

F R O S T & S U L L I V A N

2024

**TRANSFORMATIONAL  
INNOVATION LEADER**

*IN THE ASIA-PACIFIC  
DATA CENTRE INFRASTRUCTURE  
AND OPERATIONS INDUSTRY*

F R O S T & S U L L I V A N

BEST  
2024 PRACTICES  
AWARD



## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. NEXTDC excels in many of the criteria in the data center infrastructure and operations space.

AWARD CRITERIA	
<i>Transformational Innovation</i>	<i>Customer Impact</i>
Market Disruption	Price/Performance Value
Competitive Differentiation	Customer Purchase Experience
Market Gaps	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Passionate Persistence	Brand Equity

### *Navigating the AI Era: Enabling Customer Success with Gold Standard Best Practice*

As Australia’s leading independent data center operator, NEXTDC is focused on providing hyperscale, government and enterprise customers with the levels of operational certainty, future readiness and competitive advantage required for them to innovate and grow in the data economy. World-class data center services are delivered with a strong emphasis on the resilience and security of critical infrastructure

*“With a sharp focus on uncovering unmet market needs and under-served requirements, the company consistently delivers tailored solutions that address current demands while anticipating future requirements. This visionary approach has spurred transformative measures, including reengineering its critical infrastructure and revolutionizing mechanical heat rejection systems to power the next generation of high-performance computing”*

**- Gautham Gnanajothi**  
**Global Vice President of Research**

complemented by interconnected ecosystem proximity, sustainability leadership and operational excellence. Its extensive partner ecosystem includes 17 direct public cloud access PoPs and over 750 specialized ICT service providers, allowing customers to connect with cloud platforms and build integrated hybrid cloud deployments to scale their information technology (IT) infrastructure and services effectively. Maintaining the highest standards in safety, security, and energy efficiency, NEXTDC upholds a strong market presence by focusing on delivering differentiation and customer value, while aligning with an evolving industry landscape, growth drivers, and technology trends. The company adapted quickly to

the artificial intelligence (AI) revolution and is pioneering infrastructure and operational best practices to

enable hyperscale, enterprise and government customers for improved energy efficiency, risk management, sustainable practices, innovation, and enhanced growth.

NEXTDC is at the forefront of creating the operational certainty and ecosystem proximity that is essential to driving AI integration within the Australian market and across the Asia-Pacific region. For example, its state-of-the-art S6 Sydney facility will accommodate various bespoke, next-generation AI architectures. It features critical elements for AI success such as resilience, high-density power (up to 130 kW per rack), liquid cooling solutions, top-tier physical security, and ultra-low latency interconnections to a broad ecosystem. These capabilities enable customers to deploy AI infrastructure at scale with agility and flexibility. In addition, S6 and all other NEXTDC facilities have been certified to support the NVIDIA DGX-Ready AI reference architecture, which defines optimal use of NVIDIA's Blackwell graphics processing units (GPUs). This purpose-built HPC facility reflects NEXTDC's commitment to advancing digital infrastructure and accelerating AI adoption through innovation. In addition, the company also recognizes the generational opportunity presented by AI and values the need for collaboration within an interconnected ecosystem to meet diverse customer needs. To this end, it offers customizable digital infrastructure, supporting both established and emerging platform architectures, allowing partners to leverage the strategic organisational value of AI technology.

NEXTDC is continually advancing its capabilities to meet the growing power and cooling demands of high-density computing environments. As AI applications increasingly necessitate higher power outputs per rack, therefore creating higher cooling requirements, the company is integrating advanced liquid cooling technologies to fulfill bespoke customer requirements. Presently, customers are utilising power densities up to 80 kW per rack, with projections for future NVIDIA DGX-based racks suggesting a range of 130 kW to 150 kW per rack will be common. This evolving landscape requires substantial mechanical and electrical adaptations to manage increased heat densities and power demands effectively.

The company's existing facilities were also engineered to accommodate emerging power demands and next generation cooling technologies. For example, a liquid heat rejection system has been deployed in S3 Sydney to support a client's environment that utilizes 30kW racks. In S2 Sydney, NEXTDC has designed dedicated spaces for full immersion cooling, allowing for enhanced load capacities within a more compact footprint than traditional air-cooling solutions. Meanwhile, at M1 Melbourne, the company's commitment to innovation is exemplified with a direct, liquid-to-compute cooling system that has been deployed for a client's supercomputer.

