



TRANSFORMING THE SINGAPORE ECONOMY



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FOREWORD:

Message by Deputy Prime Minister Heng Swee Keat and Chairman of the Future Economy Advisory Panel

Since independence, the Singapore government has undertaken several rounds of restructuring, to keep our economy vibrant and competitive. Each round of change created new growth engines and sharpened our overall competitiveness, leading to new opportunities for our businesses and workers. We transitioned from labour-intensive industries to skills-intensive industries in the 1970s and 1980s, and to a knowledge-based economy in the late 1990s. From 2010, we sought to develop a skills-intensive and innovation-driven economy, and to position Singapore as a distinctive global city.

In 2016, we set up the Committee on the Future Economy to develop economic strategies to prepare Singapore to cope with significant structural changes in the global economy. Following a year-long consultation, we set up the Future Economy Council in 2017 to oversee the formulation and implementation of Industry Transformation Maps (ITMs) across 23 industry sectors that accounted for almost 80% of the economy. Over the past 8 years, we have mobilised stakeholders across businesses, Trade

Associations and Chambers (TACs), unions and workers, academia and government agencies, to develop and implement transformation plans, sector-by-sector. While some did not initially see the need for change, I am glad that there is now good momentum for these transformation efforts, including among our SMEs.

The first round of ITMs was launched between 2016 and 2018. Following the good progress from the first round, we launched the second round of ITMs from 2022. In between, we had to navigate one of the sharpest global economic downturns during the COVID-19 pandemic in 2020. This report highlights key aspects of our transformation effort, and how we shaped our response to the COVID-19 pandemic to emerge stronger, together.

Looking ahead, new forces will continue to reshape the global economy. Support for globalisation has diminished amidst rising geopolitical uncertainties. Many economies, especially the more developed ones, are facing significant demographic changes of a rapidly

ageing workforce and declining birthrates. Climate change and its impacts demand urgent action. The rapid pace of technological advances in fields such as biotechnology, digitalisation, AI and quantum technology will unleash new possibilities and new challenges. Jobs will be reshaped, and new skills will be demanded.

Singapore is determined to continue with our economic restructuring and transformation. This will prepare us for the economy and society of the future, which will be shaped by globalisation, technological advances and demographic changes. We must all be prepared to ride the waves of change and emerge stronger, so that current and future generations of Singaporeans can fulfil their potential and aspirations.

To achieve these:

- a. Internally within Singapore, we will build on and strengthen our tripartite efforts involving workers and unions, businesses and the government to transform. This way, we can all share in the benefits of growth and development.

- b. Externally, we will deepen our partnerships with like-minded leaders and corporates from around the world, to reap the benefits of globalisation and technological advances.
- c. We will continue to invest in research and development, and position Singapore as a Global-Asia node of technology, innovation and enterprise. This will position Singapore as an ideal base for companies to innovate and grow, and allow us to harness technological advances for good.
- d. We will work closely among our tripartite partners – unions, businesses and government, to redesign jobs and reskill workers.
- e. Most importantly, we must continue to do all of these together, and deepen trust. This has been core to our Singapore story, and the reason why past economic restructurings have been successful.

I thank everyone – businesses, workers and government agencies, for embarking on

transformation together in the last 8 years. My special thanks go to members of the Committee on the Future Economy, the Future Economy Council and the various work groups. You have devoted precious time and expertise to design and drive these changes. I also thank the many officials who have supported this work diligently over the years.

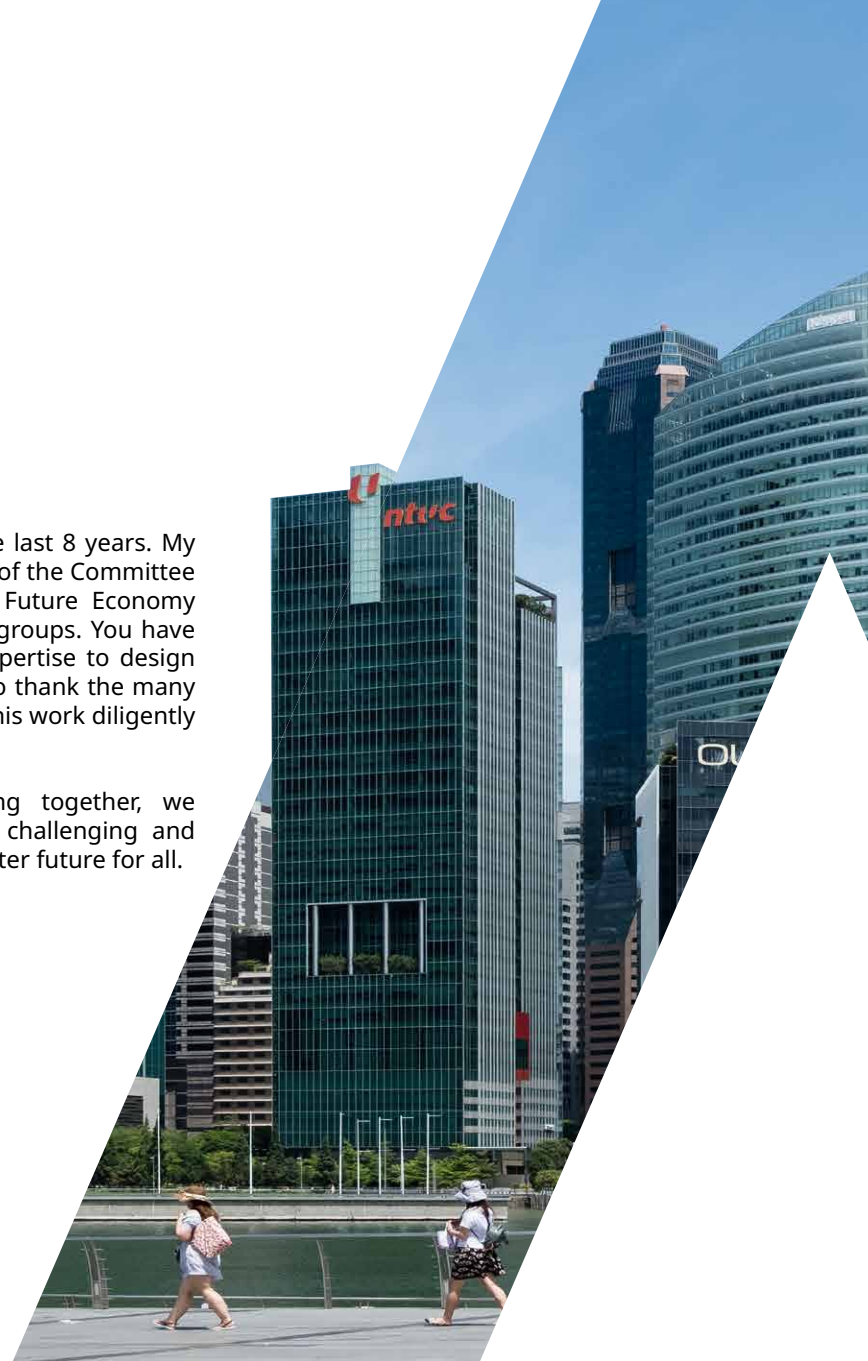
I am confident that working together, we can navigate an increasingly challenging and complex world, and build a better future for all.

With Heartfelt Thanks!



HENG SWEET KEAT

Deputy Prime Minister
Chairman of the Future Economy
Advisory Panel





Executive Summary

A strong, innovative, and vibrant economy is essential to create good opportunities for Singaporeans and generate resources to uplift our people. Transformation is necessary for us to grow our economy sustainably and inclusively for the long-term. This is especially so as growth becomes harder to achieve.

As a small and open economy, Singapore depends on our connections to the region and the world to grow and thrive. This has become more challenging as we see a shift away from globalisation, as well as greater geopolitical contestation. Also, Singapore's resource constraints – labour, land, and carbon are becoming biting.

Notwithstanding these challenges, we have been able to sustain our economic growth and become more productive, even amidst global headwinds and crises such as the COVID-19 pandemic. This is through transformation, entailing digitalisation, research and innovation, workforce transformation, and internationalisation.

Businesses have responded positively to our call for transformation. Firms have become more aware of the need to digitalise, innovate their business processes, and bring workers along as they do so. The Labour Movement and Trade Associations and Chambers (TACs) have been supportive of transformation efforts. Workers have also become more aware of the need to continuously upgrade their skills and stay current. There has been good momentum for transformation across our economy.

In this report, we reflect on Singapore's economic transformation journey over the past 8 years and celebrate contributions from the many stakeholders who have enabled us to make huge strides in this journey. This bound of transformation has involved a successful change movement, with strong tripartite collaboration between government agencies, unions and industry. All these efforts have been and will continue to be instrumental in enabling our economy to transform, so that we can sustain our growth and share the benefits with all Singaporeans.

Transforming Amidst the COVID-19 Pandemic

Amidst our transformation, the COVID-19 pandemic hit. The Government rolled out an unprecedented five Budgets in 2020 to provide support to workers, businesses and households. The Future Economy Council (FEC) convened the Emerging Stronger Taskforce (EST), in response to the structural changes that were accelerated by the pandemic. Our companies seized opportunities amidst the crisis and leveraged technology and government support to pivot and innovate. New modalities of industry-wide partnerships via Alliances for Action were formed. With the collective efforts of businesses, industry partners, unions, and the Government, Singapore became more connected and emerged stronger from the pandemic.

Igniting a Change Movement

The co-creation and development of the Industry Transformation Maps (ITMs) provided a platform for key stakeholders such as business leaders, unions and TACs to connect and collaborate. Together, these stakeholders developed and implemented transformation plans, sector-by-sector to achieve win-win outcomes for our workers, businesses and Singapore.

Digital Transformation

In tandem with the ITMs, the development of the Industry Digital Plans gave a boost to our digitalisation journey. More of our companies have better integrated automation and new technologies into their operations. Work is ongoing to ensure that our workers have the right digital capabilities to seize opportunities.

Workforce Transformation

Enabling our people to reach their fullest potential is another key focus in our economic transformation. Building on efforts such as the SkillsFuture movement, we will continue to invest in the upskilling, reskilling and development of new capabilities for our workers. This will ensure that they can take on good jobs and new opportunities.

Transforming through Research and Innovation

Innovation is a key enabler in our transformation into a knowledge-based and innovation-driven economy. It creates new avenues for growth and raises Singapore's economic competitiveness. Through Research,

Innovation and Enterprise plans, Singapore has developed a strong innovation and start-up ecosystem, with a global network of players. This has spurred innovation efforts by our firms too, enabling them to develop new products and services.

Strengthening our Connection to the Rest of the World

Throughout our economic development, Singapore has been an advocate for global economic connectivity. We remain committed to deepening our international partnerships by broadening the geographical coverage of our agreements and exploring new initiatives such as digital and green economy agreements. To amplify the benefits of our transformation efforts, we will continue to support our firms in their internationalisation journeys and overcome the limitations of a small domestic market.

Looking Ahead

Economic transformation is an ongoing journey. Together, we will create a growing and vibrant economy, with better jobs and prospects for all Singaporeans.



Chapter 1

SINGAPORE'S TRANSFORMATION STORY



1.1 Transformation has been pivotal to Singapore's sustained economic growth since independence.

- a. Post-independence, there was a shift away from import-substitution towards an export-led industrialisation, where we sought to attract global multinational companies to Singapore as vehicles to achieve industrial growth. By the late 1970s and early 1980s, we moved towards skill-intensive industries, with the emergence of strong clusters such as higher value-added electronics and petrochemicals.
- b. Coming out of a recession in 1985, we undertook structural reforms to liberalise our economy, particularly across the services sectors, in areas such as finance, telecommunications and utilities. Our
- c. In the last two decades, our resident workforce growth has been plateauing. This has necessitated a restructuring of our economy to focus on a productivity-driven growth model. Earlier committees such as the **National Productivity and Continuing Education Council** and the **Council for Skills, Innovation and Productivity** drove this restructuring. Building on the work done by these past committees, the **Committee of the Future Economy (CFE)** laid out the directions for our next bound of economic growth in 2016, considering the new trends in our operating context.



1.2 Economic transformation has become more important than ever. The trends in our operating context have accelerated, especially after the COVID-19 pandemic.

- a. First, the global economy is restructuring at a scale and pace never before seen. International consensus supporting globalisation is now in reverse. As economies de-risk and de-couple, small, open economies like Singapore will be disproportionately affected.
- b. Second, Singapore, together with the rest of the world, needs to accelerate our transition to a low-carbon economy, to achieve our net zero ambitions. This shift will greatly impact Singapore's economy and our workers. As an alternative-energy disadvantaged island-state, Singapore will need to explore innovative ways to build our green economy amidst existing constraints (e.g. clean energy imports).
- c. Third, disruptive technologies, such as Generative Artificial Intelligence (GenAI), have begun to change the way we work and the types of jobs available. We will need to build a future-ready workforce with the necessary talents and capabilities to adapt.

1.3 The Industry Transformation Programme (ITP) has given Singapore a boost to our economic transformation efforts.

- a. Based on the CFE's recommendations, we embarked on the ITP in 2016 and have been developing and implementing transformation roadmaps for 23 industries (also known as **Industry Transformation Maps (ITMs)**). The process was guided

by the **Future Economy Council (FEC)**, chaired by Deputy Prime Minister (DPM) Heng Swee Keat. The ITMs brought together relevant stakeholders to transform Singapore's industries for the future, and in the process, build our workers' and businesses' capabilities to seize opportunities.

- b. The 23 industries in the ITP cover about 80% of our economy. Industry by industry, each ITM draws together tailored plans for the sector over a 5-year horizon, into a coherent whole across four pillars: Productivity, Innovation and Technology, Trade and Internationalisation, and Jobs and Skills. The ITMs were more recently refreshed through the ITM 2025 process, where two additional pillars were added to the ITM framework (i.e. Resilience and Sustainability), to reflect the importance of these considerations to our economic transformation.
- c. Building on Singapore's strong tripartism, the ITP expanded partnerships within and across sectors, and mobilised action across the economy to drive change. The co-creation and development of the ITMs provided a platform for key stakeholders such as business leaders, the Labour Movement, Trade Associations and Chambers (TACs), and academia to connect and collaborate, to achieve win-win outcomes for our workers, businesses, and Singapore.
- d. The efforts drove good momentum for transformation across our economy. Businesses have responded positively to our call for transformation. Firms have become more aware of the need to digitalise, innovate their business processes, and help workers raise their productivity. For example, almost all businesses surveyed in the 2022/2023 National Business Survey recognised the importance of business transformation, as compared to 61% in the 2016/2017 survey. Our workers have also taken steps to upskill and reskill, through participation in SkillsFuture initiatives which support them in skills mastery and lifelong learning.

