



Commwork

Information & Communication Technologies

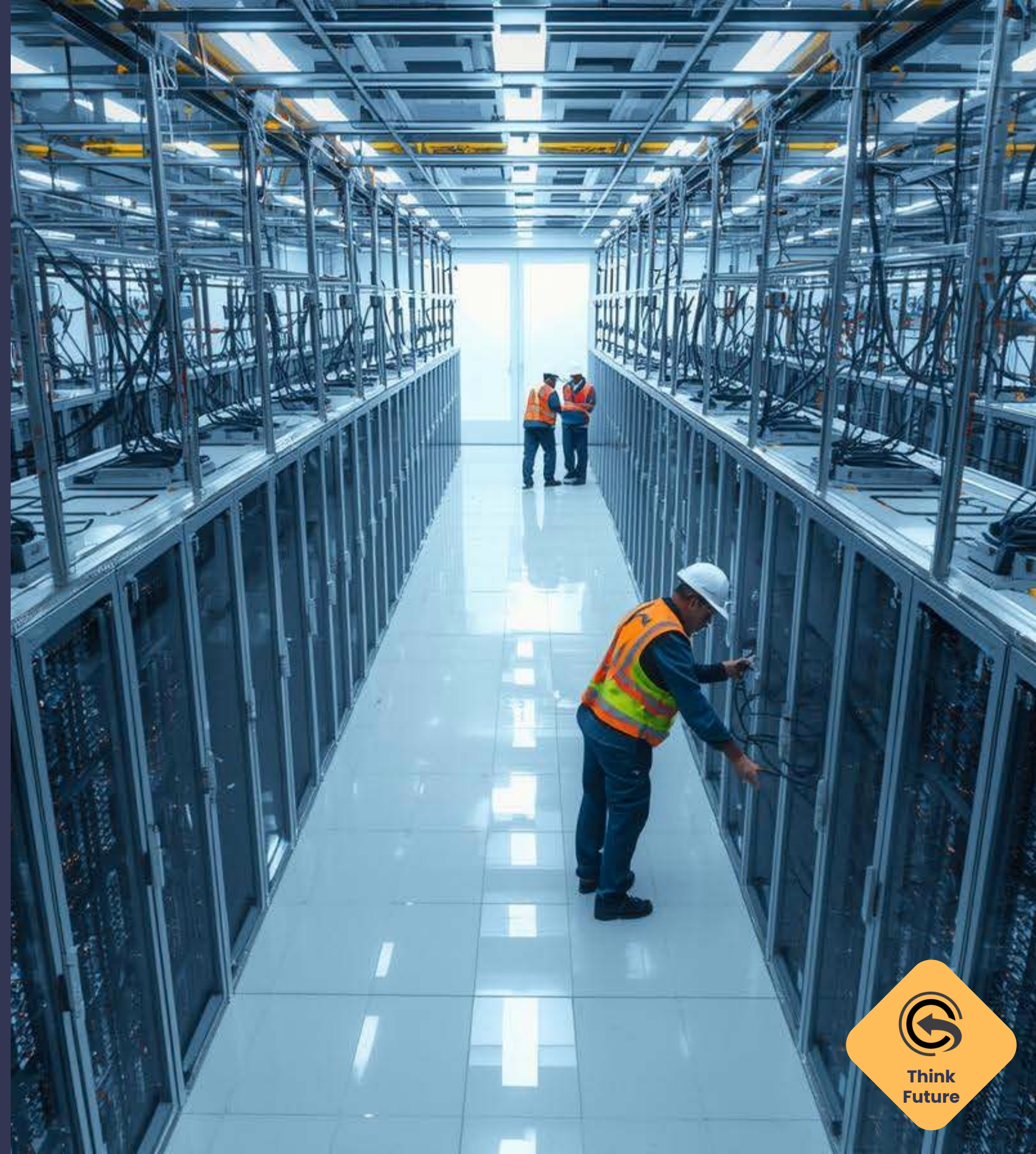
DATA CENTER SOLUTIONS



About Commwork ICT

Delivering excellence in data center
solutions since 2014

Commwork ICT specializes in **data center design** and **integration** services, having successfully completed numerous projects for valued end users. Our commitment to quality ensures that we deliver solutions that meet the highest standards of efficiency and sustainability.



Expertise: Globally Experienced Engineers & Designers

Established

Commwork ICT was founded in 2014, focusing on data center solutions.

In our first year, we completed several projects showcasing our capability and commitment.

Team Expansion

Our team grew to include various internationally experienced engineers and designers.

The team now includes diverse professionals experienced in international data center standards.

Sustainability

We prioritize reliable, efficient, and sustainable data center design in all projects.

Our focus on sustainability drives us to implement eco-friendly practices in design.

Global Office

In 2024, we opened a consulting and design office in London to enhance our global reach.

The London office allows us to better serve our international clients with localized expertise.



Key Milestones in Data Center Design

Phase 1: Strategic Planning & Requirement Definition

Key Activities:

- Define business objectives and capacity requirements
- Conduct site selection and feasibility studies
- Establish project budget and timeline

Deliverables: Project charter, site report, and initial budget plan

Phase 2: Conceptual Design

Key Activities:

- Develop high-level layout and space allocation
- Define Tier level and redundancy strategy
- Estimate power, cooling, and efficiency targets

Deliverables: Concept design package, Tier classification plan

Phase 3: Detailed Design

Key Activities:

- Finalize architectural, electrical, and mechanical drawings
- Design network, cabling, and security systems
- Integrate sustainability and energy efficiency measures

Deliverables: Full design documentation, technical specifications

Phase 4: Design Review & Validation

Key Activities:

- Conduct peer and compliance reviews
- Perform CFD and load simulations
- Validate design against standards (ASHRAE, ISO, Uptime Institute)

Deliverables: Design validation report, compliance certificates



Data Center Design Standards

1. Uptime Institute – Tier Standards

- Purpose: Defines levels of redundancy and fault tolerance.
- Tiers:
 - Tier I: Basic capacity (single path for power and cooling, no redundancy).
 - Tier II: Redundant components (some backup systems).
 - Tier III: Concurrently maintainable (systems can be serviced without downtime).
 - Tier IV: Fault-tolerant (fully redundant, highest availability).
- Focus: Availability and uptime classification.