### ***Future-Proofing Digital Acceleration with Progressive Infrastructure and Design***

NEXTDC is perfectly positioned to meet rising demand from clients planning multi-megawatt deployments leveraging NVIDIA GPUs. With a sharp focus on uncovering unmet market needs and under-served requirements, the company consistently delivers solutions that address current demands while anticipating future requirements. This visionary approach has spurred transformative measures, including reengineering its critical infrastructure and revolutionizing mechanical heat rejection systems to power the next generation of high-performance computing. This foundation of engineering excellence positions the company to proactively collaborate and support hyperscale, government, and enterprise clients, ensuring their evolving future needs are effectively addressed. Although traditional air-cooling units will still be important for certain networking equipment and legacy infrastructure, NEXTDC expects a

significant shift toward liquid cooling systems as the primary solutions for data center heat management under the demands of AI applications and high-performance computing. Furthermore, NEXTDC continues to refine its advanced mechanical and electrical equipment and processes, based on insights gained from over 14 years of innovation and collaborative engagement with customers.

From an electrical standpoint, the company builds to exact sustainability and redundancy requirements of customers whether that be traditional Rotary UPS or new cutting-edge technologies like Static UPS with Lithium-Ion batteries that complement traditional diesel generators, ensuring uninterrupted power while enhancing energy efficiency and reducing maintenance costs. Additionally, the innovative busduct style reticulation streamlines installation and enhances performance efficiency, ensuring optimal operation within data halls. Regarding mechanical infrastructure, the company is equally progressive with its water-cooled chiller approach. It uses water-cooled chillers that adapt to ambient conditions, optimizing cooling efficiency and minimizing environmental impact. Similarly, the standardized capacity allocation for chiller and cooling tower units simplifies deployment. These mechanical systems offer scalability with minimal upfront investment, facilitating future growth and modular development across new and existing data centers.

### *Shifting the Paradigm through a Unique Approach*

Traditional data center cooling systems often rely on static temperature controls, which can lead to significant energy waste. NEXTDC is leading the way in improving energy efficiency with its innovative cooling method, which utilizes temperature differential control based on IT kW metering. Impressively, the company's Chief of Engineering and Design has conducted industry-leading PhD research to create real-world, audited, and calibrated digital twins using Design Builder™ and the United States Department of Energy's EnergyPlus™ Essentials building performance simulation tool. This research initiative has been granted an international patent for its unique methods of dynamically balancing data center systems and is now in the final stages of verification through prototype field tests.

This proprietary technology allows the system to automatically adjust airflow and return air temperatures according to the actual power load of the data center. A key feature is its ability to safely raise temperatures in hot aisles when those areas are unoccupied or on low power loads. Taking advantage of a cycle-free economy cooling process significantly reduces the reliance on continuous mechanical cooling. By dynamically adjusting temperature differentials, NEXTDC's solution achieves more efficient cooling thereby lowering customer costs. In real-world conditions, this method has shown the potential to decrease central plant energy consumption by up to 10% when the data center operates at 50% of its maximum load.

To verify the system's effectiveness, NEXTDC conducted thorough on-site testing at two of its most advanced data centers in Brisbane and Sydney, with IT capacities of 6,000 kW and 30,000 kW, respectively. Field tests confirmed that the system's predictions were accurate within 2% to 5%, demonstrating that dynamic temperature control can deliver real-world results.

The system showed impressive instantaneous energy savings of up to 40% under favorable ambient conditions, thanks to higher temperature differentials and optimized airflow. Furthermore, it reduced airflow rates by 27% while maintaining effective cooling, proving that NEXTDC's proprietary solution can

significantly lower energy consumption without compromising performance. One of the standout metrics from NEXTDC's research is the improvement in power usage effectiveness (PUE), which decreased from 1.33 to 1.30 at its test facilities. With the system delivering up to 10% energy savings for central plant equipment (depending on load levels and external conditions), the company anticipates a payback period of 5 to 7 years when implementing this cooling method. Given the typical 25-year lifecycle of a data center, this investment offers a clear financial return and operational benefits.

This breakthrough technology positions NEXTDC as a leader in green solutions, ensuring efficiency, scalability, and adaptability to advancements in IT equipment and power density. As data centers address AI workloads and increased power demands, the dynamic cooling system will maintain optimal performance without sacrificing efficiency. By implementing this system, NEXTDC is not only driving operational excellence but is setting a new industry standard, demonstrating its commitment to balancing cost-effectiveness with environmental responsibility for sustainable data center operations with proven energy savings, cost efficiency, and a clear roadmap for implementation, this breakthrough technology has the potential to redefine how the industry approaches future cooling and energy management.

