



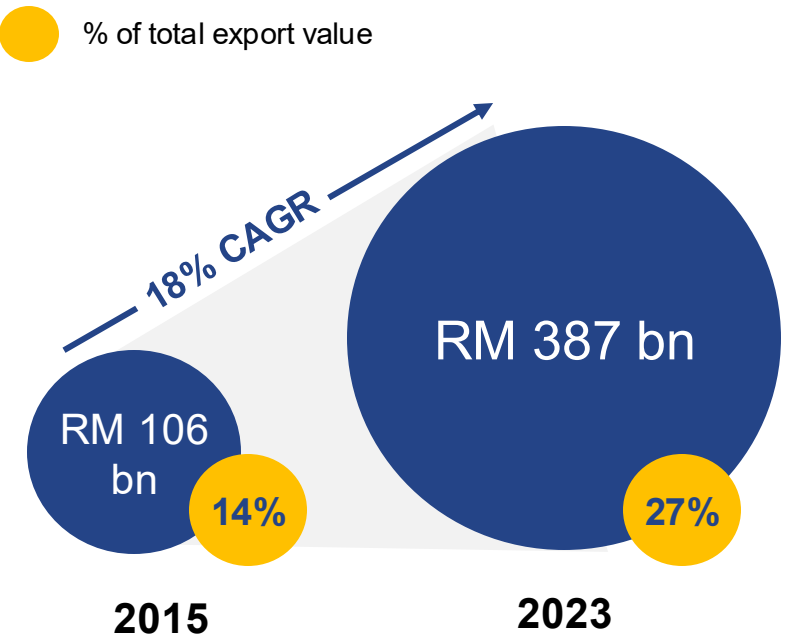
SILICON VISION

AI leadership through IP in Malaysia – indigenous innovation from the ground up

May 2025

Semiconductors are critical to the Malaysian economy - further value can be realised in line with peers' trajectories

Malaysia's semicon export value has more than tripled in the past 8 years



Contributing to

25% of GDP

~100k jobs in 2025¹

However, Malaysia has not captured full value of the industry's growth over time

Comparison of MY vs. TW semiconductor achievements since 1960s

	Malaysia semis	Taiwan semis												
Current	<ul style="list-style-type: none">~6% export market shareLeading OSAT exporter (13% share)	<ul style="list-style-type: none">~25% global export sharePresence across entire value chain with local champions' (TSMC, UMC) dominance in front-end (e.g., foundries)												
Trade in 2023, RM Bn	<table><tr><td>Export</td><td>387</td></tr><tr><td>Import</td><td>280²</td></tr><tr><td>Trade balance</td><td>107</td></tr></table>	Export	387	Import	280 ²	Trade balance	107	<table><tr><td>Export</td><td>760</td></tr><tr><td>Import</td><td>334</td></tr><tr><td>Trade balance</td><td>426</td></tr></table> <div>+3.0x</div>	Export	760	Import	334	Trade balance	426
Export	387													
Import	280 ²													
Trade balance	107													
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Jobs in industry, '000	122 ³	318 <div>+1.6x</div>												
Average salary, 'RM '000 per month	5.0	19.4 <div>+2.9x</div>												

1. ASEAN briefing

2. Calculated based on HS codes of all semiconductor-relevant materials and components

3. Calculated using MMS data for two categories: manufacturing of diodes, transistors, semiconductor devices and manufacturing of IC



Malaysia has core spikes in OSAT; ongoing ‘whole-of-nation’ efforts in other segments to move up the value chain

