



| **Tencent** |

 Tencent Cloud

# ***TMDC / T-Block***

***Tencent modular Data Center On The Road***

***Enso Li***

***2019.01.15***

# >>> Hyper Scale Datacenter Groups

*Largest DC groups of Asia Pacific*

*50+ DC in Global*

*More than 1M servers worldwide*

*10+ Core Cities*

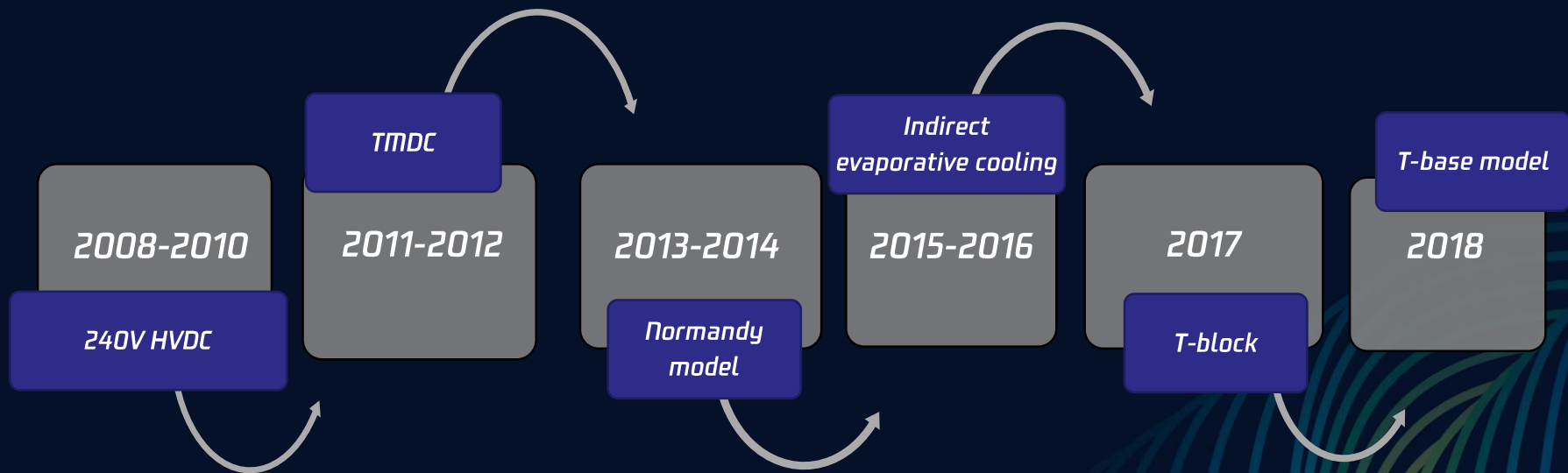
*TB level DCI*

*>100TB Internet Bandwidth*



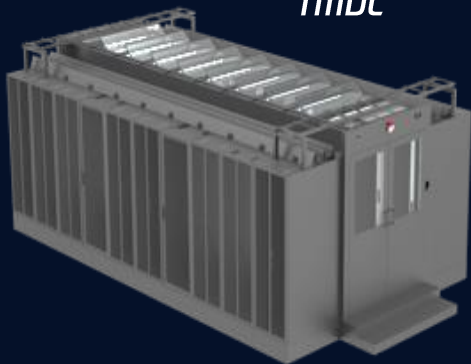
# >>> 10 years Tencent datacenter key words

