USDC TECNOLOGY
Smart Data Center

USDC TECHNOLOGY

Our Solutions for Healthcare Data Centers

usdc.vn

AGENDA

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

OVERALL ABOUT DATA CENTER

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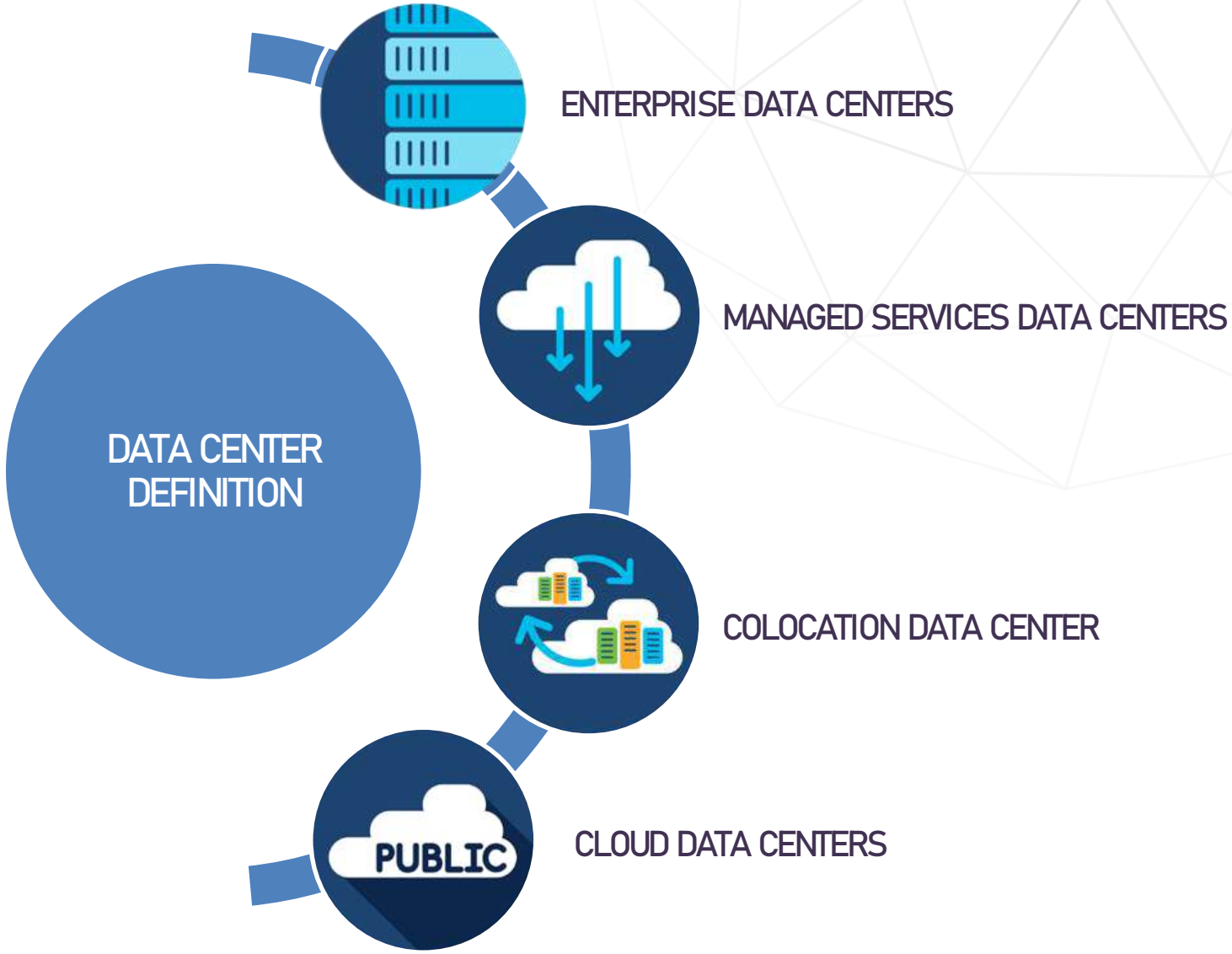
Smart Data Center

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

DATA CENTER DEFINITION

OVERALL ABOUT DATA CENTER



DATA CENTER REQUIREMENTS

DATA CENTER REQUIREMENTS

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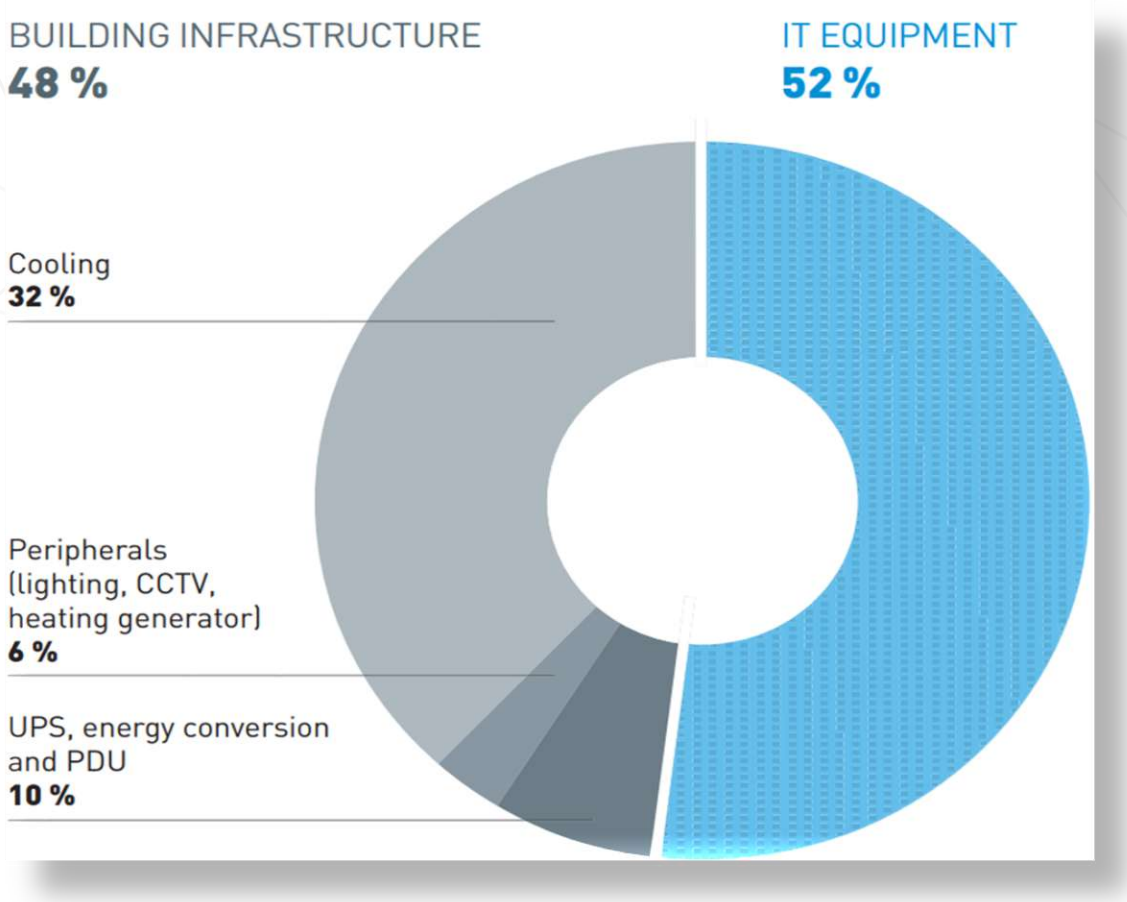
EFFICIENCY

- 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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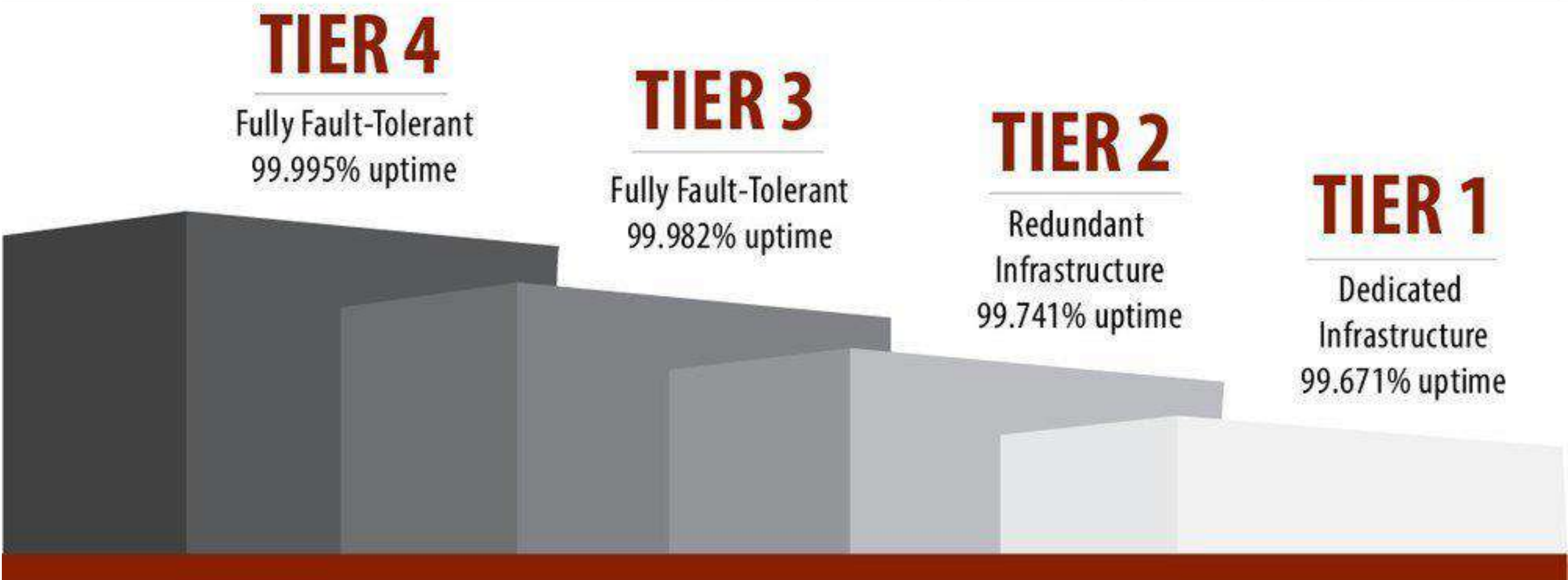
AVAILABILITY AND SCALABILITY



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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THE ROLES OF DATA CENTER IN HEALTHCARE INDUSTRY

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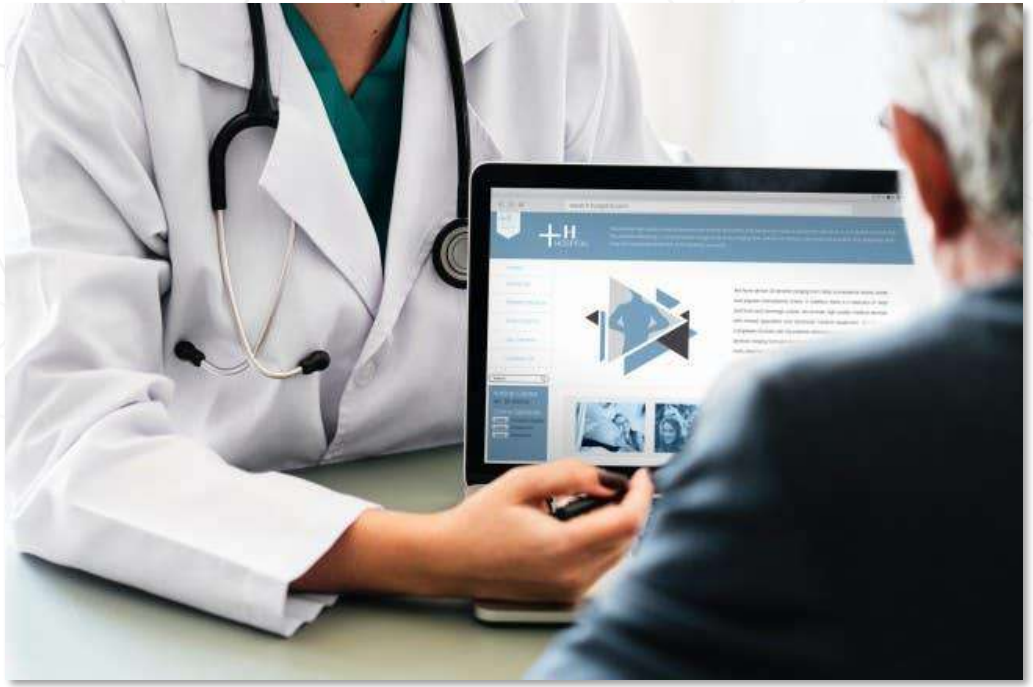
Why Data Centers are Important for the Healthcare Industry?

