



SMART SOLUTIONS FOR DATACENTER COMMISSIONING

« The vision that commissioning can be done differently »

SAVE RESOURCES BUILDING DATA CENTERS : 5 KEYS TO BE MORE EFFICIENT IN COMMISSIONING TEST PHASES

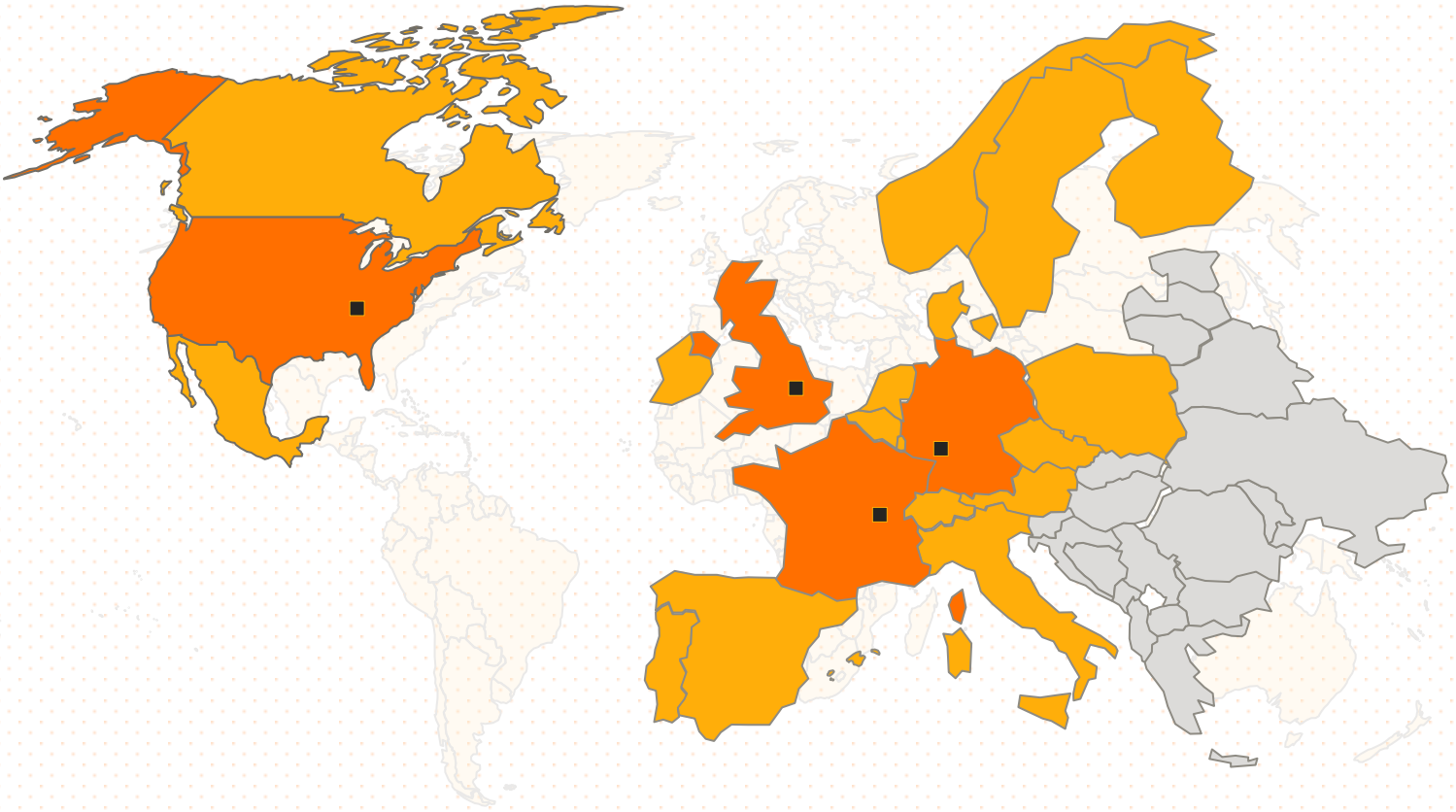


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RENTALOAD | WHO WE ARE

Worldwide leader in load bank rental services



150MW
FROM 6KW TO SEVERAL
MW UNITS,
MANUFACTURED
IN-HOUSE

95%
OF SATISFIED
CUSTOMERS

200+
PROJECTS
PER YEAR

RENTALOAD | RE-INVENTING COMMISSIONING

High pace of innovation with one novelty every 6 months.