Semi-conductor value chain	Concept & Design	Semiconductor manufacturing				Down-stream
		Materials & Equipment	Fabrication (front-end)	Assembly & Test (back-end or OSAT)	Printed circuit board assembly	
Description	Fabless and Design Service	Materials (e.g., ingot) Equipment (e.g., lithography, ATE)	Foundry Manufacturing of designed chips on contract basis	OSAT Wafer package and testing	EMS Electronics manufacturing service	End use cases powered by chips (e.g., RE, EV, AI)
Firms	Local players					
	MNCs					
Endowment	<p>Low complexity design by local players</p>	<p>Fast-rising ATE players (e.g., Penta, ViTrox)</p> <p><1% share¹ of ATE global market size ~USD 9.6 Bn</p>	<p>One of go-to destinations for MNCs' chip plant (e.g., Infineon USD 5 bn Kulim plant)</p>	<p>Global leadership in OSAT (e.g., ~13% share in traditional packaging market ~USD 45 Bn)</p> <p><i>Malaysia's current spike</i></p>	<p>Commoditised service</p> <p>Dominated by low-cost MNCs with medium involvement by local SMEs</p>	

1. AI and machine learning technologies

2. Including training areas like industrial automation, wafer sorting, assembly processes and IC package testing

Source: Expert interview, press search

‘Whole-of-nation’ efforts underway

arm

USD 250 Mn deal with Arm

IP licenses for design products (including 7 CSS, 25 AFA tokens); 10k engineers to be trained

KHAZANAH NASIONAL

BlueChipVC

USD 230+ Mn Semicon Funds

E.g., BlueChip (USD 200 Mn), Cambrian Fund (USD 30 Mn; led by ViTrox & Southern Capital, KNB as anchor investor)

MALAYSIA SEMICONDUCTOR IC DESIGN PARK

PSDC

Training Programmes

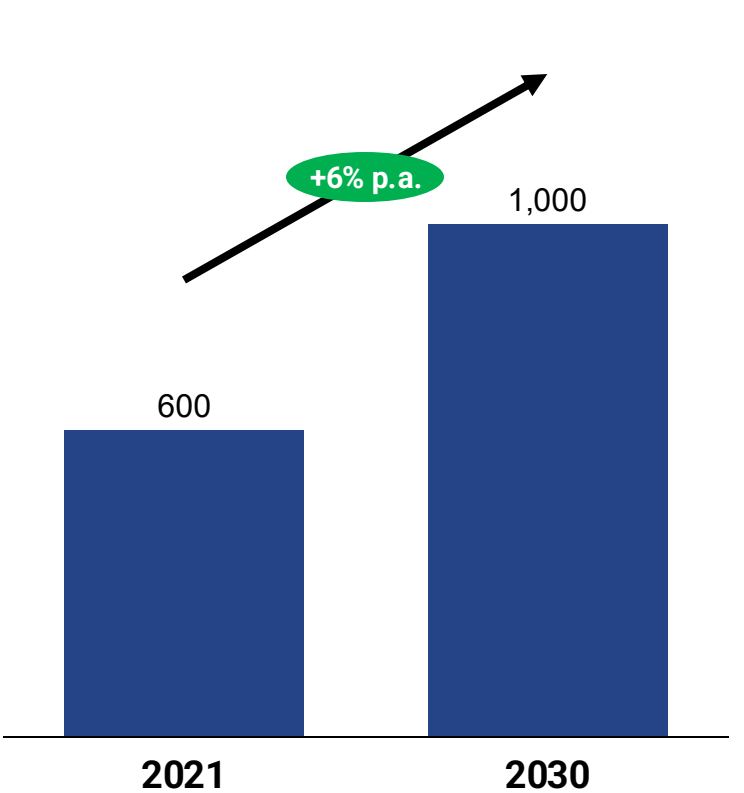
Training programmes for fresh graduates and skilled engineers²



Moving forward, Malaysia has a ‘once in a generation’ window to build a global hub for semiconductors