### ***Bridging the Gap with a Clear Vision and Seamless Execution***

NEXTDC's futuristic approach towards product development has placed the company at the forefront of this highly competitive industry. The company's ever-increasing focus on technology and innovation has been instrumental in creating a niche for itself; it also plays a crucial role in propelling the company's growth and penetration in international markets. NEXTDC's competitive differentiation is primarily driven by an ability to envisage visionary scenarios through constant analysis of megatrends and creating revolutionary solutions to address those developments. A perfect testament this is its recent partnership with Phaidra. This partnership began with initial AI testing at its B2 Brisbane data center. After this testing phase, NEXTDC plans to implement the technology across its data center network throughout Australia and the broader the Asia Pacific region.

Phaidra specializes in AI-powered control systems designed to optimize critical infrastructure. By leveraging data from thousands of sensors, Phaidra's advanced technology makes real-time, autonomous decisions to enhance cooling performance and overall energy management. Its solutions are uniquely tailored to each facility, combining physics-based models with machine learning insights to create dynamic, self-improving AI systems. For NEXTDC, integrating Phaidra's technology offers a transformative opportunity to enhance its data center infrastructure. Phaidra's closed-loop AI models continuously learn from operational data, allowing them to adapt seamlessly to fluctuating conditions, such as the increased demands of high-density GPU deployments or external environmental changes. This capability ensures maximum cooling efficiency, reliability, and scalability across NEXTDC's facilities while minimizing energy consumption and operational costs.

Phaidra's AI operates as a supervisory layer over existing control systems, analyzing sensor trends in real time and providing actionable recommendations for control setpoint adjustments. This would enable NEXTDC to achieve exceptional operational efficiency, reduce downtime, and meet the growing sustainability expectations of its clients. By leveraging Phaidra's innovative solutions, NEXTDC can not only optimize its current infrastructure but also future proof its operations to address evolving market

demands. This partnership positions NEXTDC to bolster its leadership in the industry by offering state-of-the-art solutions that prioritize performance, scalability, and environmental stewardship.

### ***Best-in-Class Strategies Drive Competitive Differentiation***

To ensure steady growth over the long run, NEXTDC continuously builds upon its competitive edge, relentlessly pursuing new opportunities for improvement. It identifies and bridges market gaps, for example, constructing edge data centers to support large industries in remote locations and provisioning mission-critical operational spaces for customers as part of its data center infrastructure. To this end, NEXTDC's Edge data center platform achieved a significant milestone in FY 24 with the opening of the first of two facilities in Western Australia's remote Pilbara region. This development enhances regional businesses' and governments' access to cloud services, long-haul interconnection and secure, resilient digital infrastructure where customers need it most for accelerated digital transformation.

Designed for deployment in harsh and remote environments, PH1 Port Hedland is a 1.5-Megawatt (MW) Tier III-certified edge data center that opened in October 2023. It utilizes a proprietary prefabricated design that allows quick assembly in challenging remote environments. This scalable infrastructure enables local data processing, reduces costs, and supports advancements such as real-time analytics and automation, all manageable from central operations in metropolitan areas. PH1 fosters innovation, creates jobs, and contributes to a more connected, sustainable, and productive future for Australia's mining sector.

Opening in December 2024, NE1 Newman, located 400km south of Port Hedland, will serve multiple mine sites in its vicinity. Both NE1 and PH1 are crucial landing stations for long-haul terrestrial and subsea fiber cables that connect Perth to the Pilbara and Darwin, as well as linking Port Hedland to Singapore via the offshore North-West Shelf gas fields. Beyond their immediate impact on the mining industry, these data centers aim to bridge the digital divide between remote areas and metropolitan centers, generating significant customer interest in future edge data center projects.

Frost & Sullivan believes NEXTDC is not only uniquely prepared for today's customer requirements but is also well positioned to cater to tomorrow's needs. The company's clear strategic vision and execution supports customers' sustainable growth strategy for years to come.

### ***Redefining Excellence: Driving Value through Technology and Innovation***

Strategic success depends on reliable individuals, systems, and processes. Downtime risks reputation, revenue, and compliance, potentially causing operational breakdowns. To mitigate this, NEXTDC is developing Mission-Critical Operations (MCX) spaces at new sites and retrofitting existing locations. These secure, resilient, and connected suites support operational teams beyond traditional office settings, aligning with NEXTDC's high standards.