7 kW

1st rackable
load bank range



6 kW

1st connected
load bank range



21 kW

1st smart floor-
standing load banks



100/200/300 kW

1st Low delta T
load banks range

D.C TO BE DELIVERED IN SCANDINAVIAN COUNTRIES

Majors D.C projects total value to be delivered in Denmark, Norway, Sweden, Finland.



3.3B

US\$

Project Value
to be delivered in 2024

3.4B

US\$

Project Value
to be delivered in 2025

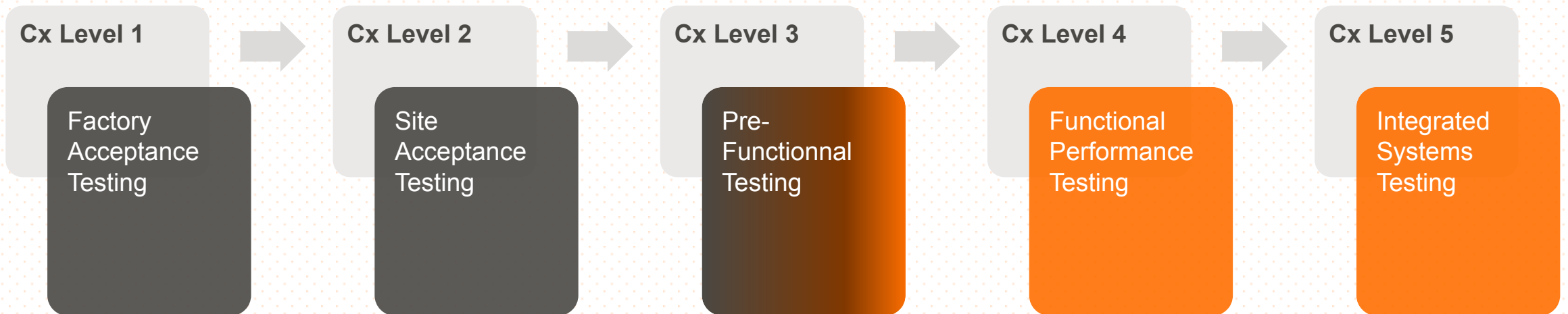
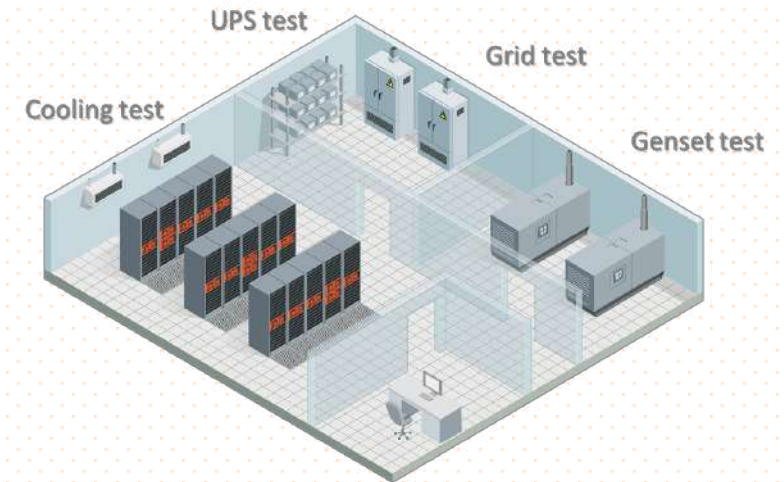
8.3B

US\$

Project Value announced
for 2026 and beyond

COMMISSIONING (Cx) DEFINITION

“Commissioning is verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the needs of the owner.” - ASHRAE