2. ANSI/TIA-942 (Telecommunications Infrastructure Standard for Data Centers)

- Purpose: Comprehensive standard covering design, cabling, and infrastructure.
- Key areas:
 - Site space and layout
 - Cabling systems (fiber, copper)
 - Network topology
 - Power and cooling
 - Fire protection and security
- Rating levels: Rated 1–4 (similar to Uptime tiers).
- Widely used for structured cabling and physical infrastructure design.



Data Center Design Standards

3. ISO/IEC 22237 (International Standard for Data Centers)

- Purpose: Global standard harmonizing design, construction, and operation.
- Covers:
 - Building construction
 - Power supply and distribution
 - Environmental control
 - Telecommunications cabling
 - Security and management
- Successor to EN 50600 (European standard).

4. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)

- Purpose: Defines environmental conditions for IT equipment.
- Key documents:
 - ASHRAE TC 9.9: Thermal guidelines for data processing environments.
- Focus: Temperature, humidity, and airflow management for energy efficiency.

5. NFPA 75 & 76 (National Fire Protection Association)

- Purpose: Fire protection and safety standards for IT equipment and telecom facilities.
- Covers: Fire detection, suppression systems, and emergency procedures.

6. BICSI 002

- Purpose: Best practices for data center design and implementation.
- Covers: Site selection, architecture, electrical, mechanical, and IT systems.
- Focus: Practical design guidance and integration.



Data Center Design Tools

🧩 1. CAD and BIM Tools

These help you create precise architectural and engineering layouts.

- AutoCAD – for detailed 2D/3D floor plans and rack layouts.
- Revit – for Building Information Modeling (BIM), integrating mechanical, electrical, and structural systems.
- SketchUp – for quick 3D visualization and conceptual design.

⚙️ 2. Data Center Infrastructure Management (DCIM) Tools

Used for planning, monitoring, and managing physical and virtual assets.

- Schneider Electric EcoStruxure IT Advisor – for capacity planning, asset tracking, and 3D visualization.
- Nlyte DCIM – for asset lifecycle management and power optimization.
- Sunbird DCIM – for real-time monitoring and capacity planning.

🌡️ 3. Computational Fluid Dynamics (CFD) and Thermal Analysis

These tools simulate airflow and temperature distribution to optimize cooling.

- 6SigmaDCX (by Future Facilities) – for advanced CFD modeling of data centers.
- ANSYS Fluent – for detailed airflow and thermal simulations.
- TileFlow – for airflow modeling in raised-floor environments.



Data Center Design Tools

🔌 4. Electrical and Power Design Tools

Used for designing power distribution and redundancy systems.

- ETAP – for electrical system modeling, load flow, and fault analysis.
- EPLAN Electric P8 – for electrical schematics and automation.
- PowerCAD – for power distribution and load calculations.

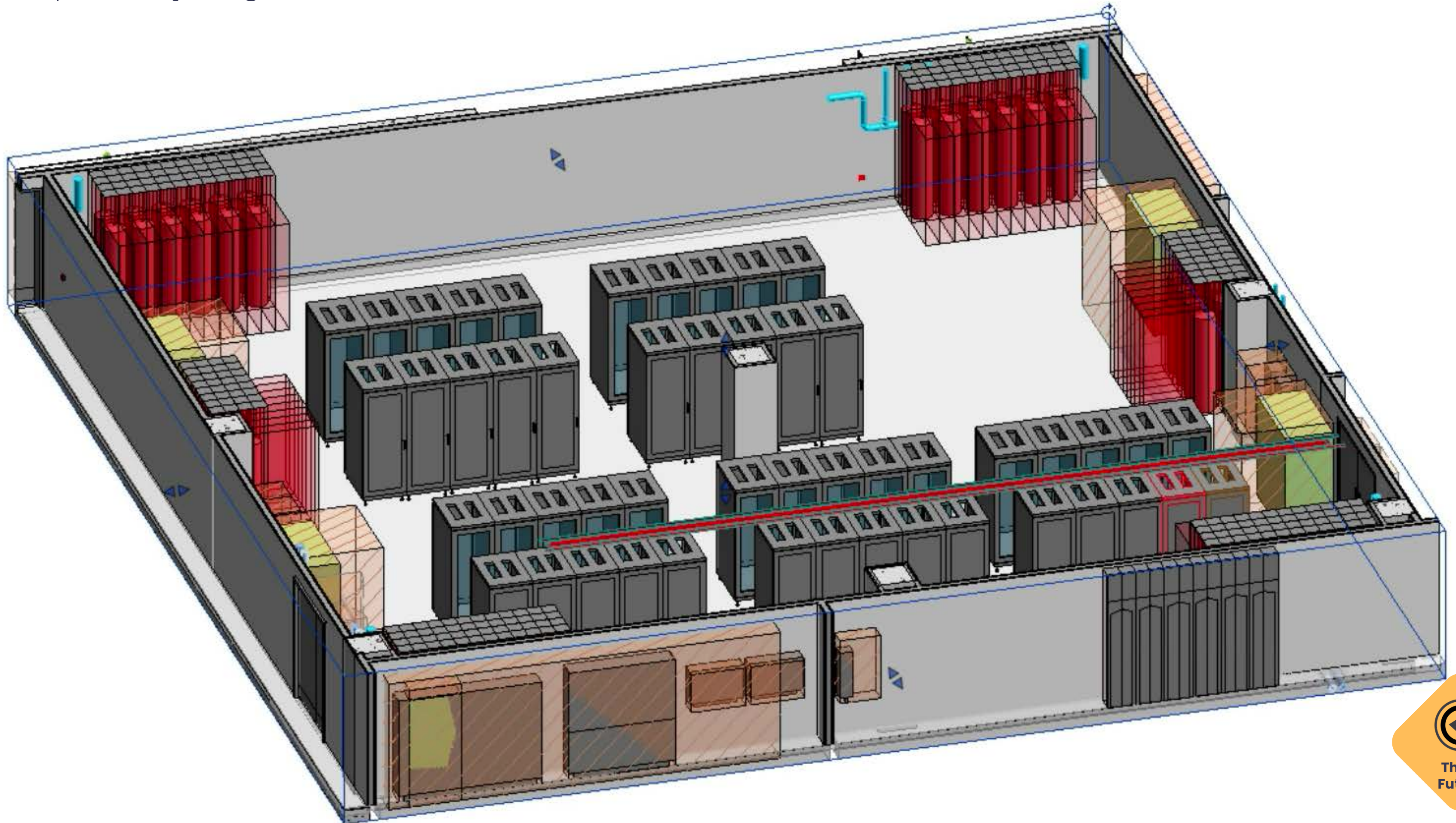
🧠 5. Visualization and Collaboration Tools

