

Space & Astronomy | Jan 18, 2026 | 17 min read | By Bryan White

From Supply Chain Node to Global Architect: Taiwan's Technical Evolution

Space * AI * Computing

Abstract

As the global technological order undergoes a tectonic shift, Taiwan has emerged not merely as a supply chain node but as a primary architect of future critical technologies. This report provides an exhaustive analysis of the island's recent advancements across four strategic domains: semiconductor physics, aerospace engineering, asymmetric defense systems, and fundamental applied sciences. Drawing on technical data from 2024 through early 2026, we explore the transition to Angstrom-class logic devices, the deployment of tactical Low Earth Orbit (LEO) constellations, the hydro-mechanical engineering of indigenous submarines, and the application of artificial intelligence in precision medicine and meteorology. This analysis posits that Taiwan's technical trajectory is driven by a unique "engineering of survival," where state-of-the-art innovation is inextricably linked to geopolitical resilience and environmental adaptation.

Part I: The Atomic Frontier - Redefining the Physics of Computation in Taiwan

The central pillar of Taiwan's technological dominance remains its semiconductor industry, anchored by the Taiwan Semiconductor Manufacturing Company (TSMC). However, the developments observed between 2024 and 2026 represent a fundamental departure from the scaling laws of the previous decade. The industry is moving beyond the FinFET era into a new regime of device physics defined by Nanosheets and Backside Power Delivery.

1.1 The Nanosheet Transition: Mastering the Gate-All-Around Architecture

For nearly fifteen years, the Fin Field-Effect Transistor (FinFET) served as the standard for high-performance logic. By extruding the transistor channel vertically into a "fin," engineers could wrap the gate around three sides, suppressing short-channel effects. However, as fabrication nodes approached 3 nanometers (N3), the FinFET geometry encountered hard physical limits. The "sub-fin" leakage and the inability to further scale the gate pitch necessitated a radical architectural change.

In early 2026, TSMC initiated high-volume production of its 2-nanometer (N2) process technology, marking the dawn of the Nanosheet or Gate-All-Around (GAA) era.[1]

The Nanosheet transistor differs from the FinFET by rotating the channel orientation. Instead of a vertical fin, the channel consists of multiple silicon ribbons (nanosheets) stacked vertically, suspended above the substrate. The gate material completely surrounds each sheet -- top, bottom, left, and right.

This 360-degree gate contact provides near-perfect electrostatic control over the channel. In a standard transistor, the "off" state is never perfectly off; electrons tunnel across the barrier, creating leakage current. The superior control of the GAA structure tightens the "subthreshold swing," allowing the transistor to switch between on and off states more sharply.

From a performance perspective, the Nanosheet architecture introduces a new degree of freedom: the effective width of the channel (W_{eff}). In FinFETs, the width was quantized by the number of fins (one fin, two fins, etc.). In Nanosheets, the width of the silicon ribbons can be continuously adjusted during the lithography process. Wider sheets provide higher drive current for high-performance cores, while narrower sheets minimize leakage for low-power circuits. This flexibility allows chip designers to optimize power-performance-area (PPA) tradeoffs with unprecedented granularity.[2]

The fabrication of these devices requires atomic-level precision. The process involves growing alternating layers of silicon and silicon-germanium (SiGe) on the wafer. The SiGe layers are then selectively etched away to release the silicon nanosheets, a process that must be controlled to within a few atomic layers to prevent surface roughness that would degrade electron mobility.

TSMC has stabilized yield rates for this complex process at approximately 70% as of early 2026.[2] Production is concentrated in the company's "Gigafabs" -- specifically Fab 20 in Hsinchu and Fab 22 in Kaohsiung.[2] The capital intensity of this transition is staggering, with a historic capital expenditure (Capex) of \$56 billion set for 2026 to support the ramp-up of N2 and the subsequent A16 node.[1]

1.2 The A16 Node: The Revolution of Backside Power Delivery

While Nanosheets solve the problem of transistor control, they do not address the interconnect bottleneck. In traditional chips, both power and data signals are routed through a complex web of metal layers above the transistors (Back-End-of-Line, or BEOL). As chips became denser, these wires became thinner, leading to increased resistance and "IR drop" (voltage loss).