Technology helping people be healthy - *Doctors are using medical devices to keep track of their patients. Doctors can track patient's electrocardiographic signals, blood pressure, and oxygen saturation all via telemonitoring.*

As the healthcare industry enters a new decade, it undergoes a massive technological transformation. Running a data center is a complex task as it is important to maintain massive data along with security.

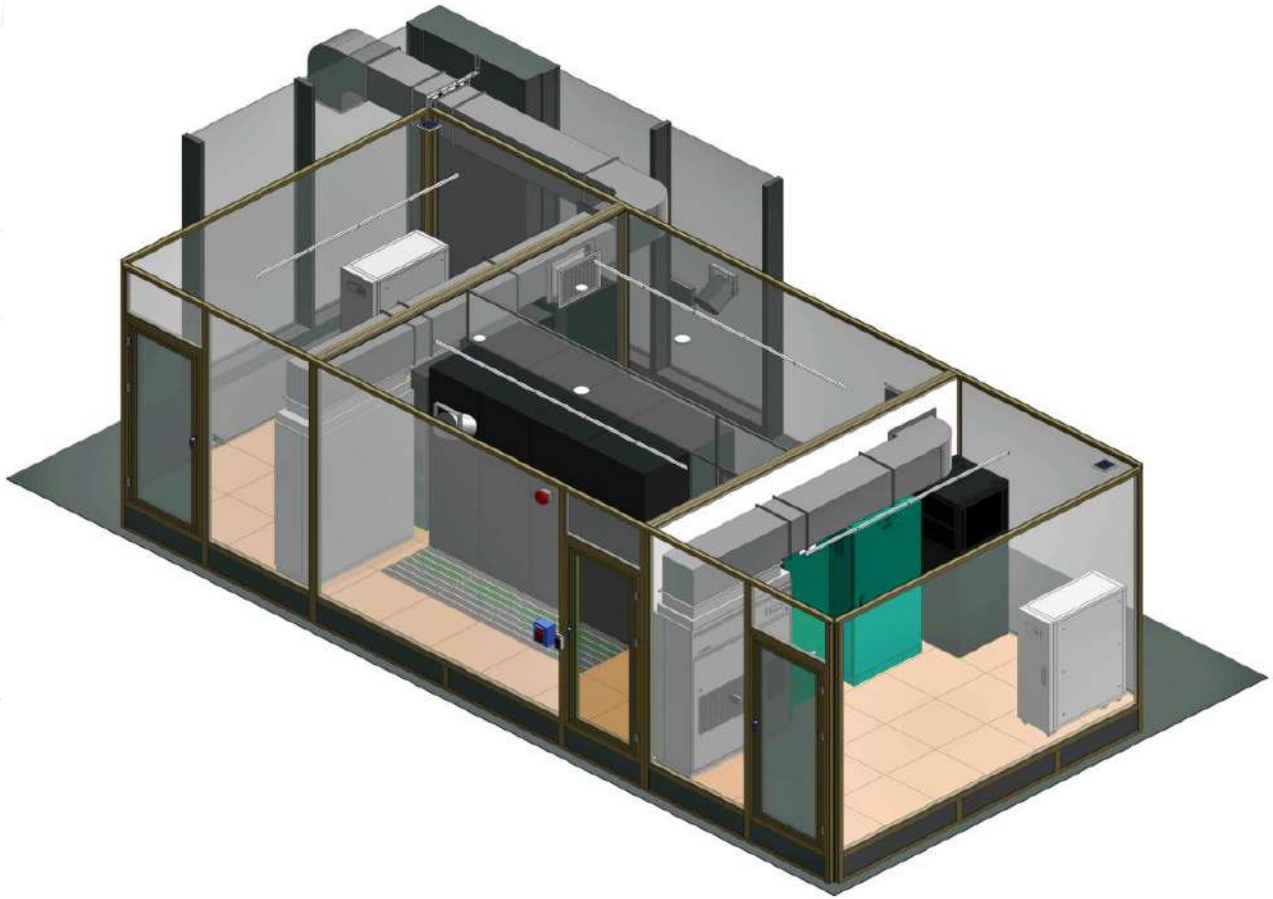


As the population is rising, so does patient data. There comes the need for data centers to manage a humongous amount of healthcare data.

Why Data Centers are Important for the Healthcare Industry?

- ***A hospital is a complex system -*** *Data is often needed very quickly or has to be passed on quite fast. In order to create an expedient network for all parties involved, data must be collected, processed and stored.*

- ***Various administrative tasks and treatment processes are teamwork****, in which the patients themselves as well as doctors, medical staff, but also externals such as pharmacies, health insurances and outpatient physicians must be included. At the same time, the highest security requirements for the sensitive patient's data must be met.*



Why Data Centers are Important for the Healthcare Industry?

Healthcare organizations face unprecedented challenges

- **Digital data is exploding** due to technological advances and government incentives to implement EHR/HMR.
- **Increased enforcement of HIPAA security** is compelling healthcare organizations to upgrade data security and disaster recovery protocols or face high penalties.
- **Applications** containing electronic protected health information (ePHI) such as Electronic Medical Records (EMR), digital imaging, revenue cycle and billing software, and other clinical applications are required to follow HIPAA compliance guidelines.
- **Increasing pressure to implement meaningful use**, reduce healthcare costs and improve care outcomes while protecting patient interests
- **Managing the transition to outsourcing** a data center can be daunting

Healthcare Industry Drivers

Requirements for storage

Responsibility remains with originating provider

Large digital files

- Picture archiving and communication system (PACS) replaces traditional film based images
- Integrated imaging in operating rooms
- Wound pictures
- Genome sequencing

Telehealth

- Online patient data needs to be integrated into EMR
- Video sessions of synchronous visits or consults will require storage and EMR integration

Healthcare Industry Drivers

Increased mobility

- Tablets, smart phones
- Medical apps
- Social media

Human machine interface

- Increased need for ubiquity
  - Smart walls
  - Surface
- Needs for efficient log on processes
  - Smart rooms

Disaster Recovery

Increased expectations with the availability of electronic records

Physical Data Centers vs. Cloud Solutions

- Physical data centers, whether located on campus or attached to local networks, typically have **higher performance speeds**. This is helpful for things like picture archiving and communication systems, which are used to store and share medical imaging.
- Physical data centers are also necessary for hospitals that still run legacy applications designed to be used only locally.
- Beyond on-premises data centers, cloud systems — even with their authorized use for protected health information — still make some hospitals uncomfortable.
- There's still an internal panic about cloud computing solutions, what you're allowed to do and what you're not allowed to do.
- But cloud solutions offer too many benefits to be ignored, such as flexibility and rapid scalability to better meet immediate business demands.

Best Practices for Healthcare Data Centers

- Unifying the data center with stakeholders and representatives
- Describe your healthcare infrastructure strategy
- Use of DCIM tools
- Applying enhanced security to healthcare data center
- Practice good data hygiene

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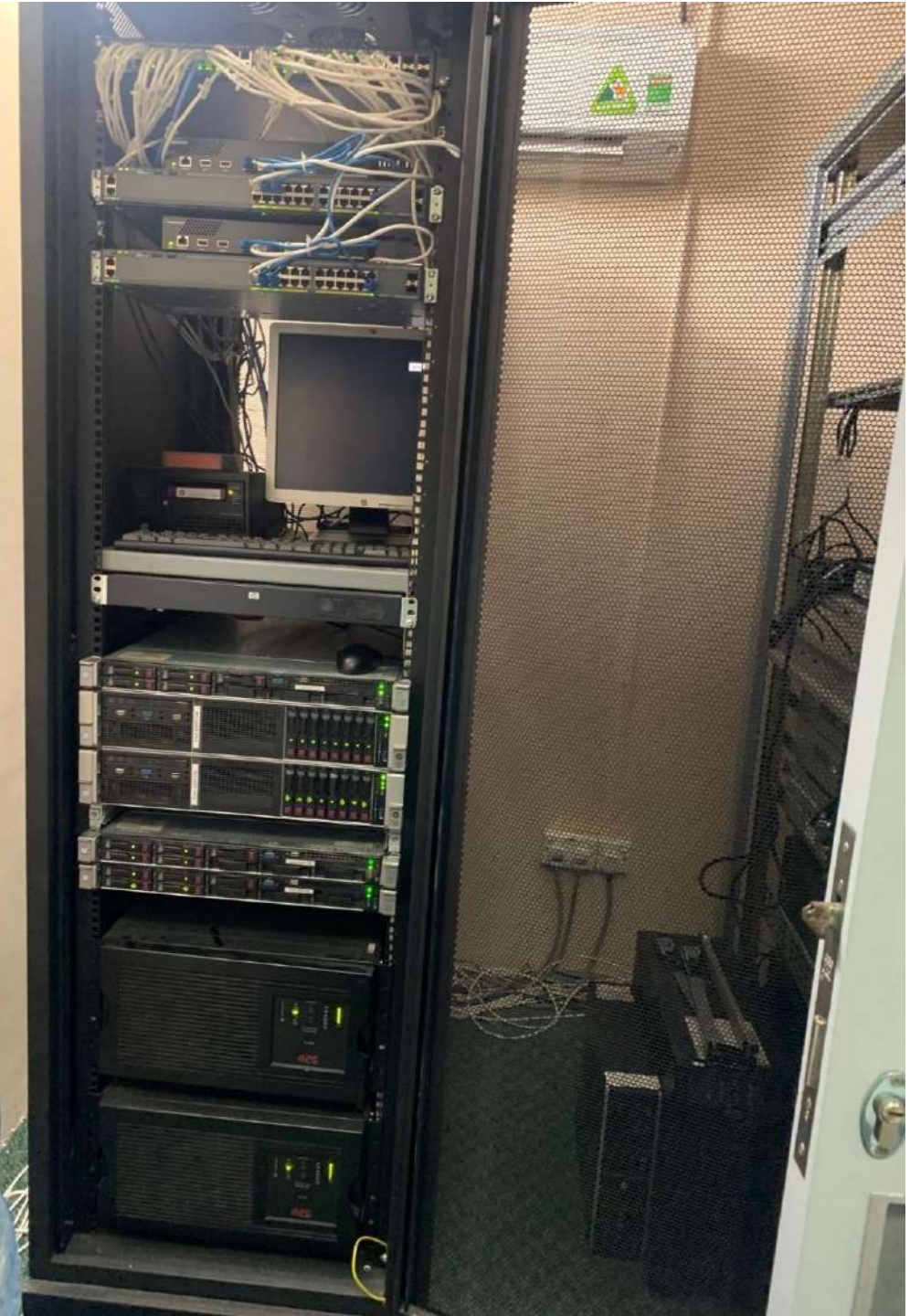
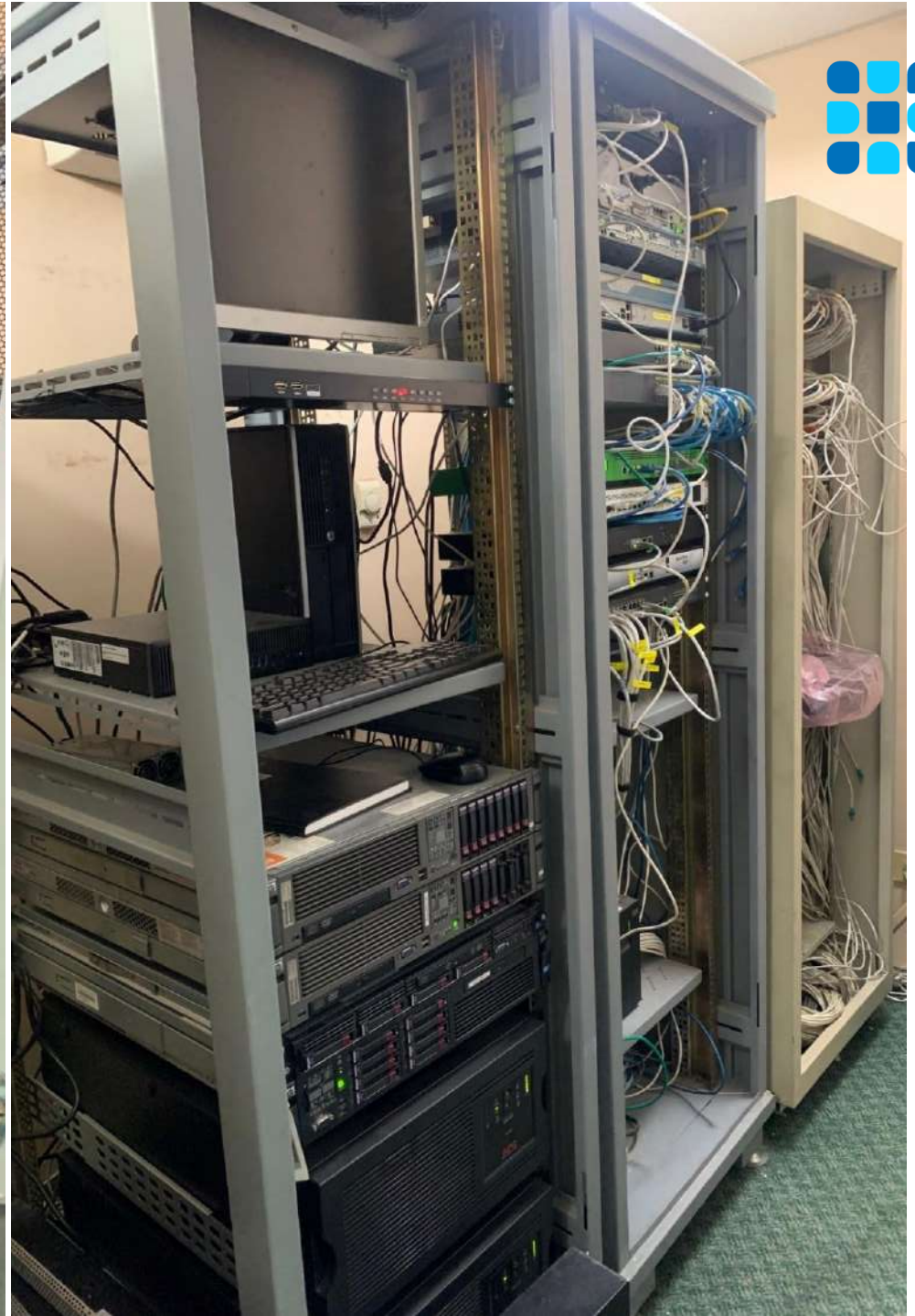
CURRENT HEALTHCARE DATA CENTERS





