



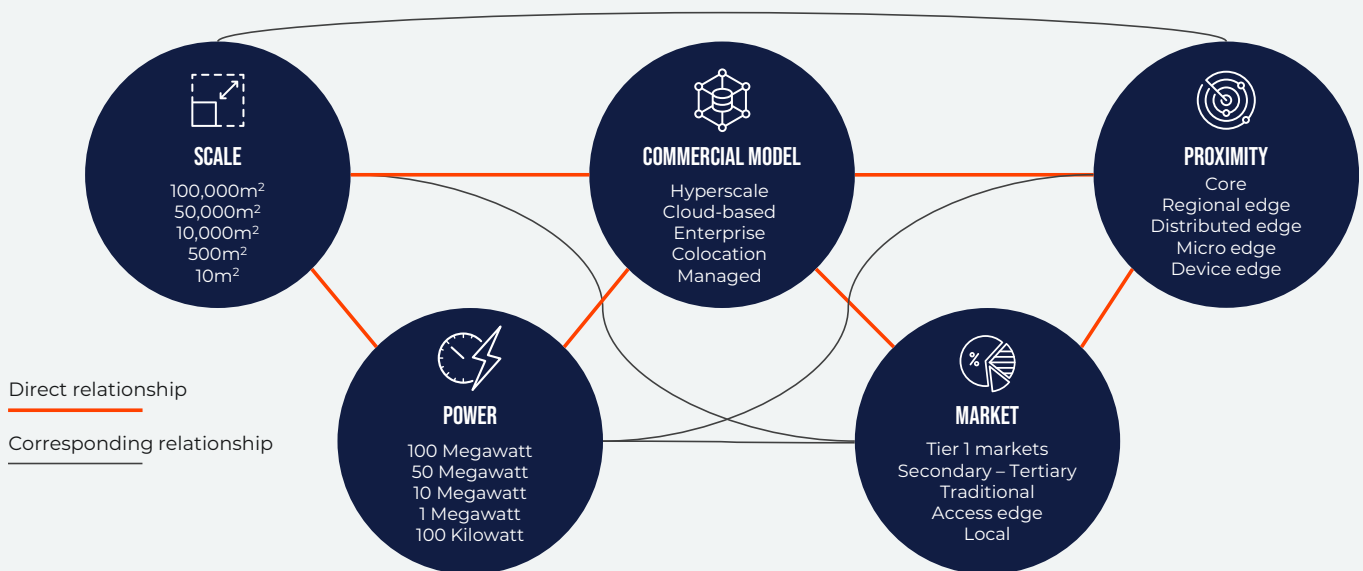
> THE PROPTech CONNECTION

TECH AS A USP

MICRO TRENDS IN DATA GROWTH

DATA CENTERS:

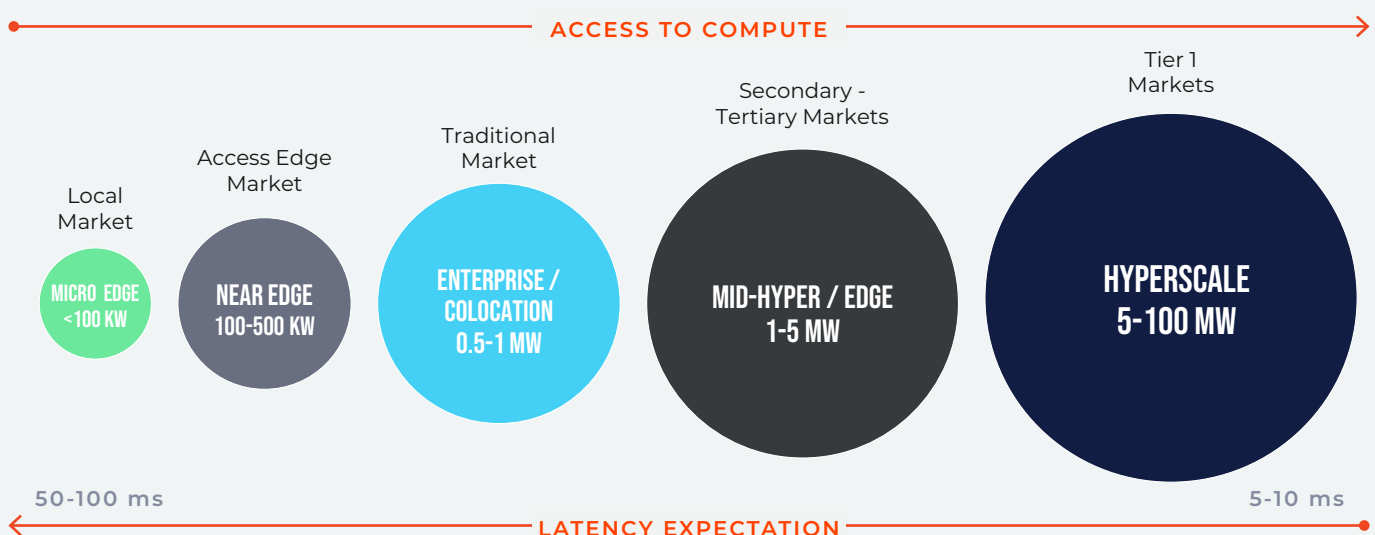
DIFFERENT MODELS TO SERVICE DIVERGENT CUSTOMER NEEDS



