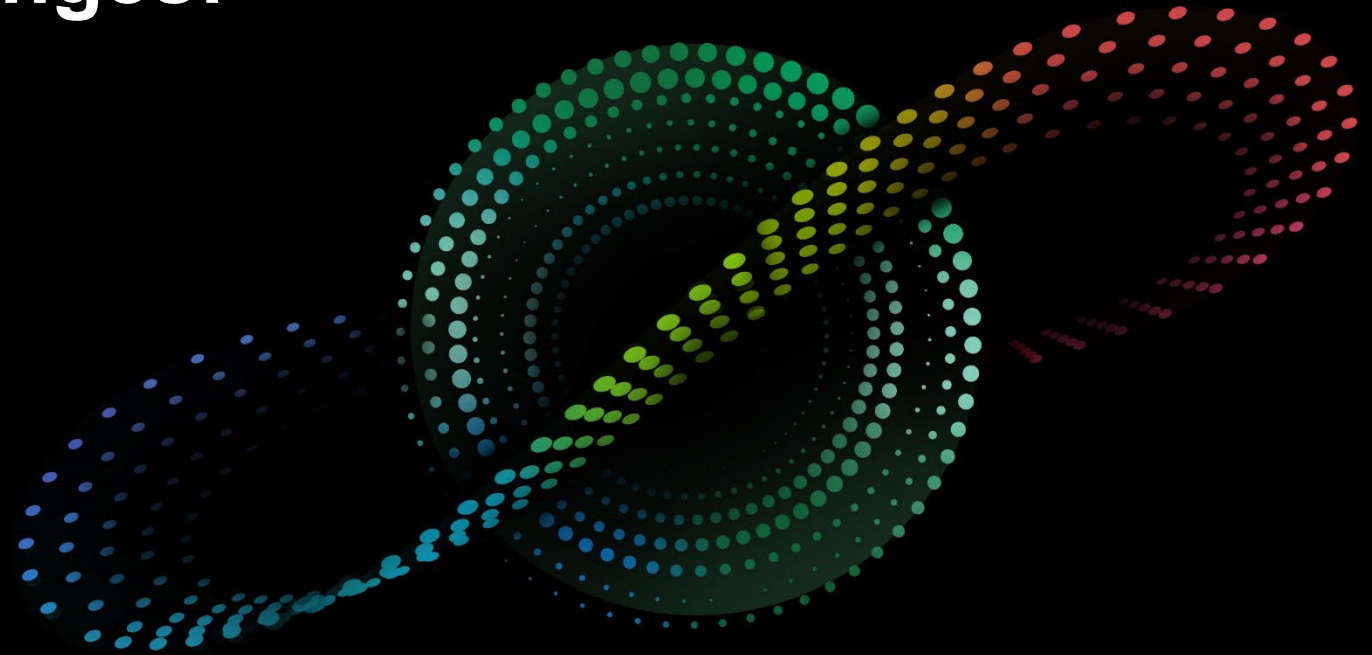





The Odyssey of Digital Transformation: Navigating through modern Data Center challenges!