*modularize*  *standardize*  *productize*



# >>> TMDC & HVDC deploy quantity

TMDC



100,000↑

4KW rack

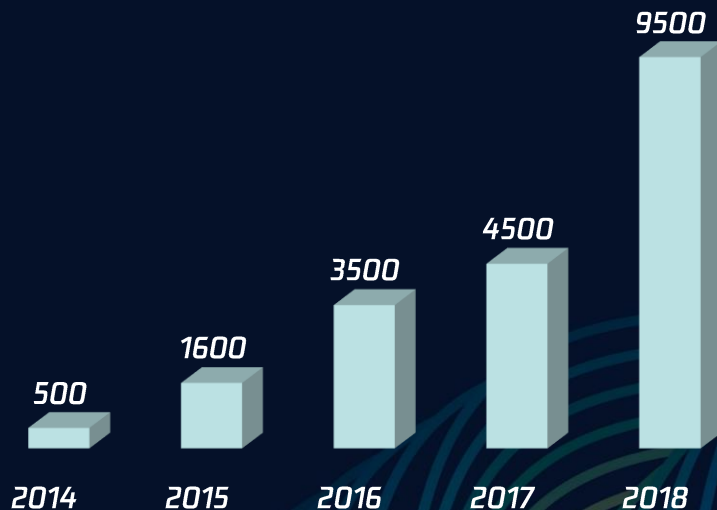
240V HVDC



200,000↑

4kw rack

TMDC accumulative total (sets)



Source: CAICT whitepaper

# >>> Tencent's 4 generations of data center

1<sup>st</sup>

- Traditional UPS & Chiller
- Raise floor design



2<sup>nd</sup>

- Waterside & Fan wall free cooling
- HVDC and directly grid power



3<sup>rd</sup>

- Tencent MDC
- Normandy model



4<sup>th</sup>

- T-block
- T-base model



# >>> Tencent Modular Data Center G3

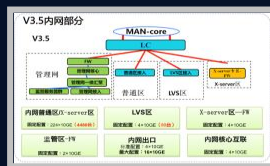
## Tencent Modular Data Center



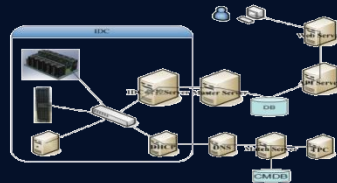
Micro Module



AC+HVDC  
High Voltage DC



V3.5v Network  
cluster

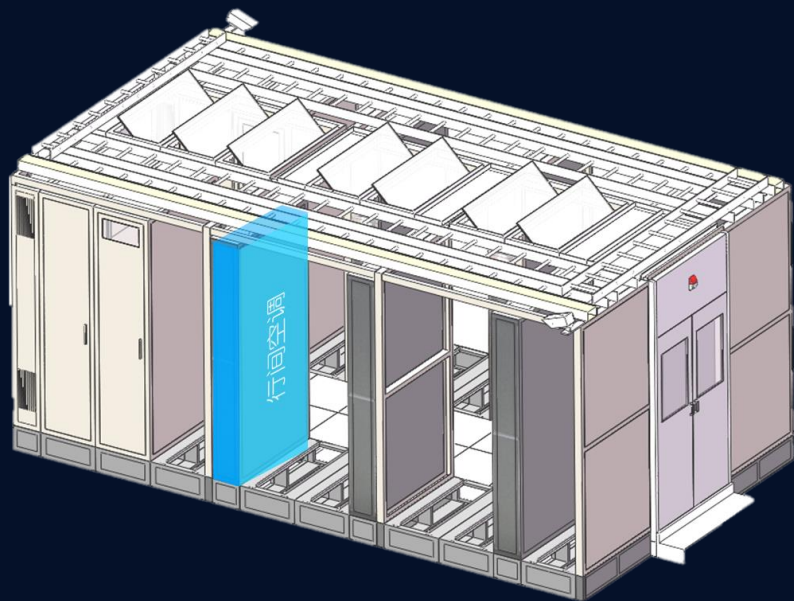


Nebula  
Monitoring system

Industrialized/ Modularized/ Standardized/Decoupling of facility and IT/Fast/Flexible/Low Cost

