

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

# 2024 ENABLING TECHNOLOGY LEADER

*IN THE ASIA-PACIFIC  
5G ENTERPRISE  
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. Singtel excels in many of the criteria in the Asia-Pacific 5G enterprise space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Customer Impact</i>
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

### **Commitment to Innovation**

A leading 5G enterprise service provider, Singtel maintains a strong regional presence in Asia-Pacific (APAC) through stakeholders (e.g., Optus in Australia) and regional associates (e.g., AIS in Thailand, Bharti

*“By winning in its stronghold in Singapore and building a proven track record, Singtel has steadily gained critical prerequisites that are helping to open new markets.”*

**– Mei Lee Quah**  
**Director, ICT Research**

Airtel in India, Telkomsel in Indonesia, and Globe in the Philippines). The company has 53 enterprise offices in 17 countries worldwide, and over 76% of its net profit in FY24 came from operations outside of Singapore. Contributions from operations outside of Singapore are on a growth trajectory, increasing 11% from 65% in FY22. The company’s value proposition and track record in deploying connectivity solutions and managing enterprise networks are well acknowledged by enterprises and public sector customers.

Since 2022, the Singtel Paragon Platform has been an innovative product to support its well-established enterprise segment in Singapore. The platform is part of Singtel’s range of value-added services for enterprise customers, which includes infrastructure-as-a-service and GPU-as-a-service (GPUaaS). Thus far, 5G as a connectivity technology as part of the platform has been well received because it addresses the need by enterprises to enable end-to-end use cases that have service level agreement and edge computing dependencies for monetization. As a value add, Singtel facilitates the overarching view through a single pane of glass of all the enabling capabilities on its platform that go into the solution that would have had to come from multiple providers and coordinated individually and separately. In other words,

Singtel is doing the heavy lifting for enterprises. As a result, industry participants, including Frost & Sullivan, recognize the Singtel Paragon Platform as the region's first innovative all-in-one platform that can support regional enterprises by tapping the potential of 5G in combination with other emerging technologies (e.g., cloud, multi-access edge computing [MEC] and internet of things).

The launch of GPUaaS by Digital InfraCo supports Singapore's artificial intelligence (AI) ambition and

*“Global expansion signifies positive growth potential for the Singtel Paragon platform. Clusters are forming and growing. Within each new cluster, unique 5G solutions are being deployed, eventually transforming the world as we know it.”*

**– Mei Lee Quah**  
**Director, ICT Research**

position as a digital and AI hub while supporting enterprise digital transformation in the region. Addressing enterprise interest in deploying AI at scale quickly and cost-effectively, the GPUaaS will run on purpose-built AI-ready data centers. This is so enterprises of all sizes can harness AI's potential to accelerate the development of generative AI, large language models, and other AI workloads. Challenges faced by enterprises in driving AI adoption include the complexity associated with managing the CI/CD infrastructure for AI platforms, managing the data lifecycle for AI models, and overcoming the lack of AI training

infrastructure and talent with AI and AI + DevOps skillsets. Singtel addresses these challenges with its new services: the VGPU and VM as a service, the AI clusters as a service, the Models as a service, and the AI workspace as a service. These services will help enterprises drive AI adoption. Beyond this and for manufacturing-specific scenarios, the collaboration between Singtel and Hitachi Digital in the United States addresses the complexity of industrial AI. The partnership will leverage key collaborator strengths—Hitachi's pre-built Industrial AI applications and Singtel Paragon Platform's network and multi-cloud orchestration capabilities—to commercialize interoperable AI solutions that create multiple industrial solution offerings to help enterprises improve and accelerate cloud operations.

### **Commitment to Creativity**

In line with current market trends, 5G end-to-end use-case solutions require better coordination between environments. Cross-environment orchestration will likely increase in importance in the future. In many cases, several workloads—whether supply chain management, enterprise resource planning, or others—that traditionally sit in the public cloud environment will now need to communicate with mission-critical applications in the edge computing environment. This is to meet low latency requirements, such as data analytics or AI, or to render for virtual reality. Moreover, with network slicing, there is further complexity associated with managing the various network profiles for different speeds and latencies to match application requirements. With access to the Singtel Paragon Platform, it is possible to manage cross-environment orchestration to derive intelligent outcomes without compromising performance. Enterprises can manage all service applications seamlessly across cloud, edge compute, and network resources through a single pane of glass. As the Singtel Paragon Platform further supports infrastructure exposure via an application programming interface (API) to enable automation, users can procure additional resources and capabilities as needed. For example, analytics or video applications can call the necessary network telemetry and shift network bandwidth in real time. With these value-added services

in place and backed by end-to-end security solutions from leading security providers such as Fortinet, the rapid deployment of 5G end-to-end use-case solutions ranging from simple to complex is now possible.

### ***Commercialization Success***

The launch of the Singtel Paragon Platform in 2022 leveraged Singtel's strong branding, backed by trust and confidence of enterprise customers. With a strong head start, Singtel has achieved customer success in advanced manufacturing, smart construction solutions, autonomous environment service vehicles, electric vehicle trials, disaster site management, drone-enabled remote inspection, outdoor surveillance robots, unmanned retail experiences, enhanced surgery and clinical, regional cloud computing, and integrated command centers. The number of commercial deployments at global brands (e.g., Hyundai Motor Group, Micron Technology) and government agencies (e.g., Advanced Remanufacturing and Technology Centre [ARTC] and National University Health System [NUHS]) is on the rise in Singapore. Considering a ready pipeline of orders and customers for 2024, revenue and the number of customers are projected to record a compound annual growth rate of 675% and 124%, respectively, from 2021 to 2024. By winning in its stronghold in Singapore and building a proven track record, Singtel has steadily gained critical prerequisites that are helping to open new markets. The platform is in place in the region among its regional associates at AIS in Thailand and Telkomsel in Indonesia and among Bridge Alliance members. Beyond APAC, the platform is being implemented globally in Spain and Hitachi Digital in the United States. Global expansion signifies positive growth potential for the Singtel Paragon platform. Clusters are forming and growing. Within each new cluster, unique 5G solutions are being deployed, eventually transforming the world as we know it.