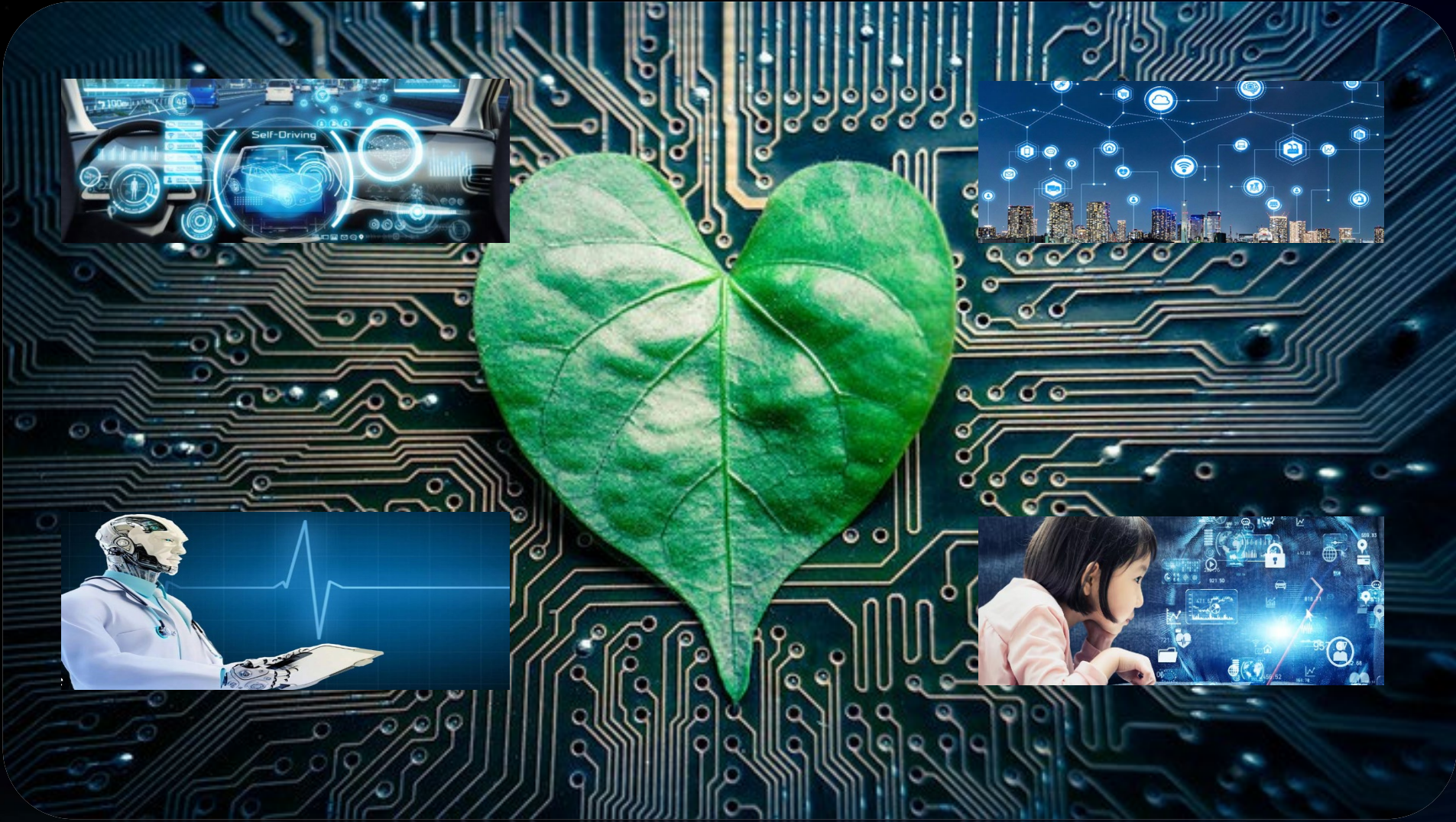


 December 14th, 2023

 Theodoros Theodoris

Head of Data Center Facilities South Balkan Region
Data Center Facilities

Explosive Growth of Data and Computing Power in the Intelligent Era Drives the High-Density and Large-Scale Development of Data Centers



01: YOUTUBE



23.7
HOURS / MONTH

02: FACEBOOK




19.6
HOURS / MONTH

03: WHATSAPP



18.6
HOURS / MONTH

04: INSTAGRAM




11.2
HOURS / MONTH

05: TIKTOK




19.6
HOURS / MONTH

06: FACEBOOK MESSENGER




3.0
HOURS / MONTH

07: TWITTER




5.1
HOURS / MONTH

08: TELEGRAM




3.0
HOURS / MONTH

09: LINE



11.6
HOURS / MONTH

10: SNAPCHAT



3.0
HOURS / MONTH

Challenges To Traditional Data Center Construction

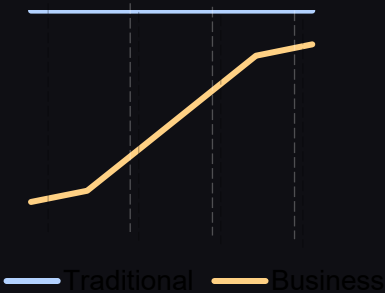
The construction time is long ,cannot match the IT evolution.