Productized and standardized at data hall scale first

# >>> TMDC Design Key Points



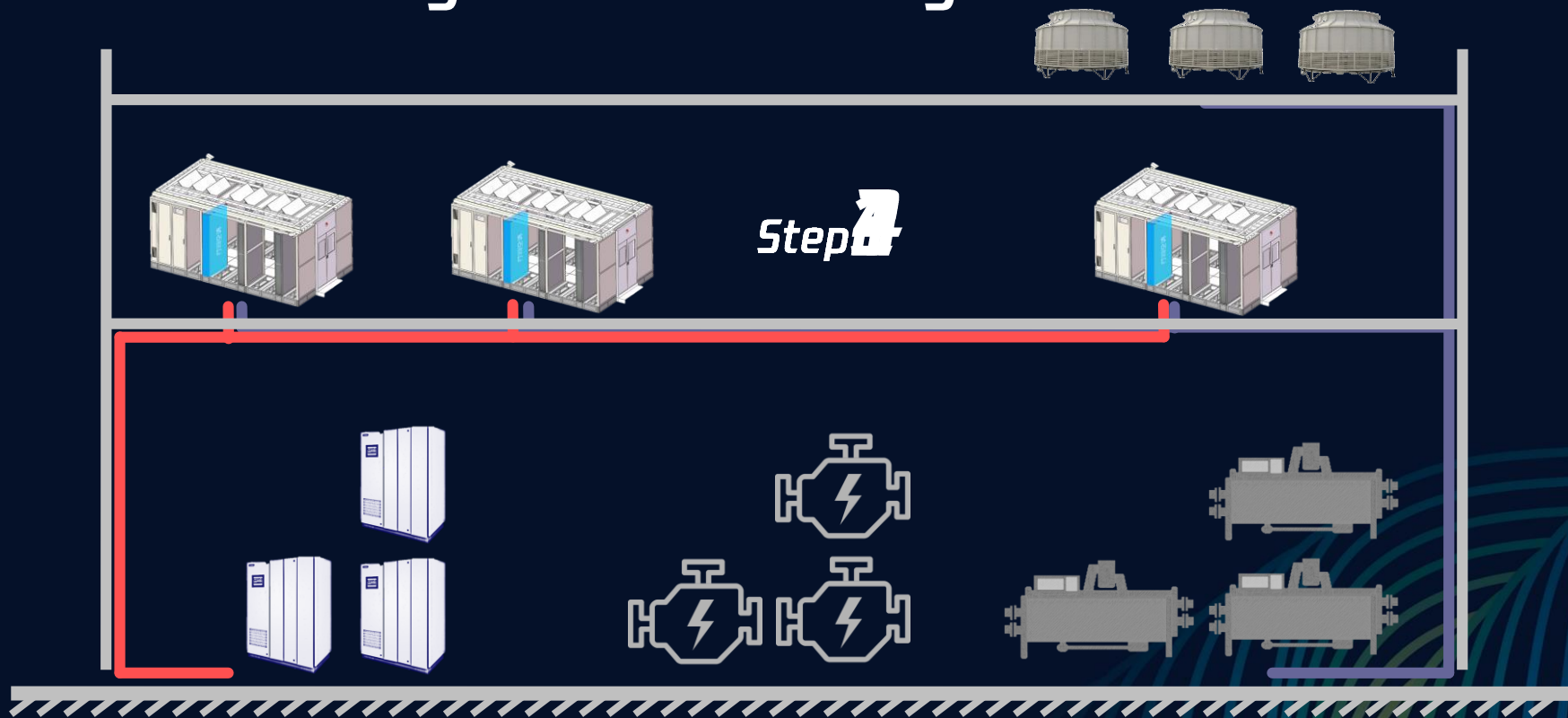
- ▶ *Productized - IT End facility package as a standard product, split out from building facility. **R18 & R12 medium & high density.***
- ▶ *Modularized – Adopt common commercial module/parts, **standardized and flexible configuration**, support Online expansion*
- ▶ *No UPS: Direct City Power to Server, **HVDC backup, Power efficiently over 97%***
- ▶ ***In-row cooling**, shorten air-flow distance, improved cooling efficiency*
- ▶ *Fits most of factory building condition, easy assemble, disassemble, renovate and move*
- ▶ *Fully operate independently, support hot-pluggable replacement, **smart control nebula***

# Typical 3<sup>rd</sup> Generation TMDC Datacenter Campus

- ▶ 10MW \*n
- ▶ 20,000~25,000 servers\*n
- ▶ 2\* 10KV power feed\*n
- ▶ 2 layers building