FEC Members (2017 to 2023)

Mr Heng Swee Keat (FEC Chairman)
Mr Lawrence Wong
Mr Gan Kim Yong
Mr Alexander Charles Hungate
Mr Amos Leong
Mr Andreas Sohmen-Pao
Mr Andrew Chong
Mr Andrew Kwan
Prof Arnoud De Meyer
Dr Azlinda Anwar
Mr Chan Chun Sing
Mr Chen Kok Sing

Mrs Chew Kwee Tiang
Mr Chew Men Leong
Prof Chong Tow Chong
Mr Chua Kee Lock
Mr Clarence Ti
Ms Denise Phua
Mr Desmond Choo
Mr Desmond Lee
Mr Dilhan Pillay Sandrasegara
Ms Euleen Goh
Ms Grace Fu
Ms Grace Yow

Ms Indranee Rajah
Ms Jamie Lim
Ms Jeanne Liew
Mrs Josephine Teo
Mr Kenneth Loo
Ms Kwee Wei-Lin
Mr Kho Choon Kheng
Mr Lee Chee Koon
Mr Liam Wee Sin
Mr Lim Hng Kiang
Dr Lim Kuo-Yi
Mr Lim Ming Yan
Mr Lim Swee Say

Ms Mary Liew
Mr Masagos Zulkifli
Mr Neil Yong
Mr Ng Chee Meng
Mr Oliver Tonby
Mr Ong Ye Kung
Mr Peter Meinhausen
Dr Robert Yap
Mr Roland Ng
Mr Russell Tham
Mr S Iswaran
Prof Subra Suresh

Prof Tan Eng Chye
Dr Tan See Leng
Prof Tan Thiam Soon
Ms Teo Lay Lim
Mr Teo Siong Seng
Mr Tham Sai Choy
Mr Thomas Chua
Mr Vincent Tan
Mr Wahab Yusoff
Mr Wayne Hunt
Mr Wong Kim Yin
Mr Zulkifli bin Baharudin



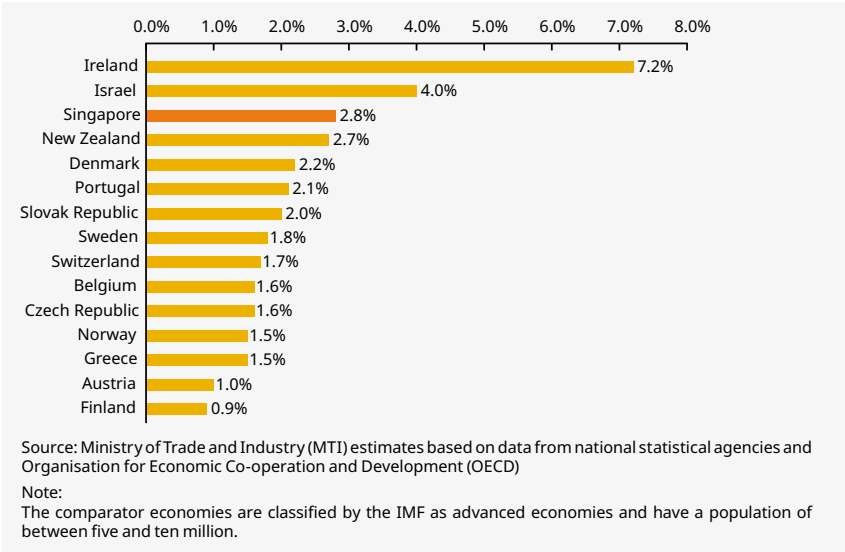
Image: Photo of FEC members.

(from left to right) Dr Azlinda Anwar, Mr Chen Kok Sing, Ms Gan Siow Huang, Ms Euleen Goh, Mrs Josephine Teo, Ms Teo Lay Lim, Dr Tan See Leng, Mr Wahab Yusoff, Mr Gan Kim Yong, Mr Amos Leong, Mr Heng Swee Keat, Mr Desmond Tan, Ms Grace Fu, Mr Liam Wee Sin, Mr Masagos Zulkifli, Mr Chee Hong Tat, Mr Robert Yap, Mr Alexander Charles Hungate, Mr Neil Yong, Mr Andrew Kwan, Ms Jeanna Liew, Mr Desmond Choo

1.4 Through our transformation efforts, the Singapore economy has performed well and helped us to grow the economic pie for all Singaporeans even with the COVID-19 shock.

- a. Despite the global headwinds and structural shifts, Singapore has been able to maintain our position as one of the world's most competitive economies. In 2024, we ranked 1st in the *International Institute for Management Development (IMD)*'s World Competitiveness Ranking.
- b. Between 2016 and 2023, the Singapore economy achieved real value added (VA) growth of 2.8% per annum (p.a.), outpacing that of most other small advanced economies (classified by the *International Monetary Fund [IMF]* as advanced economies with populations of between five and ten million) (see [Figure 1](#)).

Figure 1: International Comparisons of Real VA Growth (% p.a.), 2016-2023



- c. Over the same period, Singapore's labour productivity, measured in terms of real VA per hour worked,¹ grew by 2.1% p.a. This was stronger than most other small advanced economies (see [Figure 2](#)). [Note: Singapore's labour productivity, measured in terms of real VA per worker is reflected in [Figure 3](#), with more details on sector-specific performance in [Section 1.6](#).]
- d. As our economy and productivity grew, incomes rose in tandem. The median income of full-time Singapore residents grew at 1.5% p.a. in real terms from 2016 to 2023.

Figure 2: International Comparisons of Growth in Real VA per Hour Worked (% p.a.), 2016-2023

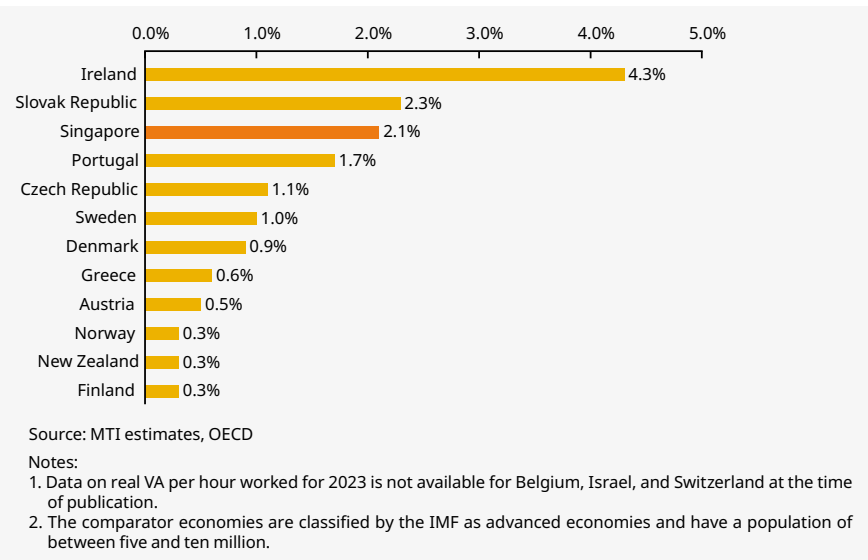
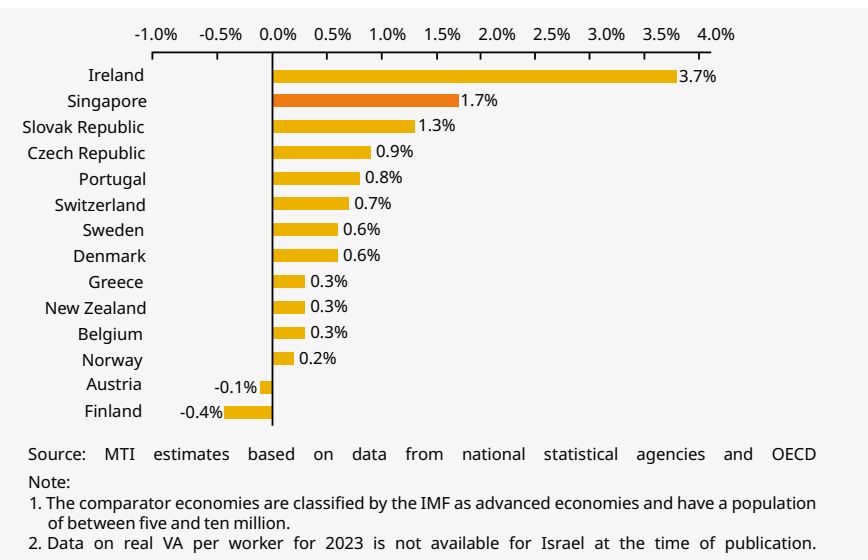


Figure 3: International Comparisons of Growth in Real VA per Worker (% p.a.), 2016-2023

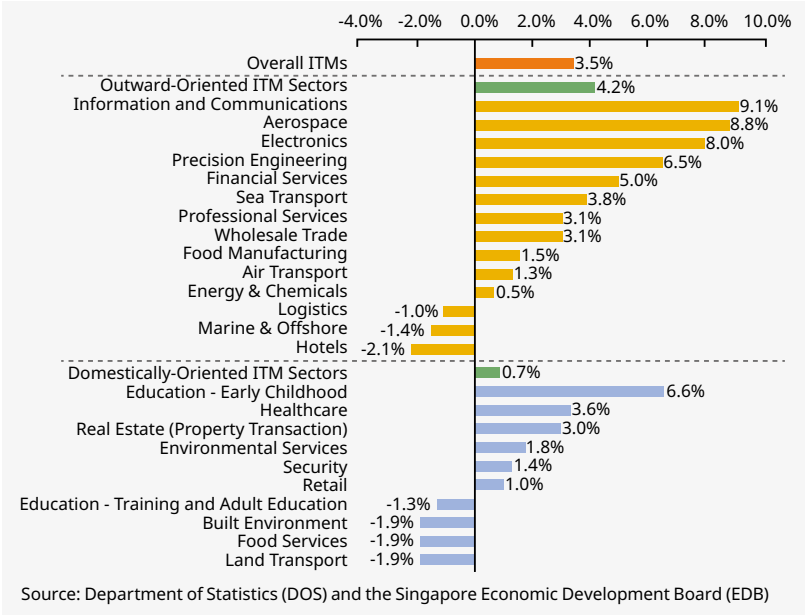


¹ For international comparisons, labour productivity measured in terms of hours worked is referred to as real VA per hour worked, in line with the terminology used by the OECD.

1.5 Nonetheless, cyclical and exogenous factors affect how the different sectors have performed.

- a. Growth across the sectors varied due to the intensity of competition, exogenous factors and cyclical factors. The ITM sectors registered overall real VA growth of 3.5% p.a. between 2016 and 2023. Most outward-oriented ITM sectors expanded robustly, registering a growth of 4.2% p.a. overall in the same period (see Figure 4). This includes sectors such as the Information & Communications (9.1% p.a.), Electronics (8.0% p.a.), Precision Engineering (6.5% p.a.), Financial Services (5.0% p.a.) and Wholesale Trade (3.1% p.a.) sectors.
- b. However, several ITM sectors contracted over the same period. ITM sectors such as Hotels (-2.1% p.a.) and Built Environment (-1.9% p.a.) experienced declines in real VA largely due to the COVID-19 pandemic, during which travel and tourism came to a halt, and work sites were closed to curb the spread of the virus. These sectors are still on the path to recovery to pre-pandemic levels. Meanwhile, real VA for the Marine & Offshore Engineering sector (-1.4% p.a.) declined due to a slowdown in ship and rig construction, amidst a sharp fall in oil prices in 2015/2016 and an accelerated shift towards greener energy sources.

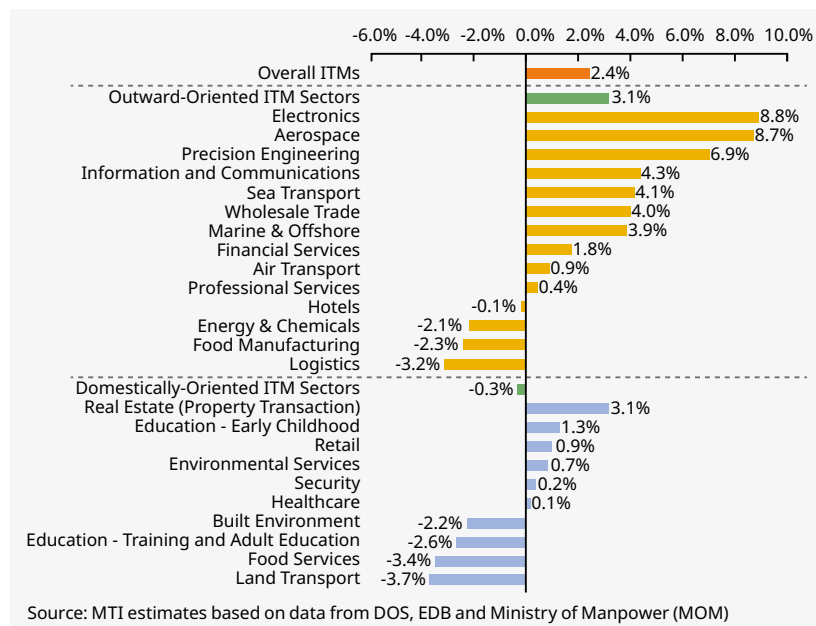
Figure 4: Real VA Growth of All ITM Sectors, Outward- and Domestically-Oriented ITM Sectors (% p.a.), 2016-2023



c. Over this period, labour productivity improvements in the ITM sectors contributed to economic growth. Overall labour productivity for the ITM sectors, in terms of real VA per worker (VAPW),² rose by 2.4% p.a. from 2016 to 2023. Nonetheless, productivity trends varied across ITM sectors, with outward-oriented ITM sectors as a whole recording stronger gains in labour productivity (3.1% p.a.) compared to the domestically-oriented ITM sectors (-0.3% p.a.) (see Figure 5).

d. There were strong productivity gains in outward-oriented ITM sectors, such as the Electronics (8.8% p.a.), Aerospace (8.7% p.a.) and Precision Engineering (6.9% p.a.) sectors. Although the pandemic hampered productivity growth in sectors such as Aerospace and Air Transport due to the drastic fall in air travel and its knock-on effects on aircraft production and maintenance, both sectors have since recovered strongly in the post-pandemic period. By contrast, productivity declines in the Logistics³ (-3.2% p.a.), Food Manufacturing (-2.3% p.a.), Energy & Chemicals⁴ (-2.1% p.a.) and Hotels⁵ (-0.1% p.a.) sectors weighed on productivity growth for the outward-oriented ITM sectors.