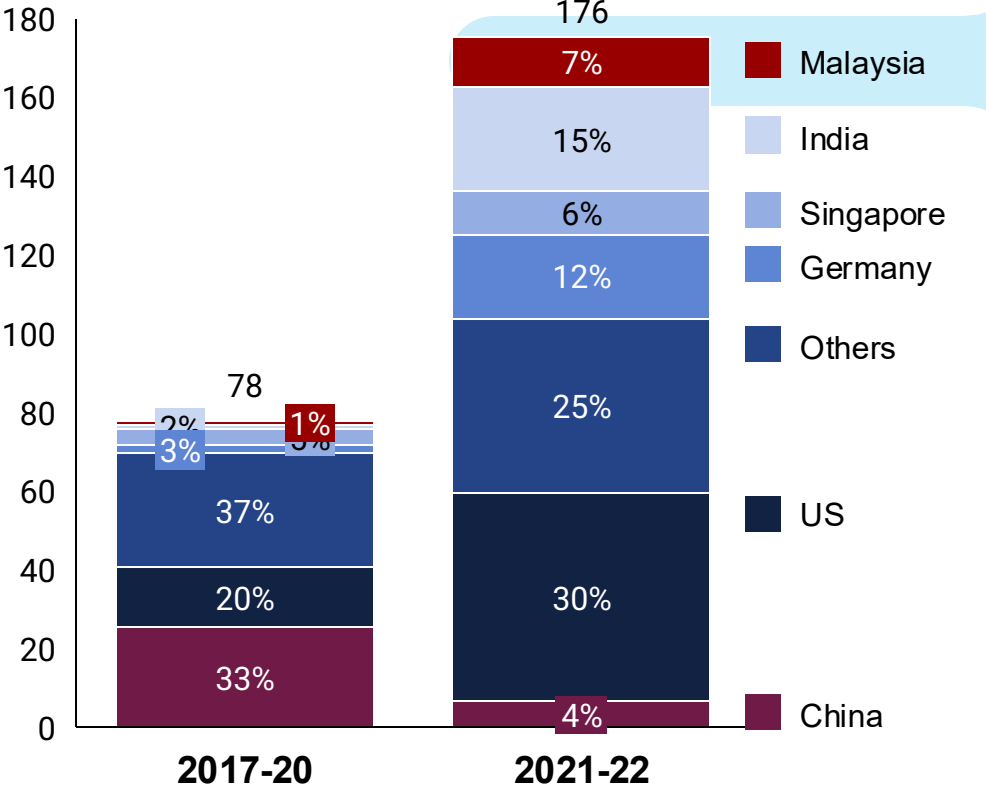
Semiconductor industry is poised for a decade of extraordinary growth, reaching USD 1 Tn by '30

Global semiconductor market value, USD Bn



Malaysia has been one of the main beneficiaries of supply chain reconfiguration...


Inbound FDI in semiconductor sector, 2017-22, USD Bn




... with USD 10+ Bn mega projects in 2023-25

NON-EXHAUSTIVE

USD 5 Bn 
Power chip plant expansion and world's largest 200mm SiC fab build in Kulim (2023)

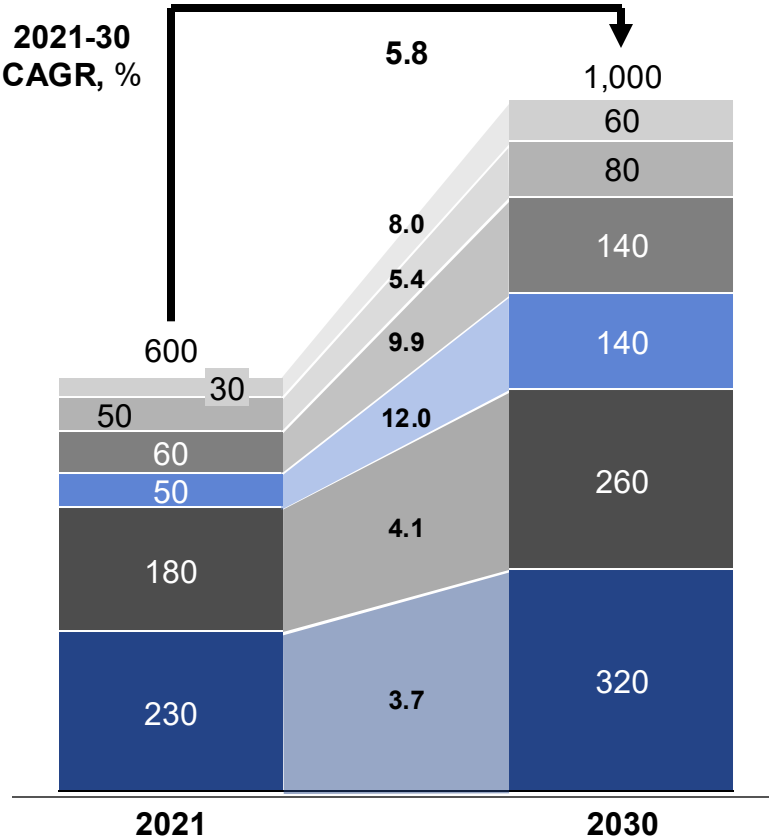
USD 1.6 Bn 
Production of semiconductor devices and high-performance IC in KL & Melaka (2023)