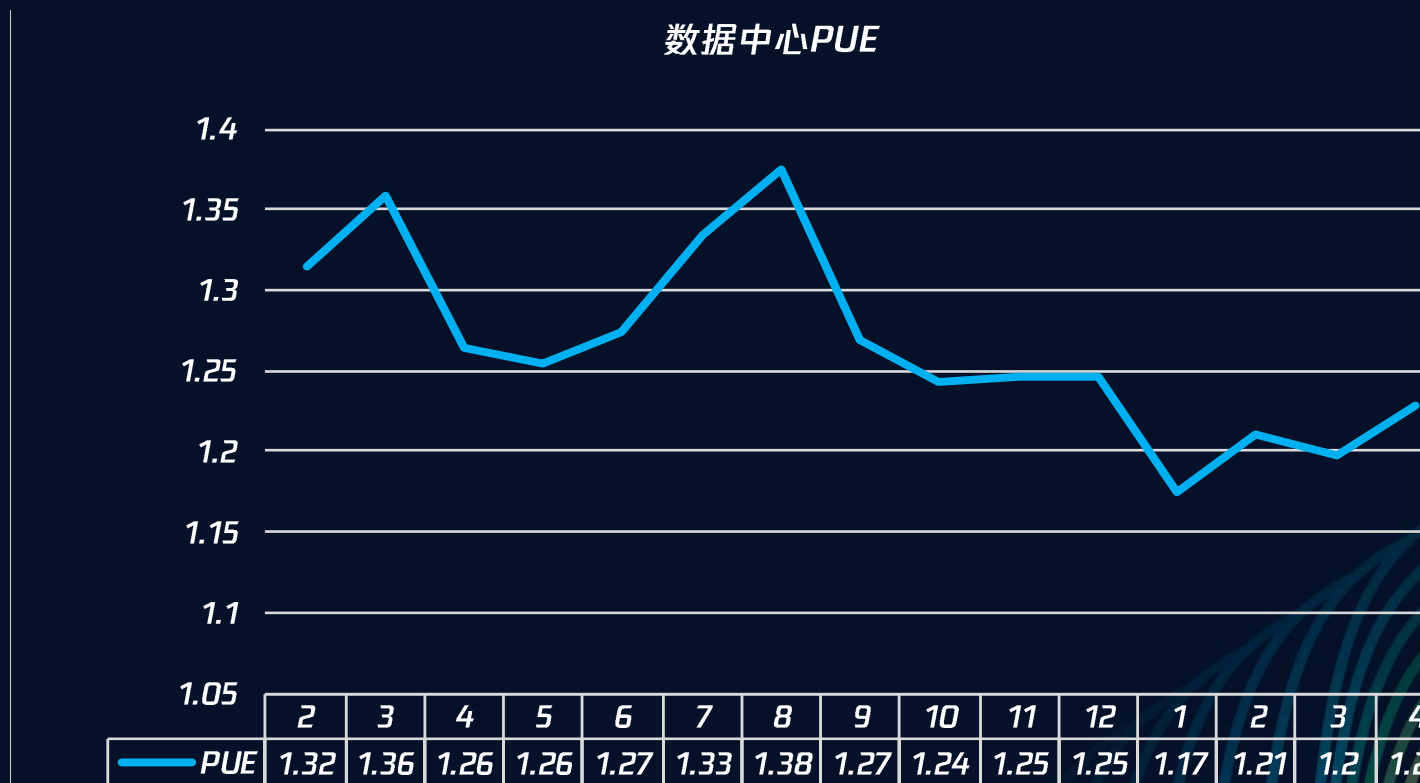
*Normandy best practice datacenter model*

# >> Fast Delivery with Flexibility



# >>> Typical TMDC datacenter PUE

数据中心PUE



# 》》Tencent 4th Generation Datacenter Requirement

*Mega scale, Fast deliver, Better TCO, High efficiency, Automated operation...*



*Scale: Meet Tencent cloud massive and various demand*



*Deliver: Shorten construction time as soon as possible*



*TCO: Lower the Capex and Opex, get more IT output*



*Capability: high reliability, more efficient operation, lower pue*

*Traditional datacenter model is not sustainable, we need to move on*

# 》》 Tencent T-base Campus Model

T-block Box

T-block building

T-base campus

T-block Box

...

T-block Box

T-block building

...

T-block Box

...

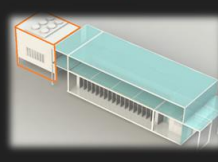
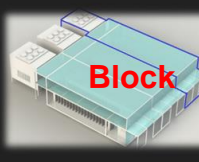
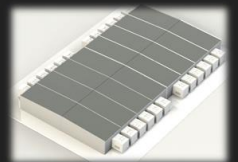
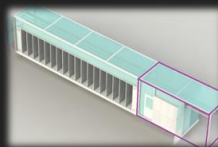
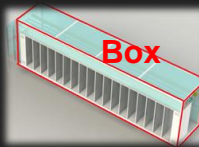
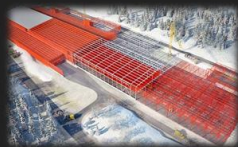
T-block Box

T-block building

...