To combat this, Taiwan is pioneering Backside Power Delivery (BPD), marketed as the "Super Power Rail," scheduled for the A16 node in late 2026.[1]

In the A16 architecture, the power delivery network is moved to the back of the silicon wafer. This requires an intricate process of wafer thinning. After the transistors are fabricated on the front, the wafer is flipped and bonded to a carrier. The bulk silicon is ground down until it is mere microns thick, exposing the bottom of the transistor source and drain regions. Power rails are then deposited directly on this backside.

The physics benefits are threefold:

- * **Resistive Reduction:** By eliminating the need for current to traverse 15-20 layers of fine front-side wiring, the path resistance is drastically reduced. This mitigates IR drop, ensuring the transistor receives the full intended voltage, which improves switching speed and stability.[3]

- * **Signal Integrity:** Removing the high-current power lines from the front side frees

up routing resources for signal wires. This reduces capacitive coupling (crosstalk) between power and data lines, enhancing signal integrity.[4]

* Area Scaling: With the power rails buried underneath, the standard cell footprint (the area occupied by a logic gate) can be shrunk further. The A16 process is expected to deliver a logic density gain of up to 1.10x compared to the N2P node.[3]

Comparative analysis suggests that TSMC's implementation of BPD (connecting directly to the source/drain) offers better area scaling than alternative methods (like Buried Power Rails) pursued by competitors, positioning A16 as a superior solution for High-Performance Computing (HPC).[5]

1.3 Advanced Packaging and Thermal Engineering

The limit of Moore's Law has shifted innovation toward "Advanced Packaging" -- aggregating multiple chiplets into a single system. TSMC's Chip-on-Wafer-on-Substrate (CoWoS) platform has become the industry standard for AI accelerators.[6]

The demand for AI computing, driven by massive logic and High Bandwidth Memory (HBM) integration, has spurred the evolution of CoWoS into distinct variants:

* CoWoS-S (Silicon Interposer): Uses a passive silicon wafer as the interposer. This allows for extremely fine lithographic interconnects but is limited by the size of the photomask (reticle). To build larger systems, TSMC employs "reticle stitching," combining multiple exposures to create interposers up to 3.3 times the standard reticle size.[7]

* CoWoS-L (Local Silicon Interconnect): For even larger superchips (like the NVIDIA Blackwell series), a full silicon interposer is too brittle and costly. CoWoS-L uses an organic substrate with small silicon bridges embedded only where high-density connections are needed. This hybrid approach supports larger package sizes while managing cost.[6]

A critical development in 2025 was the demonstration of Direct-to-Silicon Liquid Cooling on the CoWoS platform. As AI chips push past 1000 Watts (1 kW) of power, air cooling and traditional heat spreaders are insufficient.

TSMC engineers have integrated microfluidic channels directly into the packaging structure. By circulating coolant directly over the backside of the silicon, they achieved a thermal resistance of just 0.055 degrees Celsius per Watt at a flow rate of 40 ml/s.[9] This capability supports thermal design powers (TDP) exceeding 2.6 kW, a necessary threshold for next-generation AI clusters.[9]

1.4 Silicon Photonics: The Speed of Light

To address the bandwidth bottleneck between chips, TSMC is advancing its Compact Universal Photonic Engine (COUPE).[10]

This technology integrates Electronic Integrated Circuits (EIC) and Photonic Integrated Circuits (PIC) using 3D stacking (SoIC). By bonding the EIC directly on top of the PIC without conventional wire bonds, impedance is minimized. This allows for data transmission via optical signals (light) with significantly lower power consumption and latency than electrical copper wires. The COUPE platform is designed

to support the massive data throughput requirements of future data centers, targeting 128 Terabits per second (Tbps) communication.[10]

| Technology || Introduction || Key Engineering Feature || Performance Benefit |

| N2 (Nanosheet) || 2026 (Vol.) || Gate-All-Around (GAA) || 10-15% speed gain / 25-30% power reduction vs N3E [2] |

| A16 (BPD) || late 2026 || Backside Power Delivery || Reduced IR drop, 1.10x density gain [3] |

| CoWoS-L || 2024/2025 || Organic substrate + Silicon Bridges || Supports >3.3x reticle size for massive AI GPUs [7] |

| COUPE || Dev. || 3D Stacked EIC/PIC || Low impedance optical interconnects [10]

|

Part II: Orbital Sovereignty - Aerospace Engineering

Taiwan's aerospace sector has transitioned from scientific observation to the development of a resilient, dual-use space infrastructure. This shift is spearheaded by the Taiwan Space Agency (TASA) and a burgeoning private "NewSpace" ecosystem.