USD 1.3 Bn 
Industry 4.0 OSAT plant (2024)

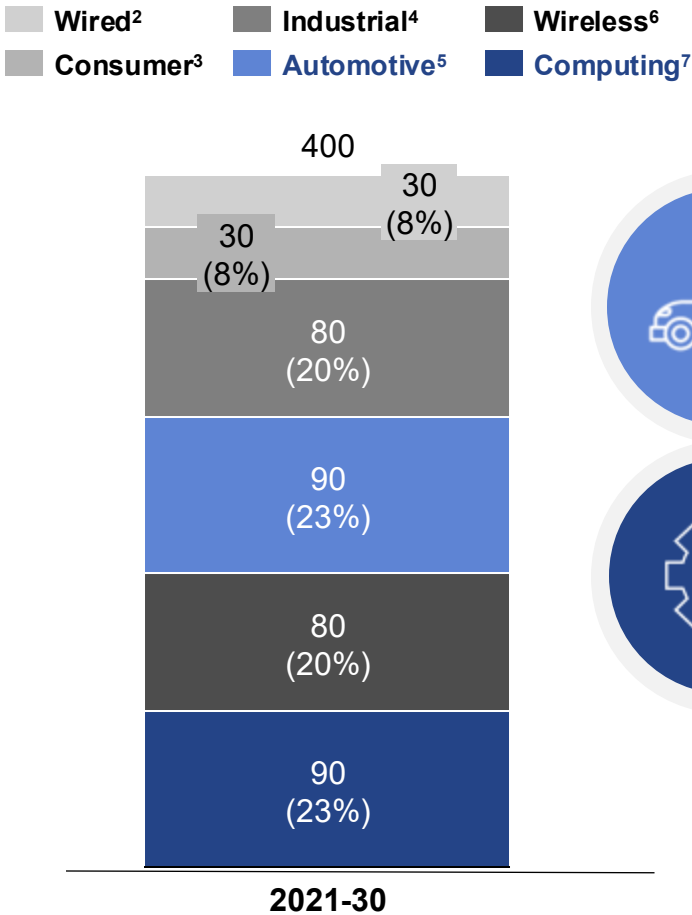
1. Other includes 55+ countries where FDI in the semiconductor sector has been tracked since 2003
Source: FDI intelligence, Yole report

Globally, the growth of the semiconductor industry is driven by Computing and Automotive sectors

Global semiconductor market¹, US\$B



Growth contribution, \$B (%)



Takeaways



~46%

of overall market growth from Automotive and Computing sectors



2x

higher growth rates in automotive as compared to the broader market

1. Values rounded across deck; 2. Switches and routers, aggregate equipment, CPEs; 3. TVs, Consoles, Smartwatches, Home appliances, etc.; 4. Medical, Automation, Test and Measurement, Security, Buildings, Lighting, Power and Energy, Military, Others; 5. Connectivity, Telematics, Infotainment, Drivetrains, Powertrains, ADAS, Chassis, Body and Convenience, Others; 6. Mobile phones, smartphones, communications infrastructure; 7. Includes data centres

Malaysia's core strategy to move up the value chain is 3-pronged – and will deliver 3 key benefits

Detailed next

What moving to and innovating at the Frontier means for Malaysia



IP-based strategy

Move from factory-based FDI to **IP-based investments** (e.g., to develop Global IC Design Champions)