Many newcomers incorrectly assume one data center is much like another. Although all process data in some way there are often little customer or tech overlaps between a hyperscale data center and micro-edge device.

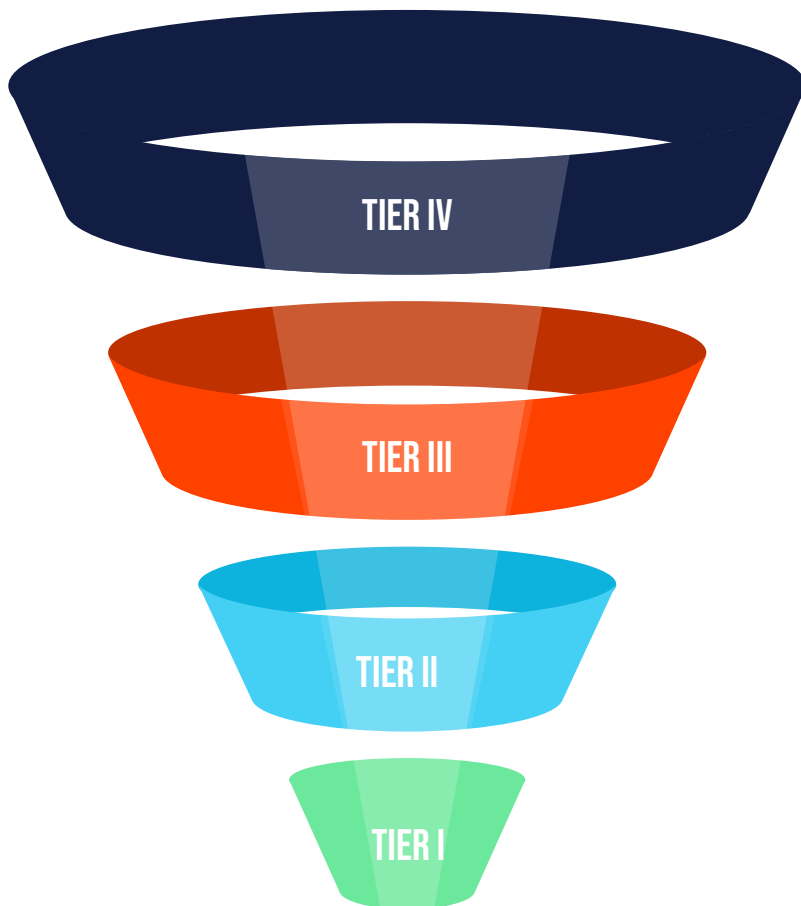
At the PTC we have found that there are more strategic factors ahead of pure data center nomenclature for stakeholders including investors, customers, or suppliers to consider. Often these factors are highly interdependent.

In our previous report (Data Centers in 2035) we looked at some of the tech advancements in the sector. In this report we take this a stage further and consider how a particular technology can help provide differentiation in a busy market and increase market share, pricing ability + strategic advantages.



DATA CENTER TIERS

STILL RELEVANT OR FROM A BYGONE AGE?



FAULT TOLERANT

Highest level of resilience, approx. uptime 99.995%

CONCURRENTLY MAINTAINABLE

Allows maintenance during operations, approx. uptime 99.982%

REDUNDANT CAPACITY

Includes redundancy in power + cooling, approx. uptime 99.741%

BASIC CAPACITY

Basic infrastructure, no redundancy systems

Historically data centers have been assigned a tier based on a number of factors with uptime percentage being the key metric.