Figure 5: Real VA per Worker Growth of All ITM Sectors, Outward- and Domestically-Oriented ITM Sectors (% p.a.)



² In terms of real VA per actual hour worked, labour productivity for the overall ITMs grew by 3.0% p.a. between 2016 and 2023. See [Annex B – Appendix A1](#) for the breakdown by ITM sector.

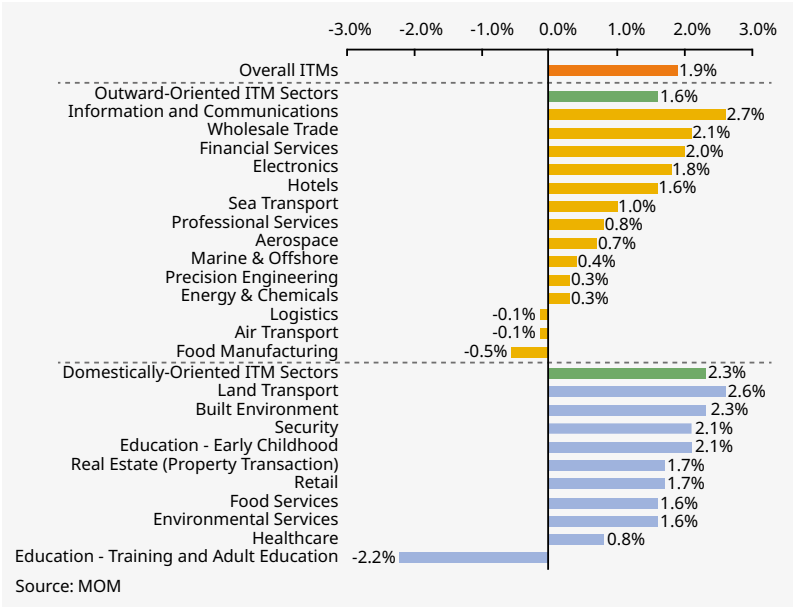
³ The Logistics ITM sector shrunk slightly despite a modest employment gain.

⁴ Real VA growth in the Food Manufacturing and Energy & Chemicals ITM sectors was outpaced by employment growth in these sectors.

⁵ The Hotels ITM sector saw a contraction in real VA that outweighed the decline in employment for the sector.

- e. On the other hand, there were modest productivity gains in domestically-oriented ITM sectors such as the Real Estate (Property Transaction Services) (3.1% p.a.), Early Childhood Education (1.3% p.a.), Retail Trade (0.9% p.a.) and Environmental Services (0.7% p.a.) sectors. However, there were productivity declines in the Land Transport (-3.7% p.a.), Food Services (-3.4% p.a.), Training and Adult Education (-2.6% p.a.) and Built Environment (-2.2% p.a.) sectors. The poor performance in these sectors was partly due to operational disruptions during the pandemic. Additionally, the domestically-oriented ITM sectors generally tend to have manpower-intensive job roles (e.g. construction workers, retail staff) with limited automation potential in the near term, which may have contributed to their weaker productivity growth.
- f. Along with the improvement in labour productivity, wages for resident workers also rose. Between 2016 and 2023, the real gross monthly income (GMI) of full-time employed residents working in ITM sectors rose by 1.9% p.a., with growth in real GMI broadly observed across most ITM sectors (see [Figure 6](#)).
- g. In addition to the factors that affect economic growth and productivity, there are many sector-level dynamics that can affect income growth. For instance, different industry structures and business cost pressures may affect firms' ability to raise prices and wages. The implementation of government schemes such as **Workfare** and the **Progressive Wage Model** for some sectors, as well as the **Jobs Support Scheme (JSS)** that was rolled out during the pandemic, may also have supported wage growth over this period.

Figure 6: Annualised Change in Real Median Gross Monthly Income from Work (Including Employer CPF) of Full-Time Employed Residents of ITM Sectors (% p.a.), 2016-2023



go.gov.sg/transforming-the-singapore-economy-2024

Scan the QR code for detailed data on VA, productivity, and wage outcomes across individual ITM sectors from 2016-2023 in our Technical Annex.

1.6 Transformation takes time.

- a. It is not always easy to measure the effect of specific transformation efforts on growth, as transformation is a continuous journey that takes time.
- b. That said, our efforts over the years in the following areas, have arguably contributed to our economic transformation thus far:
 - Transforming even in adverse circumstances like COVID-19;
 - Igniting a change movement to transform;
 - Digital transformation;
 - Transforming through Research and Innovation;
 - Workforce transformation; and
 - Strengthening our connections to the rest of the world.



Chapter 2

TRANSFORMING AMIDST COVID-19



2.1 COVID-19 posed a defining challenge for Singapore.

- a. COVID-19 presented an unprecedented crisis of highly complex nature. The global economy experienced its worst contraction since the Second World War. Singapore was not an exception, recording a short, sharp contraction in 2020.
- b. As public health measures such as the Circuit Breaker⁶ were put in place, non-essential businesses ceased on-site operations and pivoted to alternative modes of operation. Borders were shut. Many of our sectors were severely impacted.

2.2 Building on strong reserves of trust, fiscal firepower, and a can-do spirit, we managed to weather the storm.

- a. To support workers, businesses and households during the pandemic, Singapore rolled out five Budgets in 2020. Government support measures were introduced and financed by an unprecedented draw on our Past Reserves with the President's concurrence. The Government's total COVID-19 budget expenditure in Financial Year 2020 and 2021 was S\$72.3 billion.
- b. Preserving livelihoods was a key priority. To reduce job losses, we introduced the JSS to enable employers to pay a portion of their workers' salaries, and preserved an estimated 165,000

local jobs in 2020⁷. The **Jobs Growth Incentive (JGI)** was also introduced to encourage firms to bring forward their hiring of local workers and support was targeted at key growth areas.

- c. To cushion the impact on our businesses, the Government introduced temporary relief measures including bridging loan programmes to provide liquidity to businesses impacted by COVID-19. Through the **COVID-19 Temporary Measures (COTMA) Bill**, more relief was provided to individuals and businesses who were unable to meet their contractual obligations due to COVID-19. The *Monetary Authority of Singapore (MAS)* also worked with financial institutions in Singapore to offer options for small and medium-sized enterprises (SMEs) in need to lower their short-term repayment obligations and stay insured despite facing financial difficulties. By end-2021, our economy had partially recovered, with unemployment rates recovering to pre-COVID levels.
- d. While addressing the domestic impacts of the pandemic, Singapore honoured international commitments. Our ports and land links remained open for smooth goods flow, without imposing export controls. Maintaining an open hub for international business bolstered Singapore's position as a trusted catch-up port⁸. In 2021 and 2022, Singapore's container throughput reached record highs of 37.6 million and 37.3 million Twenty-foot Equivalent Units (TEUs). Upholding our international commitments has further solidified Singapore's reputation as a trusted partner and investment destination.
- e. Overall, Singapore effectively preserved lives and livelihoods during the pandemic, while honouring international commitments.

⁶ Circuit Breakers were nationwide partial lockdowns, that were in place between 2020 to 2021, to contain the spread of COVID-19 in Singapore.

⁷ Based on findings from a joint study by MOF and MOM titled "Impact of the Jobs Support Scheme (JSS) on Labour Market Outcomes", published in the Economics Survey of Singapore 2021 (www.mti.gov.sg/ess2021).

⁸ A catch-up port is one that offers shorter transit times and enables vessels to make up for upstream delays.

2.3 Our companies and entrepreneurs saw opportunities amidst COVID-19, to adopt new digital solutions and explore new markets.

- a. Amidst the uncertainties, some companies and entrepreneurs took COVID-19 as an opportunity to pivot and innovate. Many efficiently utilised government support to increase investments in digital solutions and introduce new products and services. These efforts positioned their companies well for post-pandemic growth.
- b. Ms Yvon Bock, Founder & CEO of *Hegen Ptd Ltd (Hegen)*, a homegrown brand of baby feeding bottles and breast pumps, was one such entrepreneur who seized opportunities in the global crisis to pivot and grow her brand even further.

Finding Opportunities During Crises

Hegen is a homegrown brand of baby feeding bottles and breast pumps, founded in 2015. It was ranked as one of Singapore's Top 10 fastest growing companies based on 2017-2022 revenue growth, with 10 million bottles sold across 17 markets worldwide.



Image: Founder & CEO Ms Yvon Bock explaining Hegen's products to customers at the company's experiential centre.
Source: Enterprise Singapore

When the COVID-19 pandemic struck, Hegen was impacted like many businesses, and its physical retail channels were shut down. Hegen faced significant supply chain shortages when some of its manufacturing factories were shut down. Founder & CEO Ms Yvon Bock used the crisis as an opportunity to shift the brand's marketing online. This involved improving Hegen's websites, conducting livestreams in multiple languages, and hiring more staff to fulfil orders. The crisis also prompted Hegen to explore alternative manufacturing lines for risk diversification in future.



Image: Founder & CEO Ms Yvon Bock, Co-Founder & COO Mr Leon Bock and Mr Chan Ching (Founder of Fitson Singapore and Yvon's father) discussing Hegen's baby bottles and breast pumps.
Source: Enterprise Singapore

In 2021, Hegen made further investments. It opened a new walk-in experiential centre that offered customers novel products and services, such as lactation consultancy and product personalisation services. It also further strengthened its supply chain resilience with the setup of its first local factory in Singapore and started to automate its manufacturing facilities. "We adopted a mindset of 'crisis investment' during the pandemic, where we opted to see points of adversity as points of opportunities that can be leveraged to push the brand further", said Ms Bock.

These investments paid off, enabling Hegen to double its revenue in 2022. *Enterprise Singapore (EnterpriseSG)* also supported Hegen through the **Scale-Up programme**, to accelerate their efforts in innovation and internationalisation.

Currently, Hegen has a market presence in 24 international markets, as compared to 16 in 2021. Ms Yvon Bock was also named as the overall Ernst & Young Entrepreneur of the Year 2023 Singapore and went on to represent Singapore in the 2024 EY World Entrepreneur of the Year Award. These efforts to pivot and find opportunities amidst crisis, is a shining example of the resilience and enterprising spirit of our companies in Singapore.

"

We adopted a mindset of 'crisis investment' during the pandemic, where we opted to see points of adversity as points of opportunities that can be leveraged to push the brand further.

– Ms Yvon Bock, Founder & CEO of Hegen

"



Image: Founder & CEO Ms Yvon Bock and Mr Leon Bock in discussion with their team.
Source: Enterprise Singapore

- c. The pandemic also accelerated our firms' adoption of automation and digitalisation. With border closures abroad and Circuit Breaker measures at home, our firms used technology to work differently, in more efficient and cost-effective ways. *Ocean Network Express Pte Ltd (ONE)*, the largest liner operator headquartered in Singapore, successfully utilised analytics and digitalisation to overcome labour shortages and restrictions during COVID-19.

Triumphing through Technology

During the COVID-19 pandemic, cargo volumes contracted as supply chains were disrupted. Amidst rough seas, ONE, the largest liner operator headquartered in Singapore and the 6th largest container line globally, harnessed digital transformation to overcome its challenges, allowing it to remain nimble for business continuity throughout the pandemic.

Digital Transformation Enabled Operational Efficiency during the Pandemic

ONE's digital transformation began prior to the pandemic and enabled it to implement a digitally driven business continuity plan during the pandemic to adapt quickly to the challenging business environment. In 2019, to boost operational efficiency and enhance container positioning, ONE implemented the ONE Agile Supply Chain Integrated System, a centralised inventory management system that uses data analytics to forecast container demand and supply.

ONE also enhanced its digital offerings for customers with the launch of the ONE Mobile App in May 2021, an all-in-one platform that enabled customers to quickly complete core transactions and access critical information such as quotations and bookings. New features to enable faster processing and booking confirmations, such as mini dashboards providing quick status overviews, were added to the platform in May 2022. ONE also leveraged data and Artificial

Intelligence (AI) technology, such as Robotic Process Automation (RPA), to improve the productivity of their processes and systems. Since mid-2020, the deployment of RPA to process e-commerce data and electronic business documents has increased the productivity of ONE's booking documentation process by 30-40%, and improved its quality, accuracy, and turnaround time.

Continued Focus on Digital Transformation and Manpower Development Post-Pandemic

Post-pandemic, ONE continues to harness new technologies and innovation and collaborates with the maritime industry to transform and develop new capabilities. Examples of ONE's post-pandemic digital transformation include (i) further integration of AI into business operations in partnership with Google Cloud, (ii) trialling of electronic bunker delivery notes (e-BDN) in the Port of Singapore in October 2023, and (iii) active participation in SGTraDex, a platform that enables electronic data sharing among key stakeholders in a secured manner, to digitalise their bunkering process as a founding partner of the platform.

ONE demonstrated its focus on manpower development with the launch of the ONE Academy in August 2022 to enhance its employee training framework for leadership, soft skills, and functional competencies as well as cultivate strong connections and a sense of belonging. ONE further implemented the ONE Mentoring Programme in January 2023 to accelerate the personal and professional growth of its employees by tapping on the knowledge and experience of mentors. Beyond their employees, ONE assists with training and development of the local maritime workforce through active participation in local manpower development programmes, such as internship and scholarship programmes, in collaboration with *Maritime and Port Authority of Singapore* and the maritime industry.

ONE's readiness to leverage technology to transform its business and its commitment to developing its people and the maritime workforce despite challenging times have positioned it well to capture future growth.

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ONE's unwavering commitment to both its people and technology positions it for exceptional future growth. By empowering our employees through continuous learning and development, nurturing a culture of 'My ONE Great Place to Work' and leveraging technology to transform our business, ONE is well-prepared to capture the opportunities that lie ahead.

– Ms Tay Ai Lin, Senior Vice President and Head of Global Human Resources, ONE

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2.4 Our industry partners and unions also played a key role in enabling businesses and workers to successfully navigate the challenges brought by COVID-19.

- a. Our Labour Movement stepped forward to help our workers during the pandemic. The *National Trades Union Congress (NTUC)*, affiliated unions and associations and the Government committed S\$25 million as part of the **NTUC Care Fund** to offer financial assistance to union members who were in financial difficulty or retrenched due to the pandemic.
- b. The *Singapore Business Federation (SBF)*, as the apex business chamber in Singapore, also played an important role in working with TACs to promote sustainable, resilient businesses. At the onset of the pandemic, SBF was quick to embark on a range of initiatives to help businesses and workers cope with the immediate business impact of the pandemic, and seize opportunities post-pandemic. It led efforts to help companies to adapt and transform through initiatives such as the **Rising in Support of Enterprises (RISE) Fund** and the **Business Resilience Advisory Programme**.

