USDC TECHNOLOGY
Smart Data Center

THE ROLES OF A DATA CENTER IN DIGITAL UNIVERSITY

USDC TECHNOLOGY
Smart Data Center

AGENDA

1. OVERALL ABOUT DATA CENTER
2. THE ROLES OF A DATA CENTER IN DIGITAL UNIVERSITY
3. CURRENT UNIVERSITY DATA CENTERS
4. USDC TECHNOLOGY - Smart Modular Data Center Solution
5. WHO WE ARE?

OVERALL ABOUT DATA CENTER

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Smart Data Center

- A centralized place
- A secured access area
- Centralizes IT operations and equipment of an organization

DATA CENTER DEFINITION

OVERALL ABOUT DATA CENTER

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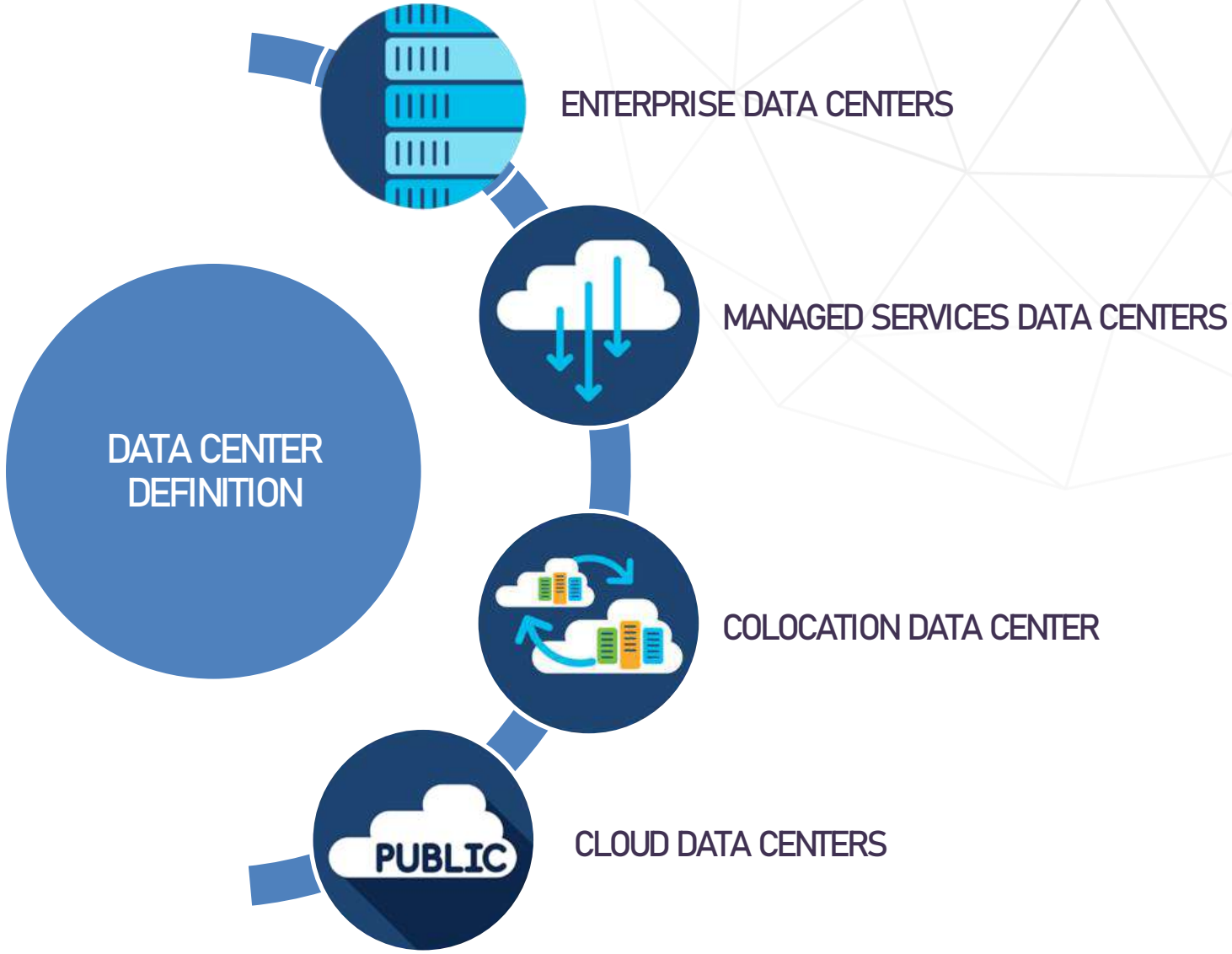

DATA CENTER REQUIREMENTS

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DATA CENTER REQUIREMENTS

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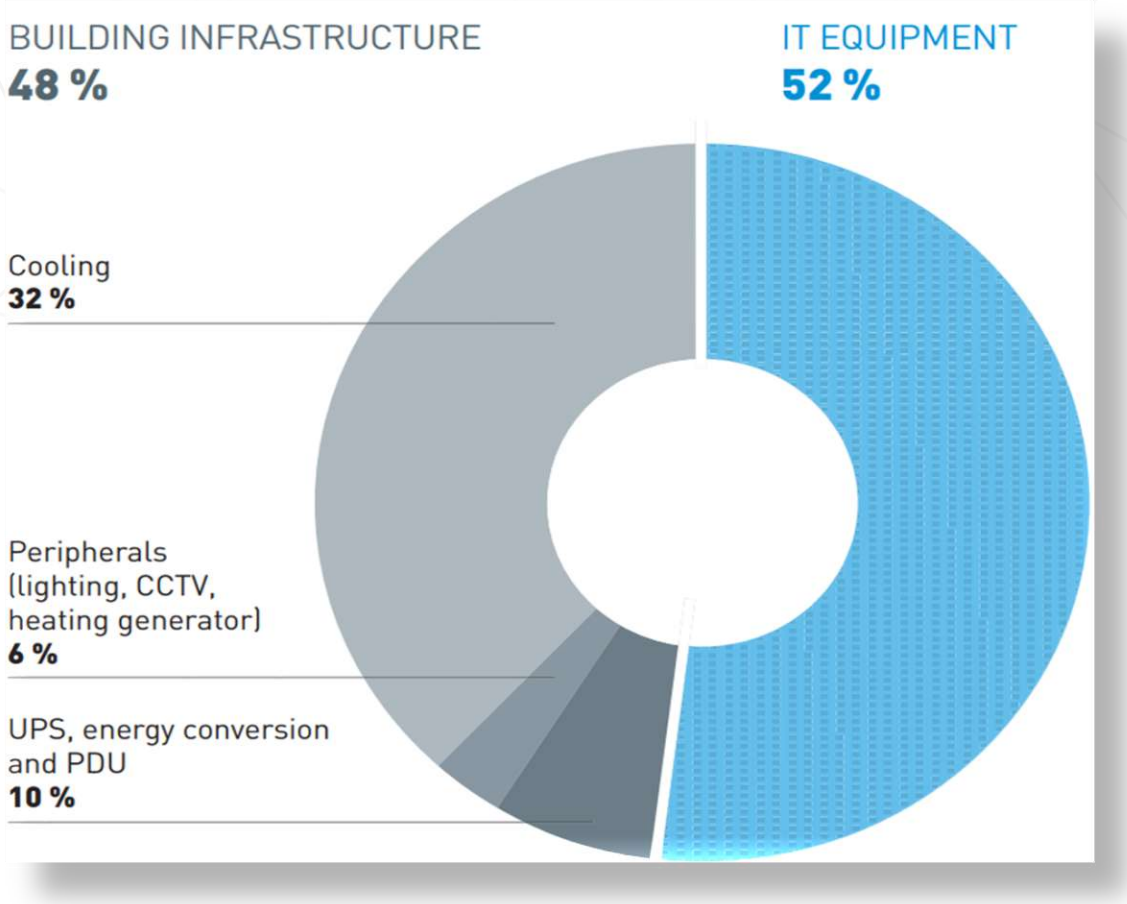
EFFICIENCY

- **IN DATA CENTER POWER IS THE MOST IMPORTANT ASSET.**
- **ABOVE ON THAT HOW TO MAINTENANCE THE POWER OF DC SHOWING THE EFFICIENCY OF A DATA CENTER.**



DATA CENTER REQUIREMENTS

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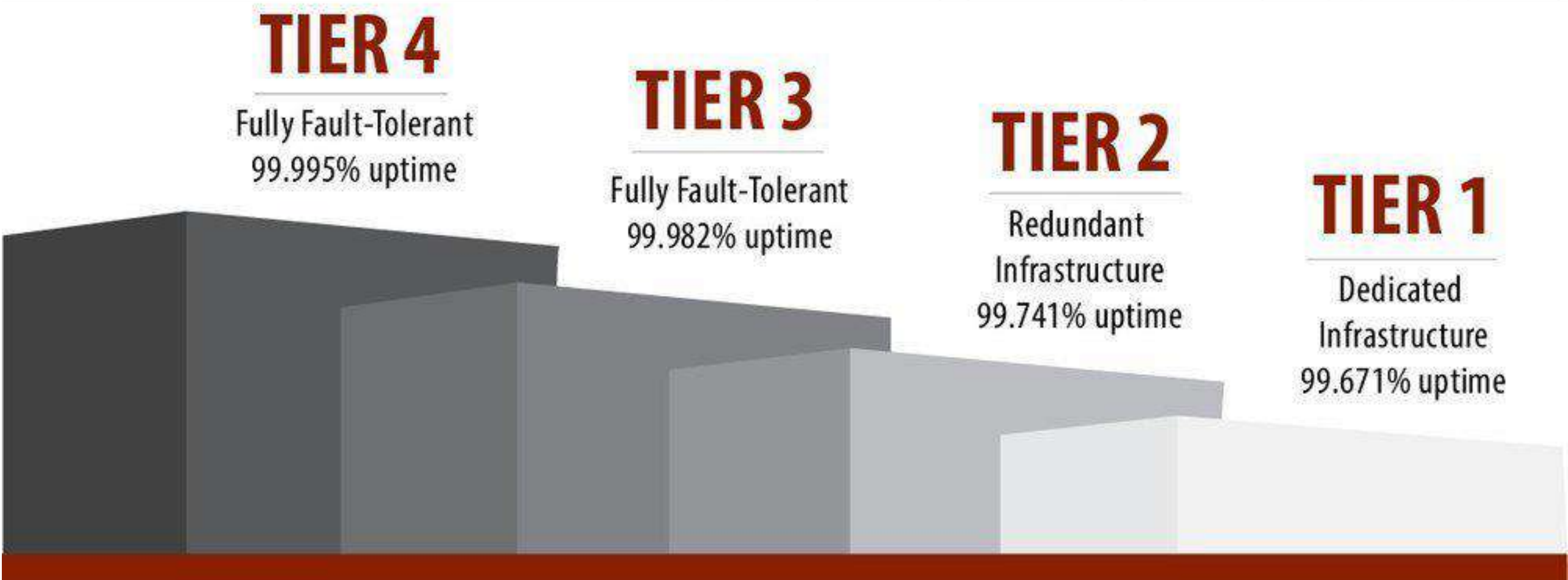
AVAILABILITY AND SCALABILITY



DATA CENTER REQUIREMENTS

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SAFETY AND SECURITY

SAFETY

Need to protect your data centers against unintentional, unforeseen and accidental events that may affect their continuity of service or their smooth operation

- FIRE DETECTION
- EXCESSIVE TEMPERATURE
- WATER LEAK

PHYSICAL

SECURITY

Need to protect your data centers against intentional and malicious acts and events

- MANAGEMENT
- ACCESS CONTROL SYSTEM
- ...