T-block Box

T-block : 搭积木般完成一个智能高效的产品化数据中心



T-block: A solution for next generation IDC

T-base: base on T-block technology IDC campus

方仓级



模块级



机库级



园区级

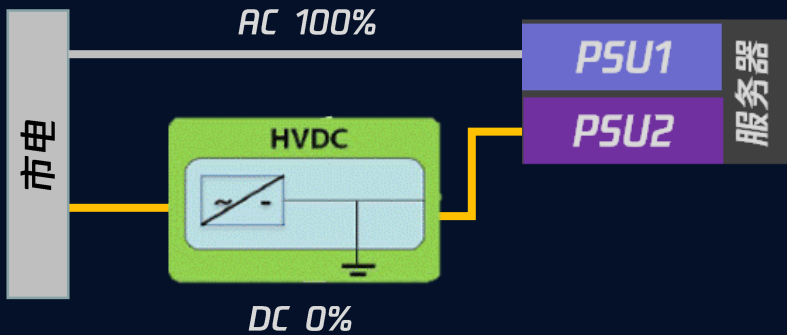
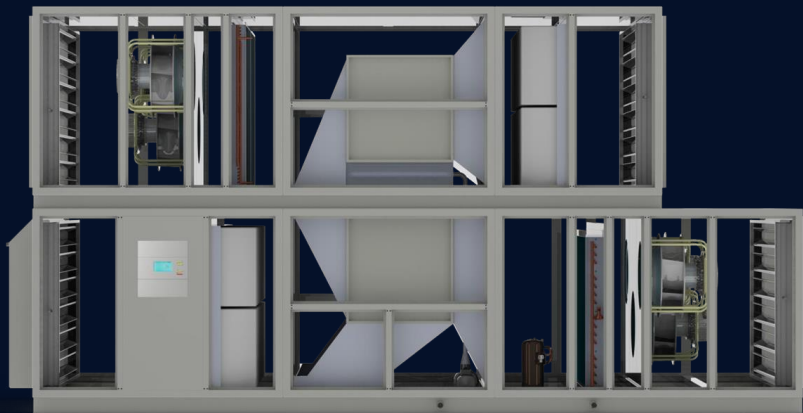
Box