Singapore Business Federation (SBF)

In 2020, SBF set up the S\$2.5 million RISE Fund, in partnership with EnterpriseSG's **SG Together Enhancing Enterprise Resilience (STEER) Programme**. The RISE Fund aimed to help businesses, particularly SMEs facing challenges due to COVID-19, and supported companies in areas such as business sustenance, business growth and capability upgrading. In addition, the industry-led **Compassion Fund** by SBF's social impact arm (the SBF Foundation) sought to increase workforce resilience by providing financial assistance to workers in need.

Amidst the uncertainties brought about by COVID-19, SBF also initiated the Business Resilience Advisory Programme to help business leaders in addressing the challenges of the pandemic and preparing for the post-pandemic operating context. Supported by industry partners, the programme included a series of webinars and advisory services, designed to help businesses understand the impact of COVID-19 and how they can build a resilient enterprise.



- c. Our TACs also supported many of our smaller firms to navigate the complexities that COVID-19 brought about. This ranged from guiding the firms in accessing government relief schemes, to pushing for digitalisation so that these firms could reach new customer segments during the pandemic.
- d. The *Institute of Singapore Chartered Accountants (ISCA)*, for instance, was supported under EnterpriseSG's STEER programme to set up its own **ISCA Support Fund**. The fund accelerated the digital transformation and upskilling efforts of small and medium practices and provided working capital to small and medium practices most affected by the pandemic, helping a substantial number of firms to digitalise and/or build skills and capabilities for potential new revenue sources.
- e. Other TACS, such as the *Singapore Indian Chamber of Commerce & Industry (SICCI)* set up a COVID-19 taskforce to aid their members in accessing financial support. SICCI also mobilised business advisors at its SME Centre @ Little India, to encourage SMEs to embark on their digitalisation journey. This benefitted more than 100 Little India merchants across the retail, F&B and services sectors.
- f. Similarly, the *Singapore Malay Chamber of Commerce & Industry (SMCCI)* reached out to 1,800 Home-Based Business (HBB) owners to collect key data and worked with the *Ministry of Social and Family Development* to facilitate the application of **Temporary Relief Funds** for eligible HBB owners. SMCCI also worked with businesses to accelerate their digital transformation, enabling them to increase their operational efficiency and tap new customer segments.
- g. The *Singapore Chinese Chamber of Commerce & Industry (SCCCI)* also set up a new SME Centre (SME Centre @ Chinatown) to address the challenges faced by brick-and-mortar businesses in Chinatown due to the pandemic and the rise of e-commerce. The Centre seeks to better support merchants in their transformation efforts, by leveraging technology and expanding their customer base.

2.5 Amidst COVID-19, the nation looked towards preparing for the future.

- a. Even amidst the thick of battling COVID-19, we knew that there would be no return to the pre-pandemic days. The FEC convened the **Emerging Stronger Taskforce (EST)** to prepare our economy for the post-pandemic future, so that we could emerge stronger from the pandemic. The EST was chaired by *Minister for National Development* and Minister-in-charge of *Social Services Integration*, Mr Desmond Lee, and then-*PSA International* Group CEO, Mr Tan Chong Meng.
- b. The EST identified six key shifts arising from the COVID-19 pandemic that Singapore needed to be prepared for:
 - A changing global order, with growing tensions among the major powers in areas such as technology, finance and trade;
 - Accelerating industry consolidation and churn, which would create winners and losers amongst countries, companies and individuals;
 - Reconfiguration of global supply chains and production, as countries and companies re-evaluate their resilience and diversify operations;
 - Accelerating digital transformation and innovation, with the gains likely to persist well beyond COVID-19;
 - Changes in consumer preferences, with new demand for hygiene and health, virtual and contactless services, and alternatives to physical travel; and
 - Increased focus on sustainability, in light of the growing climate ambitions globally and the need for sustainable development

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COVID-19 presented unprecedented challenges to Singapore and our economy, but even as we had to adapt to the immediate impact, we have also embraced these opportunities to fundamentally transform our economy and enterprises for the long-term - trends like remote or hybrid working arrangements, enabled by a myriad of virtual platforms and tools, have become part and parcel of our day-to-day work. In the midst of the pandemic, we also worked closely with industry partners to refresh Built Environment Industry Transformation Map, and formed industry-led coalitions, known as Alliances for Action, to explore and prototype new ideas to address specific issues, for example creating and enhancing sustainable indoor spaces and tackling problematic listings on property portals.

- Mr Desmond Lee, Minister for National Development and Minister-in-charge of Social Services Integration

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COVID-19 has completely changed the way we operate. The paradigm shift in our operating landscape has also brought about opportunities for us to redefine our strategies and build resilience in our economy and society. By forging strong alliances with industries and business ecosystems, and fostering a bold “can-do” spirit, we pave the way forward for a dynamic and resilient new normal.

- Mr Tan Chong Meng, Chairman of JTC Corporation

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Image: Photo of Emerging Stronger Taskforce Members at Emerging Stronger Taskforce Reunion Luncheon on 6 May 2022
Source: MSF

c. Additionally, the EST identified ways for Singapore to stay resilient and build new sources of dynamism. Innovating further on our existing tripartite structure, the EST piloted a new model of private-public partnerships that adopted a strong bias towards

action. The **Singapore Together Alliances for Action (AfAs)** enabled the EST and its partners to turn ideas into concrete actions swiftly. During that period, nine AfAs were formed in partnership with key stakeholders across the private and public sectors.

The nine AfAs launched by the EST:



AfA on Enabling Safe & Innovative Visitor Experiences



AfA on Digitalising Built Environment



AfA on Robotics



AfA on Supply Chain Digitalisation



AfA on Facilitating Smart Commerce



AfA on EduTech



AfA on MedTech



AfA on Sustainability



AfA on AgriTech



Image: All exhibitors were required to interact behind plexiglass installed in safe exhibition booths and meeting pods to reduce droplet transmission.



Image: On stage, speakers were seated at least 2m apart, with the first row of audience more than 3m away from the stage.

Alliances for Action (AfA) on Enabling Safe and Innovative Visitor Experiences

As border restrictions were implemented in the early days of the pandemic, Singapore sought a way to safely open our doors to the world. Thus, the **AfA on Enabling Safe and Innovative Visitor Experiences** was convened.

Co-led by Ms Kwee Wei Lin, President of *Singapore Hotel Association* & Head of Hotels of *Pontiac Land Group*, and Mr Lee Seow Hiang, CEO of *Changi Airport Group*, the AfA partnered prominent industry stakeholders to develop a range of prototypes to facilitate the safe resumption of large-scale business events during the pandemic.

The AfA piloted prototypes at TravelRevive, the first international travel tradeshow to take place physically in the Asia Pacific during COVID-19. Learnings from the launch of TravelRevive were swiftly incorporated to refine the prototype for the Geo Connect Asia 2021, which welcomed more than 1,000 attendees from 55 countries.

- d. Through the collective efforts of different stakeholder groups (e.g. the Labour Movement, our businesses, the Government, and our people) during the pandemic, we managed to cushion the impact of the pandemic on our economy and emerge stronger together.



Chapter 3

IGNITING A CHANGE MOVEMENT TO TRANSFORM



3.1 Key to our transformation has been a change movement to successfully mobilise industry stakeholders to collaborate and achieve better outcomes for the whole sector.

- a. Transforming entire sectors requires the combined efforts of all stakeholders. The Built Environment and Security sectors are two examples of sectors that have successfully transformed how they work, through collective action.

Security Sector's Outcome-Based Contracting Model

Against the backdrop of plateauing resident workforce growth, the Security sector has shifted away from traditional manpower intensive operating models to those that integrate technology, along with job and process redesign. For the procurement of security services, the sector has shifted from a headcount-based model to an outcome-based contracting model (OBC). Under OBC, buyers define their requirements in terms of security outcomes rather than headcounts.

The Government took the lead on this by mandating all government agencies to adopt OBC for security services contracts from 1 May 2020. Many other companies followed suit. This shift has driven the increased use of technology in security operations and has led to the creation of better paying jobs in the sector.

Built Environment Sector's Growth and Transformation Scheme

Building on the progress that the Built Environment sector has made under the Construction ITM that was launched in 2017, the refreshed Built Environment ITM was launched in 2022. The Built Environment ITM sets out the strategies for the sector to achieve greater productivity, sustainability, and digitalisation. It adopts a value-chain approach to encourage collaboration and drive transformation throughout the building life-cycle, pushing interdependent BE stakeholders to transform in tandem.

The Growth and Transformation Scheme was introduced under the refreshed Built Environment ITM to support alliances of developers, builders, consultants and other stakeholders in pursuing best-in-class transformation outcomes across multiple projects. The idea is to enable the alliances to develop the trust, relationships and capabilities required to sustain transformation efforts over the longer term.

For example, *CapitaLand Development* and its partners, including *Woh Hup*, *Surbana Jurong*, and *Threesixty Consultants*, have adopted a collaborative contracting module in one of their ongoing projects. This is a new approach to contracting that includes provisions to facilitate the early warning of issues and dispute resolution amongst project partners.



Image: CapitaLand Development and their strategic partners participating in a workshop together.

Source: MND

3.2 The Government has worked closely with the industry to facilitate collective action and streamline regulations in response to feedback.

Connectivity Cluster's Land Transshipment Procedures Review

In the Connectivity cluster, a review aimed at achieving streamlined transshipment procedures at land checkpoints was made possible as engagements within the cluster provided an avenue to seek perspectives from key stakeholders.

Currently, the transshipment of goods through our land checkpoints at Woodland and Tuas is considered as import to be re-exported. This means that companies must apply for 2 permits from Customs – one for importing the goods, and another for exporting them, resulting in higher administrative and compliance costs. The review aims to streamline land transshipment procedures through the use of transshipment permits, similar to existing practices for air and sea transshipment. This could reduce the number of permits that companies need to apply for, with potential cost savings of up to S\$40 for each transshipment, and total savings for the industry amounting to S\$2 million annually.

Alliances for Action (AfA) on Supply Chain Digitalisation

Global trade will gravitate towards nodes that are most efficient and cost-effective. Thus, the **AfA on Supply Chain Digitalisation** was convened, bringing together the private and public sectors to address challenges and explore opportunities to transform the supply chain ecosystem.

The AfA was co-led by Mr Tan Chong Meng, then-Group CEO of PSA International, and Mr Tan Chin Hwee, then-CEO (Asia Pacific) of *Trafigura*, with support from the *Infocomm Media Development Authority (IMDA)*. It brought together industry partners (such as *DBS Bank*, *Jurong Port*, *OCBC Bank*, *ONE*, *Oiltanking Pacific International Lines*, *Standard Chartered Bank* and *United Overseas Bank*). The AfA identified the opportunity to pilot a common data infrastructure to facilitate the trusted exchange of data and to connect supply chain ecosystems both locally and globally. Through this, it was envisioned that supply chain ecosystem partners could improve their asset utilisation as well as optimise their cargo handling and operations, and Singapore's position as a hub for international trade could be strengthened. As a result of efforts under the AfA, the **Singapore Trade Data Exchange or SGTraDex**, was launched in 2022.

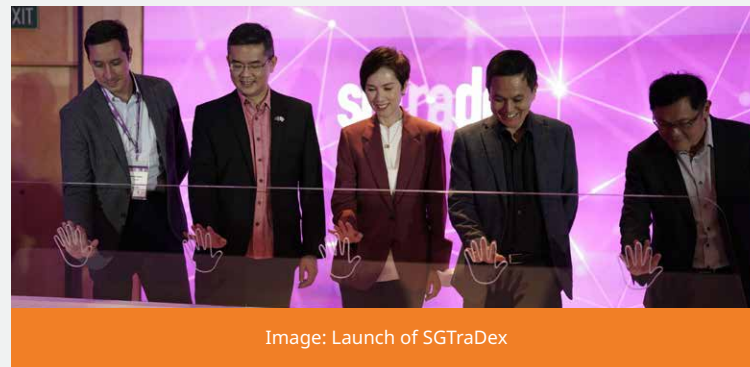


Image: Launch of SGTraDex

3.3 Trade Associations and Chambers (TACs) are important advocates in this change movement.

- a. TACs provide networks and avenues for partnerships. This has enabled companies, especially SMEs, to overcome the limitations of size by working together.
- b. The *Singapore International Chamber of Commerce (SICC)* is one TAC that has strengthened collaboration between companies within and across industries. For example, the annual SICC Awards for Collaborative Innovation celebrates successful commercial collaborations that lead to new products and services or extended capabilities.
- c. To promote closer collaboration between TACs, the Trade Association Hub at Jurong Town Hall was established in 2017. The initiative, co-led by SCCC and *JTC Corporation*, facilitated the co-location of the trade associations under one roof. TACs benefit from economies of scale and cost savings by sharing resources and facilities. This also facilitates combined trade exhibitions, roadshows, and skills upgrading programmes.
- d. Smaller TACs also benefit from the mentorship and training of larger TACs, enabling them to deliver greater value to their members. The Hub has helped to build a stronger TAC community and fostered a culture of mutual support and collaboration.



Chapter 4

DIGITAL TRANSFORMATION



4.1 Digital transformation has been a continuous learning journey.

- a. Singapore recognised the transformative potential of Information Technology (IT) and made a conscious effort to drive uptake through our early computerisation efforts. The *National Computer Board (NCB)* was established in 1981 to mobilise both government agencies and the private sector for IT adoption.
- b. Today, Singapore has one of the highest digital take-up rates globally, compared to other Asian countries and advanced economies. We have put in place advanced, secure and resilient digital infrastructure to empower the economy. This includes hard infrastructure such as Data Centres and cloud computing capabilities, as well as soft infrastructure such as the Singapore Digital Utility Stack which enables key digital transactions to be conducted seamlessly and securely. Other foundational digital utilities such as Singpass and PayNow, have also generated significant network benefits for the economy.
- c. Digital technologies have also enabled us to strengthen our connection to other economies, such as through cross-border payment linkages driven by MAS. Individuals and small businesses are able to make secure, convenient and cost-effective instant cross-border fund transfers and QR payments to partner jurisdictions such as India, Indonesia, Malaysia and Thailand.

4.2 There was a major push on digital transformation efforts in past several years, as part of the Industry Transformation Map (ITM) efforts.