LOGICAL

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DIGITAL TRANSFORMATION

TRUE DIGITAL TRANSFROMATION REQUIRES
MODERN DATA CENTER TECHNOLOGY

THE DIGITAL UNIVERSITY

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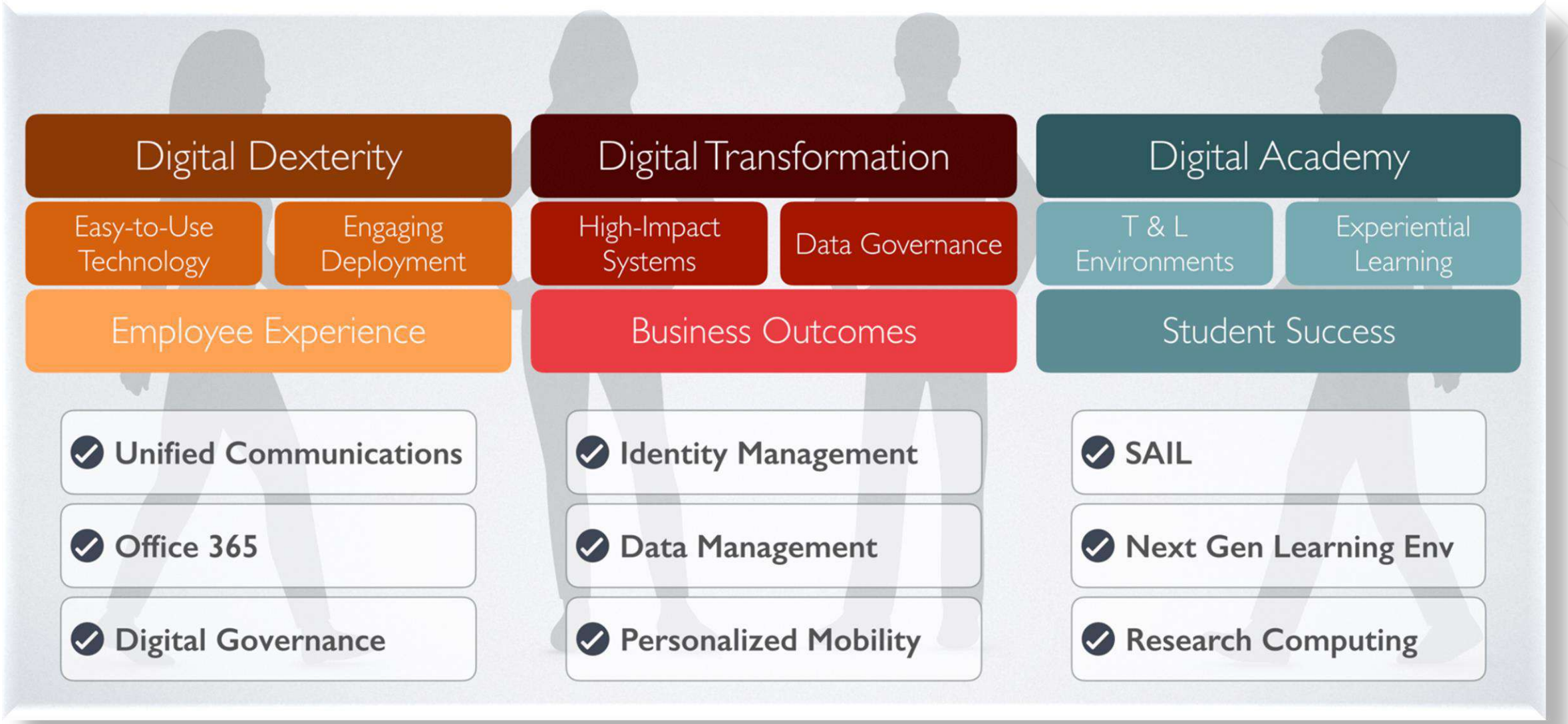
The three primary pillars of the Digital University vision



THE DIGITAL UNIVERSITY

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The three primary pillars of the Digital University vision

- **Digital Dexterity** – the ability as an institution to participate in a digital environment with ease and overall enjoyment.
- **Digital Transformation -** pushes us to accept that we have to constantly evaluate and critically consider our existing technological investments.
- **Digital Academy** - bring together our experiential teaching and learning philosophies in ways that technology can positively impact

THE DIGITAL UNIVERSITY

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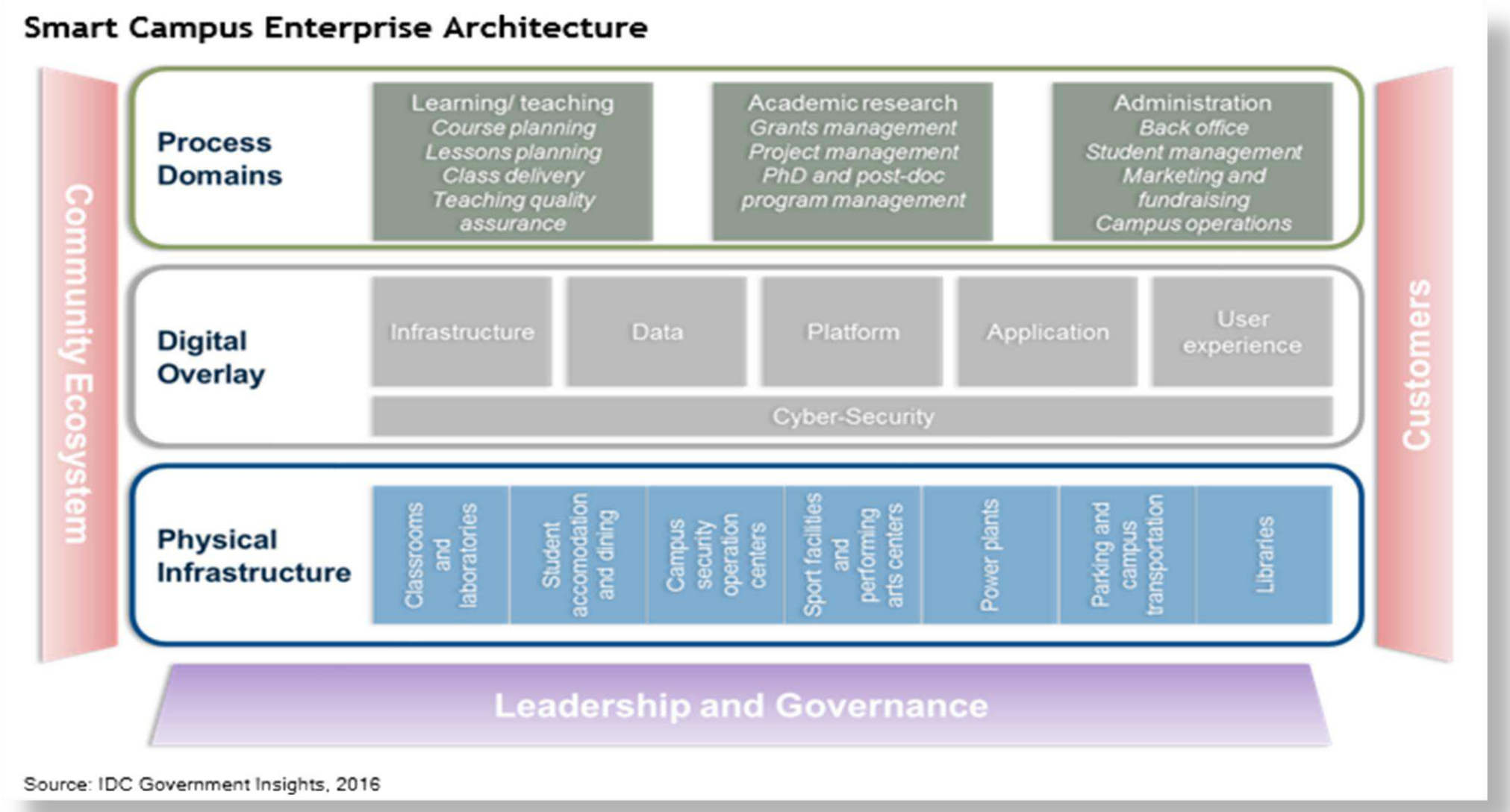
Higher Education Embracing Digital Transformation



Source: IDC Government Insights, 2016

THE DIGITAL UNIVERSITY

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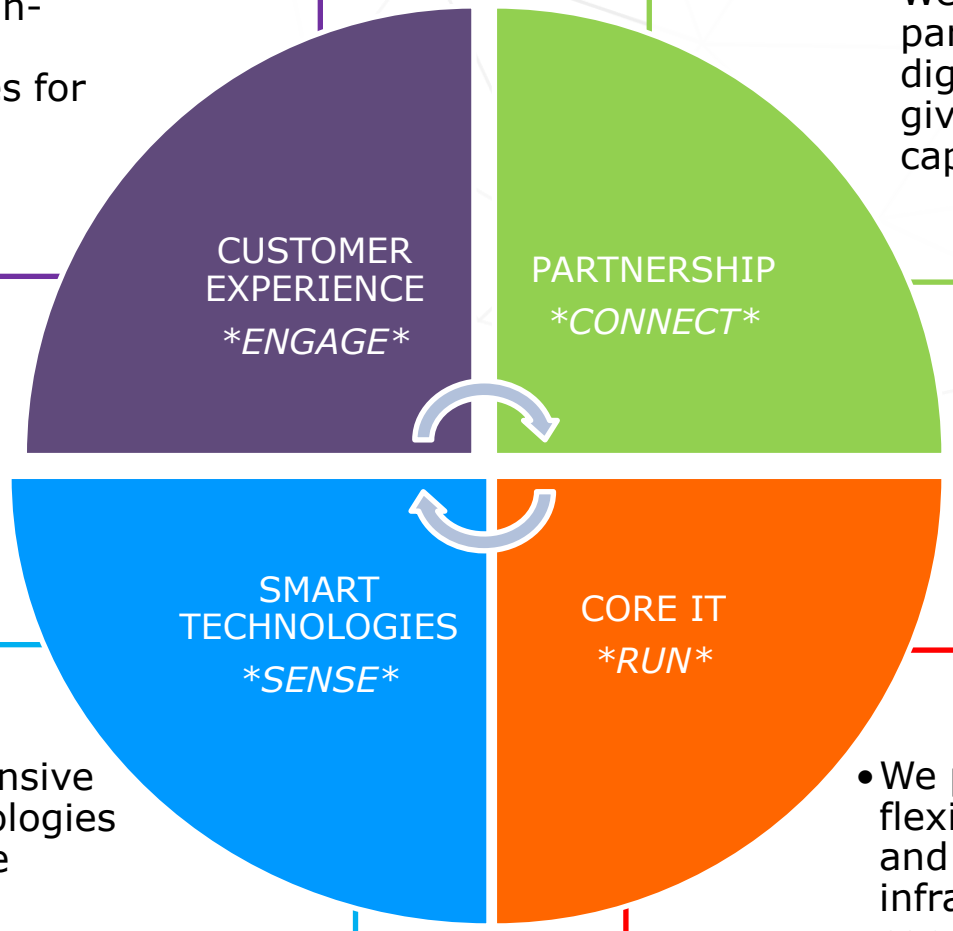
Digital Strategy Development

- We provide best-in-class digital and online experiences for our community.

- We foster sustainable partnerships and digital ecosystem that give new strategic capabilities.



DATA CENTER

- We employ responsive and aware technologies to create valuable interactions and connections.

- We provide resilient, flexible, responsive and secure infrastructure and connectivity.

THE DIGITAL UNIVERSITY

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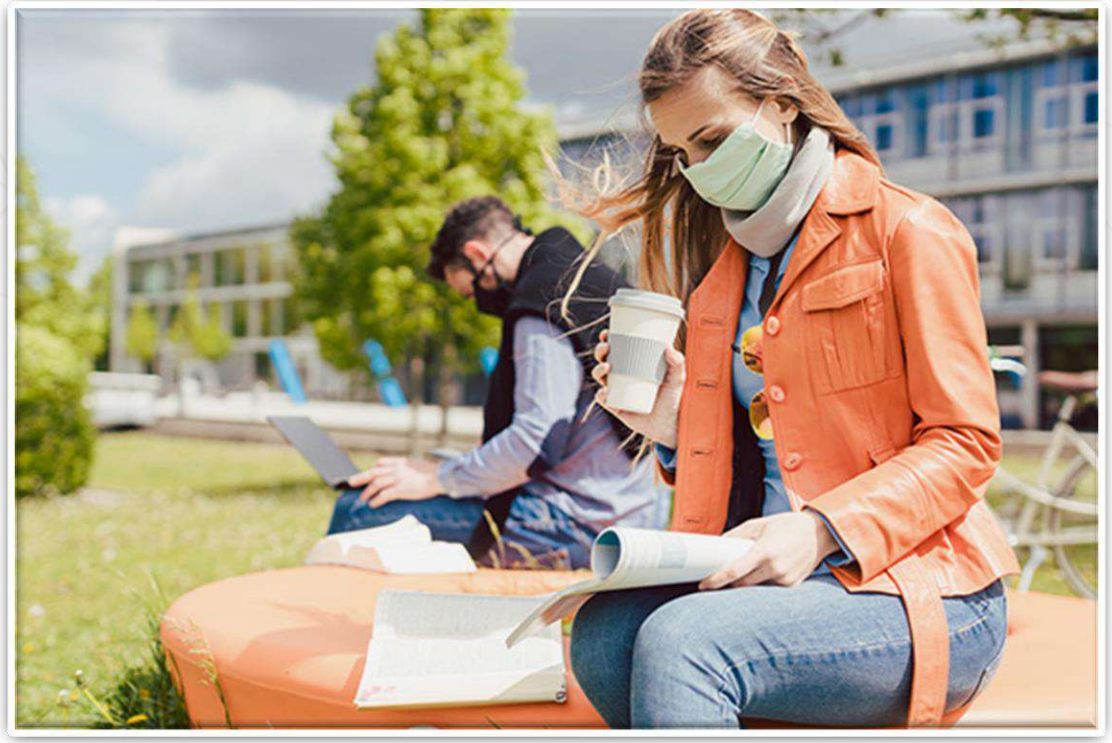
Covid-19 pandemic is accelerating the transition

While most industries are suffering as a result of the COVID-19 outbreak, the data center industry is witnessing unprecedented need for growth. Across the globe, **businesses and schools have pivoted to remote working and learning, and internet usage has skyrocketed**. As this demand for data explodes, it's become clear how vital data centers are to the economy.



