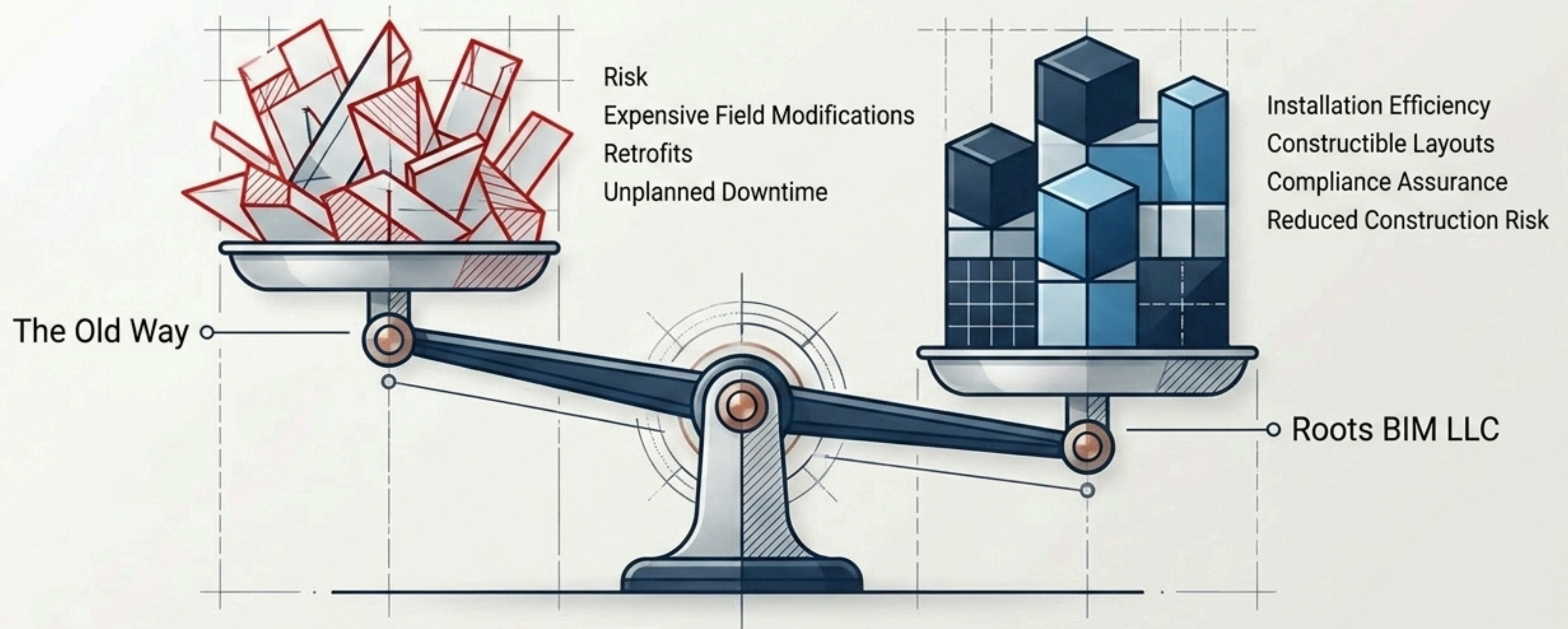
Data-rich asset
information &
layouts



Digital Twin
readiness for
lifecycle
operations

Proactive Engineering vs. Reactive Problem-Solving

Advanced BIM methodologies shift healthcare projects from costly, reactive problem-solving on the job site to precise, proactive engineering in the digital environment.





Behind every successful hospital is an invisible network of meticulously coordinated systems.

Ensuring systems are reliable enough to support the people who depend on them most.

Roots BIM LLC

www.rootsbim.com

Contact Us to Secure Your Next Project