2.1 The Triton Mission: Physics of GNSS-Reflectometry

The Triton (Formosat-7R) satellite, launched in late 2023 and fully operational through 2025, represents a significant leap in indigenous meteorological capability.[12]

Triton operates in a Low Earth Orbit (LEO) at an altitude of 601 km with a high inclination of 97.92 degrees.[12] Its primary payload is a Global Navigation Satellite System Reflectometry (GNSS-R) receiver. Unlike active radar satellites that transmit high-power pulses, Triton is a passive listener. It detects the signals broadcast by GPS and QZSS navigation satellites that bounce off the ocean surface.

The physics of this measurement relies on the Delay Doppler Map (DDM). When a GPS signal hits a rough ocean surface (caused by wind), the reflection is scattered. This scattering spreads the signal in time (Delay) and frequency (Doppler).

* Specular Reflection: A calm sea acts like a mirror, creating a sharp, coherent reflection.

* Diffuse Scattering: A rough sea scatters power in all directions. By analyzing the shape and spread of the reflected power in the DDM, scientists can infer the Mean Square Slope (MSS) of the ocean waves, which correlates directly with wind speed.[15]

Recent analyses of Triton data have highlighted the importance of accounting for the relative velocity between the transmitter (GPS satellite) and the receiver (Triton). In high-dynamic LEO scenarios, neglecting this velocity vector can induce errors in the retrieved wind speed. Taiwanese researchers have developed deep learning frameworks that explicitly incorporate these orbital dynamics, reducing the Root Mean Square Error (RMSE) of wind speed retrieval by over 11% compared to traditional models.[17] This enhanced accuracy is critical for improving typhoon track and

intensity forecasting in the Western Pacific.

2.2 Tactical Constellations: The Bellbird Program

Parallel to TASA, the private firm Tron Future is developing the Bellbird constellation, a dual-use communication network designed to ensure connectivity in the event of submarine cable severance.[18]

The Bellbird-1 CubeSat employs a miniaturized Active Electronically Scanned Array (AESA) payload operating in the Ka-band.

- * Beamforming: Unlike mechanical dishes, the AESA uses a grid of software-controlled antenna elements (up to 1024 elements in the T.SpaceRouter terminal) to steer radio beams electronically.[19] This allows for millisecond-level beam hopping, enabling the satellite to switch rapidly between different ground targets or drone swarms.

- * Throughput: The system supports transmission rates exceeding 100 Mbps with an instantaneous bandwidth of 250 MHz.[18]

- * Inter-Satellite Links (ISL): The constellation is designed for mesh networking, where satellites communicate directly with each other (ISL speeds > 1 Mbps) to relay data around the globe without needing immediate ground station visibility.[18]

The Bellbird-1, scheduled for integration with the Formosat-8A launch in late 2025, serves as a technology demonstrator for a larger constellation that could support "drone swarm" control -- a capability with profound defense implications.[21]

Part III: Asymmetric Denial - Defense Technology

Facing a quantitative military imbalance, Taiwan's defense engineering focuses on asymmetry: systems that are mobile, concealable, and highly lethal.

3.1 Underwater Engineering: The Hai Kun Class Submarine

The Indigenous Defense Submarine (IDS) program, resulting in the Hai Kun class, is a feat of hydro-mechanical integration. The vessel, undergoing trials in 2024-2025, is designed to operate in the complex acoustic environment of the Taiwan Strait and the deep waters of the Pacific.[22]

The pressure hull is constructed from high-tensile steel (likely HSLA-80 grade), capable of withstanding the hydrostatic pressure at test depths between 350 and 420 meters.[22] The design employs a hybrid hull configuration: a single pressure hull in the center for crew and command efficiency, transitioning to a double hull at the bow and stern to accommodate ballast tanks and sensor arrays.[24] This structure provides reserve buoyancy and survivability.