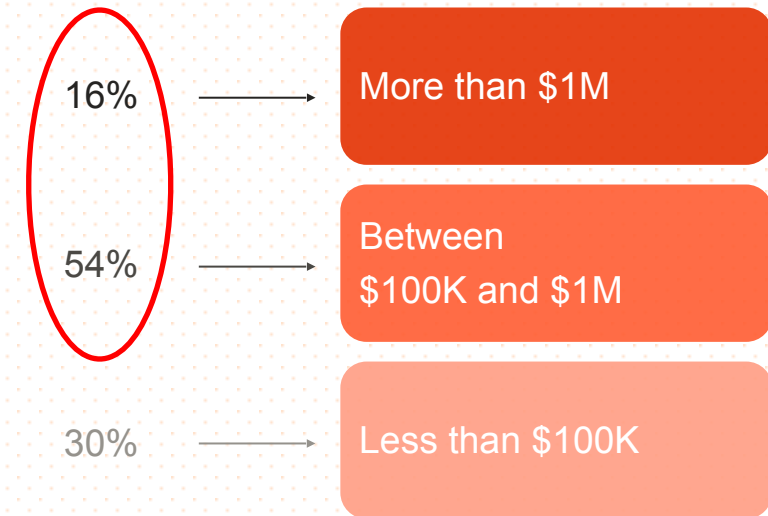


COMMISSIONING (Cx) BENEFITS

- Make sure what has been delivered matches the original design.
- Make sure the design is working.
- Highlight what **mechanical and electrical systems** can perform and how it will react when going beyond the original requirements.
- Enable to **test without risking outage on critical IT loads** how the facility will perform throughout the rest of its life
- Give an opportunity for operation teams to become familiar with how systems operate and to test and **verify their operational procedures**.
- The commissioning process also **determines the performance limits of a data center** and helps **fine tuning** the electrical and cooling settings.
- A properly commissioned data center “shut the door” to **expensive and disruptive downtimes**.

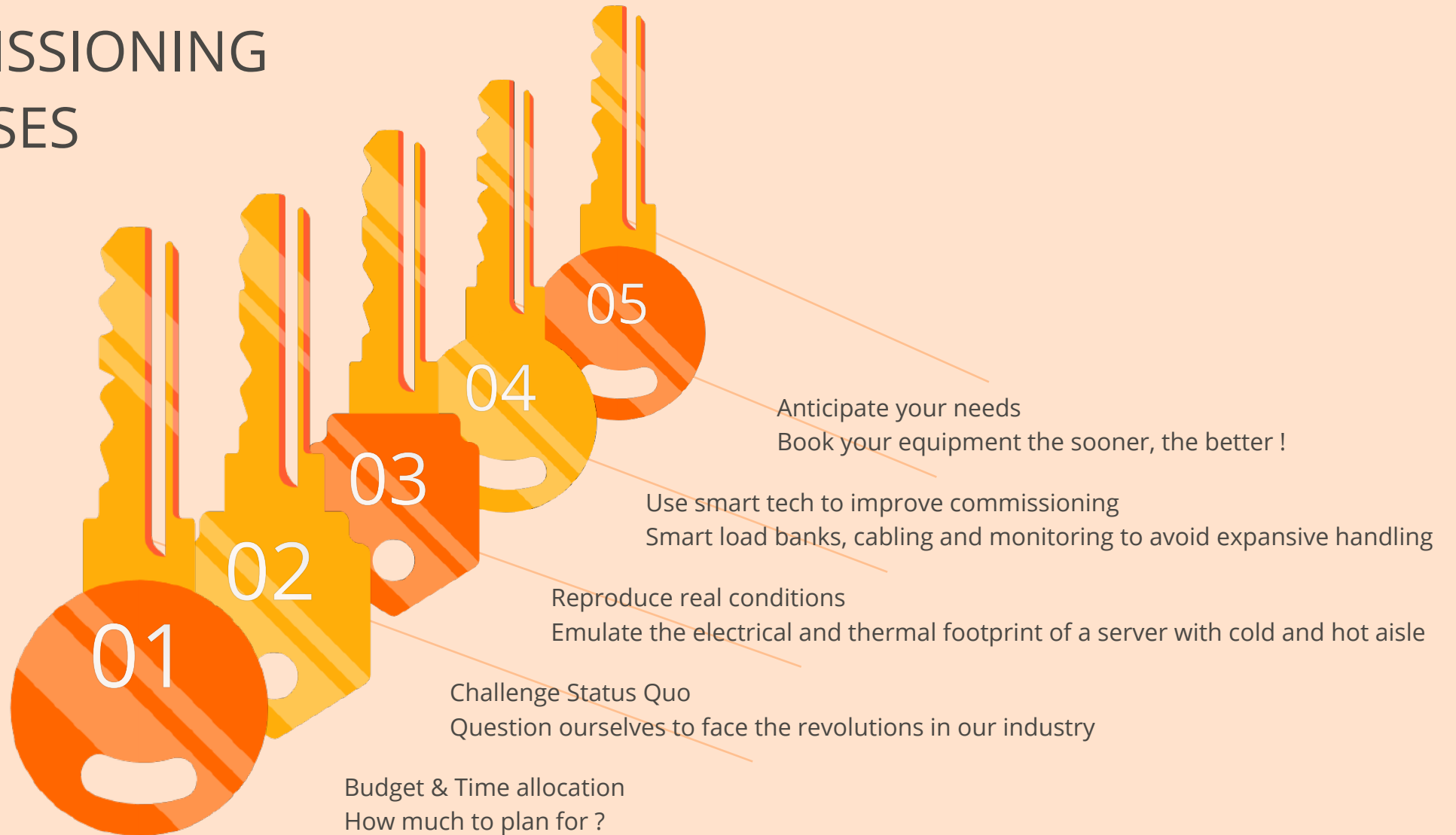
DOWNTIME COSTS (per % of outage)

