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RIE2020 AME Strategy

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PM announced RIE2020 on 8 Jan 2016

CHANNEL NEWSASIA

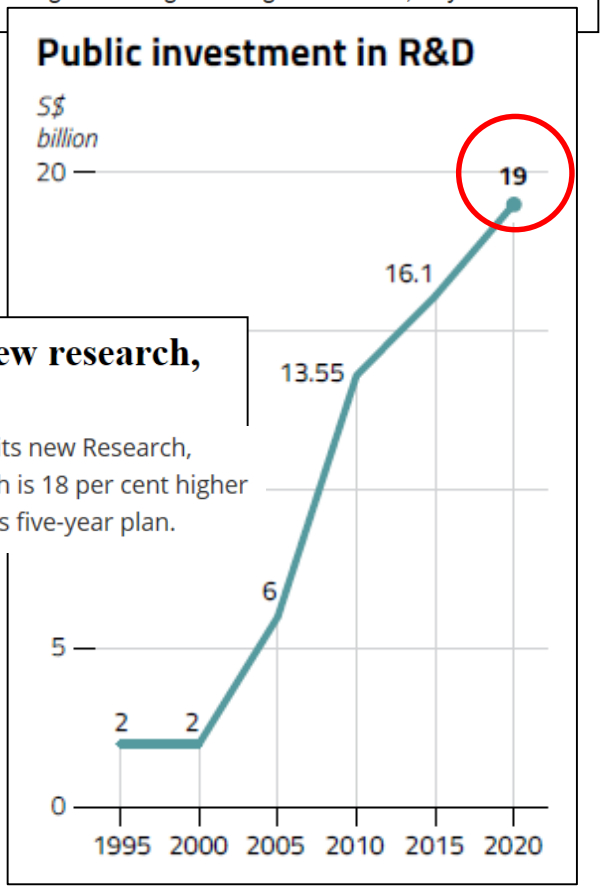
Govt commits S$19b to new 5-year plan for R&D initiatives RIE2020

Plan will contribute significantly to the economy and create opportunities and jobs, support national initiatives like Smart Nation and SkillsFuture, and help workers to thrive amidst technological changes and globalisation, says PM Lee.

THE BUSINESS TIMES

Singapore commits S$19b for new research, innovation and enterprise plan

THE government is committing S$19 billion for its new Research, Innovation and Enterprise (RIE) 2020 plan, which is 18 per cent higher than the S$16.1 billion set aside for the previous five-year plan.



Govt sets aside record S$19b for science and tech research

- **Public R&D spending sustained at 1% of GDP**
- **Priority in four technology domains**