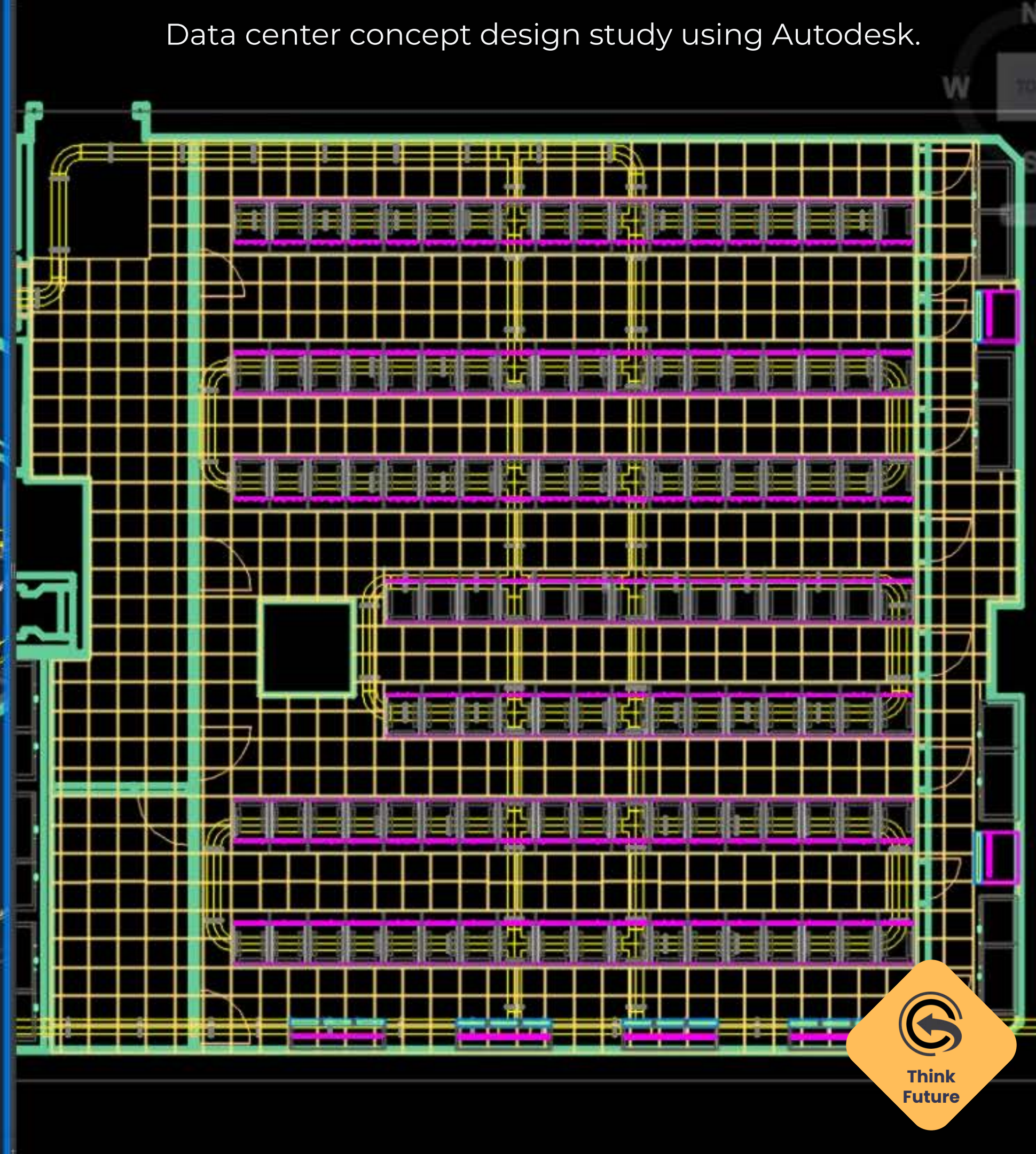
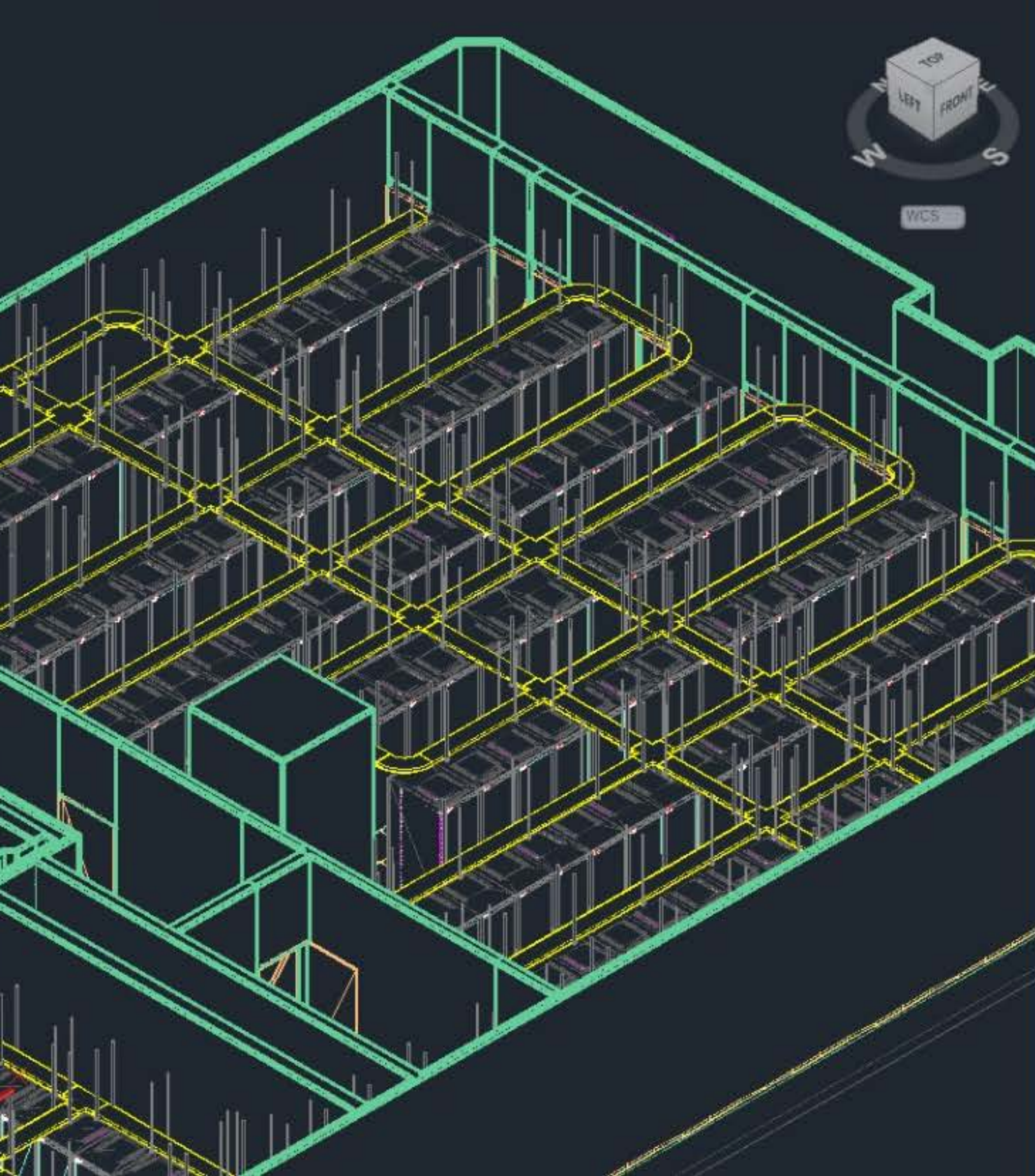
For presenting designs and collaborating with clients or teams.

