

National Semiconductor Translation and Innovation Centre (R&D Fab)

What is it?

The Agency for Science, Technology and Research (A*STAR) will invest about \$500 million to establish a new National Semiconductor Translation and Innovation Centre (NSTIC) R&D fabrication facility (R&D Fab) at JTC nanoSpace @ Tampines. This will be a national facility designed to drive advanced semiconductor research and innovation, with an initial focus on advanced packaging technologies, which are innovative methods of combining different semiconductor components into a single unit to make chips faster, more powerful and more efficient. The new facility aims to strengthen the local semiconductor ecosystem and bring technologies closer to commercialisation, by fostering partnerships with industry partners and academia. NSTIC (R&D Fab) at nanoSpace will commence operations in 2027.

This is the next phase of the NSTIC programme, which was announced in MTI's Committee of Supply (COS) 2024. Then, it was announced that A*STAR would establish a national-level R&D translational platform for flat optics and silicon photonics, at a budget of about \$180 million. NSTIC commenced operations at Fusionopolis in April 2024. A*STAR has since broadened the Centre to cover R&D programmes and infrastructure for various key semiconductor technologies, with the aim of fostering ecosystem collaboration and boosting R&D translation outcomes for the semiconductor industry.

How does it work?

The NSTIC (R&D Fab) will house 12-inch (300mm) industry-grade tools that can enable faster production and cost savings, and will be used as a shared infrastructure resource, complemented by fab operations and research expertise. This will be particularly beneficial to SMEs and startups, as it provides them with access to critical semiconductor infrastructure which will otherwise require substantial upfront investments. NSTIC (R&D Fab) will operate as a collaborative hub where public and private sector players share access to state-of-the-art cleanroom facilities, tools, and fabrication operations, providing the opportunity to bridge the gap for lab-to-fab semiconductor R&D translation. Startups, SMEs, MNCs, and public sector research organisations can collaborate within the NSTIC (R&D Fab) ecosystem to carry out translational R&D. Synergies will arise as the NSTIC (R&D Fab)'s partners complement each other's capabilities, accelerating technology development and scaling innovations to market-ready solutions. This will also create opportunities for our startups and SMEs to be integrated into the supply chain for advanced semiconductor technologies.

How can companies tap on the NSTIC (R&D Fab)?

- **Accessing Infrastructure and Tools:** Companies looking for specialised cleanroom space can gain access to such space within the facility to set up R&D labs. Companies can utilise advanced industry-grade tools, and prototyping services tailored to their R&D needs.
- **Collaborative Opportunities:** Companies can collaborate with A*STAR, Institutes of Higher Learning (IHLs) and other ecosystem players to co-develop innovations, particularly in advanced packaging and related areas.
- **Talent Development and Workforce Training:** Companies can leverage the NSTIC (R&D Fab)'s industry-like environment to train their workforce through collaborations with IHLs for pre-employment and continuing education, to attract and develop skilled professionals within the semiconductor industry.
- **Scalable R&D Programmes:** Companies can transition their low Technology Readiness Level (TRL) research from IHL or Research Institutes' labs to the NSTIC (R&D Fab) for scale-up and translational R&D, expediting product innovation and market readiness.

Annex: Photos of Deputy Prime Minister and Minister for Trade and Industry, Mr Gan Kim Yong's visit to the National Semiconductor Translation and Innovation Centre (NSTIC) at Fusionopolis

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About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector R&D agency. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit the economy and society. As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by improving societal outcomes in healthcare, urban living, and sustainability. A*STAR plays a key role in nurturing scientific talent and leaders for the wider research community and industry. A*STAR's R&D activities span biomedical sciences to physical sciences and engineering, with research entities primarily located in Biopolis and Fusionopolis. For ongoing news, visit www.a-star.edu.sg.

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Annex: Photos of Deputy Prime Minister and Minister for Trade and Industry, Mr Gan Kim Yong's visit to the National Semiconductor Translation and Innovation Centre (NSTIC) at Fusionopolis



DPM Gan Kim Yong viewing the cleanroom where NSTIC, announced at MTI's COS 2024, conducts R&D activities using shared cleanroom facilities at Fusionopolis. NSTIC (R&D Fab) at JTC nanoSpace @ Tampines will also provide shared cleanroom facilities.



MetaOptics Technologies showcasing its product, which leverages flat optics, to DPM Gan Kim Yong.