Local-first approach

Build a **local-first supply chain** across segments (e.g., materials & equipment, design, OSAT, ODM) to serve the local and broader ASEAN demand



Capability building and tech transfer via JVs

Engage in **JVs with world-class MNCs** to facilitate knowledge, capability and tech transfer in less developed strategic segments (e.g., design, advanced packaging)

Benefits Malaysia could realise



Drive innovation and IP ownership

Allows Malaysian companies to differentiate and gain a competitive advantage globally



Capture value in higher value segments

Backend only accounts for 5-10% of the total semiconductor value pool today; expanding capabilities into design and frontend increases this by >45%



Enhance supply chain resilience

Double down on differentiation and hard-to-replace products through increased local ownership of IP and reduced foreign dependency, as Malaysia's OSAT dominance is at risk from intensifying regional competition

IP-based strategy: We have started the journey to differentiate through an IP ecosystem partnership

Focus of today's roadshow

2024

April



Unveiled plan to establish **IC design hub** in Selangor



May

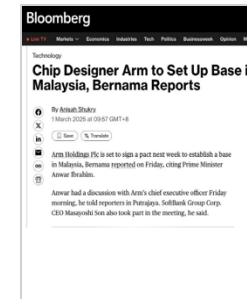


Announced **MyChipStart IC Programme** to develop IC design companies into global champions



2025

March



Inked 10-year pact (RM 1.1bn) with **Arm Limited** to develop local IC design companies

arm

May



Announce **operationalisation** of IP Ecosystem Partnership

June



Award tokens to companies that meet selection criteria

The Arm-Malaysia partnership comprises 4 components designed to build the local ecosystem and reduce time to market for innovators

Arm is a leading UK-based semiconductor and software design company



Dominance in growth industries, with 300bn chips sold to date



Energy efficiency: Cloud processor at 40% lower power than nearest competitor



Mature client base, including many Tier 1 clients



Ecosystem-based collaboration and access to 10k ecosystem partners (including EDA, foundry, design)

What is included in the partnership?



1. 25 tokens in which 20 are entry tokens (1 year, 1 tapeout right), and 5 standard tokens (1 year, unlimited tapeout rights)

An IP partnership would have ripple-effect benefits across the entire ecosystem

Detailed next

3 major hallmarks of success across the value chain



Resilient ecosystem and supply chain

- Local-first supply chain
- Mature talent base
- Emergence of new companies and JVs



Increased investments across the supply chain

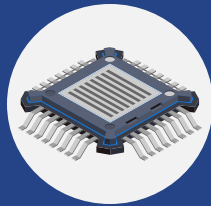
- Increased foreign-local JV collaborations
- Diversification of foreign origin
- Increased FDI inflows



Improved market access

- End client high volume demand
- Foundry access

Example benefits within value chain segments



Concept & Design

Shorten time-to-market

Lower **R&D cost**

Lower risk of development failures

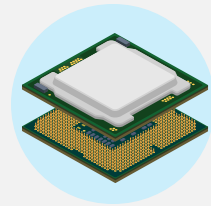
Attract top design companies and move **from design services to IP products**



Materials/Equipment

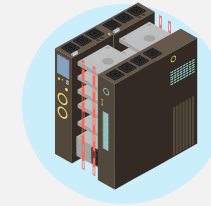
Expand scale and **increase order book** of existing local players

Create **local champions** serving the global and regional markets



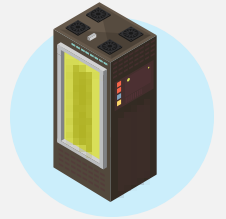
Assembly & Test

Create a **distinctive value proposition** and move up the value chain for **advanced packaging**, for both local players and JVs/partnerships



System and rack integration (ODM)

Boost **supply chain resilience** via **supply diversification**



End product

Ecosystem build-up via the queen-bee effect, as the end product players are likely to be world-standard in scale and reputation

Subsidized frontier IPs would prepare local semiconductor firms with lower R&D cost and shorter time-to-market with ‘silicon-proven’ products