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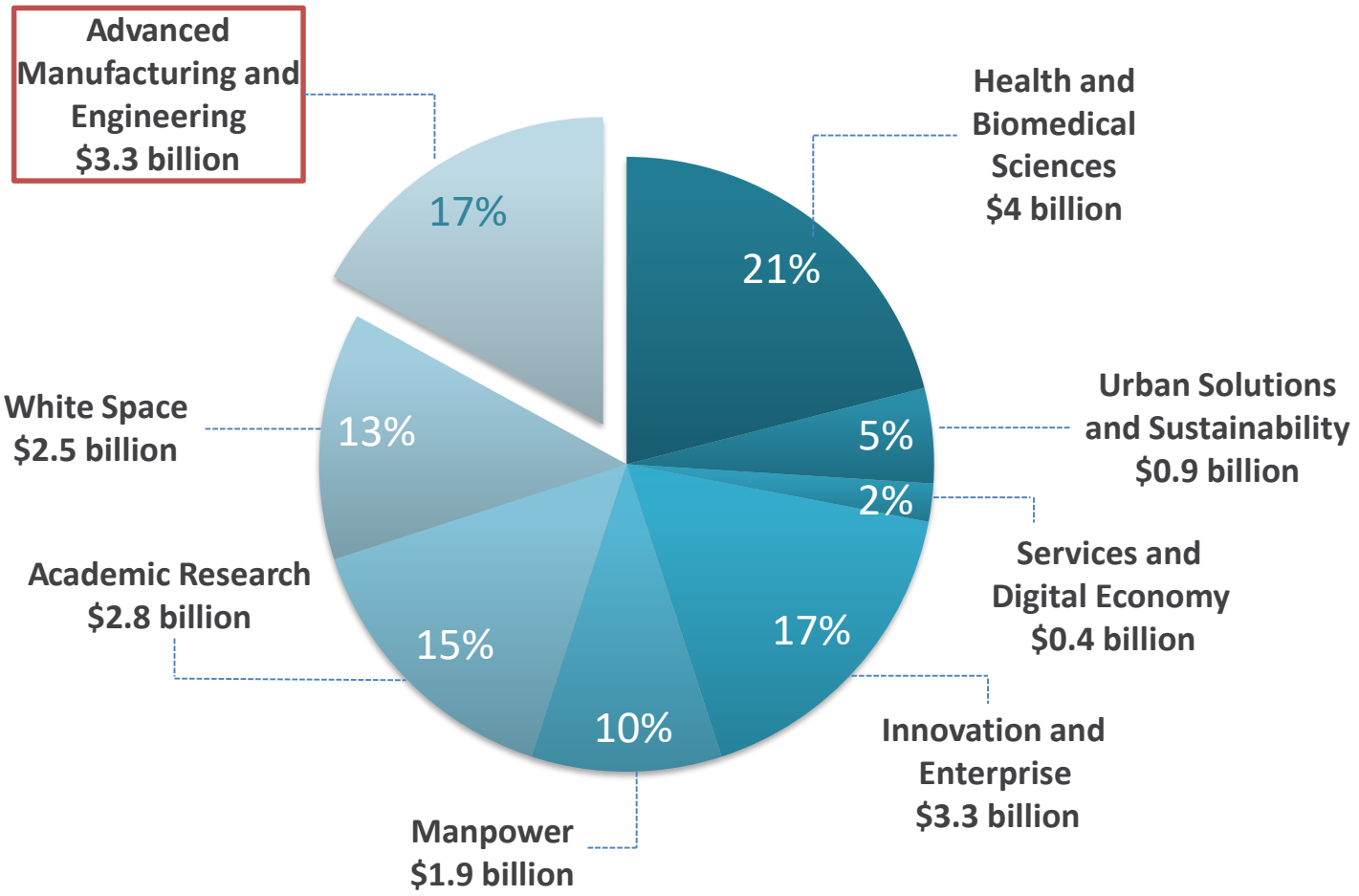
Where S$19B funds will go …



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Priority in Four Technology Domains

Advanced Manufacturing and Engineering (AME)
To develop technological capabilities that support the growth and competitiveness of our manufacturing and engineering sectors

Health and Biomedical Sciences (HBMS)
To be a leading centre that advances human health and wellness, and creates economic value for Singapore and Singaporeans through the pursuit of excellence in research and its applications

Urban Solutions and Sustainability (USS)
To develop a sustainable and liveable city through integrated solutions for Singapore and the world

Services and Digital Economy (SDE)
To develop, integrate and leverage Singapore's digital innovation capabilities to meet national priorities, raise productivity and support key services, create sustainable economic opportunities and quality jobs

Due to the pervasive and cross-cutting nature of digital technologies, AME, HBMS and USS domains will draw on and fund research in digital technology capabilities that support the research agenda within their domains

Cross-Cutting Programmes

Academic Research
To build up a significant base of capabilities and a pipeline of ideas that can feed into applied and industrial research to drive the next phase of growth

Manpower
To build a strong research and innovation community

Innovation and Enterprise
To build up a strong core of innovative enterprises that drive value creation and economic competitiveness

Key RIE2020 Thrusts

Closer **Integration of Research Thrusts**

- Encourage multi-disciplinary & multi-stakeholder collaboration
- Greater coordination of national efforts
- Strategic investments in basic and mission-oriented research

Stronger Dynamic towards the **Best Teams and Ideas**

- Continued shift towards competitive funding
- More White Space funding to ensure flexibility