In 2023, NEXTDC launched an innovation tower at the M2 Melbourne and S3 Sydney facilities, featuring customized MCX spaces. M2 offers 3,000+ square meters across four stories, including a 150-seat auditorium, boardroom and meeting rooms, while S3 provides 1,600 square meters of MCX space. Existing MCX facilities operate in Sydney, Melbourne, and Perth, with planned expansion to Adelaide, Kuala Lumpur, and Auckland. NEXTDC's 24/7 security, technical support, and customer service ensure seamless operations.

NEXTDC leads in liquid-to-compute technology. Over eight years ago, it introduced 80kW IT racks in M1 Melbourne and built Australia's first co-location immersion compute suite in S2 Sydney. In 2024, it deployed multiple megawatts of liquid-to-compute solutions at S3 Sydney for a multinational cloud provider. NEXTDC's in-house engineering team develops Coolant Distribution Units (CDUs), advanced cooling systems, and immersion-ready suites. With expertise in customized liquid-to-compute data halls, NEXTDC scales services efficiently, adapting innovative technologies to meet client needs.

NEXTDC integrates cutting-edge technologies across its products and services, with a focus on energy-efficient liquid cooling tailored for high-density AI and accelerated computing workloads. Its NVIDIA DGX AI Factory certification underscores its ability to support advanced AI projects.

AXON, NEXTDC's interconnectivity solution, enhances AI readiness by overcoming traditional networking limitations. It provides multi-cloud connectivity and Network-as-a-Service, optimizing digital infrastructure through low-latency, self-provisioning, and on-demand bandwidth with utility-based billing. With connections to every NEXTDC facility and some third-party cloud availability zones 70+ networks, 17 public clouds, and 750 digital service providers, AXON also ensures strong security, real-time monitoring, and incident response.

NEXTDC facilities in Sunshine Coast, Brisbane, Sydney, Melbourne, Perth and The Pilbara are also the data centers of choice for the major terrestrial and subsea cables that interconnect Australia's digital economy domestically and internationally.

NEXTDC's ONEDC data center infrastructure management (DCIM) platform delivers real-time intelligence, and self-service access authorisation processing, as well as automation via a customizable portal. It centralizes infrastructure monitoring, telemetry management, and service requests across national data centers.

By leveraging innovative solutions, NEXTDC enhances performance, connectivity, and operational efficiency, securing a first-mover advantage in the industry.

### ***Commitment to a Greener Future: A Staunch Focus on Environmental Sustainability***

NEXTDC prioritizes energy efficiency and sustainability without compromising operational excellence. Since 2019, it has stood out as the sole provider in Australia to hold Commonwealth Government-endorsed Climate Active certification for carbon neutrality across its corporate operations. The company employs rigorous carbon assessments and comprehensive offset strategies, including participation in the Qantas Future Planet program, to advance national and organisational net-zero emissions targets. It offers carbon neutral data center services known as NEXTneutral, which empowers clients to offset their IT-related carbon emissions seamlessly with a single click on the ONEDC portal. This service is highly cost-effective, offered at a price lower than a cup of coffee per kilowatt of power, empowering customers to drive their sustainability goals with intent and efficiency.

Wherever possible, NEXTDC has chosen renewable energy to power its data centers and reduce carbon emissions. It is actively pursuing Power Purchase Agreements (PPAs) with renewable energy providers as Australia's wind and solar infrastructure scales. Since 2014, the company has served as a Principal Partner in the Melbourne Renewable Energy Project (MREP), the first initiative of its kind for data center operators

*“NEXTDC facilitates seamless digital transformation through its cutting-edge critical infrastructure solutions, delivering unparalleled scalability, efficiency, reliability, and resilience. It ensures superior business continuity for its clients while equipping them to thrive in the future. This strategic vision positions the company as an indispensable partner for organizations navigating the complexities of an evolving digital landscape.”*

**- Gautham Gnanajothi**  
**Global Vice President of Research**

in the region. The 80 MW Crowlands Wind Farm in Victoria, part of MREP, began supplying power to the grid in January 2019.