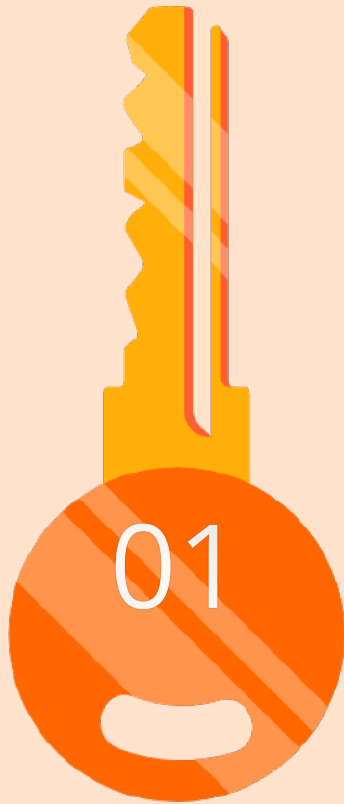
70% downtimes cost more than \$100k per downtime !



Source: UPTIME INSTITUTE ANNUAL OUTAGE ANALYSIS 2024

5 KEYS TO BE MORE EFFICIENT IN COMMISSIONING TEST PHASES





KEY#1 | Budget & time Allocation

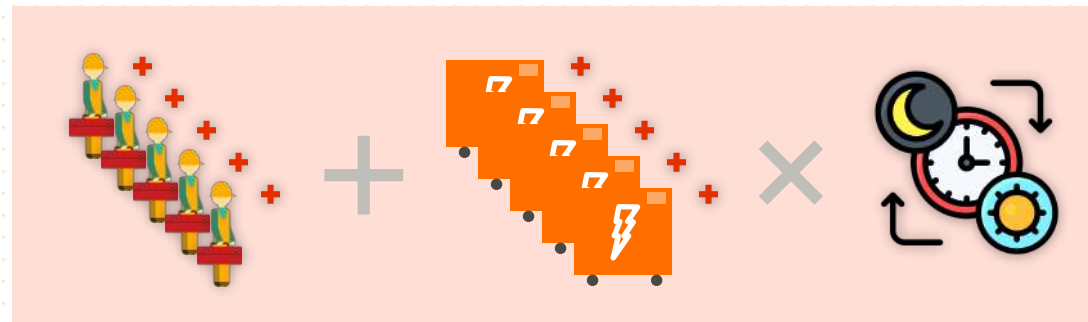
KEY#1 BUDGET & TIME ALLOCATION

Secure a comfortable budget to deal with potential hazards. From our experience, a very large majority of commissioning projects face unforeseen events causing:

- **Delays** in completing the level 4 & 5 stages :



- **Additional cost** due to additional resources to catch up :



KEY#1 FIGURES

3,5%

Industry experts agree that the ideal commissioning budget for L4+L5 complex data center tests should be **about 3.5% of total construction costs.**

+15% to +30%

Total commissioning time
due to delay.



KEY#2 | Challenge Status Quo

KEY#2 CHALLENGE STATUS QUO

- Rely on ecosystem of experts :
 - Experienced Commissioning Agents
 - Mechanical & Electrical Engineering companies specialized in DC
 - Reknown supplier in the data center industry
- To challenge existing methods of testing :
 - ROE of customers to test the building as a whole because of issues by the past.
 - New design (HPC, liquid cooling, skid systems) requiring new approach (higher density to address, granularity variations...)