Sharper Focus on **Value Creation**

- Strengthen flow-through from research to societal and economic impact
- More budget allocation towards public-private research collabs
- Build up private sector's absorptive capacities for new tech

Optimise **RIE Manpower**

- Sustain a strong research and innovation workforce
- Strong Singaporean core, supplemented with international talent

AME RIE2020 Vision

Aims to develop technological capabilities to **support continued growth** and **competitiveness of our manufacturing and engineering sectors, in order to generate *GDP growth, Good jobs for Singaporeans & Position the Economy for the Future***

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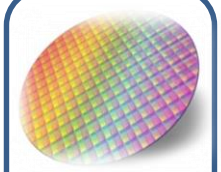
AME RIE2020 Strategic Goals

- Strengthen linkages across public research performers and both ***large & small companies to sharpen value creation from public R&D investments***
- Build capabilities where Singapore can offer a **differentiated value proposition**, incl making ***strategic bets ahead of industry*** to position Singapore for emerging opportunities
- Maximise value capture by developing ***integrated strategies across entire innovation value chain***

Key AME Industry Verticals:



Electronics

Chemicals & Energy

Marine & Offshore

Aerospace

Biologics & Pharma-ceutical Mfg

MedTech Mfg

Machinery & Systems

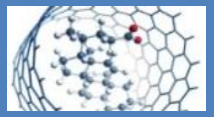
Precision Engineering

4 Cross-Cutting Technology Areas

Robotics and Automation

Digital Manufacturing

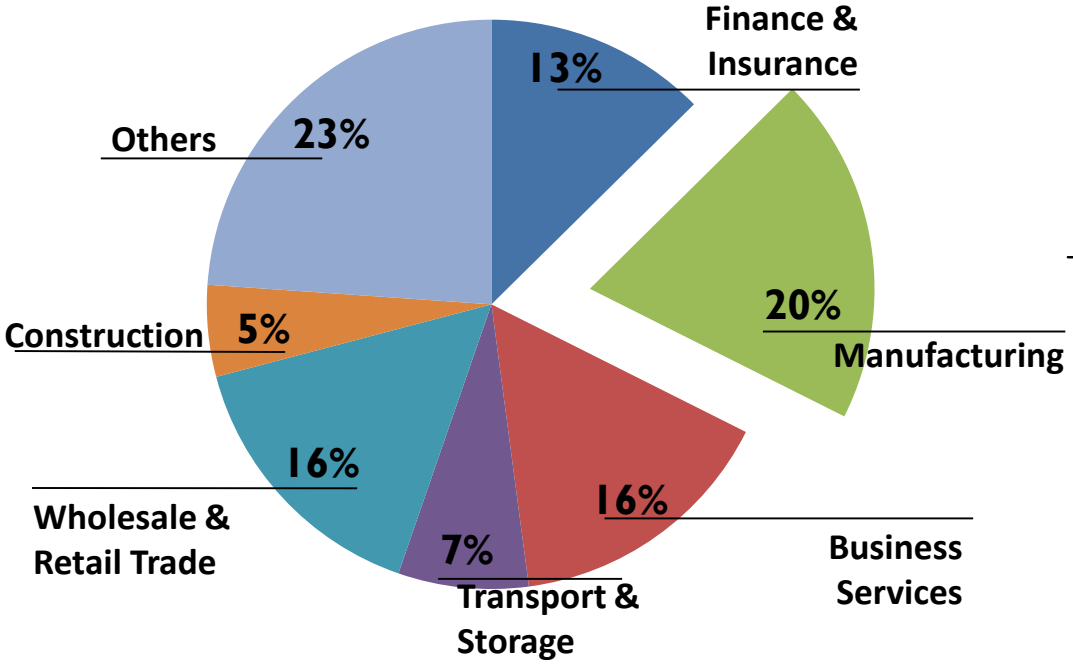
Additive Manufacturing



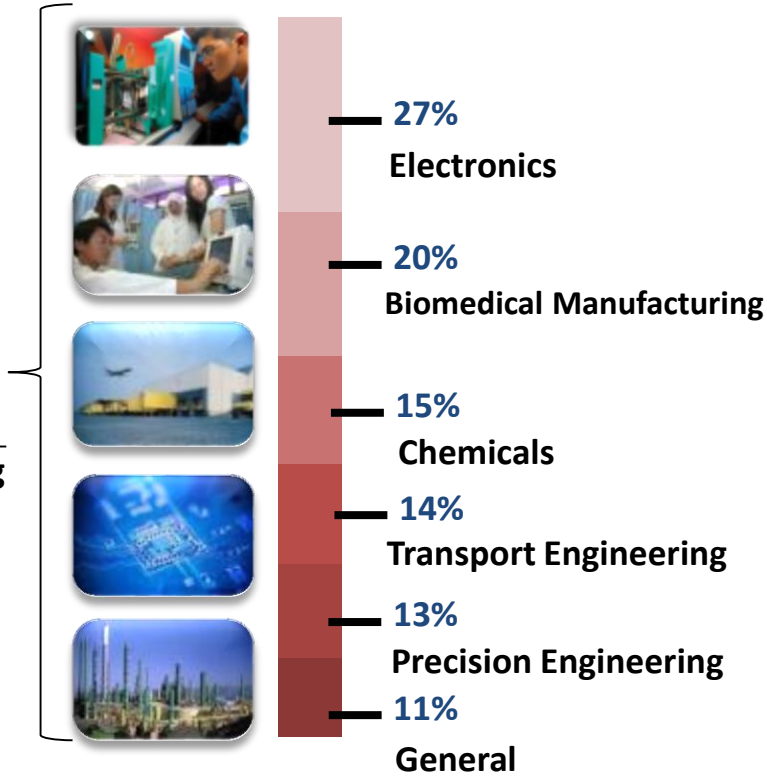
Advanced Materials

Manufacturing in Singapore Today

2015 GDP: S$402.5 bil
(US$292.7 bil)



Value Added



2015 GDP growth: 2.0%
2016 Forecast GDP growth: 1.0% - 3.0%
Source: MTI 2016 Growth Forecast

- **Employment contribution >500,000**
- Manufacturing productivity growth of **6.1% per annum** ('09 to '15)

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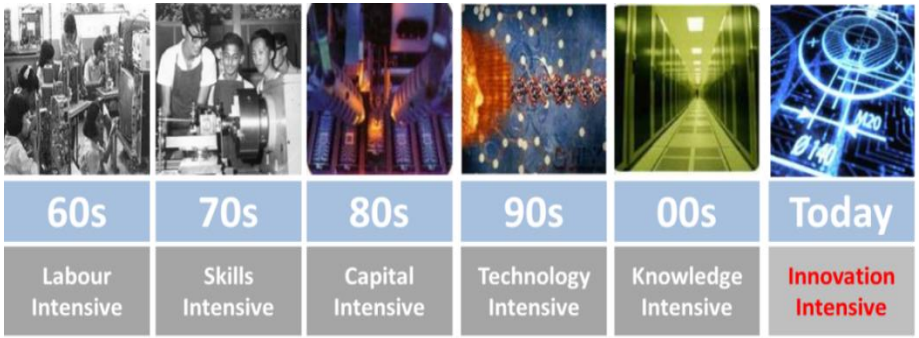
Manufacturing in Singapore has evolved over time



Global trends and local landscape require ***a new approach***

Emerging Technologies
Additive Manufacturing | Robotics | Advanced materials | Manufacturing IT

Business Model Disruptions
Servitisation of Manufacturing | Mass Customisation

Growth of ASEAN
Emerging region for production and consumption

Sustainability
Land | Energy | Labour

Competitive Manufacturing Location

- Fast technology adopter
- Host to server & offshore plants

Boosting Productivity

Pilot location for cutting-edge technology & systems

Growing New Activities

Thought leader and first mover in growth areas.