Increasingly we have seen uptime achieved through interconnected network infrastructure rather than expensive tier certifications and this seems to be more relevant with current business models and customer needs.

Hyperscale providers now bypass tier systems, using custom criteria for data center selection. While Tier 4 remains crucial for mission-critical operations in finance and healthcare, its premium costs are harder to justify.

Networks of Tier 2 + 3 centers can deliver comparable reliability at lower costs. The Uptime Institute's Tier 4 certification does not consider ongoing maintenance costs, and consistent uptime depends more on management + tech investment than tier level.

IMPROVEMENT: WHICH TECHNOLOGY CAN IMPACT ROI TODAY?

Some tech, although new, has already demonstrated sufficient traction and payback potential to deliver real value now for new data centers or retrofits of legacy premises.

THE 05 TECHS IMPROVERS CURRENTLY BEING ROLLED OUT IN THE SECTOR

01. FIBER OPTICS

Despite the emergence of 5G and wireless core connectivity, heavy data transfer is still most effective in cables. Updated cabling married to optimised management, routing, and innovation within a data center is still the best route to improve connectivity.

02. SOFTWARE DEFINED NETWORKS

Software Defined Networks (SDNs) are a key enabler of dynamic load balancing in the more interconnected networks necessary to service enterprise client needs. Their use can drive latency-sensitive workloads and increase resilience.

03. HIGH PERFORMANCE COMPUTING COOLING

Cooling hardware has always been a key element of data center resilience and performance. Innovation in liquid-air, D2C and immersion cooling designed for today's HPC use case leads to immediate costs savings and the ability to increase rack density.

04. UPS/ BATTERIES

The cost (and reputational damage) of downtime increases advancements in battery technologies and UPS systems which can have a material impact on cost and resilience metrics. Strategic choices are now available between shorter duration tools (where wider network may be the back-up) or longer duration options which can reduce the need for generators.

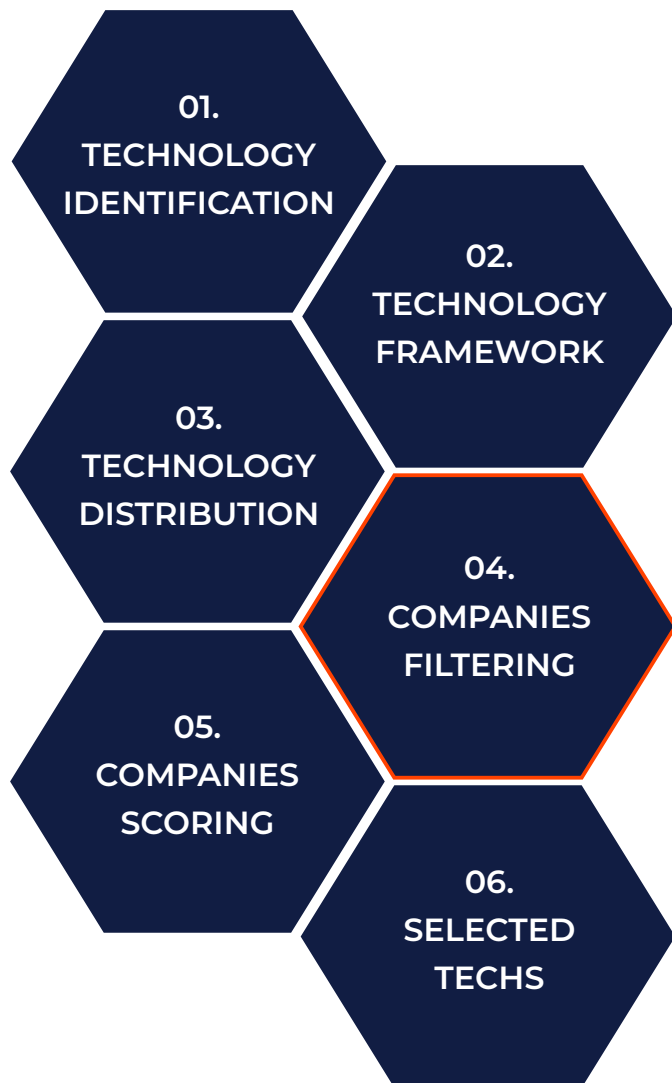
05. ENERGY MANAGEMENT SYSTEMS

Given the scope of larger data center operations, EMS is becoming core to operators within facilities. Marrying facility level EMS to a wider network through a Virtual Power Plant structure is a way of reducing cost, stabilizing grid issues, and accelerating renewables use in the sector.