KEY#2 FIGURES

30MW

Data Center.

100kW

Per rack.



KEY#3 | Reproduce Real Conditions

KEY#3 REPRODUCE REAL CONDITIONS

Use load banks that **reproduce the most accurately possible the electrical and thermal footprint of a server** :

- Accurate load selection
- Variable & Low Delta T
- Right Airflow



Try to create test conditions which will be the mirror of reality :

=> Use temporary solutions to build cold and hot aisles containments



Test the “ramp up effect” on the cooling and mechanical systems :

=> Implement gradual loads thanks to load banks offering a wide granularity



KEY#3 FIGURES

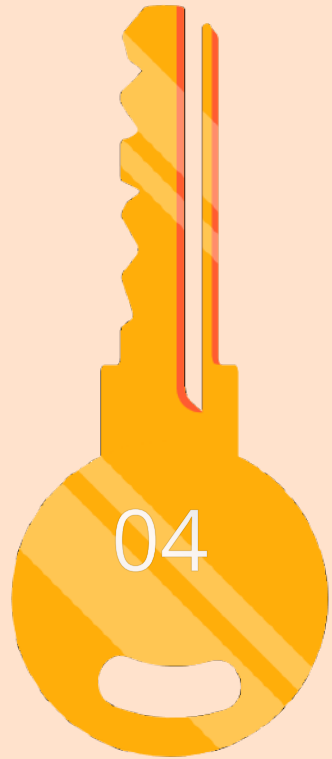
+12°C to +20°C

Delta T

when using rackable load banks
specially designed for DCs.

From 0,5 kw

To perfectly select
requested power load

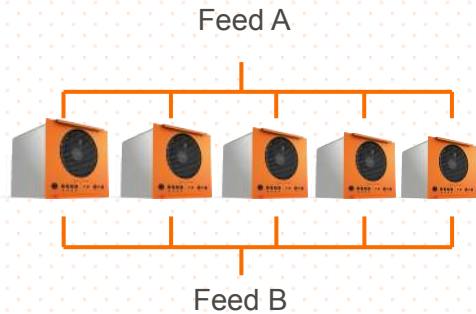


KEY#4 | Use Tech. To Improve Commissioning

KEY#4 USE TECHNOLOGY TO IMPROVE COMMISSIONING

SMART LOAD BANKS

Double chain = Time saving



SMART CABLING

Standardized powerlocks 20m cables
Tails (powerlock to lug 2m termination)
Distribution board



SMART MONITORING

Ekkosense = Temperature sensors and 3D data hall visualization



Remote control thanks to connected load banks and supervision = less handling and less risks.



KEY#4 FIGURES

Up to **20%**

Time saving
on commissioning test phase 4 & 5
thanks to smart solutions

25k€ to 50k€

Savings
per MW tested



KEY#5 | Anticipate your needs

ANTICIPATE YOUR NEEDS

- Make sure you secure your fleet, the sooner the better :
 - standard project : no later than 3 months before
 - complex project : no later than 6 months before
 - “prototype” project : no later than 10 to 12 months before
- Anticipate planning and needs in terms of :
 - What ?
 - global power requested
 - granularity of load banks (7kw, 21kw, 200kw...)
 - quantity of load banks
 - accessories (cables, deflectors, switch boards, containment).
 - When ?
 - test starting dates
 - test ending dates
 - phases agenda



KEY#5 FIGURES

Up to **1,000**

Units of 21 kW load banks
to test simultaneously
multiple data rooms.

3100 MW

To be built in FLAP-D
in the 3 coming years

KEY TAKE AWAY

KEY#1

BUDGET & TIME ALLOCATION

Allocate a comfortable budget & time to be able to deal with potential hazards.



KEY#2

CHALLENGE STATUS QUO

Surround yourself with an ecosystem of datacenters experts to face new challenges.



KEY#3

REPRODUCE REAL CONDITIONS

Choose the right partners and solutions that will enable you to reduce uncertainties.



KEY#4

USE TECH. TO IMPROVE COMMISSIONING

Smart commissioning is done with smart equipments.



KEY#5

ANTICIPATE YOUR NEEDS

Secure your load bank fleet, the sooner the better.



RENTALOAD | THEY TRUST US



RENTALOAD I THANKS !

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