- Navisworks – for integrating multiple design models and detecting clashes.
- Twinmotion – for real-time rendering and immersive visualization.



A white space study using Revit for MEP 3D coordination.





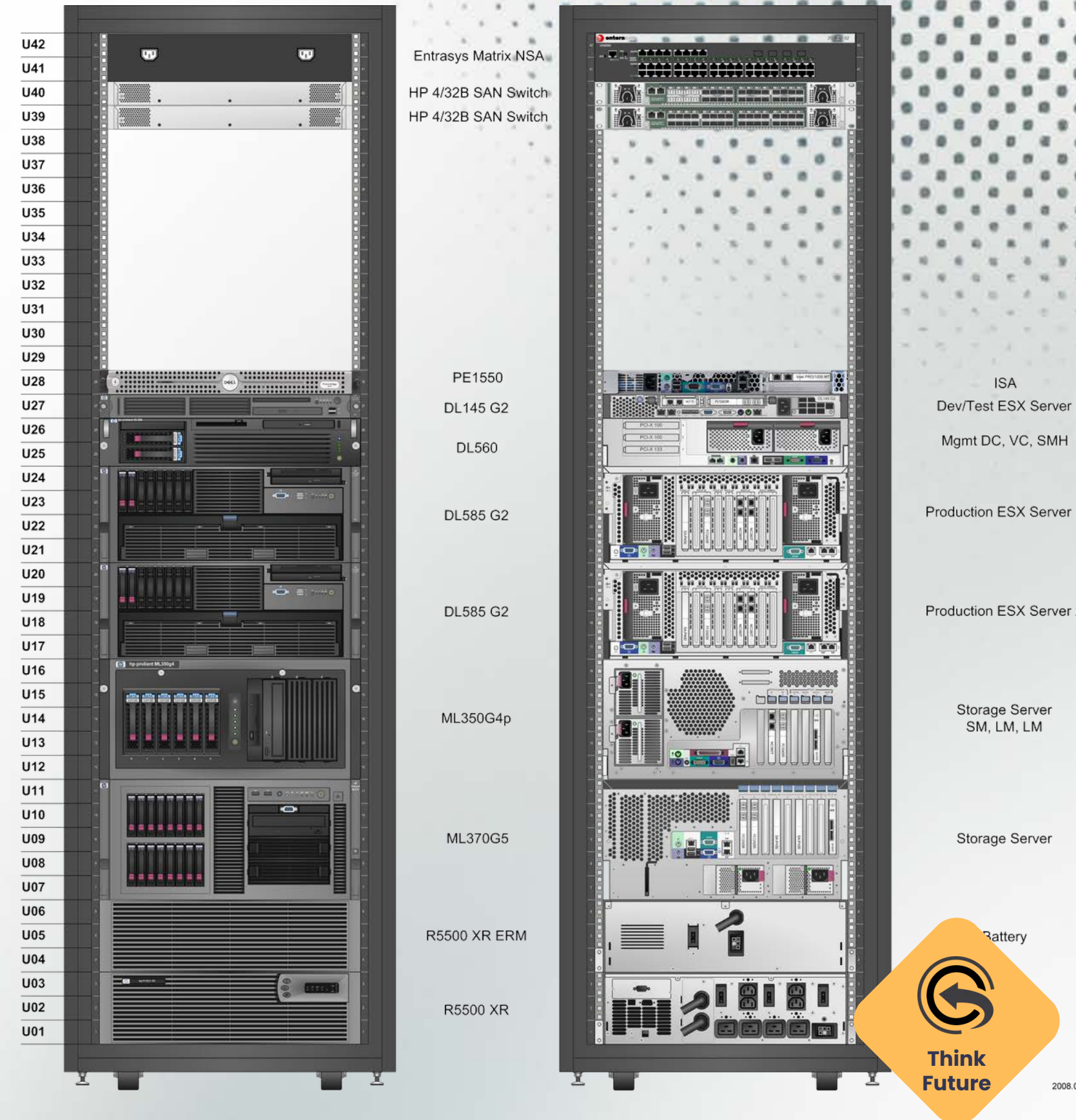
Environmental Monitoring & DCIM

Reliable. Efficient. Intelligent.

Commwork provides integrated environmental monitoring and DCIM solutions designed to ensure operational continuity and efficiency in modern data centers.

Our Capabilities

- Environmental Monitoring Systems: Real-time tracking of temperature, humidity, power, and critical infrastructure conditions.
- DCIM Integration: Centralized management of IT and facility assets, capacity planning, and performance analytics
- Alarm & Event Management: Automated alerts and escalation workflows for proactive maintenance.
- Energy Optimization: Continuous analysis of power usage to reduce operational costs and carbon footprint.
- Scalable Architecture: Modular design adaptable to data centers of any size or complexity.
- Integration Expertise: Seamless connection with BMS, SCADA, and other infrastructure systems.