Long term construction

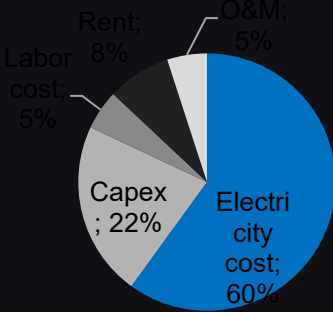


TTM > 20 months

One-time investment, no on-demand deployment



High resource consumption and high electricity costs



Annual power consumption

56M kWh

= 15,000 households annual electricity consumption

Annual water consumption

63k tons

= water for 300 households

High O&M costs and low manual O&M efficiency



O&M personnel shortage

> 61%

60% of data centers lack qualified O&M personnel.

Low resource utilization

< 65%

The SPC space usage is low.

Great security challenges and weak infrastructure



Power distribution is the primary guarantee of security

33%

33% of infrastructure disruptions due to power outages

Large losses due to network attacks

28 million/time

The data center loses US\$28 million each time a cyber attack occurs.

Sustainable – All Efficient: PUE → xUE, One Dimension → Multi-Dimensional System

Evaluation indicator: PUE → xUE

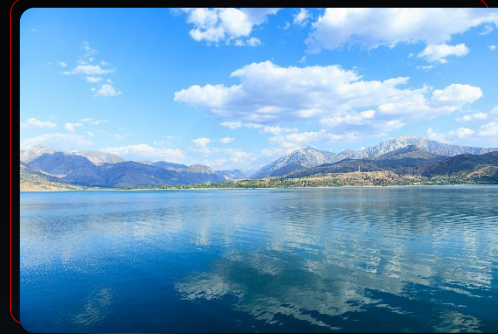
CUE



PUE



WUE



GUE



$$\mathbf{xUE: \alpha CUE | \beta PUE | \gamma WUE | \delta GUE | \dots}$$

CUE : Carbon Usage Effectiveness

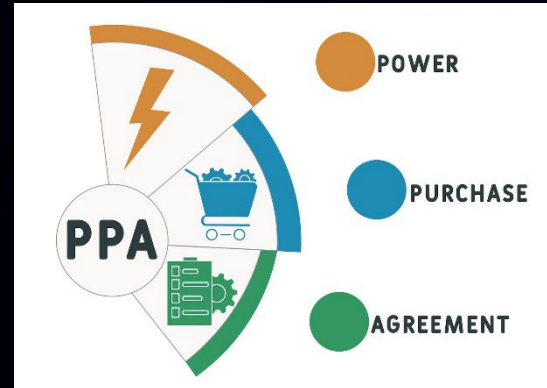
PUE: Power Usage Effectiveness

WUE: Water Usage Effectiveness

GUE: Grid Usage Effectiveness

$\alpha / \beta / \gamma / \delta$ are used to balance the importance of each indicator. The values vary with regions/industries.

Which Data Center Design Guidelines / Standard /Options to Follow?



None of the Above

GSSR, the Way to Future-proof a Data Center

Green

- Energy saving
- Space saving
- Carbon reduction

Simple

- Simple deployment
- Simple maintenance

Smart

- Smart O&M
- Smart optimization

Reliable

- Reliable architecture
- Preventive maintenance

Huawei Data Center Solution Portfolio

Green

Simple

Smart

Reliable

Large DC

Colo/OTT, carriers' IDC, bank headquarters DC, national data center, etc.

Small and medium DC

Education, healthcare, bank branches, and SME EDC, etc.

Critical power

Manufacturing, transportation, etc.

Smart power FusionPower



PowerPOD 3.0

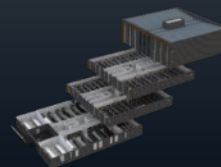
Smart cooling FusionCol



Indirect
Evaporative
Cooling EHU

High temperature
chilled water fan
wall

Prefabricated modular DC FusionDC



FusionDC1000C

Smart modular DC FusionModule



FusionModule2000



FusionModule800/500

Small and medium PMDC FusionDC



FusionDC1000A

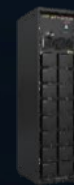
Smart power FusionPower



UPS5000



UPS2000



SmartLi



2kW
AC blade
50Ah
Blade battery

Smart management system



DCIM:NetEco6000

Huawei is Not Only a DC Vendor, but Also an Experienced DC Investor

Southwest (Gui'an)/24,000 racks



South China (Dongguan)/8,000 racks



All-round innovative solutions, like **Prefabricated Modular DC, Smart Power, Indirect Evaporative Cooling, AI-enabled Management System** have been widely applied to build green, reliable and smart cloud DC