Benefits to local design players from licensing IPs

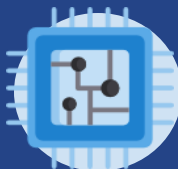
Time-to-market



R&D cost



Silicon-proven



Without IP Partnership

- Designing SoC and CSS from scratch could take **36-60 months**
- Most AI chip startups today **license IPs (cores) instead of building**

With AFA

- **Accelerated development:** ~40% faster time-to-prototype

With CSS

- **Fast-track to production:** reduced to as low as 13 months

- Developing high-performance compute IP would require **billion-dollar R&D investments**

- **Zero-cost prototyping:** startup only pays Arm royalties when moving to manufacturing

- **TCO savings:** ~50% cost savings reported by AWS using CSS V3

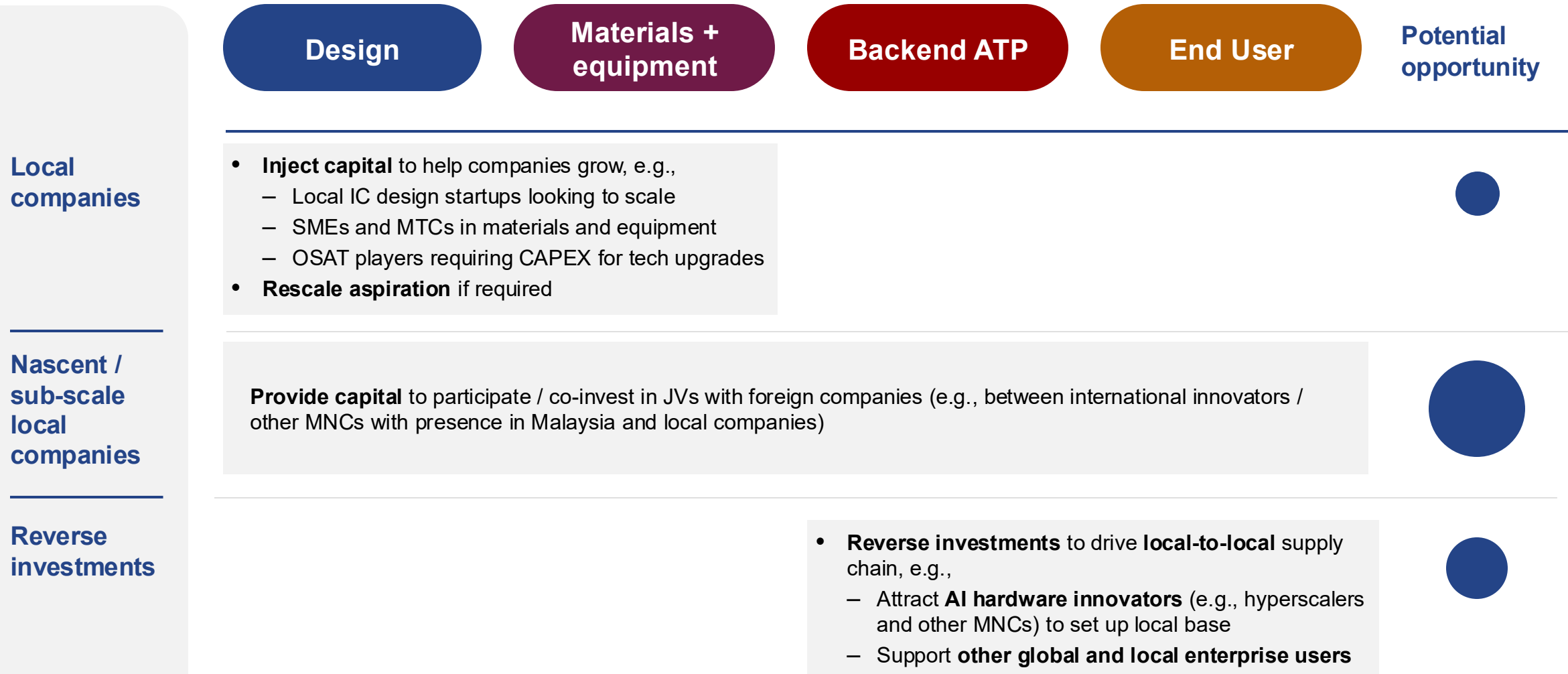
- Prone to **design error**, higher risk of failure