The question is no longer, do we need these facilities, but **how fast can be bring more of them online**?

ROLES OF DATA CENTER IN HIGHER EDUCATIONS

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How data centers are utilized in the education sector?

Researchers working for universities, especially in engineering and scientific fields, are generating **astounding amounts of data and petabytes of information**.

While the **sudden switch to digital transformation is one big reason to consider data center** for school systems.

ROLES OF DATA CENTER IN HIGHER EDUCATIONS

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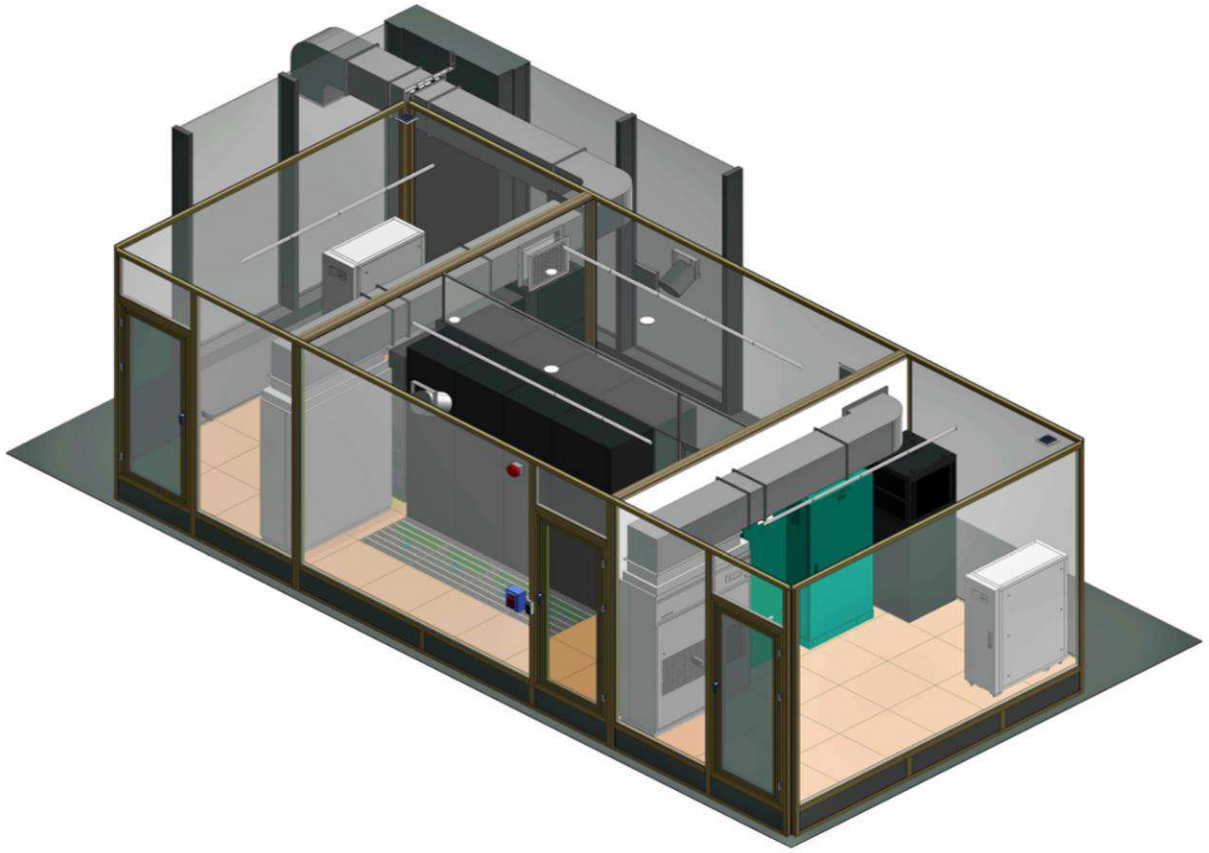
Why Universities Require a Data Center?



- Data Centers Encourage Standardization and Cost Savings
- Data Centers Could Spur Research and Collaboration Efforts
- Data Used to Improve Student Success Rates and Outcomes
- Hyperconvergence Strategies Simplify and Centralize Updates
- Data Centers Help Support Online Learners
- Data Centers Likely to Become Even More Necessary

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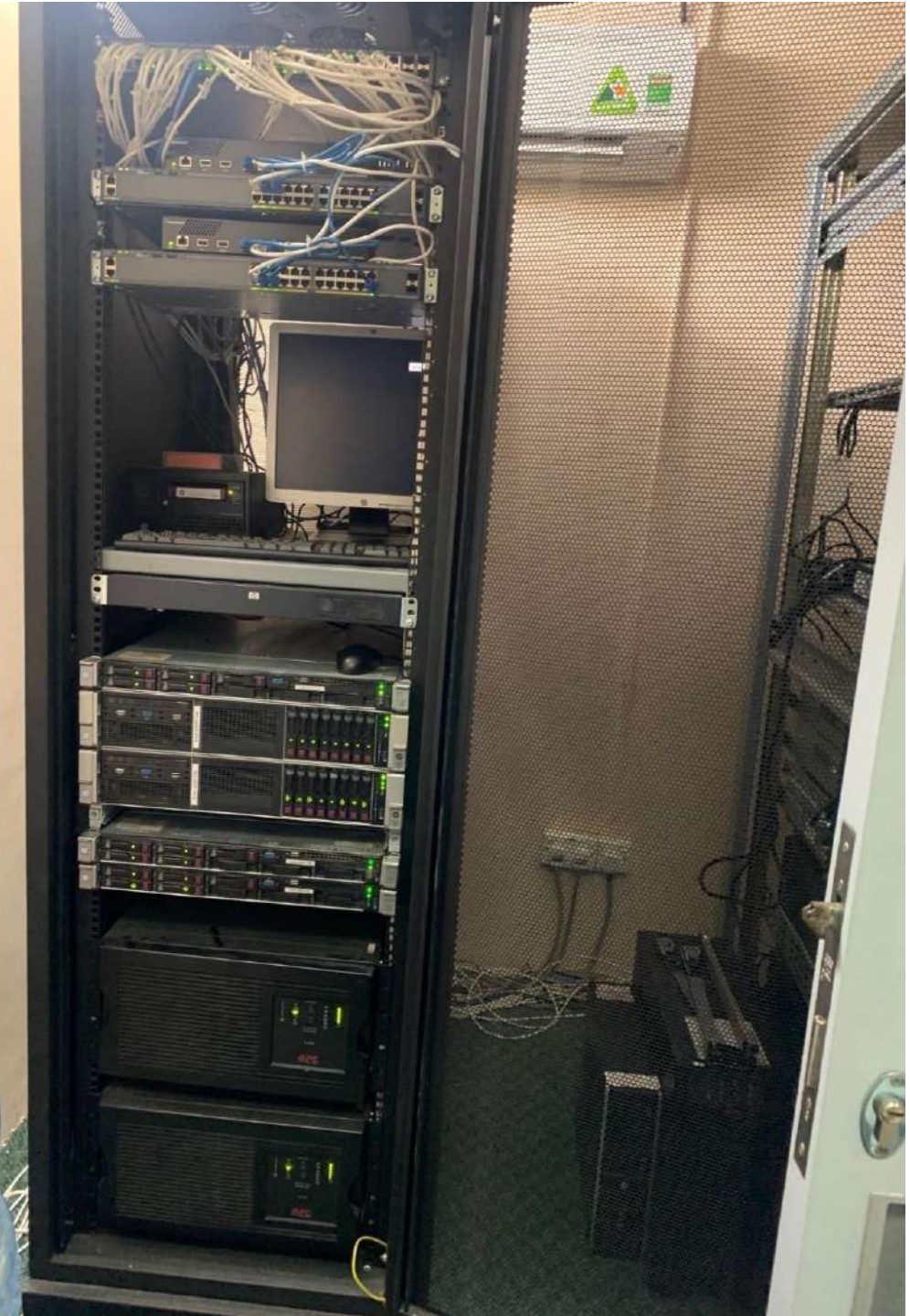
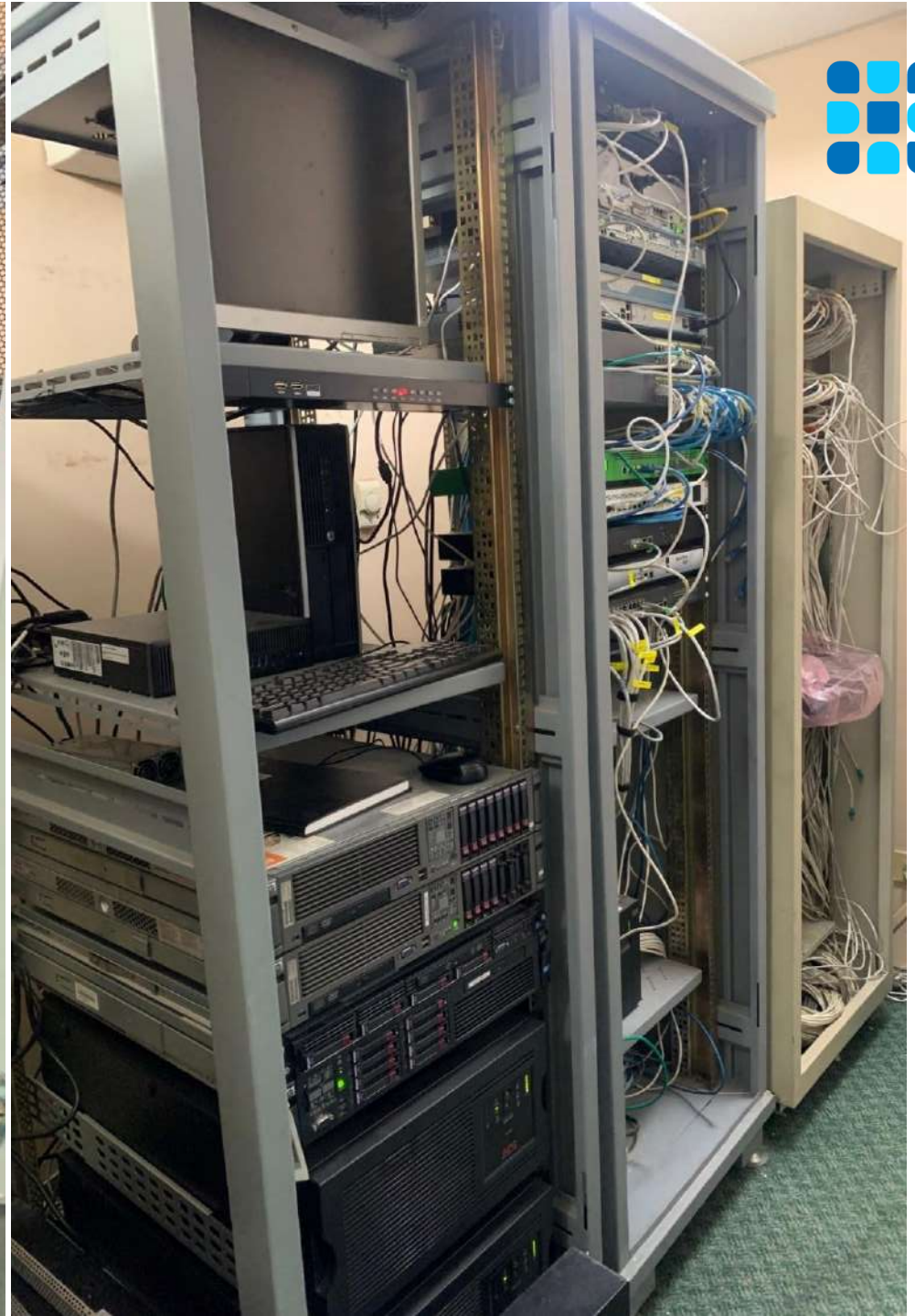
CURRENT UNIVERSITY DATA CENTERS