A critical engineering decision for modern conventional submarines is the energy storage medium. While early iterations may utilize lead-acid batteries, the Hai Kun design roadmap points toward Lithium-Ion (Li-ion) technology.[22]

- * Advantage: Li-ion batteries offer 2-3 times the energy density of lead-acid, allowing for longer submerged endurance without snorkeling (a vulnerable state where the submarine runs diesel engines to recharge).

- * Risk: The primary engineering challenge is Thermal Runaway. If a single cell

overheats due to a separator failure or internal short, it can release oxygen and heat, triggering a cascading fire.[26]

* Mitigation: The battery systems require advanced Battery Management Systems (BMS) for cell-level voltage monitoring and robust physical containment systems designed to vent toxic gases safely overboard while isolating the thermal event.[26]

3.2 Supersonic Kinetics: The Hsiung Feng III

The Hsiung Feng III (HF-3) remains the cornerstone of Taiwan's anti-ship capability. Its engineering relies on an Integrated Rocket Ramjet (IRR).[27]

Unlike a turbojet, which uses a compressor turbine, a ramjet relies on the forward motion of the missile to compress incoming air.

* Boost: Solid rocket boosters accelerate the missile to supersonic speeds (> Mach 2).

* Cruise: The solid boosters are jettisoned, and the intake covers open. The supersonic airflow enters the intake, where geometry-induced shock waves slow the air to subsonic speeds, converting kinetic energy into high pressure (ram pressure). Fuel is injected into this high-pressure air and ignited, producing thrust.

The missile cruises at speeds estimated between Mach 2.5 and Mach 3.0, with a range extending from 150 km to over 400 km in the extended-range variant.[29] The high speed reduces the reaction time available to adversary defense systems (CIWS) to mere seconds.

3.3 The Chien Hsiang Loitering Munition

To suppress enemy air defenses (SEAD), Taiwan has deployed the Chien Hsiang drone.[30]

* Guidance: It utilizes a passive anti-radiation seeker that detects the specific frequency emissions of enemy radar.

* Endurance: Powered by a pusher propeller, it has a loiter time of approximately 5 hours, allowing it to patrol a designated kill box.[31]

* Swarm Deployment: It is launched from a 12-cell trailer-mounted box launcher. This allows for saturation attacks, overwhelming enemy tracking limits.[32]

Part IV: Fundamental Sciences and Resilience

Beyond hardware, Taiwan is leveraging its data and manufacturing capabilities to advance fundamental science and infrastructure resilience.

4.1 Quantum Fabrication at Academia Sinica

In the race for quantum computing, Taiwan is applying its semiconductor manufacturing expertise to quantum devices. Academia Sinica has established the Quantum Chip Fabrication Space (QC-Fab) to produce superconducting qubits.[33]

* Superconducting Qubits: These are artificial atoms created using Josephson Junctions (non-linear inductors made of superconducting metal separated by a thin insulator).

* Fabrication Challenge: The quality of the qubit (coherence time) is heavily dependent on the purity of the materials and the precision of the interfaces. Even microscopic surface roughness can introduce noise. By using 8-inch semiconductor tools, Academia Sinica aims to standardize and improve the yield of these delicate quantum circuits, moving from experimental artisanal devices to reproducible high-fidelity qubits. They have successfully demonstrated a 5-qubit system and are scaling up.[34]

4.2 Precision Medicine and the Biobank

The Taiwan Biobank has aggregated genomic and phenotypic data from over 200,000 participants, integrated with the National Health Insurance (NHI) database.[35]

* AI Application: Researchers are using this dataset to train AI models for Polygenic Risk Scores (PRS) specific to the East Asian population.