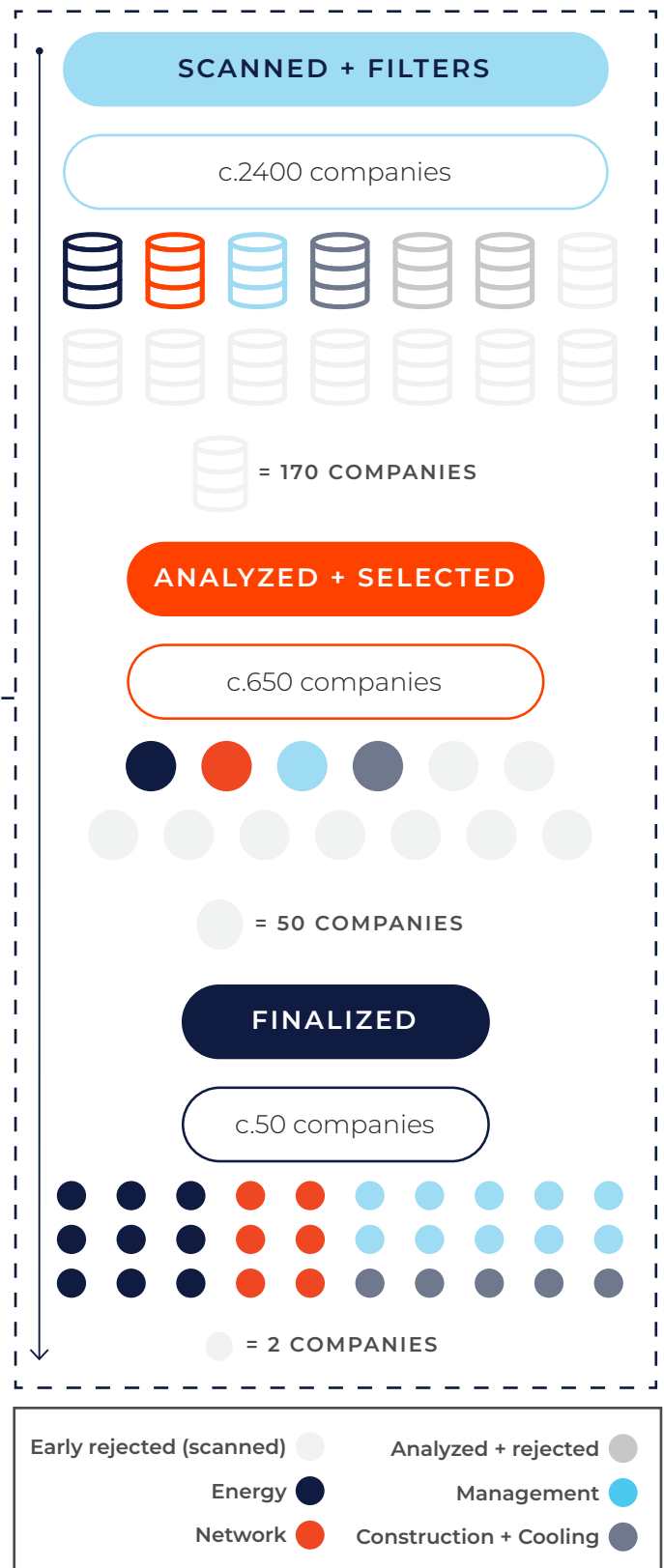
SELECTED TECHS:

HOW WE ANALYSE THE DC TECH SPACE

OUR 6-STAGE EVALUATION METHODOLOGY



At The PTC we have assessed over 19,000 tech solutions and there is no one-size-fits-all. Each client (let alone sector) has a unique set of issues, challenges, and tech readiness which we build into our existing technology assessment process. This means we can objectively present a shortlist of real tech solutions that best meet a client's use case and needs.