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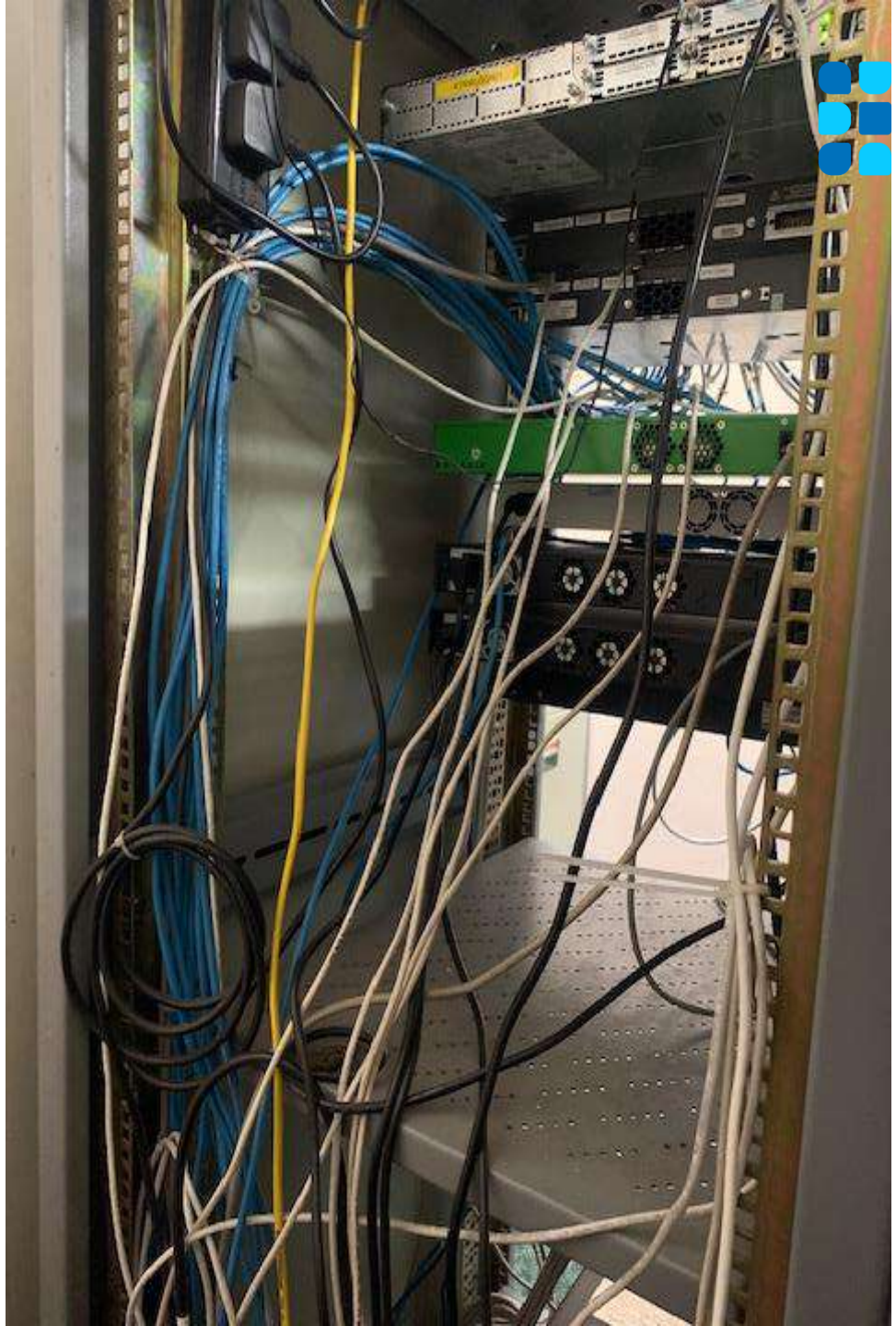
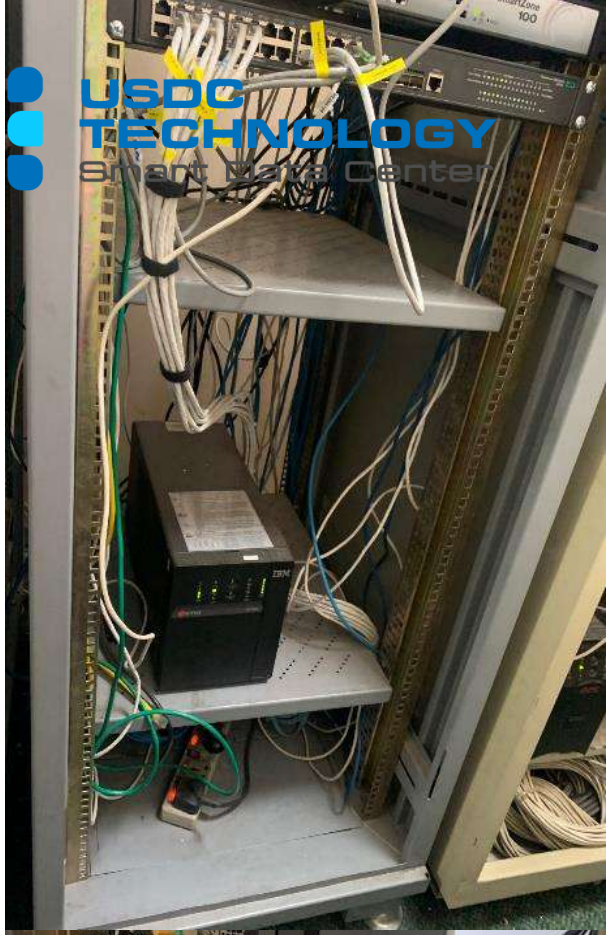
Smart Data Center





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Low Integration, Large Footprint

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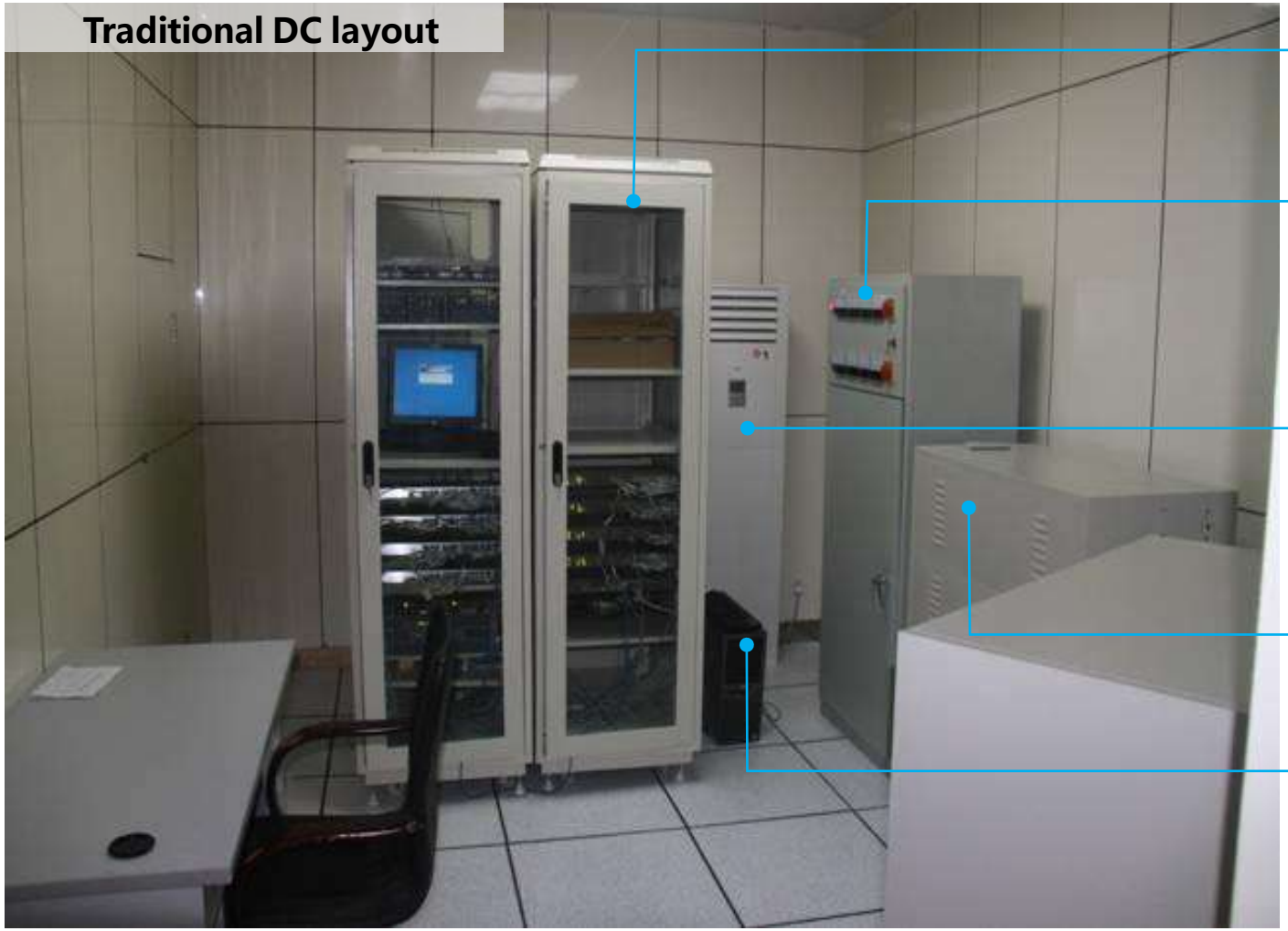
Smart Data Center