### ***Application Diversity***

The Singtel Paragon platform supports 4G and 5G, with plans to support multiple access technologies such as Wi-Fi and fixed technologies in its roadmap. It provides different options for edge compute environments, such as Singtel's own bare metal implementation, Amazon Web Services, and Microsoft Azure private MEC infrastructure environments, all of which users can manage and orchestrate through the Singtel Paragon platform. The platform is vendor agnostic and can be integrated with different 5G vendor technologies, which is important to scale the platform regionally and globally to drive the monetization of Singtel's infrastructure. Strategically partnering with industry participants that have extensive connections within regions is also important for scaling faster. As part of the Bridge Alliance, which has 34 members worldwide, Singtel can accelerate API integration with a mobile operator API exchange powered by Singtel's Paragon Platform.

With the launch of the Bridge Alliance API Exchange (BAEx), enterprises and developers can streamline the deployment of new services on member-operator networks by accessing a common open API framework, which provides secure, consistent, and on-demand access to mobile network capabilities. BAEx leverages the Singtel Paragon Platform to aggregate Bridge Alliance member operators' network authentication, user verification, and network quality APIs and enables the regional aggregation and standardization of mobile operator APIs utilizing GSMA CAMARA and TM Forum APIs. The APIs offered will support regional and global enterprise use cases in fintech, e-commerce, and over-the-top providers, starting with network authentication, user verification, and location tracking functions. This will also help

enterprises accelerate time-to-market for new services and reduce the complexity of working with multiple mobile operators. As enterprises that have operations spanning multiple countries and regions will need reliable connectivity, this arrangement will offer the high-quality connectivity required to meet mission-critical business needs and ensure seamless operations. The result for enterprises with regional and global reach is the efficient enablement of new business opportunities. Similar partnerships with Vonage, VMware, and Broadcom are precipitating even broader outcomes for Singtel's enterprise customers.

### ***Price/Performance Value***

With an increasing number of enterprises undergoing rapid digitalization, Singtel recognizes that the market needs 5G solutions to serve a wide variety of use cases affordably. The company addresses the market demand for 5G solutions through its Singtel Paragon Platform by offering features that allow enterprises to manage connectivity and cost in real time. The platform also enables mobile operators to move beyond providing traditional mobile data pools to offering value-added services such as providing connectivity assurance services, thus allowing mobile operators to better monetize their 5G investments. The platform is secure, and services can be launched within minutes, thus improving the time to market and monetization of new services. With the Paragon Marketplace and Singtel Partner Program in place, upgrading services and making service refinements are easier. The Singtel Paragon Platform is a key differentiator for Singtel because the market lacks a similar strong platform solution in Singapore, regionally, and potentially even globally. To process the large volumes of data that 5G enables enterprises to access, enterprises require the necessary analytical tools to undertake personalization to stay competitive and relevant. Taking an outcome-based approach has helped enterprises justify the cost of incorporating 5G as an investment instead of only an outlay of money as a cost.

### ***Brand Equity***

Singtel leverages its strong brand to launch new products, including the Singtel Paragon Platform. The company's plan to capture new growth and unlock value by carving out the Digital InfraCo unit in 2023 has increased year-on-year operating revenue by 8% in FY24. The carve-out is to drive growth, synergy, and productivity with its infrastructure business and to catalyze innovation and economic growth in the region. Apart from running the Singtel Paragon Platform, Digital InfraCo's portfolio includes Nxera, which is Singtel's regional data center unit, and Singtel's subsea cable and satellite businesses. These are collectively crucial to advancing AI in the region, laying the foundation for new growth in new markets, and unlocking value from existing and new markets. As a single unit under Digital InfraCo, Singtel's value proposition and branding are positively enhanced. Already recognized with a string of industry awards, Singtel continues to uphold industry respect and recognition for its Singtel Paragon platform. At the Asian Telecom Awards 2023 and the Business GOVirtual Awards 2023, Singtel received awards for B2B Client Initiative of the Year (Singapore) and Excellence Award for Tech Company of the Year: Cloud & Edge Computing, respectively, for its Singtel Paragon platform.

## Conclusion

---

The Singtel Paragon Platform, the region's first innovative all-in-one platform, is growing in capability and reach. With GPUaaS, it is addressing enterprise interest in deploying AI at scale quickly and cost-effectively. Combined under Digital InfraCo, rapid deployment of 5G end-to-end use-case solutions ranging from simple to complex is now possible. The platform is already in the region and expanding globally, creating new clusters of growth that will eventually transform the world as we know it. Frost & Sullivan commends Singtel for its growth potential because of the continuous development of the Singtel Paragon Platform.

With its strong overall performance, Singtel earns Frost & Sullivan's 2024 Asia-Pacific Enabling Technology Leadership Award in the 5G enterprise industry.

## What You Need to Know about the Enabling Technology Leadership Recognition

---

Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

### Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Technology Leverage*

**Commitment to Innovation:** Continuous emerging technology adoption and creation enables new product development and enhances product performance

**Commitment to Creativity:** Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

**Stage Gate Efficiency:** Technology adoption enhances the stage gate process for launching new products and solutions

**Commercialization Success:** Company displays a proven track record of taking new technologies to market with a high success rate

**Application Diversity:** Company develops and/or integrates technology that serves multiple applications and multiple environments

#### *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)**