Think
Future

Data Center for AI

1. Introduction – The Position and Importance of the Technology

- Increasing bandwidth demands in modern data centers
- The need for low latency and high throughput in HPC (High Performance Computing), AI, and data-intensive applications
- How NVIDIA's 800G InfiniBand and Ethernet solutions address these requirements

2. Key Features of NVIDIA 800G InfiniBand and Ethernet Technology

- 800G bandwidth: Configurations such as 2x400G or 8x100G for maximum performance
- Ultra-low latency: A critical advantage for HPC and AI workloads
- NVIDIA Quantum-2 InfiniBand Switch and NVIDIA Spectrum-X Ethernet architectures
- NVIDIA ConnectX-8 NICs offering advanced telemetry and bandwidth management capabilities

3. Importance of Integration with Structured Cabling

- Modularity and scalability: Flexible cabling architecture for 800G infrastructure transitions
- MPO/MTP connector systems: Ideal for high-density fiber connections
- OM4/OM5 multimode fiber or single-mode fiber selection and performance differences
- Cable management and signal integrity: Minimizing losses at ultra-high speeds



Data Center for AI



5. Commwork ICT's Role and Contribution

- Expertise in data center design and integration
- Consulting, design, and implementation services for 800G infrastructure transitions
- Planning, testing, and certification of structured cabling systems
- International experience and support for global projects through the London office

6. Future Perspective

- Infrastructure readiness for 1.6T Ethernet and InfiniBand technologies
- Focus on sustainability and energy-efficient designs
- AI-driven network management and automation



Key Milestones in Data Center Construction

Phase 1: Procurement & Construction

Key Activities:

- Select vendors and contractors
- Manage construction progress and quality control
- Perform Factory Acceptance Testing (FAT)

Deliverables: Construction progress reports, FAT documentation

Phase 2: Commissioning

Key Activities:

- Conduct Integrated Systems Testing (IST)
- Train operations staff and finalize documentation
- Complete system handover to operations team

Deliverables: Commissioning report, operations manual

Phase 3: Post-Occupancy & Continuous Improvement

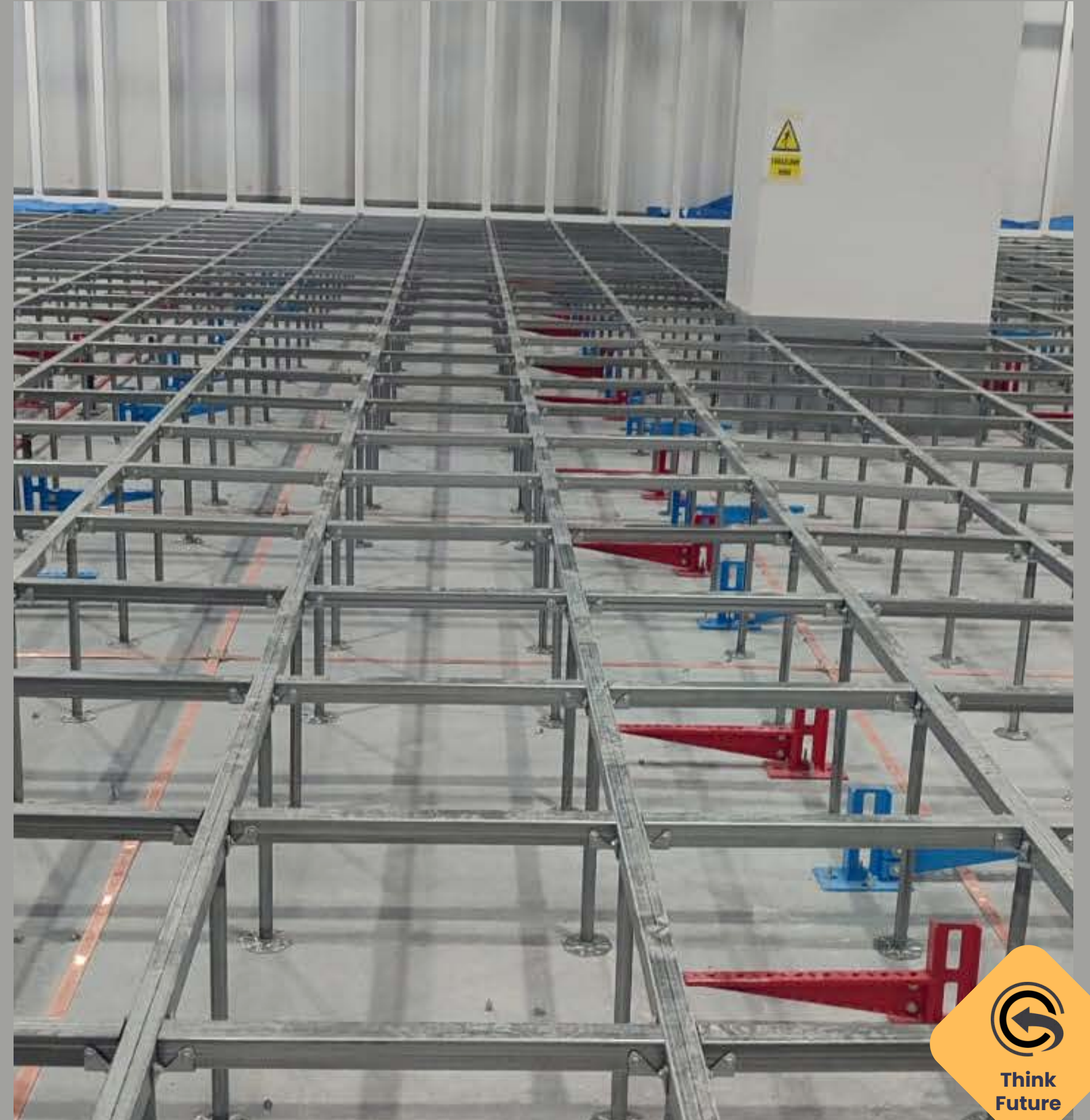
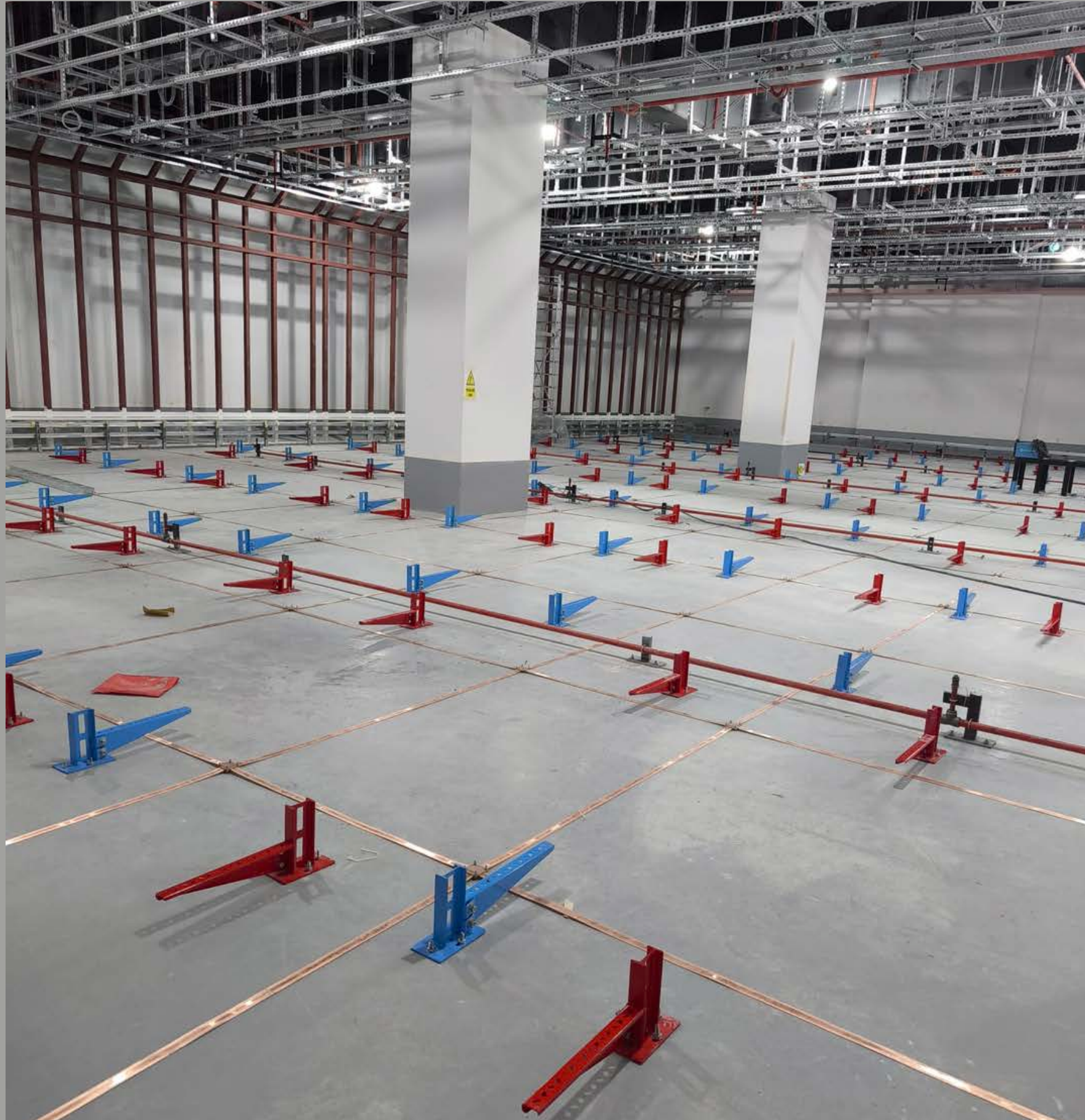
Key Activities:

- Monitor performance and energy efficiency
- Implement optimization and maintenance programs
- Plan for scalability and technology upgrades

Deliverables: Performance dashboards, improvement plans



Construction Site Floor Applications - BUSBAR System, Raised floor installation, Grounding

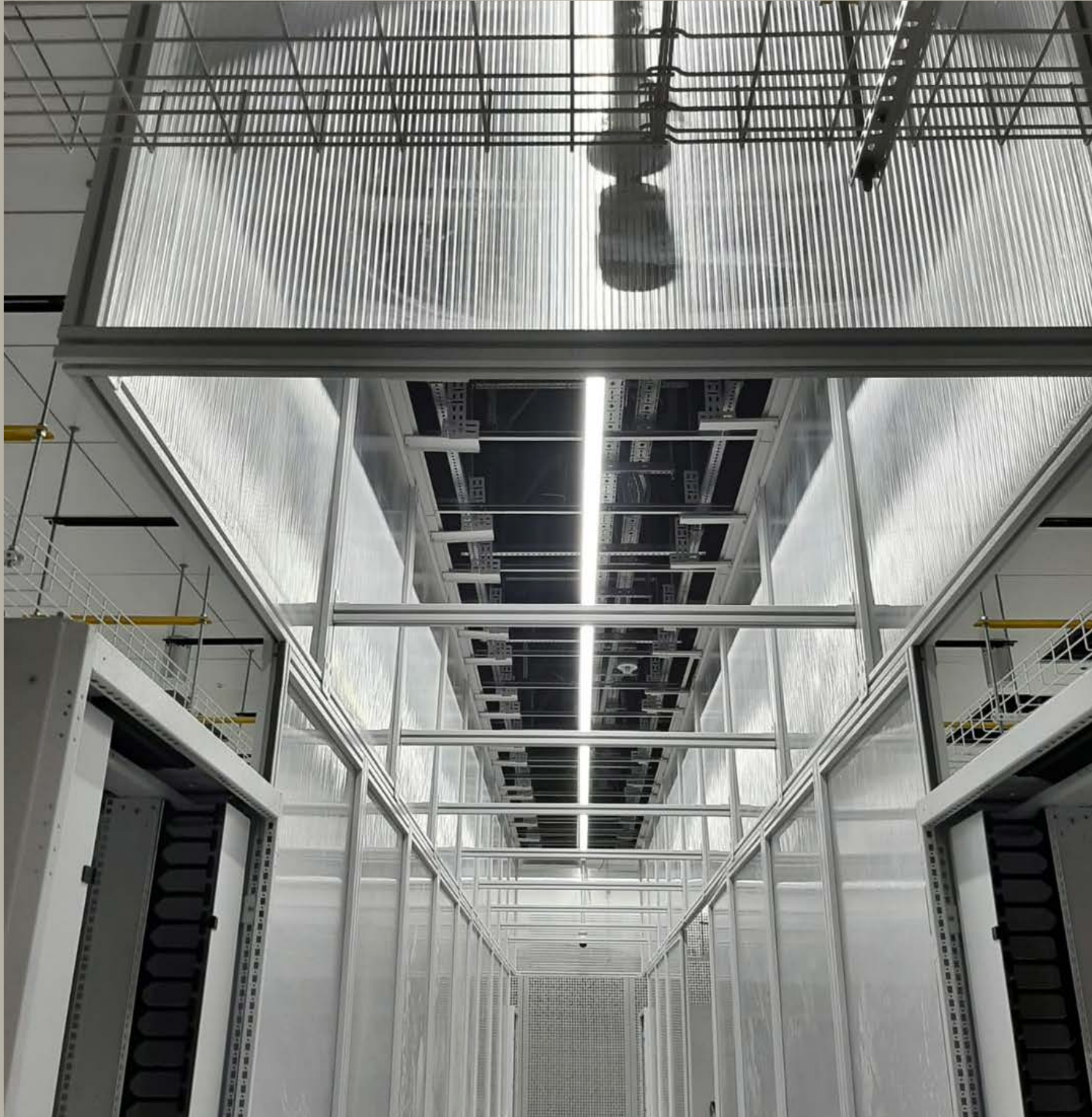


Think
Future

Construction Site Floor Applications - Sysmic stands and bases



Construction Site Construction of Hot Aisle- Power Cabling



Think
Future

Construction Site
BUSBAR System, RACK cabinets, Pathways



Construction Site
Pathway Installation, SCS



Construction Site
PDUs, SCS



CASE STUDIES



Case Studies

Commwork has been involved in every phase of the data center projects it has been involved in, from the **design process** to **MEP Coordination, installation, testing and commissioning**, depending on the needs of the project, and has successfully completed the projects.