* Case Study: In oncology, AI models analyze the complex "proteomics" (protein interactions) of tumors to predict responses to immunotherapy (checkpoint inhibitors). This moves treatment from a trial-and-error approach to precision engineering of the immune response.[36]

4.3 Engineering for Extremes: Floating Offshore Wind

The development of wind farms in the Taiwan Strait presents a unique "Compound Hazard" engineering challenge: the simultaneous threat of Super Typhoons and Seismic Liquefaction.[37]

* Mooring Dynamics: For Floating Offshore Wind Turbines (FOWT) in deeper waters (>50m), engineers are utilizing semi-submersible platforms anchored by catenary chains. The mooring system must be designed with sufficient elasticity to absorb the kinetic energy of 15-meter typhoon waves without snapping.

* Seismic Design: The seabed is prone to liquefaction during earthquakes (where soil loses stiffness and behaves like a liquid). Anchoring solutions involve deep suction piles or drag-embedment anchors that penetrate below the liquefiable layer to ensure stability.[38]

Conclusion

The technological landscape of Taiwan in the mid-2020s is defined by a synthesis of extreme precision and strategic hardening. From the Angstrom-level lithography of the A16 node to the hydrodynamic resilience of the Hai Kun submarine, the island is executing a comprehensive strategy of technological sovereignty.

The interconnectedness of these sectors is striking. The same AESA technology used to track typhoons on Triton is adapted for tactical communications on Bellbird. The manufacturing rigor used to build Nanosheet transistors is applied to fabricating superconducting qubits. This report concludes that Taiwan's scientific and engineering output is not merely a commercial asset but a vital component of its national defense and survival strategy, creating a "Silicon Shield" that is reinforced by aerospace reach and asymmetric deterrence.

Works Cited

- * TSMC Sets Historic \$56 Billion Capex for 2026 to Accelerate 2nm and A16 Production, accessed January 18, 2026,
<https://markets.financialcontent.com/wral/article/tokenring-2026-1-15-tsmc-sets-historic-56-billion-capex-for-2026-to-accelerate-2nm-and-a16-production>
- * The Silicon Frontier: TSMC Ignites 2nm Volume Production as GAA Era Begins, accessed January 18, 2026,
<https://markets.financialcontent.com/wedbush/article/tokenring-2026-1-14-the-silicon-frontier-tsmc-ignites-2nm-volume-production-as-gaa-era-begins>
- * A16 Technology - Taiwan Semiconductor Manufacturing Company Limited, accessed January 18, 2026,
https://www.tsmc.com/english/dedicatedFoundry/technology/logic/l_A16
- * Backside Power Delivery Gears Up For 2nm Devices : r/hardware - Reddit, accessed January 18, 2026,
https://www.reddit.com/r/hardware/comments/1b3kukx/backside_power_delivery_gears_up_for_2nm_devices/
- * TSMC Uncorks A16 With Super Power Rail - Semiconductor Engineering, accessed January 18, 2026,
<https://semiengineering.com/tsmc-uncorks-a16-with-super-power-rail/>
- * Too Important to Ignore: Unpacking Advanced Packaging for AI Semiconductor - Report Summary - The Futurum Group, accessed January 18, 2026,
<https://futurumgroup.com/press-release/too-important-to-ignore-unpacking-advanced-packaging-for-ai-semiconductor/>
- * CoWoS - Taiwan Semiconductor Manufacturing Company Limited - 3DFabric, accessed January 18, 2026,
<https://3dfabric.tsmc.com/english/dedicatedFoundry/technology/cowos.htm>
- * TSMC Reserves 70% of 2025 CoWoS-L Capacity for NVIDIA | TechPowerUp Forums, accessed January 18, 2026,
<https://www.techpowerup.com/forums/threads/tsmc-reserves-70-of-2025-cowos-l-capacity-for-nvidia.333030/>
- * CoWoS and Advanced Packaging: How Chip Architecture Shapes Data Center Design, accessed January 18, 2026,
<https://introl.com/blog/cowos-advanced-packaging-chip-architecture-data-center-2025>
- * TSMC details 12.8 Tbps on-package optical communications -- an efficient silicon photonics interconnect for AI | Tom's Hardware, accessed January 18, 2026,
<https://www.tomshardware.com/desktops/servers/tsmc-details-128-tbps-on-package-communication-solution-an-efficient-silicon-photonics-interconnect-for-ai>
- * [News] Silicon Photonics in the Spotlight: TSMC Lifts the Curtain on COUPE at SEMICON Taiwan - TrendForce, accessed January 18, 2026,
<https://www.trendforce.com/news/2025/09/09/news-silicon-photonics-in-the-spotlight-tsmc-lifts-the-curtain-on-coupe-at-semicon-taiwan>
- * TRITON - TASA, accessed January 18, 2026,
<https://www.tasa.org.tw/en-US/missions/detail/TRITON>
- * Triton Set to Soar: Taiwan to Launch Second Homegrown Satellite - , accessed January 18, 2026,
<https://www.taiwan-panorama.com/en/Articles/Details?Guid=55d1c405-9cb2-4a03-a99e-6c37c15d6ac6&CatId=7&postname=Triton>
- * TRITON GNSS-R Mission: Preliminary Results and Perspectives | Request PDF, accessed January 18, 2026,