Traditional DC

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

Low Cooling Utilization, High Power Consumption

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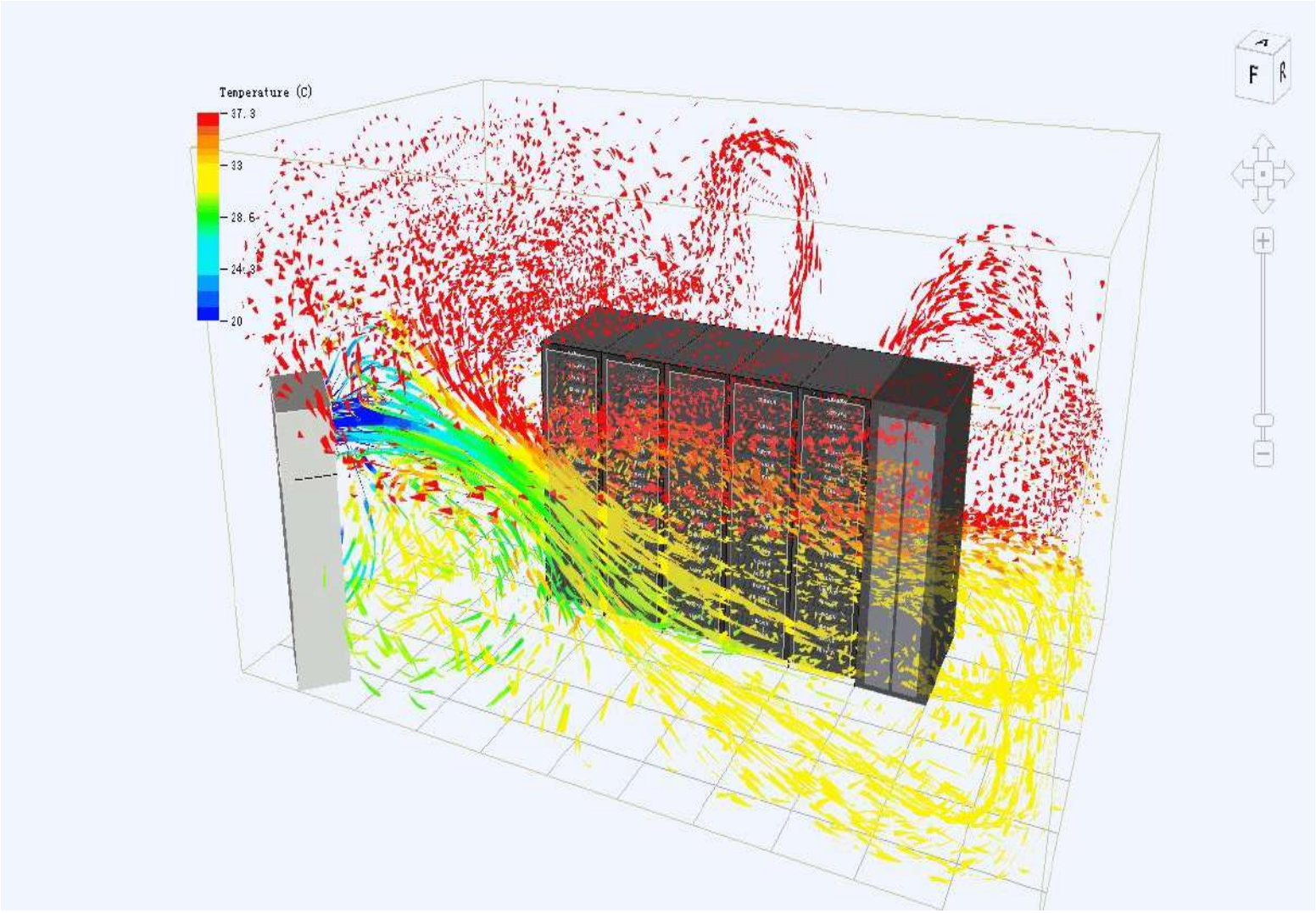
Smart Data Center



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

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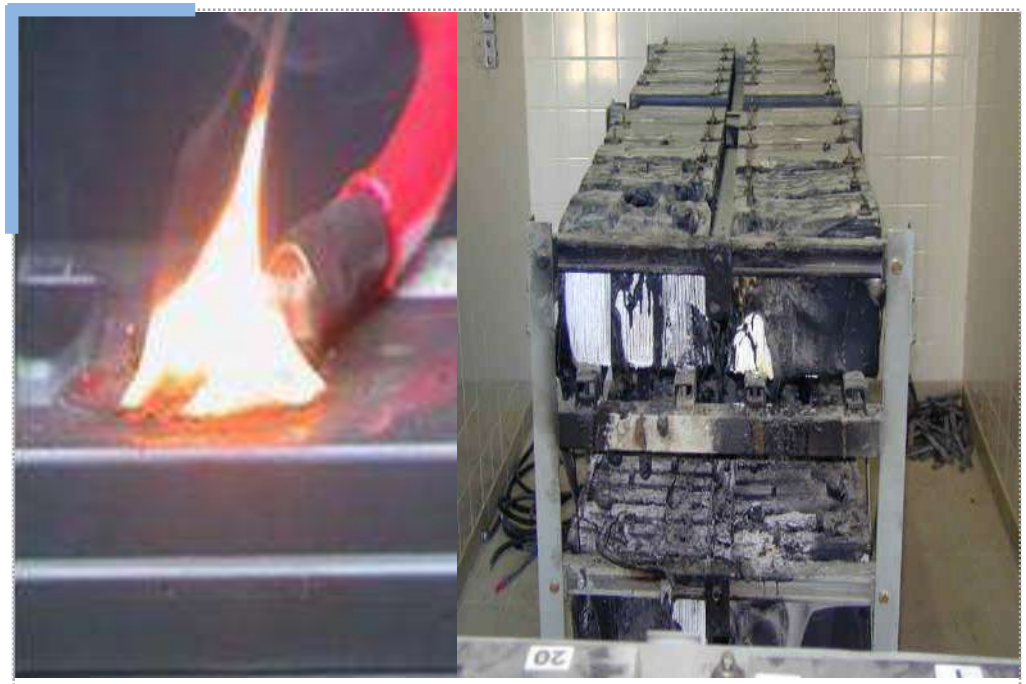
Smart Data Center



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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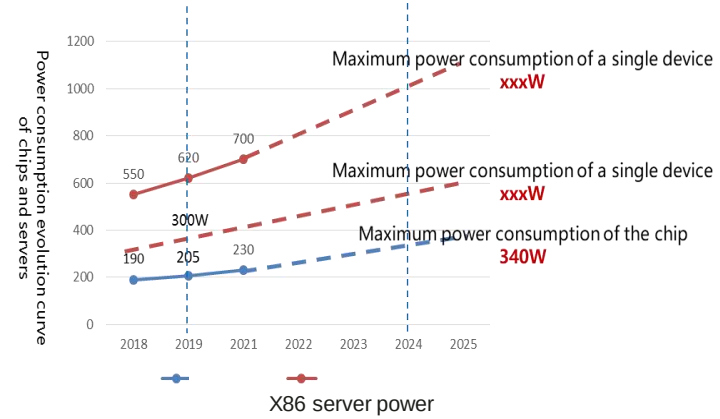
Low power density

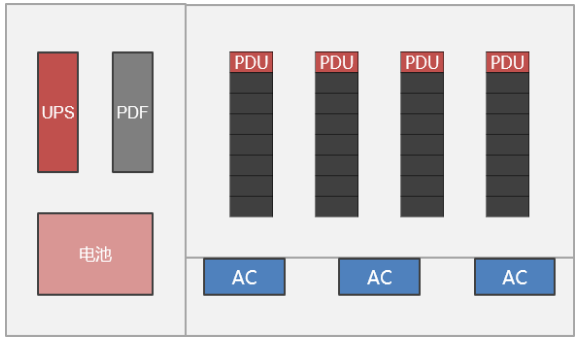
Single Power 3-5 kW/R → 10~15 kW/R



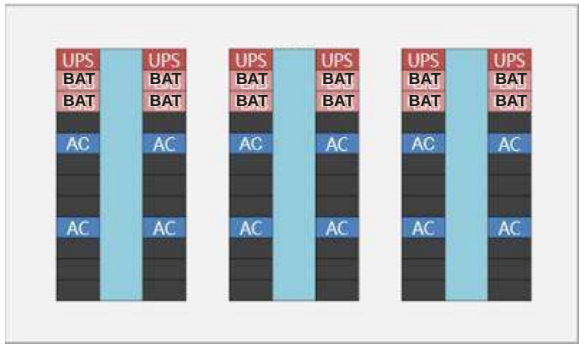
Local under-floor air supply can cause hot spots