2016



TURKCELL GEBZE DC - M2

2016



ISTANBUL MUNICIPALITY DC

2016



ISTANBUL AIRPORT DC

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2017



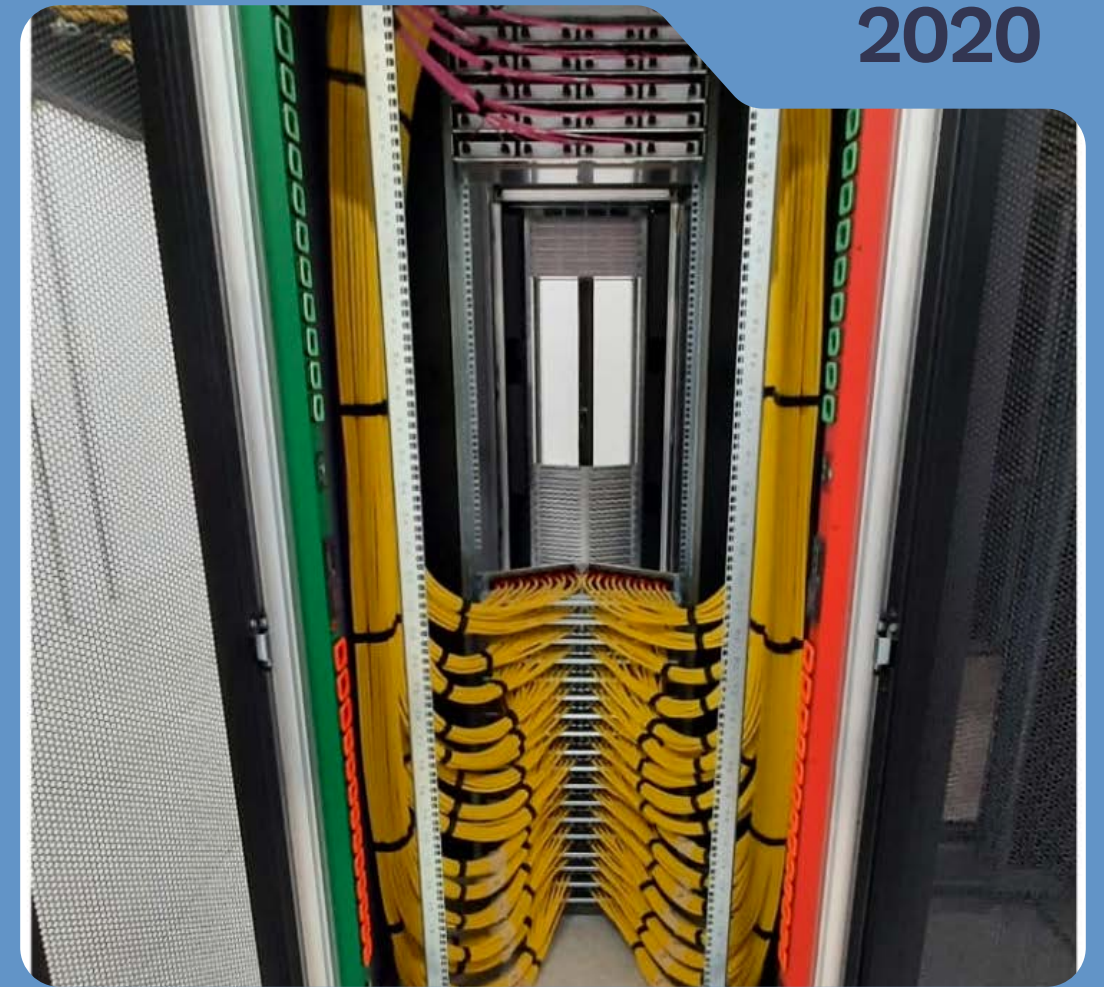
TURKCELL GEBZE DC - M3

2019



TURKCELL EUROPE DC - M1

2020



ISTANBUL NORTH HIGHWAY DC

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2021



TURKCELL GEBZE DC - M4

2021



TURK TELEKOM DC - WS7

2022



TURK TELEKOM DC - WS 13-14-15-16

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2022



TURKCELL GEBZE DC - M5

2022