Huawei Cloud DC

70,000 racks@560MW

North China (Ulanqab)/20000 racks



North China (Langfang)/10,000 racks



East China (Suzhou)/4,200 racks



Huawei Smart Modular DC Solutions



FusionModule2000 6.0, One-stop Solution for Small and Medium-sized DC



Simple

Simplified site selection, deployment, and O&M

Reliable

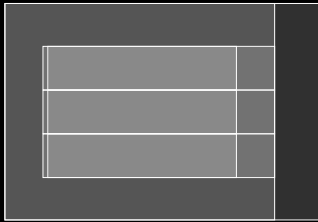
Reliable equipment and architecture, secure software

Swedish aesthetics design team

Simplified Site Selection: Low Environment Requirements

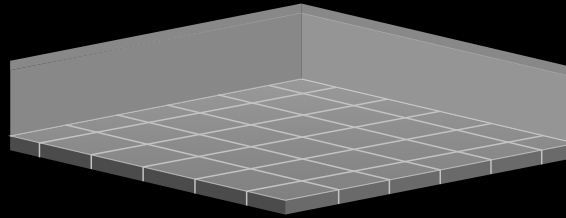
Less footprint

75.6m² → **64.8m²***



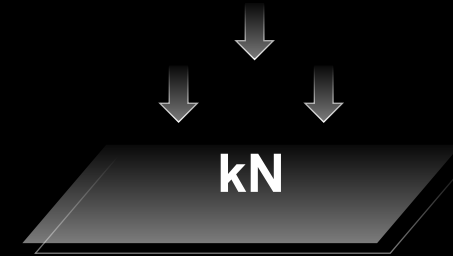
Lower height

3.0m → **2.6m**



Less weight

12kN → **8kN**



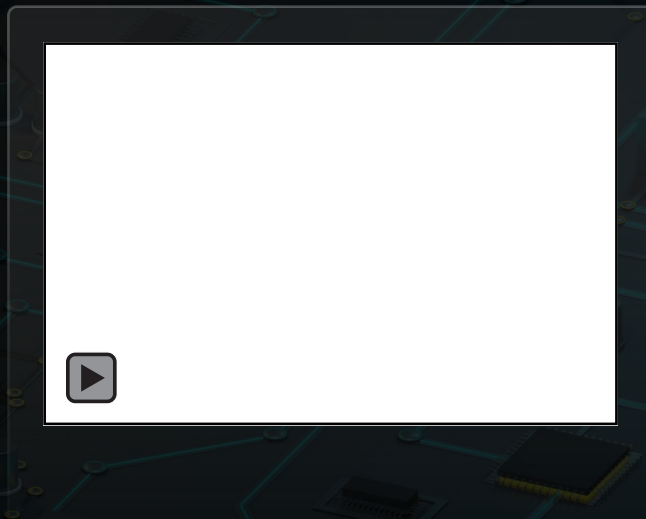
Non-Raised floor

Horizontal airflow

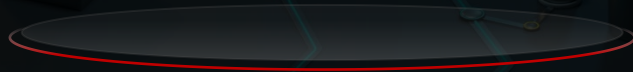


Reliable Facility: Safety Design for Power + Backup + Cooling

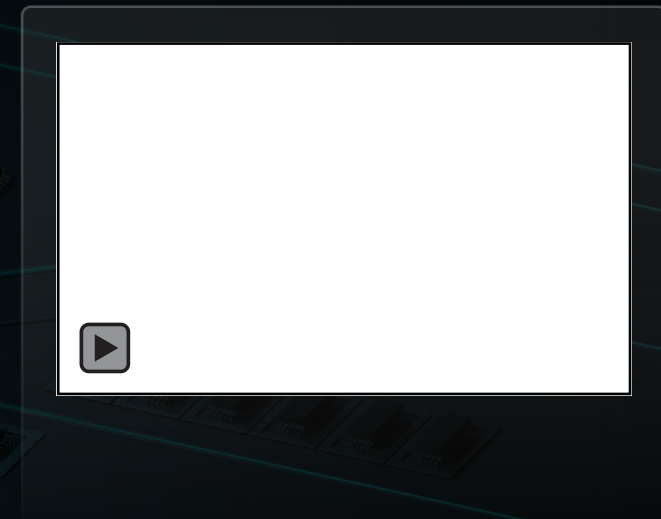
Reliable Power



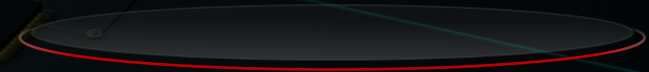
75 temperature measurement points
24-hour fault detection



Reliable Cooling



Real-time detection of refrigerant
prevents system breakdown due to high temperature



Reliable Architecture: Zero Service Interruption by Continuous Cooling

No fear of utility power outage

If the utility power supply fails, the UPS switches to battery mode with 0 ms transfer time