Low SUE*

Layout：28R*3kW=84kW @175m²

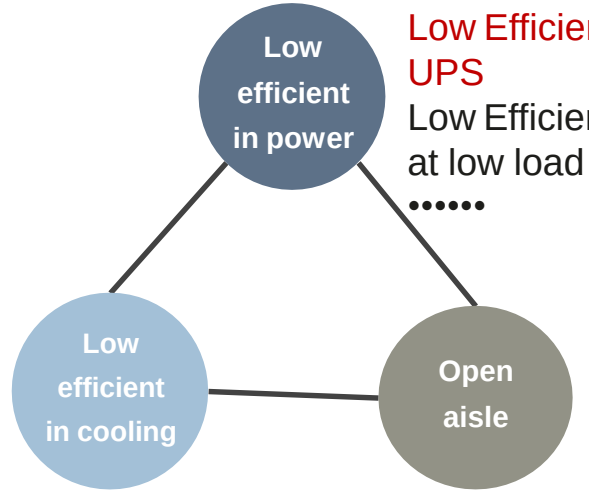


Layout：42R*6kW=252kW@175m²



*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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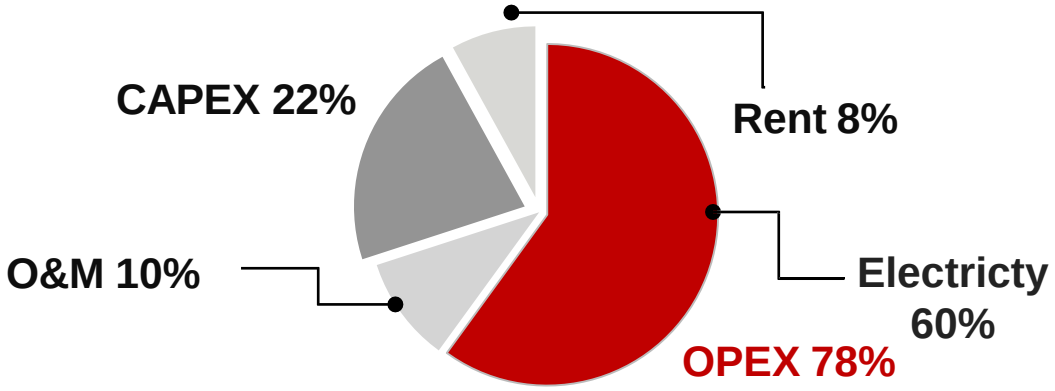
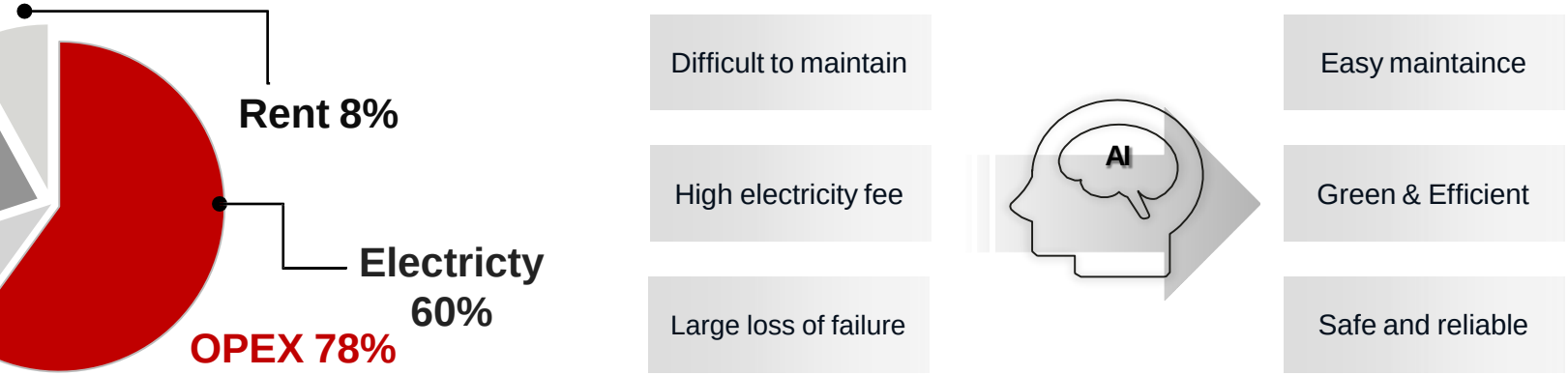
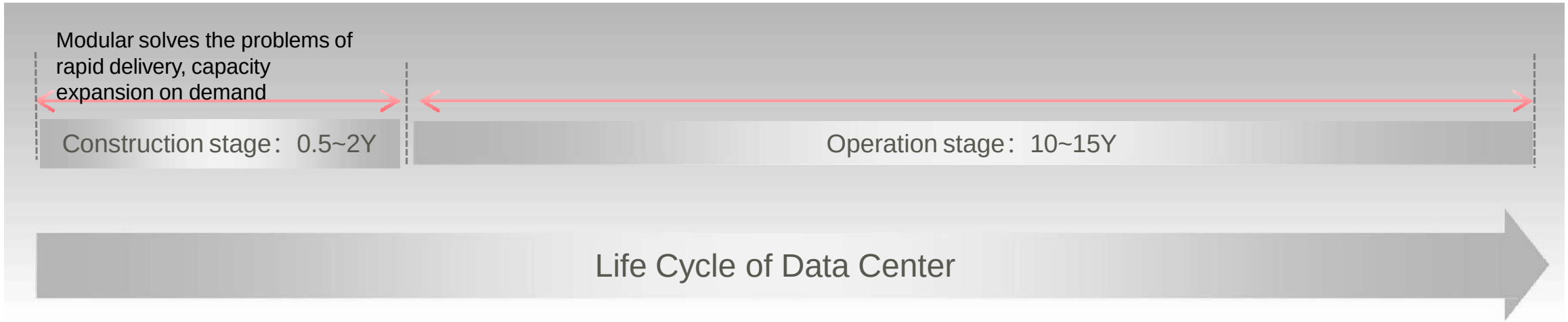
Over 70% of lifecycle expenditure are OPEX



AI Enable



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



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USDC Technology

Smart Modular Data Center Solution

USDC Solution: Modular & Intellectualization

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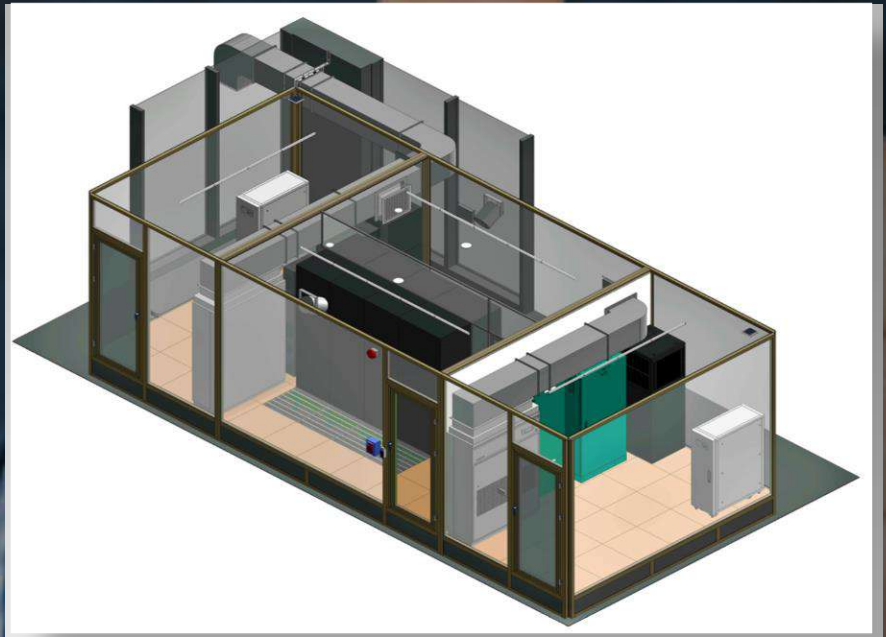
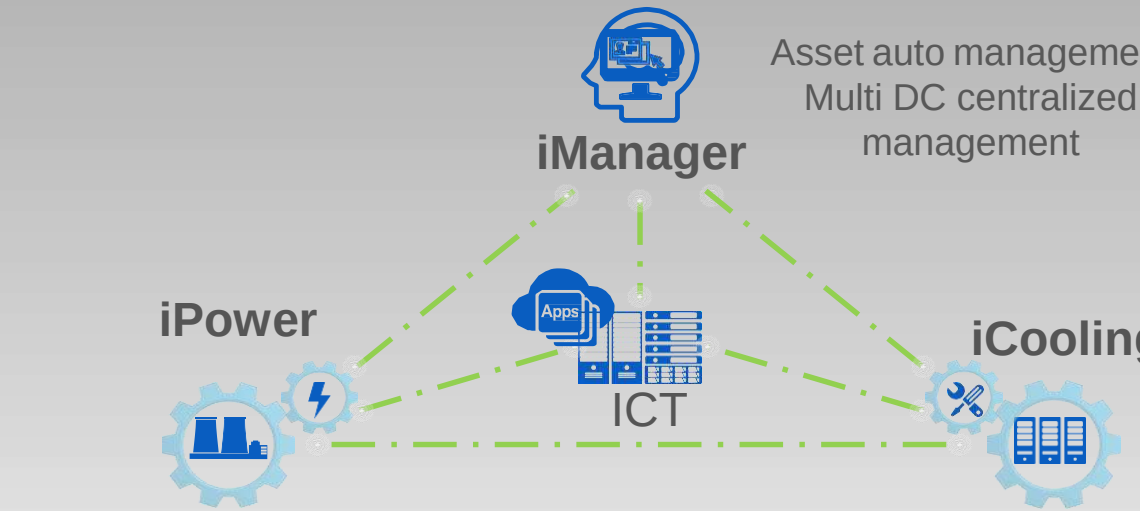
Smart Data Center

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

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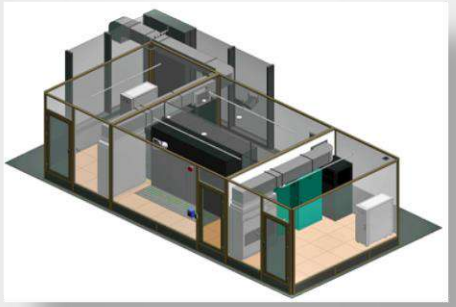
Smart Data Center

Standard Component

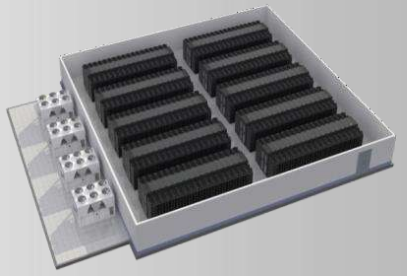
Pre-assemble, Pre-test, Pre-commissioning

Modular Structure

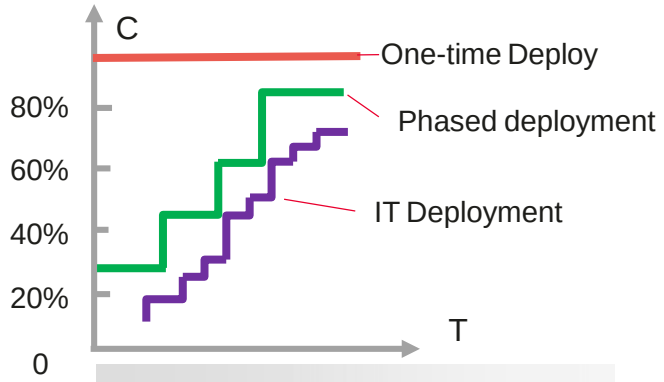


1 Mon: Manufacture

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)