- a. Aligned with the ITMs, sector-specific **Industry Digital Plans (IDP)** were launched in 2017. The IDPs provide SMEs guidance on identifying suitable digital solutions and training programmes. For example, businesses in early stages of their digital transformation journeys receive free digital consultancy services and support for basic technological solutions, while others receive help to capture new growth areas (e.g. cybersecurity, Internet-of-Things). These IDPs are regularly refreshed.
- b. The **SMEs Go Digital programme** was also launched in 2017 to help SMEs adopt digital solutions and build capabilities to seize opportunities in the digital economy. An initiative of the SMEs Go Digital programme is the **Chief Technology Officer-as-a-Service initiative**, which enables SMEs to access the platform to perform a self-assessment of their digital readiness and identify their digitalisation needs and gaps. This provides a jump start for SMEs looking to embark on their digitalisation journey, with relevant recommendations on potential digital solutions to adopt and the grant support available.



4.3 The efforts have contributed to good traction on digitalisation across the economy.

- a. Overall, more than 88,000 SMEs have benefited from the SMEs Go Digital Programme since it was launched in 2017. Between 2018 and 2022, the Annual Survey on Infocomm Usage by Enterprises reflected that companies which had adopted at least one digital technology increased from 78% to 93%. IMDA also found from its 2021 SME Survey that digital solutions under the IDPs have helped SMEs grow faster and improved their productivity. 85% of participating SMEs reported time savings and 75% said digitalisation had helped them alleviate manpower challenges.
- b. Particularly in the Retail, Healthcare and Built Environment sectors, there has been significant adoption of technology-enabled and digital solutions in the past several years.

Embracing Digital – From Our Retailers to Hawkers

There has been good progress in the Retail sector in the adoption of technology-enabled productivity and digital solutions. The sector, comprising various sub-sectors such as supermarkets, department stores, fashion & sporting goods, and jewellery & watches, typically operates on a brick-and-mortar store model. From 2018 to 2021, over 7,000 retail SMEs embarked on productivity improvement projects⁹, with 9 in 10 SMEs having adopted at least one digital solution as of 2021¹⁰.

For example, Cosmeceutical company *Kino Biotech*, which retails healthcare and beauty products under its in-house *Kinohimitsu* brand,

⁹ Based on Productivity Solutions Grant projects for retail companies.

¹⁰ Based on IMDA's 2021 SME Survey.

adopted inventory management, order management and finance management systems. This helped the company to benefit from a 50% reduction in order taking time, and 50% savings in inventory picking and purchase order generation time.

Even within our neighbourhoods, our heartland retailers and hawkers have accelerated their digital adoption. With the assistance of **Heartlands Go Digital**, the number of heartland businesses that have gone online rose from 36% to 65% (as of August 2022), with nearly nine in 10 heartland businesses accepting e-payments. Thus far, under the **Hawkers Go Digital initiative**, more than 11,000 hawker stalls have adopted e-payments. There are encouraging results. Additionally, the digital **CDC Vouchers Scheme** has also given a push to digital adoption, encouraging more heartland merchants to adopt digital transactions and build their online presence.



Healthcare Sector

COVID-19 underscored the importance of resilience in our Healthcare sector to safeguard lives and livelihoods, and withstand future pandemics and crises. With an ageing population and anticipated higher demand for healthcare, the sector has been an early adopter of technology to enhance work processes. For instance, robotics have been deployed to automate pharmacy processes such as sorting, packing, assembling

and dispensing a variety of drugs at our public hospitals, as well as to handle goods and linen delivery. AI is also being explored to aid in early detection of diseases, diagnosis, and the monitoring of patients' progress along their health plans. This includes harnessing the potential of GenAI to support healthcare providers through generated insights from patient information, and smart tracking of medication usage and changes. These initiatives free up clinicians' time to focus on patient engagement and delivering optimised care.



Image: The Outpatient Pharmacy Automation System automates pharmacy processes, reduces wait times and improves patient medication safety, transforming the patient journey.

Built Environment Sector

We have made good progress under the Construction ITM, which was launched in 2017. Site productivity improvement increased from 10% (compared to 2010 levels) in 2016 to 17.6% in 2019. This was due to the implementation of our strategies under the Construction ITM, which was launched in 2017, such as shifting on-site construction works to more productive, factory-like off-site facilities by adopting Design for Manufacturing and Assembly technologies. This was complemented by the strong push for digital building modelling, and Integrated Digital Delivery which links project stakeholders across the building lifecycle via a 'digital spine' to encourage collaboration.

Today, we continue to drive deeper transformation across the Built Environment value chain, via the refreshed Built Environment ITM, launched in 2022. One key transformation area under the Built Environment ITM is Integrated Planning and Design (IPD), aimed at facilitating collaboration (including contracting practices) and accelerating the adoption of the Integrated Digital Delivery. With IPD, various project parties can collaborate digitally with standardised data guidelines and common digital platforms.

A major IPD initiative is **CORENET X**, which is a one-stop integrated digital shopfront for regulatory submissions of building works. CORENET X will require consultants to collaborate and submit integrated and coordinated digital building models with agencies providing consolidated responses to submissions. This will facilitate early detection of potential design conflicts and reduce downstream iterations and abortive works. CORENET X will be launched progressively, following its soft-launch in December 2023.



Image: In the BCA Academy Phase 2 Intensification Works project, the use of a coordinated Building Information Modelling model enabled seamless collaboration among project stakeholders from different disciplines across building lifecycle.

4.4 We will need a digital-ready workforce with the right skills and competencies to maximise our gains from technology.

- a. Through partnerships between companies, Institutes of Higher Learning (IHLs) and the Government, we have built up a steady pipeline of tech talent, and helped our workers pick up new digital skills.

Training to be Tech-Ready

The **TechSkills Accelerator (TeSA)** aims to build and develop a skilled Information and Communications Technology (ICT) workforce for Singapore's digital economy. It is an initiative built on a collaborative partnership involving (a) the Government – IMDA, *SkillsFuture Singapore (SSG)* and *Workforce Singapore (WSG)*, (b) industry, and (c) NTUC. As of December 2023, TeSA has placed more than 17,000 locals into tech jobs, and upskilled and reskilled more than 231,000 in tech.

One key TeSA programme is **Company-Led Training**, which aims to accelerate the professional development of tertiary graduates and mid-career professionals, through on-the-job training. The programme would enable trainees to acquire the requisite competencies for jobs in demand by industry, especially for those that support the digital economy sector transformation efforts. The **AI Apprenticeship Programme** with *AI Singapore* is one such Company-Led Training.



The AI Apprenticeship Programme helped to further my knowledge and expertise in AI, through the well-thought-out structure that combines theoretical knowledge and hands-on industry experience which resonated with my professional aspirations. Beyond the technical aspects of AI, the programme also helped to hone soft skills, such as managing client expectations and ensuring the successful delivery of key project outcomes. The rewarding experience of seeing the positive impacts of my project on people's lives further reaffirmed my decision to join the AI Apprenticeship Programme and fueled my passion for AI.

– Ms Rengarajan Hamsawardhini, AI Engineer, and AI Apprenticeship Programme Graduate of the Company-Led Training with AI Singapore



Image: Graduates of AI Singapore's AI Apprenticeship Programme, which is supported by TeSA's Company-Led Training.

As part of the broader TeSA initiative, the **TeSA for ITE and Polytechnics Alliance (TIP Alliance)** was launched in September 2022, to empower Polytechnic and Institute of Technical Education (ITE) students and graduates with the necessary skills to excel in diverse tech roles across industries. This is an industry-driven collaboration, co-chaired by *SGTech* and *Singapore Computer Society*, with support from IMDA. The TIP Alliance has rallied a consortium of global and local companies that employ SG tech talent to provide more work opportunities for Polytechnic and ITE students.

Through the TIP Alliance, students can access clear end-to-end pathways to kickstart their tech careers, while acquiring relevant skills with the support of these organisations, and potential new partners. These pathways include enhanced year-long internships, on-the-job training via apprenticeships, opportunities to pursue work-study programmes, and industry-recognised certifications. In 2023, more than 400 polytechnic and ITE students underwent the enhanced year-long internships to gain greater industry experience.

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I worked on Jira Dashboards to help track statistics on the quality, success rate and other information of the Pre-Production Review, helping to draw up architecture and workflow diagrams, and any issues or potential changes to be discussed during meetings. I also helped with the Fraud Management System (FMS) Project by contributing diagrams and helping with the field mapping. Through working with my mentor, I was able to discover my area of interest, and he adapted my tasks to allow me to better explore this area.

– Ms Queenie Ng, Ngee Ann Polytechnic Student and Full-Stack Developer Intern at OCBC, Beneficiary of TIP Alliance

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IMDA and the TIP Alliance also launched the Skills-Based Hiring Movement in November 2023 to encourage employers to change their mindsets and HR practices and give sufficient weight to applicants' skills and capabilities rather than just looking at academic qualifications. Within three months of the launch, the number of companies pledging their support for skills-based hiring doubled from 100 to 200.

- b. Additionally, IMDA aims to reskill and upskill about 18,000 talents in tech roles in AI and Analytics over the next three years. There will be an emphasis on GenAI and two other in-demand areas – Software Engineering and Cloud and Mobility – which are complementary to AI and have been identified through the Information & Communications (I&C) sector's **Jobs Transformation Map (JTM)** as areas with a transformative impact on the I&C workforce.
- c. To scale these efforts, IMDA is working in partnership with five training partners, namely *National University of Singapore (NUS)*, *Ngee Ann Polytechnic*, *NTUC LearningHub*, *Singapore University of Social Sciences* and a consortium consisting of *Temasek Polytechnic-Republic Polytechnic-Generation Singapore*. As of Dec 2023, they have curated about 200 AI courses, and nearly 2,000 tech workers have been trained through these AI courses.

4.5 Looking ahead, Generative Artificial Intelligence (GenAI) has tremendous potential to supercharge our transformation journey.

- a. GenAI has the potential to transform businesses, improve employees' work experience and customers' service experience. This presents a strong opportunity for us to drive our growth and productivity.
- b. We have taken steps to promote wider adoption of AI. We have fostered stronger collaboration between academia, industry and AI domain experts to better harness the potential of AI and co-create solutions.

Collaborating to Build AI Capabilities

In 2024, EnterpriseSG and IMDA launched the **GenAI Sandbox** for SMEs to support companies in gaining hands-on experience with GenAI solutions. The sandbox has enabled more than 140 SMEs to gain greater access to GenAI tools to elevate their Marketing and Sales, and Customer Engagement efforts.

To catalyse the initial experimentation and adoption of AI tools, the **Microsoft Copilot for SMEs programme** was also introduced. Jointly developed by EnterpriseSG, *Microsoft* and *AI Singapore*, the programme enables SMEs to adopt *Copilot for Microsoft 365* at a subsidised rate. SMEs can also participate in specially-designed Microsoft training workshops to effectively harness AI-powered solutions for enhanced productivity, and tap on AI Singapore's suite of training programmes and workshops to understand the broader applications of AI.

In addition, to better support SMEs looking for higher levels of digital integration or SMEs that are unable to find suitable "off-the-shelf" solutions, EnterpriseSG has partnered IHLs, starting with Singapore Polytechnic and Nanyang Polytechnic (NYP), to work directly with SMEs to curate AI problem statements, build customised market-ready AI solutions and deploy them across various business functions. These efforts are part of broader ongoing initiatives to collaborate with industry and IHLs to provide greater support for SMEs to harness the benefits of AI to enhance their operations and competitiveness.

- c. Partnerships between local companies and industry leaders, and support from the Government, are also underway, to develop and implement AI solutions in business operations. These partnerships help to uplift our local businesses, and advance Singapore's position as an open and trusted global AI hub.

Deploying AI for Good

The *Ministry of Digital Development and Information* (then *Ministry of Communications and Information*), *Digital Industry Singapore*, *Smart Nation*, *Digital Government Office (SNDGO)* and *Google Cloud* have launched "**AI Trailblazers**". This is a joint public-private partnership¹¹ initiative designed to help organisations in Singapore identify real-world challenges that can be addressed with GenAI, build GenAI solution prototypes, and bring these prototypes to production.

Two innovation sandboxes have been established to provide up to 100 organisations in Singapore with seamless access to Google Cloud's high-performance graphical processing units, Vertex AI

¹¹ Other public and private organisations involved in the AI Trailblazers initiative include MOM, IMDA, Public Service Division (PSD), SNDGO, GovTech, American Express, Mastercard, PropertyGuru Group, and Tokopedia.

platform, pre-trained GenAI models, and low-code developer tools, at no cost for a fixed duration of up to three months. With access to these comprehensive, custom-built, and easy-to-use GenAI toolsets, organisations can build and test their own GenAI solutions in a controlled and dedicated cloud-based environment.

As part of AI Trailblazers, digital transformation solutions provider, *Temus*, utilised the Vertex AI platform to enhance its talent acquisition and development workflows. For talent acquisition, Temus designed a GenAI solution to rank over 100 CVs per open job role based on job description criteria, saving hundreds of man-hours. For talent development, Temus developed a platform that aggregates data sources such as resumes and performance reviews to provide a visual assessment of skills competencies and skills gap. This is complemented by a conversational agent that can assist managers in delivering actionable feedback and recommend options for precision training, thus catalysing staff's professional growth. Temus anticipates a 50% increase in productivity through improved skills matching to projects, and precision training for staff.



Image: Temus AI and Data Team who participated in the AI Trailblazer initiative.

Chapter 5

TRANSFORMING THROUGH RESEARCH, INNOVATION AND ENTERPRISE



5.1 Innovation is critical to our economic transformation.

- a. Building on our efforts to optimise the outcomes from digitalisation and new technologies, innovation is a key enabler in our economic transformation. It creates avenues for growth and raises Singapore's economic competitiveness.
- b. Over the years, we have remained committed to investing in research and innovation. Our innovation journey started over three decades ago when we launched the first five-year National Technology Plan to move towards an innovation-drive, knowledge-based economy. More recently, another \$25 billion was invested for Research, Innovation and Enterprise (RIE) 2025 plans, with a further top-up of \$3 billion announced this year.
- c. Through the RIE plans, Singapore has built up our innovation and research & development capabilities. We have developed a strong innovation and start-up ecosystem, with a global network of players. The *National Research Foundation (NRF)* and the *Agency for Science, Technology and Research (A*STAR)* also work closely with our research institutes, universities and industries to advance research and innovation.
- d. Today, Singapore is a well-regarded and vibrant global innovation node. We ranked 5th globally in the 2023 World Intellectual Property Organisation Global Innovation Index, and 1st in Southeast Asia and Oceania. This is a result of the Government making sustained investments in this direction, and our research community and industries making significant efforts to push the frontiers.