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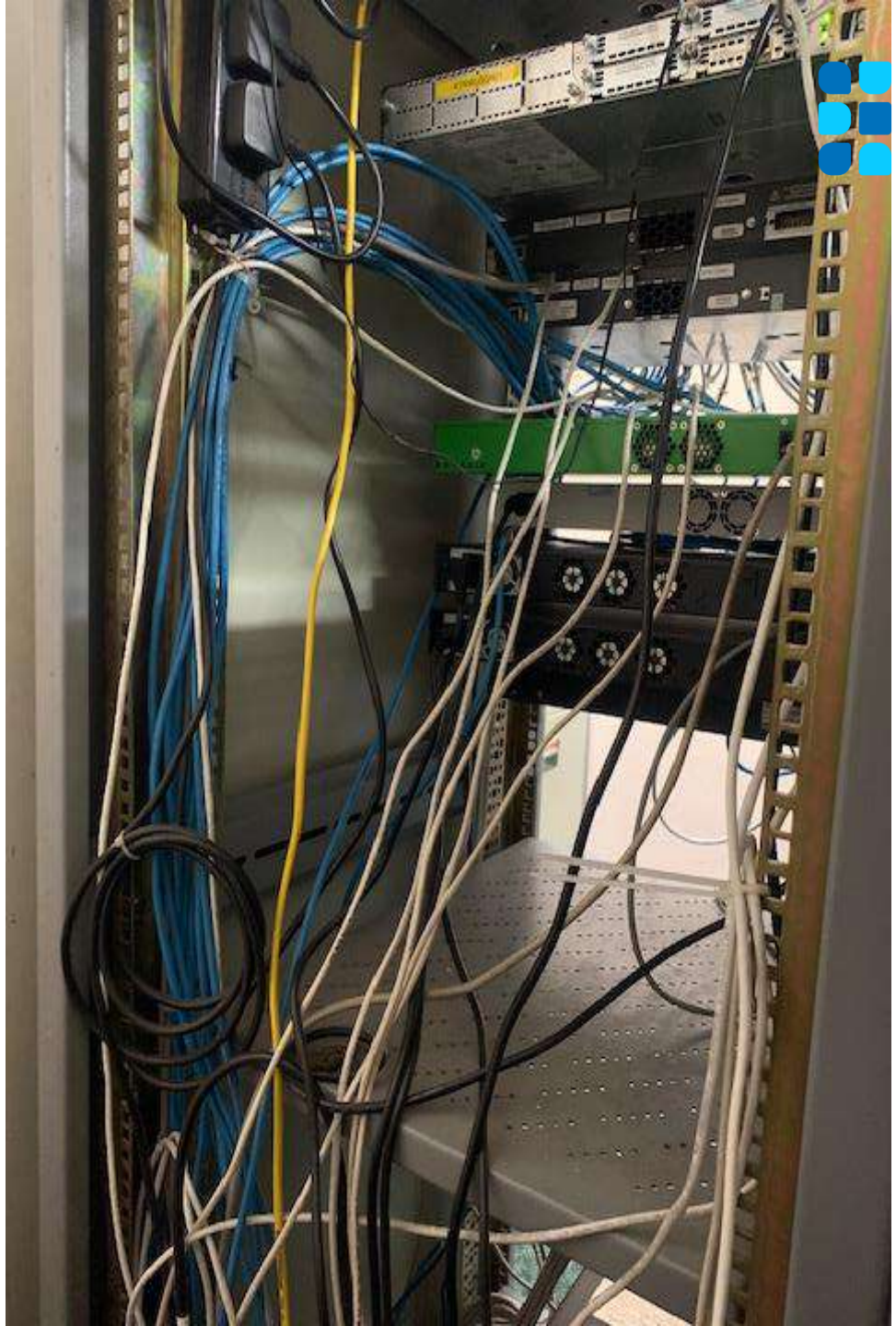

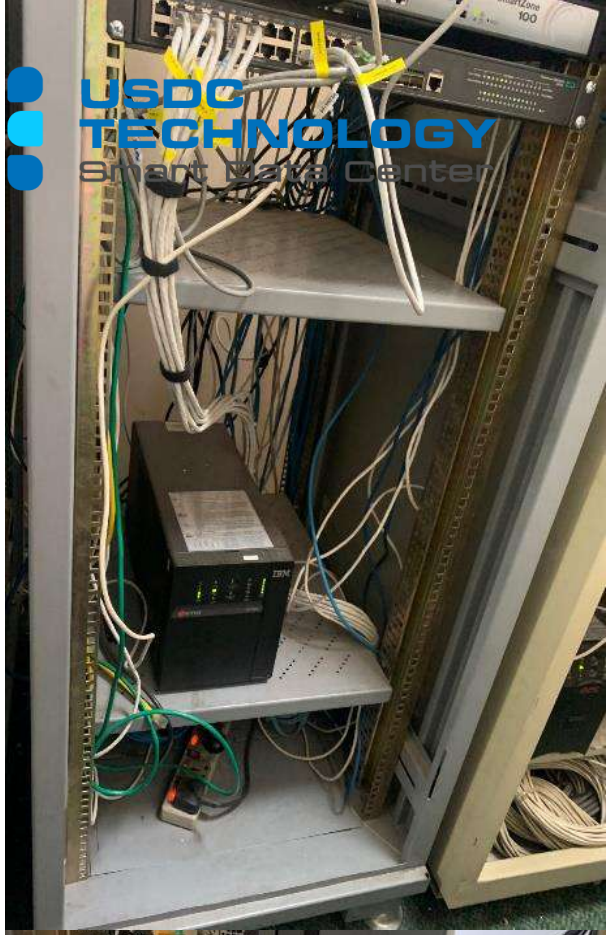

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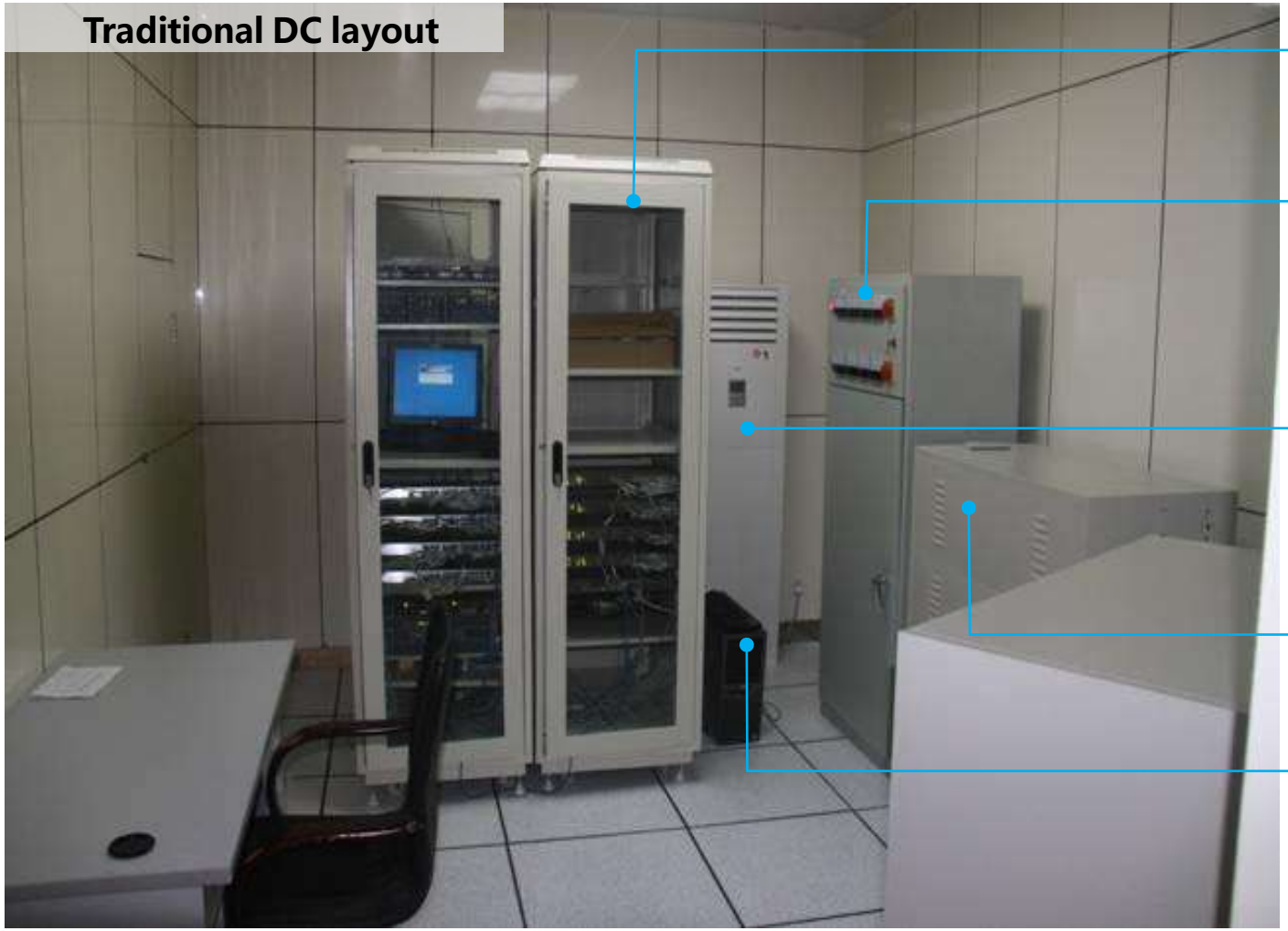
Low Integration, Large Footprint

USDC TECHNOLOGY
Smart Data Center

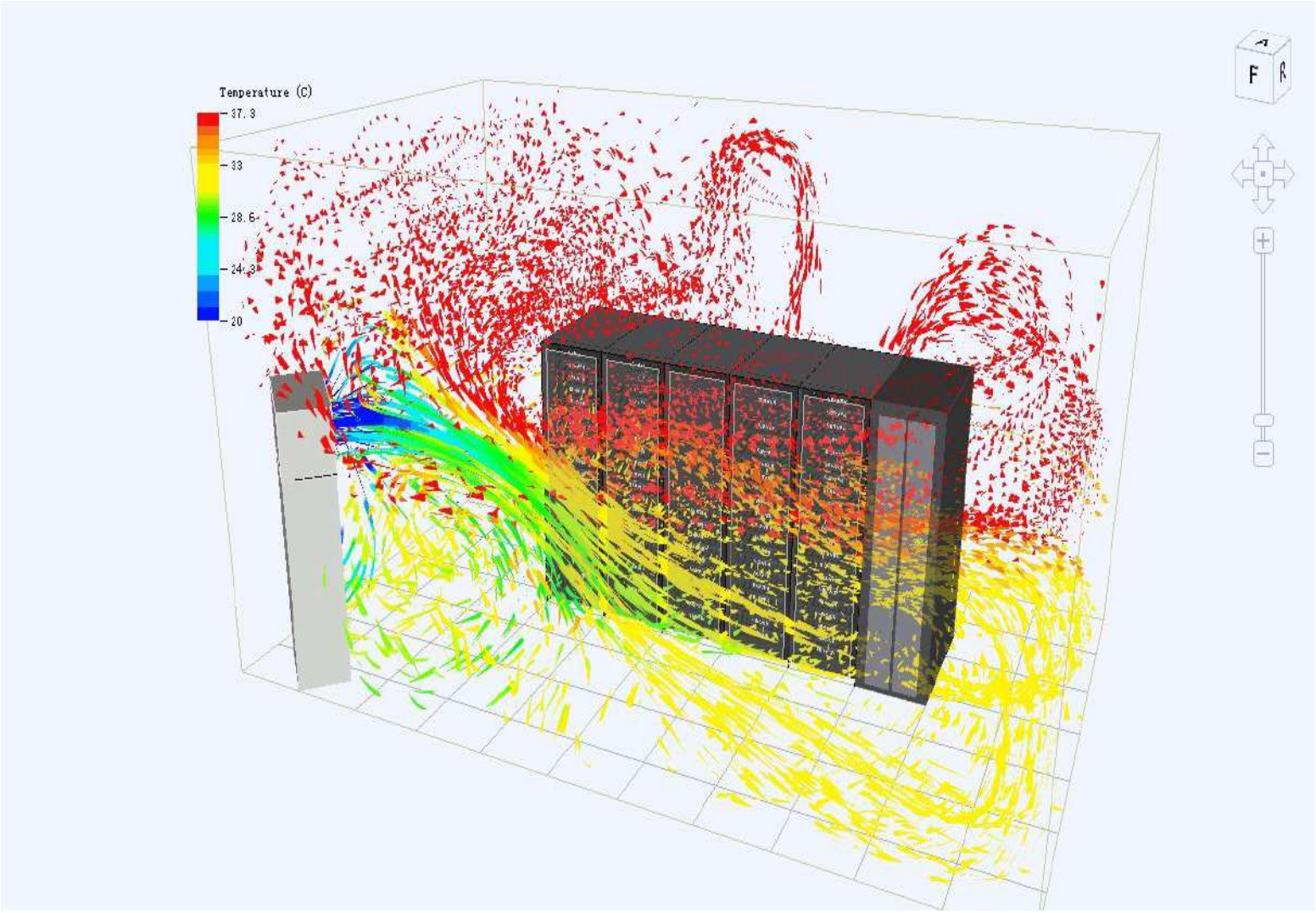


Traditional DC

- UPS, PDU, IT racks, air conditioner are independent deployment
- Low integration
- Large footprint