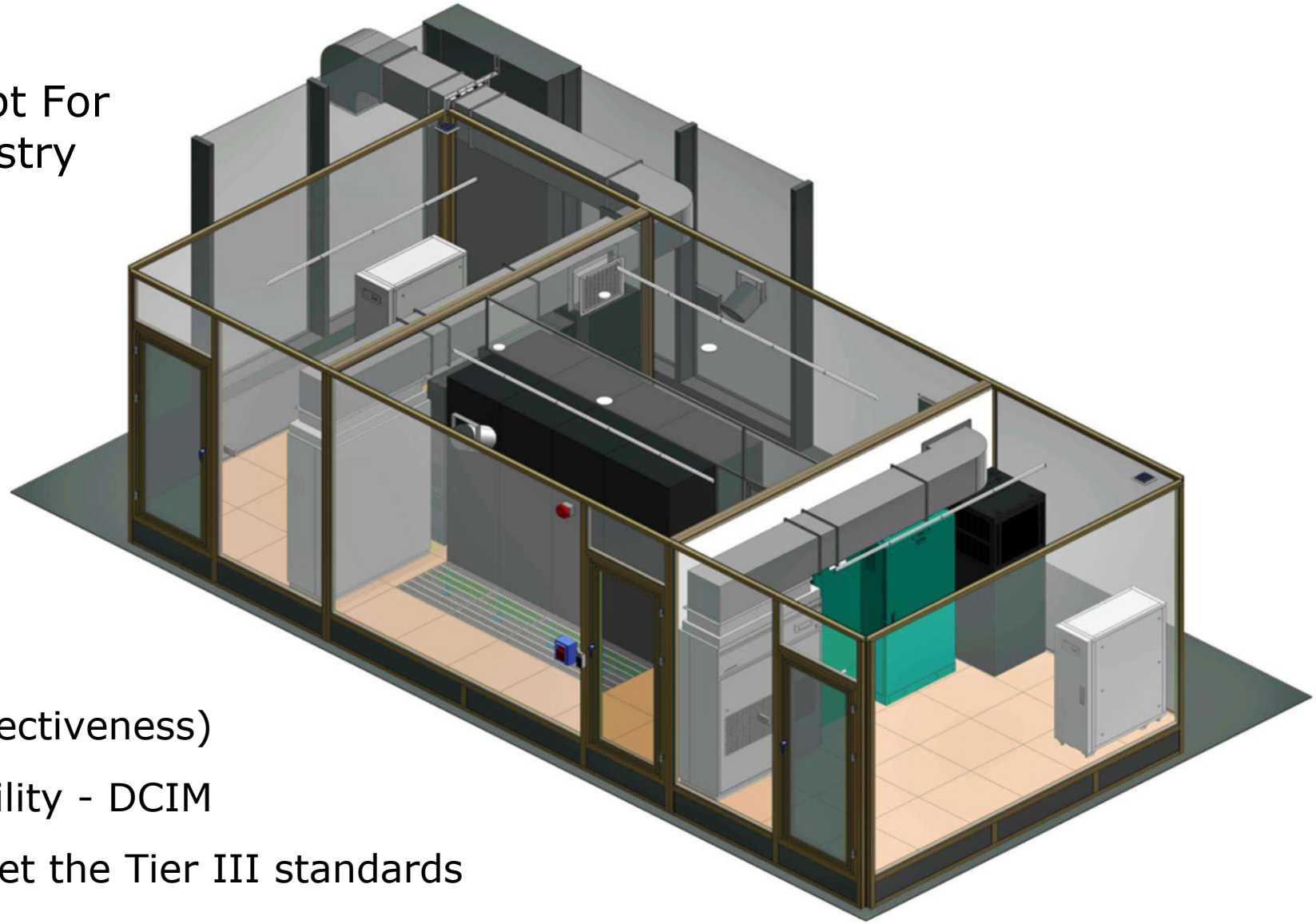
Vertical Expansion

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

HEALTHCARE DATA CENTER SOLUTION

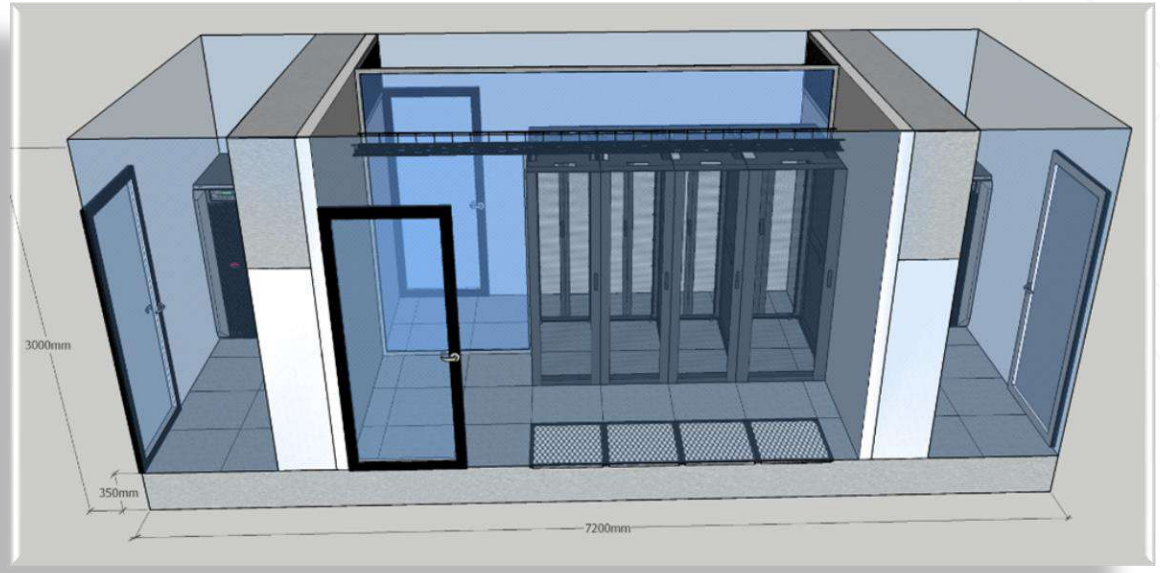
Our Special Design Concept For What The Healthcare Industry Needs

– 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

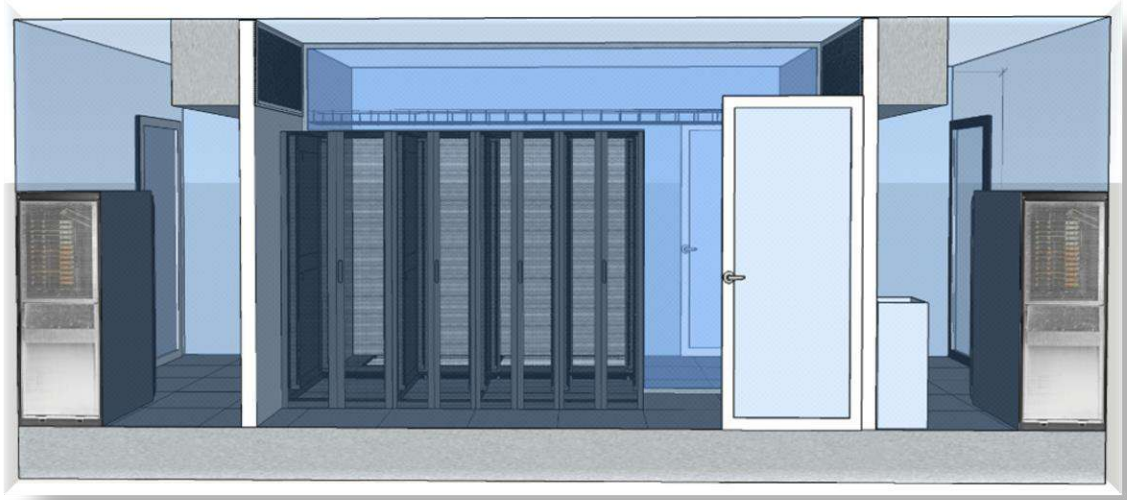
HEALTHCARE DATA CENTER SOLUTION



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.

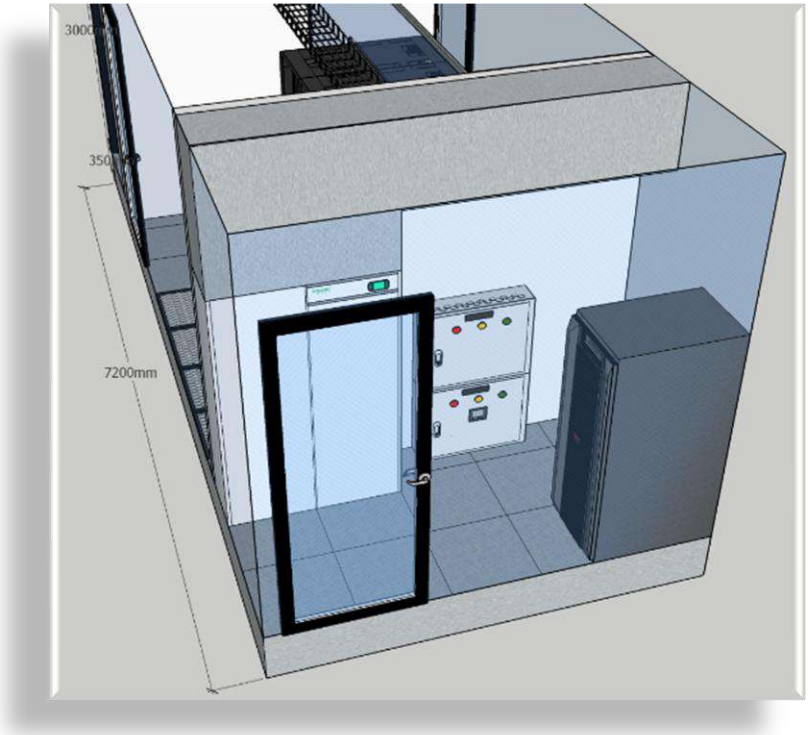
Easy Deployment

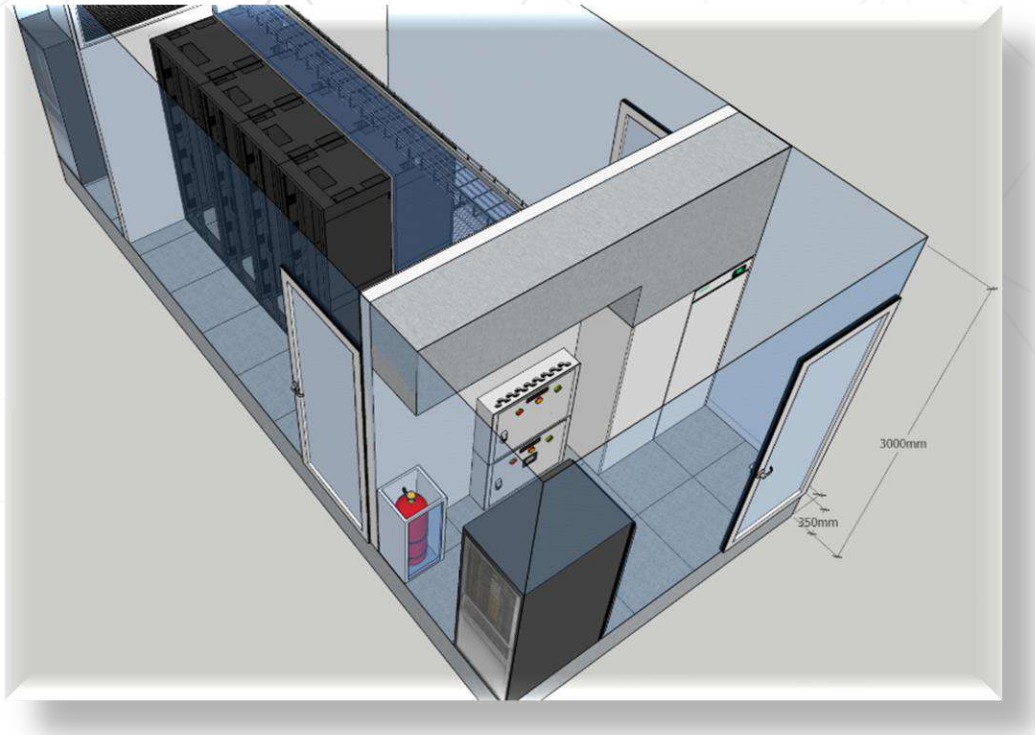
- Prefabricated and pre-tested, ensure deploy time
- Modular structure realizes fast & on-demand deployment
- Intelligent management makes unattended operation



HEALTHCARE DATA CENTER SOLUTION

- 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.