- **Market access:** automatic chip compatibility with Android/Linux, access to Arm's **1000+ partners**

- **Leading performance:** ~30% higher compute density

3 new opportunities for investors to support and participate in the local ecosystem

ILLUSTRATIVE



Qualifying criteria for the application of the Arm CSS and AFA

	Arm Compute Sub System (CSS)	Arm Flexible Access (AFA)
A Technical capability	<ul style="list-style-type: none"> Proven expertise for advanced nodes, e.g. 16nm, 7nm, 5nm, 3nm and below Demonstrated experience in utilising Arm IPs¹ Verified access to industry-standard Electronic Design Automation (EDA) tools compatible with Arm IP² Compliance with foundry's Process Design Kit (PDK) standards for relevant technology nodes; evidence must include certification results from the foundry or equivalent authorised PDK audits Proven track record of either successful prototype or production-quality chip with advanced nodes below 16nm 	<ul style="list-style-type: none"> Demonstrated use or readiness to adopt Arm IP for both exploratory research and production-level designs Demonstrated general processor integration experience, either Arm or non-Arm IP
B Operational readiness	<ul style="list-style-type: none"> Minimum of 20 qualified design engineers³ specialising in Arm architecture design, verification, and implementation, dedicated for the project from the CSS token awarded 	<ul style="list-style-type: none"> Availability of technical personnel trained in Arm architecture; proficient in deploying Arm IP across various design environments Demonstrated readiness to scale projects from prototyping to production-level designs, with evidence of existing pipeline projects
C Commercial requirements	<ul style="list-style-type: none"> Displayed financial viability of the proposed design and commercialisation strategy Submission of comprehensive commercialisation & product roadmap Existing positive cash flow evidence, with audited summary accounts for the past 3 years 	<ul style="list-style-type: none"> Displayed financial viability of the proposed design and commercialisation strategy Submission of comprehensive commercialisation & product roadmap Existing positive cash flow evidence, with audited summary accounts for the past 2 years
D Strategic alignment to national objectives	<ul style="list-style-type: none"> Local ownership preferred: Applicants with high local ownership and domicile in Malaysia preferred Local-first requirement: Demonstrated search for local semiconductor companies for every part of the supply chain, and cooperating with local companies (direct/JV) with requisite capabilities for the supply chain in the CSS applied for Technology transfer: Evidence of partnerships/JV with local companies aimed at knowledge transfer, technical capability enhancement or joint IP development Training and R&D: Participation in local training and R&D programs, and other capacity-building initiatives, in line with the national objective 	<ul style="list-style-type: none"> Local ownership preferred: Applicants with high local ownership and domicile in Malaysia preferred Training and R&D: Displayed plans and commitment to upskill employees and commit to R&D for long-term product development, leveraging on the AFA applied for