StartupSG

In 2023, through *StartupSG's* suite of programmes and partners, 1,900 startups have benefitted from assistance provided to gain access to funding, incubation and mentorship. One such startup was *BeeX*, an autonomous marine vehicle manufacturer, which has successfully spun out from NUS's **Graduate Research Innovation Programme (GRIP)**. *BeeX* was awarded the **StartupSG Tech grant** in 2019 to develop its first autonomous vehicle, and has successfully fundraised from investors such as *ShipsFocus*, *Earth Ventures*, *IMC*, and *SEEDS Capital* across two funding rounds in 2021 and 2023. The startup has since developed more sophisticated systems and completed successful trials with windfarm operators in Europe earlier this year.

Other programmes under StartupSG include the **StartupSG Equity scheme**, which aims to stimulate private sector investments into innovative, Singapore-based technology startups with intellectual property and global market potential. As of Mar 2024, the scheme has supported a total of 248 startups through more than \$380 million worth of investments into key RIE sectors, catalysing over \$2.4 billion of private sector monies into the ecosystem.

Additionally, to enable the startup community and ecosystem partners to widen their network and facilitate forging new connections, **StartupSG Network** was launched. Today, the virtual network serves as an important platform to connect different stakeholders both locally and globally to Singapore's startup ecosystem.

Scan the QR code for more information on StartupSG and StartupSG Network.

StartupSG:



go.gov.sg/
startupsgpage

StartupSG Network:



go.gov.sg/
startupsgnetwrk

5.2 Closer integration of our Research, Innovation and Enterprise (RIE) efforts with industry priorities has accelerated transformation.

- a. Innovation is and will continue to be critical to the next bound of Singapore's industry transformation and economic growth. The ITMs, which lay out the strategies to provide innovation and productivity growth in each sector, are closely integrated with the RIE plans. This is to allow our investments in R&D to better address national priorities and the needs of our businesses and people.
- b. The nexus between the RIE plans and ITM was further tightened for RIE 2025 and ITM 2025. We reviewed our FEC structure to organise the work into 7 clusters, aligned with the four RIE domains, namely – Manufacturing, Trade & Connectivity; Human Health & Potential; Urban Solutions & Sustainability; and Smart Nation & Digital Economy.
- c. We encouraged public-private R&D partnerships between research performers (i.e. institutions who undertake publicly-funded R&D activities in Singapore) and companies through the establishment of Corporate Laboratories in our universities and research institutes. Industry partners can tap scientific and technological capabilities built up in our universities and research institutes to develop new products and services while universities and research institutes achieve impact by developing cutting edge solutions to industry problems. One example is the **Applied Materials-Institute of Microelectronics Centre of Excellence in Advance Packaging**, which aims to accelerate breakthroughs in materials, equipment and process technologies for hybrid bonding and other emerging 3D chip integration technologies.
- d. Apart from research in universities, the translation of R&D into business solutions and products has been put into practice in our schools and technical institutes. The close collaboration between

industry and schools helps to instill an innovative can-do spirit in our students from an early age. At the same time, it allows our students to develop in-demand skills and capabilities. Smaller local businesses also benefit from being able to access new technologies from these efforts and capture opportunities in emerging growth areas.

Centres Engaging in Technology, Innovation, and Enterprise Activities

Besides the research capabilities in our universities, we also have a network of more than 80 centres across our polytechnics and ITEs engaging in technology, innovation and enterprise activities. These help to deepen the collaboration between the schools and industry – such collaborations are a win-win; firms get to tap on the R&D capabilities in our polytechnics and ITE, while students can contribute meaningfully to these projects and gain valuable hands-on industry experience. Some examples include:

Centres of Innovation

Centre of Innovation Built Environment – Advanced Materials with Singapore Polytechnic, Republic Polytechnic, and Temasek Polytechnic

This Centre focuses on uplifting local SMEs' capabilities in advanced construction materials and chemical formulations. This would help to meet industry requirements on sustainability, design and construction. In addition, it would also provide support to accelerate transformation efforts in building inspections, material characterisation, maintenance and repair solutions.

Environmental & Water Technology Centre of Innovation with Ngee Ann Polytechnic

This Centre partners with industry to develop new solutions in water technology, waste management, clean energy and pollution control, in support of a more sustainable world.



Scan the QR code for the directory of the
Centres of Innovation.

go.gov.sg/centresofinnovation

Automation & Robotics Innovation Centre at Nanyang Polytechnic (NYP)

NYP's **Automation & Robotics Innovation Centre** collaborated with *Sanwa-Intec Asia*, an SME that supplies the automotive industry, to design and implement robotics and automation solutions. One of the solutions is a robotics tool that emulates an operator's handling of hot moulded products. With this tool, Sanwa-Intec has significantly increased production volume, while reducing its energy consumption. Alysia Ong, who had the chance to work on these projects, is now working at Sanwa-Intec after completing her internship there.



Image: Ms Alysia Ong at NYP's Automation & Robotics Innovation Centre



By gaining more experience during my internship, I was able to adapt quickly to my new responsibilities at the new job and experience less stress from being new.

- Ms Alysia Ong, NYP student



Partnering with NYP has helped us accelerate our digital transformation journey by automating and robotising some operations.

- Mr Anthony Yeow, Operations Manager for Sanwa-Intec



ITE Makerspace

Each of the three ITE Colleges has a dedicated facility (“E-Makerspace”) that provides equipment and resources for students to transform their ideas into products. Various industry partners have contributed expertise and resources to make these facilities vibrant. The E-Makerspace leverages students’ creativity and practical skills, while nurturing their spirit of entrepreneurship. It encourages students to imagine infinite possibilities and believe in their abilities.

One such example is the partnership between ITE and the international sewing machine brand *BERNINA* to establish a service training centre at ITE College East for *BERNINA* machines. The space serves as both an E-Makerspace and learning centre for digital sewing. The ITE-BERNINA collaboration illustrates how the makerspace enables students to realise their dreams. For instance, Ms April Sheen, a graduate from the Higher Nitec in Electronics Engineering, obtained her certification in machine sewing through the *BERNINA* education programme. This certification enabled her to build her portfolio and gain admission to the Diploma in Apparel Design and Merchandising course at Temasek Polytechnic, bringing her a step closer to her dream of becoming a wedding dress designer.



Image: BERNINA Service Training Centre at ITE College East

5.3 Innovation requires being connected to global networks, to exchange the best ideas.

- a. We have entered an era where co-innovation (and not just innovation) has become more crucial than ever. To bolster our innovation efforts, we have continually looked at ways to develop deep and extensive networks with the rest of the world.
- b. On the recommendation of the CFE, we set up the **Global Innovation Alliance (GIA)**. The GIA seeks to strengthen the linkages between Singapore and global innovation hubs, and enables our start-ups and SMEs to expand abroad, while providing a springboard for international companies looking to expand into Asia.

Global Innovation Alliance (GIA)

Under GIA, **Acceleration Programmes (AP)** expedite market entry of companies into 21 major innovation hubs across the globe, including New York, San Francisco, London, Shanghai, Mumbai, Seoul, Tokyo, and more¹². This international network of mentors, corporates, partners, and clients enhances the two-way flow of market opportunities and technology capabilities of companies. Since 2019, we have supported over 500 Singapore tech companies through the GIA AP, benefitting over 700 participants in their internationalisation efforts. Some have since entered overseas markets successfully through collaborative agreements and commercial partnerships. We have also seen a healthy pipeline of over 130 foreign companies leveraging GIA’s AP to expand in Asia through Singapore.

One example of success is *pQCe*, a deep-tech software startup specialising in quantum cybersecurity, which aims to strengthen and protect the next generation of computing against quantum attacks. Through participation in the GIA San Francisco programme, *pQCe*

¹² Other cities include Abu Dhabi, Bangalore, Bangkok, Beijing, Berlin, Ho Chi Minh City, Jakarta, Manila, Melbourne, Munich, Paris, Shenzhen, Suzhou, and Sydney.

gained exposure to over 10 venture capitalists and corporations interested in utilising post-quantum computing applications. One notable outcome was the partnership with *IoTeX*, a US blockchain company. *IoTeX* signed a Memorandum of Understanding (MOU) with pQCe to customise pQCe's quantum cybersecurity products to address the specific needs of the US blockchain sector.

GIA also features **Co-Innovation Programmes** which drive R&D collaboration between Singapore-based companies and their overseas partners. Such joint projects encourage companies to come together to hone their capabilities, co-develop innovative solutions, and grow at a global scale. Our network has expanded across 40 countries, across Asia-Pacific, the Americas and Europe. Since 2019, we have received over 600 project submissions from more than 480 companies.

One noteworthy collaboration involves the German multinational corporation *Robert Bosch GmbH*, along with three other German entities, joining forces with *D-SIMLAB Technologies Pte Ltd* (a Singapore company specialising in simulation-based business analytics and optimisation software solutions). This collaboration taps on D-SIMLAB's expertise in AI, wafer fab material flow planning and capacity optimisation to develop autonomous integrated scheduling for semiconductor production. This will add a new dimension to D-SIMLAB's capability to enable and enhance intelligent Industry 4.0 compliant manufacturing environments.



Image: Plug and Play APAC's Acceleration Program in GIA Jakarta Node



Image: Launch of the GIA New York City Node in October 2023

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The GIA Jakarta acceleration programme by Plug & Play connected us with mentors and major corporates. We were also introduced to investors and managed to raise funds from Gan Konsulindo. In addition, the programme also gave us the opportunity to interact with a community of startups that provided invaluable learning opportunities.

– Mr Joel Lee, Co-founder and CEO, Protos Labs

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Image: SWITCH 2023

- c. Other initiatives that have strengthened our global networks for innovation are the annual **Singapore Week of Innovation and Technology (SWITCH)** and the **Singapore FinTech Festival (SFF)**. Since 2016, SWITCH has provided a platform to bring together global innovation stakeholders, encompassing corporate giants, high-growth startups, investors and intermediaries, with over 15,000 delegates in its 2023 run. SWITCH has served as a dynamic showcase for innovation, highlighting breakthroughs not only from Singapore but also from across the globe. Through curated events and networking opportunities, it has facilitated meaningful connections that catalyse impactful collaborations and propel innovation forward. Similarly, SFF, the largest platform in the world for FinTech, brings together a global community to engage, connect and collaborate on issues relating to the development of financial services, public policy and technology. In 2023, the SFF had over 60,000 participants, from 150 countries and regions.



Image: Session-in-place at the Global Stage at SWITCH 2023



Image: SFF 2023

5.4 Innovation has been a key pillar of Singapore's economic transformation journey. It is necessary to ensure that we can continue to achieve sustainable economic development.

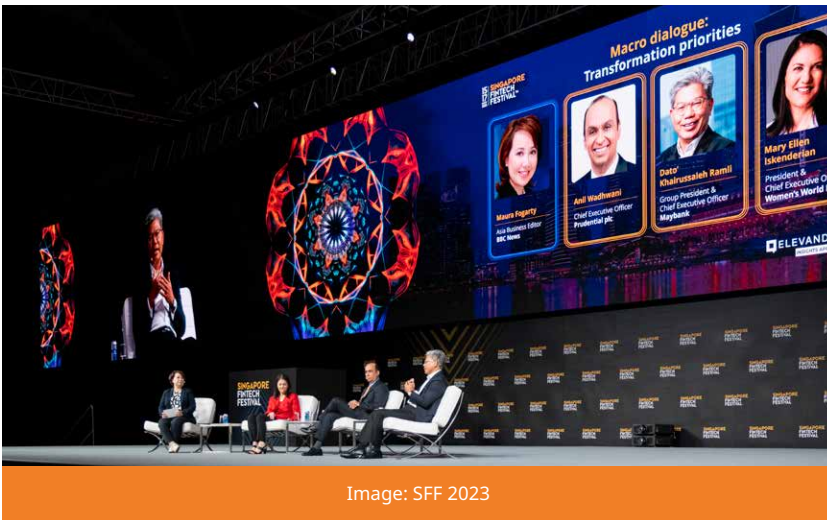


Image: SFF 2023

Chapter 6

WORKFORCE TRANSFORMATION



6.1 As our industries and firms transform, our workforce must do so too.

- a. Even as we innovate and digitalise our industries, people remain Singapore's most precious asset. The continued transformation of our workforce is critical to ensure that our people remain competitive and relevant in today's fast-changing economy. This will enable Singaporeans to seize good job opportunities.
- b. We have made good progress through the **SkillsFuture movement**¹³, which seeks to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points. Through SkillsFuture, we empowered workers and firms to embrace the spirit of lifelong learning. Our workers have become more aware, and are taking the need to upskill and reskill¹⁴ more seriously. This is reflected in overall participation in SkillsFuture initiatives which increased from 380,000 people in 2016 to 520,000 people in 2023.
- c. Sectors such as the Healthcare and Early Childhood sectors have also been driving workforce transformation with the implementation of the JTM. The JTM was developed in tandem with the ITMs, to give sectors greater clarity on new jobs and roles that would be affected by technology and automation, and the skills that workers need to thrive amidst the changes. This complemented the efforts of our national SkillsFuture movement.

Healthcare Sector

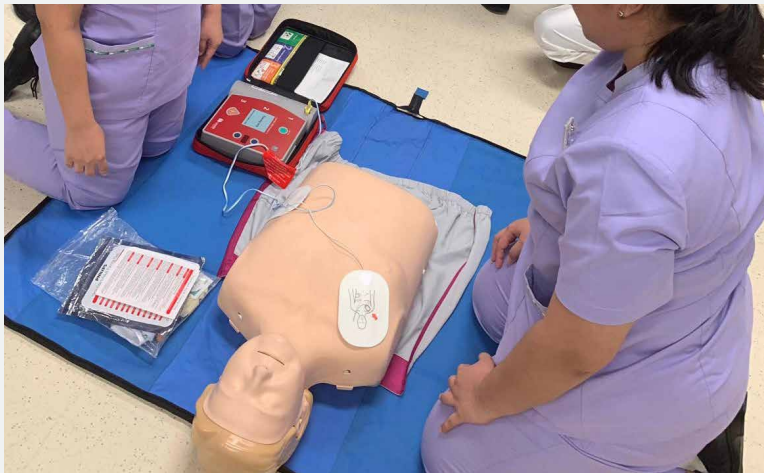
The Healthcare sector aims to grow its workforce by about 5% annually from 2021-2025; and has **taken efforts to transform roles and open up better opportunities for career progression**. For example, Ministry of Health has been collaborating with public healthcare institutions and community care organisations to enhance and redesign support care roles, aiming to improve local recruitment and retention and provide wage and skill progression for these healthcare workers.¹⁵

Our public healthcare institutions are introducing a redesigned Care Support Associate role in their hospital wards, which blends patient caregiving and basic clinical tasks with administrative and operational tasks. This approach enables staff to be trained for a wider range of tasks and competencies, thus enhancing their productivity and potential for progression over time.