HEALTHCARE DATA CENTER SOLUTION

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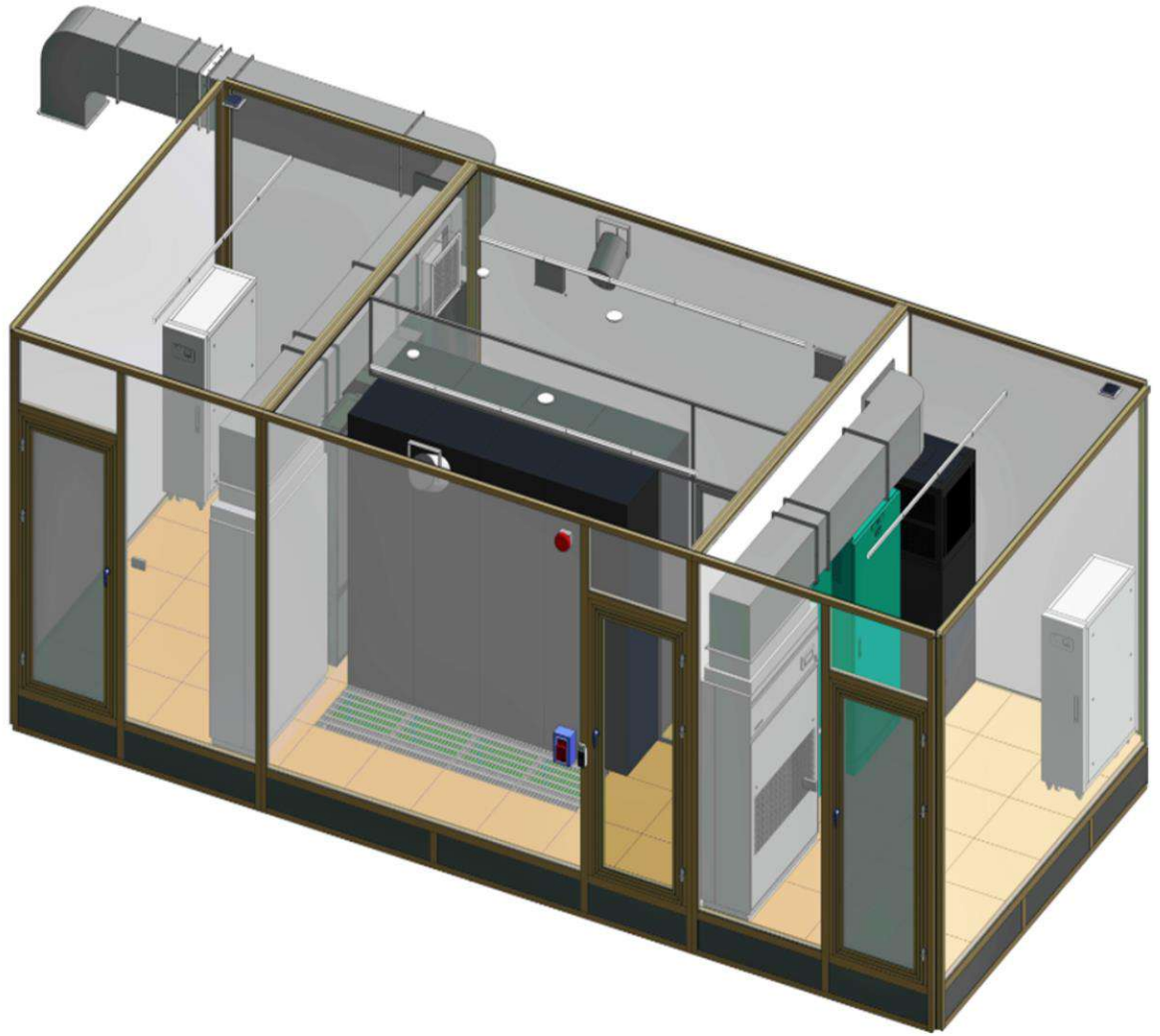
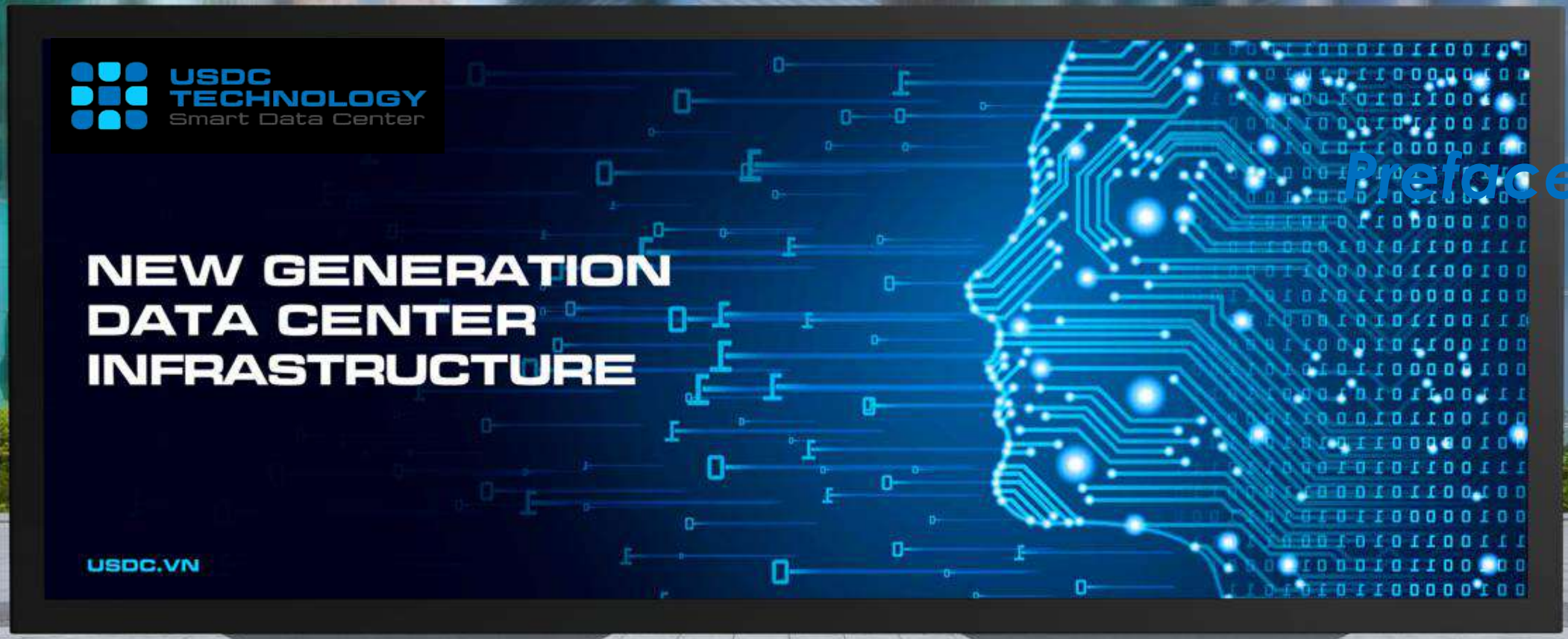
Save the energy and lower carbon footprint. Base on the energy-intensive, refrigerant-based cooling components like chillers and compressors can be eliminated, shut off, or operated at a reduced capacity.

Saving an average of **20%** of the money, energy, and carbon for cooling when compared to data center designs without economizers. (Based on Green Grid survey).



USDC TECHNOLOGY
Smart Data Center

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.

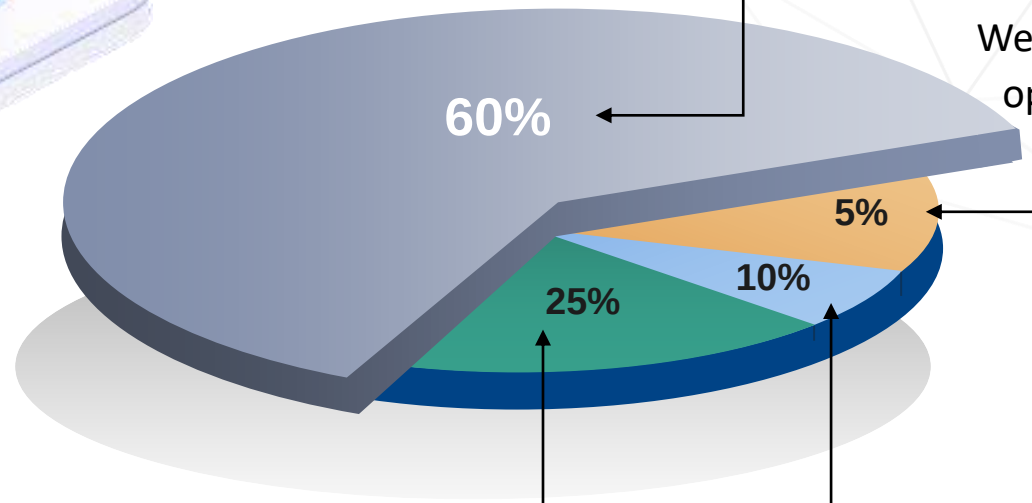
Optimal Cost Solution

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



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

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

USDC TECHNOLOGY
Smart Data Center

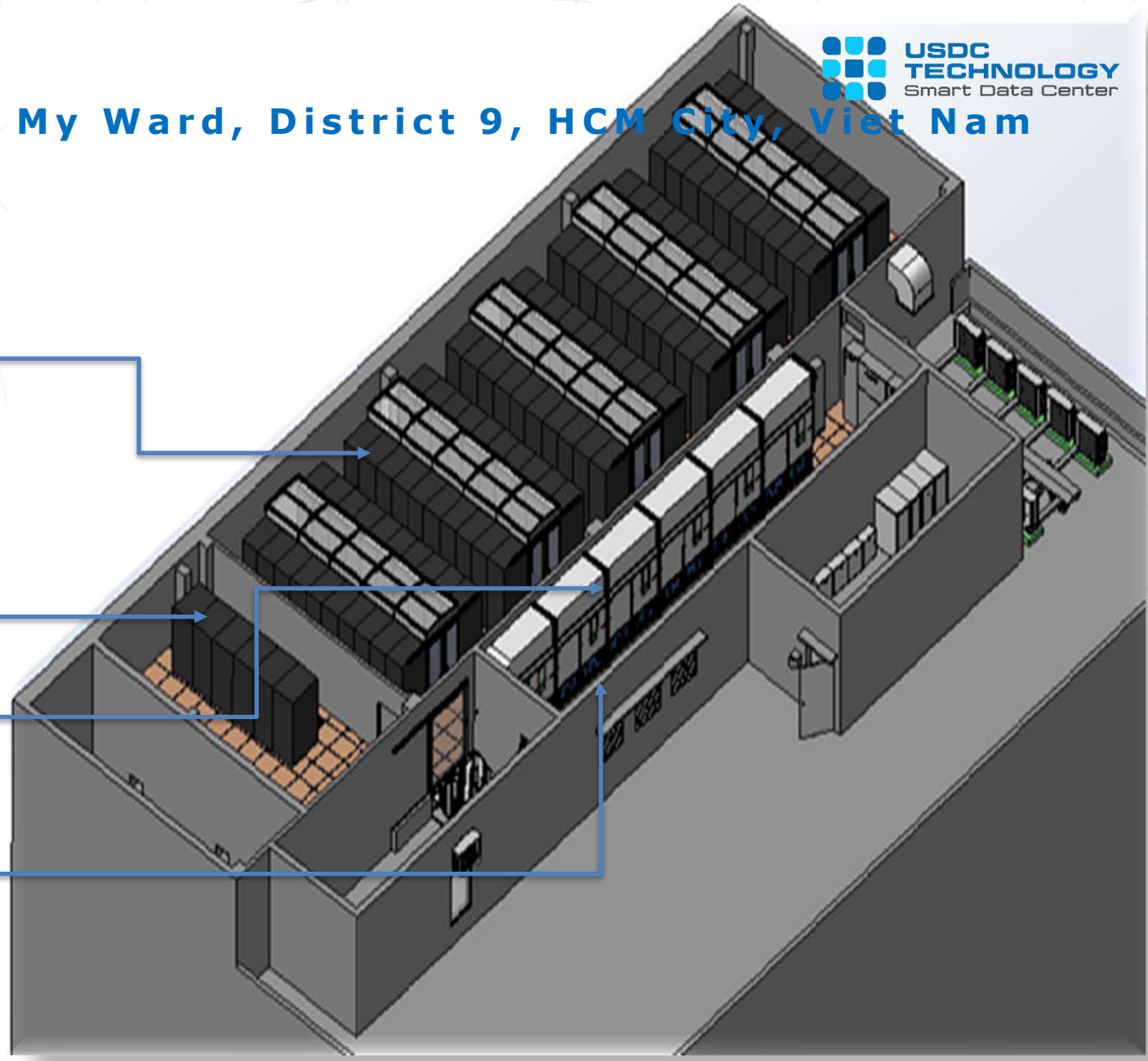
FLOOR PLAN

SEGMENT
100 RACKS

NETWORK

COOLING

ECONOMIZER



Floor Loading: 1000 kg/ m²

USDC Smart Data Center

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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"