Low Cooling Utilization, High Power Consumption

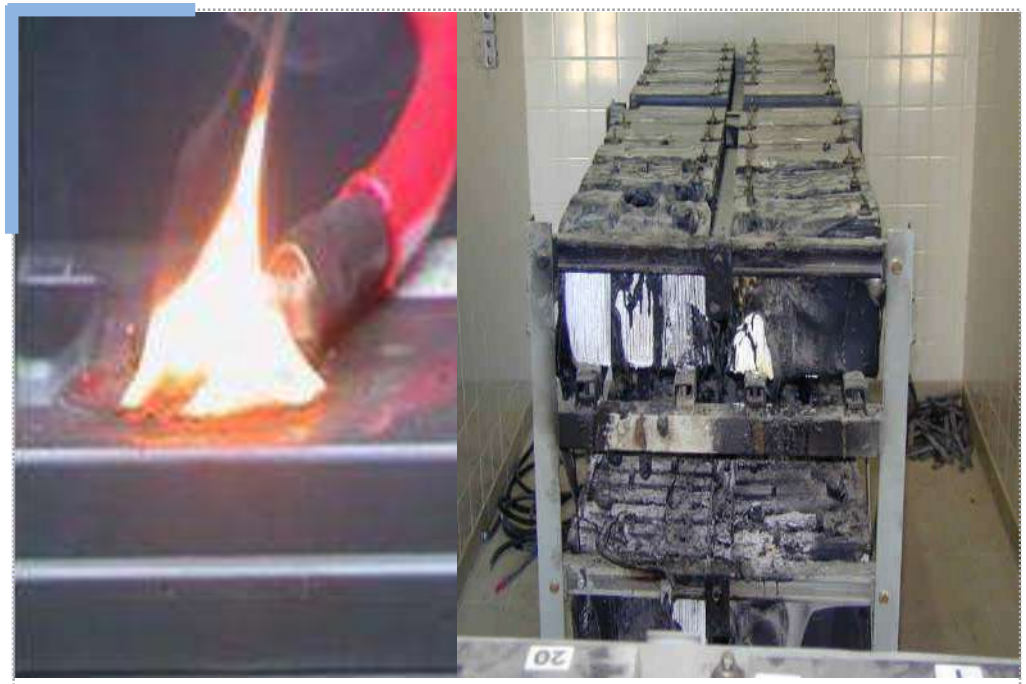
USDC TECHNOLOGY
Smart Data Center



Traditional DC

- Open space, Air conditioner cools the environment first
- Room air conditioner, hot and cold air mixing
- Low cooling efficiency

Battery Catching Fire, Equipment Condensation



Battery rough management, fire risk

Equipment condensation, room downtime risk

Construction is Complex, Long TTM, 2 to 3 Years to Build a New Data Center

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Consulting& Planning	Detailed Design	Civil Engineering	Commission	Maintenance

3 Months

- Planning
- Site selection
- TCO analysis
- ROI analysis
- TIER planning

6 months

- PUE design
- TIER design
- Power density
- Drawing
- CFD Simulation

18 months

- Detail design
- Project mgmt.
- Construction

24 months

- Commission
- Dummy load
- Emergency plan
- Trail running
- Acceptance

- Monitoring
- Daily inspection
- Proactive
- Failure analysis
- Emergence maintenance

Low Space Utilization, and Low Cooling Efficiency

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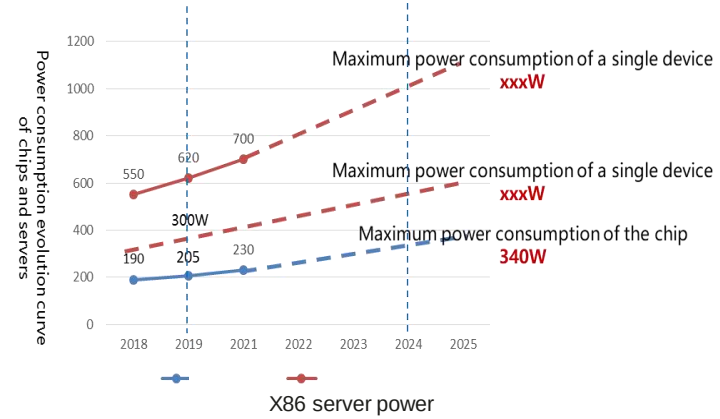
Low power density

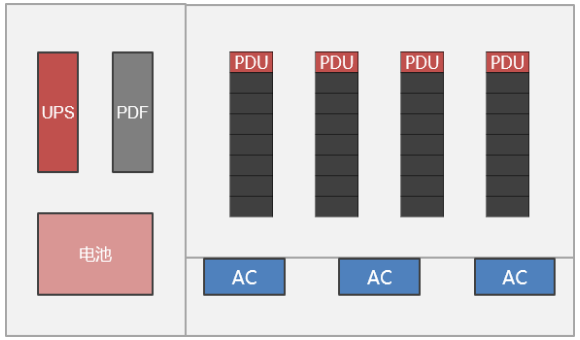
Single Power 3-5 kW/R → 10~15 kW/R



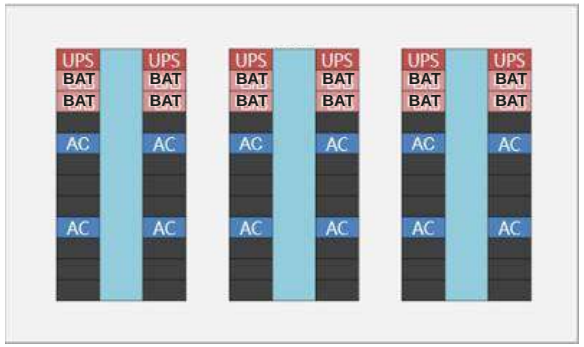
Local under-floor air supply can cause hot spots

Low SUE*

Layout：28R*3kW=84kW @175m²

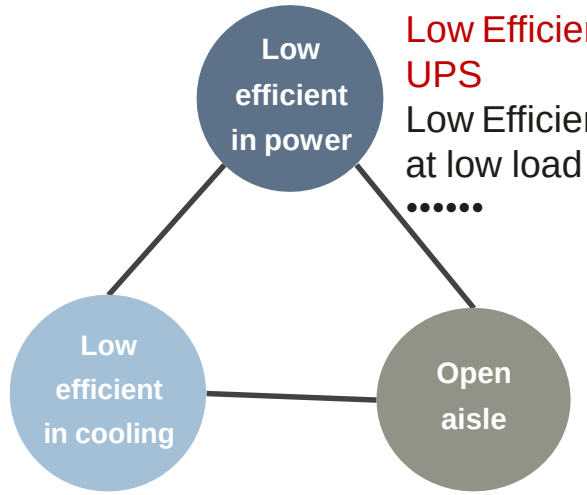


Layout：42R*6kW=252kW@175m²



*SUE: Space Usage Efficiency

High energy consumption



Low Efficiency UPS
Low Efficiency at low load
……

Fixed frequency air conditioner
Inroom Cooling
……

Hot and cold air mixing
Air volume is too high / too low
……

Focus on Entire Life Cycle, Pay More Attention to OPEX

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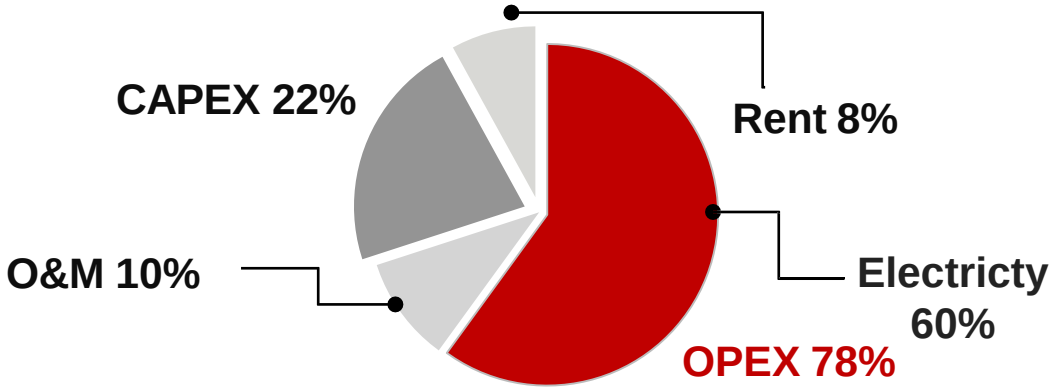
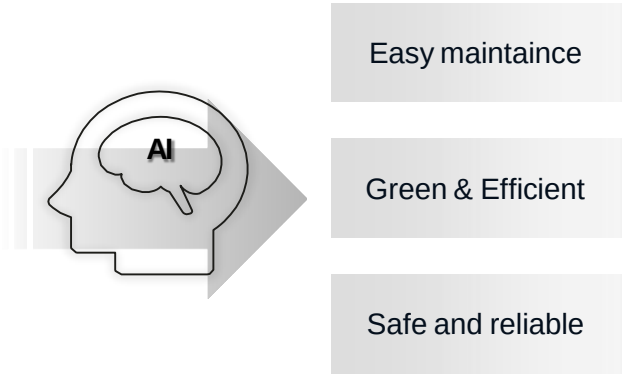
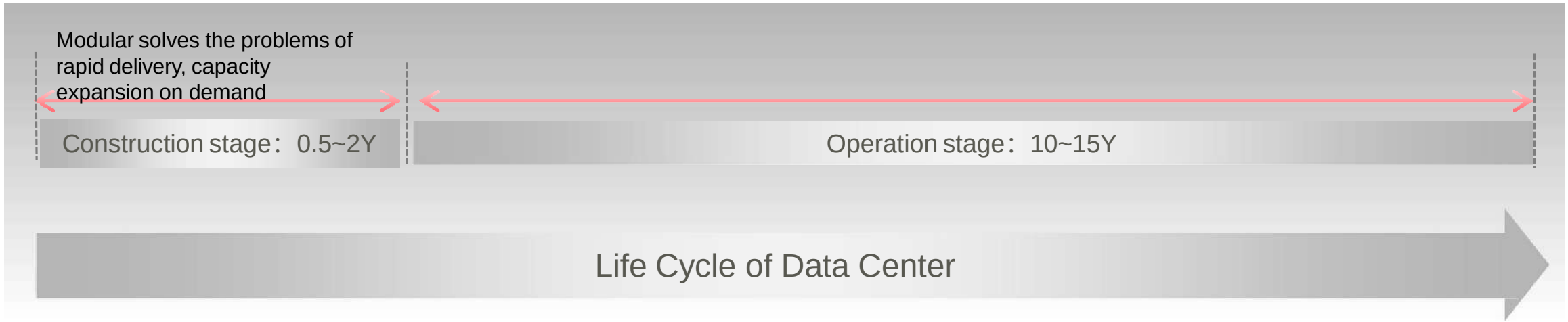
Over 70% of lifecycle expenditure are OPEX



AI Enable



Intelligence is the best way to solve life cycle reliability, energy saving, and efficient O&M



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Smart Data Center

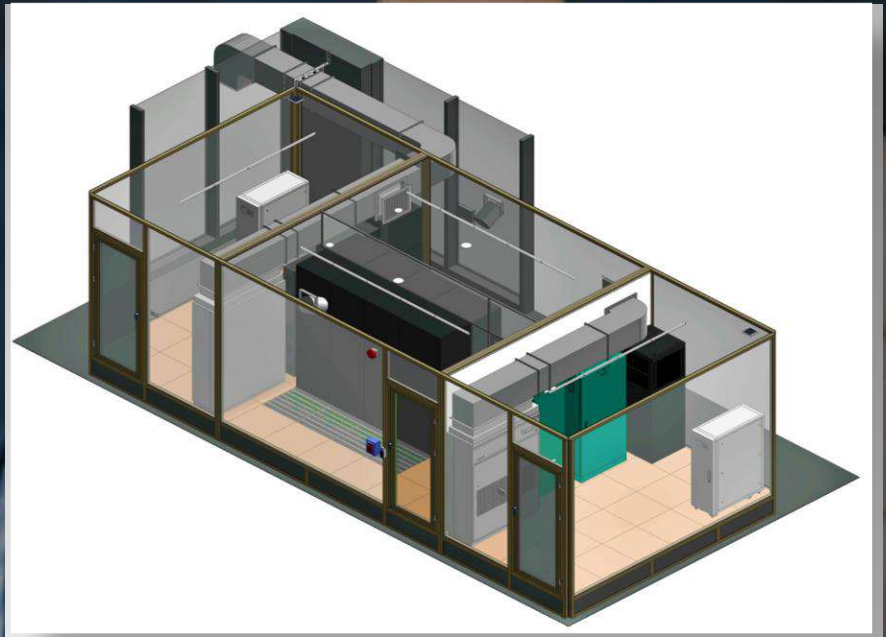
USDC Technology

Smart Modular Data Center Solution

USDC Solution: Modular & Intellectualization

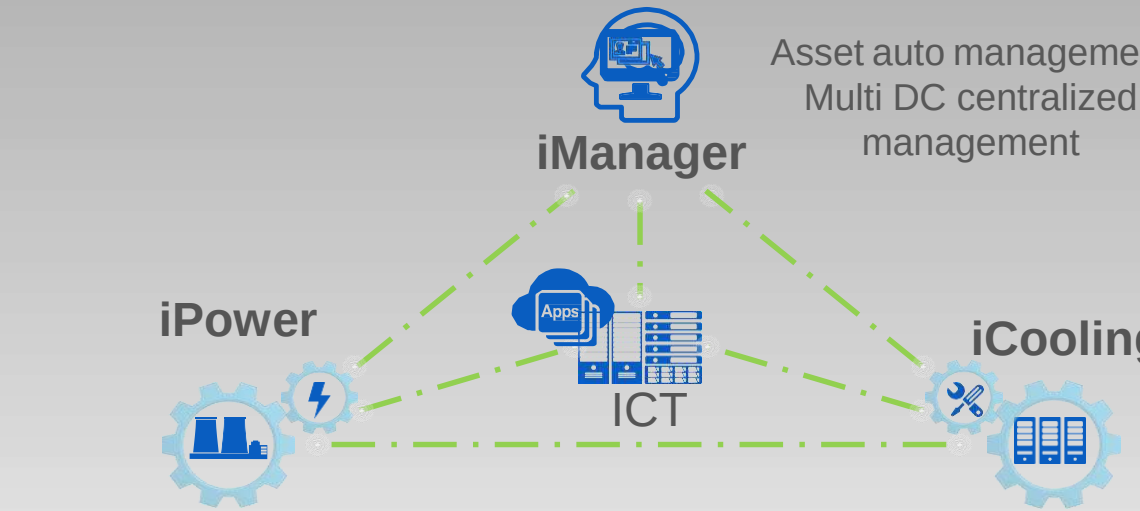
USDC TECHNOLOGY
Smart Data Center

Modular Structure



Easy Installation & Fast deployment with High Quality Control through Standard Modular Design