Globally Leading Manufacturing Hub

- Manufacturing technology developer
- Location of choice for lead plants

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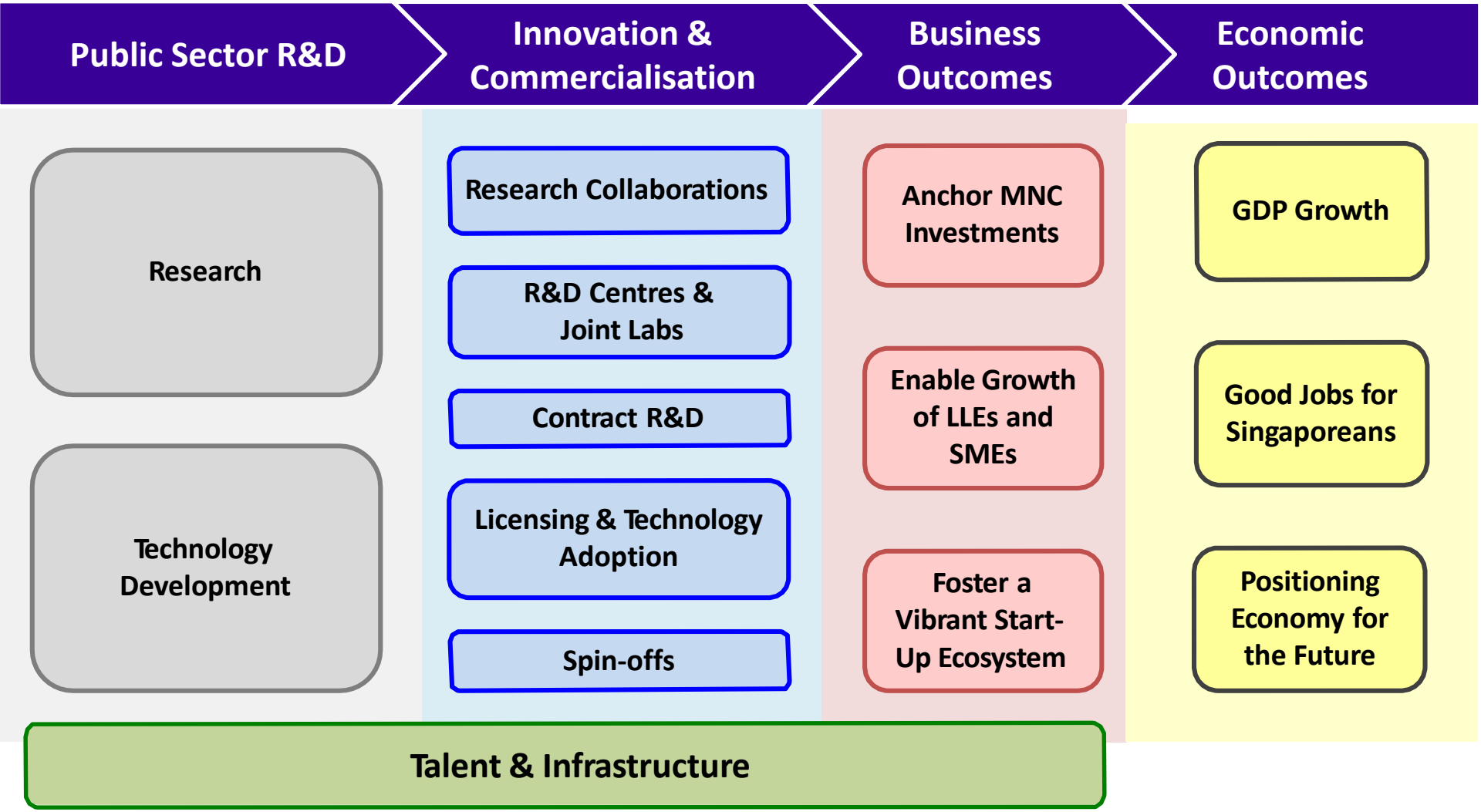
Value Creation Framework for Economic Outcomes



Note: MNC – Multinational Corporation; LLE – Large Local Enterprise; SME – Small and Medium Enterprise

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Competitive Funding to Support AME Research