https://www.researchgate.net/publication/383810586_TRITON_GNSS-R_Mission_Preliminary_Results_and_Perspectives

* Evaluation of the effect of satellite motion on GNSS-R wind speed retrieval:

insights from TRITON - ResearchGate, accessed January 18, 2026,

https://www.researchgate.net/publication/394102653_Evaluation_of_the_Effect_of_Satellite_Motion_on_GNSS-R_Wind_Speed_R

* Developing and Testing Models for Sea Surface Wind Speed Estimation with GNSS-R

Delay Doppler Maps and Delay Waveforms - MDPI, accessed January 18, 2026,

<https://www.mdpi.com/2072-4292/12/22/3760>

* Evaluation of the effect of satellite motion on GNSS-R wind speed retrieval:

insights from TRITON - Frontiers, accessed January 18, 2026,

<https://www.frontiersin.org/journals/remote-sensing/articles/10.3389/frsen.2025.1657576/full>

* Taiwan launches homegrown satellite constellation to replace aging defense comms,

accessed January 18, 2026,

<https://www.tronfuture.com/news/taiwan-launches-homegrown-satellite-constellation-to-replace-aging-defense-comms/>

* Tron Future Tech to test LEO satellite communication under Foxconn-initiated EV

project, accessed January 18, 2026,

<https://www.tronfuture.com/news/tron-future-tech-to-test-leo-satellite-communication-under-foxconn-initiated-ev-project/>

* Solution - Space Tech | Tron Future , accessed January 18, 2026,

<https://www.tronfuture.com/solutions/space-tech/>

* Taiwan Tech Firm Sees Military Uses for Its New Satellite - Domino Theory,

accessed January 18, 2026,

<https://dominotheory.com/taiwan-tech-firm-sees-military-uses-for-its-new-satellite/>

* Hai Kun-class submarine - Wikipedia, accessed January 18, 2026,

https://en.wikipedia.org/wiki/Hai_Kun-class_submarine

* Taiwan Submarine Capabilities, accessed January 18, 2026,

<https://www.nti.org/analysis/articles/taiwan-submarine-capabilities/>

* taiwan's first indigenous defense submarine "haikun" - Institute for National

Defense and Security Research-Defense Security Brief, accessed January 18, 2026,

<https://indsr.org.tw/en/respublicationcon?uid=15&resid=2986&pid=5210>

* Can India and Taiwan Cooperate on Submarines? -- ORF America, accessed January 18,

2026,

<https://orfamerica.org/orf-america-comments/can-india-and-taiwan-cooperate-on-submarines>

* Safety Testing of Lithium-Ion Batteries for Military Applications, accessed

January 18, 2026,

<https://railroads.dot.gov/sites/fra.dot.gov/files/2023-06/Safety%20Testing%20of%20Lithium-Ion%20Batteries%20for%20Military%20>

* HF Supersonic Anti-Ship Missile - NCSIST, accessed January 18, 2026,

https://www.ncsist.org.tw/eng/csistdup/products/product.aspx?product_Id=10&catalog=30

* Hsiung Feng III - Missile Threat - CSIS, accessed January 18, 2026,

<https://missilethreat.csis.org/missile/hsiung-feng-iii/>

* Taiwan Mass Producing Its Supersonic Anti-Ship Missile - Domino Theory, accessed