No system breakdown at high power density

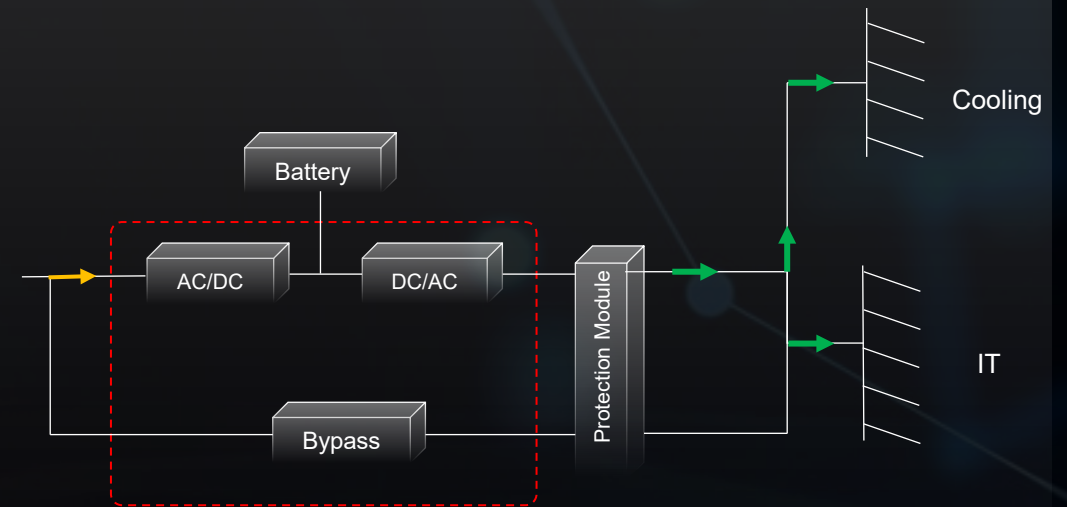
Up to 21 kW per cabinet matches the trend for high density

Prolonged equipment service life

Utility power purification prevents the impact of flashover on mechanical equipment

Continuous cooling architecture

Pool-based power system with on-demand mode selection ensures IT and cooling reliability



“Insanity is doing the same thing over and over again and expecting a different result.”

Vintage Approach



VS

Next Generation FusionModule800



Will RUE (Robot Usage Effectiveness) be the next Data Center Indicator?



$$RUE = \frac{\textit{Robots USED}}{\textit{O\&M persons required}}$$

You Deserve a DCAI**M!**

HUAW**EI**

You Deserve the BEST!

Large DC

Colo/OTT, carriers' IDC, bank headquarters DC, national data center, etc.

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PowerPOD 3.0

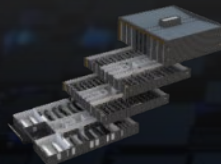
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AC blade 50Ah
Blade battery

HUAWEI

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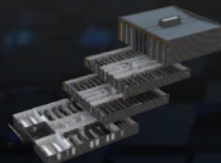
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UPS2000

Smart management system



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SmartLi



2kW
AC blade 50Ah
Blade battery

HUAWEI

**Lets Embrace a Win-Win Future
TOGETHER**