Open to public sector research performers

AME Domain

Individual Research Grants (IRG)	• Develop novel ideas solicited through an investigator-led, ground up mechanism across the research ecosystem
Programmatic Funds	• Seed long-term capabilities for future industry readiness, typically beyond a 5-year timeframe
Industry Alignment Fund – Prepositioning Programmes (IAF PP)	• Develop industry-ready capabilities • Projects supported by IAF-PP are expected to lead to industry traction in a 3- to 5-year timeframe

***Industry Alignment Fund – Industry Collaboration Projects (IAF ICP)**	• Support projects between industry and public sector R&D performers that involve commitment of tangible industry contributions

All Domains

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*Queries to be directed to: **IAF_ICP@a-star.edu.sg**

Summary

- Under RIE2020, Singapore government committing S$19billion, 18% more than previous plan and at about 1% of GDP
- Four major shifts to **capture more value** from our investments and research
- Domain framework allows for a more **focused approach** to achieve strategic goals
- Manufacturing will continue to be an important pillar of Singapore's economy
- R&D and technology play key roles in **strengthening existing manufacturing sectors**, seeding new growth niches and boosting productivity
- More competitive funding will be available to support research aligned with AME strategy

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Overview of AME Programmatic Funds

Queries to be directed to:

programmatic_ame@hq.a-star.edu.sg

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Programmatic Funds Overview

- Programmatic initiatives aim for future industry readiness (8 – 10 years)
  - To develop new and emerging capabilities relevant to existing industrial sectors or seed new growth sectors through first building scientific peaks of excellence
  - May not have immediate industry application nor identifiable receptacles in Singapore
  - Typically driven by a multidisciplinary team comprising public sector research performers from across the local research ecosystem

- Programmes/projects should be aligned with AME domain's strategic objectives and outcomes

- Typically ~$20M* per programme over 3 - 5 years

**Inclusive of Indirect Costs (IRC) capped at 20% of direct cost*

Programmatic Governance

- **Strategic Review Panel** (SRP)
  - Make recommendations on all Programmatic Funds policies and initiatives
  - Comprises representatives from A*STAR, NUS, NTU and SUTD

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NUS National University of Singapore
NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

- A*STAR is the appointed **Implementing Agency**

Role of Implementing Agency includes
- *evaluation and scoping of proposals together with research performers*
- *management of budget (e.g. fund disbursement, monitoring overall fund commitment and utilisation)*
- *tracking progress of awarded proposals*

*Co-chaired by MD A*STAR and MD EDB

Application Process

- Announcements will be made periodically to inform or solicit proposals from the R&D community on key focus areas
  - via A*STAR website
  - via thematic workshops and grant calls
  - through Research Administrative Office (or equivalent) of the institutes of higher learning, academic medical centres, hospitals and A*STAR research institutes

- Applications must be endorsed by the applying Host Institution(s) prior to submission

- All queries and applications must be submitted through A*STAR (as Implementing agency) at **programmatic_ame@hq.a-star.edu.sg**

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Proposal Evaluation Criteria

Strategic

- Does it align with AME themes and strategies?
- Does it have the potential to develop new and emerging technological capabilities to support the continued growth and competitiveness of our manufacturing and engineering sectors?

Transformative

- Is it novel and innovative?
- Does it exploit Singapore's unique and existing strengths?
- Are there compelling differentiating factors and competitive advantages?

Catalytic

- Does it have the potential to lead to value creation and value capture in Singapore in the longer term, beyond 5 years?
- Will it attract a new industry sector and/or grow existing industry activities?
- Will it lead to the creation of new jobs and other societal outcomes?

Synergistic

- Does it integrate synergistic strengths and capabilities across various Singapore publicly funded research or tertiary institutions?
- Does the Programme Director have the track record and competency to lead the project?

Programmatic Eligibility Criteria

- Programme director should:
  - Hold at least a 0.7 FTE primary appointment in a Singapore publicly funded research or tertiary institution;
  - Run a laboratory or research programme that carries out research in Singapore; and
  - Have a track record of leadership ability in coordinating research programmes, as well as achieving productive research outcomes.

Programmatic Funds Workflow