January 18, 2026,

<https://dominotheory.com/taiwan-mass-producing-its-supersonic-anti-ship-missile/>

- * NCSIST Chien Hsiang - Wikipedia, accessed January 18, 2026,
https://en.wikipedia.org/wiki/NCSIST_Chien_Hsiang
- * Taiwan's Chien Hsiang loitering drone was designed to destroy enemy radar and UAVs, accessed January 18, 2026,
https://www.spacewar.com/m/reports/Taiwans_Chien_Hsiang_loitering_drone_was_designed_to_destroy_enemy_radar_and_UAVs
- * Taiwan's Chien Hsiang Loitering Munition Will Debut in Annual Live-Fire Exercise Later in August - The Aviationist, accessed January 18, 2026,
<https://theaviationist.com/2024/08/17/taiwan-chien-hsiang-loitering-munition/>
- * Academia Sinica - Press Releases | Academia Sinica Announces Advances in Quantum Chip Fabrication Science and Unveils Two Research Spaces Promoting Taiwan's Quantum Technology Research and Development, accessed January 18, 2026,
https://www.sinica.edu.tw/en/news_content/55/3181
- * Academia Sinica announces quantum chip fabrication progress - Taiwan Today, accessed January 18, 2026,
<https://www.taiwantoday.tw/Economics/Top-News/270711/Academia-Sinica-announces-quantum-chip-fabrication-progress>
- * Taiwan Biobank: An East Asian Resource for Precision Medicine, accessed January 18, 2026,
<https://www.npm.sg/taiwan-biobank-an-east-asian-resource-for-precision-medicine/>
- * Five AI-driven Drug Discovery Companies Enabling Precision Oncology - BiopharmaTrend, accessed January 18, 2026,
<https://www.biopharmatrend.com/artificial-intelligence/how-artificial-intelligence-is-reshaping-the-landscape-of-personalized-cancer>
- * Wind Farm Design with 15 MW Floating Offshore Wind Turbines in Typhoon Regions - MDPI, accessed January 18, 2026, <https://www.mdpi.com/2077-1312/13/4/687>
- * Offshore wind turbines must withstand typhoons and earthquakes in Taiwan - Niras, accessed January 18, 2026, <https://www.niras.com/projects/offshore-jacket-design/>
- * Backside Power Delivery | Boosting 2nm Chips & AI Performance - McKinsey Electronics, accessed January 18, 2026,
<https://www.mckinsey-electronics.com/post/the-best-kept-secret-in-semiconductor-innovation-backside-power-delivery>
- * Heterogeneous Integration of a Compact Universal Photonic Engine for Silicon Photonics Applications in HPC - Research at TSMC, accessed January 18, 2026,
<https://research.tsmc.com/page/on-chip-interconnect/14.html>
- * Taiwan Deploys 250KM Hsiung Feng III Anti-ship Missile - Global Defense Corp, accessed January 18, 2026,
<https://www.globaldefensecorp.com/2025/08/20/taiwan-deploys-250km-hsiung-feng-iii-anti-ship-missile/>
- * Taiwan to Produce 100+ Iranian Shahed 136-Like Chien Hsiang Loitering Munitions by 2025 - Defense Mirror, accessed January 18, 2026,
https://defensemirror.com/news/33135/Taiwan_to_Produce_100__Iranian_Shahed_136_Like_Chien_Hsiang_Loitering_Munitions_L
- * Academia Sinica Announces Quantum Chip Fabrication Science Advances, Unveils Two Research Spaces, accessed January 18, 2026,
<https://thequantuminsider.com/2025/06/16/academia-sinica-announces-quantum-chip-fabrication-science-advances-unveils-two-rese>
- * Taiwanese offshore wind project will be typhoon and earthquake-proof, accessed January 18, 2026,

<https://www.rivieramm.com/news-content-hub/news-content-hub/taiwanese-offshore-wind-project-will-be-typhoon-and-earthquake->

* Taiwan's Smart Healthcare Value Chain: AI Innovation from R&D to Industry

Deployment, accessed January 18, 2026,

<https://pmc.ncbi.nlm.nih.gov/articles/PMC12786189/>