Block

Building

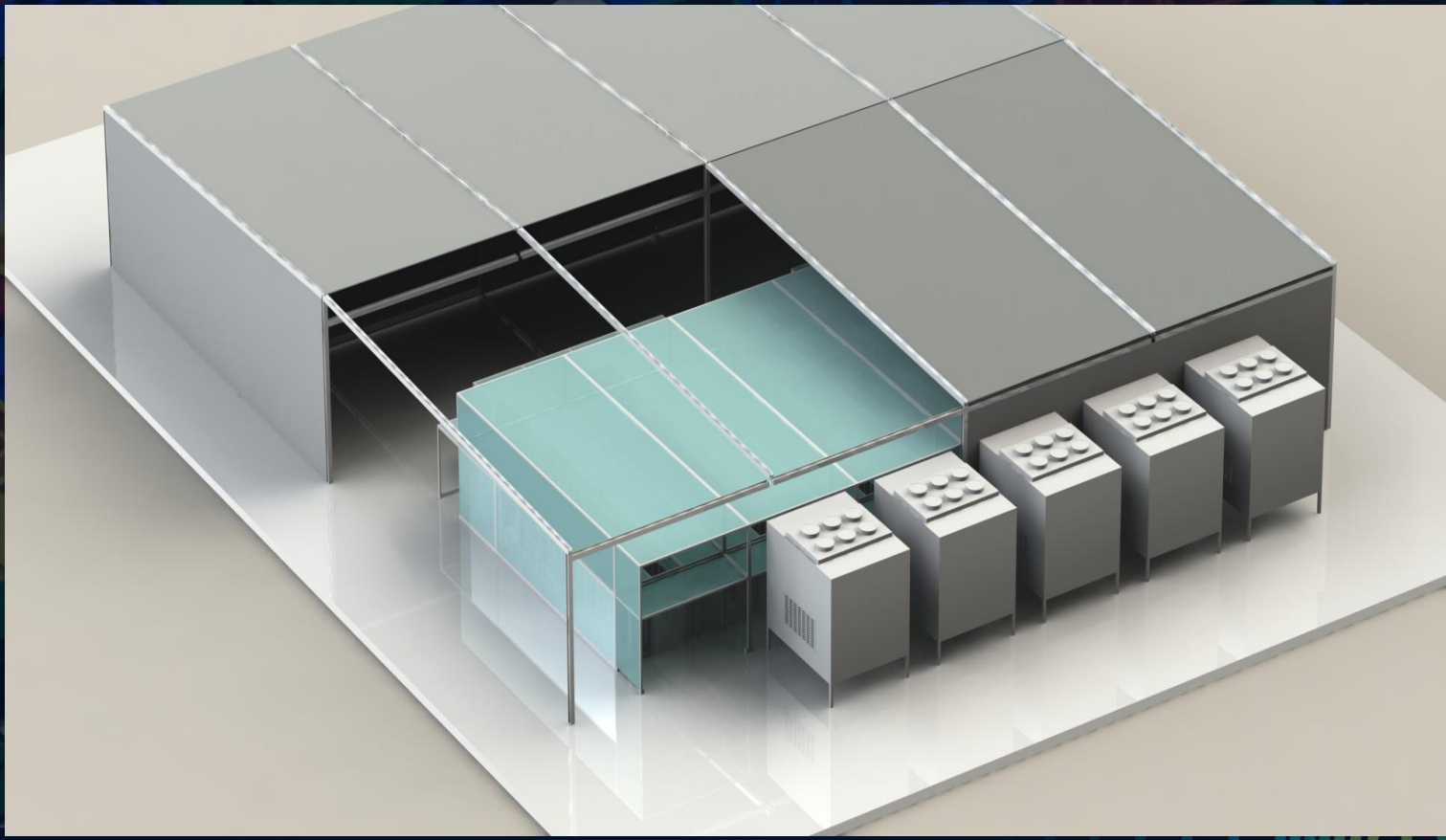
Base

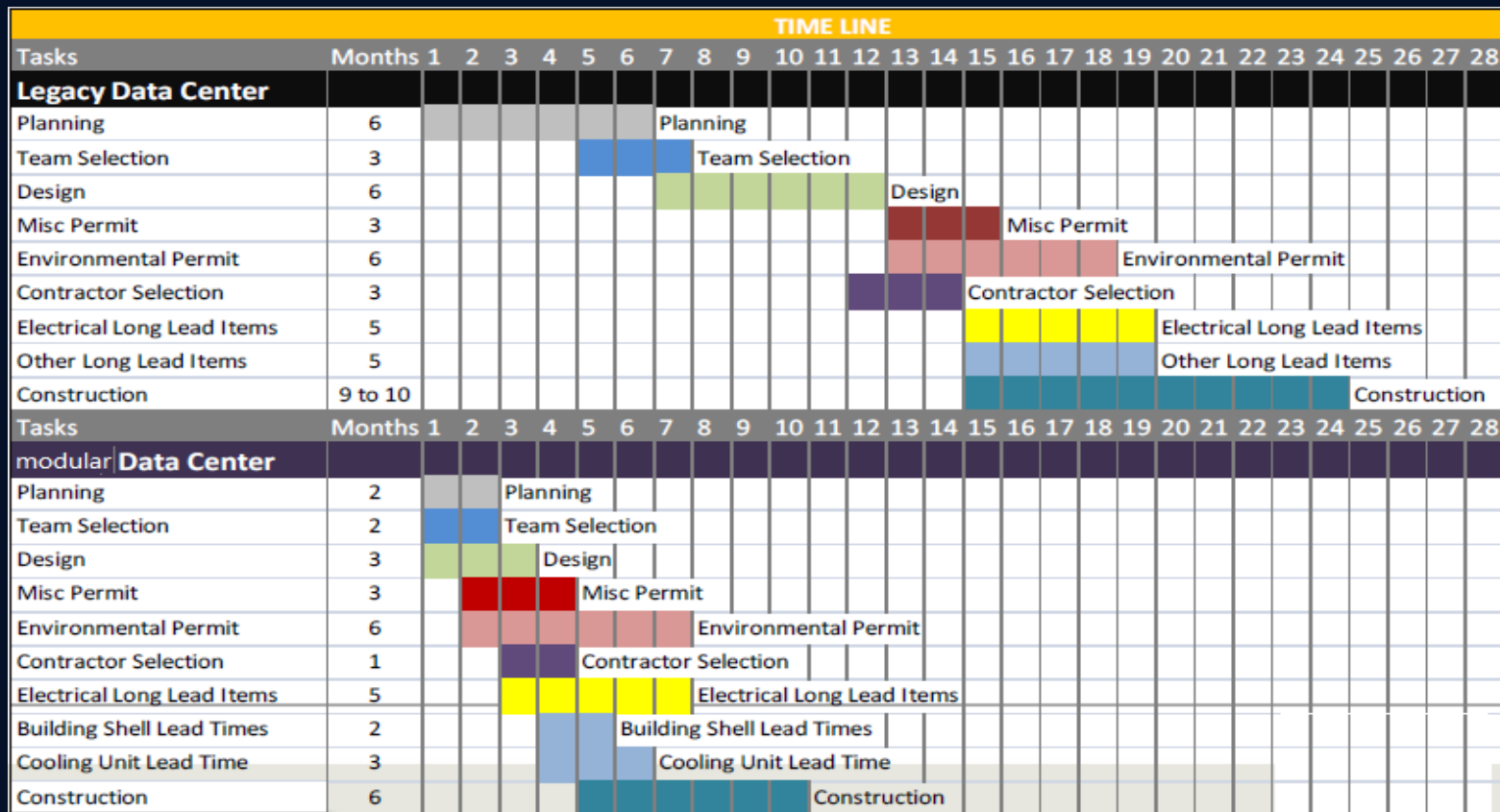
# >>> High efficiency technology



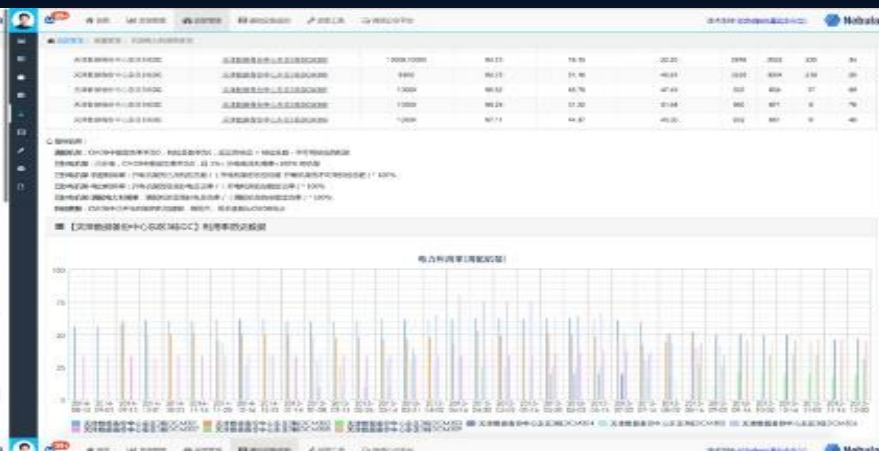
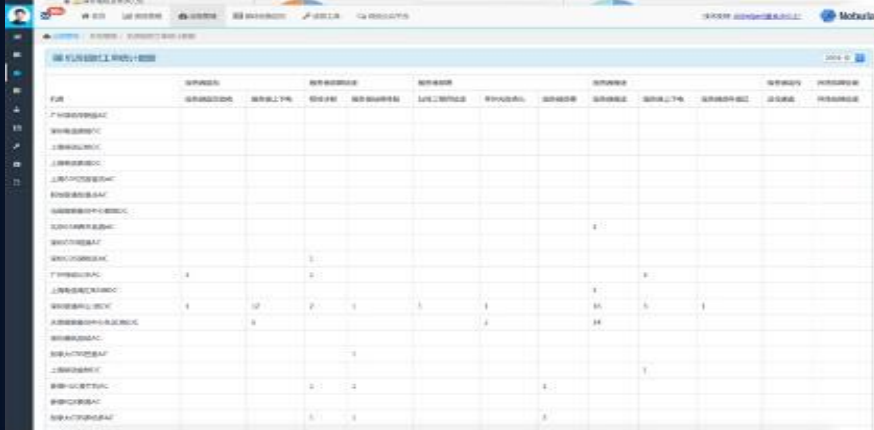
- Indirect Evaporative Cooling
- No chiller and standardized/Productized
- N+1 power/cooling & easy maintenance
- No air contamination by exchanger
- More free cooling and better PUE
- Pay as you grow and good TCO
- AC+240V HVDC get good efficiency
- Granularity/Precise control/Fast deliver
- PUE less than 1.2 at most place