TURKCELL ANKARA DC - M2

2023



TURKCELL ANKARA DC - M3

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2023



TURKCELL EUROPE DC - M2

2024



TURKCELL ANKARA DC - M4

2024



TURKCELL EUROPE DC - M3

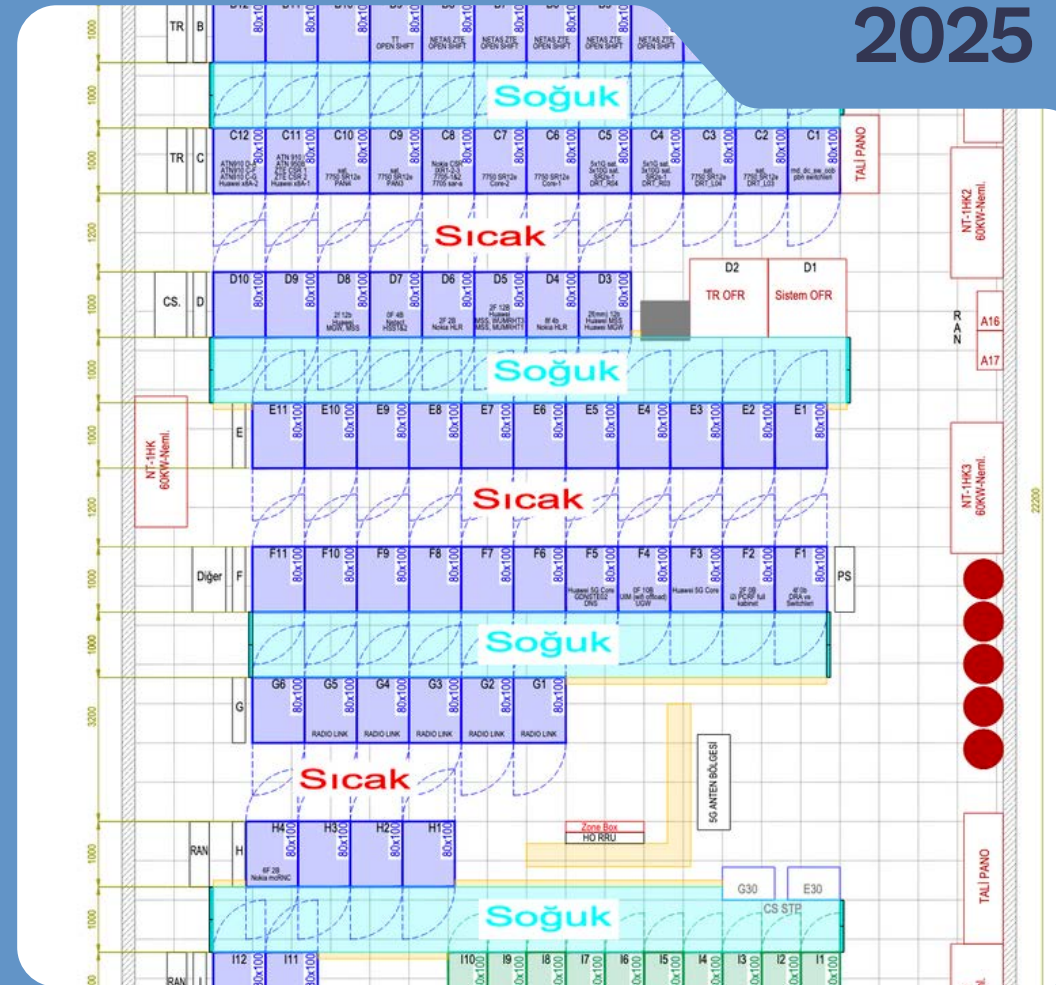
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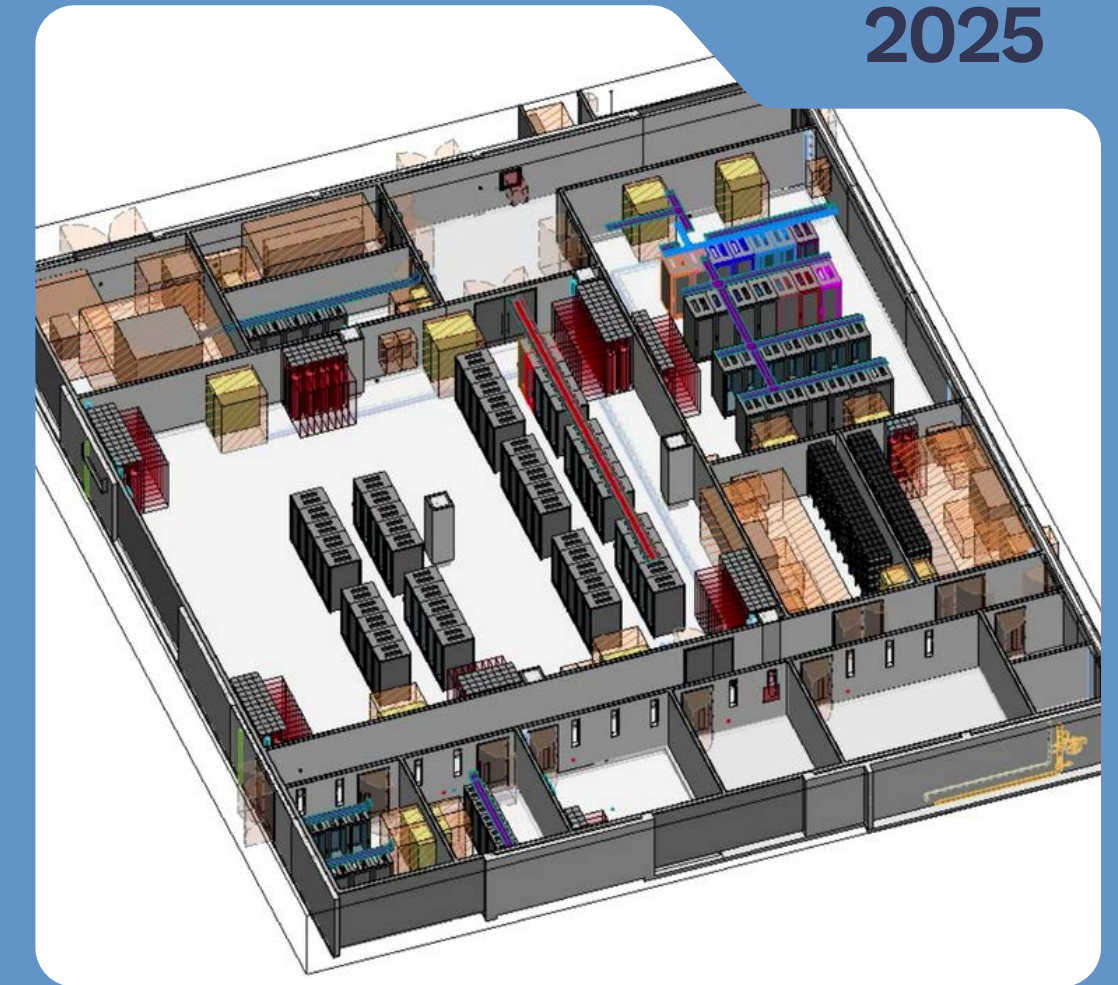
2025

TURKCELL ANKARA DC - M5



2025

TURK TELEKOM MOBILE INNOVATION DC



2025

KSIA - ICONIC TERMINAL, ATCT MCR



Commwork
Information &

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