Intellectualization



Top convenience & reliability through smart control system

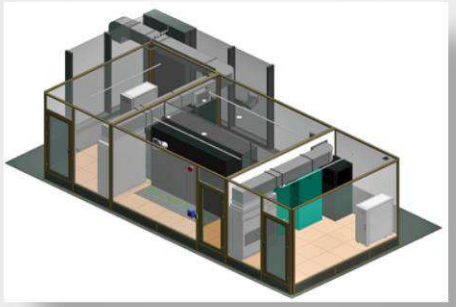
Modular Design, On-Demand Construction

USDC TECHNOLOGY
Smart Data Center

Standard Component

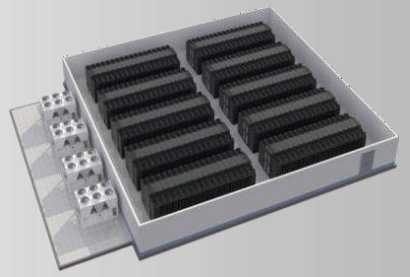
Pre-assemble, Pre-test, Pre-commissioning

Modular Structure

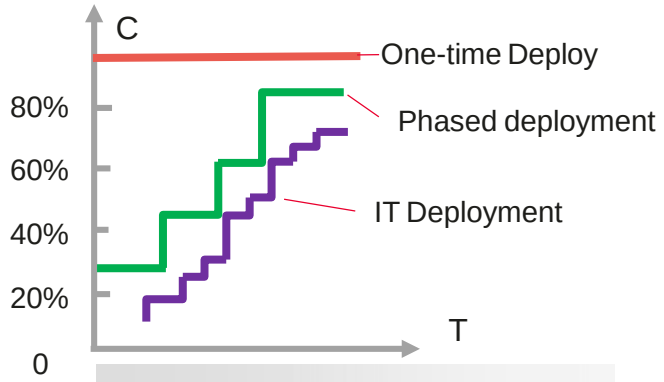


1 Mon: Manufacture

Modular DC



1 Week: Assembling & commissioning



Flexible capacity expansion, matching IT device expansion

Horizontal Expansion

- Phased deployment saves CAPEX and adapts to unpredictable business growth.
- Standard interfaces, implementing free combination to match different solutions (layout)

Vertical Expansion

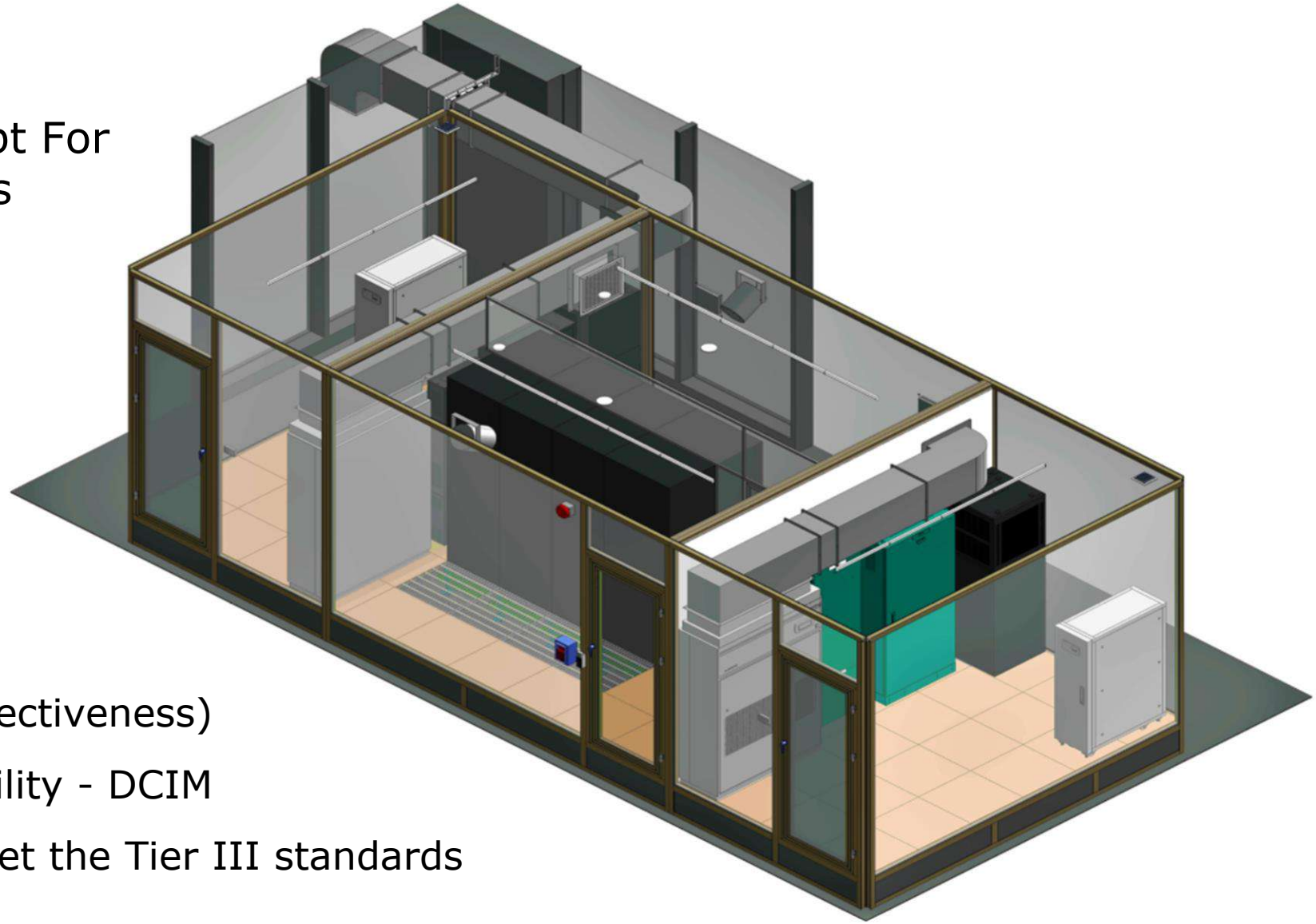
- Adapt to different TIER levels and increase the power density
- Be able to match the upgrade of IT devices
- Keep using the latest technology

Modular Design, On-Demand Construction

USDC TECHNOLOGY
Smart Data Center

Our Special Design Concept For
What The University Needs

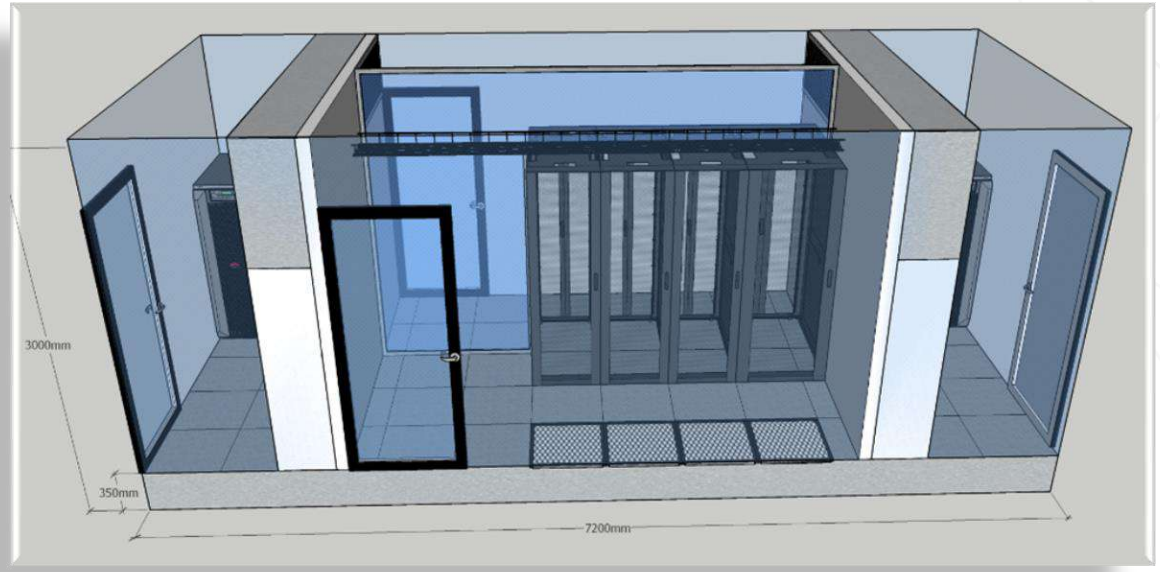
– Modular Data Center



- ❑ Fast Deployment
- ❑ Highly Integrated
- ❑ Highly Reliable
- ❑ Energy Efficient
- ❑ Low PUE (Power Usage Effectiveness)
- ❑ Comprehensive Manageability - DCIM
- ❑ Designs are N + 1 and meet the Tier III standards

Modular Design, On-Demand Construction

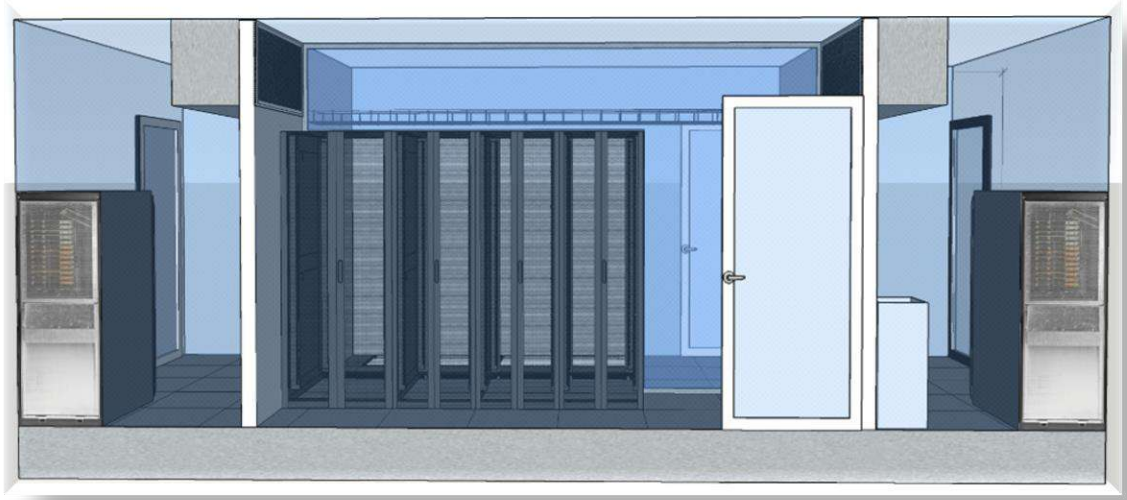
USDC TECHNOLOGY
Smart Data Center



Traditional data centers suffer from long construction periods, high energy consumption and high initial investment. To help resolve these issues. USDC Technology has introduced Container DC which has a highly integrated power system, environmental monitoring, cooling systems, racks, cabling, fire control, security and other infrastructure facilities.