¹³ The four key thrusts of the SkillsFuture movement are: (a) to help individuals make well-informed choices in education, trainings and careers, (b) to develop an integrated high-quality system of education and training that responds to constantly evolving needs, (c) to promote employer recognition and career development based on skills and mastery, and (d) to foster a culture that supports and celebrates lifelong learning.

¹⁴ For example, a UOB survey conducted in 2021 with 1,030 individuals aged between 18 and 65 in Singapore, found that 90% of employees believed they would need to reskill or upskill. Similarly, as part of Ministry of Digital Development and Information (then Ministry of Communications and Information)'s Future of Work Online Poll conducted in September 2021 among 1,047 Singapore residents aged 15 & above, 63% of workers mentioned that they would need to reskill and upskill to stay relevant.

¹⁵ For instance, Patient Service Associates now handle both basic patient care tasks and administrative duties. Similarly, support care staff now take on some nursing responsibilities under the redesigned Care Support Associate role.



Images: Care Support Associates from SingHealth who were undergoing training

Similarly, the *Agency for Integrated Care* has worked closely with employers in the community care sector to create a new career pathway – the Care Track – which creates value-added care roles that blend various nursing care functions with therapy support care functions, aiming to encourage cross-deployment and multi-skilling of staff.

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There is always room for growth and development through upskilling as the needs of elders are ever-changing and growing. I feel a sense of elation when my elders benefited from my learning.

– Mr Joel Chew, Senior Community Care Associate,
St Luke's ElderCare

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The training has left me feeling inspired, empowered and with a greater sense of professionalism in my work. I am also able to coach and lead the care team more effectively in terms of care planning.

– Ms Jenny Tchee, Community Care Executive,
St Luke's ElderCare

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Early Childhood Sector

The Early Childhood sector has rolled out the **Early Childhood and Early Intervention Continuing Professional Development roadmaps** and a **Leadership Development Framework** to support Early Childhood and Early Intervention professionals and leaders in their professional development.

These resources draw upon the **Skills Framework for Early Childhood** and assists educators in planning their professional development. They aim to prioritise and cultivate the necessary knowledge, skills and competencies required for progression within and across the respective occupational tracks.



The Continuing Professional Development Roadmaps and Leadership Development Framework have proven to be invaluable resources for facilitating discussions with our educators and leaders to map out their professional development journey. They aid early childhood professionals in the sector in identifying prioritised areas for growth and development in alignment with their individual goals and aspirations.

– Ms Alicia Lim, Early Childhood Development Agency Fellow; District Head, PCF Sparkletots



6.2 Workforce transformation has been a collective effort by workers, firms, and the Labour Movement, with support from the Government.

- a. As part of SkillsFuture efforts, the Government, industry and training providers have worked together closely to ensure that training programmes and workforce transformation efforts are responsive to changing industry needs. This close collaboration ensures that the complexity and diversity of skill demands can be best addressed.
- b. More firms have stepped up to invest in training, including retraining and upskilling their existing pool of workers, and leveraging automation and new technologies so that the workers can perform higher value-added roles. In 2023, more employers have sponsored their workers for training – from 20,000 companies and 168,000 workers in 2022 to 23,000 companies and 228,000 workers in 2023. Some companies have also paved the way for workforce transformation within their industries, by sharing their networks and transformation journeys with other companies.

Empowering the Future Workforce of the Logistics Sector

ST Logistics has made substantial investments in developing its workforce. For instance, each ST Logistics employee's career development plan is meticulously mapped to a defined set of skills derived from a fusion of SSG's Skills Framework and JTMs developed in tandem with ITMs, and the company's own 5-year technology and innovation roadmap. The company regularly assesses the skills of each employee and monitors their progress, leveraging an AI-Powered Skills Management System to bridge any competency gaps. This concerted effort has yielded numerous benefits for ST Logistics, including improved productivity and enhanced worker retention—both perennial challenges in the logistics industry.

As an appointed SkillsFuture Queen Bee, ST Logistics has shared its expertise with other companies within the sector to develop their workforce. The logistics industry is highly fragmented, comprising many SMEs that lack opportunities to collaborate and network. ST Logistics facilitates connections between these companies and relevant government / non-government programmes, providing guidance to ensure that companies can optimise their staff's capacity development and transform their businesses, even amidst budget or manpower constraints. It also encourages participation in the Supply Chain Employee Union and organises complimentary masterclasses, drawing upon its in-house experts to impart knowledge on sustainability, digitalisation, workplace safety, cybersecurity and future skills.



The career development plan initiative had helped me to gain clarity on my career goals and objective, by providing a roadmap for my professional journey. It had also helped me to enhance my skills by assessing my current skills and identifying gaps, so that I can focus on developing the relevant skills, allowing myself to be more competitive in the field. With this career development plan initiative in place, it encourages me to stay informed about industry trends, allowing me to be more adaptable to changes and advancements. Knowing that there's a plan in place, and actively working towards the goals have helped me to boost the job satisfaction and motivation.

– Mr Matthew Peh, Assistant Manager (Operations),
ST Logistics



Image: Launch of Supply Chain SkillsFuture Queen Bee Network

Acing with Automation

Certis has evolved from being a physical security provider to an integrated service provider.

Drawing on more than 60 years of experience, Certis has invested in building capabilities to deliver Integrated Facilities Management services. To complement its digital transformation, Certis has evolved its workforce by redesigning jobs and offering alternative career pathways to its employees. The adoption of Integrated Facilities Management, Smart Facilities Management and Internet-of-Things solutions has created new jobs and facilitated upskilling of existing employees to perform higher value roles.

Rajesh S/O Kantilal Rashiwala, a Security Specialist at the Jewel Smart Operations Centre (SOC), is one such individual who has benefitted from these efforts. Rajesh joined Certis in 2017 as an Aviation Security Officer, conducting pre-board screening at Terminal 3, before moving to Jewel the following year. Today, Rajesh is part of a team of dedicated SOC operators overseeing the complex daily operations of Jewel. Security+, which is Certis' proprietary digital application that combines advanced security, Facilities Management and guest services into a single platform, enables Rajesh's team to centrally monitor the status of all building facilities. If any issues arise, his team can effectively direct Jewel's security specialists, attractions rangers, experience concierges, Facilities Management technicians, housekeepers, or pest control team, to respond. With his expanded skillset and job scope offering him both better remuneration and more career advancement opportunities, Rajesh has gained a deeper sense of purpose at work and is content with his brighter outlook at Certis.

“

I am thankful for the opportunity to upskill myself and be part of the digitally ready workforce. With experience and new skills gained in managing the facilities, I enjoy greater work satisfaction to be able to centrally monitor and manage complex operations of Jewel through Security+. With more to learn, I will continue to upskill myself and also hope to inspire others to embrace technologies and transform the way they work.

– Mr Rajesh S/O Kantilal Rashiwala, Certis

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- c. We adopted a similar approach with WSG's initiatives, engaging our workers directly to empower them to proactively take charge of their career health. WSG identifies new ways of equipping Singaporeans with the necessary skills to succeed in their careers. By building career agility and resilience, workers are then able to make longer-term career plans.

Workforce Singapore (WSG)'s Career Conversion Programmes

Developed in collaboration with key stakeholders such as sector agencies and industry partners, WSG's **Career Conversion Programmes (CCPs)** are aimed at addressing hiring and reskilling needs. Currently, WSG offers CCPs across around 30 sectors. From 2017 to 2023, over 7,300 companies and 47,000 individuals have benefitted from CCPs.

CCPs provide employers with salary support to facilitate the reskilling of mid-career new hires or existing employees to take up new job roles with good longer-term prospects.

The key CCP modalities are:

- Place-and-Train CCPs: companies hire jobseekers and put the individuals through on-the-job training or industry-recognised training to take on a new growth job role.
- Attach-and-Train CCPs: companies act as host employers to provide jobseekers with training and work attachments, in growth job roles where there are good prospects for placement.
- Job Redesign Reskilling CCPs: companies can send any existing employee for reskilling to take on new or redesigned job roles aligned with JTM.

By participating in CCPs, employers can hire from a wider talent pool to address their manpower needs. CCPs can also enable employers to reskill existing employees to prepare them for more productive job roles within the same company and support the company's growth plans. For individuals, participating in CCPs will enable them to reskill to take on new growth job roles with good longer-term prospects.



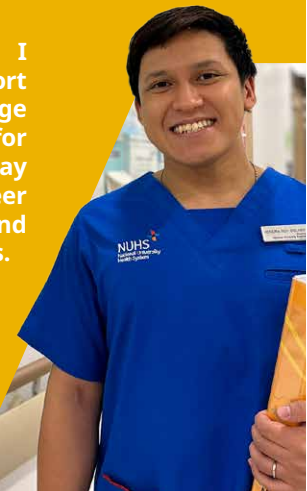
The structured on-the-job-training for WSG's CCP for Electronics Engineer/Assistant Engineer helped me to successfully transition from daily operational tasks to playing a more strategic role, focusing on data analysis and presenting findings. This shift has greatly improved my professional trajectory and efficiency at work.

– Ms Soon Vern Yee, Staff Engineer at ams-OSRAM, and CCP for Electronics Engineer/Assistant Engineer Participant.



Inspired by my late mother's legacy, I found my calling in Nursing. With support from loved ones, I embraced the challenge of a mid-career switch via WSG's CCP for Registered Nurses (Degree). Nursing may not be an easy job, but it is a fulfilling career that offers many opportunities beyond traditional clinical or management routes.

– Mr Hendra Roy Osland, Staff Nurse at National University Hospital, and CCP for Registered Nurses (Degree) participant.



- d. The Labour Movement and firms have also joined forces to implement workforce transformation efforts at scale, and rally workers to come on board. NTUC, through **Company Training Committees (CTCs)**, empowers companies to embark on business and workforce transformation and take training to the firm level. Companies can tap on the CTC Grant for areas such as enhancing employee skills and talent retention. **Operations & Technology Roadmaps (OTRs)** are also available, fully subsidised, to companies with CTCs. OTRs help companies identify trends and drivers that influence their business, and new products, service, technology and manpower that might be required to futureproof the business.
- e. An example is local content company, Vicinity Studio, which formed a CTC with the Creative Media and Publishing Union in 2021.

Sparkling Business and Workforce Transformation

Vicinity Studio first started as a young startup of five in 2017 and has since grown to a 42 person-strong local content production outfit. Its business and human resource capabilities have since grown in tandem.

Recognising the importance of capability building and investing in its staff, Vicinity formed a CTC with its union, the Creative Media and Publishing Union, and conducted an OTR¹⁶ using **NTUC Training and Placement ecosystem initiatives**. Through this work, Vicinity Studio was able to uplift internal organisational capabilities and improve work prospects for its staff.

Its young staff like Soo Che and Jaslyn have benefitted from the CTC programme, which has helped Vicinity Studio create career progression pathways for both new and existing employees across various roles. Guided by the various OTR blueprints, staff were able to hone their technical skills and meaningfully grow in their profession.

Through the OTR, Vicinity Studio was also able to adapt its business strategies to evolve in the medium- to long-term, such as sharing production equipment with other companies to lower production costs.

All in all, the CTC partnership has been a key enabler in helping Vicinity Studio “create change hypothesis and make it a reality”. In recognition of efforts to upgrade its workers and remain competitive through the OTR and assistance from the union, Vicinity Studio was awarded the Plaque of Commendation during the NTUC May Day Awards 2022.

Armed with a better equipped and invigorated team, the company now stands ready to seize new business opportunities.

¹⁶ CTCs allow companies to tap on the NTUC ecosystem for business and workforce transformation. Through the CTC platform, companies can tap on the CTC Grant managed by NTUC's e2i along with various NTUC, Government, and industry ecosystem initiatives, to revamp roles, enhance employee skills, attract, and retain talent, and elevate overall enterprise capabilities. The OTR provides a structured three-year plan to guide business and workforce transformation efforts.



Image: Soo Che (Left) and Jaslyn (Right), videographers.

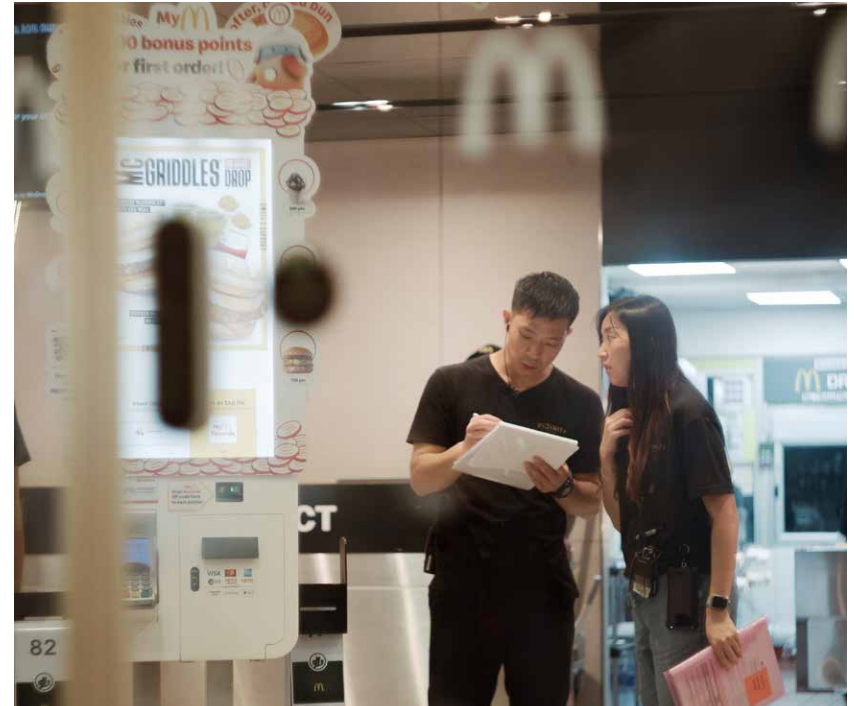


Image: Cherlyn Ng (Right), with Director Eric Chow (Left)



The CTC helps everyone find fulfilment at work, and helps us to build a more structured career progression roadmap.

– Ms Cheryl Ng, Vicinity Studio's Head of Producers



6.3 Work is underway to broaden and deepen leadership skills in our corporate sector.

- a. In addition to upskilling our workforce, there is value in sharpening leadership skills in our corporate sector. Industries and companies that have exceeded expectations are led by leaders who have a keen sense of opportunities, an ability to formulate strategies, and to build deep capabilities in their organisations to deliver results. Thus, we need to develop more Singaporeans to take on regional and global leadership roles. The **AfA for Business Leadership Development** is an ongoing initiative that seeks to address this need.