# >> *Building blocks for T-block data hall module*

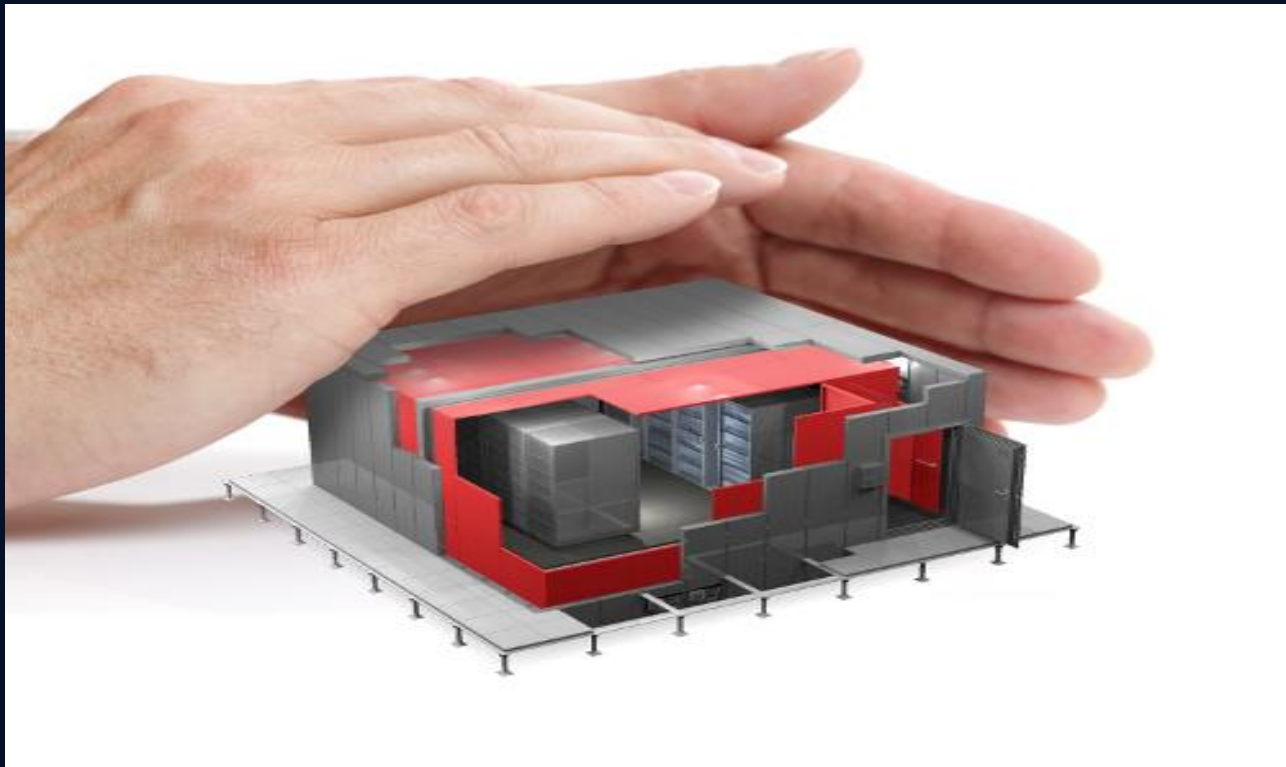




» *Besides hardware, data can talk*



# >> *Open and standardize the south and north interface*



*With OCP, We build the hardware and software ecosystem.*

# ***Thank You***



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