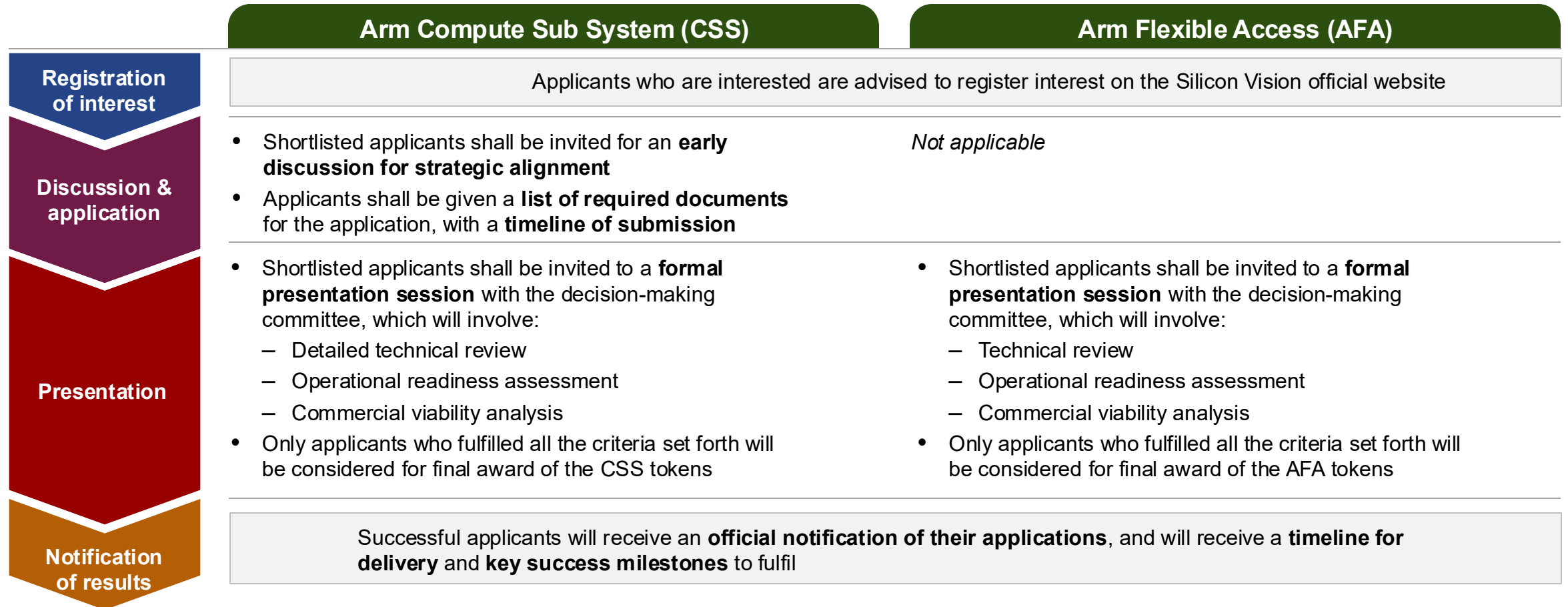
1. Including but not limited to, Cortex-A, Cortex-M, Neoverse architecture, 2. Including but not limited to, Cadence, Synopsys, Mentor Graphics
3. Either in-house or design service provider

Documents needed for the application of the Arm CSS and AFA

	Arm Compute Sub System (CSS)	Arm Flexible Access (AFA)
1 Company profile	<ul style="list-style-type: none">• Background of applicant(s), including certificate(s) of incorporation and ownership structure• Size (number of employees, breakdown of engineers)• Financial statements¹, including revenue and profits, for the past 3 years• Market reach and share (optional)	
2 Product roadmaps	<ul style="list-style-type: none">• Location at which the main design activity is conducted• Key products completed, including project name, CPU core used, foundry, target clock speed, number of gates (approx.), tools used, and manufacturing details• Future products, ongoing and planned• Commercialisation timelines• Local partnership strategy	
3 Strategic and commercial proposal	<ul style="list-style-type: none">• Business plan for the next two (2) years• Funding model for the CSS applied, including relevant partners and their capabilities• Supply chain map-out for the CSS / AFA applied, including relevant partners and their capabilities	
4 Others	<ul style="list-style-type: none">• Collaboration agreements with local partners, if applying as part of a consortium or partnership• Applicant contact details	

1. For AFA: funding model / financial statements to include fundraising rounds shown for loss-making startups

Stages of application



Main parties



KEMENTERIAN EKONOMI

MOU Signatory Contract Signatory



MALAYSIAN INVESTMENT DEVELOPMENT AUTHORITY

arm

Supported by



- Ministry of Investment, Trade and Industry (MITI)
- Kementerian Kewangan (MOF)
- Ministry of Science, Technology and Innovation (MOSTI)

- Kementerian Pendidikan Tinggi (KPT)
- Kementerian Sumber Manusia (KESUMA)



- Including style rules and recommendations, functional verification process, code coverage analysis, timing verification, manufacturing test with coverage measurement, and layout database verification



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