Alliances for Action (AfA) for Business Leadership Development

The AfA for Business Leadership Development was launched in June 2023 to champion actions by stakeholders to accelerate the development of Singapore leadership talent and entrepreneurial opportunities. The AfA recommends that companies should intentionally develop local talents into anchors for local, regional and global growth, while industry aggregators will bring together networks of talent. These efforts will be complemented by Government initiatives aimed at advancing local talent development by Singapore-based companies.

SBF released the AfA-Business Leadership Development report, highlighting the key opportunities and gaps in local talent development and six recommendations for individuals, companies, industry enablers, and the Government to cultivate conducive conditions for Singapore talents to assume key leadership roles in global enterprises.



Image: Launch of Insights Report from AfA on Business Leadership Development

6.4 We will continue to transform our workforce with our strong foundation of partnerships.

- a. Through our strong tripartite partnerships – between the Government, unions and employers – we will provide sufficient upskilling and reskilling pathways for Singaporeans. This will ensure that Singaporeans can take on high-skilled jobs that are aligned with the demands of our evolving economy, and ensure that good opportunities are available to all Singaporeans.

Chapter 7

STRENGTHENING OUR CONNECTION TO THE REST OF THE WORLD



7.1 Singapore has and will continue to be a Global-Asia node.

- a. Singapore has been the trusted location to facilitate flows of trade¹⁷, capital¹⁸, data¹⁹, people and ideas²⁰ within the region and beyond. We are one of the world's most connected countries, strategically located along the world's major trade, shipping and aviation routes. We are strongly embedded in global trade flows as well. As one of the largest global commodities and agri-commodities trade hubs, we have close to 400 global traders in Singapore and conduct close to 20 per cent of the world's energy and metals trade. International companies continue to choose Singapore as the premier Asia business hub to build their regional bases and connections, given our extensive connectivity, neutrality, and openness to work with the rest of the world.
- b. Our commitment to the rule of law and rules-based international order to facilitate market access will be key to Singapore's continued success as the Global-Asia node. We will thus continue to take an open, outward-looking approach to work with like-minded partners to broaden and deepen our ties in trade and other areas of growth. Over the years, we have grown our connections with the world on various fronts.

7.2 Our network of partnerships and agreements have enabled us to enhance our trade and connectivity outcomes.

- a. First, Singapore has forged an extensive network of 27 Free Trade Agreements (FTAs) that are in force. This also includes FTAs with several emerging markets and regional blocs²¹ further afield, such as Central Asia, Africa, the Middle East, and Latin America. Through the FTAs, Singapore and its trading partners can access mutual opportunities and benefit from concessions such as preferential customs duties, simplified customs processes and better protection of their overseas investments.
- b. Second, to complement and augment our network of FTAs, Singapore has further developed and advanced our agreements in the digital economy and green economy. Singapore has pioneered Digital Economy Agreements, and the plurilateral Digital Economy Partnership Agreement (DEPA), to enhance interoperability between governance frameworks. This will also support our businesses engaging in digital trade and electronic commerce. We have also developed initiatives such as Green Economy Agreements (GEA) and the ASEAN Taxonomy for Sustainable Finance that will contribute to capability development and help to catalyse new green growth opportunities. Our GEA with Australia for example, has catalysed collaborations in scientific research, green shipping corridors and co-innovation programmes for SMEs.

¹⁷ Singapore is the second-busiest container port in the world. In 2023, the Port of Singapore handled a record 39.01 million TEUs in shipping containers. Over 200 shipping lines connect our seaport to more than 600 ports globally. Changi Airport hosts more than 100 airlines, connecting to more than 400 cities across the world.

¹⁸ Singapore ranks as the top financial centre in Asia and 3rd globally. In 2022, we attracted US\$141 billion in foreign direct investments, up 10% from the previous year before despite a 12% decline globally.

¹⁹ Singapore connects Asia with the world, through 26 subsea cables, and is one of the top data centre markets globally.

²⁰ For instance, Singapore hosts international conferences such as SWITCH, Industrial Transformation Asia-Pacific, and the Singapore Conference on AI. Our safeguards for intellectual property and hosting of HQs of international institutions like the IMF / World Bank also promote the exchange of ideas in Singapore.

²¹ Costa Rica, India, Jordan, Panama, Peru, Sri Lanka, Turkey, the Gulf Cooperation Council, the Pacific Alliance comprising Chile, Colombia, Mexico, and Peru, and the MERCOSUR comprising Brazil, Argentina, Paraguay and Uruguay.

- c. Third, we leveraged multilateral and bilateral platforms to engage our partners. On the multilateral front, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership and Regional Comprehensive Economic Partnership have contributed significantly to reducing trade barriers and strengthening economic integration. Closer to home, Singapore has participated in the collective efforts of ASEAN to strengthen external relations with our partners. For instance, ASEAN, under Indonesia's Chairmanship in 2023, concluded negotiations to upgrade the ASEAN-Australia-New Zealand FTA. We have also worked with ASEAN member countries to explore harmonising standards in the bloc, including in areas such as sustainable development, digitalisation, to foster regional economic integration, reduce technical barriers, ensure quality and safety and boost trade of our products and services. These overlapping and mutually reinforcing economic partnerships help to strengthen multilateralism and the rules-based trading order.
- d. On the bilateral front, partnerships such as the US-Singapore Partnership for Growth and Innovation, China-Singapore Free Trade Agreement, and the India-Singapore Ministerial Roundtable have helped us to strengthen our ties and catalyse new areas of collaborations with our partners. In addition, we are negotiating bilateral Services and Investment Agreements with Eurasian Economic Union member countries to establish more economic links.
- e. These efforts have paved the way for Singapore to remain strongly plugged into global and regional developments to help our firms and workers access new growth opportunities. We will continue deepening our connectedness and complementarity with international and regional partners, to strengthen our position as the gateway to Asia and the rest of the world.

7.3 We will continue to grow cross-border industry partnerships to create win-win outcomes for all.

- a. Leveraging the large global network of government and industry partnerships, such as EnterpriseSG network of Overseas Centres, we have been able to give Singapore firms greater access to opportunities overseas and support them on their expansion overseas.

Forming New Supply Chains to Expand Singapore's Connectivity with Global Trade Routes

YCH Group established a logistics hub in Fukuoka, Japan, in April 2024, marking a significant milestone in its North Asia expansion. This hub strengthens the service footprint across the region, including China and South Korea. Located in a bonded facility, it allows duty-free replenishment to Fukuoka International Airport, streamlining logistics and ensuring customs compliance. Facilitated by EnterpriseSG, this venture opens new opportunities for Singapore firms to expand into Japan and vice versa, enhancing Singapore's connectivity with major global trade routes.



Image: YCH's warehouse in Japan

- b. Within the region, we have deepened cooperation with our neighbours to further integrate Singapore into the regional economy across sectors. For instance, we are establishing a new Johor-Singapore Special Economic Zone, expanding the number of Vietnam-Singapore Industrial Parks, as well as jointly developing India's first net zero industrial park in Tamil Nadu.
- c. We have also actively pursued industry partnerships and collaborations with other countries to create new business opportunities for Singapore and Singapore companies. We will continue to deepen our strategic partnerships and leverage different modalities to do so.
- d. In manufacturing, firms looking to diversify production into Southeast Asia can benefit from Singapore's twinning model that taps on the complementary advantages of both Singapore and our neighbouring countries, Malaysia and Indonesia. This would allow us to address shifts in global supply chains and to anchor new trade flows that are being created.
- e. Similarly, in transport & logistics, Singapore companies have managed re-export flows of multinational corporations (MNCs) involving high value goods passing through Singapore for redistribution to end destination countries. We have done so by investing in our capabilities to provide in-demand value-added services, expanding and deepening our distribution network, and developing critical assets such as industry-leading regional distribution centres for Singapore to play an important role in the global supply chain of major MNCs.
- f. Additionally, we have supported our firms to collaborate and jointly pursue opportunities to gain market access and export globally. For example, through the **Partnership for Capability Transformation (PACT) programme**, Amazon partnered with EnterpriseSG and SBF to help Singapore companies tap on its extensive networks for export opportunities in the US.

Partnership for Capability Transformation (PACT) – Amazon Global Selling

In July 2023, e-commerce platform, *Amazon Global Selling*, launched the **"Amazon Global Selling Singapore: Cross-border Brand Launchpad" programme**, in collaboration with EnterpriseSG and SBF.

The programme seeks to help SMEs access consumers in the US by equipping them with cross-border e-commerce skills and capabilities. It aims to support over 100 local SMEs to launch and scale their brands on Amazon in the US, through provision of dedicated and tailored account management support. This includes advisory services on sales optimisation, and support for the adoption of marketing tools and key sales events. SMEs were able to enhance their cross-border e-commerce knowledge as well, through a series of seminars conducted by Amazon Global Selling in partnership with SBF, touching on areas such as product research, brand building and cross-border logistics.



Image: Amazon Global Selling

- g. We have also mobilised different industry stakeholders to create win-win outcomes, especially in the region. For example, in infrastructure development, Singapore has stepped up to bring together regional infrastructure ecosystem players to jointly explore and take on project opportunities that support Asia's development needs through the **Infrastructure Asia (InfraAsia) initiative**.

Infrastructure Asia (InfraAsia)

The development of infrastructure is key to catalysing the growth of new economic clusters and strengthening partnerships and connectivity within the region. InfraAsia was set up in April 2018 by EnterpriseSG and MAS, to support Asia's social and economic growth through infrastructure development.

InfrasAsia curates platforms that connect local and international stakeholders across the infrastructure value chain to enable knowledge exchange and capacity building, as well as to facilitate infrastructure project development and investments. Harnessing the networks and collective capabilities of the private and public sectors, Infrasia has partnered with key stakeholders across the region to catalyse more project opportunities to meet Asia's infrastructure needs.

One such platform is the **Asia Infrastructure Forum (AIF) Conversations**. InfraAsia, in collaboration with the Philippines' Department of Energy co-organised a market sounding exercise in Singapore for the Green Energy Auction Programme. Through the session, the Philippines' Department of Energy was able to obtain constructive feedback on the parameters of the Green Energy Auction Programme from over 100 international renewable energy developers and investors based in Singapore.



Image: AIF Conversations on Renewable Energy Opportunities in The Philippines (held in Singapore)

- h. TACs have been important multipliers in our efforts to connect with and rally participation of industry stakeholders to drive business advocacy and trade facilitation. Through strong partnerships with the business chambers, we have empowered more firms to plug themselves into the global economy.
- i. For example, SBF supported more than 1,800 enterprises through **GlobalConnect@SBF** in 2023. In the same year, SCCCI engaged around 800 companies through the Singapore Enterprise Centres in Shanghai and Chengdu to help Singapore enterprises looking to set up or expand their presence in China.
- j. Foreign business chambers in Singapore have also been key to unlocking new opportunities for our firms. For instance, in 2020, SBF and the *European Chamber of Commerce, Singapore (EuroCham)* signed an MOU to deepen collaboration in the areas of sustainability, digitalisation, internationalisation and corporate social responsibility. Similarly, the *American Chamber of Commerce (AmCham)* launched **SME ACcelerate** in 2021, to link MNCs with SMEs, supporting SMEs in areas such as digitilisation and women-led businesses.



WHAT'S NEXT



8.1 Even as we continually transform, some core features of how we work will remain unchanged.

- a. First, Singapore will continue to strengthen our tripartite partnerships. With the strong collaboration and trust among unions, employers and the Government, our economic transformation has benefitted businesses and workers.
- b. Second, we will continue to strengthen our position as a Global-Asia node for technology, innovation and enterprise. Looking ahead, we will actively seek new areas of cooperation to deepen

collaboration especially in regional markets, while strengthening our relevance as a global business hub. We will also enlarge our network of trading partners and establish new connections with emerging markets.

- c. Third, we will continue to maintain our reputation as a trusted partner. We have always and will continue to honour our commitments. As we had done so during COVID-19, we will not impose export restrictions even in the depths of a crisis, and we will enable our enterprises to fulfil their obligations and responsibilities to global supply chains.



8.2 In light of future trends, we are doubling down on our efforts in several areas.

- a. The global economy in the coming years will be more uncertain and complex, and the next phase of our economic journey will be more challenging. We will thus double down on our efforts in the following areas:
 - b. First, we will strengthen Singapore's role as a base for companies to operate in the growing Asia region. Singapore is well positioned to contribute to and participate in Asia's continued economic growth, including that of Southeast Asia, which is one of the fastest growing regions in the world. This includes being a good base for companies to conduct research, innovate, and develop products which serve the broader Asia market.
 - c. As a regional financial centre, we can support the flow of finance to support regional growth, including in infrastructure and sustainable development. Ongoing initiatives such as the **ASEAN Taxonomy on Sustainable Finance** have helped to mobilise finance to support credible projects in ASEAN and the region. Our financial sector can serve international investors seeking to tap on investment opportunities in the region, and catalyse growth for the region by attracting foreign capital.
 - d. We will also pursue new win-win partnerships and build on existing ones, such as the Singapore-Johor Special Economic Zone and the Singapore-Johor-Riau Islands growth triangle. In addition, we will continue to broaden and deepen our trade linkages with the rest of the world, including in new areas such as digitalisation and sustainability. These efforts will strengthen support for our companies looking to scale up and grow in the region.
- e. Second, we will strengthen the integration between our RIE and economic transformation plans. We had tightened the nexus between the RIE plans and ITMs through RIE 2025 and ITM 2025, by aligning the 7 FEC clusters to the 4 RIE domains. Initiatives such as **StartupSG, SWITCH and the GIA** have also spurred innovation in industries and the research community. We will continue to strengthen this integration by exploring new synergies and developing new areas of growth arising from structural shifts.
- f. Third, we will continue to support our workforce to upskill and reskill, to be able to thrive in the jobs of the future. As technology transforms industries and workplaces, training and upskilling have become even more urgent. This will be done through a collaborative effort between companies, workers, government agencies and trade associations and unions.
- g. Fourth, we will transform to go green. We strive to achieve our longer-term goal of net zero carbon emissions by 2050. Through the Singapore Green Plan 2030, we have accelerated this shift towards greener options for businesses and individuals. This comprises (i) decarbonising our businesses and industry, through initiatives such as the **Resource Efficiency Grant and the Enterprise Sustainability Programme**, (ii) pursuing new growth opportunities in a lower-carbon economy, and (iii) equipping our workers for the green transition so that they have the requisite skills and capabilities to ride this wave.

8.3 Singapore has never rested on our laurels and has always overcome hurdles through grit and determination. We must continue to embody this “can-do” spirit and build on the progress that we have made in our economic transformation. Together, we will create a growing and vibrant economy, with better jobs and prospects for all Singaporeans.