DATA CENTERS

AS A UTILITY NEED

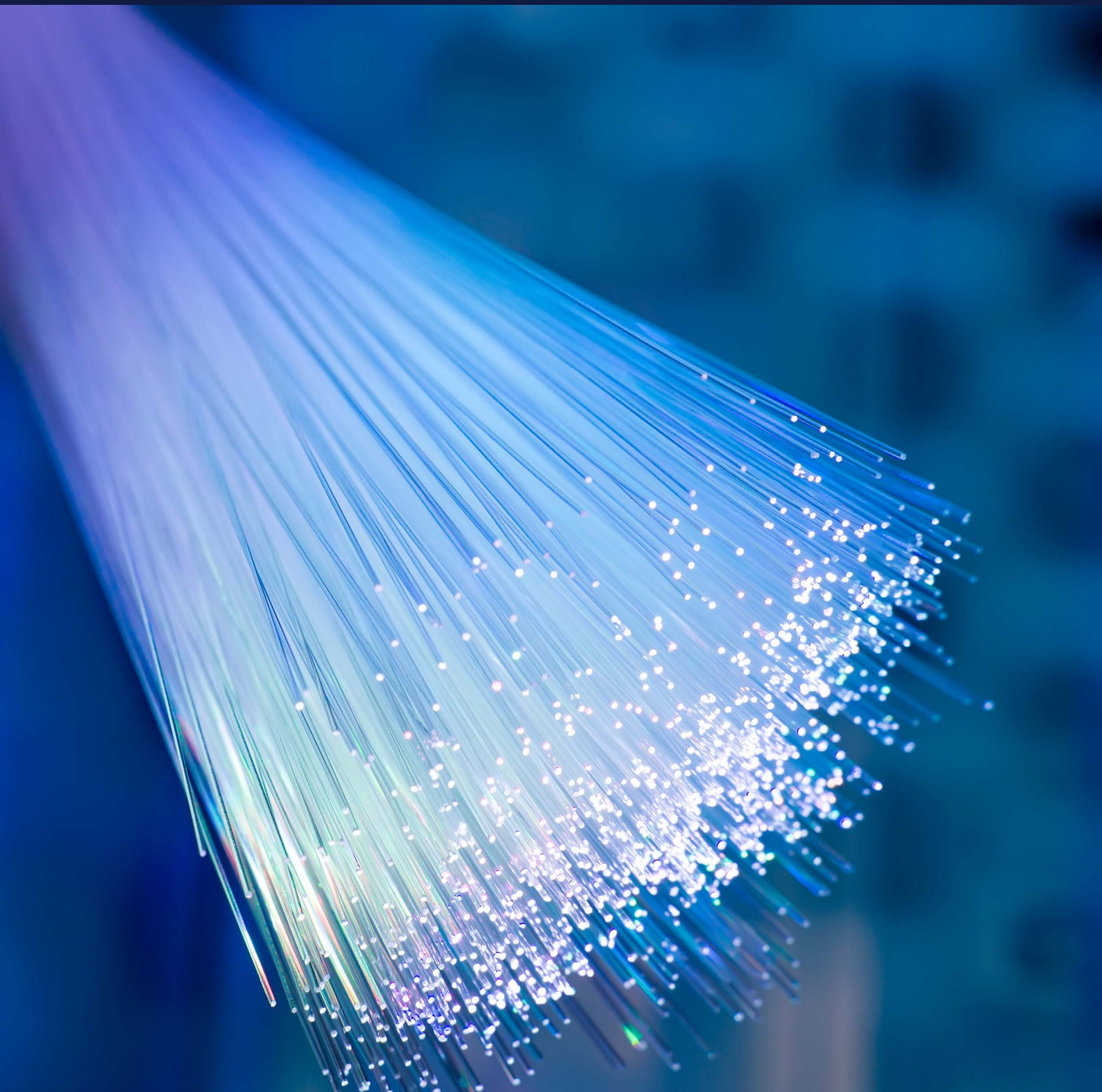
Depending on the role within the ecosystem, technology has a different intrinsic impact for adoption. What we have seen on working with clients in all roles, however, is the desire for clear benefit from technology and a greater understanding of the overlap between the roles. The days of an investor wilfully ignoring an operator are thankfully gone as the impact on yield, returns, and tenancy retention are mutually shared so understanding the impact of the tech stack is a shared need.

	OWNER	OPERATOR	FUNDER/ INVESTOR	IT SERVICE PROVIDER	UTILITY VENDORS	OTHER SERVICES
Sustainable Infrastructure	●	●	●	●	●	●
Flexibility to Scale	●	●	●	●	●	●
Data Security	●	●	●	●	●	●
Latency	●	●	●	●	●	●
Storage Capacity	●	●	●	●	●	●
Energy Footprint	●	●	●	●	●	●
Climate control	●	●	●	●	●	●
Resilience / Downtime	●	●	●	●	●	●
Regulatory Expertise	●	●	●	●	●	●
Interconnectivity	●	●	●	●	●	●

KEY NEED ●

MODERATE NEED ●

LOWER NEED ●



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