Easy Deployment

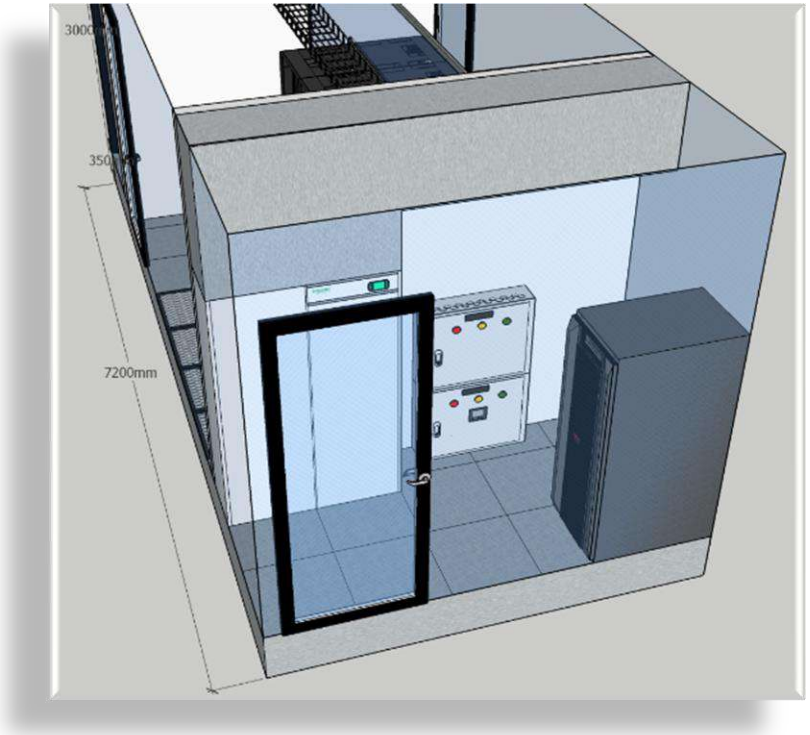
- Prefabricated and pre-tested, ensure deploy time
- Modular structure realizes fast & on-demand deployment
- Intelligent management makes unattended operation

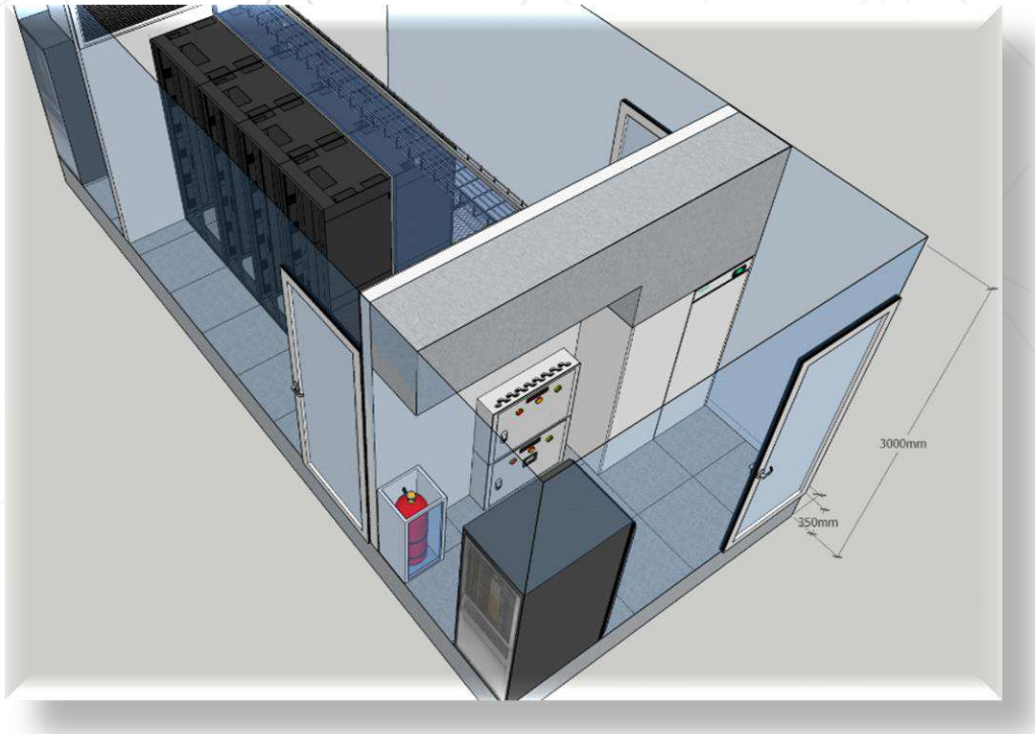


Modular Design, On-Demand Construction

USDC TECHNOLOGY
Smart Data Center

- All designs are **N + 1** and meet the **Tier III standards.**
- **Scalability:** Best fit for the data center room under 10 racks.
- **The PUE** level is controlled **less than 1.6.**





- The cold aisle is closed and isolated to increase the **energy-saving performance**.
- **Modular UPS:** Adopts series of modular UPS, in case of a power module failure.
- DCIM system improves the visibility of the actual capacity.

USDC TECHNOLOGY
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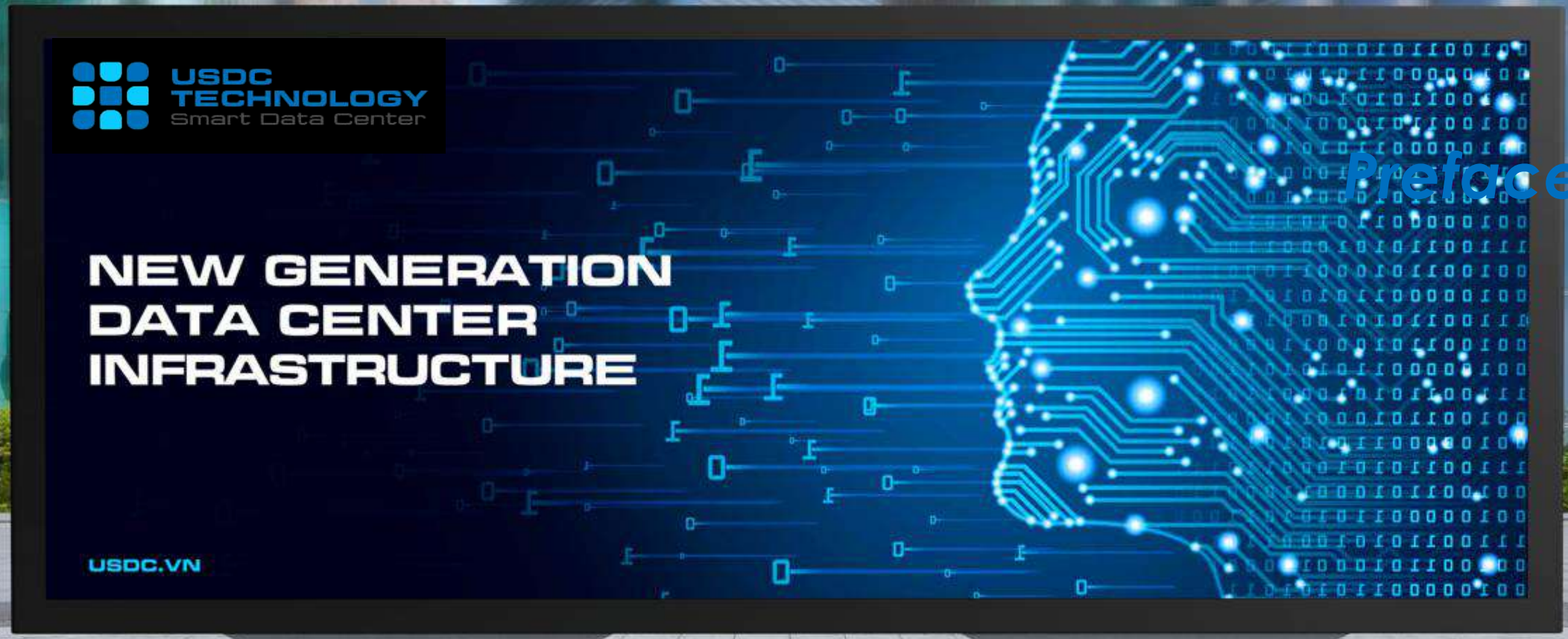
WHO WE ARE?



Preface

"USDC Technology is a professional and leading company in technology construction for Smart Data Center services in Vietnam and the region. Our mission is delivering the most optimal products and services by applying the latest technologies. We focus on the best experience to customers, the highest satisfaction to partners, fulfilling life for employees, and sustainable development to investors."

CEO of USDC Technology

Why USDC Technology?

Enthusiastic Consulting

Our teams with in-depth knowledge and rich experience in Datacenter, Cloud Computing, and strong support from our strategic partners, USDC Technology are confident to bring practical IT infrastructure solutions to customers.

Optimal Cost Solution

We optimize energy, resources, personnel, operating costs while maximizing the safety and automation of the system. We deliver real value of money to our customer by providing high-quality services and competitive price.

Professional Support

USDC Technology invests in building the most proactive interactive support system to promptly overcome risks, troubleshoot problems, and gain trust from our customers.

Our Core Services

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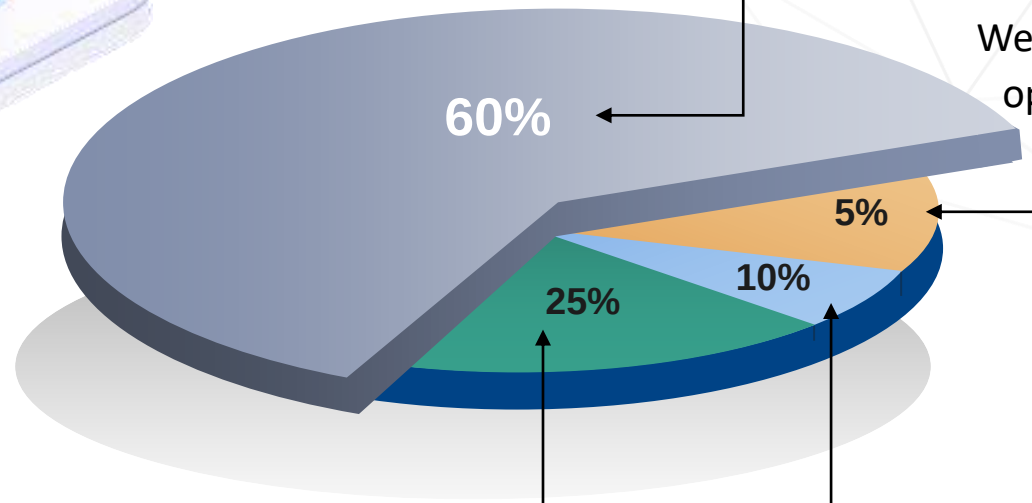
Smart Data Center



Data Center Contractor

We provide design consultancy, construction & deployment, operation services, and certifying international standards

Trading

We provide IT equipment as a service + specialized cabinet & electrical panel

Data Center as a Service

We offer collocation service (rack & cage), cross-connect, BaaS, DRaaS

Cloud-based Solutions

We are providing solutions for VPC, VDI, Object-based Storage, DCIM

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Smart Data Center

USDC Smart Data Center

USDC Smart Data center is established and operated to meet the demand of customers who would like to outsource Data Center service to professional providers and concentrate their resource to their core business.

With designs are N + 1, and meet the Tier III standards, USDC Data center is designed with environment-friendly that keep our advanced Data Center PUE 1.5 or lower.