Customers benefit from NEXTDC’s waste management leadership. As the only data center company in Australia to have achieved TRUE Waste Management certification (at S1 Sydney), NEXTDC proactively embraces circular economy principles by refurbishing, repurposing, and recycling end-of-life customer electronic equipment to minimize landfill and e-waste. The company also collaborates with construction contractors to incorporate sustainable designs and utilize renewable materials across project lifecycles. Through partnerships with certified

recycling facilities, NEXTDC ensures the responsible disposal and recycling of excavated materials, and essential plant and equipment, which helps reduce environmental pollution and conserve resources.

### ***Fostering Trust and Loyalty Through Unmatched Customer Focus***

NEXTDC is a disruptive leader in the data center infrastructure and operations space, continually evolving and creating stiff barriers for existing competitors. The company provides significant value to customers through a comprehensive approach that assesses performance metrics such as uptime and latency while prioritizing operational cost savings, including reduced energy expenses through efficient cooling solutions. A key advantage of NEXTDC is that it empowers its customers with a high level of flexibility to scale their platforms without necessitating large capital investments. In addition, its extensive national footprint of Tier IV-certified facilities, multiple redundancy sites in metropolitan centers, and a 100% uptime guarantee create a compelling value proposition around operational certainty.

The offering also compounds ecosystem value by connecting customers to various cloud services, carriers, and enterprise partners. Specifically, NEXTDC’s award-winning engineering expertise and certifications deliver exceptional value relative to its pricing. The company’s focus on operational resilience, security, and sustainable practices positions it as a trusted partner for government, enterprise, and hyperscale customers.

It is noteworthy that the company places strong emphasis on customer satisfaction by consistently enhancing its critical infrastructure features to align with evolving customer needs. NEXTDC’s marketing strategy highlights reliability, security, and scalability, positioning its services as essential operational certainty, future readiness, digital acceleration and strategic growth. This strategy allows customers to take pride in hosting their IT infrastructure in state-of-the-art, energy-efficient facilities. NEXTDC takes a holistic approach to the data center experience, focusing on ecosystem connectivity, energy efficiency, and scalable infrastructure to deliver a premium service experience that frees customers to concentrate on their core competencies without concern about infrastructure limitations.



NEXTDC's impressive growth momentum bears testament to a customer-centric approach, breakthrough technology solutions and exceptional operational strategies, earning the trust and loyalty of customers while increasing market share.

## Conclusion

---

In an era of rapid digital transformation, hyperscale, government and enterprise organisations need a data center partner that ensures resilience, security, and seamless interconnection – enabling them to stay focused on innovation and growth.

As high-performance computing and AI adoption accelerates, power demands and energy costs are rising, placing new pressures on critical digital infrastructure. NEXTDC helps businesses navigate these challenges with scalable, high-performance solutions designed for flexibility and agility. NEXTDC's next-generation data centers deliver operational certainty through unmatched reliability, energy efficiency, and security while providing the future readiness needed to anticipate and adapt to change.

Similarly, success in today's digital economy depends on proximity to a rich ecosystem of clouds, networks, and digital services. NEXTDC's national platform spans all capital cities, multiple sites in key metros, and strategic termination points for domestic and international terrestrial and subsea fiber networks. This extensive footprint ensures businesses can seamlessly connect, scale, and optimise performance across their hybrid and multi-cloud environments.

By offering cutting-edge, sustainable infrastructure tailored to evolving digital platforms, NEXTDC empowers organizations to accelerate their strategic advantage. This customer-first approach has earned NEXTDC Frost & Sullivan's 2024 Asia-Pacific Transformational Innovation Leadership Award – a testament to a sustained track record in setting new industry benchmarks.

## What You Need to Know about the Transformational Innovation Leadership Recognition

---

Frost & Sullivan's Transformational Innovation Leadership Award recognizes the best up-and-coming, potentially disruptive market participant.

### Best Practices Award Analysis

For the Transformational Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Transformational Innovation*

**Market Disruption:** Innovative new solutions have a genuine potential to disrupt the market, render current solutions obsolete, and shake up competition

**Competitive Differentiation:** Strong competitive market differentiators created through a deep understanding of current and emerging competition

**Market Gaps:** Solution satisfies the needs and opportunities that exist between customers' desired outcomes and their current market solutions

**Leadership Focus:** Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

**Passionate Persistence:** Tenacity enables the pursuit and achievement of seemingly insurmountable industry obstacles

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

## About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

## The Growth Pipeline Engine™

Frost & Sullivan’s proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

[Learn more.](#)

### Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