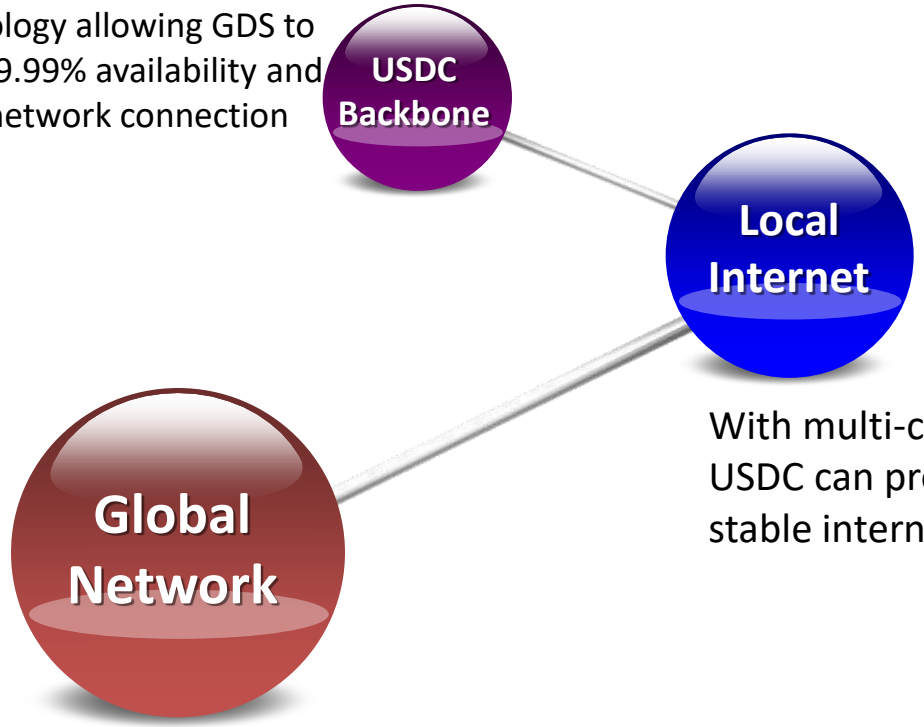
USDC Data Center Location

USDC TECHNOLOGY
Smart Data Center

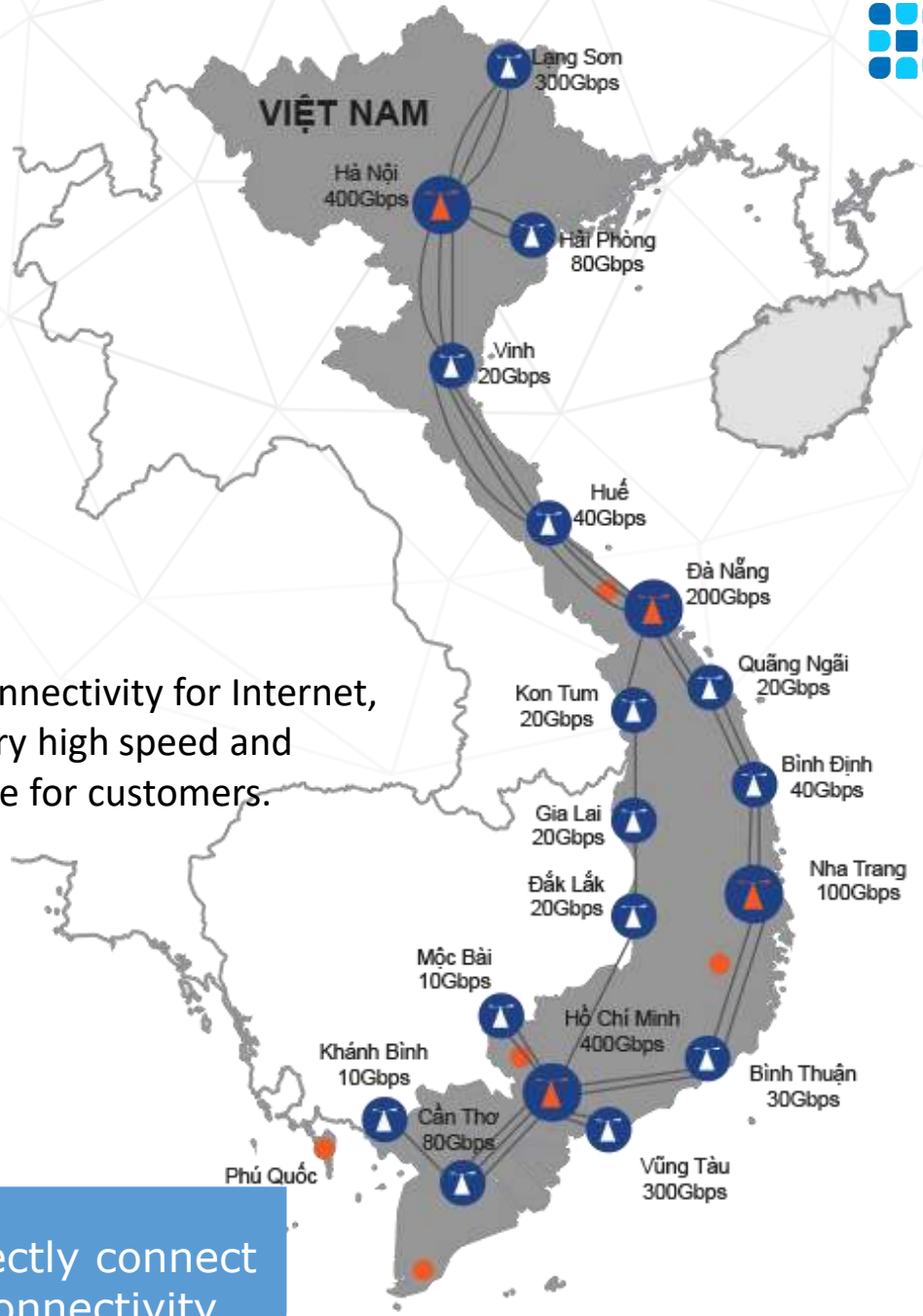
We provide the most reliable facilities, robust security systems, and stable network connectivity for our Customers

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.



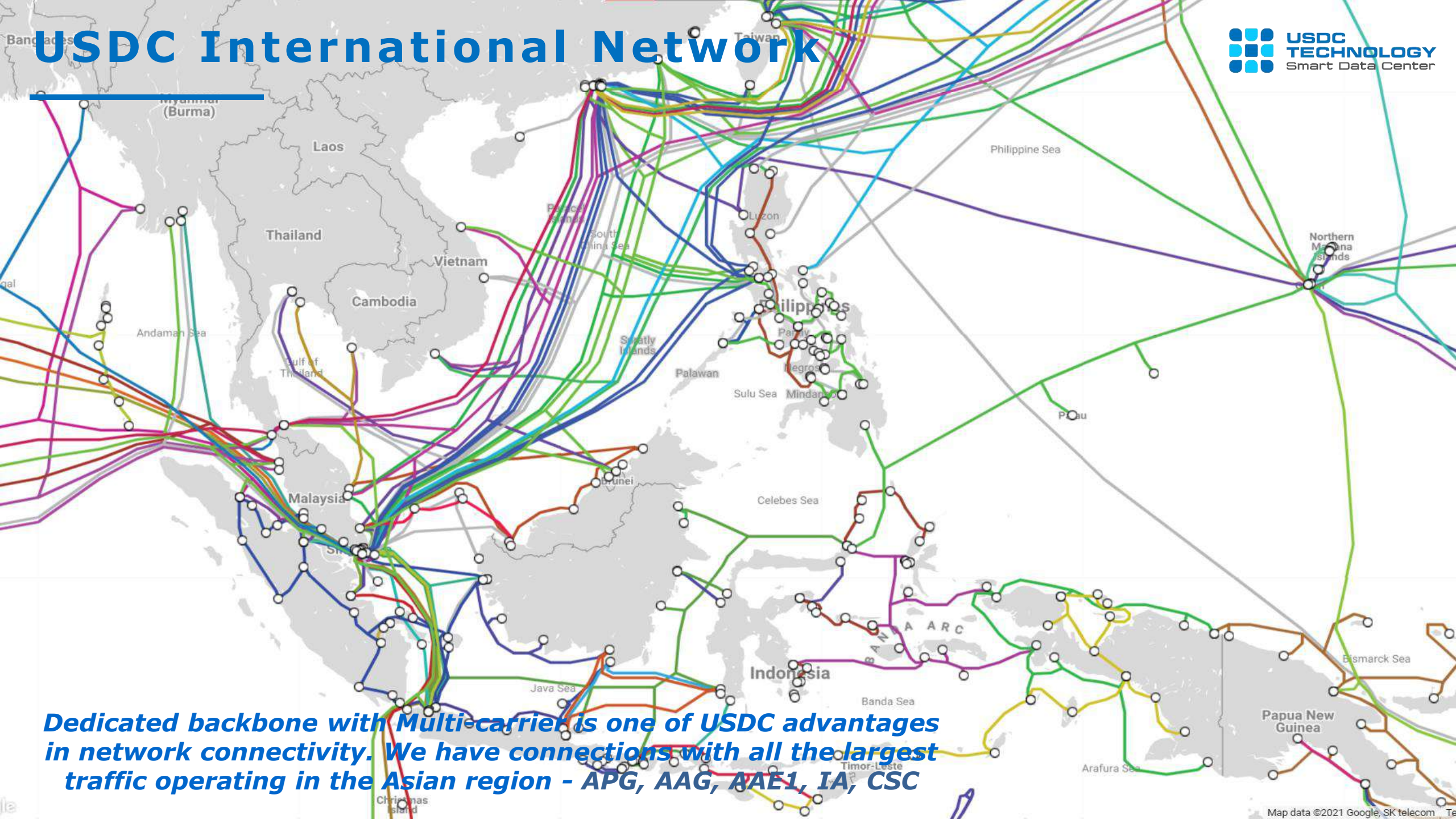
QĐ Hoàng Sa Việt Nam

QĐ Trường Sa Việt Nam

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 International Network



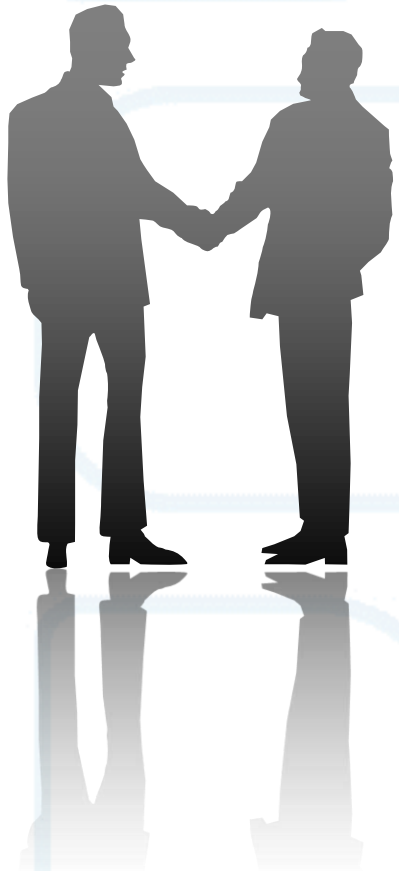
Dedicated backbone with Multi-carrier is one of USDC advantages in network connectivity. We have connections with all the largest traffic operating in the Asian region - APG, AAG, AAE1, IA, CSC

Our Partners

Conclusion

It is amazing to see what technological advancements can do for humans. Data centers are the heart of many healthcare IT accomplishments. Life sciences companies and healthcare innovators are concentrating on developing diagnostic technologies and digital medication strategies to boost 2021 best practices for healthcare data centers.

"As healthcare systems evolve into a fully documented electronic medical record, data access and security is mission critical. Reliable IT services start with a facility located in an area at low risk for natural disasters that is hardened and secured, with highly available electrical, cooling, and monitoring - with controls for fire prevention, detection, and physical security. USDC Technology was selected for its ability to meet all these needs for our customers." – CEO of USDC Technology



USDC TECHNOLOGY
Smart Data Center

LIÊN HỆ
Điện thoại: (028) 7308 0708 Email: info@usdc.vn