Data Center

Address: Hi-Tech Park, Long Thanh My Ward, District 9, HCM City, Viet Nam

FLOOR PLAN

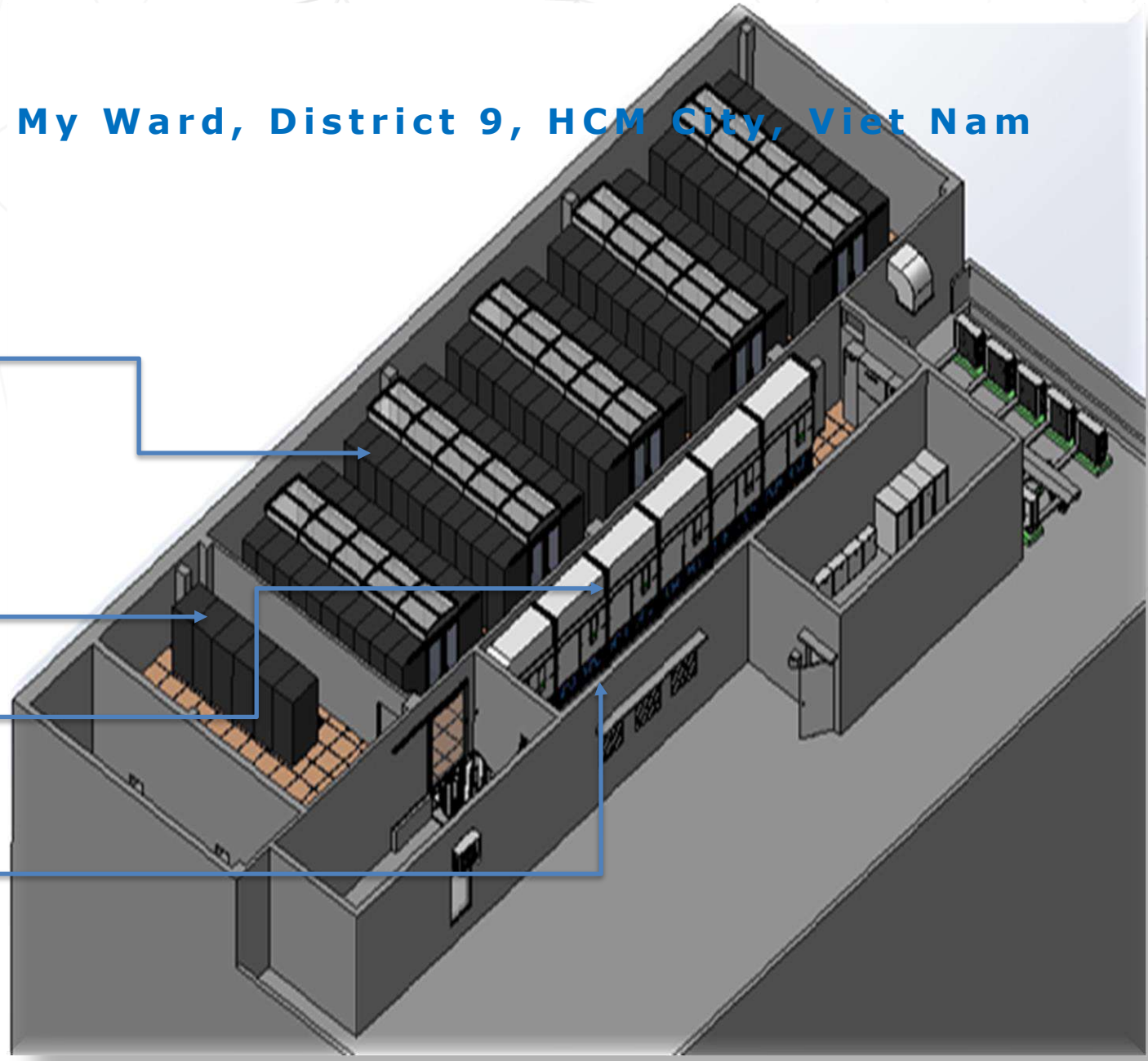
SEGMENT

100 RACKS

NETWORK

COOLING

ECONOMIZER



Floor Loading: 1000 kg/ m²

USDC Smart Data Center

Economizer

Reduce the energy using

Efficient Cooling

The smart cooling can reduce 40% energy than standard one

Air-flow Management

Total separation of hot and old air, as well as air compartmentalization

Intelligent Operation

DCIM system improves the visibility of the actual capacity

Tier III Standards

All designs are N + 1, and meet the Tier III standards

"With experienced teams, we have strong capabilities in ICT field and have been providing while range of comprehensive IT & Datacenter services, from consulting to implementing infrastructure, and able to meet the highest requirement levels"

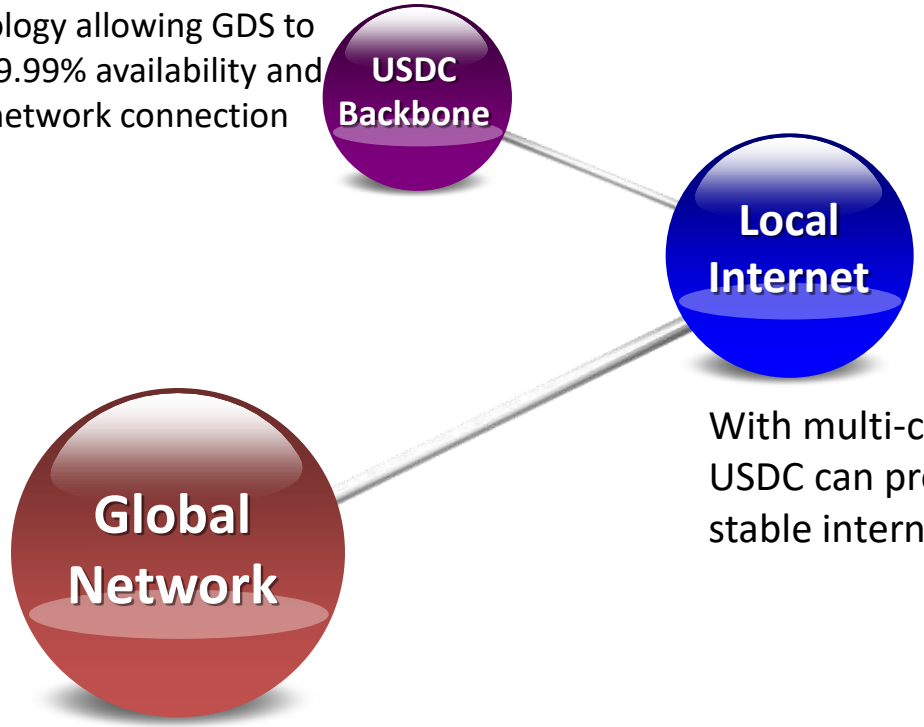
USDC Data Center Location

USDC TECHNOLOGY
Smart Data Center

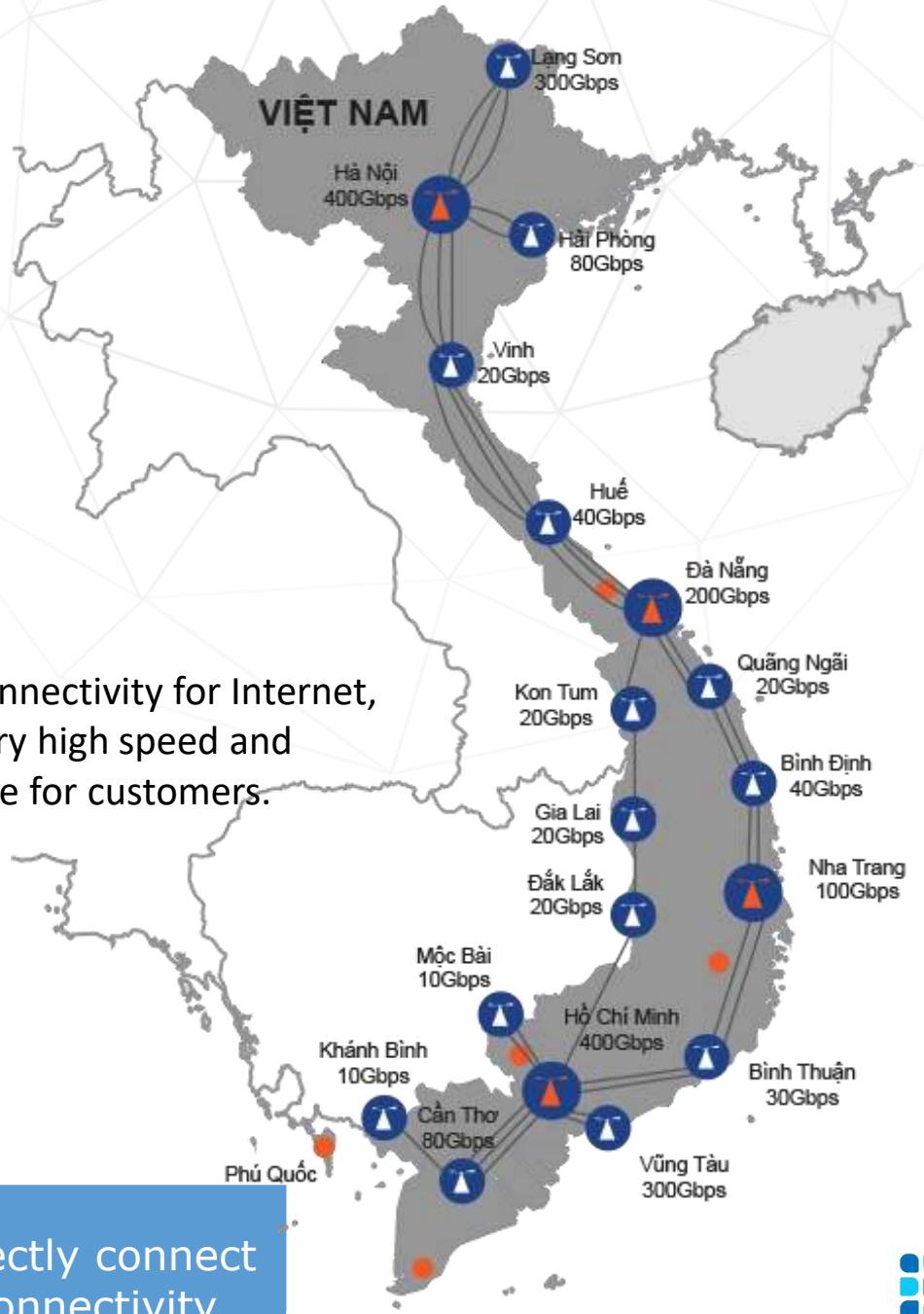
We provide the most reliable facilities, robust security systems, and stable network connectivity for our Customers

USDC Local Network

USDC Backbone is designed with Ring topology allowing GDS to commit 99.99% availability and stable network connection



With multi-carrier connectivity for Internet, USDC can provide very high speed and stable internet service for customers.

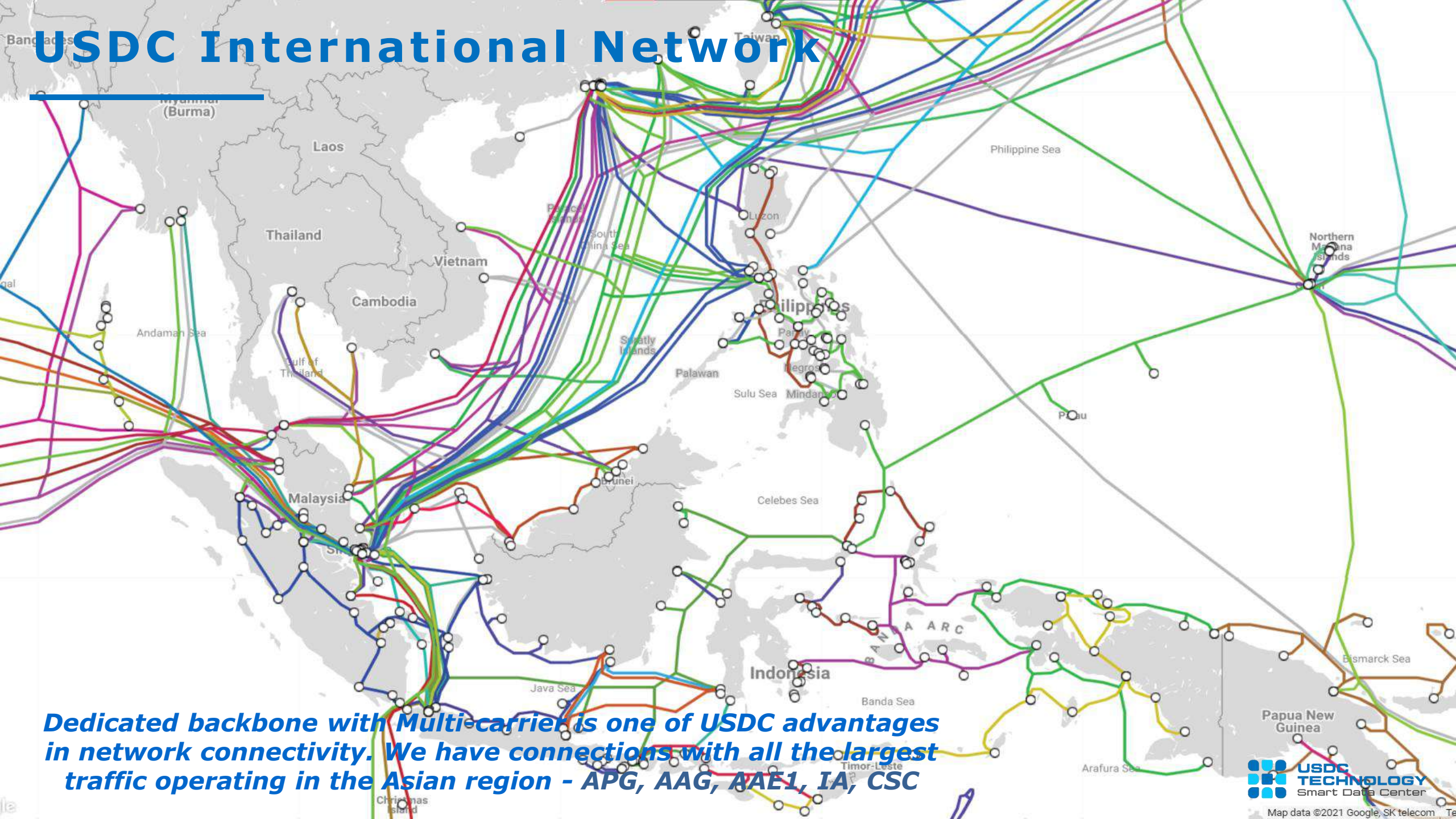


International & domestic network services are available over in-house cable because the carriers' nodes are installed inside data center

USDC set up our own dedicated backbone network to directly connect USDC Datacenter to multi-carriers, providing a stable connectivity

USDC TECHNOLOGY
Smart Data Center

USDC International Network



Dedicated backbone with Multi-carrier is one of USDC advantages in network connectivity. We have connections with all the largest traffic operating in the Asian region - APG, AAG, AAE1, IA, CSC

USDC TECHNOLOGY
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Our Partners

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